

# SECTION **ATC**

## AUTOMATIC AIR CONDITIONER

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M

### CONTENTS

<p><b>PRECAUTIONS</b> ..... 5</p> <p>  Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" ..... 5</p> <p>  Precautions Necessary for Steering Wheel Rotation After Battery Disconnect ..... 5</p> <p>    OPERATION PROCEDURE ..... 5</p> <p>  Precautions for Procedures without Cowl Top Cover... 6</p> <p>  Precautions for Working with HFC-134a (R-134a)... 6</p> <p>    CONTAMINATED REFRIGERANT ..... 6</p> <p>  General Refrigerant Precautions ..... 7</p> <p>  Precautions for Refrigerant Connection ..... 8</p> <p>    ABOUT ONE-TOUCH JOINT ..... 8</p> <p>    FEATURES OF NEW TYPE REFRIGERANT CONNECTION ..... 10</p> <p>    O-RING AND REFRIGERANT CONNECTION... 11</p> <p>  Precautions for Servicing Compressor ..... 13</p> <p>  Precautions for Service Equipment ..... 13</p> <p>    RECOVERY / RECYCLING EQUIPMENT ..... 13</p> <p>    ELECTRICAL LEAK DETECTOR ..... 13</p> <p>    VACUUM PUMP ..... 13</p> <p>    MANIFOLD GAUGE SET ..... 13</p> <p>    SERVICE HOSES ..... 14</p> <p>    SERVICE COUPLERS ..... 14</p> <p>    REFRIGERANT WEIGHT SCALE ..... 14</p> <p>    CHARGING CYLINDER ..... 14</p> <p>  Precautions for Leak Detection Dye ..... 15</p> <p>    IDENTIFICATION ..... 15</p> <p>    IDENTIFICATION LABEL FOR VEHICLE ..... 15</p> <p><b>PREPARATION</b> ..... 16</p> <p>  Special Service Tools ..... 16</p> <p>  HFC-134a (R-134a) Service Tools and Equipment.. 17</p> <p>  Commercial Service Tools ..... 19</p> <p><b>REFRIGERATION SYSTEM</b> ..... 20</p> <p>  Refrigerant Cycle ..... 20</p> <p>    REFRIGERANT FLOW ..... 20</p> <p>    FREEZE PROTECTION ..... 20</p> <p>  Refrigerant System Protection ..... 20</p> <p>    REFRIGERANT PRESSURE SENSOR ..... 20</p>	<p>    PRESSURE RELIEF VALVE ..... 20</p> <p>    Component Layout ..... 21</p> <p><b>LUBRICANT</b> ..... 22</p> <p>  Maintenance of Lubricant Quantity in Compressor.. 22</p> <p>    LUBRICANT ..... 22</p> <p>    LUBRICANT RETURN OPERATION ..... 22</p> <p>    LUBRICANT ADJUSTING PROCEDURE FOR COMPONENTS REPLACEMENT EXCEPT COMPRESSOR ..... 23</p> <p>    LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT ..... 24</p> <p><b>AIR CONDITIONER CONTROL</b> ..... 25</p> <p>  Description of Air Conditioner LAN Control System.. 25</p> <p>  System Construction ..... 25</p> <p>  OPERATION ..... 25</p> <p>  TRANSMISSION DATA AND TRANSMISSION ORDER ..... 26</p> <p>  AIR MIX DOOR CONTROL (AUTOMATIC TEMPERATURE CONTROL) ..... 27</p> <p>  FAN SPEED CONTROL ..... 27</p> <p>  INTAKE DOOR CONTROL ..... 27</p> <p>  MODE DOOR CONTROL ..... 27</p> <p>  MAGNET CLUTCH CONTROL ..... 28</p> <p>  SELF-DIAGNOSIS SYSTEM ..... 28</p> <p>  Description of Control System ..... 29</p> <p>  Control Operation ..... 29</p> <p>    DISPLAY SCREEN ..... 30</p> <p>    AUTO SWITCH ..... 30</p> <p>    TEMPERATURE CONTROL DIAL (POTENTIAL TEMPERATURE CONTROL) (DRIVER SIDE) ... 30</p> <p>    TEMPERATURE CONTROL DIAL (POTENTIAL TEMPERATURE CONTROL) (PASSENGER SIDE) ..... 30</p> <p>    RECIRCULATION (REC) SWITCH ..... 30</p> <p>    FRESH (FRE) SWITCH ..... 30</p> <p>    DEFROSTER (DEF) SWITCH ..... 30</p> <p>    REAR WINDOW DEFOGGER SWITCH ..... 30</p> <p>    OFF SWITCH ..... 30</p> <p>    A/C SWITCH ..... 30</p> <p>    MODE SWITCH ..... 30</p>
---	--

ATC

FAN CONTROL DIAL .....	30	Air Mix Door Motor PBR Circuit .....	68
DUAL SWITCH .....	30	DIAGNOSIS PROCEDURE FOR AIR MIX DOOR	
Fail-safe Function .....	31	MOTOR PBR .....	68
Discharge Air Flow .....	32	Intake Door Motor Circuit .....	69
System Description .....	33	INSPECTION FLOW .....	69
SWITCHES AND THEIR CONTROL FUNCTION..	33	SYSTEM DESCRIPTION .....	70
CAN Communication System Description .....	34	COMPONENT DESCRIPTION .....	71
<b>TROUBLE DIAGNOSIS .....</b>	<b>35</b>	DIAGNOSIS PROCEDURE FOR INTAKE DOOR	
CONSULT-II Function (BCM) .....	35	MOTOR .....	71
CONSULT-II BASIC OPERATION .....	35	Blower Motor Circuit .....	72
DATA MONITOR .....	35	INSPECTION FLOW .....	72
How to Perform Trouble Diagnosis for Quick and		SYSTEM DESCRIPTION .....	73
Accurate Repair .....	36	COMPONENT DESCRIPTION .....	74
WORK FLOW .....	36	DIAGNOSIS PROCEDURE FOR BLOWER	
SYMPTOM TABLE .....	36	MOTOR .....	74
Component Parts and Harness Connector Location..	37	COMPONENT INSPECTION .....	76
ENGINE COMPARTMENT .....	37	Magnet Clutch Circuit .....	77
PASSENGER COMPARTMENT .....	38	INSPECTION FLOW .....	77
Schematic .....	39	SYSTEM DESCRIPTION .....	78
Wiring Diagram — A/C — .....	40	DIAGNOSIS PROCEDURE FOR MAGNET	
Auto Amp. Terminals and Reference Value .....	45	CLUTCH .....	78
PIN CONNECTOR TERMINAL LAYOUT .....	45	COMPONENT INSPECTION .....	82
TERMINALS AND REFERENCE VALUE FOR		Insufficient Cooling .....	83
UNIFIED METER AND A/C AMP. ....	45	INSPECTION FLOW .....	83
Self-diagnosis Function .....	47	PERFORMANCE TEST DIAGNOSIS .....	85
DESCRIPTION .....	47	PERFORMANCE CHART .....	87
FUNCTION CONFIRMATION PROCEDURE ....	48	TROUBLE DIAGNOSIS FOR UNUSUAL PRES-	
AUXILIARY MECHANISM: TEMPERATURE		SURE .....	88
SETTING TRIMMER .....	53	Insufficient Heating .....	91
AUXILIARY MECHANISM: FOOT POSITION		INSPECTION FLOW .....	91
SETTING TRIMMER .....	54	Noise .....	92
AUXILIARY MECHANISM: INLET PORT MEM-		INSPECTION FLOW .....	92
ORY FUNCTION .....	54	Self-diagnosis .....	93
Operational Check .....	55	INSPECTION FLOW .....	93
CHECKING MEMORY FUNCTION .....	55	Memory Function .....	94
CHECKING BLOWER .....	55	INSPECTION FLOW .....	94
CHECKING DISCHARGE AIR .....	55	Ambient Sensor Circuit .....	95
CHECKING INTAKE AIR .....	55	COMPONENT DESCRIPTION .....	95
CHECKING TEMPERATURE DECREASE .....	55	AMBIENT TEMPERATURE INPUT PROCESS..	95
CHECKING TEMPERATURE INCREASE .....	56	DIAGNOSIS PROCEDURE FOR AMBIENT	
CHECK A/C SWITCH .....	56	SENSOR .....	95
CHECKING AUTO MODE .....	56	COMPONENT INSPECTION .....	97
Power Supply and Ground Circuit for Auto Amp. ...	57	In-vehicle Sensor Circuit .....	98
INSPECTION FLOW .....	57	COMPONENT DESCRIPTION .....	98
COMPONENT DESCRIPTION .....	57	DIAGNOSIS PROCEDURE FOR IN-VEHICLE	
DIAGNOSIS PROCEDURE FOR A/C SYSTEM..	58	SENSOR .....	99
LAN System Circuit .....	59	COMPONENT INSPECTION .....	100
DIAGNOSIS PROCEDURE FOR LAN CIRCUIT..	59	Sunload Sensor Circuit .....	101
Mode Door Motor Circuit .....	63	COMPONENT DESCRIPTION .....	101
INSPECTION FLOW .....	63	SUNLOAD INPUT PROCESS .....	101
SYSTEM DESCRIPTION .....	64	DIAGNOSIS PROCEDURE FOR SUNLOAD	
COMPONENT DESCRIPTION .....	65	SENSOR .....	101
DIAGNOSIS PROCEDURE FOR MODE DOOR		COMPONENT INSPECTION .....	103
MOTOR .....	65	Intake Sensor Circuit .....	104
Air Mix Door Motor Circuit .....	66	COMPONENT DESCRIPTION .....	104
INSPECTION FLOW .....	66	DIAGNOSIS PROCEDURE FOR INTAKE SEN-	
SYSTEM DESCRIPTION .....	67	SOR .....	104
COMPONENT DESCRIPTION .....	68	COMPONENT INSPECTION .....	105
DIAGNOSIS PROCEDURE FOR AIR MIX DOOR..	68		

<b>CONTROLLER</b> .....	<b>106</b>	<b>HEATER CORE</b> .....	<b>124</b>
Removal and Installation of A/C and AV Switch ..	106	Removal and Installation .....	124
REMOVAL .....	106	REMOVAL .....	124
INSTALLATION .....	106	INSTALLATION .....	124
<b>AUTO AMP</b> .....	<b>107</b>	<b>DUCTS AND GRILLES</b> .....	<b>125</b>
Removal and Installation of Unified Meter and A/C		Removal and Installation .....	125
Amp. ....	107	COMPONENT LAYOUT .....	125
REMOVAL .....	107	REMOVAL .....	125
INSTALLATION .....	107	INSTALLATION .....	130
<b>AMBIENT SENSOR</b> .....	<b>108</b>	<b>REFRIGERANT LINES</b> .....	<b>131</b>
Removal and Installation .....	108	HFC-134a (R-134a) Service Procedure .....	131
REMOVAL .....	108	SETTING OF SERVICE TOOLS AND EQUIP-	
INSTALLATION .....	108	MENT .....	131
<b>IN-VEHICLE SENSOR</b> .....	<b>109</b>	Components .....	133
Removal and Installation .....	109	Removal and Installation of Compressor .....	134
REMOVAL .....	109	REMOVAL .....	134
INSTALLATION .....	109	INSTALLATION .....	134
<b>SUNLOAD SENSOR</b> .....	<b>110</b>	Check Disc to Pulley Clearance .....	135
Removal and Installation .....	110	Removal and Installation of Low-pressure Flexible	
REMOVAL .....	110	Hose .....	135
INSTALLATION .....	110	REMOVAL .....	135
<b>INTAKE SENSOR</b> .....	<b>111</b>	INSTALLATION .....	135
Removal and Installation .....	111	Removal and Installation of High-pressure Flexible	
REMOVAL .....	111	Hose .....	136
INSTALLATION .....	111	REMOVAL .....	136
<b>BLOWER UNIT</b> .....	<b>112</b>	INSTALLATION .....	136
Removal and Installation .....	112	Removal and Installation of Low-pressure Pipe 1	
REMOVAL .....	112	(Engine Compartment) .....	137
INSTALLATION .....	112	REMOVAL .....	137
Disassembly and Assembly .....	113	INSTALLATION .....	137
Removal and Installation of Blower Duct .....	114	Removal and Installation of High-pressure Pipe 1	
REMOVAL .....	114	(Engine Compartment) .....	138
INSTALLATION .....	114	REMOVAL .....	138
<b>BLOWER MOTOR</b> .....	<b>115</b>	INSTALLATION .....	138
Removal and Installation .....	115	Removal and Installation of Low-pressure Pipe 2	
REMOVAL .....	115	and High-pressure Pipe 2 .....	139
INSTALLATION .....	115	REMOVAL .....	139
<b>INTAKE DOOR MOTOR</b> .....	<b>116</b>	INSTALLATION .....	140
Removal and Installation .....	116	Removal and Installation of Liquid Tank .....	140
REMOVAL .....	116	REMOVAL .....	140
INSTALLATION .....	116	INSTALLATION .....	141
<b>IN-CABIN MICROFILTER</b> .....	<b>117</b>	Removal and Installation of Condenser .....	141
Removal and Installation .....	117	REMOVAL .....	141
FUNCTION .....	117	INSTALLATION .....	142
REPLACEMENT TIMING .....	117	Removal and Installation of Refrigerant Pressure	
REPLACEMENT PROCEDURES .....	117	Sensor .....	142
<b>HEATER &amp; COOLING UNIT ASSEMBLY</b> .....	<b>118</b>	REMOVAL .....	142
Removal and Installation .....	118	INSTALLATION .....	142
REMOVAL .....	118	Removal and Installation of Evaporator .....	142
INSTALLATION .....	119	REMOVAL .....	142
Disassembly and Assembly .....	120	INSTALLATION .....	143
<b>MODE DOOR MOTOR</b> .....	<b>122</b>	Removal and Installation of Expansion Valve .....	143
Removal and Installation .....	122	REMOVAL .....	143
REMOVAL .....	122	INSTALLATION .....	143
INSTALLATION .....	122	Checking for Refrigerant Leaks .....	144
<b>AIR MIX DOOR MOTOR</b> .....	<b>123</b>	Checking System for Leaks Using the Fluorescent	
Removal and Installation .....	123	Leak Detector .....	144
REMOVAL .....	123		
INSTALLATION .....	123		

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

---

Dye Injection .....	144	Compressor .....	148
Electrical Leak Detector .....	145	Lubricant .....	148
PRECAUTIONS FOR HANDLING LEAK		Refrigerant .....	148
DETECTOR .....	145	Engine Idling Speed .....	148
CHECKING PROCEDURE .....	146	Belt Tension .....	148
<b>SERVICE DATA AND SPECIFICATIONS (SDS) ...</b>	<b>148</b>		

# PRECAUTIONS

## PRECAUTIONS

PPF:00001

### Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

NJS000A2

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

#### **WARNING:**

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

### Precautions Necessary for Steering Wheel Rotation After Battery Disconnect

NJS000CQ

#### **NOTE:**

- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the “LOCK” position.
- Always use CONSULT-II to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

#### **OPERATION PROCEDURE**

1. Connect both battery cables.

#### **NOTE:**

Supply power using jumper cables if battery is discharged.

2. Use the Intelligent Key or mechanical key to turn the ignition switch to the “ACC” position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the “LOCK” position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-II.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

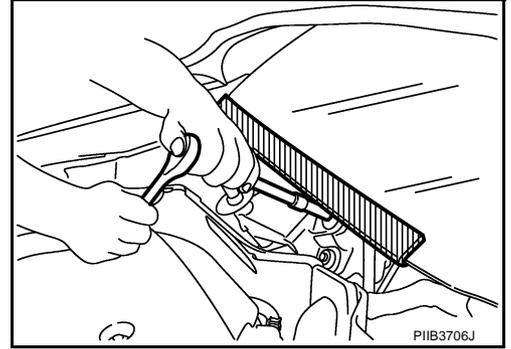
ATC

# PRECAUTIONS

## Precautions for Procedures without Cowl Top Cover

NJS000CR

When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc.



## Precautions for Working with HFC-134a (R-134a)

NJS000A3

### CAUTION:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed and compressor malfunction is likely to occur, refer to “CONTAMINATED REFRIGERANT” below. To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.
- Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor malfunction is likely to occur.
- The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
  - When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
  - When installing refrigerant components to a vehicle, never remove the caps (unseal) until just before connecting the components. Connect all refrigerant loop components as quickly as possible to minimize the entry of moisture into system.
  - Only use the specified lubricant from a sealed container. Immediately reseal containers of lubricant. Without proper sealing, lubricant will become moisture saturated and should not be used.
  - Never allow lubricant (Nissan A/C System Oil Type S) to come in contact with styrene foam parts. Damage may result.

### CONTAMINATED REFRIGERANT

If a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle, take appropriate steps shown below:

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- In case of repairing, recover the refrigerant using only **dedicated equipment and containers. Never recover contaminated refrigerant into the existing service equipment.** If the facility does not have dedicated recovery equipment, contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact Nissan Customer Affairs for further assistance.

# PRECAUTIONS

## General Refrigerant Precautions

NJS000A4

### WARNING:

- Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from the A/C system, using certified service equipment meeting requirements of SAEJ-2210 [HFC-134a (R-134a) recycling equipment], or J-2209 [HFC-134a (R-134a) recovery equipment]. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.
- Never release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant every time an air conditioning system is discharged.
- Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.
- Never store or heat refrigerant containers above 52°C (126°F).
- Never heat a refrigerant container with an open flame; if container warming is required, place the bottom of the container in a warm pail of water.
- Never intentionally drop, puncture, or incinerate refrigerant containers.
- Keep refrigerant away from open flames: poisonous gas will be produced if refrigerant burns.
- Refrigerant will displace oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.
- Never pressure test or leak test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a) have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.

A  
B  
C  
D  
E  
F  
G  
H  
I

ATC

K  
L  
M

# PRECAUTIONS

NJS000A6

## Precautions for Refrigerant Connection

A new type refrigerant connection has been introduced to all refrigerant lines except the following location.

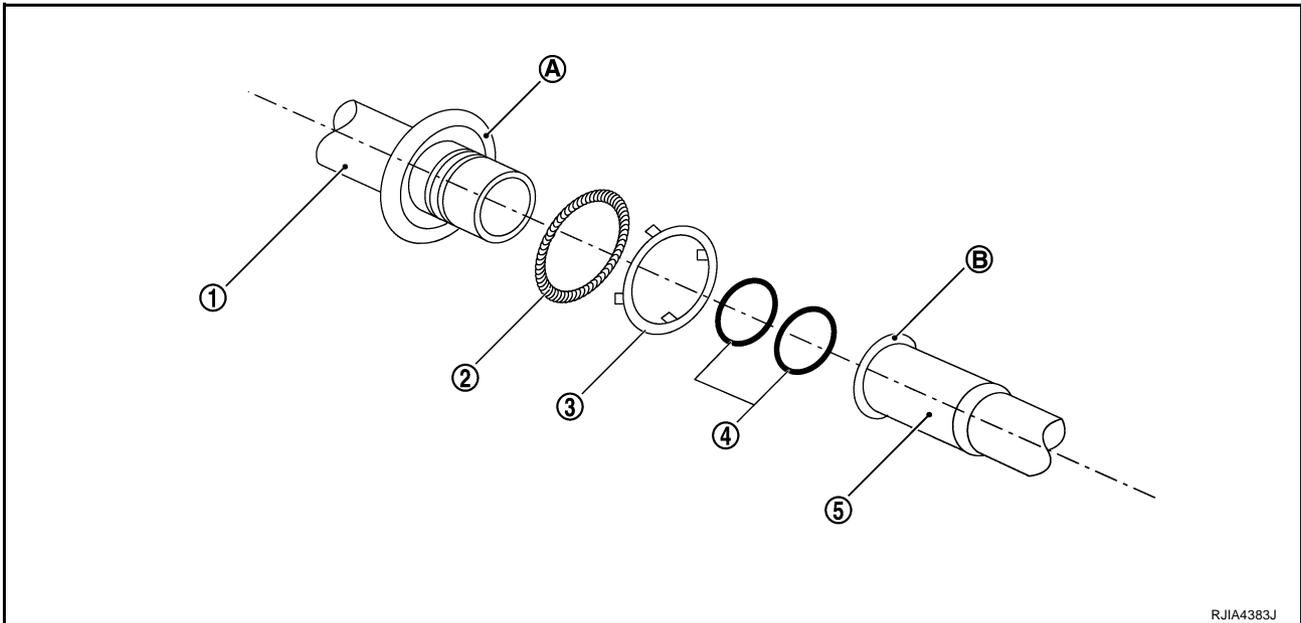
- Expansion valve to evaporator
- Refrigerant pressure sensor to condenser

### ABOUT ONE-TOUCH JOINT

#### Description

- One-touch joints are pipe joints which do not require tools during piping connection.
- Unlike conventional connection methods using union nuts and flanges, controlling tightening torque at connection point is not necessary.
- When removing a pipe joint, use a disconnecter.

#### COMPONENT PARTS



RJIA4383J

#### FUNCTIONS OF COMPONENT PARTS

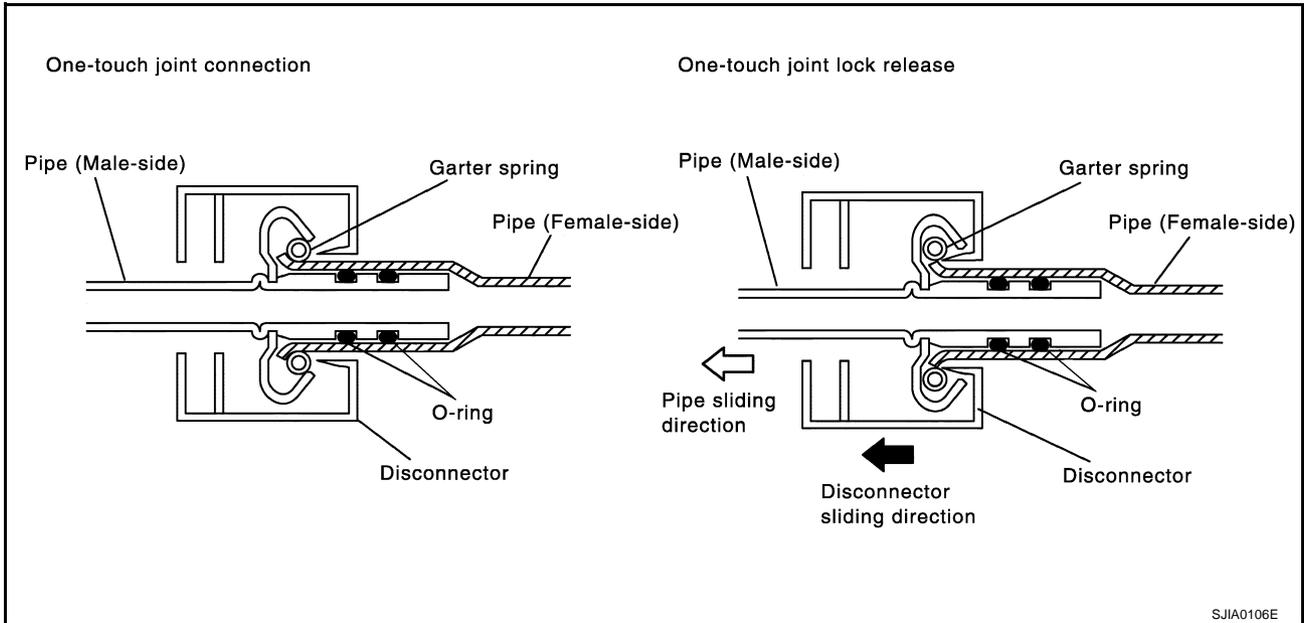
1	Pipe (Male side)	<ul style="list-style-type: none"><li>● Retains O-rings (4).</li><li>● Retains garter spring (2) in cage (A).</li></ul>
2	Garter spring	Anchors female side piping (5).
3	Indicator ring	When connection is made properly, this is ejected from male-side piping (1). (This part is no longer necessary after connection.)
4	O-ring	Seals connection point. (Not reusable)
5	Pipe (Female side)	<ul style="list-style-type: none"><li>● Seals connection by compressing O-rings (4).</li><li>● Anchors piping connection using flare (B) and garter spring (2).</li></ul>

#### NOTE:

- Garter spring (2) cannot be removed from cage (A) of male-side piping.
- Indicator ring (3) remains near piping connection point, however, this is not a malfunction. (This is to check piping connection during factory assembly.)

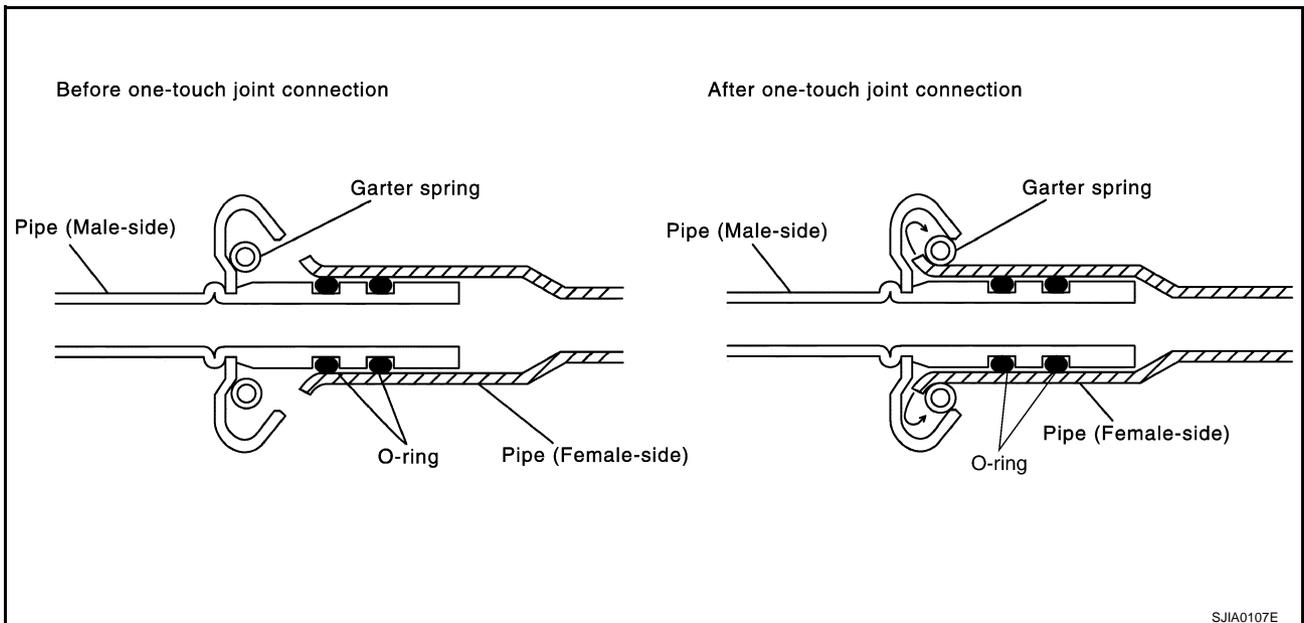
# PRECAUTIONS

## REMOVAL



1. Clean piping connection point, and set a disconnecter.
2. Slide disconnecter in axial direction of piping, and stretch garter spring with tapered point of disconnecter.
3. Slide disconnecter farther so that inside diameter of garter spring becomes larger than outside diameter of female-side piping flare. Then male-side piping can be disconnected.

## INSTALLATION



1. Clean piping connection points, and insert male-side piping into female-side piping.
2. Push inserted male-side piping harder so that female-side piping flare stretches garter spring.
3. If inside diameter of garter spring becomes larger than outside diameter of female-side piping flare, garter spring seats on flare. Then, it fits in between male-side piping cage and female-side piping flare to anchor piping connection point.

### NOTE:

When garter spring seats on flare, and fits in between male-side piping cage and female-side piping flare, it clicks.

### CAUTION:

- Female-side piping connection point is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# PRECAUTIONS

- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.

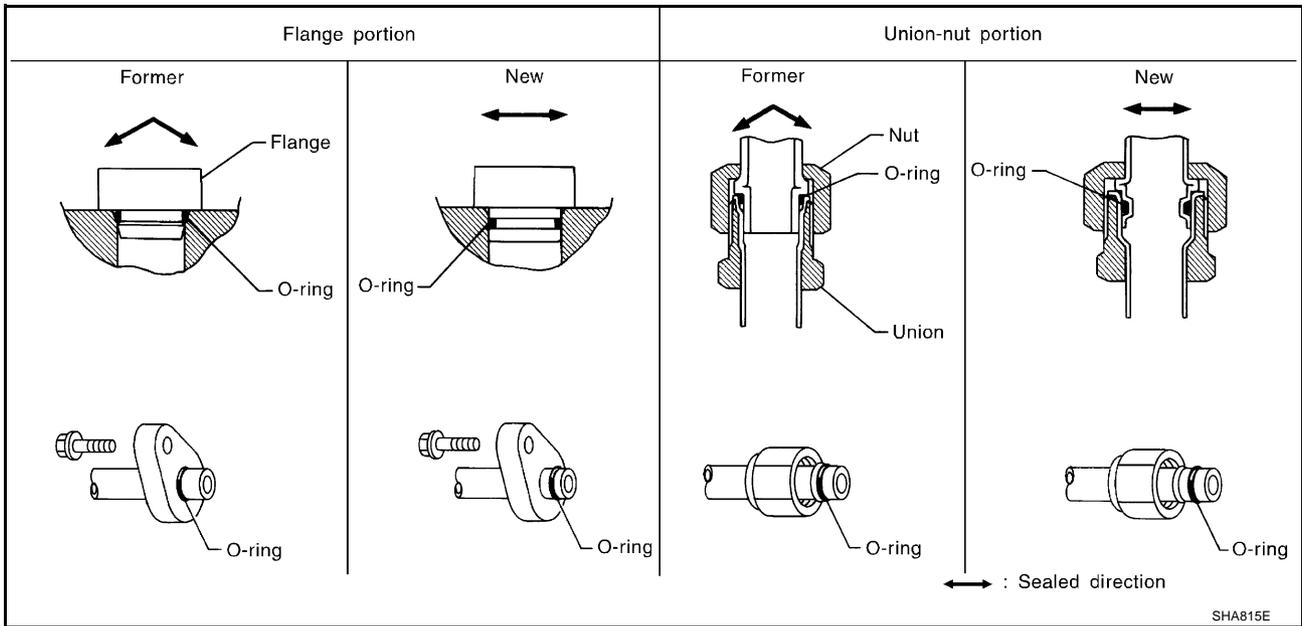
## NOTE:

One-touch joint connection is used in points below.

- Low-pressure pipe 1 to low-pressure pipe 2 (O-ring size: 16)
- High-pressure pipe 1 to high-pressure pipe 2 (O-ring size: 8)

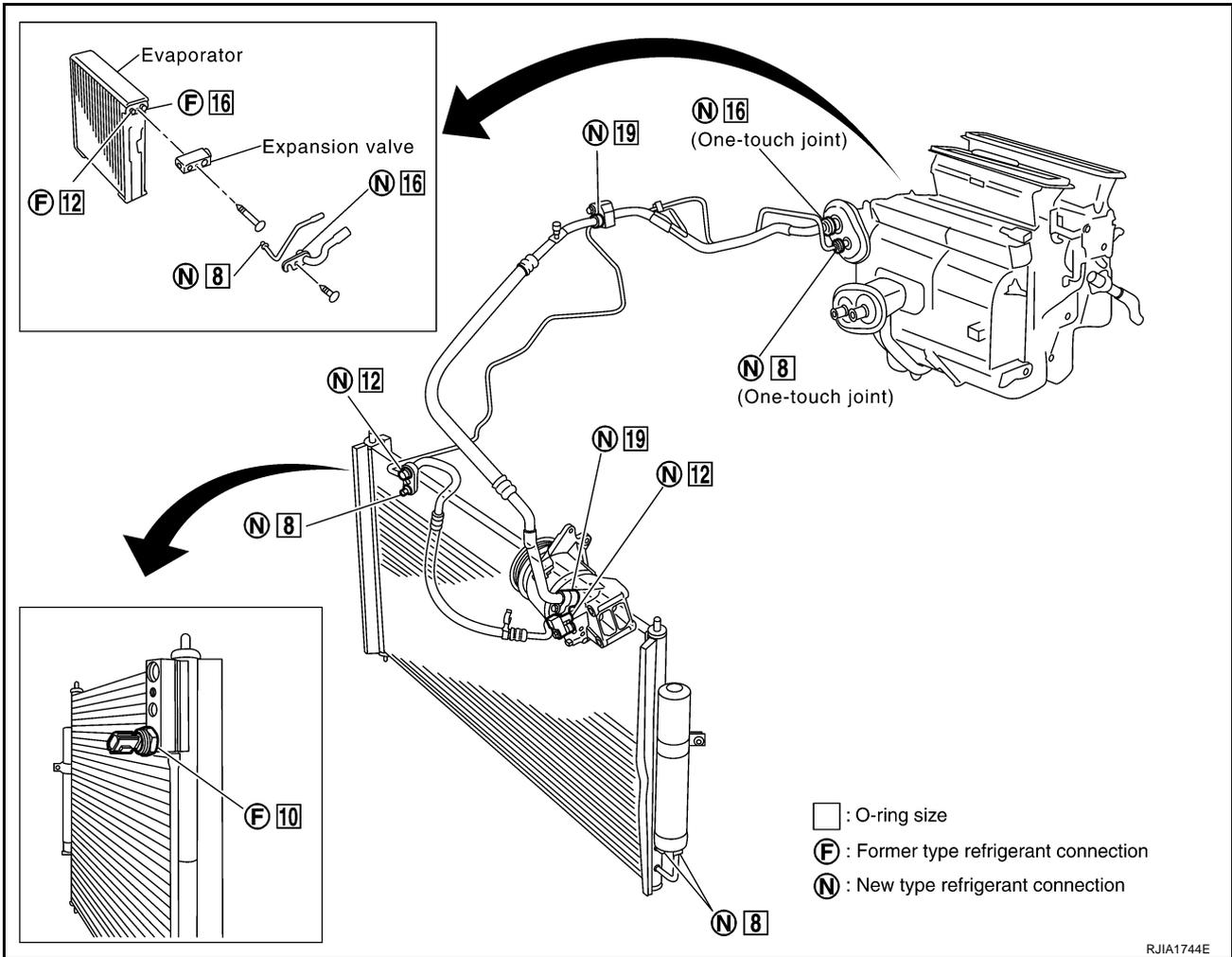
## FEATURES OF NEW TYPE REFRIGERANT CONNECTION

- The O-ring has been relocated. It has also been provided with a groove for proper installation. This eliminates the possibility of the O-ring being caught in, or damaged by, the mating part. The sealing direction of the O-ring is now set vertically in relation to the contacting surface of the mating part to improve sealing characteristics.
- The reaction force of the O-ring will not occur in the direction that causes the joint to pull out, thereby facilitating piping connections.



# PRECAUTIONS

## O-RING AND REFRIGERANT CONNECTION



### CAUTION:

The new and former refrigerant connections use different O-ring configurations. Never confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant may leak at the connection.

### O-Ring Part Numbers and Specifications

Connection type	Piping connection point		Part number	QTY	O-ring size	
New	Low-pressure pipe 1 to low-pressure pipe 2 (One-touch joint)		92473 N8221	2	16	
	Low-pressure pipe 2 to expansion valve		92473 N8210	1	16	
	High-pressure pipe 1 to high-pressure pipe 2 (One-touch joint)		92471 N8221	2	8	
	High-pressure pipe 2 to expansion valve		92471 N8210	1	8	
	Condenser to high-pressure flexible hose		92472 N8210	1	12	
	Condenser to high-pressure pipe 1		92471 N8210	1	8	
	Low-pressure flexible hose to low-pressure pipe 1		92474 N8210	1	19	
	Compressor to low-pressure flexible hose		92474 N8210	1	19	
	Compressor to high-pressure flexible hose		92472 N8210	1	12	
	Liquid tank to condenser pipe		92471 N8210	Inlet	1	8
		Outlet		1		
Former	Refrigerant pressure sensor to condenser		J2476 89956	1	10	
	Expansion valve to evaporator		Inlet	92475 71L00	1	12
			Outlet	92475 72L00	1	16

A  
B  
C  
D  
E  
F  
G  
H  
I  
ATC

K  
L  
M

# PRECAUTIONS

## WARNING:

Make sure all refrigerant is discharged into the recycling equipment and the pressure in the system is less than atmospheric pressure. Then gradually loosen the discharge side hose fitting and remove it.

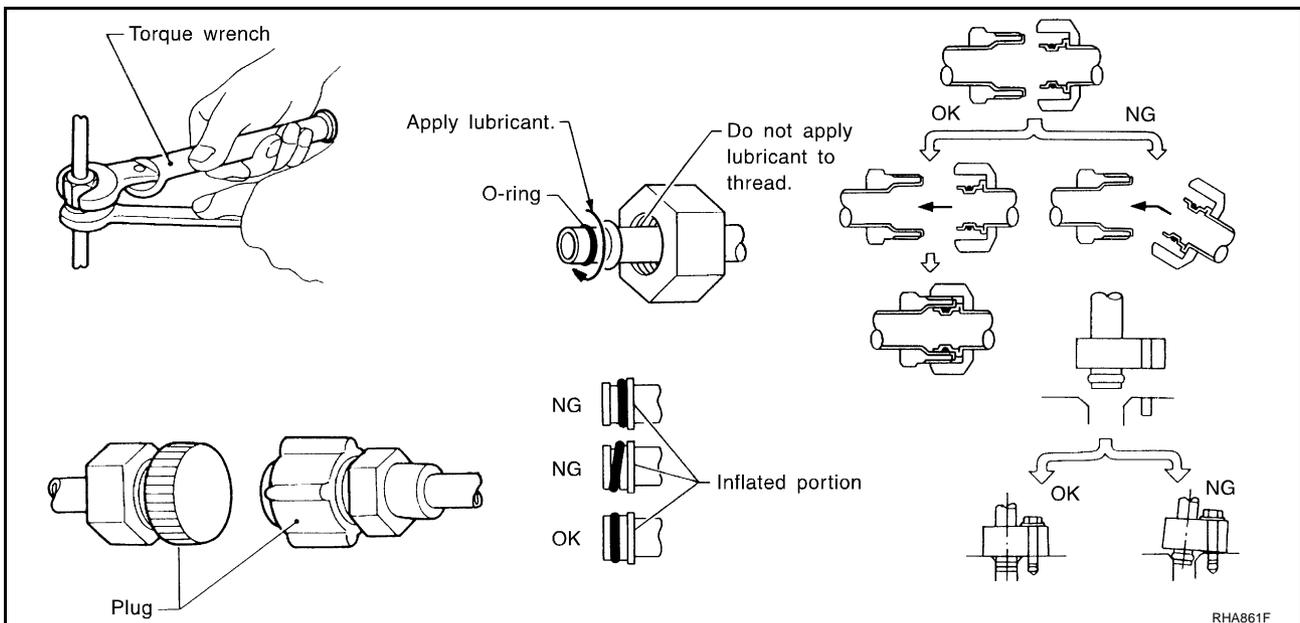
## CAUTION:

When replacing or cleaning refrigerant cycle components, observe the following.

- When the compressor is removed, store it in the same way as it is when mounted on the car. Failure to do so will cause lubricant to enter the low-pressure chamber.
- When connecting tubes, always use a torque wrench and a back-up wrench.
- After disconnecting tubes, immediately plug all openings to prevent entry of dust and moisture.
- When installing an air conditioner in the vehicle, connect the pipes at the final stage of the operation. Never remove the seal caps of pipes and other components until just before required for connection.
- Allow components stored in cool areas to warm to working area temperature before removing seal caps. This prevents condensation from forming inside A/C components.
- Thoroughly remove moisture from the refrigeration system before charging the refrigerant.
- Always replace used O-rings.
- When connecting tubes, apply lubricant to circle of the O-rings shown in illustration. Be careful not to apply lubricant to threaded portion.

**Name** : Nissan A/C System Oil Type S

- O-ring must be closely attached to the groove of tube.
- When replacing the O-ring, be careful not to damage O-ring and tube.
- Connect tube until a click can be heard, then tighten the nut or bolt by hand. Make sure that the O-ring is installed to tube correctly.
- After connecting line, perform leak test and make sure that there is no leakage from connections. When the refrigerant leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.



# PRECAUTIONS

## Precautions for Servicing Compressor

NJS000A7

- Plug all openings to prevent moisture and foreign matter from entering.
- When the compressor is removed, store it in the same way as it is when mounted on the car.
- When replacing or repairing compressor, follow "Maintenance of Lubricant Quantity in Compressor" exactly. Refer to [ATC-22, "Maintenance of Lubricant Quantity in Compressor"](#).
- Keep friction surfaces between clutch and pulley clean. If the surface is contaminated with lubricant, wipe it off by using a clean waste cloth moistened with thinner.
- After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equally distribute lubricant inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.
- After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.

## Precautions for Service Equipment RECOVERY / RECYCLING EQUIPMENT

NJS000A8

Be certain to follow the manufacturer's instructions for machine operation and machine maintenance. Never introduce any refrigerant other than that specified into the machine.

### ELECTRICAL LEAK DETECTOR

Be certain to follow the manufacturer's instructions for tester operation and tester maintenance.

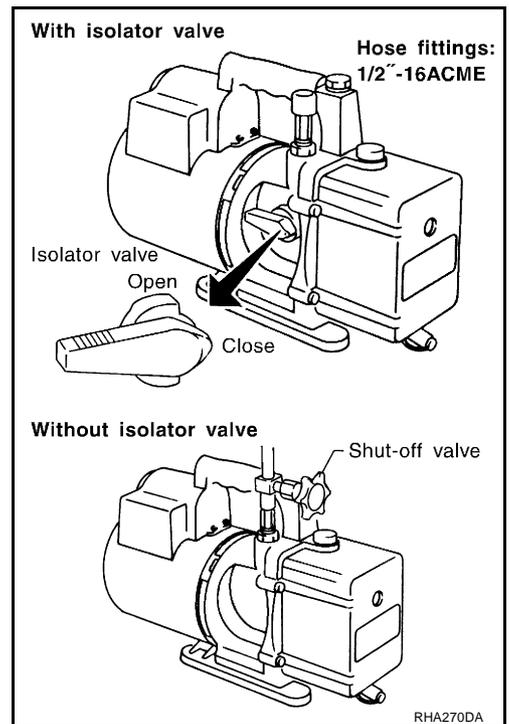
### VACUUM PUMP

The lubricant contained inside the vacuum pump is not compatible with the specified lubricant for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure. So the vacuum pump lubricant may migrate out of the pump into the service hose. This is possible when the pump is switched off after evacuation (vacuuming) and hose is connected to it.

To prevent this migration, use a manual valve placed near the hose-to-pump connection, as follows.

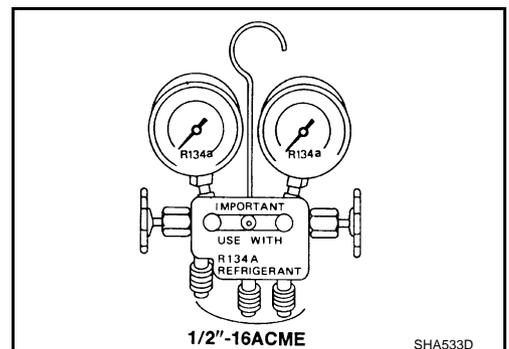
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has an automatic shut-off valve, disconnect the hose from the pump. As long as the hose is connected, the valve is open and lubricating oil may migrate.

Some one-way valves open when vacuum is applied and close under no vacuum condition. Such valves may restrict the pump's ability to pull a deep vacuum and are not recommended.



### MANIFOLD GAUGE SET

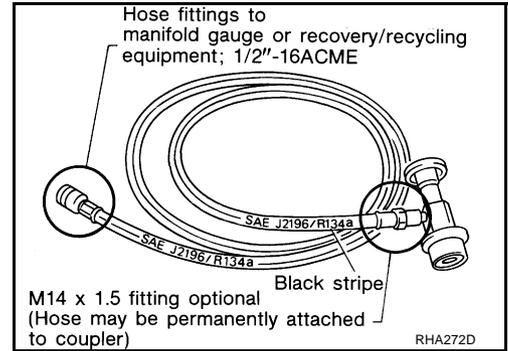
Be certain that the gauge face indicates HFC-134a or R-134a. Be sure the gauge set has 1/2"-16 ACME threaded connections for service hoses. Confirm the set has been used only with refrigerant HFC-134a (R-134a) and specified lubricants.



# PRECAUTIONS

## SERVICE HOSES

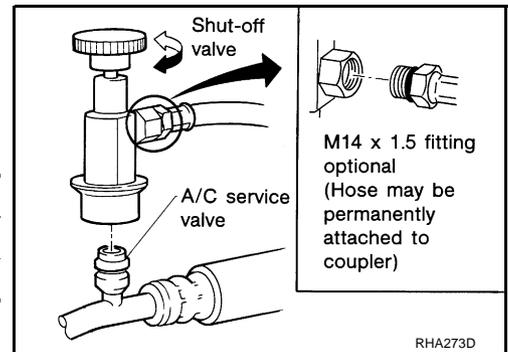
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite to the manifold gauge.



## SERVICE COUPLERS

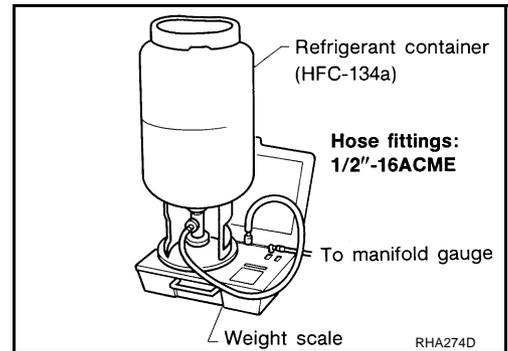
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

Shut-off valve rotation	A/C service valve
Clockwise	Open
Counterclockwise	Close



## REFRIGERANT WEIGHT SCALE

Verify that no refrigerant other than HFC-134a (R-134a) and specified lubricants have been used with the scale. If the scale controls refrigerant flow electronically, the hose fitting must be 1/2" -16 ACME.



## CHARGING CYLINDER

Using a charging cylinder is not recommended. Refrigerant may be vented into air from cylinder's top valve when filling the cylinder with refrigerant. Also, the accuracy of the cylinder is generally less than that of an electronic scale or of quality recycle/recharge equipment.

# PRECAUTIONS

## Precautions for Leak Detection Dye

NJS000A9

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- The fluorescent dye leak detector is not a replacement for an electrical leak detector (SST: J-41995). The fluorescent dye leak detector should be used in conjunction with an electrical leak detector (SST: J-41995) to pin-point refrigerant leaks.
- For the purpose of safety and customer's satisfaction, read and follow all manufacture's operating instructions and precautions prior to performing the work.
- A compressor shaft seal should not necessarily be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electrical leak detector (SST: J-41995).
- Always remove any remaining dye from the leak area after repairs are completed to avoid a misdiagnosis during a future service.
- Never allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time cannot be removed.
- Never spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Never use more than one refrigerant dye bottle (1/4 ounce /7.4 cc) per A/C system.
- Leak detection dyes for HFC-134a (R-134a) and CFC-12 (R-12) A/C systems are different. Never use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C system or CFC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C system, or A/C system damage may result.
- The fluorescent properties of the dye will remain for three years or a little over unless a compressor malfunction occurs.

## IDENTIFICATION

### NOTE:

Vehicles with factory installed fluorescent dye have a green label.  
Vehicles without factory installed fluorescent dye have a blue label.

## IDENTIFICATION LABEL FOR VEHICLE

Vehicles with factory installed fluorescent dye have the identification label on the front side of hood.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# PREPARATION

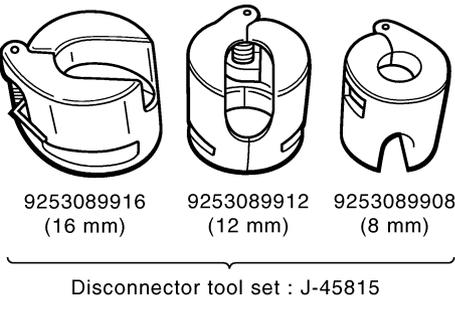
## PREPARATION

PFP:00002

### Special Service Tools

NJS000AB

The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name		Description
<p>9253089908 (for high-pressure pipe 1) ( - ) 9253089912 (for high-pressure flexible hose) ( - ) 9253089916 (for low-pressure pipe 1 and low-pressure flexible hose) ( - ) Disconnecter tool set (J-45815)</p>	 <p style="text-align: center;">9253089916    9253089912    9253089908 (16 mm)            (12 mm)            (8 mm)</p> <p style="text-align: center;">Disconnecter tool set : J-45815</p> <p style="text-align: right; font-size: small;">SJIA1274E</p>	<p>Disconnect one-touch joint connection</p>

# PREPARATION

## HFC-134a (R-134a) Service Tools and Equipment

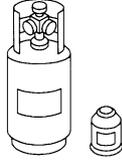
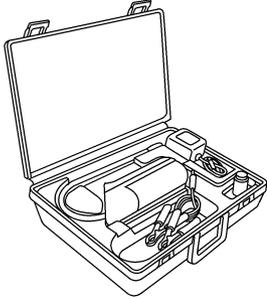
NJS000AC

Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.

Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.

Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.

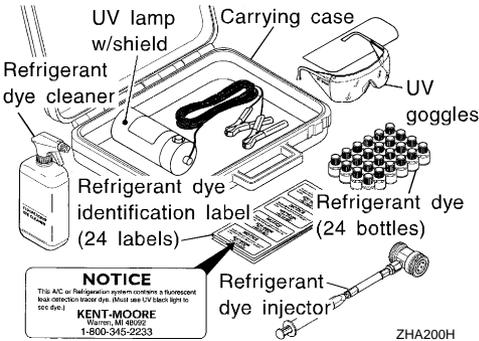
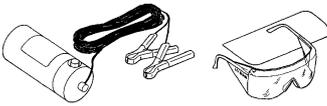
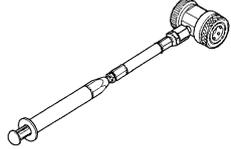
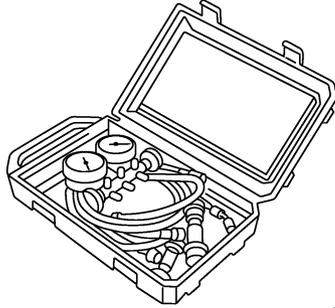
Never use adapters that convert one size fitting to another: refrigerant/lubricant contamination occurs and compressor malfunction may result.

Tool number (Kent-Moore No.) Tool name	Description
<p>HFC-134a (R-134a) refrigerant</p> <div style="text-align: center;">  <p>S-NT196</p> </div>	<p>Container color: Light blue                      Container marking:                      HFC-134a (R-134a)                      Fitting size: Thread size</p> <ul style="list-style-type: none"> <li>● Large container 1/2" -16 ACME</li> </ul>
<p>Nissan A/C System Oil Type S (DH-PS)</p> <div style="text-align: center;">  <p>S-NT197</p> </div>	<p>Type: Polyalkylene glycol oil (PAG), type S (DH-PS)                      Application:                      HFC-134a (R-134a) swash plate compressors (Nissan only)                      Capacity: 40 mℓ (1.4 US fl oz., 1.4 Imp fl oz.)</p>
<p>(ACR2005-NI)                      ACR5 A/C Service Center</p> <div style="text-align: center;">  <p>WJIA0293E</p> </div>	<p>Function: Refrigerant recovery, recycling and recharging</p>
<p>(J-41995)                      Electrical A/C leak detector</p> <div style="text-align: center;">  <p>AHA281A</p> </div>	<p>Power supply:                      DC 12 V (Battery terminal)</p>

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# PREPARATION

Tool number (Kent-Moore No.) Tool name	Description
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle (J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles) (J-43872) Refrigerant dye cleaner	 <p>Power supply: DC 12 V (Battery terminal)</p>
(J-42220) UV lamp and UV safety goggles	 <p>Power supply: DC 12 V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system Includes: UV lamp and UV safety goggles</p>
(J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 <p>Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4 cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)</p>
(J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle	 <p>For injecting 1/4 ounce of fluorescent leak detection dye into A/C system</p>
(J-43872) Refrigerant dye cleaner	 <p>For cleaning dye spills</p>
(J-39183) Manifold gauge set (with hoses and couplers)	 <p>Identification:  <ul style="list-style-type: none"> <li>● The gauge face indicates HFC-134a (R-134a).</li> </ul>                     Fitting size: Thread size  <ul style="list-style-type: none"> <li>● 1/2" -16 ACME</li> </ul> </p>

# PREPARATION

Tool number (Kent-Moore No.) Tool name	Description
<p>Service hoses</p> <ul style="list-style-type: none"> <li>● High-pressure side hose (J-39501-72)</li> <li>● Low-pressure side hose (J-39502-72)</li> <li>● Utility hose (J-39476-72)</li> </ul>	<p>Hose color:</p> <ul style="list-style-type: none"> <li>● Low hose: Blue with black stripe</li> <li>● High hose: Red with black stripe</li> <li>● Utility hose: Yellow with black stripe or green with black stripe</li> </ul> <p>Hose fitting to gauge:</p> <ul style="list-style-type: none"> <li>● 1/2" -16 ACME</li> </ul>
<p>Service couplers</p> <ul style="list-style-type: none"> <li>● High-pressure side coupler (J-39500-20)</li> <li>● Low-pressure side coupler (J-39500-24)</li> </ul>	<p>Hose fitting to service hose: M14 x 1.5 fitting is optional or permanently attached.</p>
<p>(J-39650) Refrigerant weight scale</p>	<p>For measuring of refrigerant Fitting size: Thread size 1/2" -16 ACME</p>
<p>(J-39649) Vacuum pump (Including the isolator valve)</p>	<p>Capacity:</p> <ul style="list-style-type: none"> <li>● Air displacement: 4 CFM</li> <li>● Micron rating: 20 microns</li> <li>● Oil capacity: 482 g (17 oz.)</li> </ul> <p>Fitting size: Thread size</p> <ul style="list-style-type: none"> <li>● 1/2" -16 ACME</li> </ul>

## Commercial Service Tools

NJS000AD

Tool name	Description
<p>Refrigerant identifier equipment</p>	<p>Checking for refrigerant purity and system contamination</p>
<p>Power tool</p>	<p>For loosening bolts and nuts</p>

# REFRIGERATION SYSTEM

## REFRIGERATION SYSTEM

PFP:KA990

### Refrigerant Cycle REFRIGERANT FLOW

NJS000AE

The refrigerant flows from the compressor, through the condenser with liquid tank, through the evaporator, and back to the compressor. The refrigerant evaporation in the evaporator is controlled by an externally equalized expansion valve, located inside the evaporator case.

### FREEZE PROTECTION

To prevent evaporator frozen up, the evaporator air temperature is monitored, and the voltage signal to the unified meter and A/C amp. will make the A/C relay go OFF and stop the compressor.

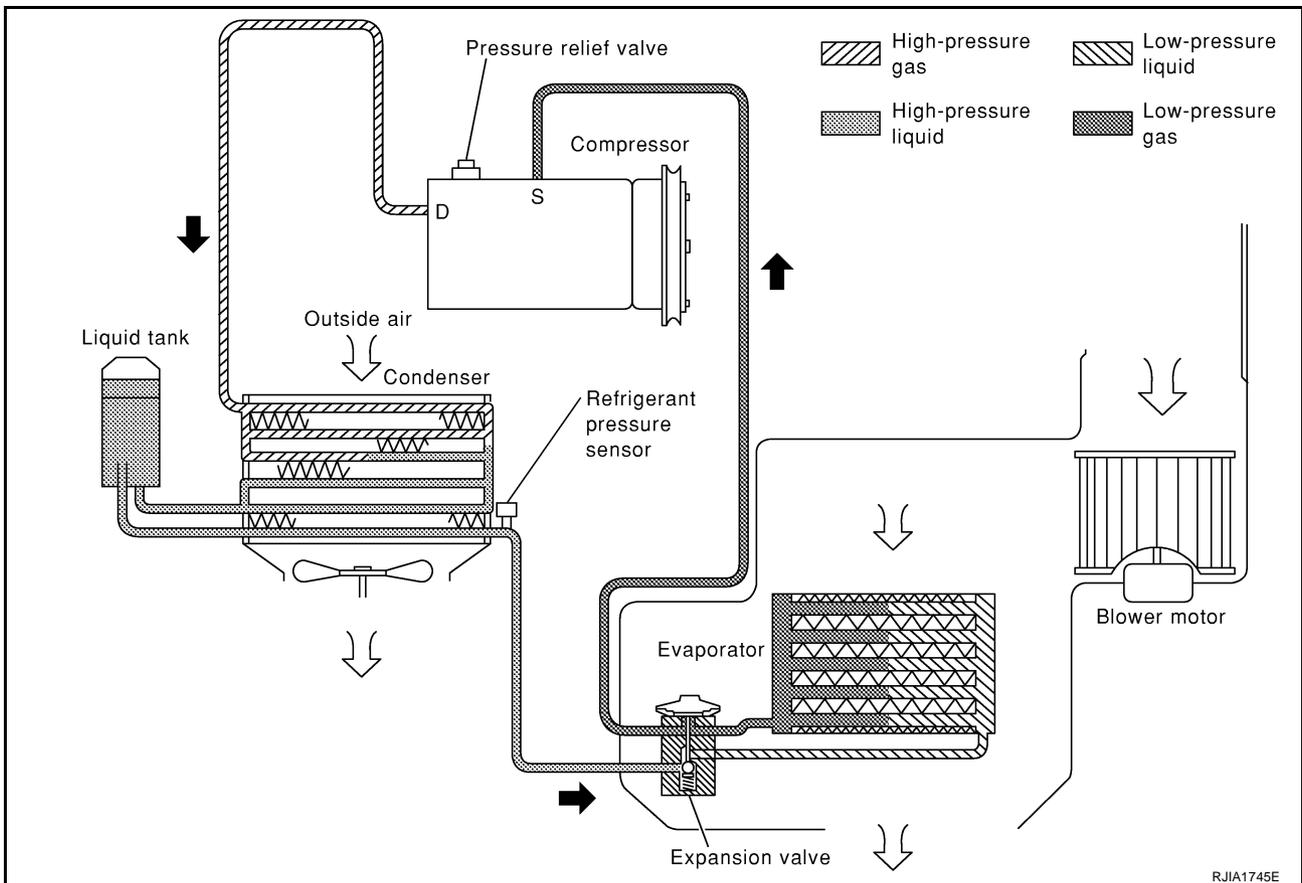
### Refrigerant System Protection REFRIGERANT PRESSURE SENSOR

NJS000AF

The refrigerant system is protected against excessively high- or low-pressure by the refrigerant pressure sensor, located on the condenser. If the system pressure rises above, or falls below the specifications, the refrigerant pressure sensor detects the pressure inside the refrigerant line and sends the voltage signal to the ECM. ECM makes the A/C relay go OFF and stops the compressor when pressure on the high-pressure side detected by refrigerant pressure sensor is over about 2,746 kPa (28 kg/cm<sup>2</sup> , 398 psi), or below about 134 kPa (1.4 kg/cm<sup>2</sup> , 20 psi).

### PRESSURE RELIEF VALVE

The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an unusual level [more than 3,727 kPa (38 kg/cm<sup>2</sup> , 540 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

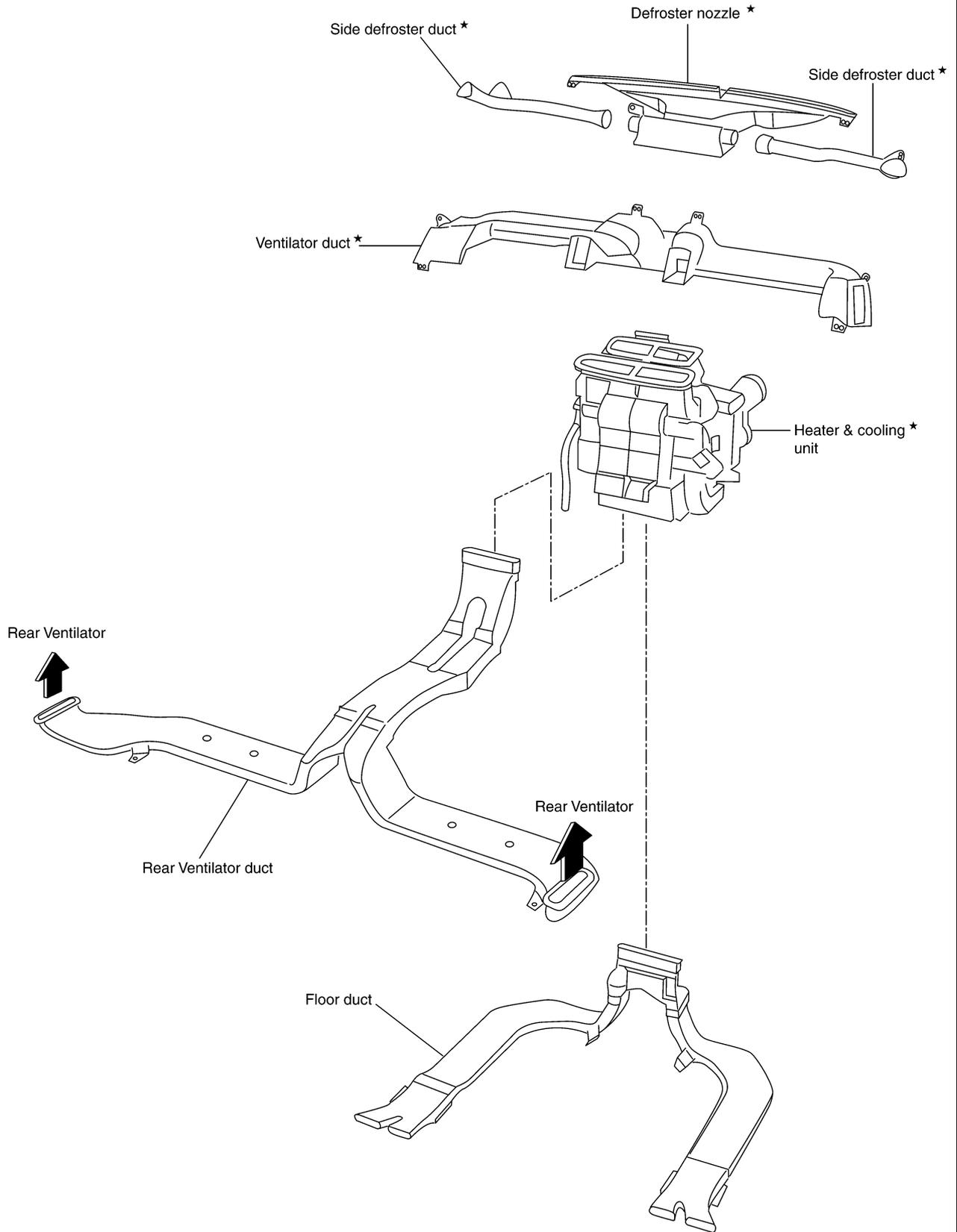


# REFRIGERATION SYSTEM

## Component Layout

NJS000AG

SEC.273



\* : For removal, it necessary to remove instrument panel.

RJIA1746E

A  
B  
C  
D  
E  
F  
G  
H  
I  
ATC  
K  
L  
M

## LUBRICANT

PFP:KLG00

### Maintenance of Lubricant Quantity in Compressor

NJS000AH

The lubricant in the compressor circulates through the system with the refrigerant. Add lubricant to compressor when replacing any component or after a large refrigerant leakage occurred. It is important to maintain the specified amount.

If lubricant quantity is not maintained properly, the following malfunctions may result:

- Lack of lubricant: May lead to a seized compressor.
- Excessive lubricant: Inadequate cooling (thermal exchange interference)

## LUBRICANT

Name : NISSAN A/C System Oil Type S

### LUBRICANT RETURN OPERATION

Adjust the lubricant quantity according to the test group shown below.

#### 1. CHECK LUBRICANT RETURN OPERATION

---

Can lubricant return operation be performed?

- A/C system works properly.
- There is no evidence of a large amount of lubricant leakage.

**CAUTION:**

If excessive lubricant leakage is noted, never perform the lubricant return operation.

OK or NG

- OK >> GO TO 2.  
NG >> GO TO 3.

#### 2. PERFORM LUBRICANT RETURN OPERATION, PROCEEDING AS FOLLOWS

---

1. Start the engine, and set to the following conditions:
  - Engine speed: Idling to 1,200 rpm
  - A/C switch: ON
  - Blower speed: Max. position
  - Temp. control: Optional [Set so that intake air temperature is 25 to 30°C (77 to 86°F).]
  - Intake position: Recirculation (REC)
2. Perform lubricant return operation for about 10 minutes.
3. Stop the engine.

>> GO TO 3.

#### 3. CHECK REPLACEMENT PART

---

Should the compressor be replaced?

- YES >> GO TO [ATC-24, "LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT"](#) .
- NO >> GO TO [ATC-23, "LUBRICANT ADJUSTING PROCEDURE FOR COMPONENTS REPLACEMENT EXCEPT COMPRESSOR"](#) .

# LUBRICANT

## LUBRICANT ADJUSTING PROCEDURE FOR COMPONENTS REPLACEMENT EXCEPT COMPRESSOR

After replacing any of the following major components, add the correct amount of lubricant to the system.  
Amount of lubricant to be added:

Part replaced	Lubricant to be added to system	Remarks
	Amount of lubricant m ℓ (US fl oz., Imp fl oz.)	
Evaporator	75 (2.5, 2.6)	—
Condenser	35 (1.2, 1.2)	—
Liquid tank	10 (0.3, 0.4)	—
In case of refrigerant leak	30 (1.0, 1.1)	Large leak
	—	Small leak <sup>*1</sup>

\*1: If the refrigerant leak is small, no addition of lubricant is needed.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

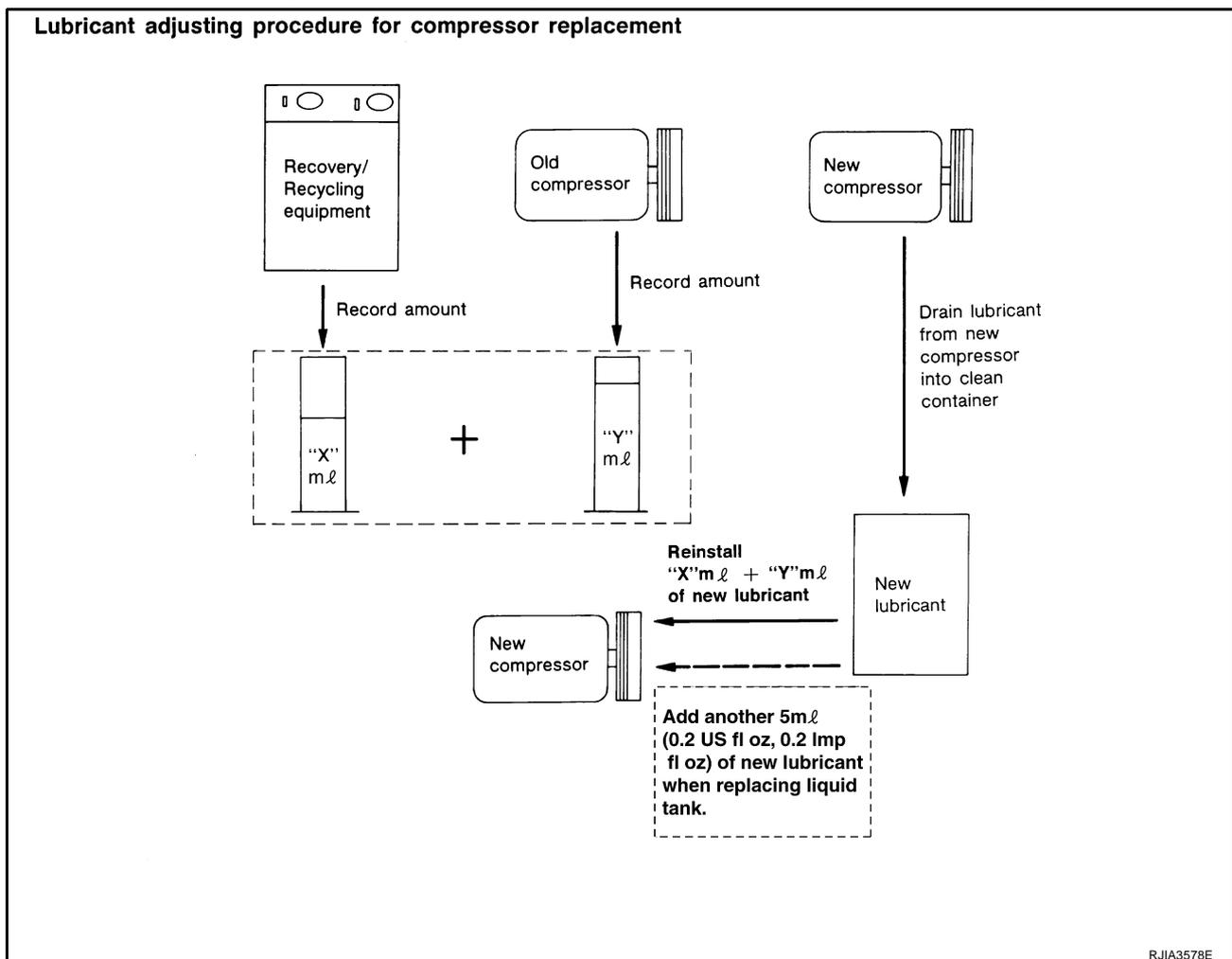
ATC

# LUBRICANT

## LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT

1. Before connecting recovery/recycling/recharging equipment to vehicle, check recovery/recycling/recharging equipment gauges. No refrigerant pressure should be displayed. If NG, recover refrigerant from equipment lines.
2. Connect recovery/recycling/recharging equipment to vehicle. Confirm refrigerant purity in supply tank using recovery/recycling/recharging equipment and refrigerant identifier. If NG, refer to [ATC-6, "CONTAMINATED REFRIGERANT"](#).
3. Confirm refrigerant purity in vehicle A/C system using recovery/recycling/recharging equipment and refrigerant identifier. If NG, refer to [ATC-6, "CONTAMINATED REFRIGERANT"](#).
4. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
5. Drain the lubricant from the old (removed) compressor into a graduated container and recover the amount of lubricant drained.
6. Drain the lubricant from the new compressor into a separate, clean container.
7. Measure an amount of new lubricant installed equal to amount drained from old compressor. Add this lubricant to new compressor through the suction port opening.
8. Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to new compressor through the suction port opening.
9. If the liquid tank also needs to be replaced, add another 5 mℓ (0.2 US fl oz., 0.2 Imp fl oz.) of lubricant at this time.

Do not add this 5 mℓ (0.2 US fl oz., 0.2 Imp fl oz.) of lubricant when replaces the compressor only.



## AIR CONDITIONER CONTROL

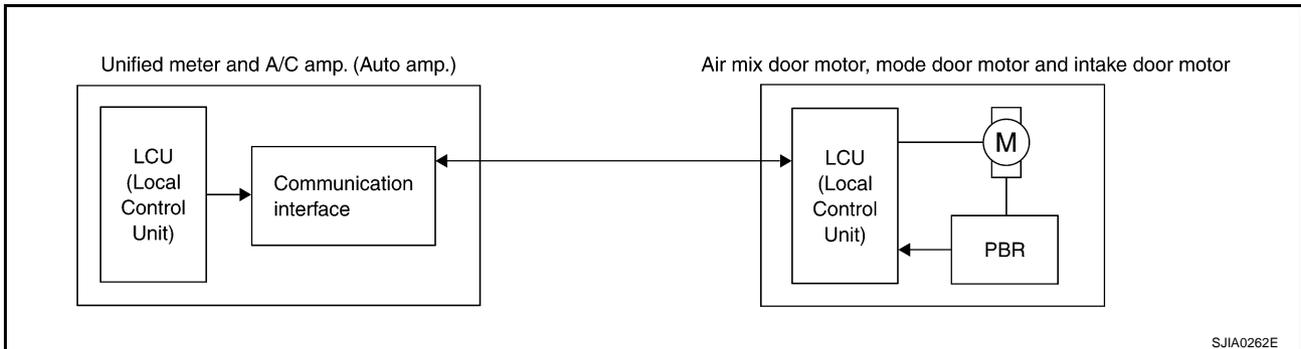
PF2:27500

### Description of Air Conditioner LAN Control System

NJS000AJ

The LAN (Local Area Network) system consists of unified meter and A/C amp., mode door motor, air mix door motors and intake door motor.

A configuration of these components is shown in the figure below.



SJIA0262E

### System Construction

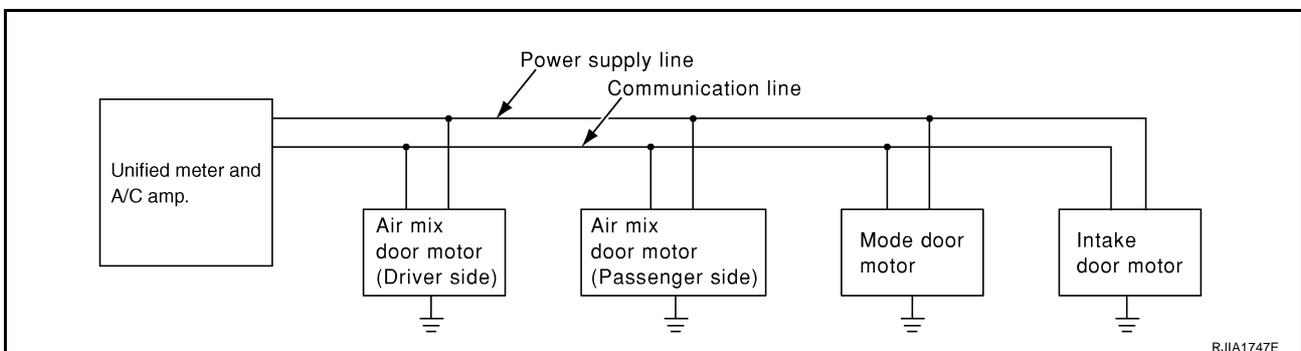
NJS000AJ

A small network is constructed between the unified meter and A/C amp., air mix door motors, mode door motor and intake door motor. The unified meter and A/C amp. and motors are connected by data transmission lines and motor power supply lines. The LAN network is built through the ground circuits of the each door motor.

Addresses, motor opening angle signals, motor stop signals and error checking messages are all transmitted through the data transmission lines connecting the unified meter and A/C amp. and the each door motor.

The following functions are contained in LCUs built into the air mix door motors, the mode door motor and the intake door motor.

- Address
- Motor opening angle signals
- Data transmission
- Motor stop and drive decision
- Opening angle sensor (PBR function)
- Comparison
- Decision (Unified meter and A/C amp. indicated value and motor opening angle comparison)



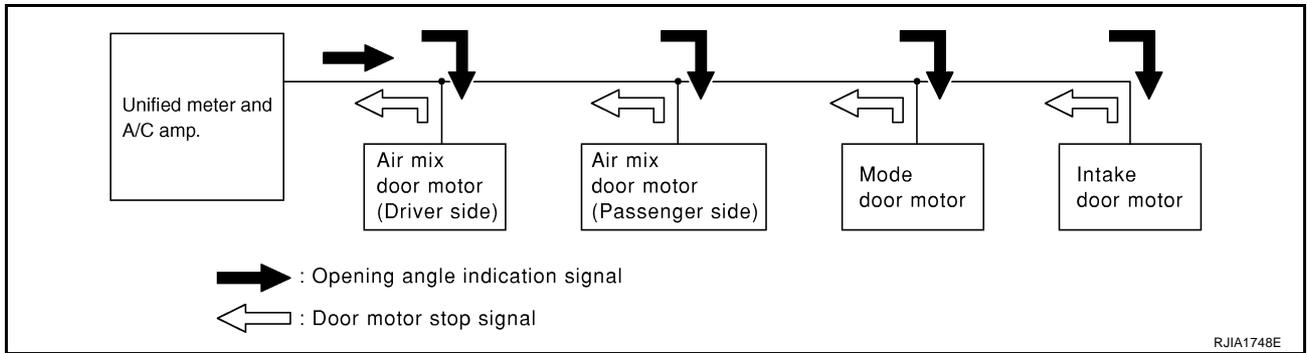
RJIA1747E

### OPERATION

The unified meter and A/C amp. receives data from each of the sensors. The unified meter and A/C amp. sends mode door, air mix door and intake door opening angle data to the mode door motor LCU, air mix door motor LCU and intake door motor LCU.

The mode door motor, air mix door motors and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the unified meter and A/C amp. and each of the motor position sensors is compared by the LCUs in each door motor with the existing decision and opening angles. Subsequently, HOT/COLD, DEF/VENT or FRE/REC operation is selected. The new selection data are returned to the unified meter and A/C amp.

# AIR CONDITIONER CONTROL



## TRANSMISSION DATA AND TRANSMISSION ORDER

Unified meter and A/C amp. data are transmitted consecutively to each of the door motors following the form shown in figure below.

### Start:

Initial compulsory signal sent to each of the door motors.

### Address:

Data sent from the unified meter and A/C amp. are selected according to data-based decisions made by the air mix door motor, mode door motor and intake door motor.

If the addresses are identical, the opening angle data and error check signals are received by the door motor LCUs. The LCUs then make the appropriate error decision. If the opening angle data have no error, door control begins.

If an error exists, the received data are rejected and corrected data received. Finally, door control is based upon the corrected opening angle data.

### Opening Angle:

Data that shows the indicated door opening angle of each door motor.

### Error Check:

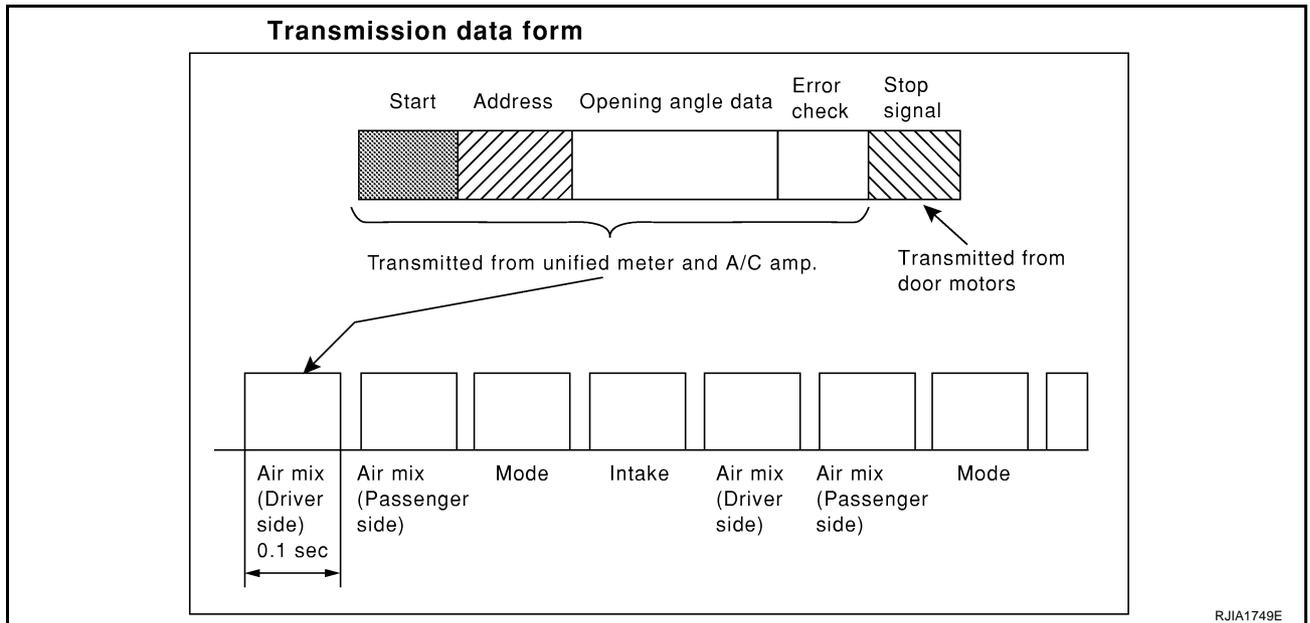
In this procedure, transmitted and received data are checked for errors. Error data are then compiled. The error check prevents corrupted data from being used by the air mix door motor, the mode door motor and the intake door motor. Error data can be related to the following symptoms.

- Malfunction of electrical frequency
- Poor electrical connections
- Signal leakage from transmission lines
- Signal level fluctuation

# AIR CONDITIONER CONTROL

## Stop Signal:

At the end of each transmission, a stop operation, in-operation, or internal malfunction message is delivered to the unified meter and A/C amp. This completes one data transmission and control cycle.



## AIR MIX DOOR CONTROL (AUTOMATIC TEMPERATURE CONTROL)

The air mix doors are automatically controlled so that in-vehicle temperature is maintained at a predetermined value by the temperature setting, ambient temperature, in-vehicle temperature and amount of sunload.

## FAN SPEED CONTROL

Blower speed is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and air mix door position.

When pressing AUTO switch, the blower motor starts to gradually increase air flow volume.

When engine coolant temperature is low, the blower motor operation is delayed to prevent cool air from flowing.

## INTAKE DOOR CONTROL

The intake doors are automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature, amount of sunload and ON/OFF operation of the compressor.

## MODE DOOR CONTROL

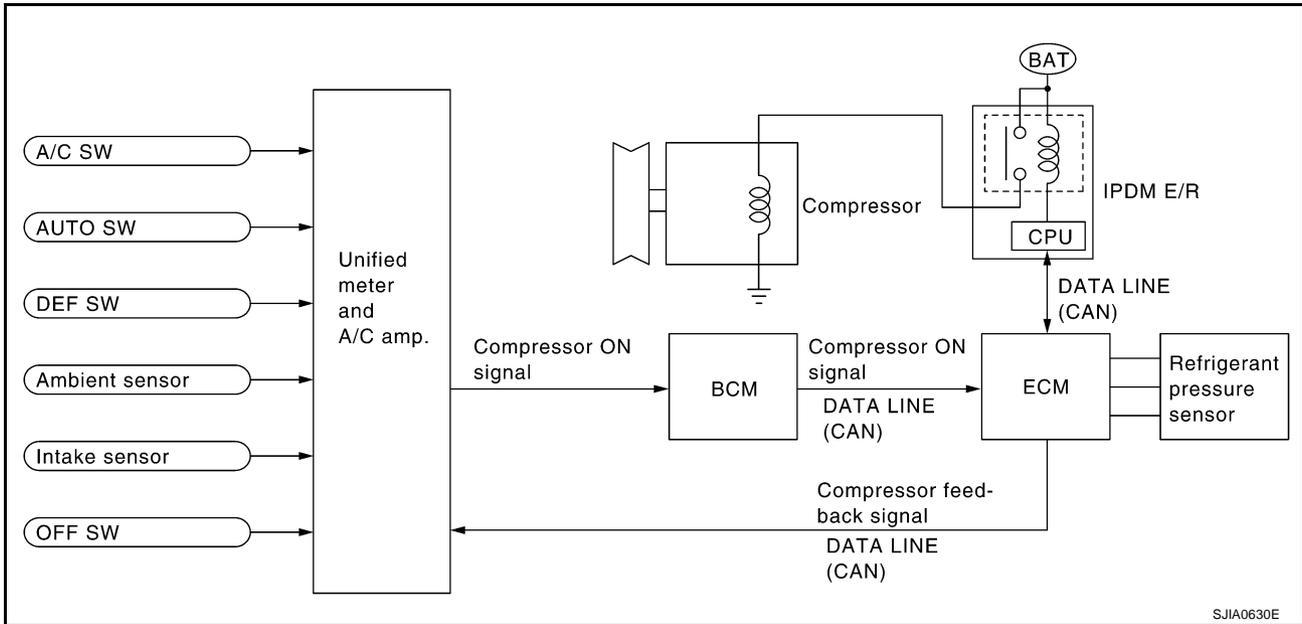
The mode door is automatically controlled by the temperature setting, ambient temperature, in-vehicle temperature, intake temperature and amount of sunload.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# AIR CONDITIONER CONTROL

## MAGNET CLUTCH CONTROL



When A/C switch, AUTO switch or DEF switch is pressed, unified meter and A/C amp. transmits compressor ON signal to BCM.

BCM sends compressor ON signal to ECM, via CAN communication.

ECM judges whether compressor can be turned ON, based on each sensor status (refrigerant-pressure sensor signal, throttle angle, etc.). If it judges compressor can be turned ON, it sends compressor ON signal to IPDM E/R, via CAN communication.

Upon receipt of compressor ON signal from ECM, IPDM E/R turns air conditioner relay ON to operate compressor.

When sending compressor ON signal to IPDM E/R via CAN communication, ECM simultaneously sends compressor feedback signal to unified meter and A/C amp. via CAN communication.

Unified meter and A/C amp., then, uses input compressor feedback signal to control air inlet.

## SELF-DIAGNOSIS SYSTEM

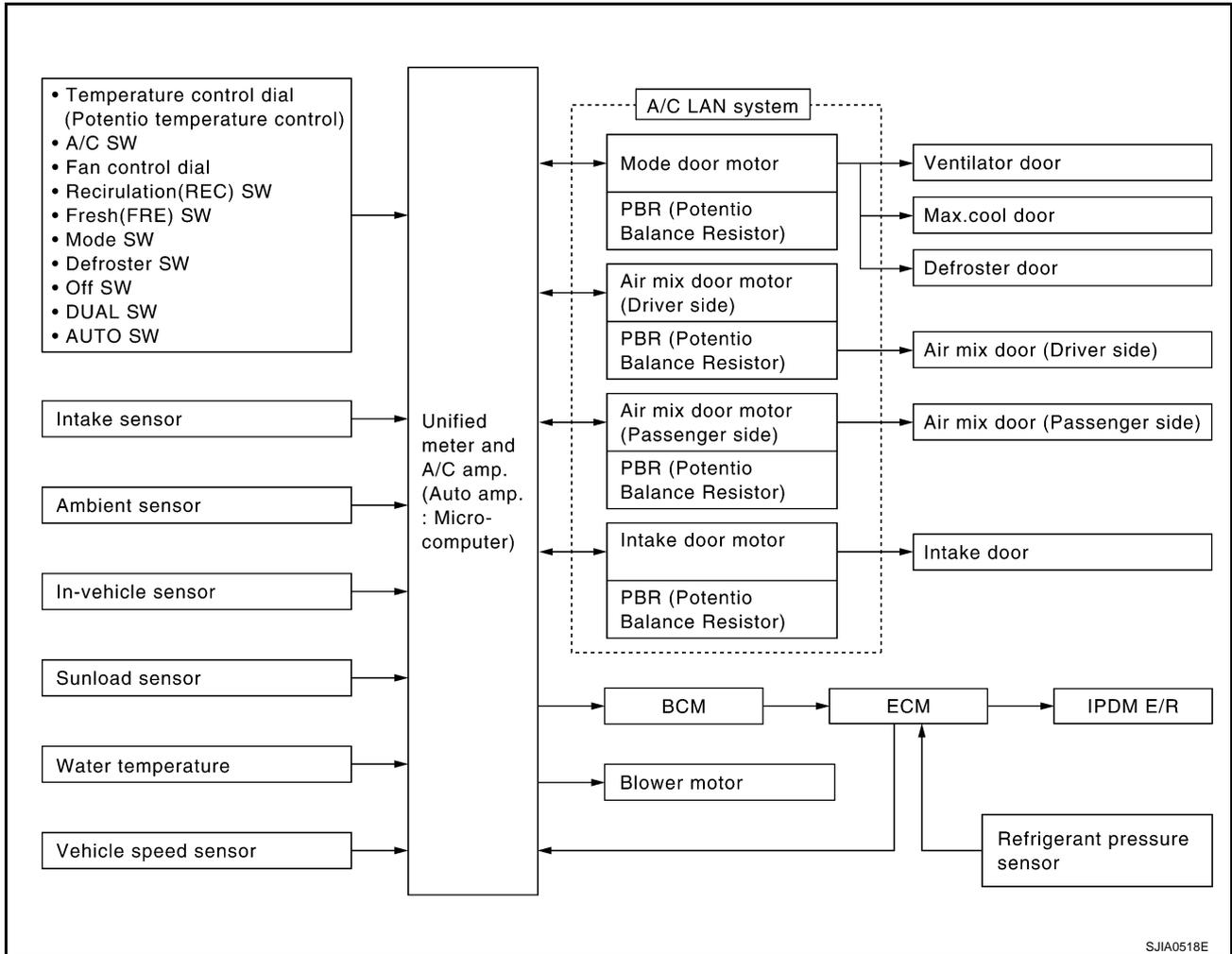
The self-diagnosis system is built into the unified meter and A/C amp. to quickly locate the cause of malfunctions.

# AIR CONDITIONER CONTROL

## Description of Control System

NJS000AK

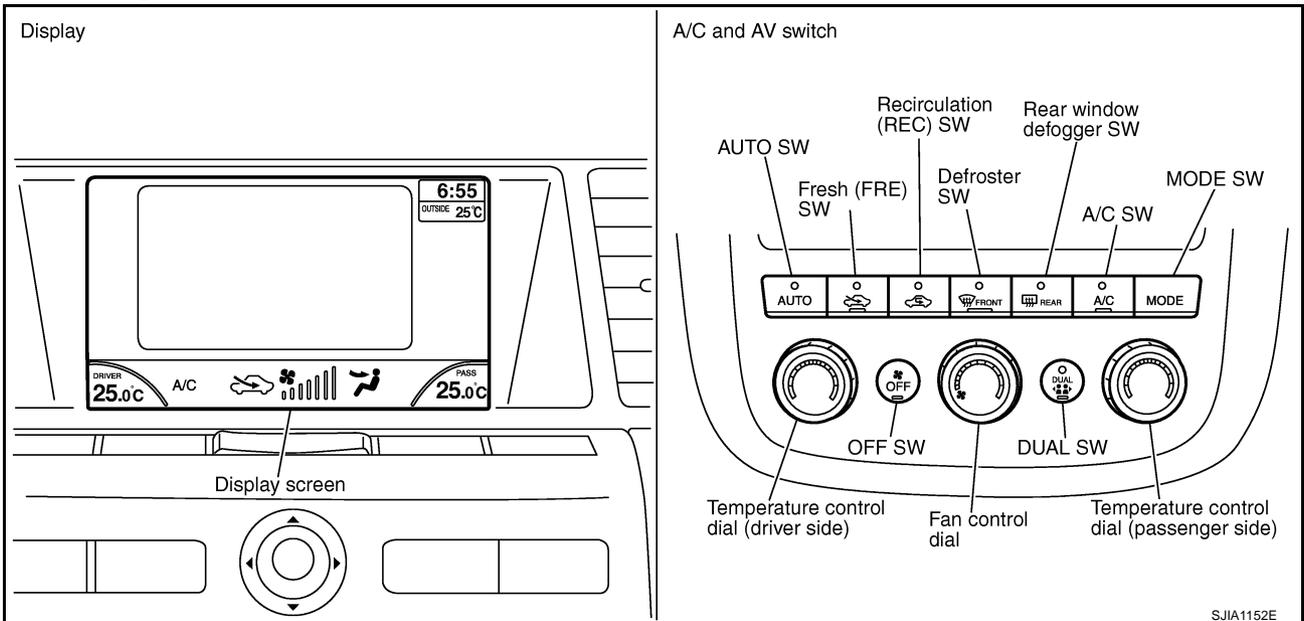
The control system consists of input sensors, switches, the unified meter and A/C amp. (microcomputer) and outputs. The relationship of these components is shown in the figure below:



A  
B  
C  
D  
E  
F  
G  
H  
I  
ATC

## Control Operation

NJS000AL



K  
L  
M

# AIR CONDITIONER CONTROL

---

## DISPLAY SCREEN

The operation status of the system is displayed on the screen.

## AUTO SWITCH

- The compressor, intake doors, air mix doors, mode doors and blower speed are automatically controlled so that the in-vehicle temperature will reach, and be maintained at the set temperature selected by the operator.
- When pressing AUTO switch, air inlet, air outlet, fan speed, and discharge air temperature are automatically controlled.

## TEMPERATURE CONTROL DIAL (POTENTIO TEMPERATURE CONTROL) (DRIVER SIDE)

The set temperature is Increased or decreased with this dial.

## TEMPERATURE CONTROL DIAL (POTENTIO TEMPERATURE CONTROL) (PASSENGER SIDE)

- The set temperature is Increased or decreased with this dial.
- When the temperature control dial is turned, the DUAL switch LED will automatically illuminate.

## RECIRCULATION (REC) SWITCH

- When REC switch is ON, REC switch LED turns ON, and air inlet is fixed to REC.
- When REC switch is ON and is pressed for approximately 1.5 seconds or longer, REC and FRE switch LEDs blink twice. Then, automatic control mode is entered. Inlet status is displayed even during automatically controlled.
- When FRE switch is turned ON, or when compressor is turned from ON to OFF, REC switch is automatically turned OFF (fixed to FRE mode). REC mode can be re-entered by pressing REC switch again.
- REC switch is not operated when DEF switch is turned ON, or at the D/F position.

## FRESH (FRE) SWITCH

- When FRE switch is ON, FRE switch LED turns ON, and air inlet is fixed to FRE.
- When FRE switch is ON and is pressed for approximately 1.5 seconds or longer, REC and FRE switch LEDs blink twice. Then, automatic control mode is entered. Inlet status is displayed even during automatically controlled.
- When REC switch is turned ON, FRE switch is automatically turned OFF (fixed to REC mode). FRE mode can be re-entered by pressing FRE switch again.

## DEFROSTER (DEF) SWITCH

Mode doors are set to the defrost position with this switch. Also, intake doors are set to the outside air position, and compressor turns ON.

## REAR WINDOW DEFOGGER SWITCH

When illumination is ON, rear window is defogged.

## OFF SWITCH

Compressor and blower are OFF, the intake doors are set to the fresh air position, and the mode doors are set to the foot position.

## A/C SWITCH

Compressor is ON or OFF.

(Pressing the A/C switch when the AUTO switch is ON, will turn OFF the A/C switch and compressor.)

## MODE SWITCH

The air discharge outlets is controlled by this switch.

## FAN CONTROL DIAL

The blower speed is manually controlled with this dial. Seven speeds are available for manual control (as shown on the display screen).

## DUAL SWITCH

- When the DUAL switch LED is illuminated, the driver side and passenger side temperature can each be set independently.
- When the DUAL switch LED is not illuminated, the driver side outlet and setting temperature is applied to both sides.

# AIR CONDITIONER CONTROL

## Fail-safe Function

NJS000AM

- If a communication error exists between unified meter and A/C amp. and A/C and AV switch for 30 seconds or longer, air conditioner is controlled under the following conditions:

**Compressor** : ON  
**Air outlet** : AUTO  
**Air inlet** : FRE (Fresh)  
**Blower fan speed** : AUTO  
**Set temperature** : Setting before communication error occurs  
**Display** : OFF

A

B

C

D

E

F

G

H

I

ATC

K

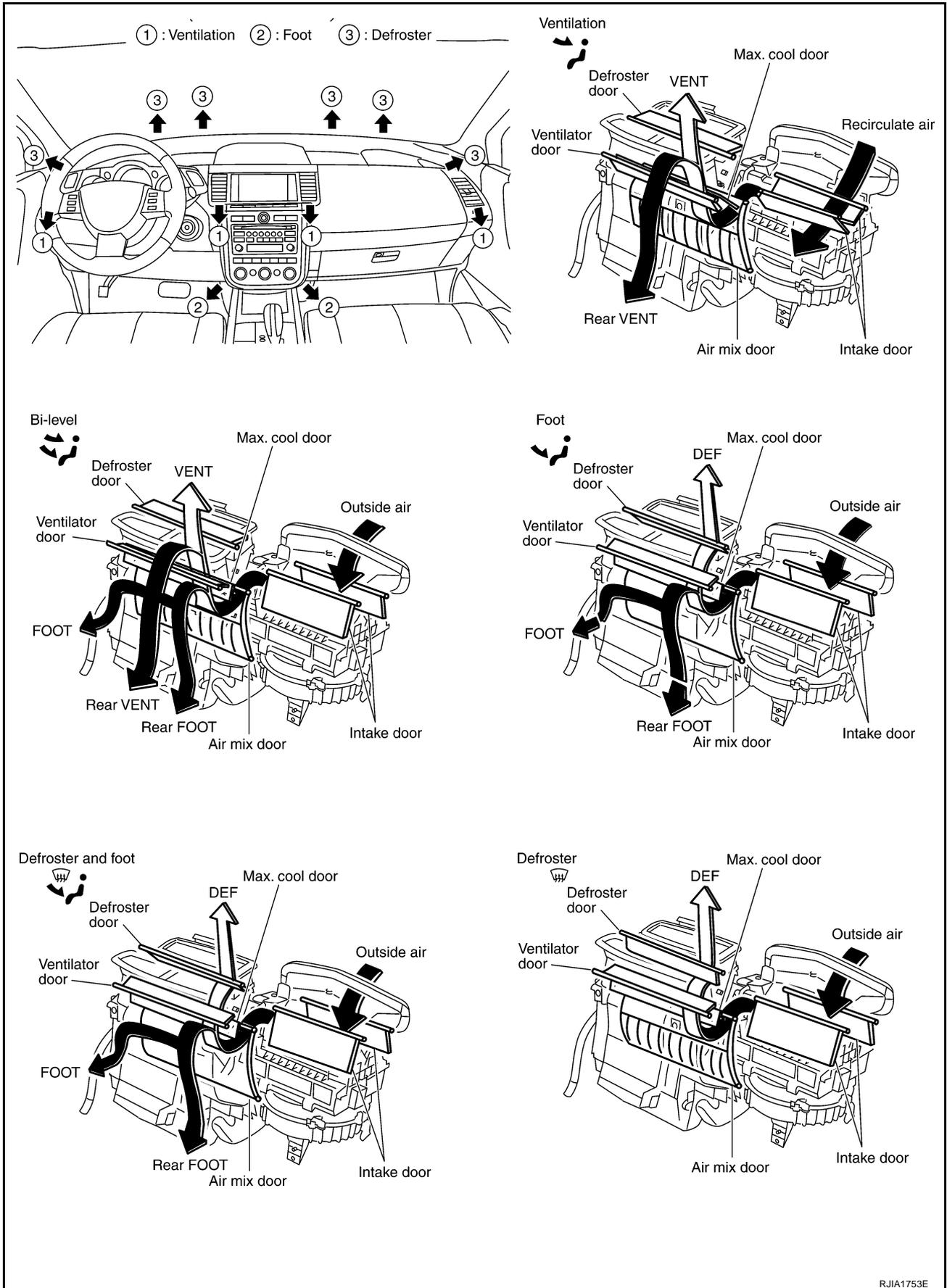
L

M

# AIR CONDITIONER CONTROL

## Discharge Air Flow

NJS000AN



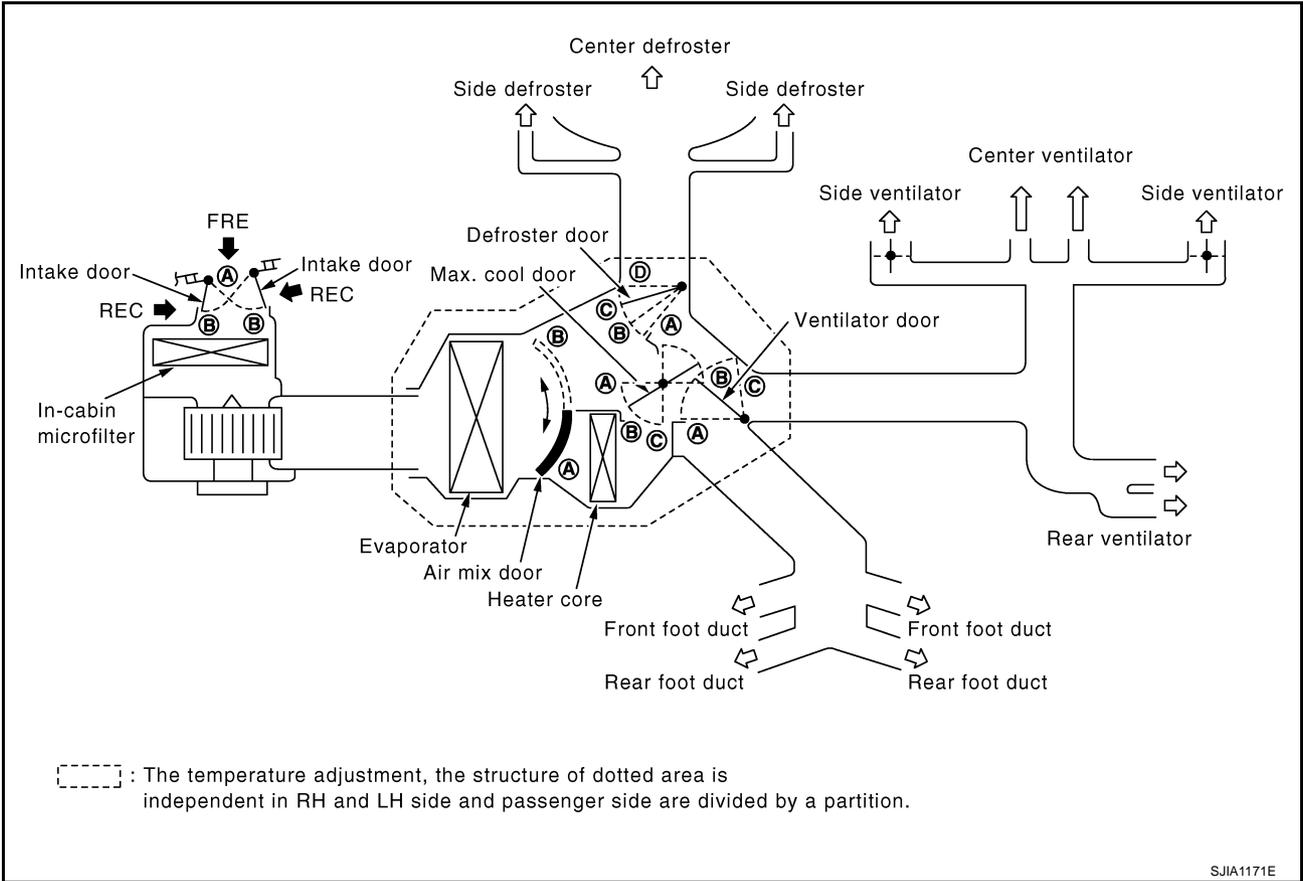
RJIA1753E

# AIR CONDITIONER CONTROL

## System Description SWITCHES AND THEIR CONTROL FUNCTION

NJS000AO

A  
B  
C  
D  
E  
F  
G  
H  
I



ATC

K  
L  
M

Door	Position or switch	MODE SW				DEF SW		AUTO SW	REC SW	FRE SW	Temperature control dial			OFF SW
		VENT	B/L	FOOT	D/F	ON	OFF				18°C (60°F)	~	32°C (90°F)	
Ventilator door	(A)	(B)	(C)	(C)	(C)	—	AUTO	—	—	—	(C)			
Max. cool door	(A)	(B)	(B)	(B)	(C)	—	AUTO	—	—	—	(B)			
Defroster door	(D)	(D)	(D) <sup>*1</sup> or (C)	(B)	(A)	—	—	—	—	—	(C)			
Intake door	—	—	—	—	(B)	—	—	(A) <sup>*2</sup>	(B) <sup>*2</sup>	—	(B)			
Air mix door	—	—	—	—	—	—	AUTO	—	—	(A)	AUTO	(B)	—	

\*1: This position is selected only when the mode door is automatically controlled.  
\*2: Inlet status is displayed during automatic control.

SJIA1172E

---

## CAN Communication System Description

NJS000AP

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. For details, refer to [LAN-32, "CAN Communication Unit"](#) .

# TROUBLE DIAGNOSIS

## TROUBLE DIAGNOSIS

PFP:00004

### CONSULT-II Function (BCM)

NJS000A0

CONSULT-II can display each diagnosis item using the diagnosis test modes shown following.

System part	Check item, diagnosis mode	Description
BCM	Data monitor	Displays BCM input data in real time.

### CONSULT-II BASIC OPERATION

Refer to [GI-38, "CONSULT-II Start Procedure"](#) .

#### DATA MONITOR

##### Operation Procedure

1. Touch "AIR CONDITIONER" on "SELECT TEST ITEM" screen.
2. Touch "DATA MONITOR" on "SELECT DIAG MODE" screen.
3. Touch either "ALL SIGNALS" or "SELECTION FROM MENU" on "DATA MONITOR" screen.

All signals	Monitors all the items.
Selection from menu	Selects and monitors the individual item selected.

4. When "SELECTION FROM MENU" is selected, touch items to be monitored. When "ALL SIGNALS" is selected, all the items will be monitored.
5. Touch "START".
6. Touch "RECORD" while monitoring, then the status of the monitored item can be recorded. To stop recording, touch "STOP".

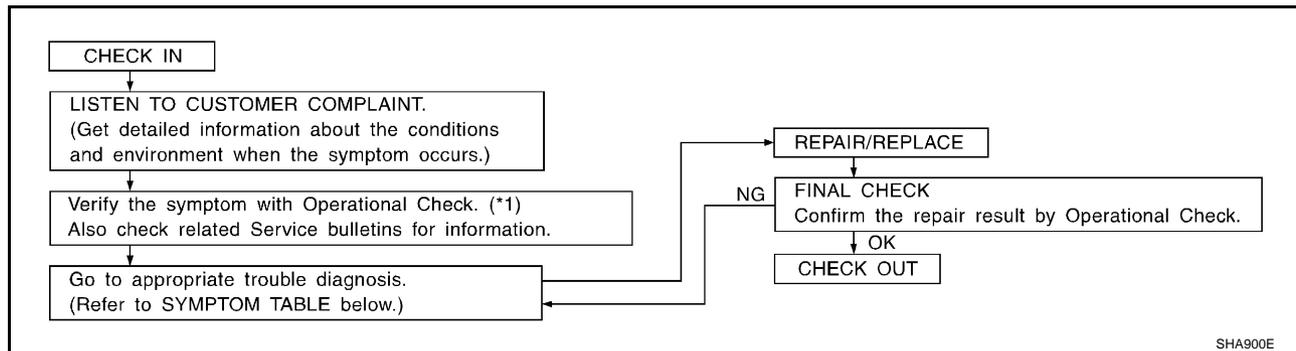
##### Display Item List

Monitor item name "operation or unit"	Contents
IGN ON SW "ON/OFF"	Displays "IGN position (ON)/OFF, ACC position (OFF)" status as judged from ignition switch signal.
FAN ON SIG "ON/OFF"	Displays "FAN (ON)/FAN (OFF)" status as judged from blower fan motor switch signal.
AIR COND SW "ON/OFF"	Displays "COMP (ON)/COMP (OFF)" status as judged from A/C switch signal.

# TROUBLE DIAGNOSIS

## How to Perform Trouble Diagnosis for Quick and Accurate Repair WORK FLOW

NJS000AR



SHA900E

\*1 [ATC-55. "Operational Check"](#)

## SYMPTOM TABLE

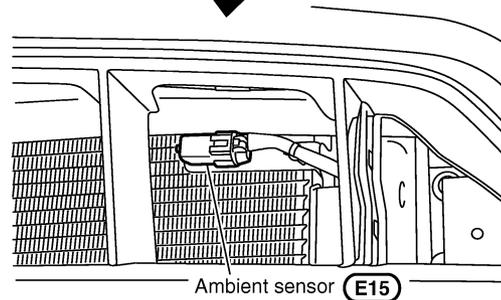
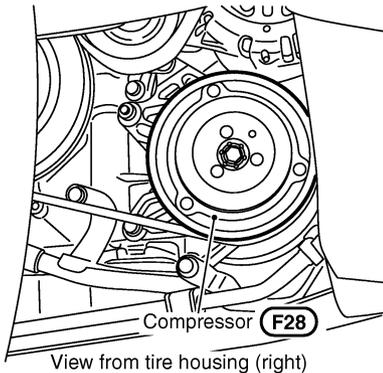
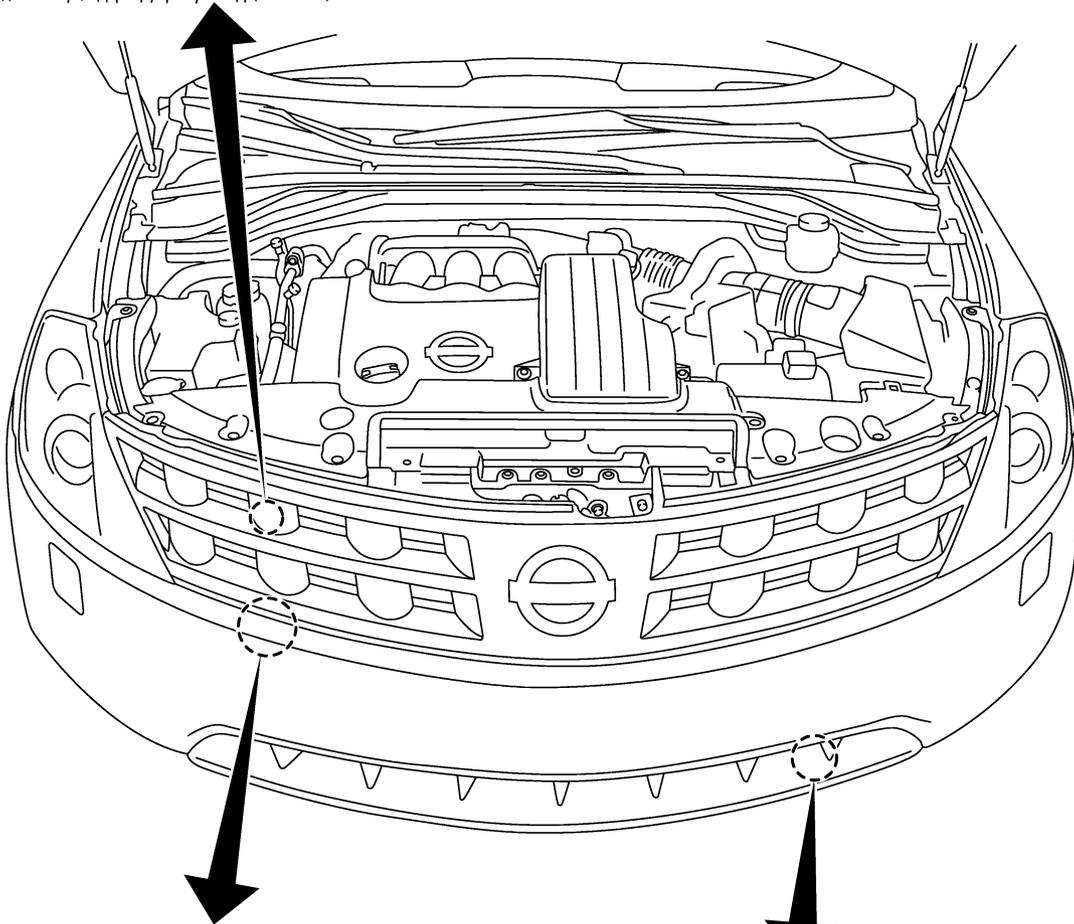
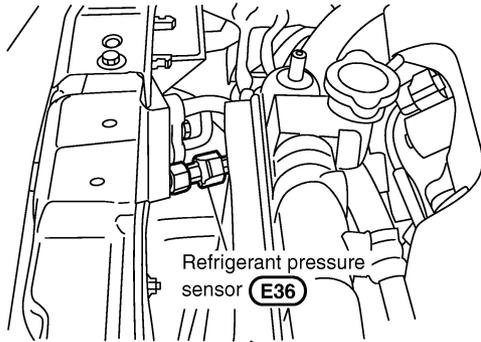
Symptom	Reference Page	
A/C system does not come on.	Go to Trouble Diagnosis Procedure for A/C System.	<a href="#">ATC-57. "Power Supply and Ground Circuit for Auto Amp."</a>
A/C system cannot be controlled.	<ul style="list-style-type: none"> <li>● Go to Integrated Display System.</li> <li>● Go to Navigation System.</li> </ul>	<a href="#">AV-101. "A/C and AV Switch Self-Diagnosis Function"</a> (Integrated Display System) <a href="#">AV-173. "A/C and AV Switch Self-Diagnosis Function"</a> (Navigation System)
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	<a href="#">ATC-63. "Mode Door Motor Circuit"</a>
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	<a href="#">ATC-66. "Air Mix Door Motor Circuit"</a>
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	<a href="#">ATC-69. "Intake Door Motor Circuit"</a>
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	<a href="#">ATC-72. "Blower Motor Circuit"</a>
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	<a href="#">ATC-77. "Magnet Clutch Circuit"</a>
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	<a href="#">ATC-83. "Insufficient Cooling"</a>
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	<a href="#">ATC-91. "Insufficient Heating"</a>
Noise	Go to Trouble Diagnosis Procedure for Noise.	<a href="#">ATC-92. "Noise"</a>
Self-diagnosis cannot be performed.	Go to Trouble Diagnosis Procedure for Self-diagnosis.	<a href="#">ATC-93. "Self-diagnosis"</a>
Memory function does not operate.	Go to Trouble Diagnosis Procedure for Memory Function.	<a href="#">ATC-94. "Memory Function"</a>

# TROUBLE DIAGNOSIS

## Component Parts and Harness Connector Location ENGINE COMPARTMENT

NJS000AS

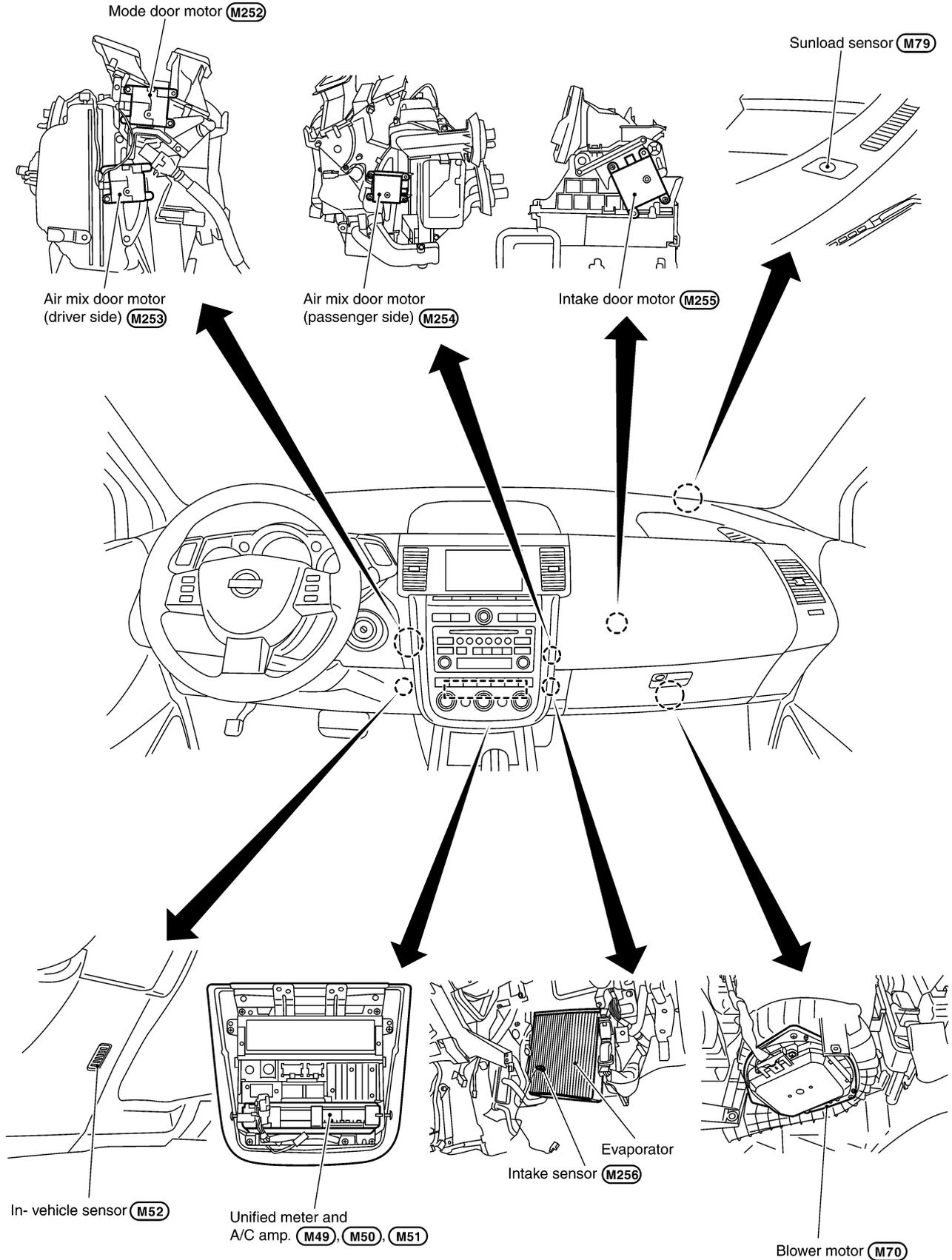
A  
B  
C  
D  
E  
F  
G  
H  
I  
ATC  
K  
L  
M



SJIA1153E

# TROUBLE DIAGNOSIS

## PASSENGER COMPARTMENT



RJIA1757E

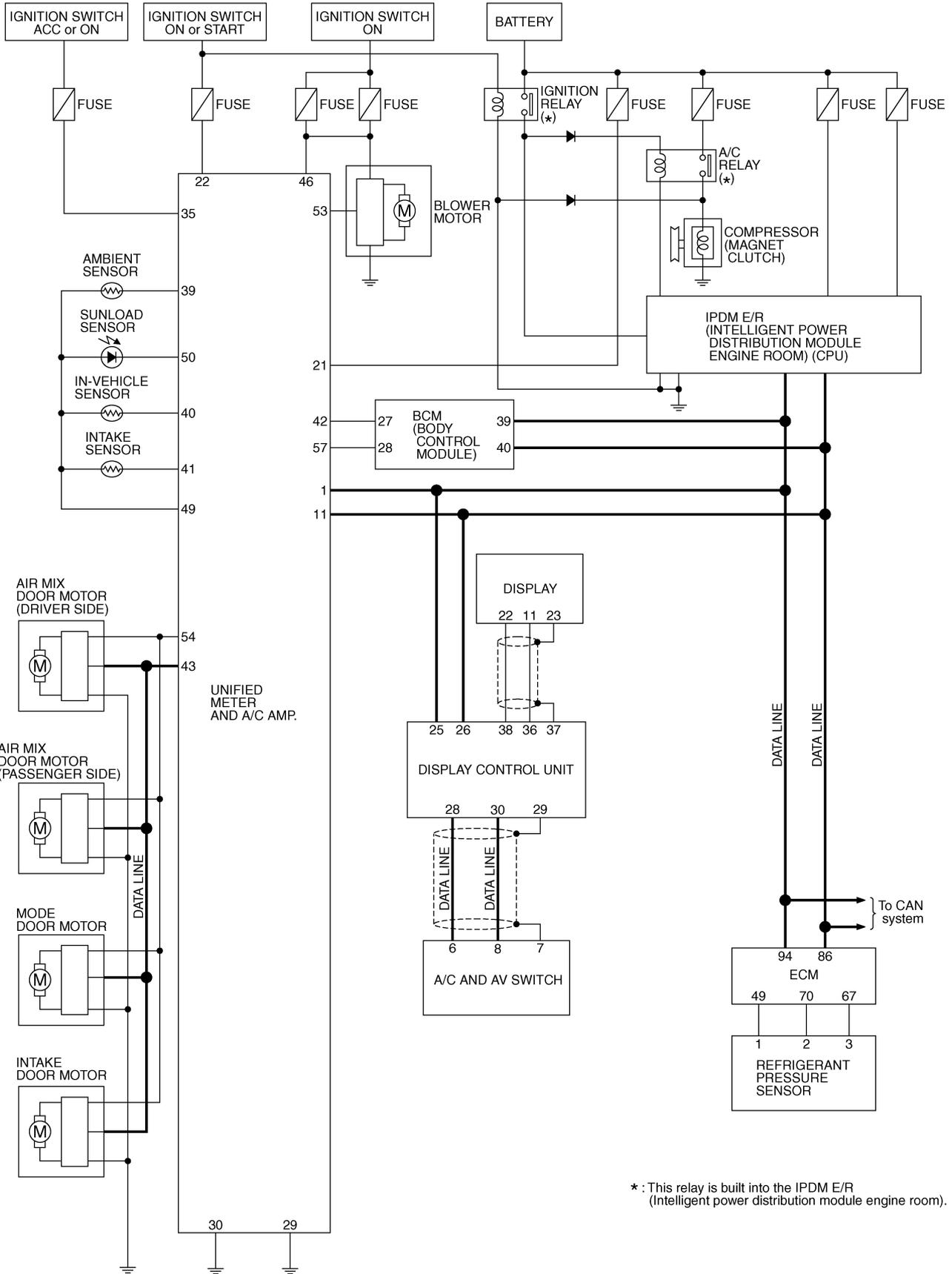
# TROUBLE DIAGNOSIS

## Schematic

NJS000AT

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC



\* : This relay is built into the IPDM E/R (Intelligent power distribution module engine room).

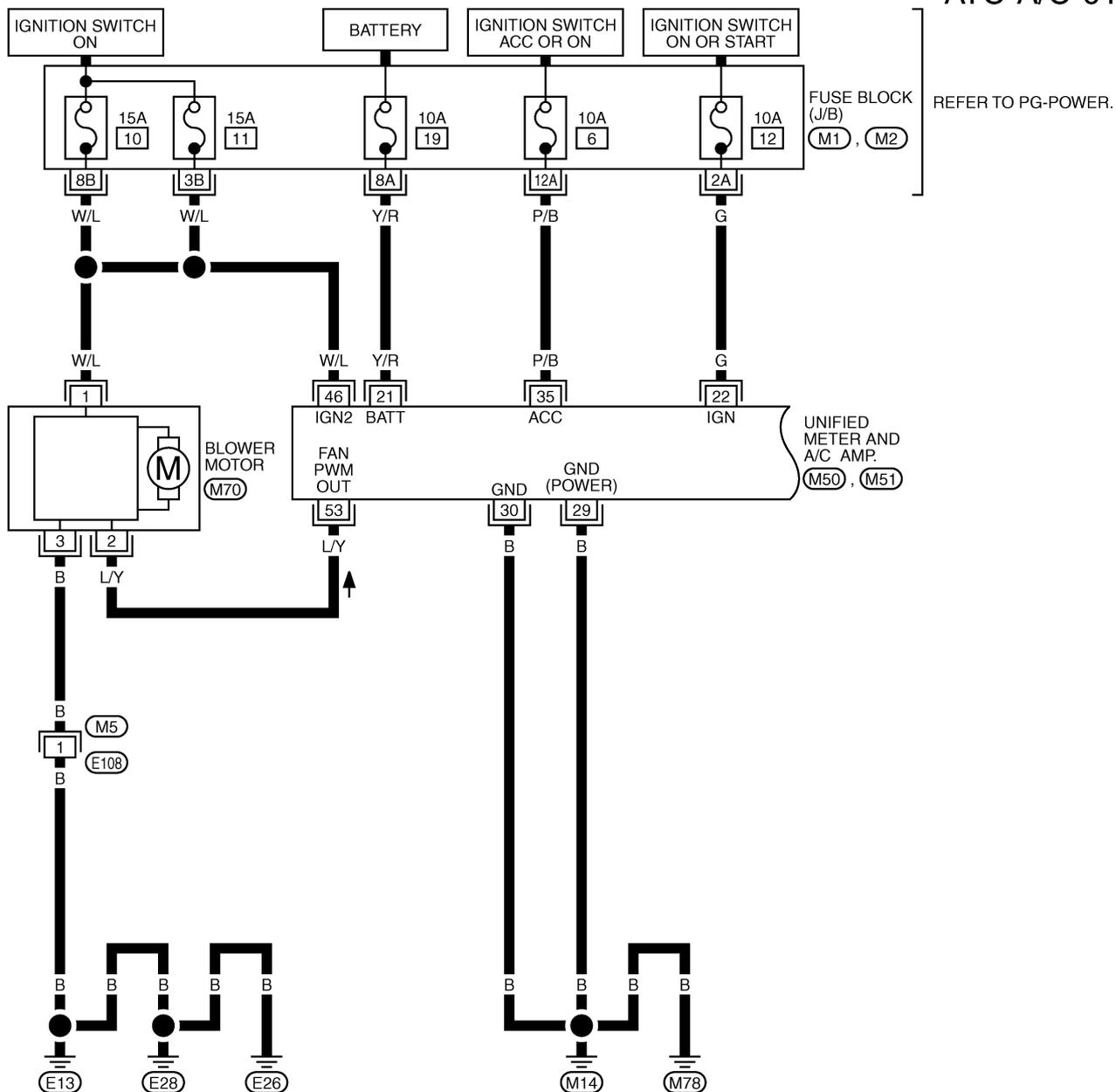
TJWB0165E

# TROUBLE DIAGNOSIS

## Wiring Diagram — A/C —

NJS000AU

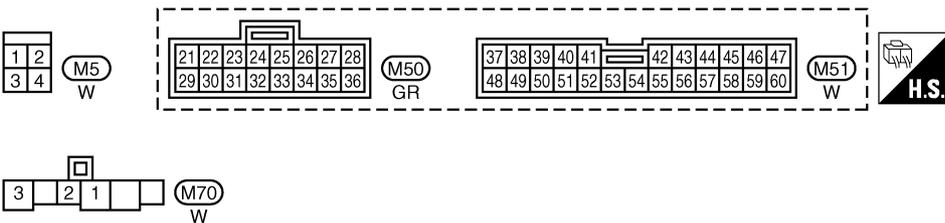
ATC-A/C-01



REFER TO PG-POWER.

FUSE BLOCK (J/B)  
(M1), (M2)

UNIFIED METER AND A/C AMP.  
(M50), (M51)



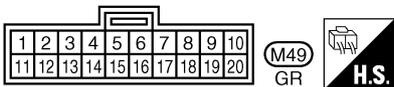
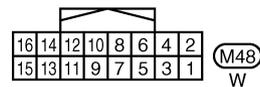
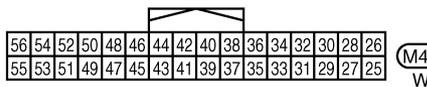
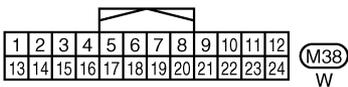
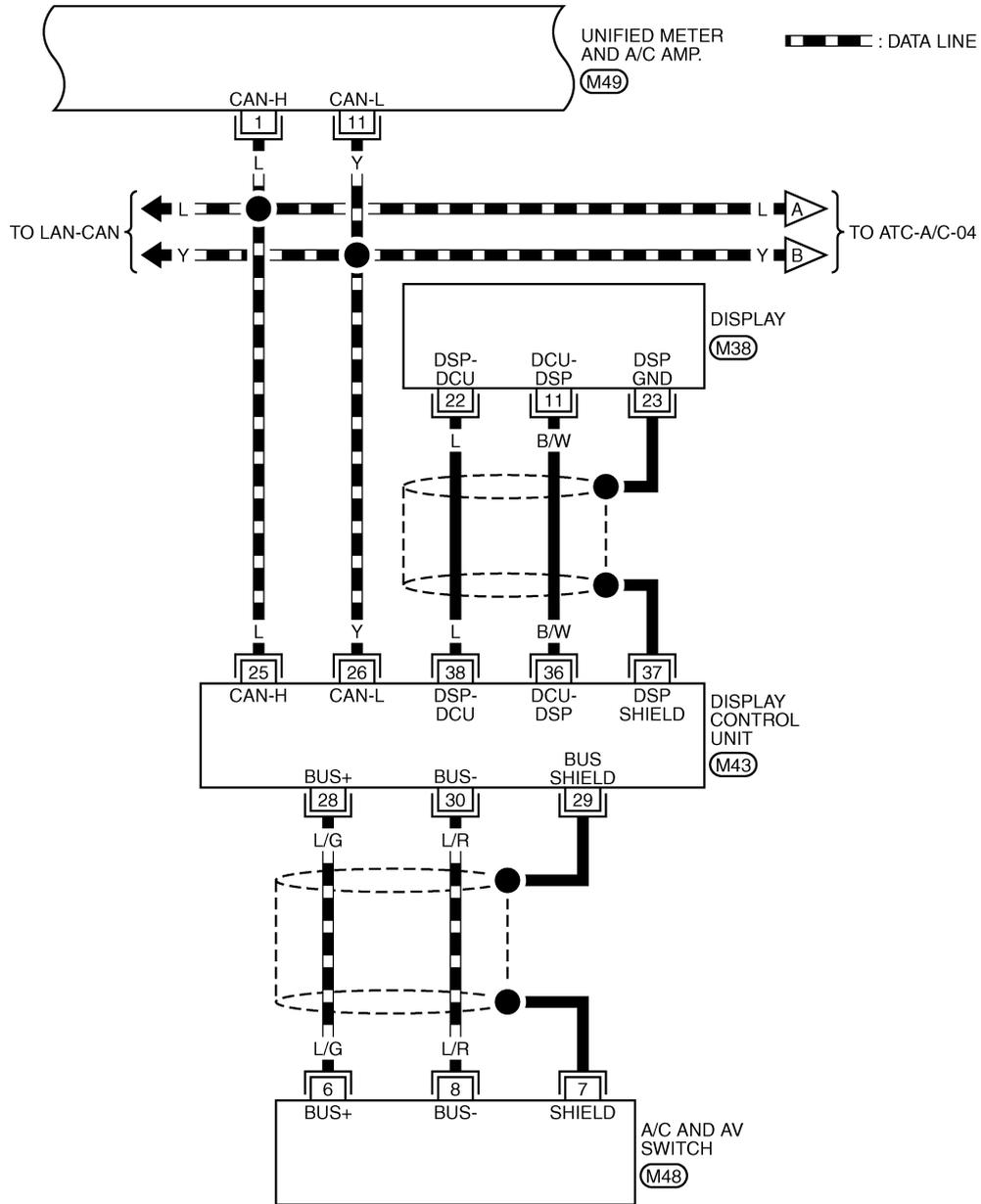
REFER TO THE FOLLOWING.  
(M1), (M2) - FUSE BLOCK-JUNCTION BOX (J/B)



TJWB0166E

# TROUBLE DIAGNOSIS

ATC-A/C-02

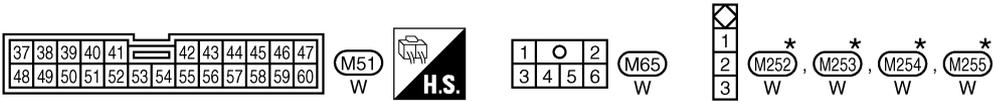
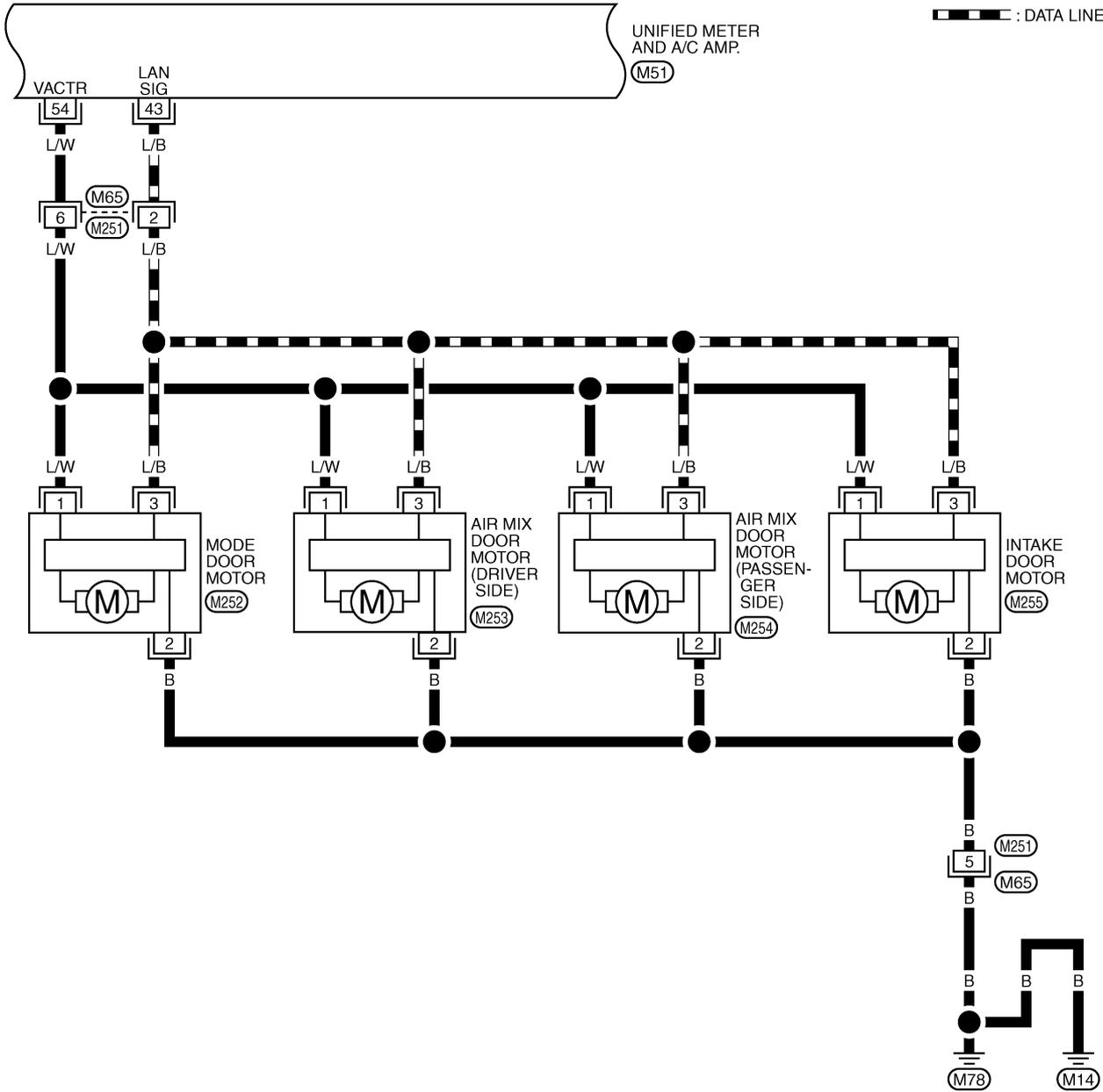


TJWB0167E

# TROUBLE DIAGNOSIS

ATC-A/C-03

▬ : DATA LINE



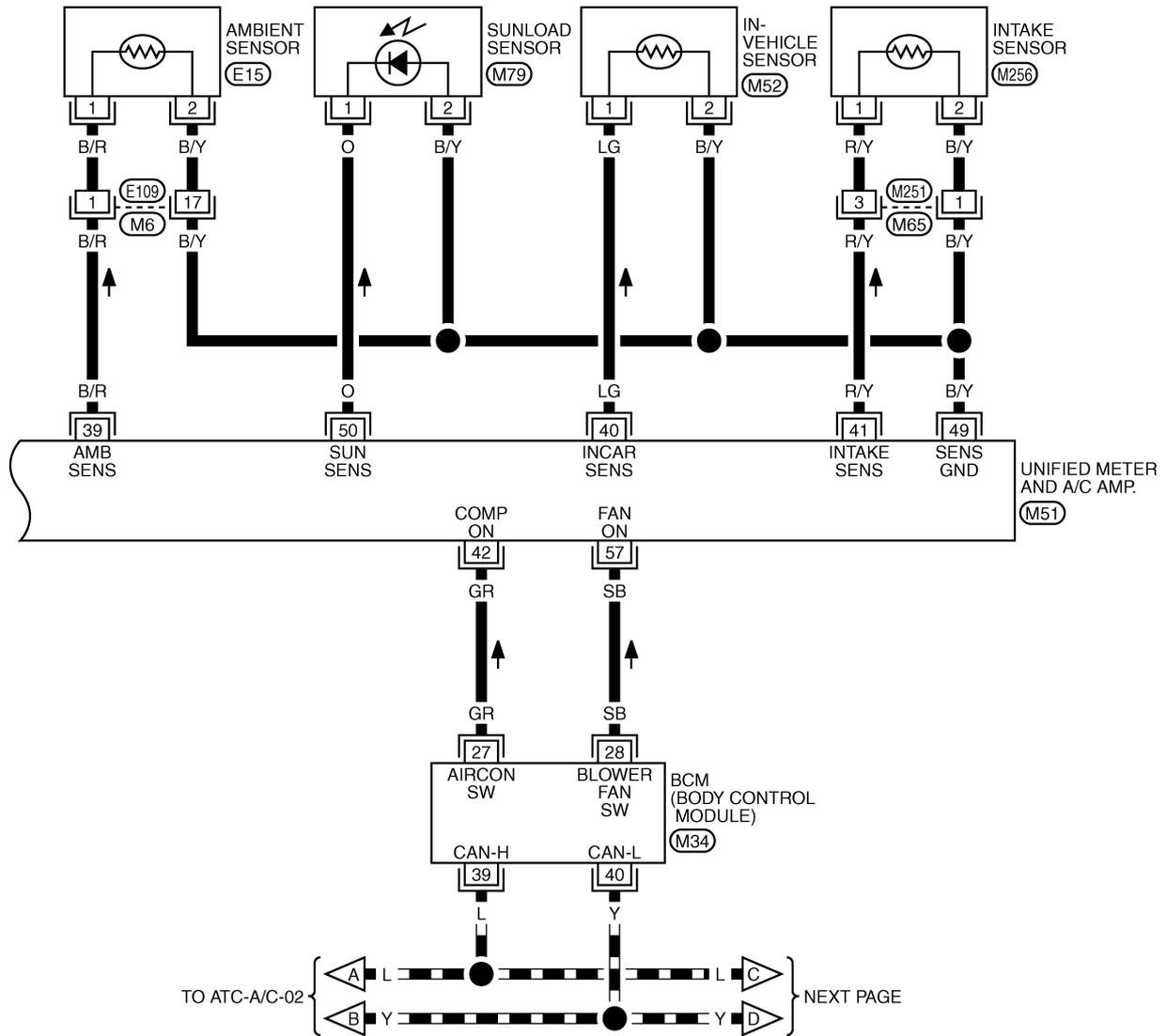
\*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TJWB0168E

# TROUBLE DIAGNOSIS

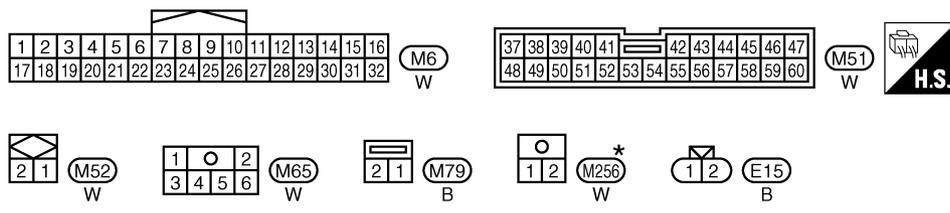
ATC-A/C-04

▬ : DATA LINE



A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC



REFER TO THE FOLLOWING.  
M34 - ELECTRICAL UNITS



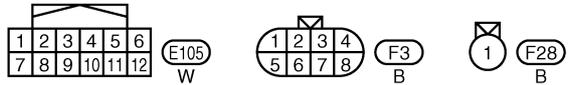
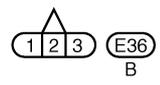
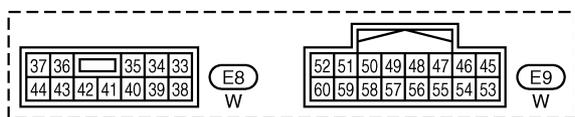
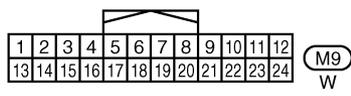
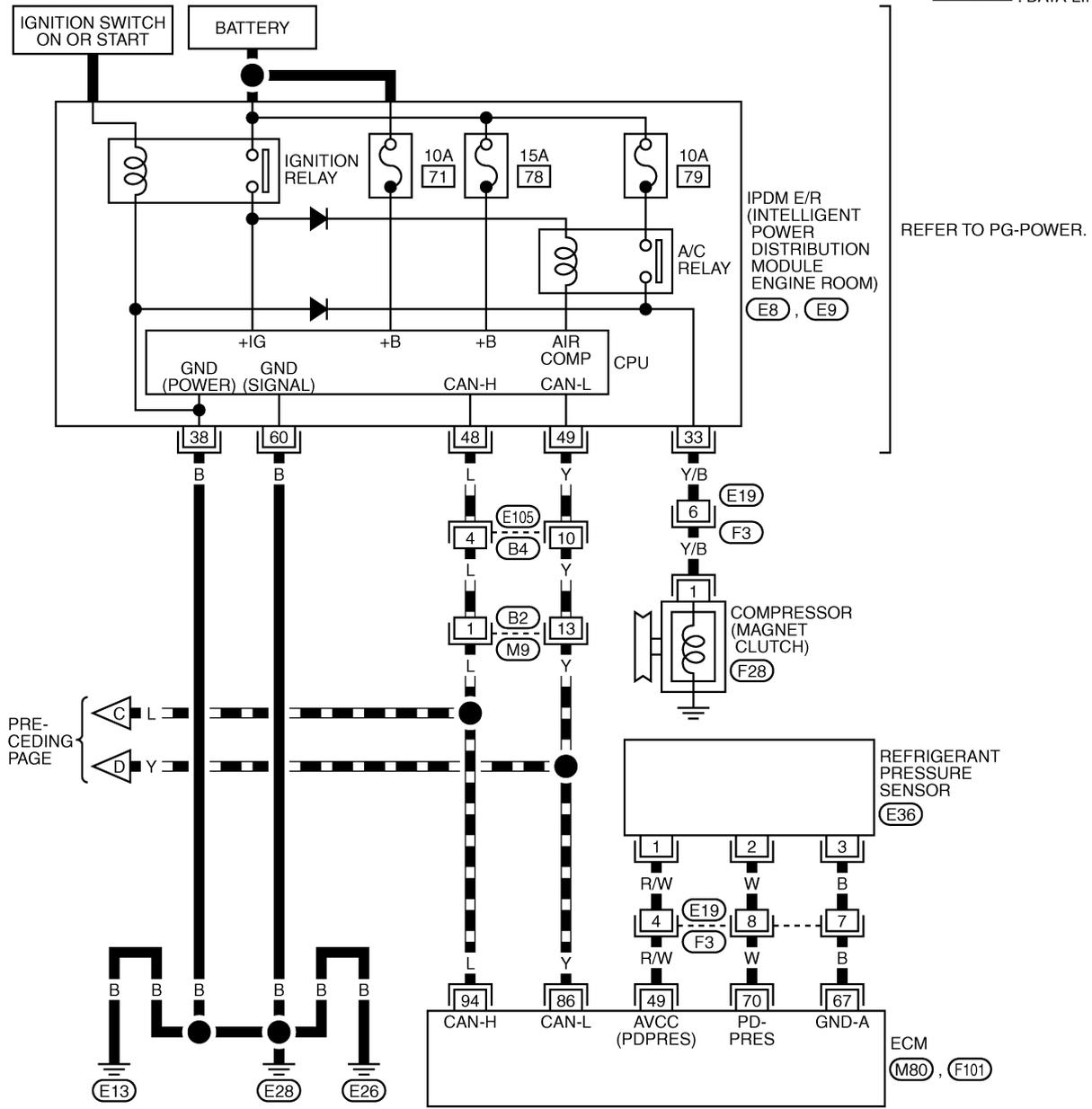
\*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

TJWB0169E

# TROUBLE DIAGNOSIS

ATC-A/C-05

▬ : DATA LINE



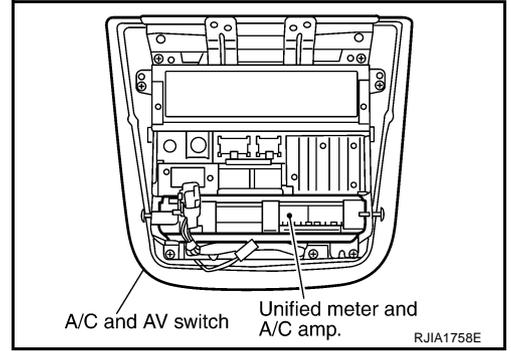
REFER TO THE FOLLOWING.  
 (M80), (F101) -ELECTRICAL UNITS

# TROUBLE DIAGNOSIS

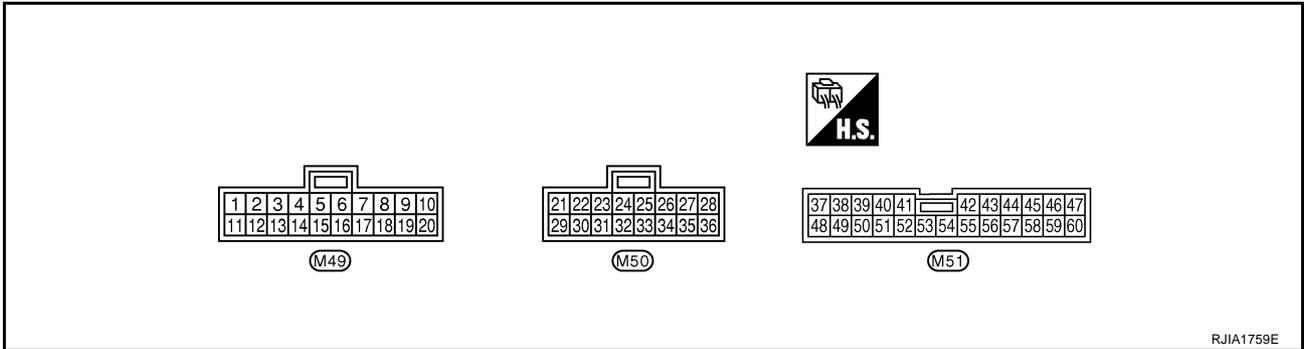
## Auto Amp. Terminals and Reference Value

NJS000AV

Measure voltage between each terminal and ground by referring terminals and reference value for unified meter and A/C amp.



## PIN CONNECTOR TERMINAL LAYOUT



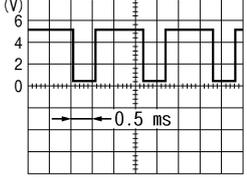
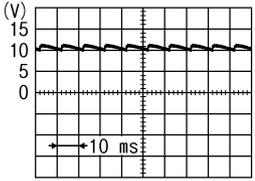
## TERMINALS AND REFERENCE VALUE FOR UNIFIED METER AND A/C AMP.

Terminal No.	Wire color	Item	Ignition switch	Condition	Voltage (V)
1	L	CAN-H	—	—	—
11	Y	CAN-L	—	—	—
21	Y/R	Power supply from BATT	OFF	—	Battery voltage
22	G	Power supply from IGN	ON	—	Battery voltage
29	B	Ground (Power)	ON	—	Approx. 0
30	B	Ground	ON	—	Approx. 0
35	P/B	Power supply from ACC	ACC	—	Battery voltage
39	B/R	Ambient sensor	—	—	—
40	LG	In-vehicle sensor	—	—	—
41	R/Y	Intake sensor	—	—	—
42	GR	Compressor ON signal	ON	A/C switch: ON (Blower motor operates.)	Approx. 0
				OFF switch: ON (A/C system: OFF)	<p style="text-align: right;">SJA1423J</p>
43	L/B	A/C LAN signal	ON	—	<p style="text-align: right;">SJA1453J</p>

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# TROUBLE DIAGNOSIS

Terminal No.	Wire color	Item	Ignition switch	Condition	Voltage (V)
46	W/L	Power supply from IGN2	ON	—	Battery voltage
49	B/Y	Sensor ground	ON	—	Approx. 0
50	O	Sunload sensor	—	—	—
53	L/Y	Blower motor control signal	ON	Blower speed: 1st speed (manual)	 <p style="text-align: right; font-size: small;">SJIA1454J</p>
54	L/W	Power supply for each door motor	ON	—	Battery voltage
57	SB	Blower motor ON signal	ON	A/C switch: ON (Blower motor operates.)	Approx. 0
				OFF switch: ON (A/C system: OFF)	 <p style="text-align: right; font-size: small;">SJIA1474J</p>

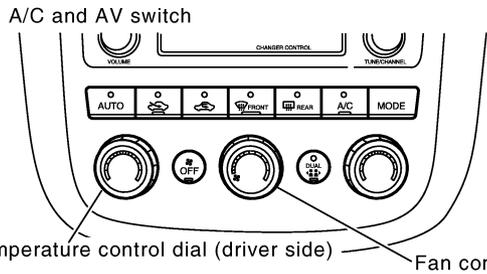
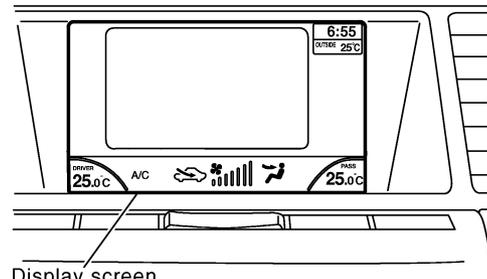
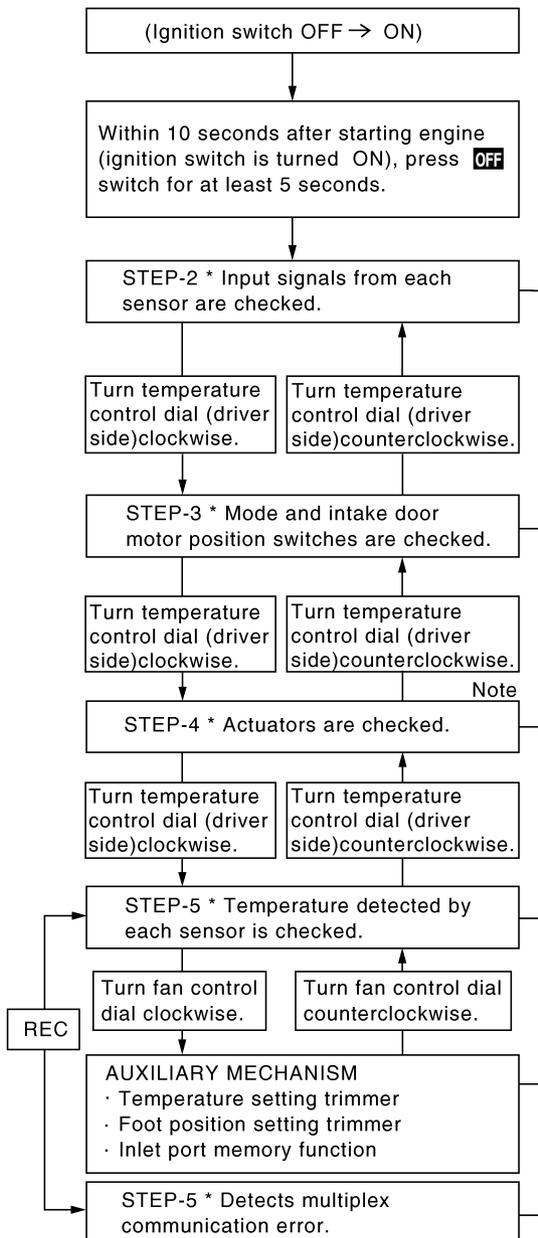
# TROUBLE DIAGNOSIS

NJS000AW

## Self-diagnosis Function DESCRIPTION

The self-diagnosis system diagnoses sensors, door motors, blower motor, etc. by system line. Refer to applicable sections (items) for details. Shifting from normal control to the self-diagnosis system is accomplished by starting the engine (turning the ignition switch ON) and pressing OFF switch for at least 5 seconds. The OFF switch must be pressed within 10 seconds after starting the engine (ignition switch is turned ON). This system will be canceled by either pressing AUTO switch or turning the ignition switch OFF. Shifting from one step is accomplished by means of turning temperature control dial (driver side), as required.

Shifting from STEP-5 to AUXILIARY MECHANISM is accomplished by means of turning  (fan) control dial clockwise.



Ignition switch: OFF  
or AUTO switch: ON → Self-diagnosis function is canceled.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

SJIA1154E

# TROUBLE DIAGNOSIS

## FUNCTION CONFIRMATION PROCEDURE

### 1. SET IN SELF-DIAGNOSIS MODE

1. Turn ignition switch ON.
2. Set in self-diagnosis mode as follows. Within 10 seconds after starting engine (ignition switch is turned ON.), press OFF switch for at least 5 seconds.

#### NOTE:

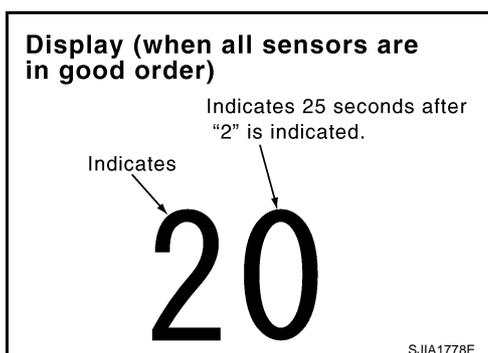
- If battery voltage drops below 12 V during diagnosis STEP-3, door motor speed becomes slower and as a result, the system may generate an error even when operation is normal. To avoid this, start engine before performing this diagnosis.
- Former STEP-1 (LEDs and display screen are checked) does not exist in this self-diagnosis function.

>> GO TO 2.

### 2. STEP-2: SENSOR CIRCUITS ARE CHECKED FOR OPEN OR SHORT CIRCUIT

Does code No. 20 appear on the display?

- YES >> GO TO 3.  
NO >> GO TO 13.



### 3. CHECK TO ADVANCE SELF-DIAGNOSIS STEP-3

Turn temperature control dial (driver side) clockwise.

Advance to self-diagnosis STEP-3?

- YES >> GO TO 4.  
NO >> Replace A/C and AV switch. (Temperature control dial is malfunctioning.)

### 4. CHECK TO RETURN SELF-DIAGNOSIS STEP-2

Turn temperature control dial (driver side) counterclockwise.

Return to self-diagnosis STEP-2?

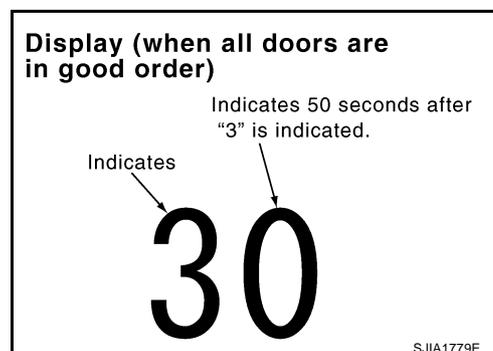
- YES >> GO TO 5.  
NO >> Replace A/C and AV switch. (Temperature control dial is malfunctioning.)

### 5. STEP-3: MODE DOOR AND INTAKE DOOR POSITIONS ARE CHECKED

Turn temperature control dial (driver side) clockwise.

Does code No. 30 appear on the display?

- YES >> GO TO 6.  
NO >> GO TO 14.

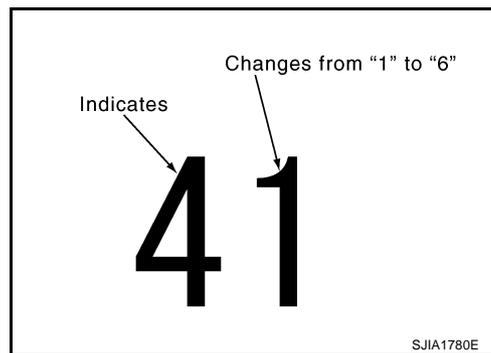


# TROUBLE DIAGNOSIS

## 6. STEP-4: OPERATION OF EACH ACTUATOR IS CHECKED

1. Turn temperature control dial (driver side) clockwise.
2. Press  (DEF) switch. Code No. of each actuator test is indicated on the display.

>> GO TO 7.



## 7. CHECK ACTUATORS

Refer to the following chart and check discharge air flow, air temperature, blower motor duty ratio and compressor operation.

Discharge air flow			
Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	-	-
	60%	40%	-
	15%(18%)	62%(82%)	23% (-)
	15%	55%	30%
	-	-	100%

( ) : Manually control RJIA3995E

Code No.	41	42	43	44	45	46
Mode door position	VENT	B/L 1	B/L 2	FOOT*1	D/F	DEF
Intake door position	REC	REC	20%FRE	FRE	FRE	FRE
Air mix door position	FULL COLD	FULL COLD	FULL HOT	FULL HOT	FULL HOT	FULL HOT
Blower motor duty ratio	37%	91%	65%	65%	65%	91%
Compressor	ON	ON	OFF	OFF	ON	ON

Checks must be made visually, by listening the sound, or by touching air outlets with hand, etc. for improper operation.

\*1: FOOT position during automatic control. Refer to [ATC-54, "AUXILIARY MECHANISM: FOOT POSITION SETTING TRIMMER"](#) .

### OK or NG

OK >> GO TO 8.

- NG >>
- Air outlet does not change.  
Go to Mode Door Motor Circuit. Refer to [ATC-63, "Mode Door Motor Circuit"](#) .
  - Intake door does not change.  
Go to Intake Door Motor Circuit. Refer to [ATC-69, "Intake Door Motor Circuit"](#) .
  - Discharge air temperature does not change.  
Go to Air Mix Door Motor Circuit. Refer to [ATC-66, "Air Mix Door Motor Circuit"](#) .
  - Blower motor operation is malfunctioning.  
Go to Blower Motor Circuit. Refer to [ATC-72, "Blower Motor Circuit"](#) .
  - Magnet clutch does not engage.  
Go to Magnet Clutch Circuit. Refer to [ATC-77, "Magnet Clutch Circuit"](#) .

# TROUBLE DIAGNOSIS

## 8. STEP-5: TEMPERATURE OF EACH SENSOR IS CHECKED

1. Turn temperature control dial (driver side) clockwise.
2. Code No. 51 appears on the display.

>> GO TO 9.

## 9. CHECK AMBIENT SENSOR

Press  (DEF) switch one time. Temperature detected by ambient sensor is indicated on the display.

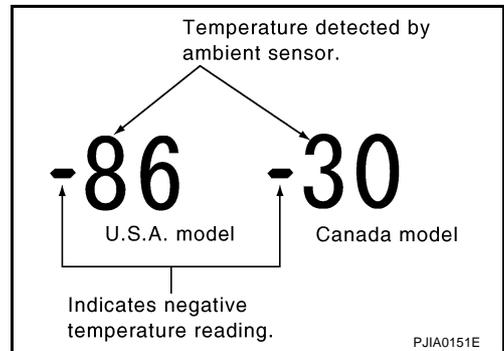
### NOTE:

If the temperature indicated on the display greatly differs from the actual temperature, check sensor circuit first, and then check sensor.

### OK or NG

OK >> GO TO 10.

NG >> Go to Ambient Sensor Circuit. Refer to [ATC-95, "Ambient Sensor Circuit"](#) .



## 10. CHECK IN-VEHICLE SENSOR

Press  (DEF) switch for the second time. Temperature detected by in-vehicle sensor is indicated on the display.

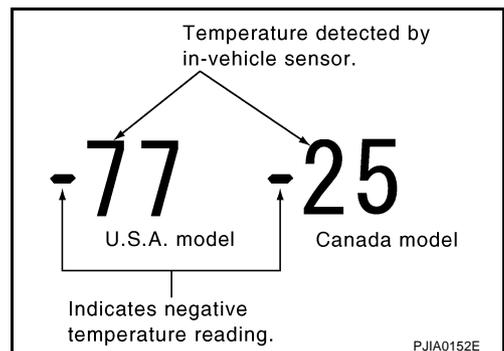
### NOTE:

If the temperature indicated on the display greatly differs from the actual temperature, check sensor circuit first, and then check sensor.

### OK or NG

OK >> GO TO 11.

NG >> Go to In-vehicle Sensor Circuit. Refer to [ATC-98, "In-vehicle Sensor Circuit"](#) .



## 11. CHECK INTAKE SENSOR

Press  (DEF) switch for the third time. Temperature detected by intake sensor is indicated on the display.

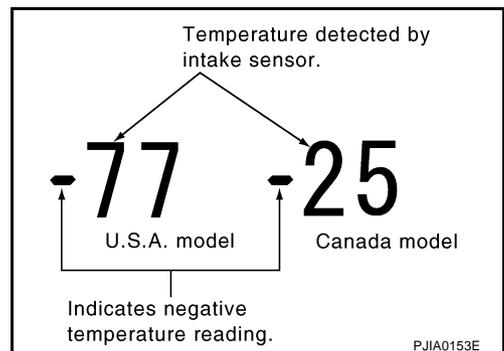
### NOTE:

If the temperature indicated on the display greatly differs from the actual temperature, check sensor circuit first, and then check sensor.

### OK or NG

OK >> GO TO 12.

NG >> Go to Intake Sensor Circuit. Refer to [ATC-104, "Intake Sensor Circuit"](#) .



# TROUBLE DIAGNOSIS

## 12. CHECK CAN COMMUNICATION ERROR

1. Press  (REC) switch.
2. CAN communication error between unified meter and A/C amp. and display control unit is displayed. (If pulual errors occur, the display of each error will indicates 1 second each.)

### OK or NG

- OK >> 1. Turn ignition switch OFF or AUTO switch ON.  
2. INSPECTION END
- NG >> Go to CAN communication. Refer to [DI-34, "DTC \[U1000\] CAN Communication Circuit"](#) .
- Unified meter and A/C amp. - Display control unit

Display	CAN communication error
52	In good order
52 	Display control unit ⇨ Unified meter and A/C amp.
52 	Unified meter and A/C amp. ⇨ Display control unit

SJIA1155E

## 13. CHECK MALFUNCTIONING SENSOR AND DOOR MOTOR

Refer to the following chart for malfunctioning code No.

(If two or more sensors and door motors malfunction, corresponding code Nos. indicates 1 second each.)

\*1: Perform self-diagnosis STEP-2 under sunshine.

When performing indoors, aim a light (more than 60 W) at sunload sensor, otherwise code No. 25 will indicate despite that sunload sensor is functioning properly.

Code No.	Malfunctioning sensor and door motor (Including circuits)	Reference page
21 / -21	Ambient sensor	*2
22 / -22	In-vehicle sensor	*3
24 / -24	Intake sensor	*4
25 / -25	Sunload sensor *1	*5
26 / -26	Air mix door motor PBR (Driver side)	*6
27 / -27	Air mix door motor PBR (Passenger side)	

\*2: [ATC-95, "DIAGNOSIS PROCEDURE FOR AMBIENT SENSOR"](#) .

\*3: [ATC-99, "DIAGNOSIS PROCEDURE FOR IN-VEHICLE SENSOR"](#) .

\*4: [ATC-104, "DIAGNOSIS PROCEDURE FOR INTAKE SENSOR"](#) .

\*5: [ATC-101, "DIAGNOSIS PROCEDURE FOR SUNLOAD SENSOR"](#) .

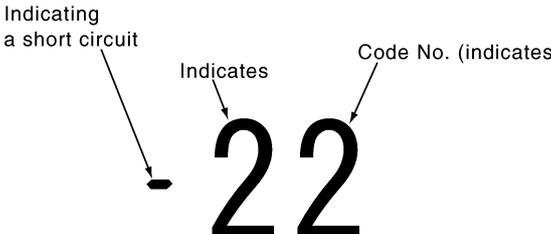
\*6: [ATC-68, "DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR PBR"](#) .

**Display (when sensor malfunctions)**

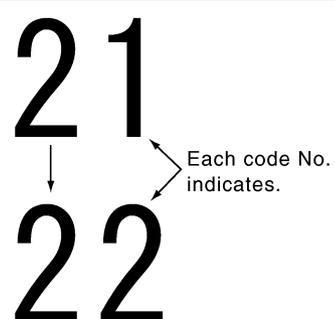
Indicating a short circuit

Indicates

Code No. (indicates)



Each code No. indicates.



SJIA1781E

>> INSPECTION END

# TROUBLE DIAGNOSIS

## 14. CHECK MALFUNCTIONING DOOR MOTOR POSITION SWITCH

Mode and/or intake door motor PBR(s) is/are malfunctioning.

Code No. *1 *2	Mode or intake door position	Reference page
31	VENT	*4
32	B/L 1	
33	B/L 2	
34	FOOT*3	
35	D/F	
36	DEF	
37	FRE	*5
38	20% FRE	
39	REC	

(If two or more mode or intake door motors malfunction, corresponding code Nos. indicates 1 second each)

\*1: If mode door motor harness connector is disconnected, the following display pattern will appear.

31→32→33→34→35→36→Return to 31

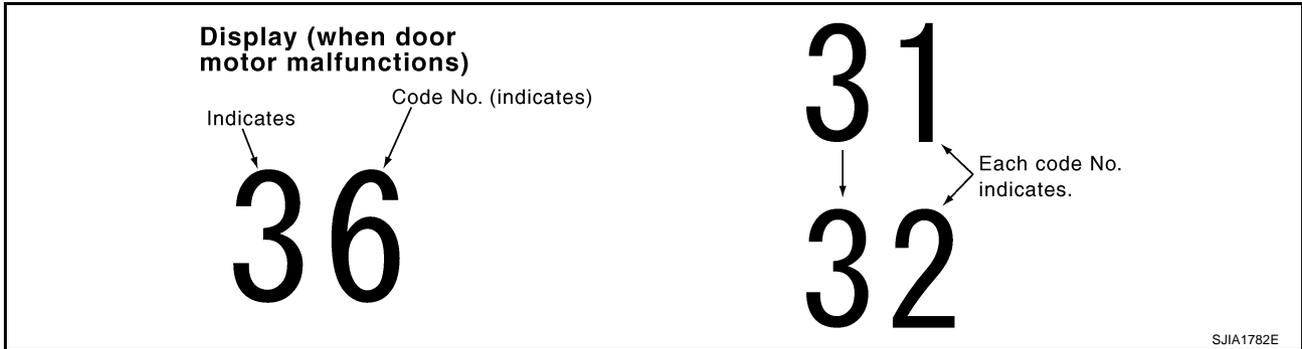
\*2: If intake door motor harness connector is disconnected, the following display pattern will appear.

37→38→39→Return to 37

\*3: FOOT position during automatic control. Refer to [ATC-54, "AUXILIARY MECHANISM: FOOT POSITION SETTING TRIMMER"](#) .

\*4: [ATC-65, "DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR"](#) .

\*5: [ATC-71, "DIAGNOSIS PROCEDURE FOR INTAKE DOOR MOTOR"](#) .



>> INSPECTION END

# TROUBLE DIAGNOSIS

## AUXILIARY MECHANISM: TEMPERATURE SETTING TRIMMER

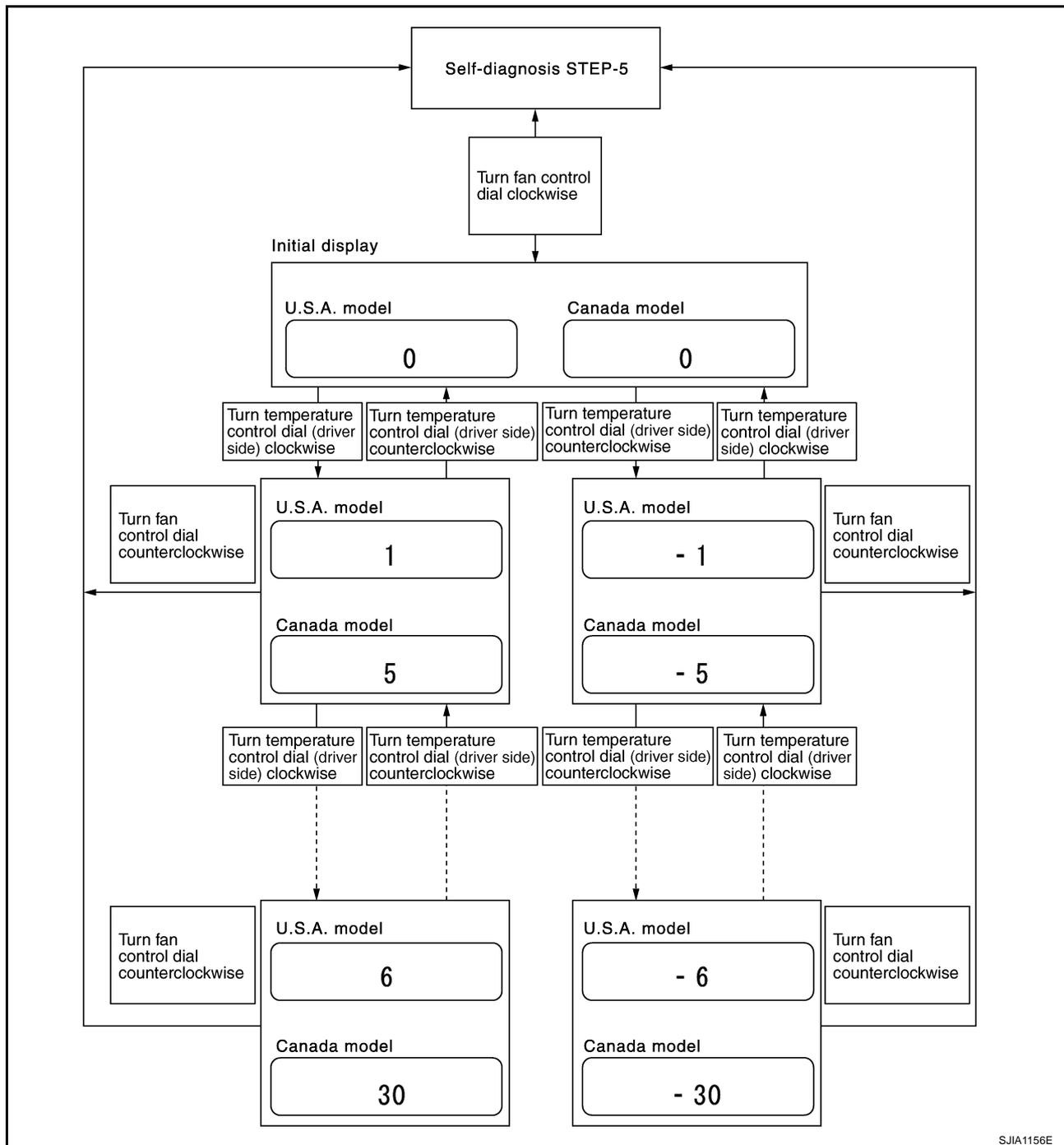
The trimmer compensates for differences in range of  $\pm 3^{\circ}\text{C}$  ( $\pm 6^{\circ}\text{F}$ ) between temperature setting (displayed digitally) and temperature felt by customer.

Operating procedures for this trimmer are as follows:

1. Begin self-diagnosis STEP-5 mode. Refer to [ATC-47, "Self-diagnosis Function"](#).
2. Turn fan control dial clockwise to set system in auxiliary mode.
3. Display shows "61" in auxiliary mechanism. It takes approximately 3 seconds.
4. Turn temperature control dial (driver side) as desired. Temperature will change at a rate of  $0.5^{\circ}\text{C}$  ( $1.0^{\circ}\text{F}$ ) each time a dial is turned.

### CAUTION:

A decimal point is not indicated on the display.



When battery cable is disconnected or battery voltage is below 10 V, trimmer operation is canceled. Temperature set becomes that of initial condition, i.e.  $0^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ).

## TROUBLE DIAGNOSIS

### AUXILIARY MECHANISM: FOOT POSITION SETTING TRIMMER

Wind distribution ratio in FOOT mode can be set.

Operating procedures for this trimmer are as follows:

1. Begin self-diagnosis STEP-5 mode. Refer to [ATC-47, "Self-diagnosis Function"](#).
2. Turn fan control dial clockwise to set system in auxiliary mode.
3. Display shows "61" in auxiliary mechanism. It takes approximately 3 seconds.
4. Press the mode switch as desired.

Display	Discharge air flow					
	Automatically controls the mode door			Manually controls the mode door		
	VENT	FOOT	DEF	VENT	FOOT	DEF
 (Initial setting)	15%	62%	23%	18%	82%	—
	15%	62%	23%	15%	62%	23%
	18%	82%	—	15%	62%	23%
	18%	82%	—	18%	82%	—

PJIA0124E

When battery cable is disconnected or battery voltage is below 10 V, trimmer operation is canceled. Wind distribution ratio set becomes that of initial condition.

### AUXILIARY MECHANISM: INLET PORT MEMORY FUNCTION

When ignition switch is turned from OFF to ON, inlet port memory function at manual mode can be set.

Operating procedures for this trimmer are as follows:

1. Begin self-diagnosis STEP-5 mode. Refer to [ATC-47, "Self-diagnosis Function"](#).
2. Turn fan control dial clockwise to set system in auxiliary mode.
3. Display shows "61" in auxiliary mechanism. It takes approximately 3 seconds.
4. Press the recirculation (REC) and fresh (FRE) switch as desired.

Switch	LED status of REC/FRE switch	Setting status	Setting changeover method
REC	ON	Manual REC status is memorized. (Initial setting)	REC SW: ON
	OFF	AUTO control	
FRE	ON	Manual FRE status is memorized.	FRE SW: ON
	OFF	AUTO control (Initial setting)	

When battery cable is disconnected or battery voltage is below 10 V, memory function is canceled. Memory function set becomes that of initial condition.

# TROUBLE DIAGNOSIS

NJS000AX

## Operational Check

The purpose of the operational check is to check if the individual system operates properly.

**Conditions** : Engine running at normal operating temperature

### CHECKING MEMORY FUNCTION

1. Turn temperature control dial clockwise until 32°C (90°F) is displayed.
2. Press OFF switch.
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Press the AUTO switch.
6. Confirm that the set temperature remains at previous temperature.
7. Press OFF switch.

If NG, go to trouble diagnosis procedure for [ATC-94, "Memory Function"](#) .

If OK, continue the check.

### CHECKING BLOWER

1. Turn fan control dial clockwise. Blower should operate on low speed. The fan symbol should have one blade lit.
2. Turn fan control dial clockwise again, and continue checking blower speed and fan symbol until all speeds are checked.
3. Leave blower on max. speed.

If NG, go to trouble diagnosis procedure for [ATC-72, "Blower Motor Circuit"](#) .

If OK, continue the check.

### CHECKING DISCHARGE AIR

1. Press MODE switch and DEF switch.
2. Each position indicator should change shape.
3. Confirm that discharge air comes out according to the air distribution table. Refer to [ATC-32, "Discharge Air Flow"](#) .

If NG, go to trouble diagnosis procedure for [ATC-63, "Mode Door Motor Circuit"](#) .

If OK, continue the check.

#### NOTE:

Confirm that the compressor clutch is engaged (sound or visual inspection) and intake door position is at FRESH when the DEF or D/F is selected.

Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	—	—
	60%	40%	—
	15%(18%)	62%(82%)	23% (—)
	15%	55%	30%
	—	—	100%

( ) : Manually control

RJIA3995E

### CHECKING INTAKE AIR

1. Press recirculation (REC) switch. Recirculation indicator should illuminate.
2. Press fresh (FRE) switch. Fresh indicator should illuminate.
3. Listen for intake door position change. (Slight change of blower sound can be heard.)

If NG, go to trouble diagnosis procedure for [ATC-69, "Intake Door Motor Circuit"](#) .

If OK, continue the check.

#### NOTE:

Confirm that the compressor clutch is engaged (sound or visual inspection) and intake door position is at FRESH when the DEF or D/F is selected.

### CHECKING TEMPERATURE DECREASE

1. Turn temperature control dial (driver side) counterclockwise until 18°C (60°F) is displayed.
2. Check for cold air at discharge air outlets.

If NG, go to trouble diagnosis procedure for [ATC-83, "Insufficient Cooling"](#) .

If OK, continue the check.

# TROUBLE DIAGNOSIS

---

## CHECKING TEMPERATURE INCREASE

1. Turn temperature control dial (driver side) clockwise until 32°C (90°F) is displayed.
2. Check for hot air at discharge air outlets.

If NG, go to trouble diagnosis procedure for [ATC-91, "Insufficient Heating"](#) .

If OK, continue the check.

## CHECK A/C SWITCH

Press AUTO switch and A/C switch. Then A/C switch indicator is turned ON.

- Confirm that the compressor clutch engages (sound or visual inspection).

If NG, go to trouble diagnosis procedure for [ATC-77, "Magnet Clutch Circuit"](#) .

If OK, continue the check.

## CHECKING AUTO MODE

Press AUTO switch and A/C switch. Then display is indicated AUTO.

- Confirm that the compressor clutch engages (sound or visual inspection). (Discharge air and blower speed will depend on ambient, in-vehicle, and set temperatures.)

If NG, go to trouble diagnosis procedure for [ATC-57, "Power Supply and Ground Circuit for Auto Amp."](#) , then if necessary, trouble diagnosis procedure for [ATC-77, "Magnet Clutch Circuit"](#) .

If all operational checks are OK (symptom cannot be duplicated), go to Malfunction Simulation Tests in [GI-27, "How to Perform Efficient Diagnosis for an Electrical Incident"](#) and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to [ATC-36, "SYMPTOM TABLE"](#) and perform applicable trouble diagnosis procedures.

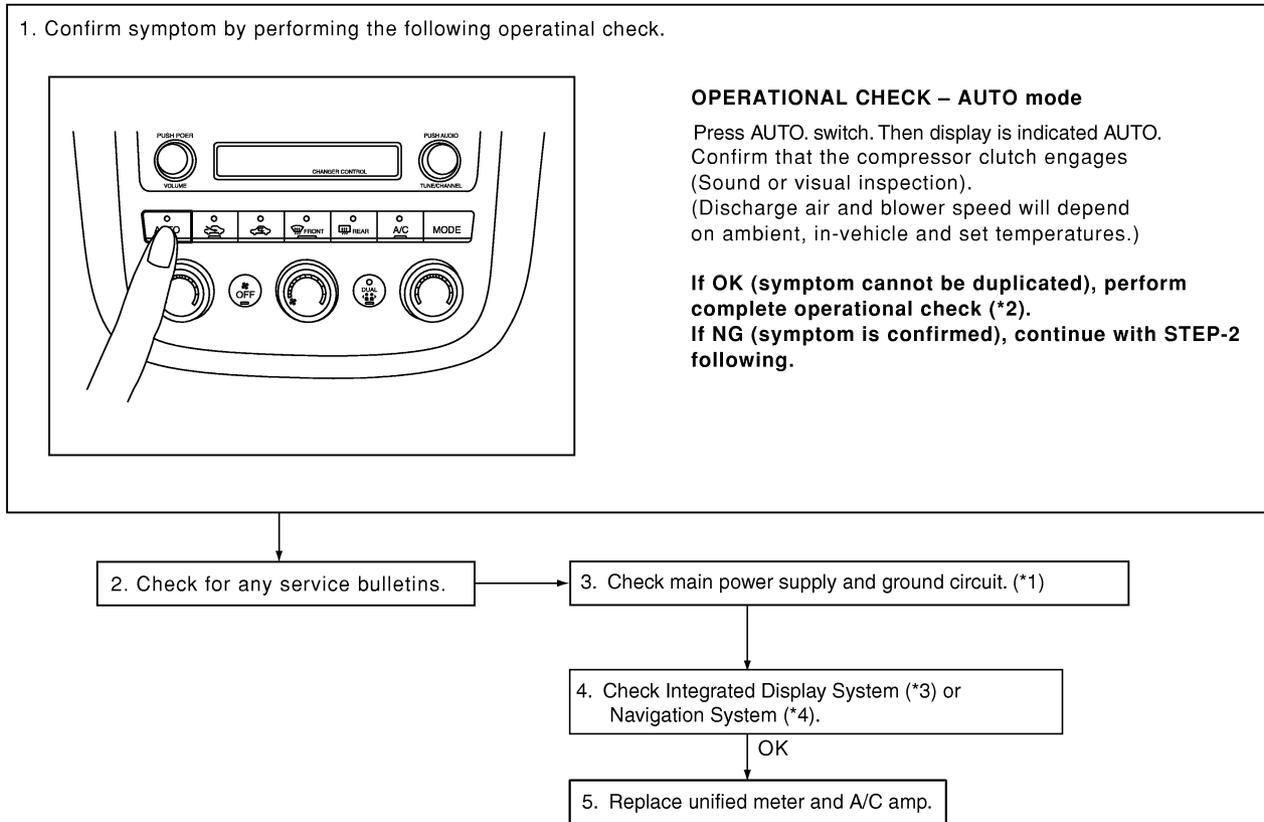
# TROUBLE DIAGNOSIS

NJS000AY

## Power Supply and Ground Circuit for Auto Amp.

SYMPTOM: A/C system does not come on.

### INSPECTION FLOW



\*1 [ATC-58. "DIAGNOSIS PROCEDURE FOR A/C SYSTEM"](#)

\*2 [ATC-55. "Operational Check"](#)

\*3 [AV-121. "Example of Symptoms Possible No Malfunction"](#)

\*4 [AV-39. "A/C and AV Switch Self-Diagnosis Function"](#)

SJIA1158E

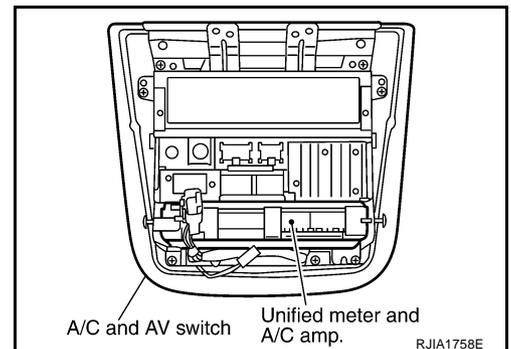
### COMPONENT DESCRIPTION

#### Unified Meter and A/C Amp. (Automatic Amplifier)

The unified meter and A/C amp. has a built-in microcomputer which processes information sent from various sensors needed for air conditioner operation. The air mix door motor, mode door motor, intake door motor, blower motor and compressor are then controlled.

When the various switches and temperature control dials are operated, data is input to the unified meter and A/C amp. from the display control unit using CAN communication.

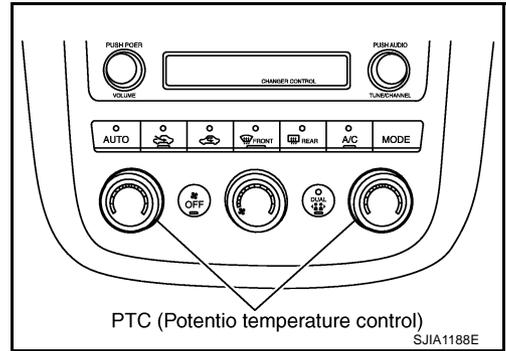
Self-diagnosis functions are also built into unified meter and A/C amp. to provide quick check of malfunctions in the auto air conditioner system.



# TROUBLE DIAGNOSIS

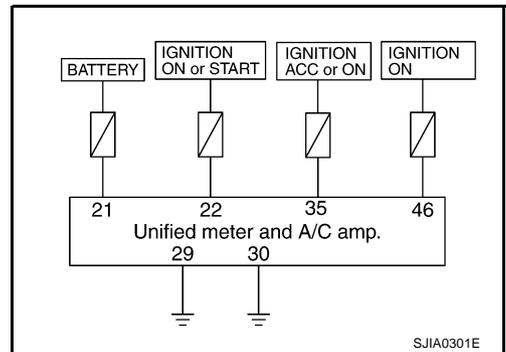
## Potential Temperature Control (PTC)

The PTC is built into the A/C and AV switch. It can be set at an interval of 0.5°C (1.0°F) in the 18°C (60°F) to 32°C (90°F) temperature range by turning temperature control dial. The set temperature is displayed.



## DIAGNOSIS PROCEDURE FOR A/C SYSTEM

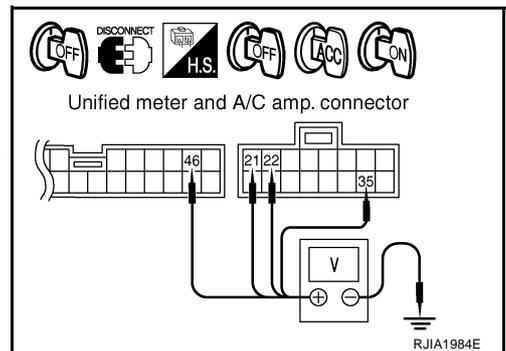
SYMPTOM: A/C system does not come on.



### 1. CHECK POWER SUPPLY CIRCUIT FOR UNIFIED METER AND A/C AMP.

1. Disconnect unified meter and A/C amp. connector.
2. Check voltage between unified meter and A/C amp. harness connector M50 terminals 21, 22 and 35, unified meter and A/C amp. harness connector M51 terminal 46 and ground.

Terminals		(-)	Ignition switch position		
(+)	Terminal No.		OFF	ACC	ON
Unified meter and A/C amp. connector		Ground			
M50	21		Battery voltage	Battery voltage	Battery voltage
M50	22		Approx. 0 V	Approx. 0 V	Battery voltage
M50	35		Approx. 0 V	Battery voltage	Battery voltage
M51	46		Approx. 0 V	Approx. 0 V	Battery voltage



OK or NG

OK >> GO TO 2.

NG >> Check 10A and 15A fuses [Nos. 6, 10, 11, 12 and 19, located in the fuse block (J/B)]. Refer to [PG-69, "FUSE BLOCK - JUNCTION BOX \(J/B\)"](#).

- If fuses are OK, check harness for open circuit. Repair or replace if necessary.
- If fuses are NG, check harness for short circuit and replace fuse.

# TROUBLE DIAGNOSIS

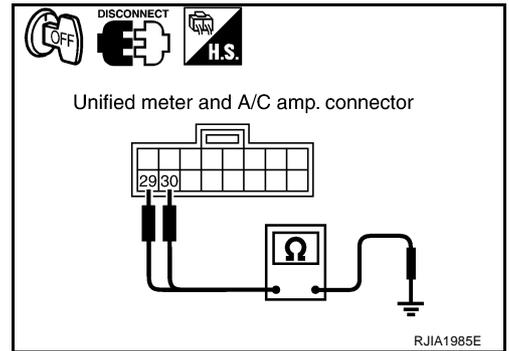
## 2. CHECK GROUND CIRCUIT FOR UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Check continuity between unified meter and A/C amp. harness connector M50 terminal 29, 30 and ground.

**29, 30 – Ground : Continuity should exist.**

OK or NG

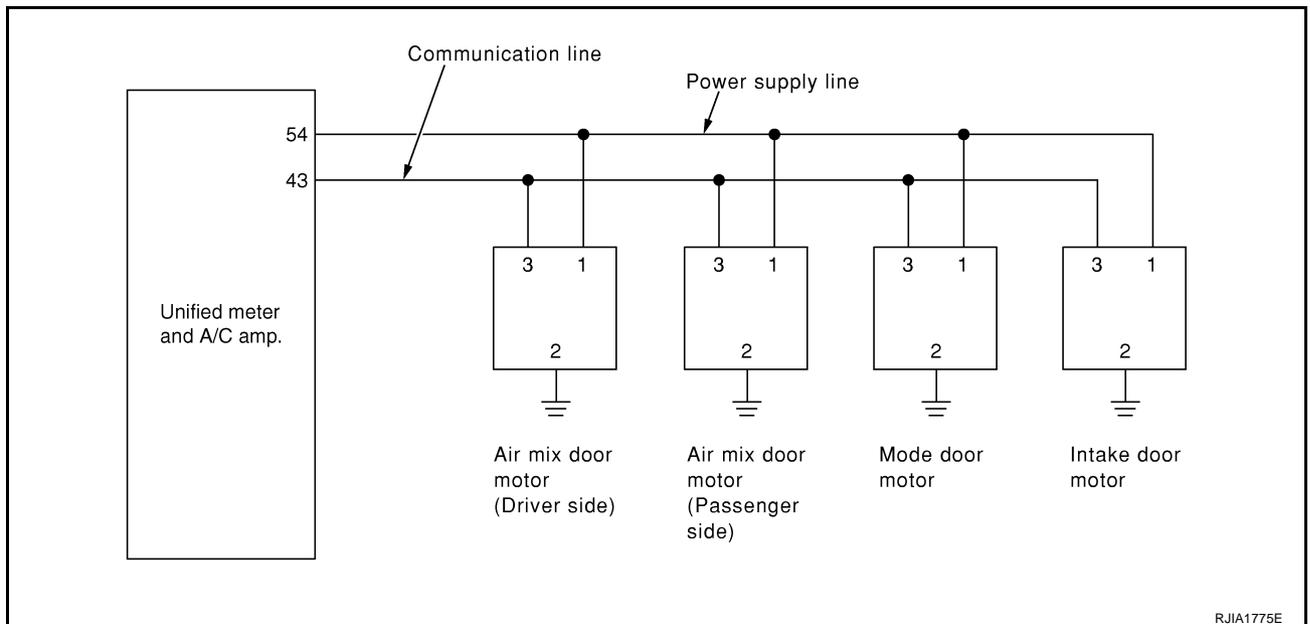
- OK >> Replace unified meter and A/C amp.  
 NG >> Repair harness or connector.



## LAN System Circuit

NJS000AZ

SYMPTOM: Mode door motor, intake door motor and/or air mix door motor(s) does not operate normally.



## DIAGNOSIS PROCEDURE FOR LAN CIRCUIT

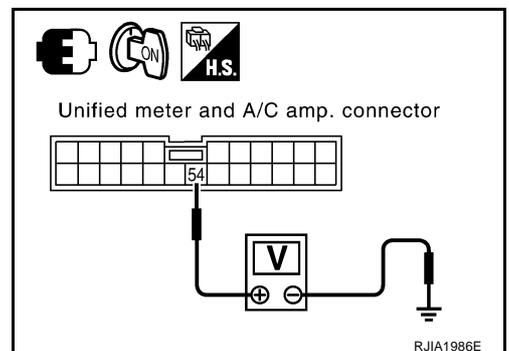
### 1. CHECK POWER SUPPLY FOR UNIFIED METER AND A/C AMP.

1. Turn ignition switch ON.
2. Check voltage between unified meter and A/C amp. harness connector M51 terminal 54 and ground.

**54 – Ground : Battery voltage**

OK or NG

- OK >> GO TO 2.  
 NG >> Replace unified meter and A/C amp.



# TROUBLE DIAGNOSIS

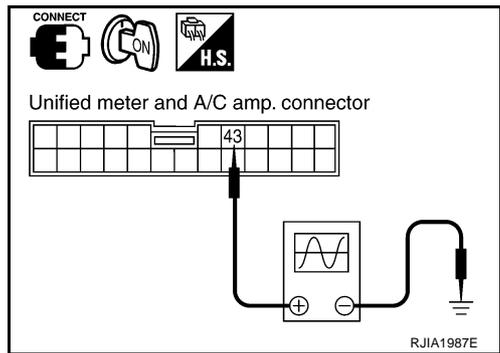
## 2. CHECK SIGNAL FOR UNIFIED METER AND A/C AMP.

Confirm A/C LAN signal between unified meter and A/C amp. harness connector M51 terminal 43 and ground using an oscilloscope.

Terminals		Voltage
(+)		
Unified meter and A/C amp. connector	Terminal No.	(-)
M51	43	Ground

SJIA1453J



**OK or NG**

- OK >> GO TO 3.
- NG >> Replace unified meter and A/C amp.

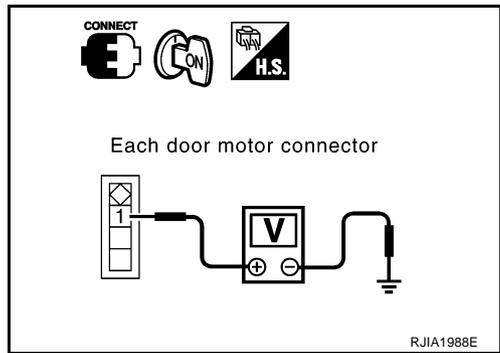
## 3. CHECK POWER SUPPLY FOR EACH DOOR MOTOR

Check voltage between each door motor harness connector terminal 1 and ground.

**1 – Ground : Battery voltage**

**OK or NG**

- OK >> GO TO 4.
- NG >> Repair harness or connector.



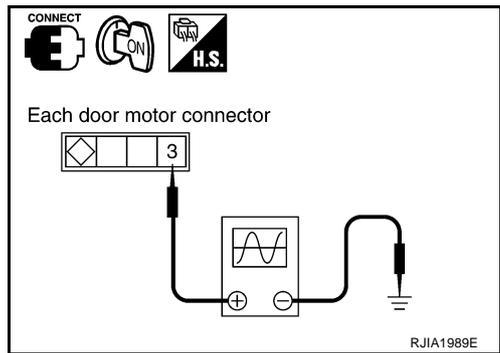
## 4. CHECK SIGNAL FOR EACH DOOR MOTOR

Confirm A/C LAN signal between each door motor harness connector terminal 3 and ground using an oscilloscope.

Door motor	Terminals		Voltage
	(+)		
	Connector	Terminal No.	(-)
Mode	M252	3	Ground
Air mix (Driver side)	M253	3	
Air mix (Passenger side)	M254	3	
Intake	M255	3	

SJIA1453J



**OK or NG**

- OK >> GO TO 5.
- NG >> Repair harness or connector.

# TROUBLE DIAGNOSIS

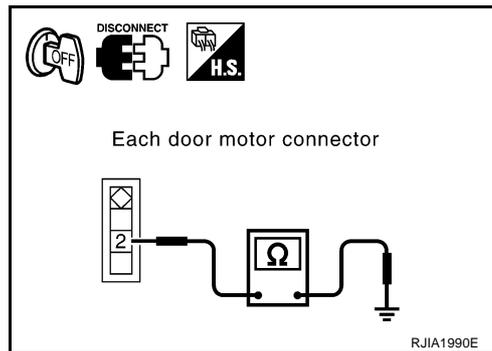
## 5. CHECK EACH DOOR MOTOR GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect each door motor connector.
3. Check continuity between each door motor harness connector terminal 2 and ground.

**2 – Ground : Continuity should exist.**

OK or NG

- OK >> GO TO 6.  
NG >> Repair harness or connector.



## 6. CHECK MOTOR OPERATION

1. Reconnect each door motor connector.
2. Turn ignition switch ON.
3. Confirm operation of each door motor.

OK or NG

- OK >> (Return to operate normally.)  
● Poor contact in motor connector.
- NG >> (Does not operate normally.)  
● GO TO 7.

## 7. CHECK AIR MIX DOOR MOTOR AND INTAKE DOOR MOTOR OPERATION

1. Turn ignition switch OFF.
2. Disconnect mode door motor, air mix door motor (driver side, passenger side), and intake door motor connectors.
3. Reconnect air mix door motor (driver side, passenger side) and intake door motor connectors.
4. Turn ignition switch ON.
5. Confirm operation of air mix door motor (driver side, passenger side) and intake door motor.

OK or NG

- OK >> [Air mix (driver side, passenger side) and intake door motors operate normally.]  
● Replace mode door motor.
- NG >> [Air mix (driver side, passenger side) and intake door motors does not operate normally.]  
● GO TO 8.

## 8. CHECK MODE DOOR MOTOR AND INTAKE DOOR MOTOR OPERATION

1. Turn ignition switch OFF.
2. Disconnect air mix door motor (driver side, passenger side) connectors.
3. Reconnect mode door motor connector.
4. Turn ignition switch ON.
5. Confirm operation of mode door motor and intake door motor.

OK or NG

- OK >> (Mode and intake door motors operate normally.)  
● GO TO 10.
- NG >> (Mode and intake door motors does not operate normally.)  
● GO TO 9.

# TROUBLE DIAGNOSIS

---

## 9. CHECK MODE DOOR MOTOR AND AIR MIX DOOR MOTOR OPERATION

---

1. Turn ignition switch OFF.
2. Disconnect intake door motor connector.
3. Reconnect air mix door motor (driver side, passenger side) connectors.
4. Turn ignition switch ON.
5. Confirm operation of mode door motor and air mix door motor (driver side, passenger side).

### OK or NG

- OK >> [Mode and air mix door motor (driver side, passenger side) operate normally.]
- Replace intake door motor.
- NG >> [Mode and air mix door motor (driver side, passenger side) does not operate normally.]
- Replace display and A/C auto amp.

---

## 10. CHECK AIR MIX DOOR MOTOR OPERATION

---

1. Turn ignition switch OFF.
2. Disconnect air mix door motor (driver side) connector.
3. Turn ignition switch ON.
4. Confirm operation of air mix door motor (passenger side).

### OK or NG

- OK >> [Air mix door motor (passenger side) operates normally.]
- Replace air mix door motor (driver side).
- NG >> [Air mix door motor (passenger side) does not operate normally.]
- Replace air mix door motor (passenger side).

# TROUBLE DIAGNOSIS

NJS000B0

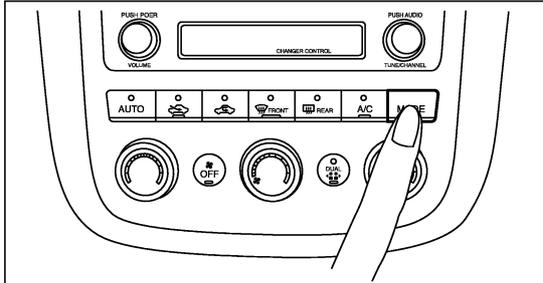
## Mode Door Motor Circuit

### SYMPTOM

- Air outlet does not change.
- Mode door motor does not operate normally.

### INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



#### OPERATIONAL CHECK – Discharge air

- Press MODE switch and DEF switch.
- Each position indicator should change shape.

#### Discharge air flow

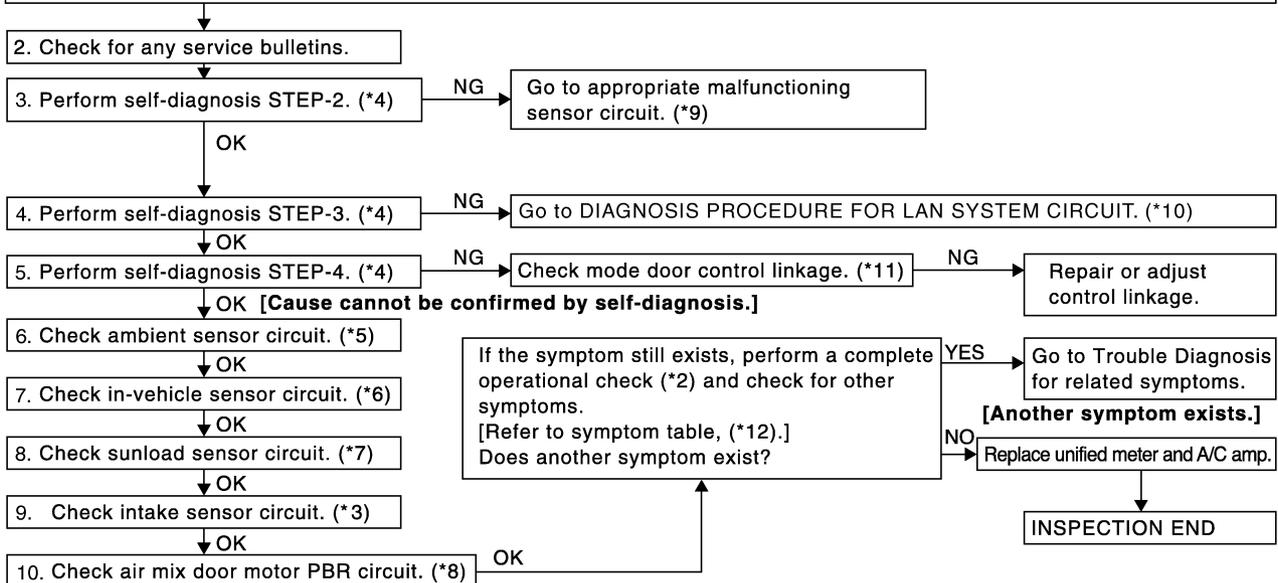
Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	100%	–	–
	60%	40%	–
	15%(18%)	62%(82%)	23%(–)
	15%	55%	30%
	–	–	100%

( ) : Manually control

- Confirm that discharge air comes out according to the air distribution table at left. Refer to "Discharge Air Flow"(\*1).

#### NOTE:

- If OK (symptom cannot be duplicated), perform complete operational check (\*2).
- If NG (symptom is confirmed), continue with STEP-2 following.
- Confirm that the compressor clutch is engaged (sound or visual inspection) and intake door position is at FRESH when DEF or D/F is selected.



SJIA1159E

- |   |   |   |
|---|---|---|
| *1 <a href="#">ATC-32, "Discharge Air Flow"</a>                               | *2 <a href="#">ATC-55, "Operational Check"</a>              | *3 <a href="#">ATC-104, "Intake Sensor Circuit"</a>                       |
| *4 <a href="#">ATC-48, "FUNCTION CONFIRMATION PROCEDURE", see No. 4 to 6.</a> | *5 <a href="#">ATC-95, "Ambient Sensor Circuit"</a>         | *6 <a href="#">ATC-98, "In-vehicle Sensor Circuit"</a>                    |
| *7 <a href="#">ATC-101, "Sunload Sensor Circuit"</a>                          | *8 <a href="#">ATC-68, "Air Mix Door Motor PBR Circuit"</a> | *9 <a href="#">ATC-48, "FUNCTION CONFIRMATION PROCEDURE", see No. 13.</a> |
| *10 <a href="#">ATC-59, "DIAGNOSIS PROCEDURE FOR LAN CIRCUIT"</a>             | *11 <a href="#">ATC-65, "Mode Door Motor"</a>               | *12 <a href="#">ATC-36, "SYMPTOM TABLE"</a>                               |

# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

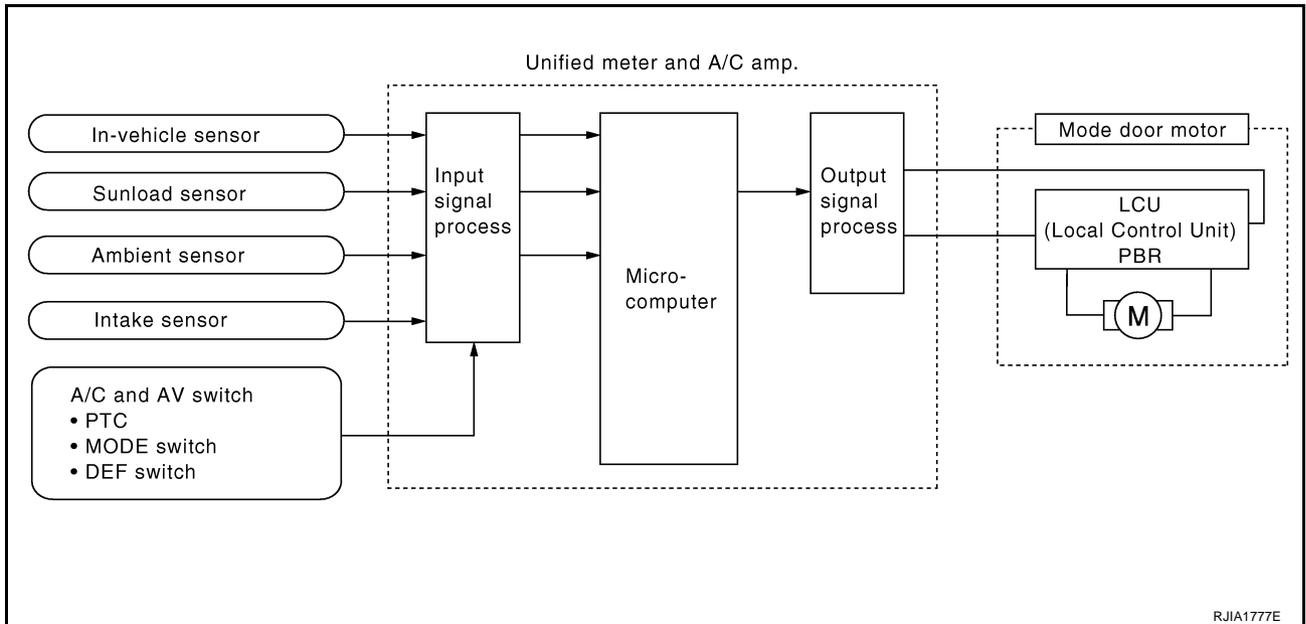
Mode door control system components are:

- Unified meter and A/C amp.
- Mode door motor (LCU)
- A/C LAN system (PBR built-in mode door motor, intake door motor and air mix door motor)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor

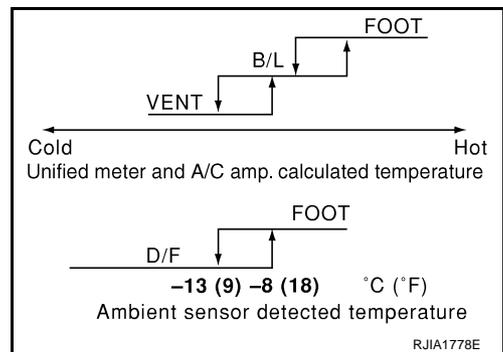
### System Operation

The unified meter and A/C amp. receives data from each of the sensors. The unified meter and A/C amp. sends air mix door, mode door and intake door opening angle data to the air mix door motor LCUs, mode door motor LCU and intake door motor LCU.

The air mix door motors, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the unified meter and A/C amp. and each of the motor position sensors are compared by the LCUs in each door motor with the existing decision and opening angles. Subsequently, HOT/COLD, DEF/VENT and FRE/REC operation is selected. The new selection data are returned to the unified meter and A/C amp.



### Mode Door Control Specification

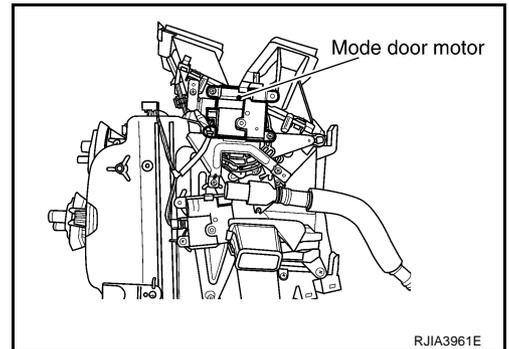


# TROUBLE DIAGNOSIS

## COMPONENT DESCRIPTION

### Mode Door Motor

The mode door motor is attached to the heater & cooling unit assembly. It rotates so that air is discharged from the outlet set by the unified meter and A/C amp. Motor rotation is conveyed to a link which activates the mode door.



## DIAGNOSIS PROCEDURE FOR MODE DOOR MOTOR

SYMPTOM: Mode door motor does not operate normally.

Perform diagnosis procedure. Refer to [ATC-59, "DIAGNOSIS PROCEDURE FOR LAN CIRCUIT"](#) .

A

B

C

D

E

F

G

H

I

ATC

K

L

M

# TROUBLE DIAGNOSIS

NJS000B1

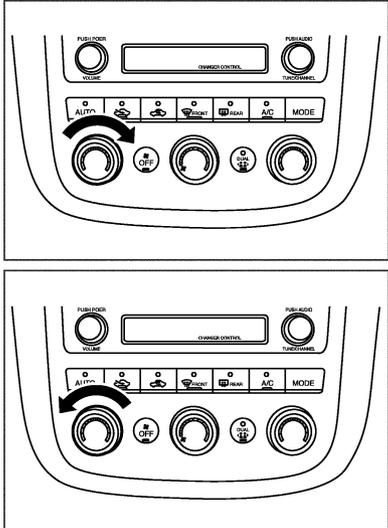
## Air Mix Door Motor Circuit

### SYMPTOM

- Discharge air temperature does not change.
- Air mix door motor does not operate normally.

### INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



**OPERATIONAL CHECK**

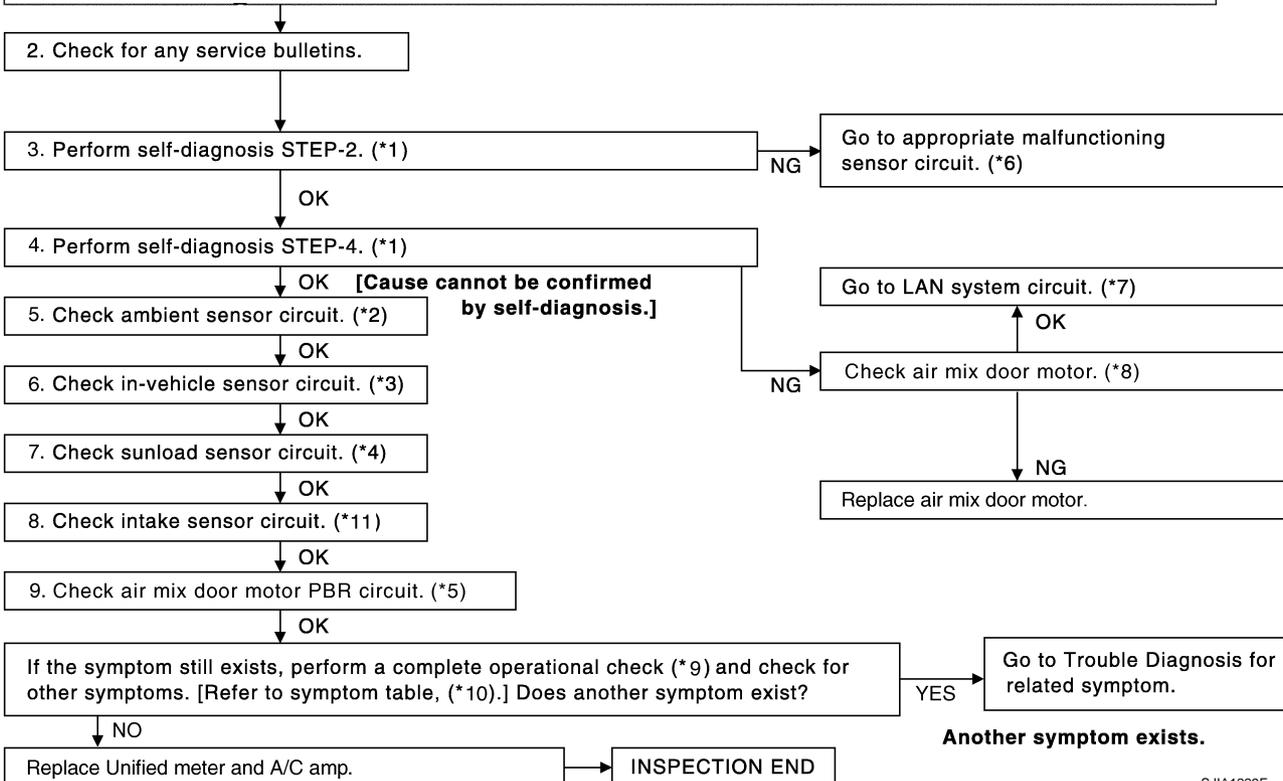
**Temperature increase**

- a. Turn temperature control dial (driver side) clockwise until 32°C (90°F) is displayed.
- b. Check for hot air at discharge air outlets.

**Temperature decrease**

- a. Turn temperature control dial (driver side) counterclockwise until 18°C (60°F) is displayed.
- b. Check for cold air at discharge air outlets.

**If OK (symptom cannot be duplicated), perform complete operational check (\*9).  
If NG (symptom is confirmed), continue with STEP-2 following.**



- |  |   |  |
|--|---|--|
| *1 <a href="#">ATC-48, "FUNCTION CONFIRMATION PROCEDURE"</a> , see No. 4 to 6. | *2 <a href="#">ATC-95, "Ambient Sensor Circuit"</a>         | *3 <a href="#">ATC-98, "In-vehicle Sensor Circuit"</a>                     |
| *4 <a href="#">ATC-101, "Sunload Sensor Circuit"</a>                           | *5 <a href="#">ATC-68, "Air Mix Door Motor PBR Circuit"</a> | *6 <a href="#">ATC-48, "FUNCTION CONFIRMATION PROCEDURE"</a> , see No. 13. |
| *7 <a href="#">ATC-59, "LAN System Circuit"</a>                                | *8 <a href="#">ATC-68, "Air Mix Door Motor"</a>             | *9 <a href="#">ATC-55, "Operational Check"</a>                             |
| *10 <a href="#">ATC-36, "SYMPTOM TABLE"</a>                                    | *11 <a href="#">ATC-104, "Intake Sensor Circuit"</a>        |  |

SJIA1229E

**Another symptom exists.**

# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

### Component Parts

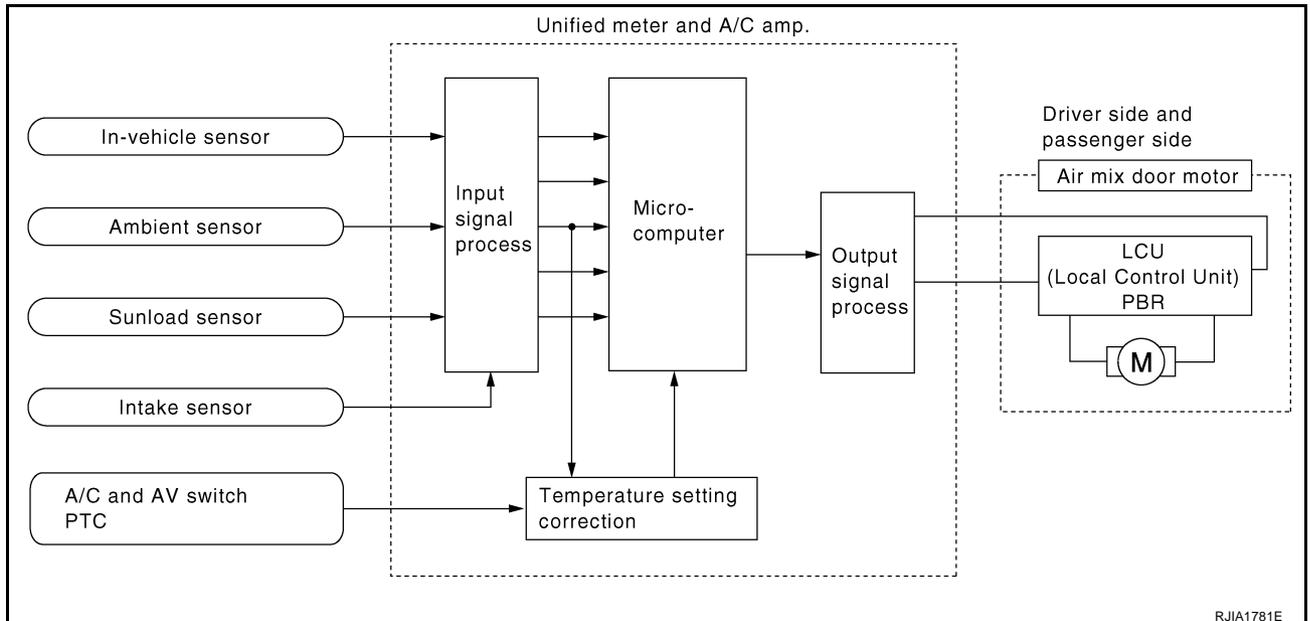
Air mix door control system components are:

- Unified meter and A/C amp.
- Air mix door motor (LCU)
- A/C LAN system (PBR built-in mode door motor, intake door motor and air mix door motor)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor

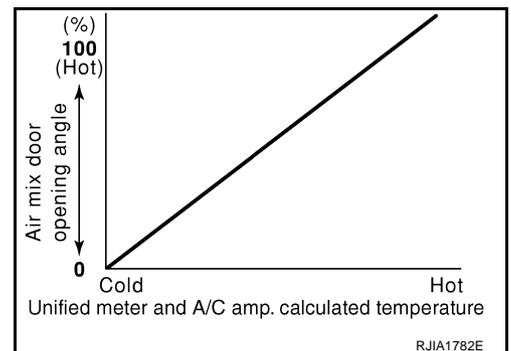
### System Operation

The unified meter and A/C amp. receives data from each of the sensors. The unified meter and A/C amp. sends air mix door, mode door and intake door opening angle data to the air mix door motor LCUs, mode door motor LCU and intake door motor LCU.

The air mix door motors, mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the unified meter and A/C amp. and each of the motor position sensors are compared by the LCUs in each door motor with the existing decision and opening angles. Subsequently, HOT/COLD, DEF/VENT and FRE/REC operation is selected. The new selection data are returned to the unified meter and A/C amp.



### Air Mix Door Control Specification

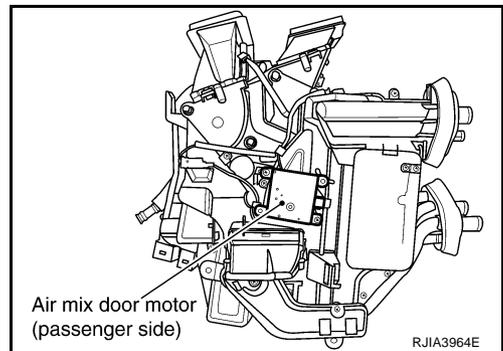
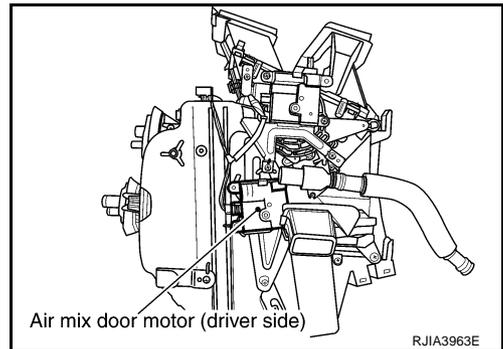


# TROUBLE DIAGNOSIS

## COMPONENT DESCRIPTION

### Air Mix Door Motor

The air mix door motors are attached to the heater & cooling unit assembly. It rotates so that the air mix door is opened or closed to a position set by the unified meter and A/C amp. Motor rotation is then conveyed through a shaft and the air mix door position feedback is then sent to the unified meter and A/C amp. by PBR built-in air mix door motor.



### DIAGNOSIS PROCEDURE FOR AIR MIX DOOR

SYMPTOM: Discharge air temperature does not change.

Perform diagnosis procedure. Refer to [ATC-59, "DIAGNOSIS PROCEDURE FOR LAN CIRCUIT"](#) .

### Air Mix Door Motor PBR Circuit

NJS000B2

SYMPTOM

- Discharge air temperature does not change.
- PBR circuit is open or shorted.

### DIAGNOSIS PROCEDURE FOR AIR MIX DOOR MOTOR PBR

Perform diagnosis procedure. Refer to [ATC-59, "DIAGNOSIS PROCEDURE FOR LAN CIRCUIT"](#) .

# TROUBLE DIAGNOSIS

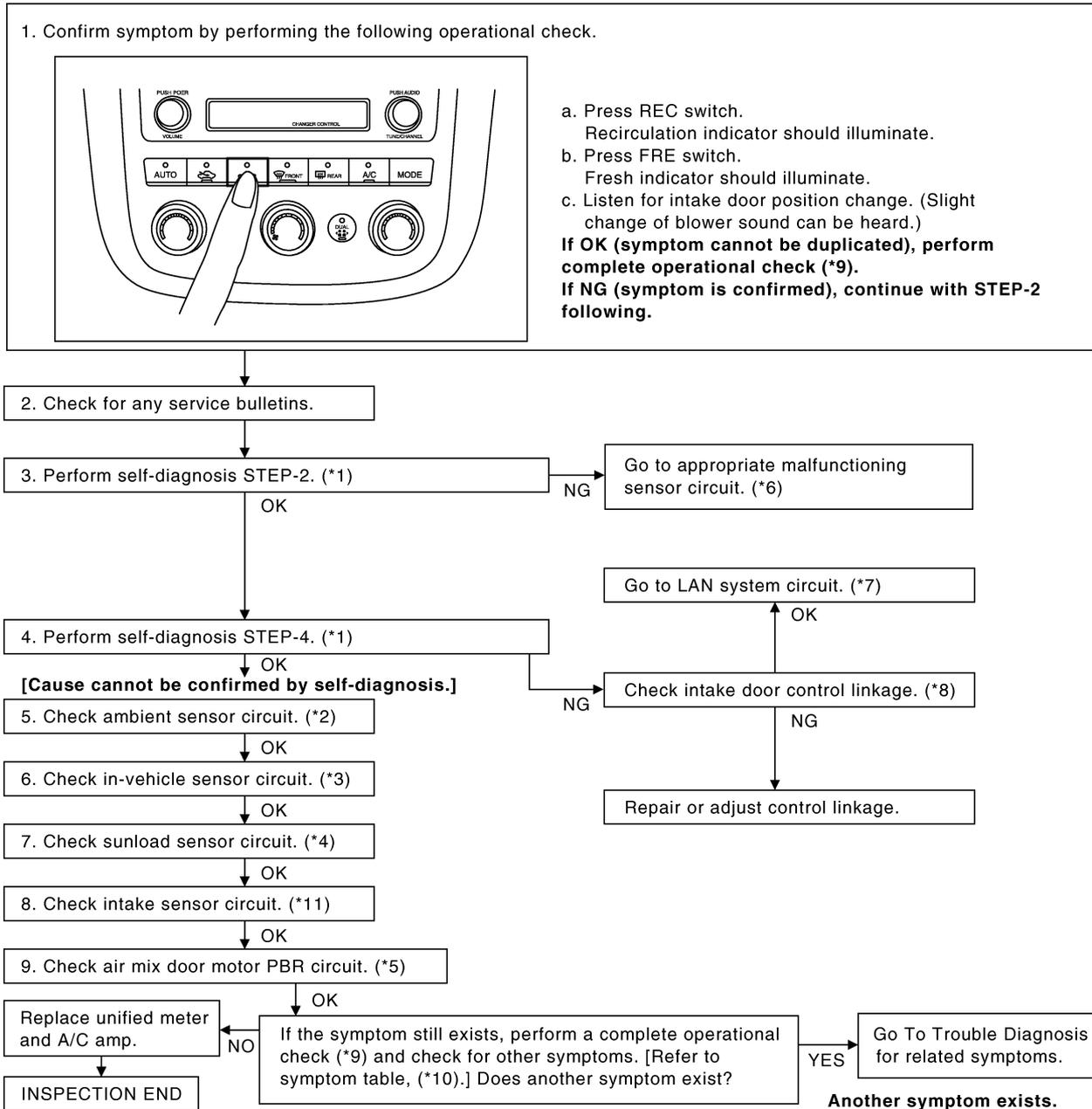
NJS000B3

## Intake Door Motor Circuit

### SYMPTOM

- Intake door does not change.
- Intake door motor does not operate normally.

### INSPECTION FLOW



\*1 [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 4 to 6.

\*4 [ATC-101, "Sunload Sensor Circuit"](#)

\*7 [ATC-59, "LAN System Circuit"](#)

\*10 [ATC-36, "SYMPTOM TABLE"](#)

\*2 [ATC-95, "Ambient Sensor Circuit"](#)

\*5 [ATC-68, "Air Mix Door Motor PBR Circuit"](#)

\*8 [ATC-71, "Intake Door Motor"](#)

\*11 [ATC-104, "Intake Sensor Circuit"](#)

\*3 [ATC-98, "In-vehicle Sensor Circuit"](#)

\*6 [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 13.

\*9 [ATC-55, "Operational Check"](#)

SJIA1160E

# TROUBLE DIAGNOSIS

## SYSTEM DESCRIPTION

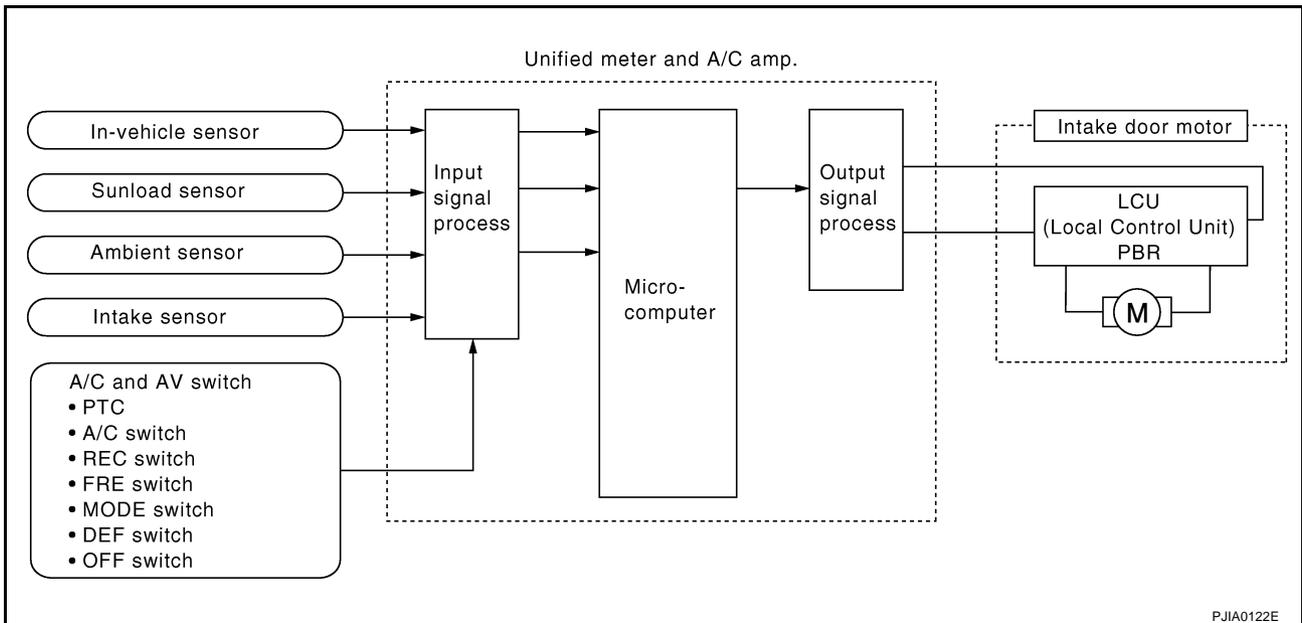
### Component Parts

Intake door control system components are:

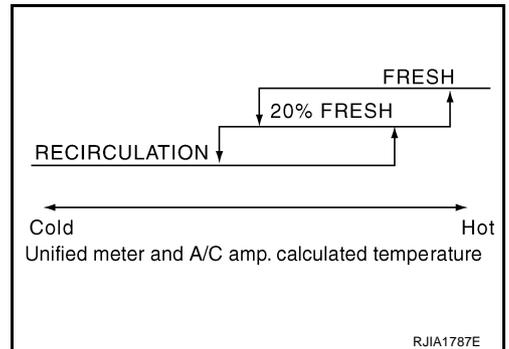
- Unified meter and A/C amp.
- Intake door motor (LCU)
- A/C LAN system (PBR built-in mode door motor, intake door motor and air mix door motor)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor

### System Operation

The intake door control determines intake door position based on the ambient temperature, the intake air temperature and the in-vehicle temperature. When shifting mode position D/F, when the DEF or OFF switches are pressed, or when A/C switch is OFF, the unified meter and A/C amp. sets the intake door at the FRE position.



### Intake Door Control Specification

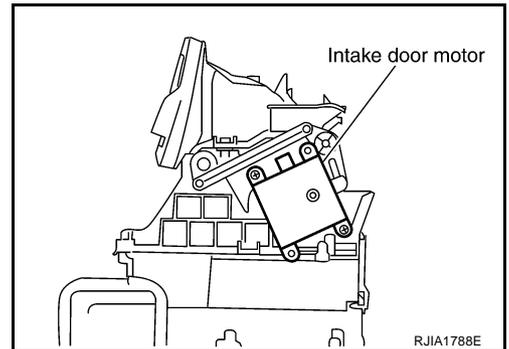


# TROUBLE DIAGNOSIS

## COMPONENT DESCRIPTION

### Intake Door Motor

The intake door motor is attached to the blower unit. It rotates so that air is drawn from inlets set by the unified meter and A/C amp. Motor rotation is conveyed to a lever which activates the intake door.



## DIAGNOSIS PROCEDURE FOR INTAKE DOOR MOTOR

SYMPTOM: Intake door motor does not operate normally.

Perform diagnosis procedure. Refer to [ATC-59, "DIAGNOSIS PROCEDURE FOR LAN CIRCUIT"](#) .

A

B

C

D

E

F

G

H

I

ATC

K

L

M

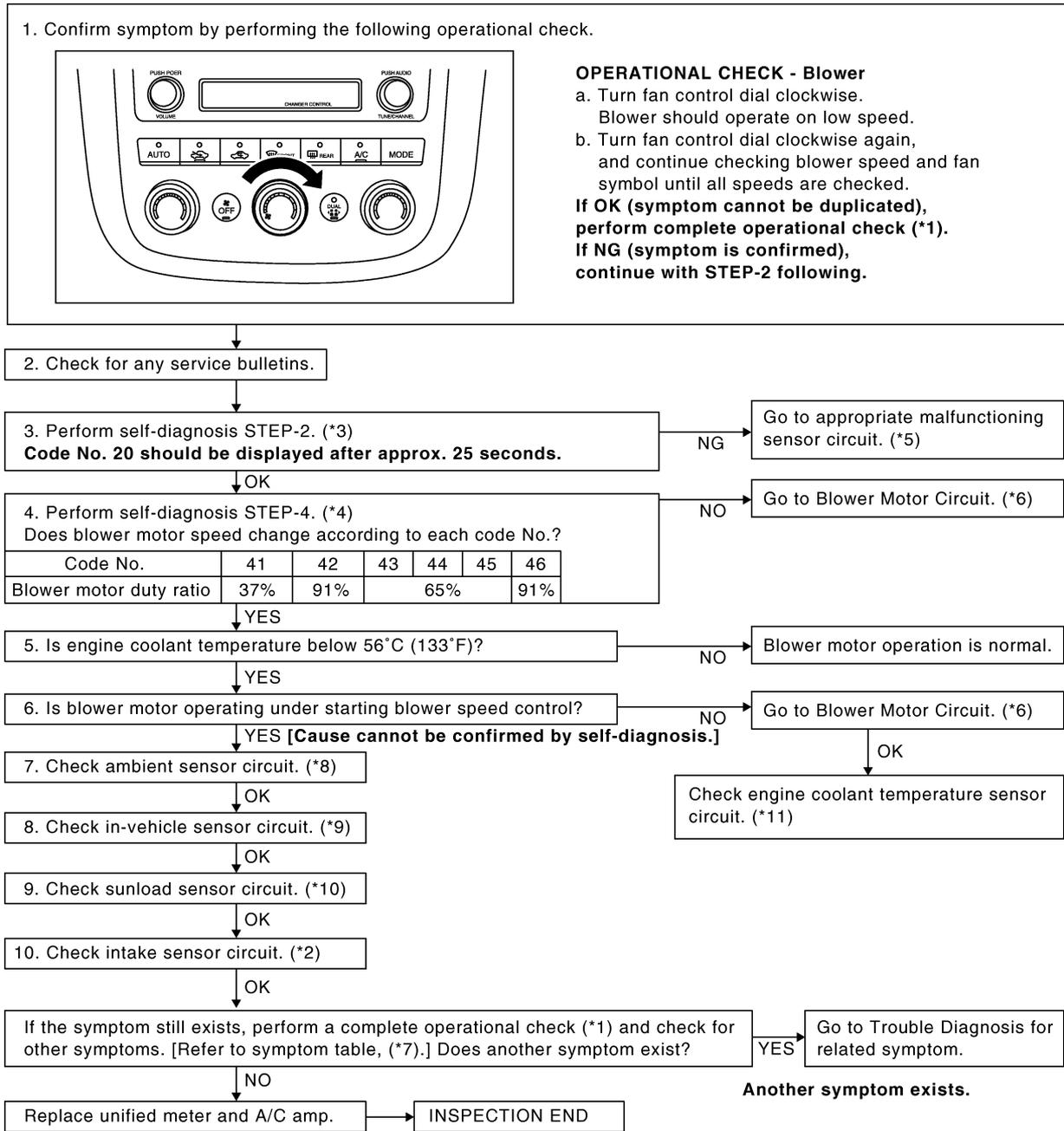
# TROUBLE DIAGNOSIS

NJS000B4

## Blower Motor Circuit

SYMPTOM: Blower motor operation is malfunctioning.

### INSPECTION FLOW



SJIA1161E

\*1 [ATC-55. "Operational Check"](#)

\*2 [ATC-104. "Intake Sensor Circuit"](#)

\*3 [ATC-48. "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 4.

\*4 [ATC-48. "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 6.

\*5 [ATC-48. "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 13.

\*6 [ATC-74. "DIAGNOSIS PROCEDURE FOR BLOWER MOTOR"](#)

\*7 [ATC-36. "SYMPTOM TABLE"](#)

\*8 [ATC-95. "Ambient Sensor Circuit"](#)

\*9 [ATC-98. "In-vehicle Sensor Circuit"](#)

\*10 [ATC-101. "Sunload Sensor Circuit"](#)

\*11 [EC-209. "DTC P0117, P0118 ECT SENSOR"](#)

# TROUBLE DIAGNOSIS

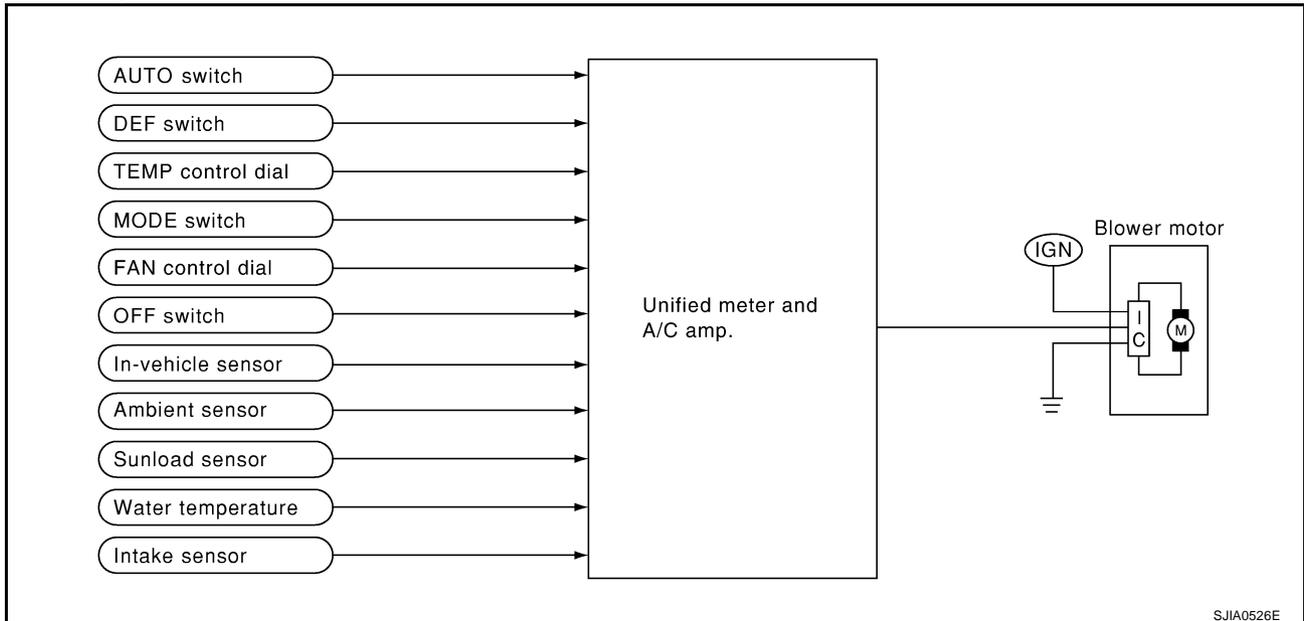
## SYSTEM DESCRIPTION

### Component Parts

Fan speed control system components are:

- Unified meter and A/C amp.
- A/C LAN system (PBR built-in mode door motor, intake door motor and air mix door motor)
- In-vehicle sensor
- Ambient sensor
- Sunload sensor
- Intake sensor

### System Operation



### Automatic Mode

In the automatic mode, the blower motor speed is calculated by the unified meter and A/C amp. based on the input from the PBR, in-vehicle sensor, sunload sensor, intake sensor and ambient sensor.

When the air flow is increased, the duty ratio of the blower fan motor's drive signal is changed at 8%/sec. to prevent a sudden increase in air flow.

In addition to manual air flow control and the usual automatic air flow control, starting air flow control, low water temperature starting control and high passenger compartment temperature starting control are available.

### Starting Fan Speed Control

Start up from COLD SOAK Condition (Automatic mode)

In a cold start up condition where the engine coolant temperature is below 56°C (133°F), the blower will not operate for a short period of time (up to 150 seconds). The exact start delay time varies depending on the ambient and engine coolant temperature.

In the most extreme case (very low ambient) the blower starting delay will be 150 seconds as described above. After this delay, the blower will operate at low speed until the engine coolant temperature rises above 56°C (133°F), and then the blower speed will increase to the objective speed.

Start up from usual or HOT SOAK Condition (Automatic mode)

The blower will begin operation momentarily after the AUTO switch is pressed. The blower speed will gradually rise to the objective speed over a time period of 3 seconds or less (actual time depends on the objective blower speed).

A  
B  
C  
D  
E  
F  
G  
H  
I  
ATC

K  
L  
M

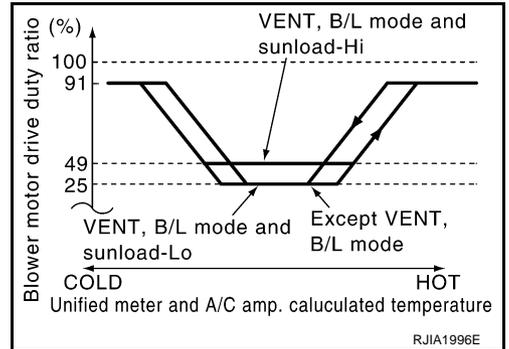
# TROUBLE DIAGNOSIS

## Blower Speed Compensation

### Sunload

When the in-vehicle temperature and the set temperature are very close, the blower will be operating at low speed. The low speed will vary depending on the sunload. During conditions of low or no sunload, the blower speed is at duty ratio 25%. During high sunload conditions, the unified meter and A/C amp. raise the blower speed (duty ratio 49%).

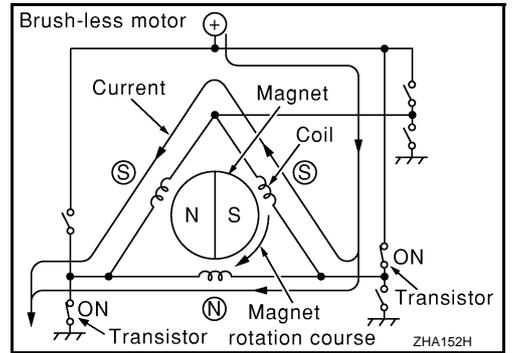
## Fan Speed Control Specification



## COMPONENT DESCRIPTION

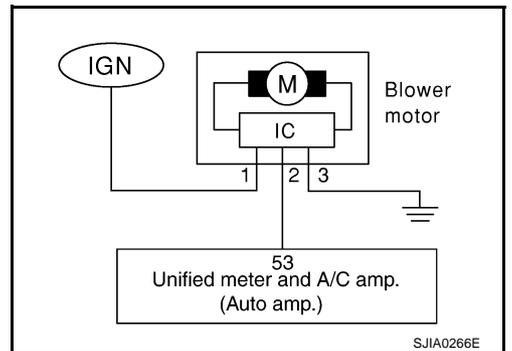
### Brush-less Motor

The blower motor utilizes a brush-less motor with a rotating magnet. Quietness is improved over previous motors where the brush was the point of contact and the coil rotated.



## DIAGNOSIS PROCEDURE FOR BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning.



# TROUBLE DIAGNOSIS

## 1. CHECK POWER SUPPLY FOR BLOWER MOTOR

1. Disconnect blower motor connector.
2. Turn ignition switch ON.
3. Check voltage between blower motor harness connector M70 terminal 1 and ground.

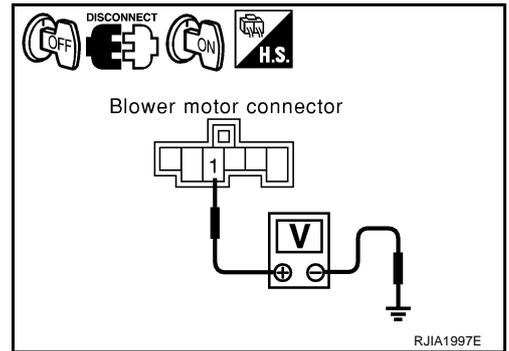
**1 – Ground** : **Battery voltage**

OK or NG

OK >> GO TO 2.

NG >> Check power supply circuit and 15A fuses [Nos. 10 and 11, located in the fuse block (J/B)]. Refer to [PG-69](#), "[FUSE BLOCK - JUNCTION BOX \(J/B\)](#)".

- If fuse are OK, check harness for open circuit. Repair or replace if necessary.
- If fuse are NG, check harness for short circuit and replace fuse.



## 2. CHECK BLOWER MOTOR GROUND CIRCUIT

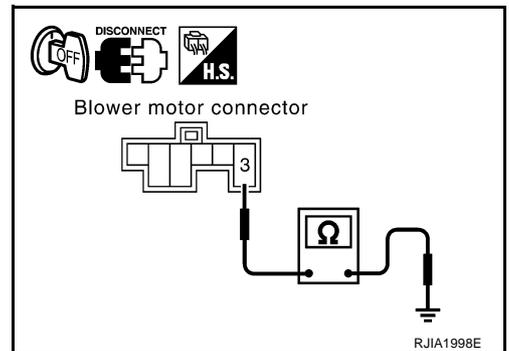
1. Turn ignition switch OFF.
2. Check continuity between blower motor harness connector M70 terminal 3 and ground.

**3 – Ground** : **Continuity should exist.**

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.



## 3. CHECK CIRCUIT CONTINUITY BETWEEN BLOWER MOTOR AND UNIFIED METER AND A/C AMP.

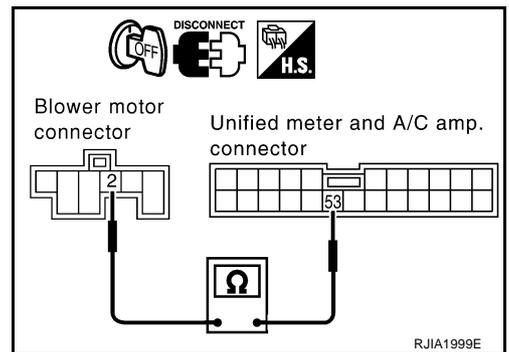
1. Disconnect unified meter and A/C amp. connector.
2. Check continuity between blower motor harness connector M70 terminal 2 and unified meter and A/C amp. harness connector M51 terminal 53.

**2 – 53** : **Continuity should exist.**

OK or NG

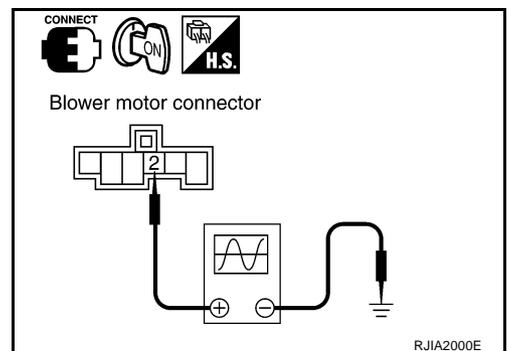
OK >> GO TO 4.

NG >> Repair harness or connector.



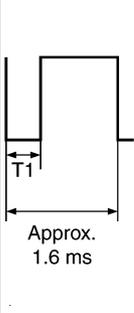
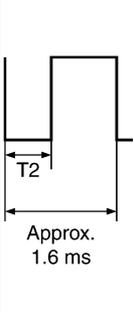
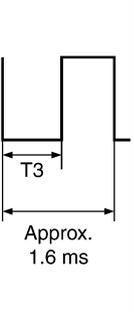
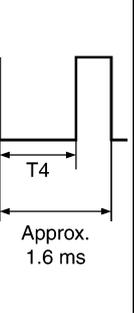
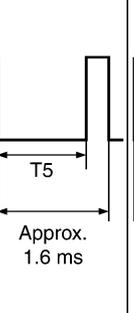
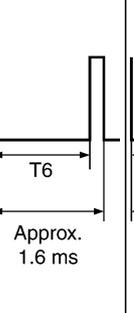
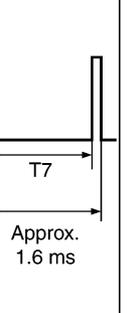
## 4. CHECK UNIFIED METER AND A/C AMP. OUTPUT SIGNAL

1. Reconnect blower motor connector and unified meter and A/C amp. connector.
2. Turn ignition switch ON.
3. Change the fan speed from Lo to Hi, and check the duty ratios between the blower motor harness connector M70 terminal 2



# TROUBLE DIAGNOSIS

and ground by using an oscilloscope. Normal terminal 2 drive signal duty ratios are shown in the table below.

Blower fan speed	1st	2nd	3rd	4th	5th	6th	7th
Blower motor connector M70 terminal No. 2 (Oscilloscope)							
Duty ratio	Approx. 21 - 31%	Approx. 33 - 39%	Approx. 41 - 47%	Approx. 49 - 59%	Approx. 61 - 71%	Approx. 73 - 83%	Approx. 85 - 91%

NOTE: Duty ratio =  $\frac{T_x}{\text{Approx. } 1.6 \text{ ms}} \times 100 (\%)$

RJIA1792E

### OK or NG

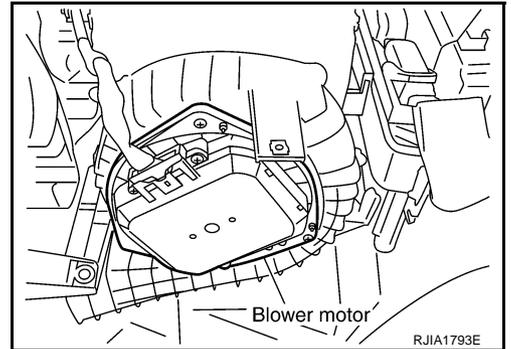
- OK >> Replace blower motor after confirming the fan air flow does not change.
- NG >> Replace unified meter and A/C amp.

### COMPONENT INSPECTION

#### Blower Motor

Confirm smooth rotation of the blower motor.

- Ensure that there are no foreign particles inside the blower unit.



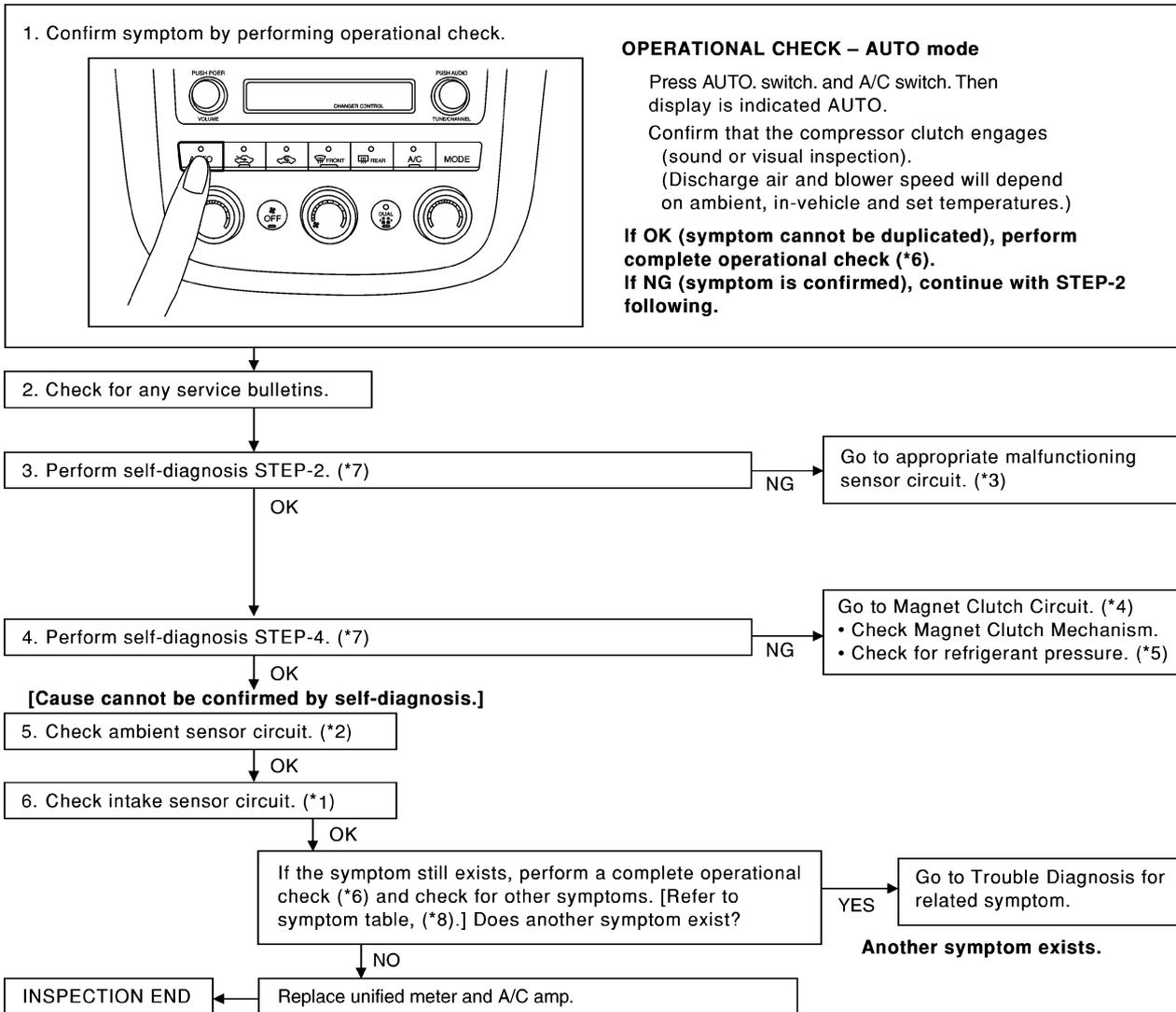
# TROUBLE DIAGNOSIS

NJS000B5

## Magnet Clutch Circuit

SYMPTOM: Magnet clutch does not engage.

### INSPECTION FLOW



SJIA1162E

\*1 [ATC-104. "Intake Sensor Circuit"](#)

\*2 [ATC-95. "Ambient Sensor Circuit"](#)

\*3 [ATC-48. "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 13.

\*4 [ATC-78. "DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH"](#)

\*5 [ATC-88. "TROUBLE DIAGNOSIS FOR UNUSUAL PRESSURE"](#)

\*6 [ATC-55. "Operational Check"](#)

\*7 [ATC-48. "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 4 to 6.

\*8 [ATC-36. "SYMPTOM TABLE"](#)

# TROUBLE DIAGNOSIS

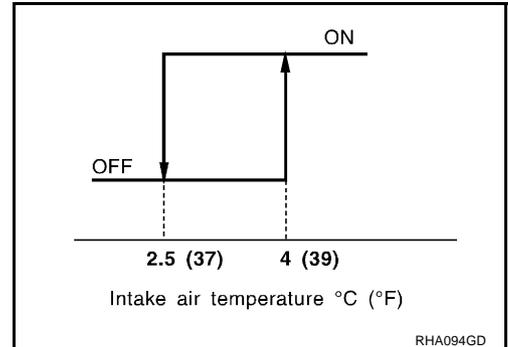
## SYSTEM DESCRIPTION

Unified meter and A/C amp. controls compressor operation by ambient temperature and signal from ECM.

### Low Temperature Protection Control

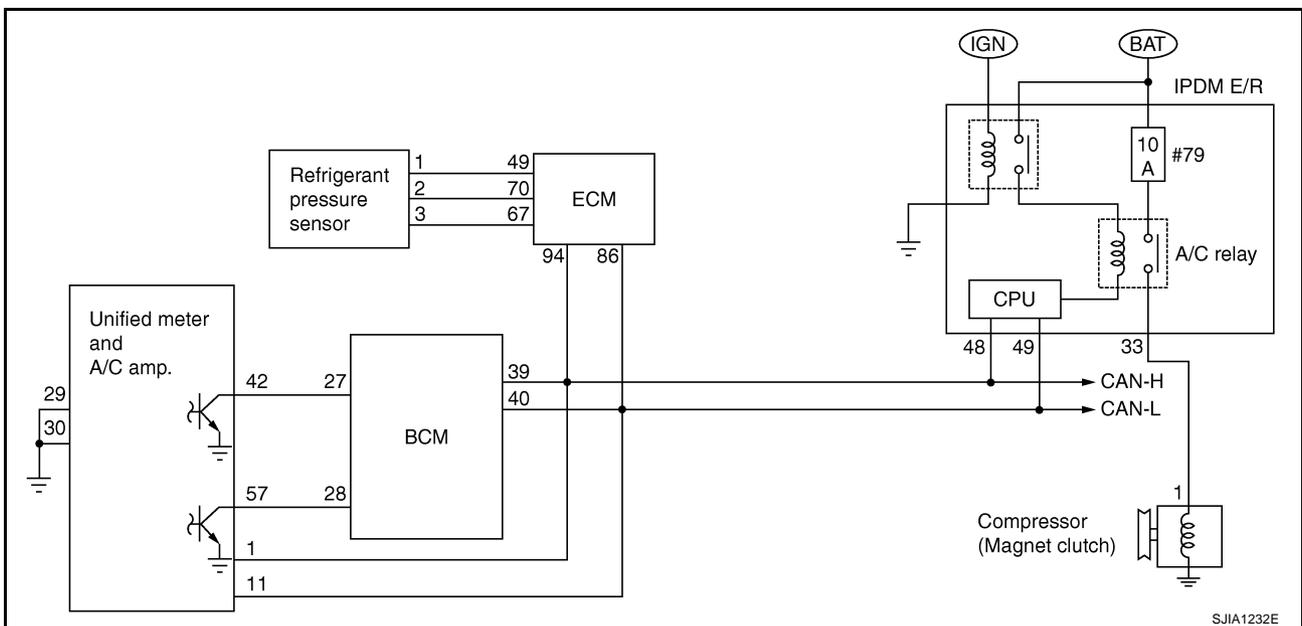
Unified meter and A/C amp. will turn the compressor ON or OFF as determined by a signal detected by intake sensor.

When intake air temperature is higher than 4°C (39°F), the compressor turns ON. The compressor turns OFF when intake air temperature is lower than 2.5°C (37°F).



## DIAGNOSIS PROCEDURE FOR MAGNET CLUTCH

SYMPTOM: Magnet clutch does not engage when A/C switch is ON.



### 1. CHECK INTAKE SENSOR CIRCUIT

Check intake sensor. Refer to [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) , see No. 11.

OK or NG

OK >> GO TO 2.

NG >> Malfunctioning intake sensor: Refer to [ATC-104, "Intake Sensor Circuit"](#) .

### 2. PERFORM AUTO ACTIVE TEST

Refer to [PG-21, "Auto Active Test"](#) .

Does the magnet clutch operate?

YES >> ●  WITH CONSULT-II: GO TO 5.

●  WITHOUT CONSULT-II: GO TO 6.

NO >> Check 10A fuse (No. 79, located in IPDM E/R). Refer to [PG-25, "IPDM E/R Terminal Arrangement"](#) and GO TO 3.

# TROUBLE DIAGNOSIS

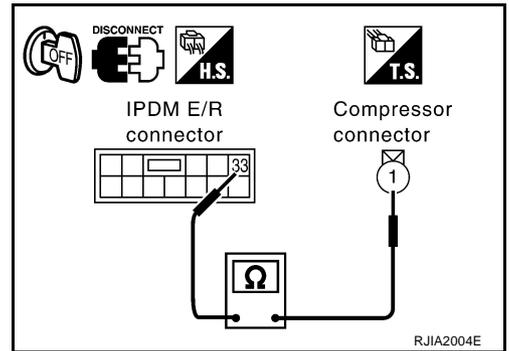
## 3. CHECK CIRCUIT CONTINUITY BETWEEN IPDM E/R AND COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector and compressor connector.
3. Check continuity between IPDM E/R harness connector E8 terminal 33 and compressor harness connector F28 terminal 1.

**33 – 1 : Continuity should exist.**

OK or NG

- OK >> GO TO 4.  
 NG >> Repair harness or connector.

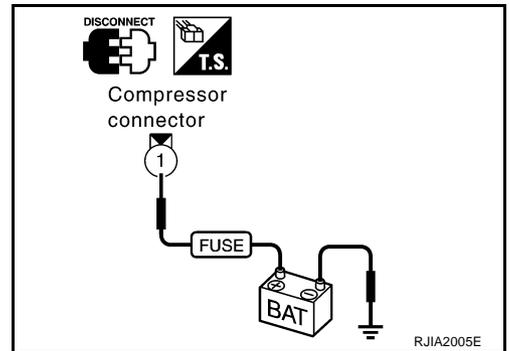


## 4. CHECK MAGNET CLUTCH CIRCUIT

Check for operation sound when applying battery voltage direct current to terminal.

OK or NG

- OK >> 1. Replace IPDM E/R.  
 2. Go to self-diagnosis procedure [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-4. Confirm that magnet clutch operation normal.
- NG >> 1. Replace compressor.  
 2. Go to self-diagnosis procedure [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-4. Confirm that magnet clutch operation normal.



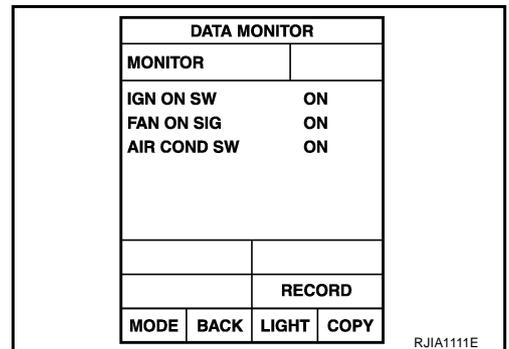
## 5. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

Check compressor ON/OFF signal. Refer to [ATC-35, "CONSULT-II Function \(BCM\)"](#).

**A/C SW ON : AIR COND SW ON**  
**A/C SW OFF : AIR COND SW OFF**

OK or NG

- OK >> GO TO 8.  
 NG >> GO TO 6.



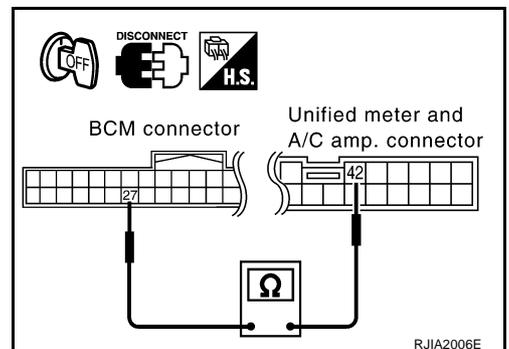
## 6. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect BCM connector and unified meter and A/C amp. connector.
3. Check continuity between BCM harness connector M34 terminal 27 and unified meter and A/C amp. harness connector M51 terminal 42.

**27 – 42 : Continuity should exist.**

OK or NG

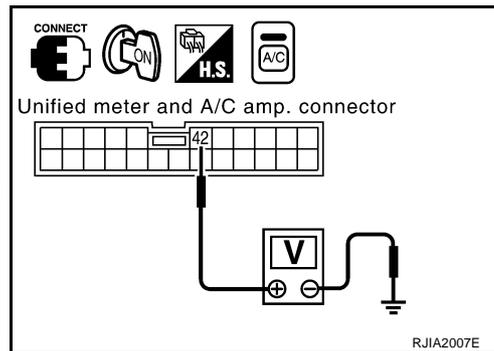
- OK >> GO TO 7.  
 NG >> Repair harness or connector.



# TROUBLE DIAGNOSIS

## 7. CHECK VOLTAGE FOR UNIFIED METER AND A/C AMP. (COMPRESSOR ON SIGNAL)

1. Reconnect BCM connector and unified meter and A/C amp. connector.
2. Turn ignition switch ON.
3. Check voltage between unified meter and A/C amp. harness connector M51 terminal 42 and ground.



Terminals		(-)	Condition	Voltage
(+)				
Unified meter and A/C amp. connector	Terminal No.			
M51	42	Ground	A/C switch: ON (Blower motor operates.)	Approx. 0 V
			OFF switch: ON (A/C system: OFF)	Approx. 5 V

### OK or NG

OK >> GO TO 8.

NG-1 >> If the voltage is approx. 5 V when A/C switch is ON: Replace unified meter and A/C amp.

NG-2 >> If the voltage is approx. 0 V when A/C switch is OFF: Replace BCM.

## 8. CHECK REFRIGERANT PRESSURE SENSOR

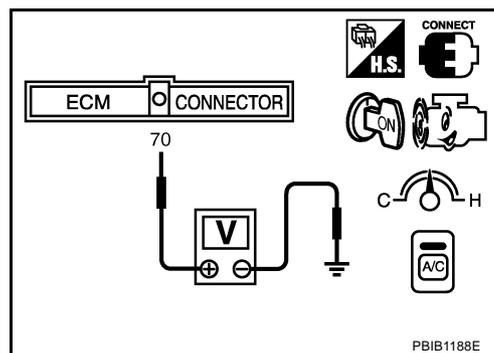
### ☑ WITH CONSULT-II

1. Start the engine.
2. Check voltage of refrigerant pressure sensor. Refer to [EC-127, "CONSULT-II Reference Value in Data Monitor"](#).

### ☒ WITHOUT CONSULT-II

1. Start the engine.
2. Check voltage between ECM harness connector F101 terminal 70 and ground.

Terminals		(-)	Condition	Voltage
(+)				
ECM connector	Terminal No.			
F101	70	Ground	A/C switch: ON (Blower motor operates.)	Approx. 1.0 - 4.0 V



### OK or NG

OK >> ● ☑ WITH CONSULT-II: GO TO 9.

● ☒ WITHOUT CONSULT-II: GO TO 10.

NG >> Refer to [EC-653, "REFRIGERANT PRESSURE SENSOR"](#).

# TROUBLE DIAGNOSIS

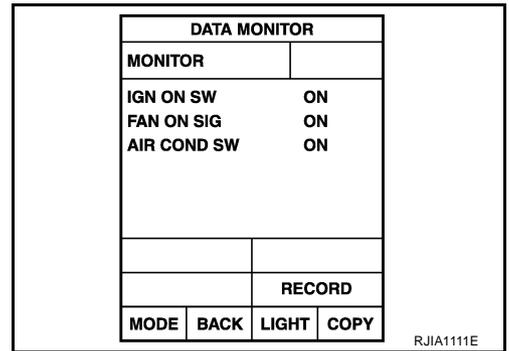
## 9. CHECK BCM INPUT (FAN ON) SIGNAL

Check FAN ON/OFF signal. Refer to [ATC-35, "CONSULT-II Function \(BCM\)"](#).

**FAN CONTROL DIAL ON : FAN ON SIG ON**  
**FAN CONTROL DIAL OFF : FAN ON SIG OFF**

OK or NG

OK >> GO TO 12.  
 NG >> GO TO 10.



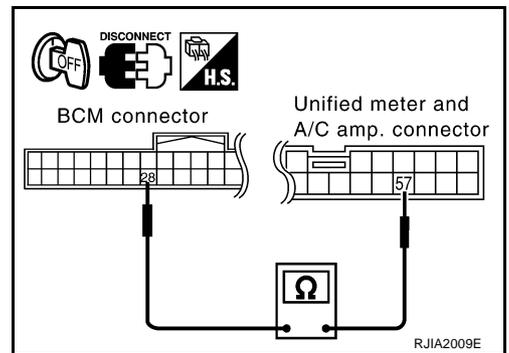
## 10. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND UNIFIED METER AND A/C AMP.

- Turn ignition switch OFF.
- Disconnect BCM connector and unified meter and A/C amp. connector.
- Check continuity between BCM harness connector M34 terminal 28 and unified meter and A/C amp. harness connector M51 terminal 57.

**28 – 57 : Continuity should exist.**

OK or NG

OK >> GO TO 11.  
 NG >> Repair harness or connector.



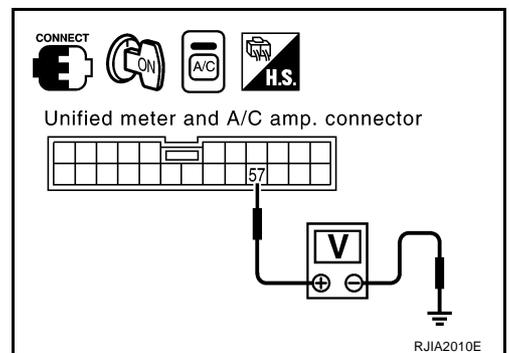
## 11. CHECK VOLTAGE FOR UNIFIED METER AND A/C AMP. (FAN ON SIGNAL)

- Reconnect BCM connector and unified meter and A/C amp. connector.
- Turn ignition switch ON.
- Check voltage between unified meter and A/C amp. harness connector M51 terminal 57 and ground.

Terminals			Condition	Voltage
(+)		(-)		
Unified meter and A/C amp. connector	Terminal No.			
M51	57	Ground	Fan control dial: ON (Blower motor operates.)	Approx. 0 V
			Fan control dial: OFF	Approx. 5 V

OK or NG

OK >> GO TO 12.  
 NG-1 >> If the voltage is approx. 5 V when blower motor is ON: Replace unified meter and A/C amp.  
 NG-2 >> If the voltage is approx. 0 V when blower motor is OFF: Replace BCM.



A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# TROUBLE DIAGNOSIS

## 12. CHECK CAN COMMUNICATION

Check CAN communication. Refer to [BCS-13, "CAN Communication Inspection Using CONSULT-II \(Self-Diagnosis\)"](#) .

- BCM – ECM
- ECM – IPDM E/R
- ECM – Unified meter and A/C amp.

OK or NG

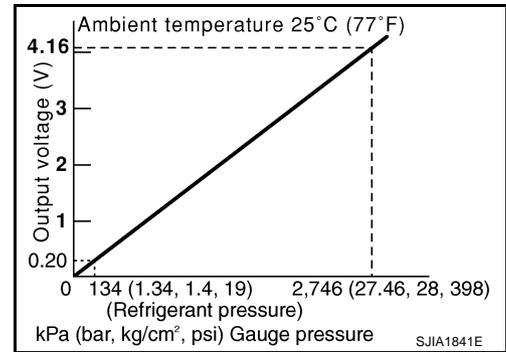
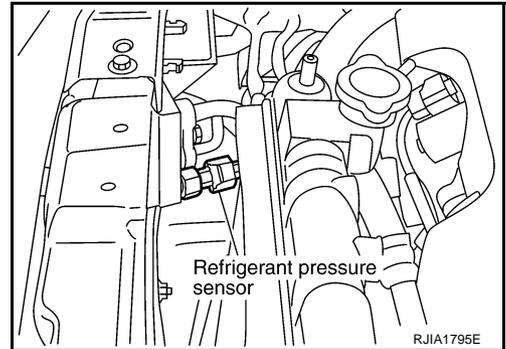
OK >> Replace ECM.

NG >> Repair or replace malfunctioning part(s).

### COMPONENT INSPECTION

#### Refrigerant Pressure Sensor

The refrigerant pressure sensor is attached to the condenser. Make sure that the A/C refrigerant pressure and the sensor output voltage are within the specified range as shown in the A/C operating condition figure. Refer to [EC-653, "REFRIGERANT PRESSURE SENSOR"](#) .



# TROUBLE DIAGNOSIS

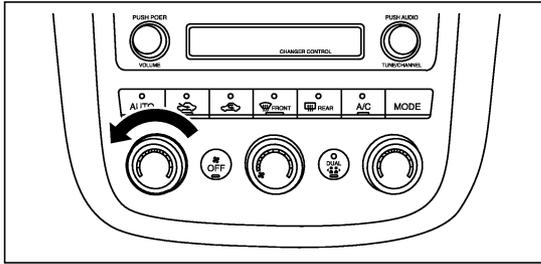
NJS000B6

## Insufficient Cooling

SYMPTOM: Insufficient cooling

### INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



#### OPERATIONAL CHECK – Temperature decrease

- Turn temperature control dial counterclockwise until 18°C (60°F) is displayed.
- Check for cold air at discharge air outlets.

**If OK (symptom cannot be duplicated), perform complete operational check (\*10).**  
**If NG (symptom is confirmed), continue with STEP-2 following.**

2. Check for any service bulletins.

3. Perform self-diagnosis STEP-2. (\*1)

NG → Go to appropriate malfunctioning sensor circuit. (\*5)

4. Perform self-diagnosis STEP-4. (\*1)

NG → **Go to appropriate malfunctioning items.**  
 • Check LAN system circuit. (\*6)  
 • Check blower motor circuit. (\*7)  
 • Check magnet clutch circuit. (\*8)

5. Check compressor belt tension. Refer to (\*12), "Checking Drive Belts".

NG → Adjust or replace compressor belt.

6. Check air mix door operation. (\*2)

NG → Adjust or replace air mix door control linkage.

7. Check cooling fan motor operation.

NG → Refer to (\*13), "System Description".

8. Before connecting Recovery / Recycling Recharging equipment to vehicle, check Recovery / Recycling Recharging equipment gauges. No refrigerant pressure should be displayed. If NG, recover refrigerant from equipment lines.

9. Confirm refrigerant purity in supply tank using Recovery / Recycling Recharging equipment with refrigerant identifier.

NG → Refer to Contaminated refrigerant. (\*11)

10. Connect Recovery / Recycling Recharging equipment to vehicle. Confirm refrigerant purity in vehicle A/C system using Recovery / Recycling Recharging equipment with refrigerant identifier.

NG → Refer to Contaminated refrigerant. (\*11)

11. Check for evaporator core freeze up. (Does not freeze up.)

NG (Freeze up.) → Perform performance test diagnosis. Refer to (\*9).

12. Check refrigeration cycle pressure with manifold gauge connected. Refer to (\*3).

NG → Perform performance test diagnosis. Refer to (\*9).

13. Check ducts for air leaks.

NG → Repair air leaks.

14. Perform temperature setting trimmer. (\*4)  
 (1) Set up AUXILIARY MECHANISM mode in self-diagnosis.  
 (2) Turn temperature control dial (driver side) counterclockwise as desired.

INSPECTION END

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

SJIA1230E

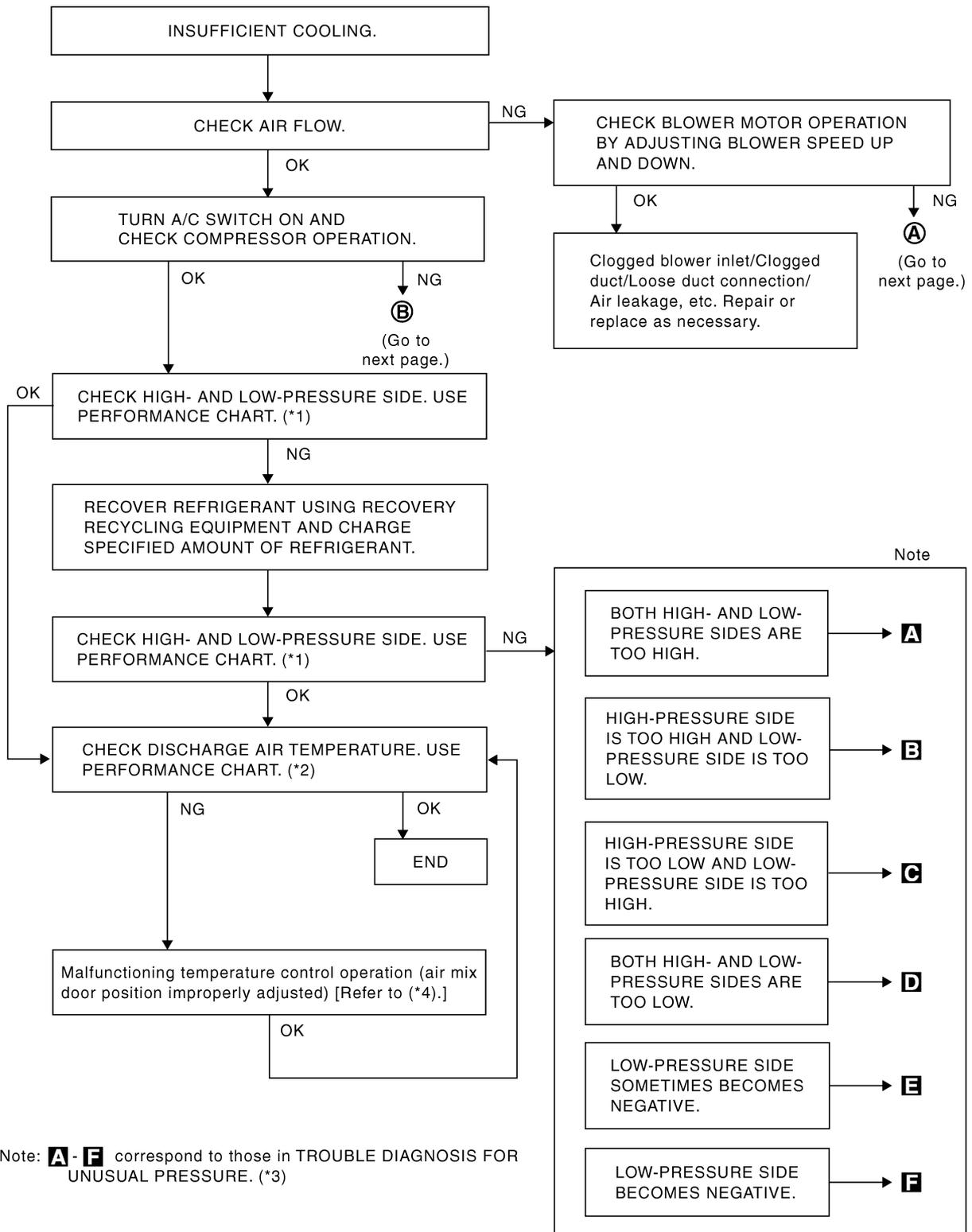
## TROUBLE DIAGNOSIS

---

- \*1 [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 4 to 6.
- \*2 [ATC-66, "Air Mix Door Motor Circuit"](#)
- \*3 [ATC-87, "Test Reading"](#)
- \*4 [ATC-53, "AUXILIARY MECHANISM: TEMPERATURE SETTING TRIMMER"](#)
- \*5 [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 13.
- \*6 [ATC-59, "LAN System Circuit"](#)
- \*7 [ATC-72, "Blower Motor Circuit"](#)
- \*8 [ATC-77, "Magnet Clutch Circuit"](#)
- \*9 [ATC-85, "PERFORMANCE TEST DIAGNOSIS"](#)
- \*10 [ATC-55, "Operational Check"](#)
- \*11 [ATC-6, "CONTAMINATED REFRIGERANT"](#)
- \*12 [EM-13, "Checking Drive Belts"](#)
- \*13 [EC-502, "SYSTEM DESCRIPTION"](#)

# TROUBLE DIAGNOSIS

## PERFORMANCE TEST DIAGNOSIS



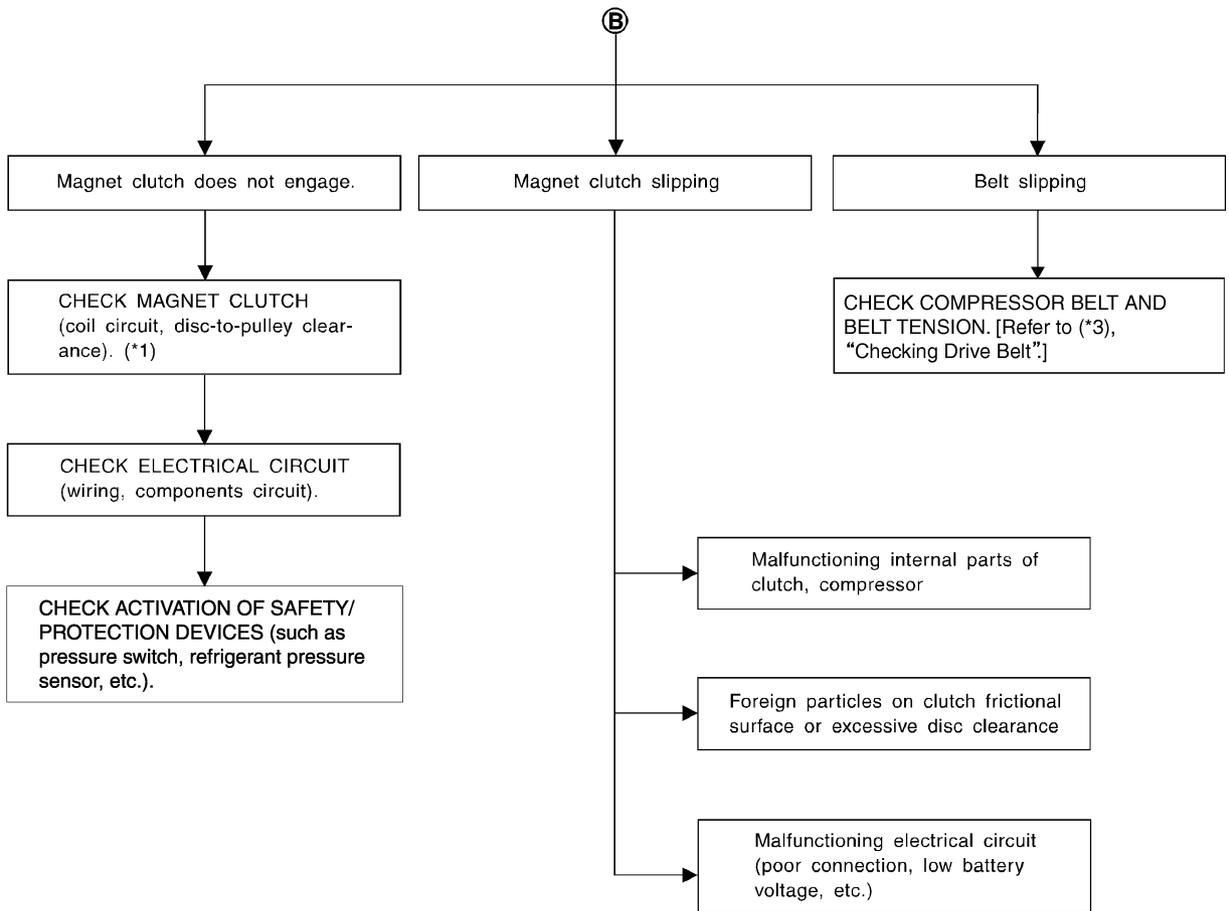
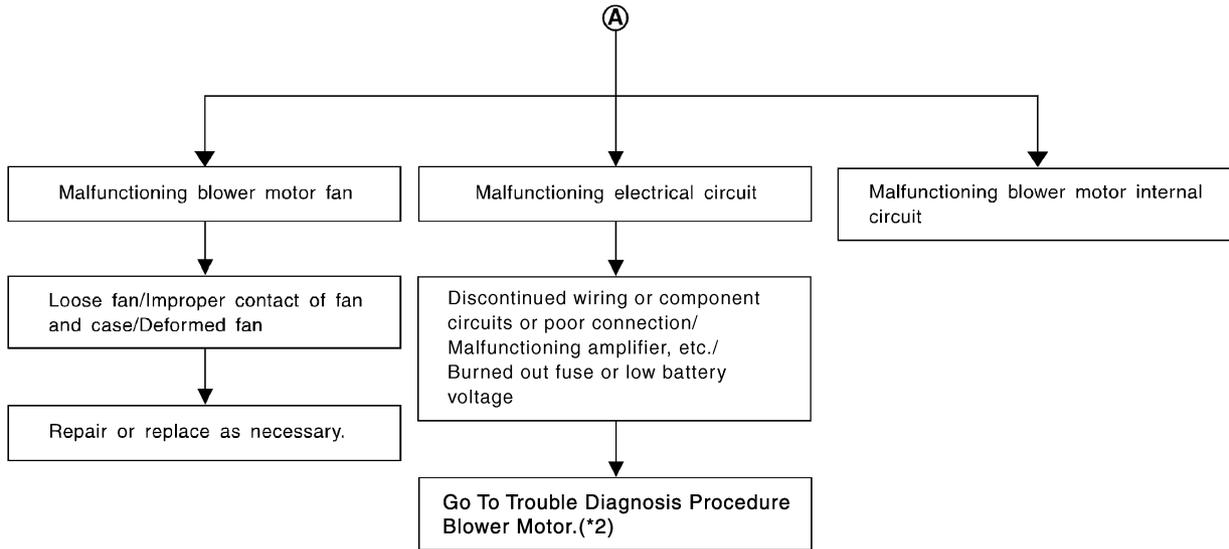
Note: **A** - **F** correspond to those in TROUBLE DIAGNOSIS FOR UNUSUAL PRESSURE. (\*3)

SJIA1226E

\*1 [ATC-87, "PERFORMANCE CHART"](#) \*2 [ATC-87, "PERFORMANCE CHART"](#) \*3 [ATC-88, "TROUBLE DIAGNOSIS FOR UNUSUAL PRESSURE"](#)

\*4 [ATC-66, "Air Mix Door Motor Circuit"](#)

# TROUBLE DIAGNOSIS



SJIA1642E

\*1 [ATC-135, "Check Disc to Pulley Clearance"](#)

\*2 [ATC-72, "Blower Motor Circuit"](#)

\*3 [EM-13, "Checking Drive Belts"](#)

# TROUBLE DIAGNOSIS

## PERFORMANCE CHART

### Test Condition

Testing must be performed as follows:

Vehicle condition	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door windows	Open
Hood	Open
TEMP.	Max. COLD
Mode switch	 (Ventilation) set
Recirculation (REC) switch	 (Recirculation) set
 Fan (blower) speed	Max. speed set
Engine speed	Idle speed

Operate the air conditioning system for 10 minutes before taking measurements.

### Test Reading

#### Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	20 (68)	5.3 - 6.5 (42 - 44)
	25 (77)	9.7 - 11.5 (49 - 53)
	30 (86)	13.8 - 16.3 (57 - 61)
	35 (95)	18.0 - 21.2 (64 - 70)
	40 (104)	22.2 - 25.7 (72 - 78)
60 - 70	20 (68)	6.5 - 7.7 (44 - 46)
	25 (77)	11.5 - 13.3 (53 - 56)
	30 (86)	16.3 - 18.8 (61 - 66)
	35 (95)	21.2 - 24.0 (70 - 75)
	40 (104)	25.7 - 29.2 (78 - 85)

#### Ambient Air Temperature-to-operating Pressure Table

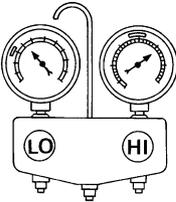
Ambient air		High-pressure (Discharge side) kPa (kg/cm <sup>2</sup> , psi)	Low-pressure (Suction side) kPa (kg/cm <sup>2</sup> , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	20 (68)	680 - 840 (6.94 - 8.57, 98.6 - 121.8)	160 - 198 (1.63 - 2.02, 23.2 - 28.7)
	25 (77)	800 - 985 (8.16 - 10.05, 116.0 - 142.8)	198 - 245 (2.02 - 2.50, 28.7 - 35.5)
	30 (86)	940 - 1,150 (9.59 - 11.73, 136.3 - 166.8)	225 - 278 (2.30 - 2.84, 32.6 - 40.3)
	35 (95)	1,160 - 1,410 (11.83 - 14.38, 168.2 - 204.5)	273 - 335 (2.78 - 3.42, 39.6 - 48.6)
	40 (104)	1,325 - 1,620 (13.52 - 16.52, 192.1 - 234.9)	325 - 398 (3.32 - 4.06, 47.1 - 57.7)

# TROUBLE DIAGNOSIS

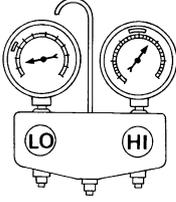
## TROUBLE DIAGNOSIS FOR UNUSUAL PRESSURE

Whenever system's high and/or low side pressure(s) is/are unusual, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (usual) pressure range. Since the standard (usual) pressure, however, differs from vehicle to vehicle, refer to above table (Ambient air temperature-to-operating pressure table).

### Both High- and Low-pressure Sides are Too High

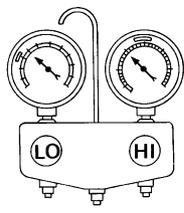
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Both high- and low-pressure sides are too high.</p>  <p style="text-align: right; font-size: small;">AC359A</p>	<p>The pressure return to normal soon after water is splashed on condenser.</p>	<p>Excessive refrigerant charge in refrigeration cycle.</p>	<p>Reduce refrigerant until specified pressure is obtained.</p>
	<p>Air suction by cooling fan is insufficient.</p>	<p>Insufficient condenser cooling performance. ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan.</p>	<ul style="list-style-type: none"> <li>● Clean condenser.</li> <li>● Check and repair cooling fan as necessary.</li> </ul>
	<ul style="list-style-type: none"> <li>● Low-pressure pipe is not cold.</li> <li>● When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm<sup>2</sup>, 28 psi). It then decreases gradually thereafter.</li> </ul>	<p>Poor heat exchange in condenser (After compressor operation stops, high-pressure decreases too slowly). ↓ Air in refrigeration cycle.</p>	<p>Evacuate repeatedly and recharge system.</p>
	<p>Engine tends to overheat.</p>	<p>Engine cooling systems malfunction.</p>	<p>Check and repair each engine cooling system.</p>
	<ul style="list-style-type: none"> <li>● An area of the low-pressure pipe is colder than areas near the evaporator outlet.</li> <li>● Low-pressure pipe is sometimes covered with frost.</li> </ul>	<ul style="list-style-type: none"> <li>● Excessive liquid refrigerant on low-pressure side.</li> <li>● Excessive refrigerant discharge flow.</li> <li>● Expansion valve is open a little compared with the specification.</li> </ul> <p>↓ Improper expansion valve adjustment.</p>	<p>Replace expansion valve.</p>

### High-pressure Side is Too High and Low-pressure Side is Too Low

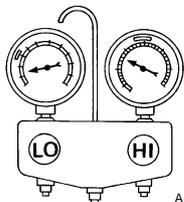
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>High-pressure side is too high and low-pressure side is too low.</p>  <p style="text-align: right; font-size: small;">AC360A</p>	<p>Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.</p>	<p>High-pressure tube or parts located between compressor and condenser are clogged or crushed.</p>	<ul style="list-style-type: none"> <li>● Check and repair or replace malfunctioning parts.</li> <li>● Check lubricant for contamination.</li> </ul>

# TROUBLE DIAGNOSIS

## High-pressure Side is Too Low and Low-pressure Side is Too High

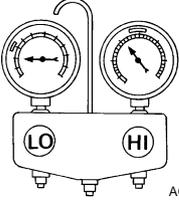
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
High-pressure side is too low and low-pressure side is too high.  AC356A	High- and low-pressure sides become equal soon after compressor operation stops.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.
	No temperature difference between high- and low-pressure sides.	Compressor pressure operation is improper. ↓ Damaged inside compressor packings.	Replace compressor.

## Both High- and Low-pressure Sides are Too Low

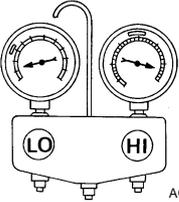
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high- and low-pressure sides are too low.  AC353A	<ul style="list-style-type: none"> <li>There is a big temperature difference between liquid tank outlet and inlet. Outlet temperature is extremely low.</li> <li>Liquid tank inlet and expansion valve are frosted.</li> </ul>	Liquid tank inside is slightly clogged.	<ul style="list-style-type: none"> <li>Replace liquid tank.</li> <li>Check lubricant for contamination.</li> </ul>
	<ul style="list-style-type: none"> <li>Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank.</li> <li>Expansion valve inlet is frosted.</li> <li>Temperature difference occurs somewhere in high-pressure side.</li> </ul>	High-pressure pipe located between liquid tank and expansion valve is clogged.	<ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>
	Expansion valve and liquid tank are warm or slightly cool when touched.	Low refrigerant charge. ↓ Leaking fittings or components.	Check refrigerant for leaks. Refer to <a href="#">ATC-144, "Checking for Refrigerant Leaks"</a> .
	There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.	Expansion valve closes a little compared with the specification. ↓ 1. Improper expansion valve adjustment. 2. Malfunctioning expansion valve. 3. Outlet and inlet may be clogged.	<ul style="list-style-type: none"> <li>Remove foreign particles by using compressed air.</li> <li>Replace expansion valve.</li> <li>Check lubricant for contamination.</li> </ul>
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	<ul style="list-style-type: none"> <li>Check and repair malfunctioning parts.</li> <li>Check lubricant for contamination.</li> </ul>
	Air flow volume is not enough or is too low.	Evaporator is frozen.	<ul style="list-style-type: none"> <li>Check intake sensor circuit. Refer to <a href="#">ATC-104, "Intake Sensor Circuit"</a> .</li> <li>Replace compressor.</li> <li>Repair evaporator fins.</li> <li>Replace evaporator.</li> <li>Refer to <a href="#">ATC-72, "Blower Motor Circuit"</a> .</li> </ul>

# TROUBLE DIAGNOSIS

## Low-pressure Side Sometimes Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side sometimes becomes negative.</p>  <p style="text-align: right; font-size: small;">AC354A</p>	<ul style="list-style-type: none"> <li>● Air conditioning system does not function and does not cyclically cool the compartment air.</li> <li>● The system constantly functions for a certain period of time after compressor is stopped and restarted.</li> </ul>	<p>Refrigerant does not discharge cyclically.</p> <p>↓</p> <p>Moisture is frozen at expansion valve outlet and inlet.</p> <p>↓</p> <p>Water is mixed with refrigerant.</p>	<ul style="list-style-type: none"> <li>● Drain water from refrigerant or replace refrigerant.</li> <li>● Replace liquid tank.</li> </ul>

## Low-pressure Side Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>Low-pressure side becomes negative.</p>  <p style="text-align: right; font-size: small;">AC362A</p>	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or wet with dew.</p>	<p>High-pressure side is closed and refrigerant does not flow.</p> <p>↓</p> <p>Expansion valve or liquid tank is frosted.</p>	<p>Leave the system at rest until no frost is present. Start it again to check whether or not the malfunction is caused by water or foreign particles.</p> <ul style="list-style-type: none"> <li>● If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant.</li> <li>● If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air).</li> <li>● If either of the above methods cannot correct the malfunction, replace expansion valve.</li> <li>● Replace liquid tank.</li> <li>● Check lubricant for contamination.</li> </ul>

# TROUBLE DIAGNOSIS

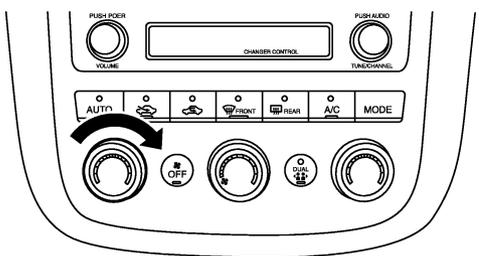
NJS000B7

## Insufficient Heating

SYMPTOM: Insufficient heating

### INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



**OPERATIONAL CHECK - Temperature increase**

- Turn temperature control dial clockwise until 32°C (90°F) is displayed.
- Check for hot air at discharge air outlets.

**If OK (symptom cannot be duplicated), perform complete operational check (\*1).**  
**If NG (symptom is confirmed), continue with STEP-2 following.**

2. Check for any service bulletins.

3. Perform self-diagnosis STEP-2. (\*3)

NG → Go to appropriate malfunctioning sensor circuit. (\*4)

OK

4. Perform self-diagnosis STEP-4. (\*3)

NG → **Go to appropriate malfunctioning items.**  
 • Check LAN system circuit. (\*5)  
 • Check blower motor circuit. (\*6)

OK

5. Check the following:

- Engine coolant level [Refer to (\*8), "Changing Engine Coolant".]
- Hoses for leaks or kinks.
- Radiator cap. Refer to (\*9), "Checking Radiator Cap".
- Air in cooling system.

NG → Repair/replace as necessary.

OK

6. Check air mix door operation.

NG → Go to Air Mix Door Motor Circuit. (\*2)

OK

7. Check ducts for air leaks.

NG → Repair leaks.

OK

8. Check the heater inlet and outlet hose temperatures by touching.

Hot inlet  
Warm outlet

Both hoses warm

Check engine coolant temperature sensor (\*7)

NG

Check heater hoses for proper installation.

NG

Repair or replace as necessary. Retest.

OK

Back flush heater core, drain and refill coolant. [Refer to (\*8), "Changing Engine Coolant".] Retest.

Hot inlet  
Warm outlet

Both hoses warm

System OK

Replace heater core. Refill engine coolant. [Refer to (\*8), "Changing Engine Coolant".] Retest.

Hot inlet  
Warm outlet

SJIA1231E

\*1 [ATC-55. "Operational Check"](#)

\*2 [ATC-66. "Air Mix Door Motor Circuit"](#)

\*3 [ATC-48. "FUNCTION CONFIRMATION PROCEDURE"](#), see No. 4 to 6.

\*4 [ATC-48. "FUNCTION CONFIRMATION PROCEDURE"](#), see No.13.

\*5 [ATC-59. "LAN System Circuit"](#)

\*6 [ATC-72. "Blower Motor Circuit"](#)

\*7 [EC-209. "DTC P0117, P0118 ECT SENSOR"](#)

\*8 [CO-9. "Changing Engine Coolant"](#)

\*9 [CO-15. "Checking Radiator Cap"](#)

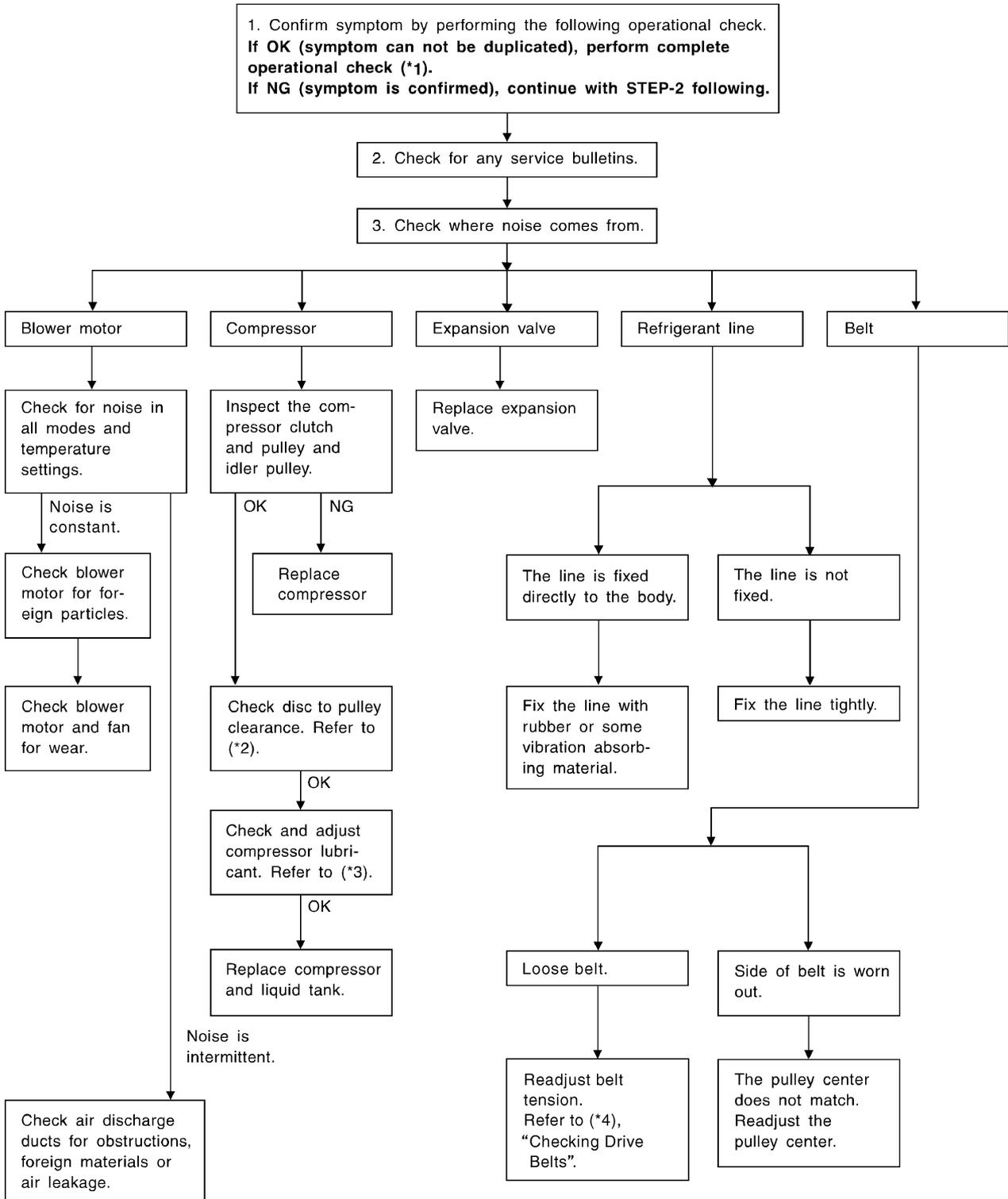
# TROUBLE DIAGNOSIS

NJS000B8

## Noise

SYMPTOM: Noise

### INSPECTION FLOW



SJIA0843E

\*1 [ATC-55, "Operational Check"](#)

\*2 [ATC-135, "Check Disc to Pulley Clearance"](#)

\*3 [ATC-22, "Maintenance of Lubricant Quantity in Compressor"](#)

\*4 [EM-13, "Checking Drive Belts"](#)

# TROUBLE DIAGNOSIS

NJS000B9

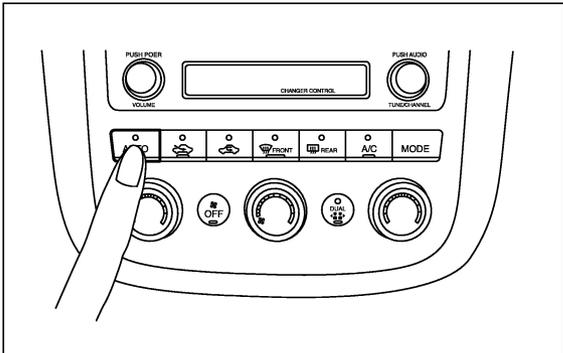
A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

## Self-diagnosis

SYMPTOM: Self-diagnosis cannot be performed.

### INSPECTION FLOW

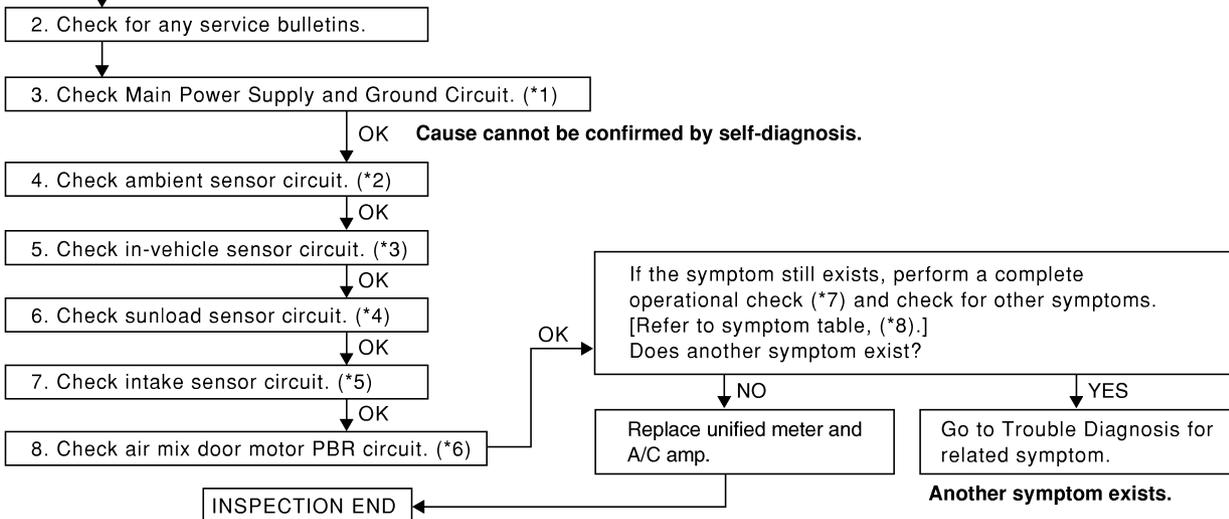
1. Confirm symptom by performing operational check.



**OPERATIONAL CHECK – AUTO mode**

Press AUTO switch and A/C switch. Then display is indicated AUTO.  
Confirm that the compressor clutch engages (Sound or visual inspection.)  
(Discharge air and blower speed will depend on ambient, in-vehicle and set temperatures.)

**If OK (symptom cannot be duplicated), perform complete operational check (\*7).  
If NG (symptom is confirmed), continue with STEP-2 following.**



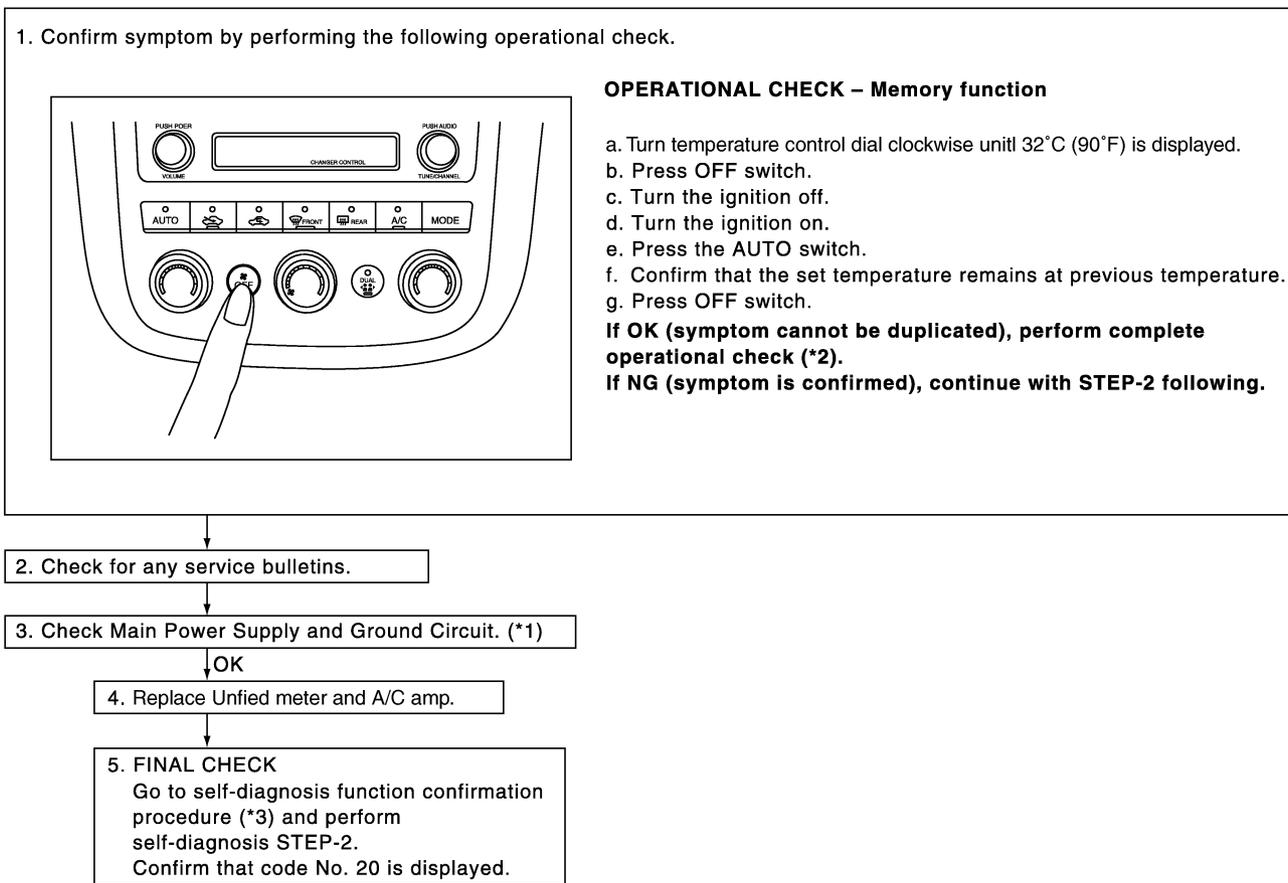
ATC

- SJIA1163E
- \*1 [ATC-57, "Power Supply and Ground Circuit for Auto Amp."](#)
  - \*2 [ATC-95, "Ambient Sensor Circuit"](#)
  - \*3 [ATC-98, "In-vehicle Sensor Circuit"](#)
  - \*4 [ATC-101, "Sunload Sensor Circuit"](#)
  - \*5 [ATC-104, "Intake Sensor Circuit"](#)
  - \*6 [ATC-68, "Air Mix Door Motor PBR Circuit"](#)
  - \*7 [ATC-55, "Operational Check"](#)
  - \*8 [ATC-36, "SYMPTOM TABLE"](#)

## Memory Function

SYMPTOM: Memory function does not operate.

### INSPECTION FLOW



\*1 [ATC-57. "Power Supply and Ground Circuit for Auto Amp."](#) \*2 [ATC-55. "Operational Check"](#)

\*3 [ATC-48. "FUNCTION CONFIRMATION PROCEDURE"](#)

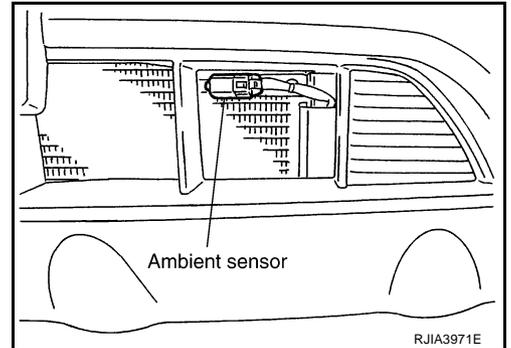
# TROUBLE DIAGNOSIS

NJS000BB

## Ambient Sensor Circuit COMPONENT DESCRIPTION

### Ambient Sensor

The ambient sensor is attached on the radiator core support (left side). It detects ambient temperature and converts it into a resistance value which is then input into the unified meter and A/C amp.



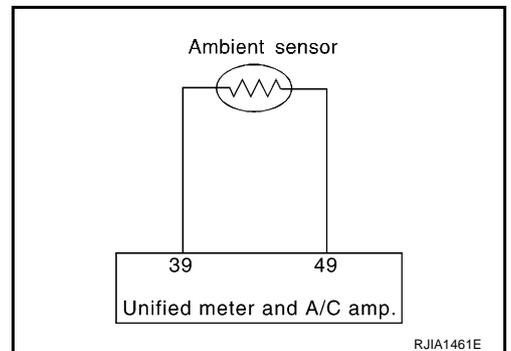
### AMBIENT TEMPERATURE INPUT PROCESS

The unified meter and A/C amp. includes a processing circuit for the ambient sensor input. However, when the temperature detected by the ambient sensor increases quickly, the processing circuit retards the unified meter and A/C amp. function. It only allows the unified meter and A/C amp. to recognize an ambient temperature increase of 0.33°C (0.6°F) per 100 seconds.

As an example, consider stopping for a few minutes after high speed driving. Although the actual ambient temperature has not changed, the temperature detected by the ambient sensor will increase. This is because the heat from the engine compartment can radiate to the front grille area, location of the ambient sensor.

### DIAGNOSIS PROCEDURE FOR AMBIENT SENSOR

SYMPTOM: Ambient sensor circuit is open or shorted. (21 or – 21 is indicated on unified meter and A/C amp. As a result of performing self-diagnosis STEP-2.)



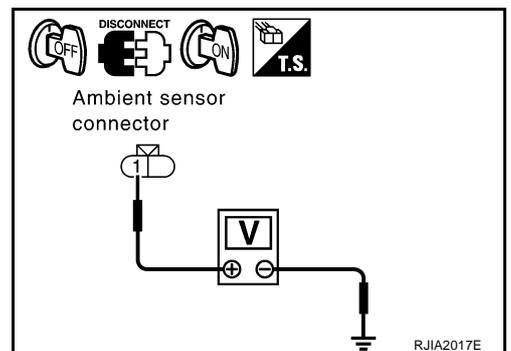
## 1. CHECK VOLTAGE BETWEEN AMBIENT SENSOR AND GROUND

1. Disconnect ambient sensor connector.
2. Turn ignition switch ON.
3. Check voltage between ambient sensor harness connector E15 terminal 1 and ground.

**1 – Ground : Approx. 5 V**

OK or NG

- OK >> GO TO 2.
- NG >> GO TO 4.



# TROUBLE DIAGNOSIS

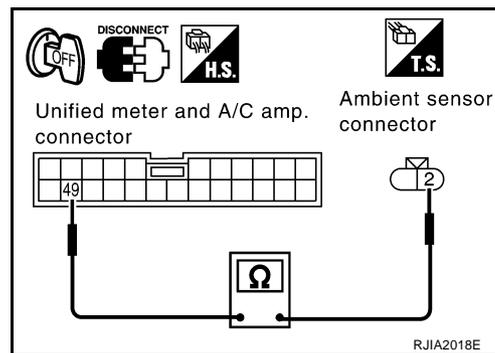
## 2. CHECK CIRCUIT CONTINUITY BETWEEN AMBIENT SENSOR AND UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between ambient sensor harness connector E15 terminal 2 and unified meter and A/C amp. harness connector M51 terminal 49.

**2 – 49** : Continuity should exist.

OK or NG

- OK >> GO TO 3.  
NG >> Repair harness or connector.



## 3. CHECK AMBIENT SENSOR

Refer to [ATC-97, "Ambient Sensor"](#).

OK or NG

- OK >> 1. Replace unified meter and A/C amp.  
2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.
- NG >> 1. Replace ambient sensor.  
2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.

## 4. CHECK CIRCUIT CONTINUITY BETWEEN AMBIENT SENSOR AND UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between ambient sensor harness connector E15 terminal 1 and unified meter and A/C amp. harness connector M51 terminal 39.

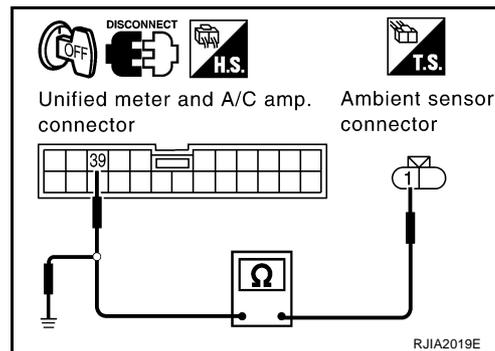
**1 – 39** : Continuity should exist.

4. Check continuity between ambient sensor harness connector E15 terminal 1 and ground.

**1 – Ground** : Continuity should not exist.

OK or NG

- OK >> 1. Replace unified meter and A/C amp.  
2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP -2. Confirm that code No. 20 is displayed.
- NG >> Repair harness or connector.



# TROUBLE DIAGNOSIS

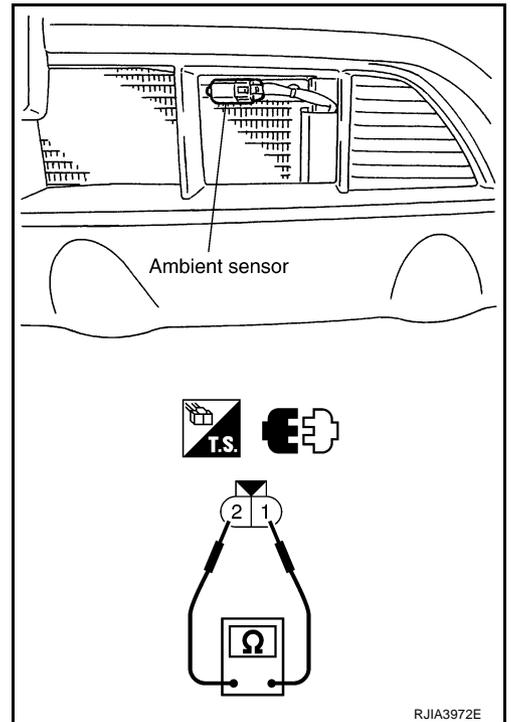
## COMPONENT INSPECTION

### Ambient Sensor

After disconnecting ambient sensor connector E15, measure resistance between terminals 1 and 2 at sensor side. Refer to the table below.

Temperature °C (°F)	Resistance kΩ
-15 (5)	12.73
-10 (14)	9.92
-5 (23)	7.80
0 (32)	6.19
5 (41)	4.95
10 (50)	3.99
15 (59)	3.24
20 (68)	2.65
25 (77)	2.19
30 (86)	1.81
35 (95)	1.51
40 (104)	1.27
45 (113)	1.07

If NG, replace ambient sensor.



A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

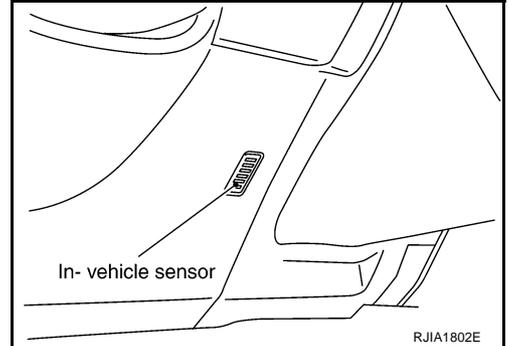
# TROUBLE DIAGNOSIS

## In-vehicle Sensor Circuit COMPONENT DESCRIPTION

NJS000BC

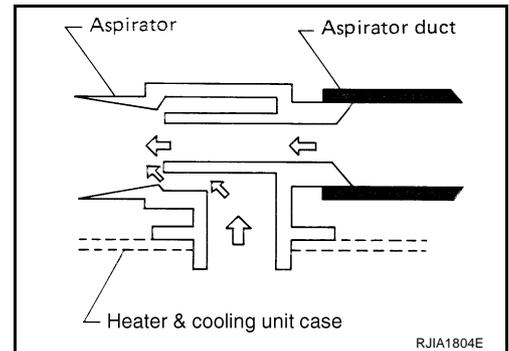
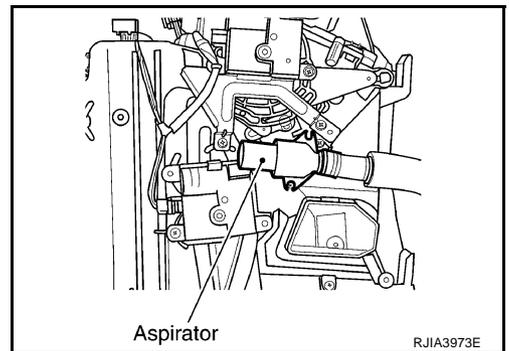
### In-vehicle Sensor

The in-vehicle sensor is located on instrument driver lower panel. It converts variations in temperature of compartment air drawn from the aspirator into a resistance value. It is then input into the unified meter and A/C amp.



### Aspirator

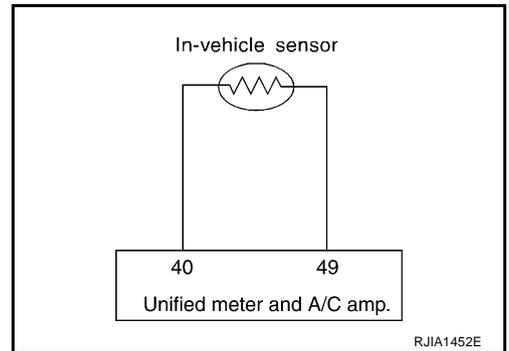
The aspirator is located on driver's side of heater & cooling unit assembly. It produces vacuum pressure due to air discharged from the heater & cooling unit assembly, continuously taking compartment air in the aspirator.



# TROUBLE DIAGNOSIS

## DIAGNOSIS PROCEDURE FOR IN-VEHICLE SENSOR

SYMPTOM: In-vehicle sensor circuit is open or shorted. (22 or -22 is indicated on unified meter and A/C amp. as a result of performing self-diagnosis STEP-2.)



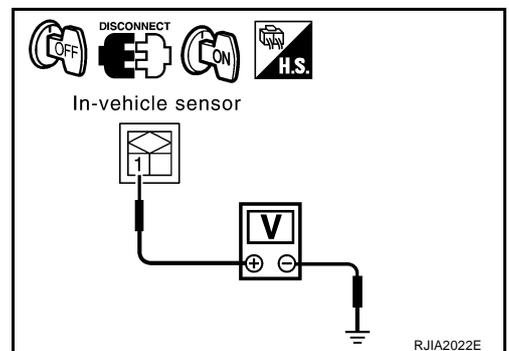
### 1. CHECK VOLTAGE BETWEEN IN-VEHICLE SENSOR AND GROUND

1. Disconnect in-vehicle sensor connector.
2. Turn ignition switch ON.
3. Check voltage between in-vehicle sensor harness connector M52 terminal 1 and ground.

**1 – Ground** : **Approx. 5 V**

OK or NG

- OK >> GO TO 2.  
NG >> GO TO 4.



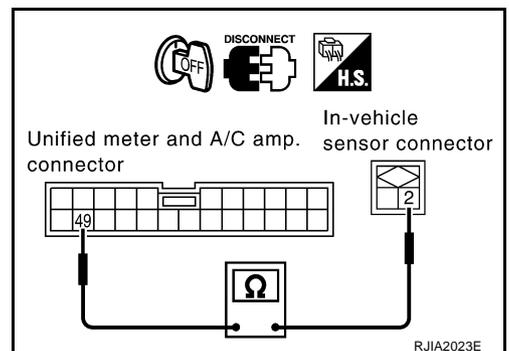
### 2. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR AND UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between in-vehicle sensor harness connector M52 terminal 2 and unified meter and A/C amp. harness connector M51 terminal 49.

**2 – 49** : **Continuity should exist.**

OK or NG

- OK >> GO TO 3.  
NG >> Repair harness or connector.



### 3. CHECK IN-VEHICLE SENSOR

Refer to [ATC-100, "In-vehicle Sensor"](#) .

OK or NG

- OK >> 1. Replace unified meter and A/C amp.  
2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.
- NG >> 1. Replace in-vehicle sensor.  
2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.

# TROUBLE DIAGNOSIS

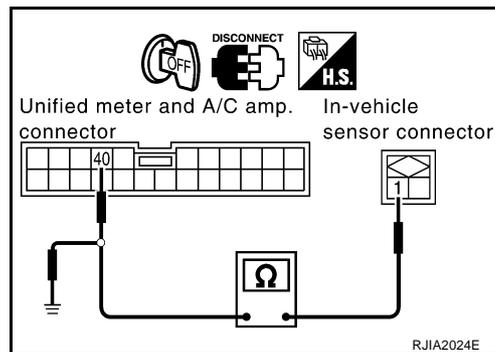
## 4. CHECK CIRCUIT CONTINUITY BETWEEN IN-VEHICLE SENSOR AND UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between in-vehicle sensor harness connector M52 terminal 1 and unified meter and A/C amp. harness connector M51 terminal 40.

**1 – 40 : Continuity should exist.**

4. Check continuity between in-vehicle sensor harness connector M52 terminal 1 and ground.

**1 – Ground : Continuity should not exist.**



### OK or NG

OK >> 1. Replace unified meter and A/C amp.

2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.

NG >> Repair harness or connector.

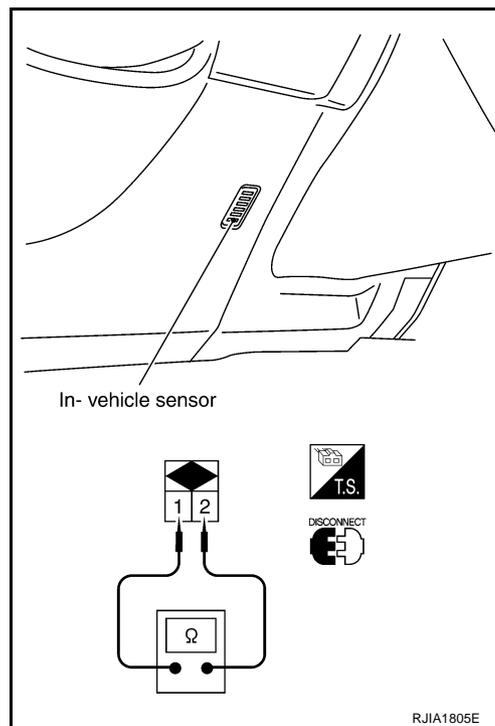
## COMPONENT INSPECTION

### In-vehicle Sensor

After disconnecting in-vehicle sensor connector M52, measure resistance between terminals 1 and 2 at sensor side. Refer to the table below.

Temperature °C (°F)	Resistance kΩ
-15 (5)	12.73
-10 (14)	9.92
-5 (23)	7.80
0 (32)	6.19
5 (41)	4.95
10 (50)	3.99
15 (59)	3.24
20 (68)	2.65
25 (77)	2.19
30 (86)	1.81
35 (95)	1.51
40 (104)	1.27
45 (113)	1.07

If NG, replace in-vehicle sensor.



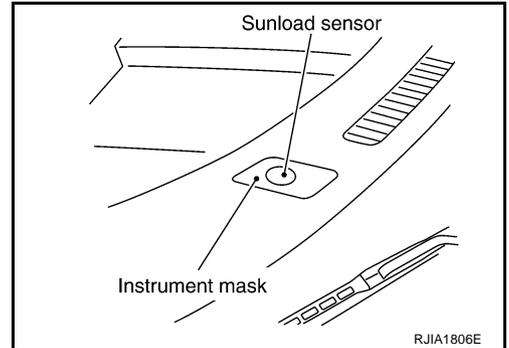
# TROUBLE DIAGNOSIS

## Sunload Sensor Circuit COMPONENT DESCRIPTION

NJS000BD

### Sunload Sensor

The sunload sensor is located on the passenger's side instrument mask. It detects sunload entering through windshield by means of a photo diode. The sensor converts the sunload into a current value which is then input into the unified meter and A/C amp.



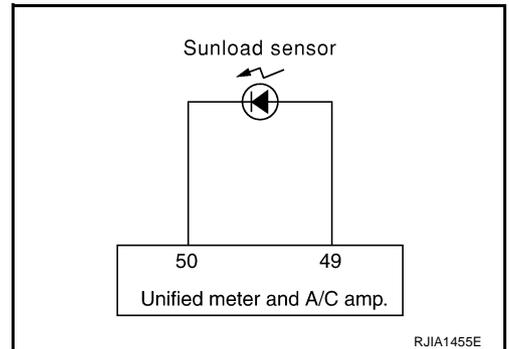
### SUNLOAD INPUT PROCESS

The unified meter and A/C amp. also includes a processing circuit which averages the variations in detected sunload over a period of time. This prevents drastic swings in the ATC system operation due to small or quick variations in detected sunload.

For example, consider driving along a road bordered by an occasional group of large trees. The sunload detected by the sunload sensor will vary whenever the trees obstruct the sunlight. The processing circuit averages the detected sunload over a period of time, so that the (insignificant) effect of the trees momentarily obstructing the sunlight does not cause any change in the ATC system operation. On the other hand, shortly after entering a long tunnel, the system will recognize the change in sunload, and the system will react accordingly.

### DIAGNOSIS PROCEDURE FOR SUNLOAD SENSOR

SYMPTOM: Sunload sensor circuit is open or shorted. (25 or -25 is indicated on unified meter and A/C amp. as a result of performing self-diagnosis STEP-2.)



## 1. CHECK VOLTAGE BETWEEN SUNLOAD SENSOR AND GROUND

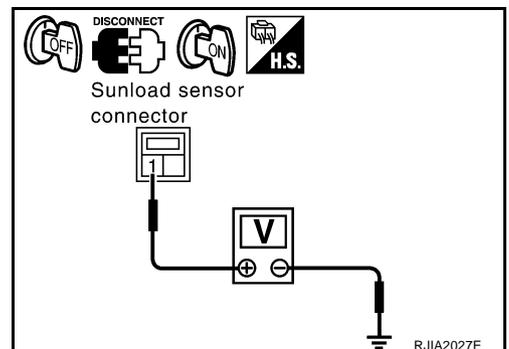
1. Disconnect sunload sensor connector.
2. Turn ignition switch ON.
3. Check voltage between sunload sensor harness connector M79 terminal 1 and ground.

**1 – Ground**

**: Approx. 5 V**

OK or NG

- OK >> GO TO 2.  
NG >> GO TO 4.



# TROUBLE DIAGNOSIS

## 2. CHECK CIRCUIT CONTINUITY BETWEEN SUNLOAD SENSOR AND UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between sunload sensor harness connector M79 terminal 2 and unified meter and A/C amp. harness connector M51 terminal 49.

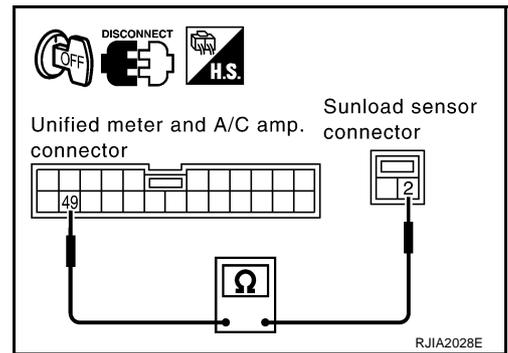
**2 – 49**

**: Continuity should exist.**

OK or NG

OK >> GO TO 3.

NG >> Repair harness or connector.



## 3. CHECK SUNLOAD SENSOR

1. Reconnect sunload sensor connector and unified meter and A/C amp. connector.
2. Refer to [ATC-103, "Sunload Sensor"](#).

OK or NG

OK >> 1. Replace unified meter and A/C amp.

2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.

NG >> 1. Replace sunload sensor.

2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.

## 4. CHECK CIRCUIT CONTINUITY BETWEEN SUNLOAD SENSOR AND UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between sunload sensor harness connector M79 terminal 1 and unified meter and A/C amp. harness connector M51 terminal 50.

**1 – 50**

**: Continuity should exist.**

4. Check continuity between sunload sensor harness connector M79 terminal 1 and ground.

**1 – Ground**

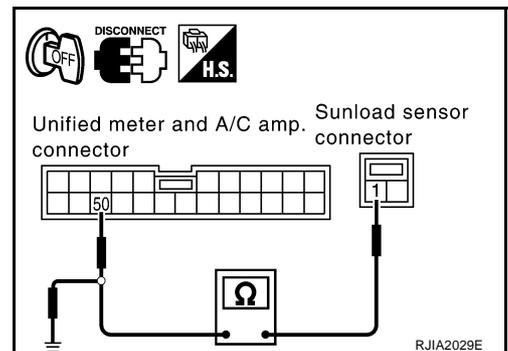
**: Continuity should not exist.**

OK or NG

OK >> 1. Replace unified meter and A/C amp.

2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.

NG >> Repair harness or connector.

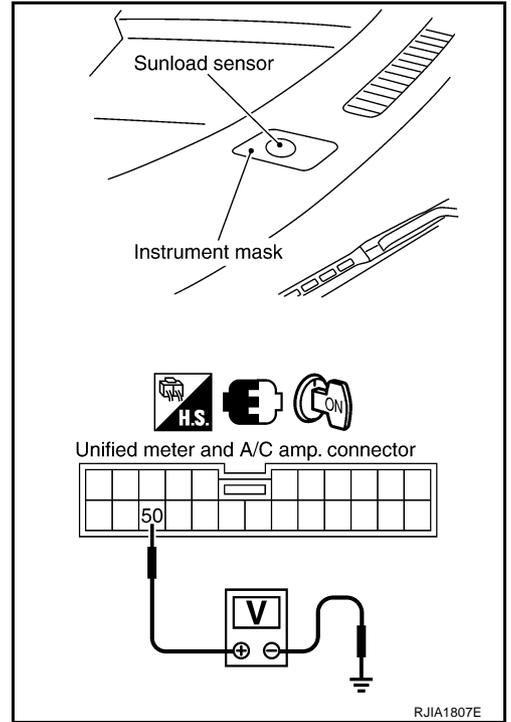


# TROUBLE DIAGNOSIS

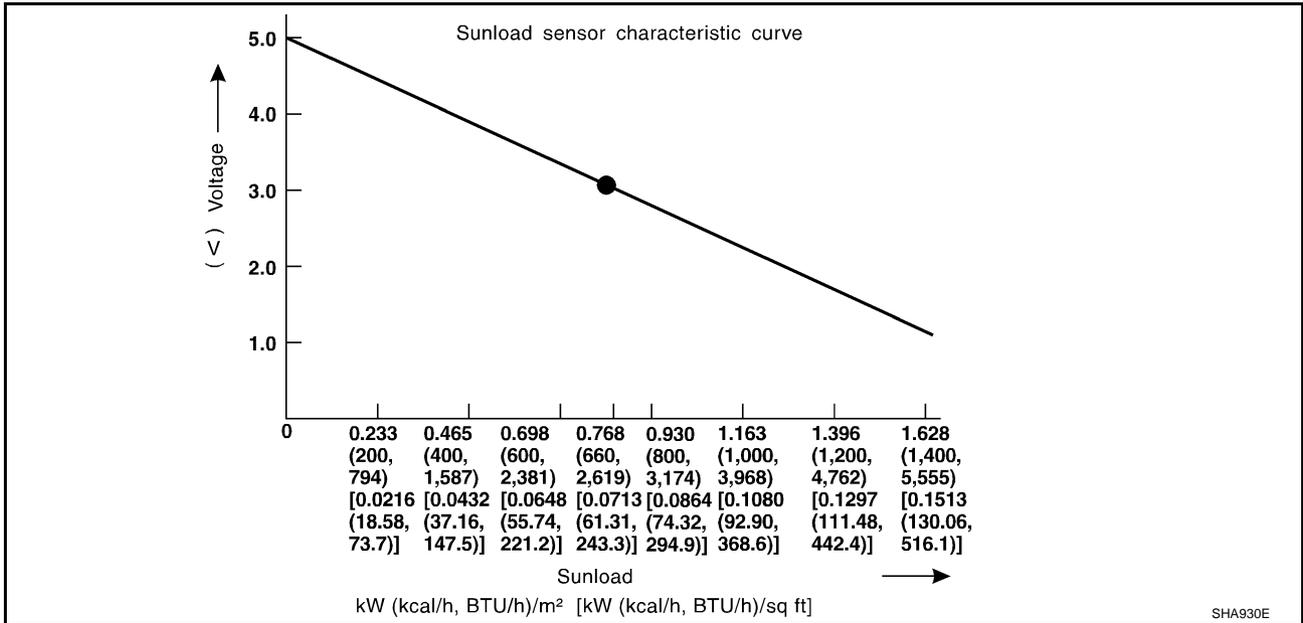
## COMPONENT INSPECTION

### Sunload Sensor

Measure voltage between unified meter and A/C amp. harness connector M51 terminal 50 and ground.



- When checking sunload sensor, select a place where sunshine directly on it.



If NG, replace sunload sensor.

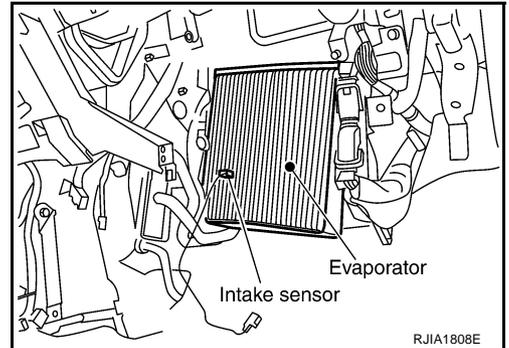
# TROUBLE DIAGNOSIS

NJS000BE

## Intake Sensor Circuit COMPONENT DESCRIPTION

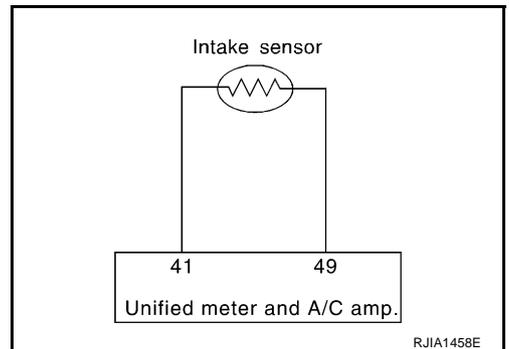
### Intake Sensor

The intake sensor is located on the heater & cooling unit assembly. It converts temperature of air after it passes through the evaporator into a resistance value which is then input to the unified meter and A/C amp.



### DIAGNOSIS PROCEDURE FOR INTAKE SENSOR

SYMPTOM: Intake sensor circuit is open or shorted. (24 or -24 is indicated on unified meter and A/C amp. as a result of performing self-diagnosis STEP-2.)



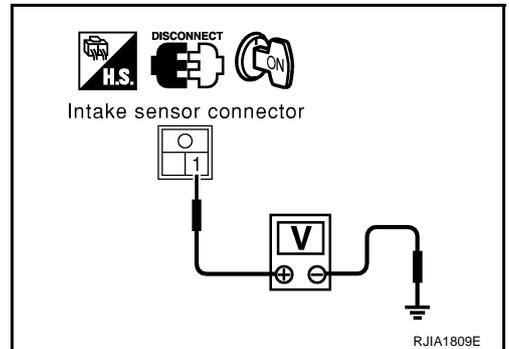
### 1. CHECK VOLTAGE BETWEEN INTAKE SENSOR AND GROUND

1. Disconnect intake sensor connector.
2. Turn ignition switch ON.
3. Check voltage between intake sensor harness connector M256 terminal 1 and ground.

**1 – Ground** : **Approx. 5 V**

OK or NG

- OK >> GO TO 2.  
NG >> GO TO 4.



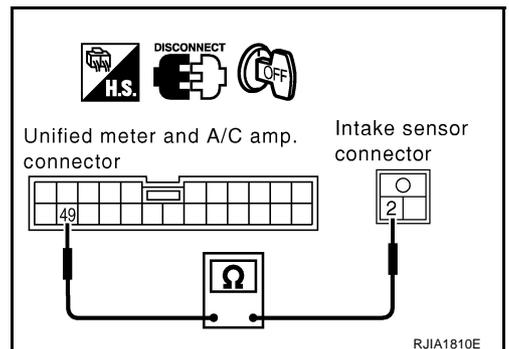
### 2. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND UNIFIED METER AND A/C AMP.

1. Turn ignition switch OFF.
2. Disconnect unified meter and A/C amp. connector.
3. Check continuity between intake sensor harness connector M256 terminal 2 and unified meter and A/C amp. harness connector M51 terminal 49.

**2 – 49** : **Continuity should exist.**

OK or NG

- OK >> GO TO 3.  
NG >> Repair harness or connector.



# TROUBLE DIAGNOSIS

## 3. CHECK INTAKE SENSOR

Refer to [ATC-105, "Intake Sensor"](#) .

OK or NG

- OK >> 1. Replace unified meter and A/C amp.  
 2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.
- NG >> 1. Replace intake sensor.  
 2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.

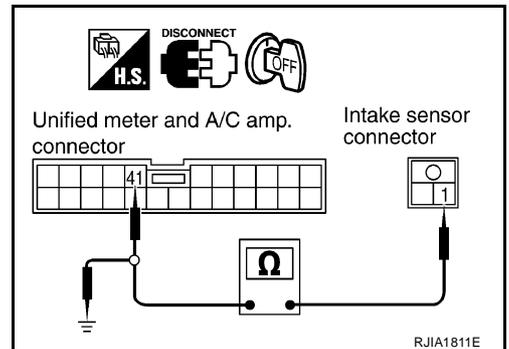
## 4. CHECK CIRCUIT CONTINUITY BETWEEN INTAKE SENSOR AND UNIFIED METER AND A/C AMP.

- Turn ignition switch OFF.
- Disconnect unified meter and A/C amp. connector.
- Check continuity between intake sensor harness connector M256 terminal 1 and unified meter and A/C amp. harness connector M51 terminal 41.

**1 – 41 : Continuity should exist.**

- Check continuity between intake sensor harness connector M256 terminal 1 and ground.

**1 – Ground : Continuity should not exist.**



OK or NG

- OK >> 1. Replace unified meter and A/C amp.  
 2. Go to self-diagnosis [ATC-48, "FUNCTION CONFIRMATION PROCEDURE"](#) and perform self-diagnosis STEP-2. Confirm that code No. 20 is displayed.
- NG >> Repair harness or connector.

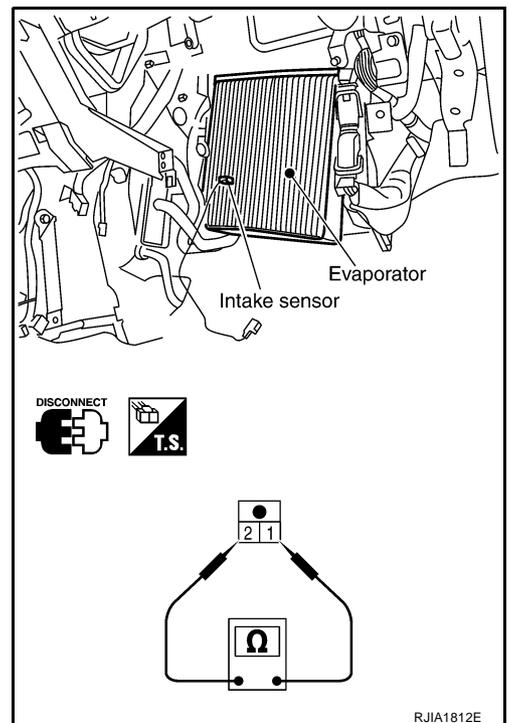
## COMPONENT INSPECTION

### Intake Sensor

After disconnecting intake sensor connector M256, measure resistance between terminals 1 and 2 at sensor side. Refer to the table below.

Temperature °C (°F)	Resistance kΩ
-15 (5)	18.63
-10 (14)	14.14
-5 (23)	10.85
0 (32)	8.40
5 (41)	6.57
10 (50)	5.18
15 (59)	4.12
20 (68)	3.30
25 (77)	2.66
30 (86)	2.16
35 (95)	1.77
40 (104)	1.46
45 (113)	1.21

If NG, replace intake sensor.



# CONTROLLER

---

## CONTROLLER

PF2:27500

### Removal and Installation of A/C and AV Switch REMOVAL

NJS000BF

Refer to [AV-61, "Removal and Installation for A/C and AV Switch"](#).

### INSTALLATION

Installation is basically the reverse order of removal.

# AUTO AMP

## AUTO AMP

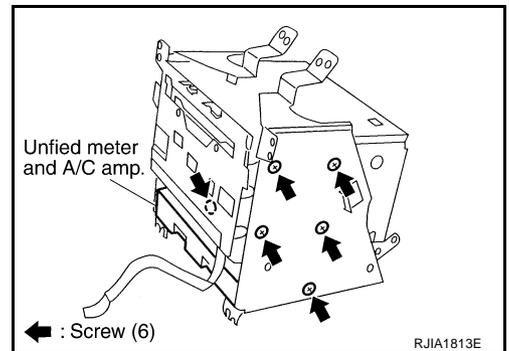
PPF:27760

### Removal and Installation of Unified Meter and A/C Amp.

NJS000BG

#### REMOVAL

1. Remove audio unit. Refer to [AV-59, "Removal and Installation of Audio Unit"](#).
2. Remove mounting screws, and then remove unified meter and A/C amp.



#### INSTALLATION

Installation is basically the reverse order of removal.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# AMBIENT SENSOR

## AMBIENT SENSOR

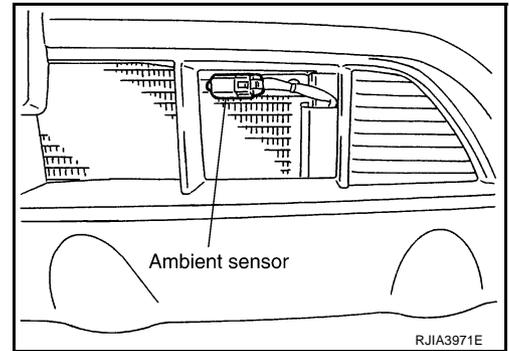
PFP:27722

### Removal and Installation

NJS000BH

#### REMOVAL

1. Remove ambient sensor from bracket.
2. Disconnect ambient sensor connector, and then remove ambient sensor.



#### INSTALLATION

Installation is basically the reverse order of removal.

# IN-VEHICLE SENSOR

## IN-VEHICLE SENSOR

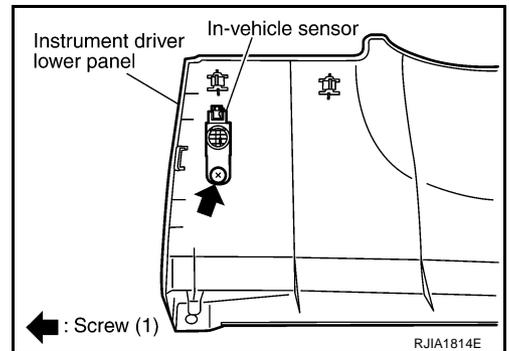
PFP:27720

### Removal and Installation

NJS000BI

#### REMOVAL

1. Remove instrument driver lower panel. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove mounting screw, and then remove in-vehicle sensor.



#### INSTALLATION

Installation is basically the reverse order of removal.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# SUNLOAD SENSOR

## SUNLOAD SENSOR

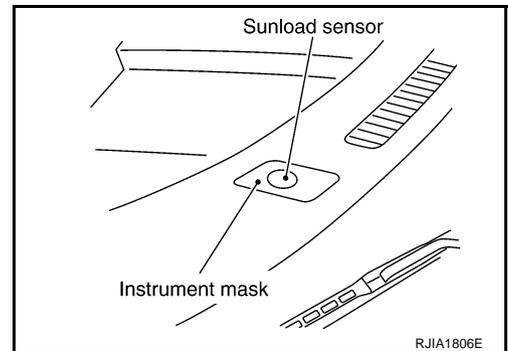
PFP:27721

### Removal and Installation

NJS000BJ

#### REMOVAL

1. Remove instrument mask (right side). Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
2. Disconnect sunload sensor connector, and then remove sunload sensor.



#### INSTALLATION

Installation is basically the reverse order of removal.

# INTAKE SENSOR

## INTAKE SENSOR

PF2:27723

### Removal and Installation

NJS000BK

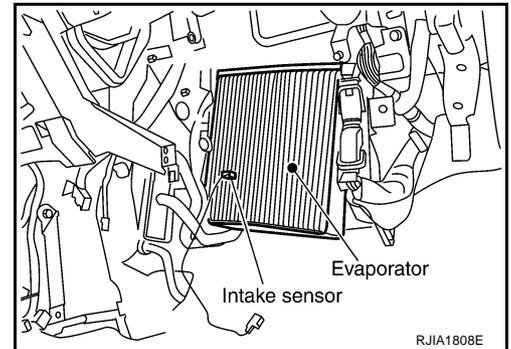
#### REMOVAL

1. Remove low-pressure pipe 2 and high-pressure pipe 2. Refer to [ATC-139, "Removal and Installation of Low-pressure Pipe 2 and High-pressure Pipe 2"](#).

**CAUTION:**

Cap or wrap the joint of evaporator, low-pressure pipe 1, 2 and high-pressure pipe 1, 2 with suitable material such as vinyl tape to avoid the entry of air.

2. Slide evaporator to passenger side, and then remove intake sensor.



#### INSTALLATION

Installation is basically the reverse order of removal.

**CAUTION:**

- Replace O-rings of low-pressure pipe 1, 2 and high-pressure pipe 1, 2 with new ones, and then apply compressor oil to it when installing it.
- Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# BLOWER UNIT

PFP:27200

NJS000BL

## BLOWER UNIT

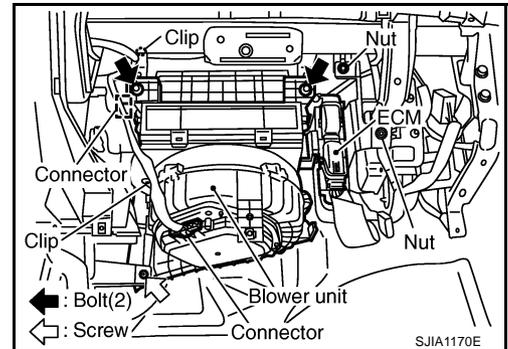
### Removal and Installation

#### REMOVAL

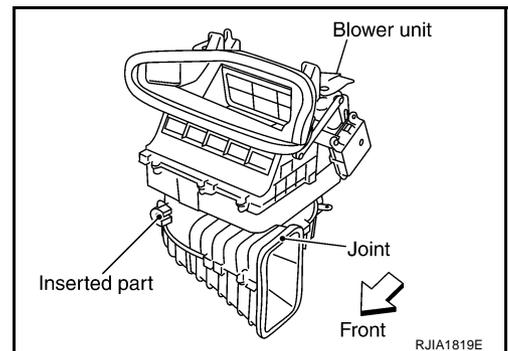
1. Remove instrument passenger lower panel. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
2. Remove mounting nuts, and then remove ECM with bracket attached.
3. Disconnect intake door motor connector and blower fan motor connector.
4. Remove blower unit mounting bolts and screw.
5. Remove harness clips from blower unit.

#### **CAUTION:**

**Move blower unit rightward, and remove locating pin (1 part) and joint. Then remove blower unit downward.**



6. Remove blower unit.



#### INSTALLATION

Installation is basically the reverse order of removal.

#### **CAUTION:**

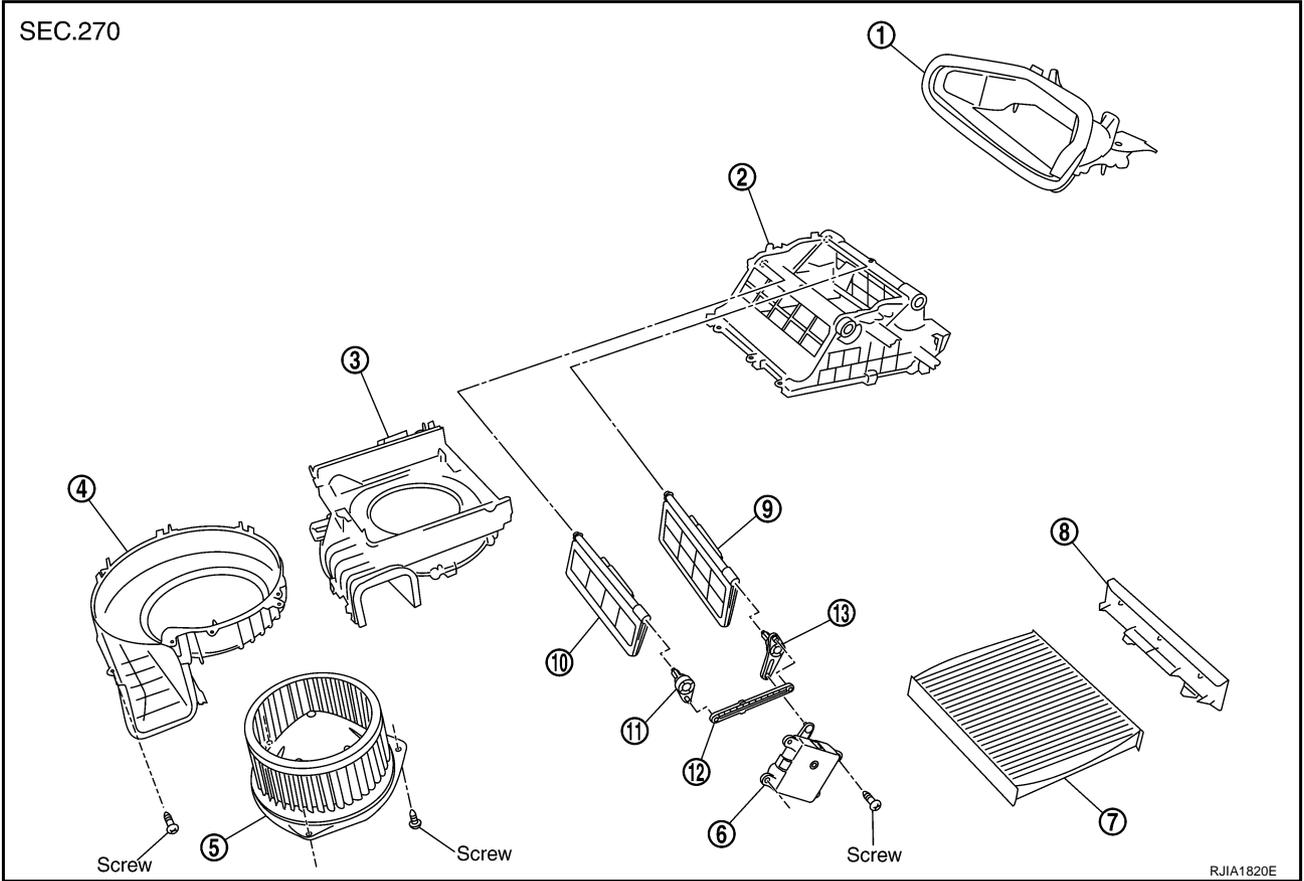
**Make sure locating pin (1 part) and joint are securely inserted.**

# BLOWER UNIT

## Disassembly and Assembly

NJS000BM

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M



- |                         |                              |                      |
|-------------------------|------------------------------|----------------------|
| 1. Intake adapter       | 2. Intake box case           | 3. Intake upper case |
| 4. Intake lower case    | 5. Blower fan motor assembly | 6. Intake door motor |
| 7. In-cabin microfilter | 8. Filter cover              | 9. Intake door 2     |
| 10. Intake door 1       | 11. Intake door lever 1      | 12. Intake door link |
| 13. Intake door lever 2 |                              |                      |

**ATC**

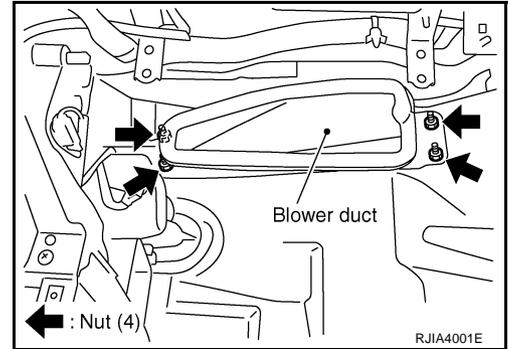
# BLOWER UNIT

NJS000BN

## Removal and Installation of Blower Duct

### REMOVAL

1. Remove instrument panel. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
2. Remove blower unit. Refer to [ATC-112, "BLOWER UNIT"](#) .
3. Remove mounting nuts, and then remove blower duct.



### INSTALLATION

Installation is basically the reverse order of removal.

# BLOWER MOTOR

## BLOWER MOTOR

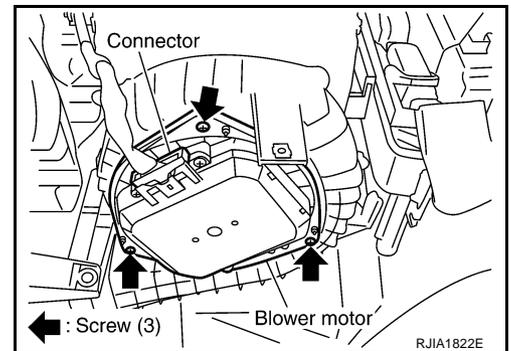
PFP:27226

### Removal and Installation

NJS000B0

#### REMOVAL

1. Remove instrument passenger lower panel. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Disconnect blower motor connector.
3. Remove mounting screws, and then remove blower motor.



#### INSTALLATION

Installation is basically the reverse order of removal.

A  
B  
C  
D  
E  
F  
G  
H  
I

ATC

K  
L  
M

# INTAKE DOOR MOTOR

## INTAKE DOOR MOTOR

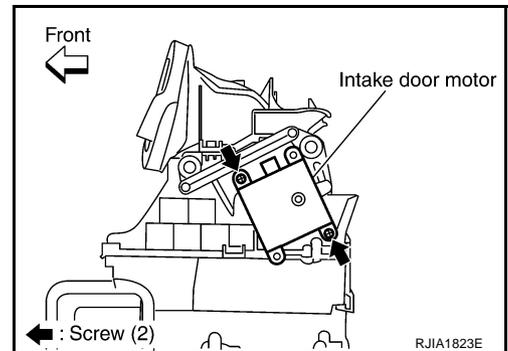
PFP:27730

### Removal and Installation

NJS000BP

#### REMOVAL

1. Remove blower unit. Refer to [ATC-112, "BLOWER UNIT"](#).
2. Remove mounting screws, and then remove intake door motor from blower unit.



#### INSTALLATION

Installation is basically the reverse order of removal.

# IN-CABIN MICROFILTER

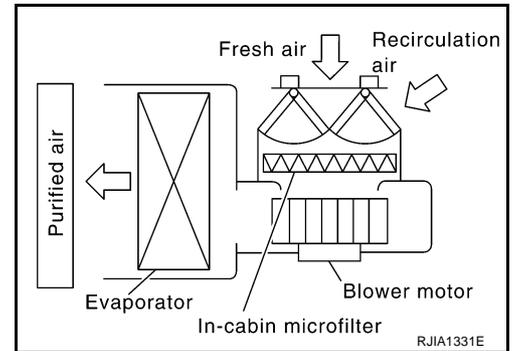
## IN-CABIN MICROFILTER

PPF:27277

### Removal and Installation FUNCTION

NJS000BQ

Air inside passenger compartment is kept clean at either recirculation or fresh mode by installing in-cabin microfilter into blower unit.



### REPLACEMENT TIMING

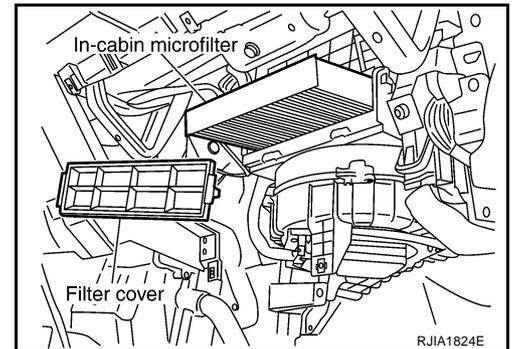
Replace in-cabin microfilter.

Refer to [MA-8, "CHASSIS AND BODY MAINTENANCE"](#) in Schedule 1 and [MA-9, "CHASSIS AND BODY MAINTENANCE"](#) in Schedule 2.

When replacing filter, affix a caution label inside the glove box.

### REPLACEMENT PROCEDURES

1. Remove instrument passenger lower panel. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove filter cover, and then remove in-cabin microfilter.
3. Take out in-cabin microfilter from blower unit.
4. Replace with new one and reinstall on blower unit.
5. Reinstall instrument passenger lower panel.



A  
B  
C  
D  
E  
F  
G  
H  
I  
ATC  
K  
L  
M

# HEATER & COOLING UNIT ASSEMBLY

## HEATER & COOLING UNIT ASSEMBLY

PFP:27110

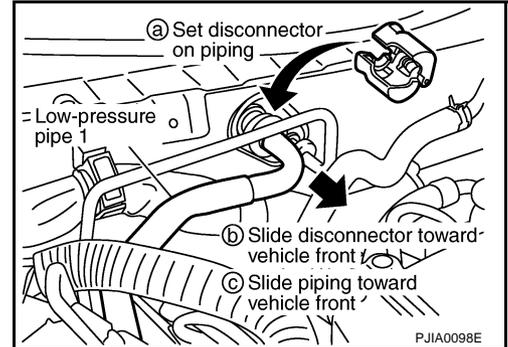
### Removal and Installation REMOVAL

NJS000BR

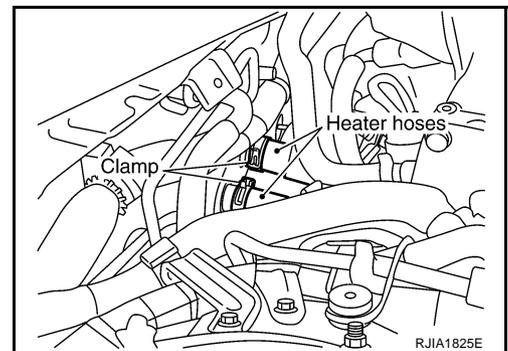
1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Drain coolant from cooling system. Refer to [CO-9, "Changing Engine Coolant"](#) .
3. Remove cowl top cover. Refer to [EI-20, "COWL TOP"](#) .
4. Disconnect evaporator-side one-touch joints.
  - a. Set a disconnecter [high-pressure side (SST: 9253089908), low-pressure side (SST: 9253089916)] on A/C piping.
  - b. Slide a disconnecter toward vehicle front until it clicks.
  - c. Slide A/C piping toward vehicle front and disconnect it.

#### **CAUTION:**

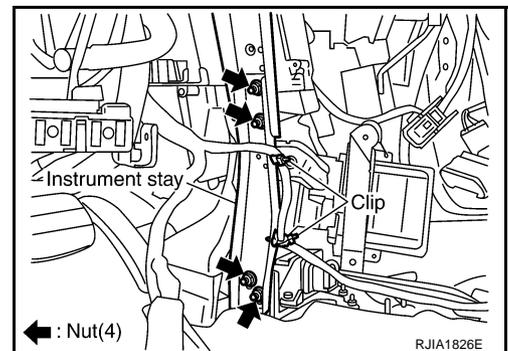
**Cap or wrap the joint of the low-pressure pipe 1 and high-pressure pipe 1 with suitable material such as vinyl tape to avoid the entry of air.**



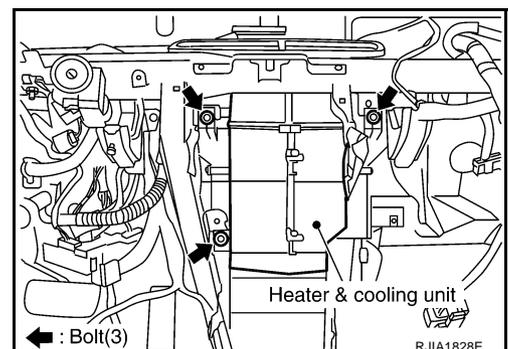
5. Remove clamps, and then disconnect two heater hoses from heater core.



6. Remove instrument panel. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
7. Remove blower unit. Refer to [ATC-112, "BLOWER UNIT"](#) .
8. Remove clips of vehicle harness from steering member.
9. Remove mounting nuts, and then remove instrument stays (driver side and passenger side).

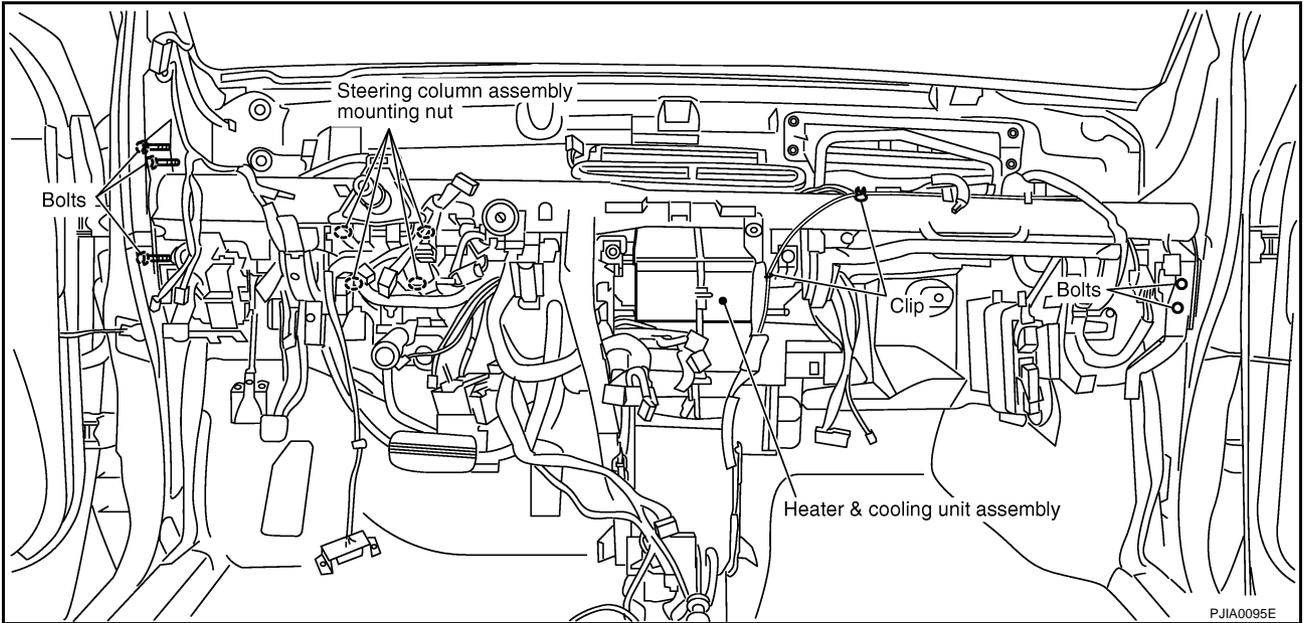


10. Remove mounting bolts from heater & cooling unit.



# HEATER & COOLING UNIT ASSEMBLY

11. Remove rear ventilator duct<sup>1</sup> and front floor duct. Refer to [ATC-128, "Removal of Rear Ventilator Ducts"](#) and [ATC-130, "Removal of Floor Ducts"](#).



12. Remove steering member mounting bolts and steering column assembly mounting nuts, and then remove steering member.  
13. Remove heater & cooling unit assembly.

## INSTALLATION

Installation is basically the reverse order of removal.

### CAUTION:

- Replace O-rings of low-pressure pipe 1 and high-pressure pipe 1 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

### NOTE:

- When filling radiator with coolant, refer to [CO-9, "Changing Engine Coolant"](#).
- Recharge the refrigerant.

#### Heater & cooling unit assembly mounting bolt

 : 6.8 N·m (0.69 kg·m, 60 in·lb)

#### Steering member mounting bolt and steering column assembly mounting nut

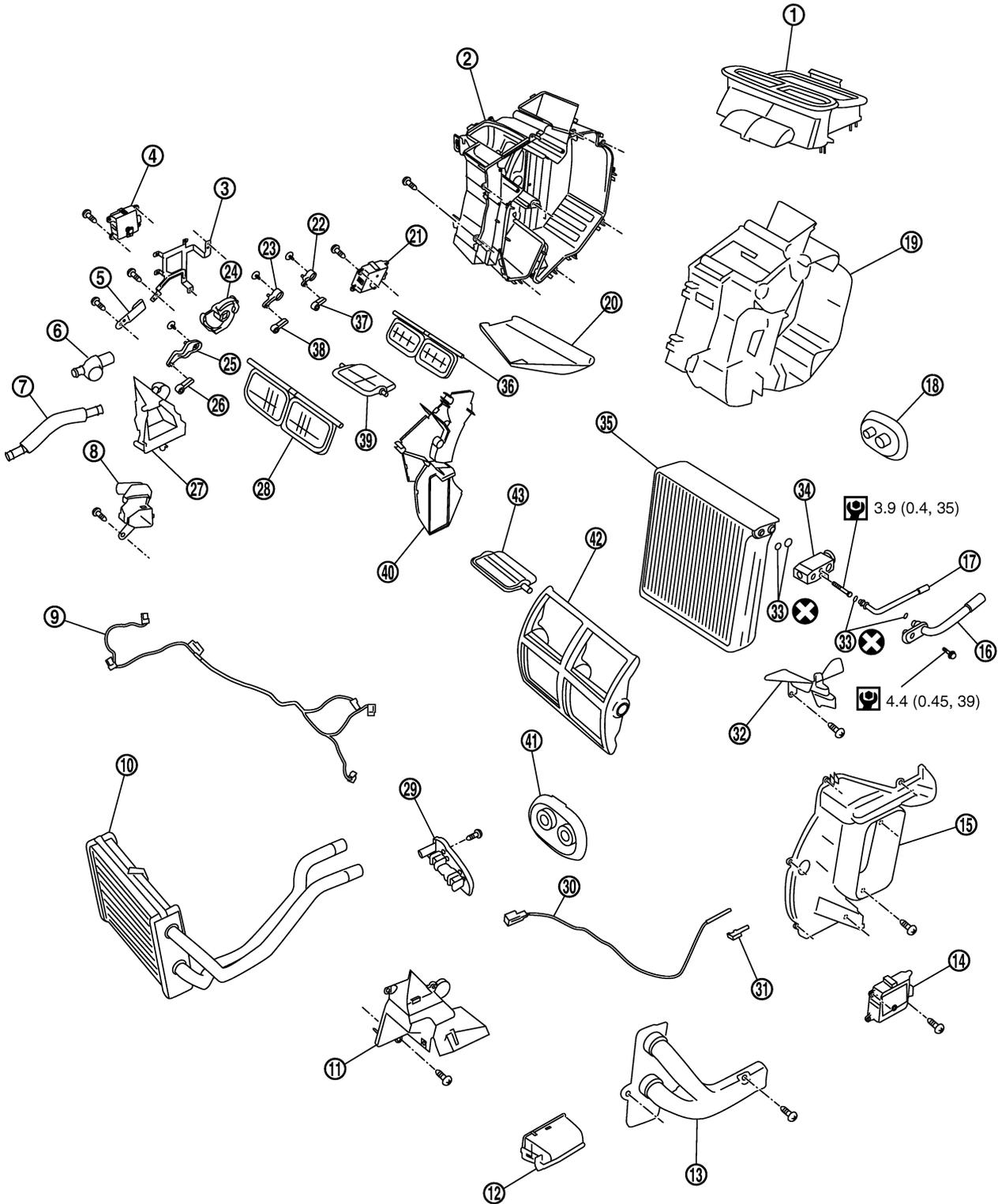
 : 12 N·m (1.2 kg·m, 9 ft·lb)

# HEATER & COOLING UNIT ASSEMBLY

## Disassembly and Assembly

NJS000BS

SEC. 270•271



PJJA0096E

- |                         |   |                               |
|-------------------------|---|-------------------------------|
| 1. Adaptor duct         | 2. Heater & cooling unit case (left)    | 3. Mode door motor bracket    |
| 4. Mode door motor      | 5. Instrument lower cover bracket       | 6. Aspirator                  |
| 7. Aspirator duct       | 8. Front heater duct (left)             | 9. Sub harness                |
| 10. Heater core         | 11. Foot duct (passenger side)          | 12. Front heater duct (right) |
| 13. Heater core cover   | 14. Air mix door motor (passenger side) | 15. Evaporator cover          |
| 16. Low-pressure pipe 2 | 17. High-pressure pipe 2                | 18. Cooler pipe grommet       |

# HEATER & COOLING UNIT ASSEMBLY

- |  |                          |                                      |
|--|--------------------------|--------------------------------------|
| 19. Heater & cooling unit case (right) | 20. Insulator            | 21. Air mix door motor (driver side) |
| 22. Defroster door lever               | 23. Max. cool door lever | 24. Main link                        |
| 25. Ventilator door lever              | 26. Ventilator door link | 27. Foot duct (left)                 |
| 28. Ventilator door                    | 29. Heater pipe support  | 30. Intake sensor                    |
| 31. Intake sensor bracket              | 32. Adaptor cover        | 33. O-ring                           |
| 34. Expansion valve                    | 35. Evaporator           | 36. Defroster door                   |
| 37. Defroster door link                | 38. Max. cool door link  | 39. Max. cool door (left)            |
| 40. Center case                        | 41. Heater pipe grommet  | 42. Air mix door (Slide door)        |
| 43. Max. cool door (right)             |                          |                                      |



**: N·m (kg-m, in-lb)**



**: Always replace after every disassembly**

A  
B  
C  
D

E

F

G

H

I

ATC

K

L

M

# MODE DOOR MOTOR

## MODE DOOR MOTOR

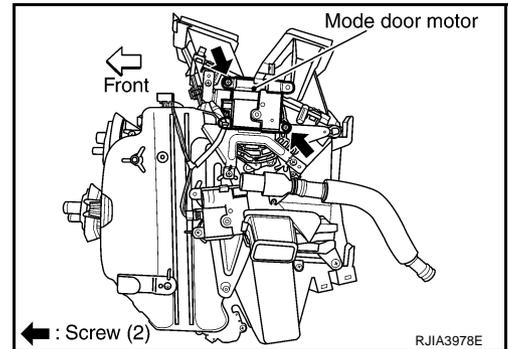
PFP:27731

### Removal and Installation

NJS000BT

#### REMOVAL

1. Remove front heater duct (left). Refer to [ATC-129, "Removal of Foot Ducts"](#) .
2. Remove BCM. Refer to [BCS-14, "Removal and Installation of BCM"](#) .
3. Remove mode door motor mounting screws.
4. Disconnect connector, and then remove mode door motor.



#### INSTALLATION

Installation is basically the reverse order of removal.

# AIR MIX DOOR MOTOR

## AIR MIX DOOR MOTOR

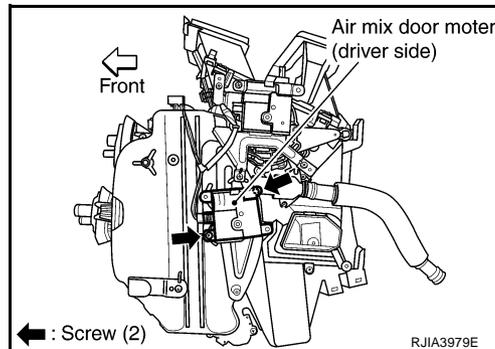
PF2:27732

### Removal and Installation

NJS000BU

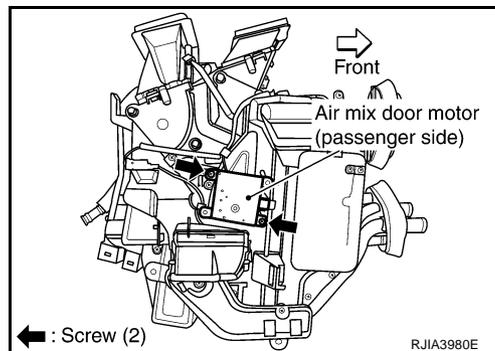
#### Driver Side

1. Set the temperature control dial (driver side) at 18°C (60°F), and then disconnect the battery cable from the negative terminal.
2. Remove front heater duct (left). Refer to [ATC-129, "Removal of Foot Ducts"](#) .
3. Remove BCM. Refer to [BCS-14, "Removal and Installation of BCM"](#) .
4. Remove mounting screws, and then remove air mix door motor.
5. Disconnect air mix door motor connector.



#### Passenger Side

1. Set the temperature control dial (passenger side) at 18°C (60°F), and then disconnect the battery cable from the negative terminal.
2. Remove blower unit. Refer to [ATC-112, "BLOWER UNIT"](#) .
3. Remove mounting screws, and then remove air mix door motor.
4. Disconnect air mix door motor connector.



### INSTALLATION

Installation is basically the reverse order of removal.

# HEATER CORE

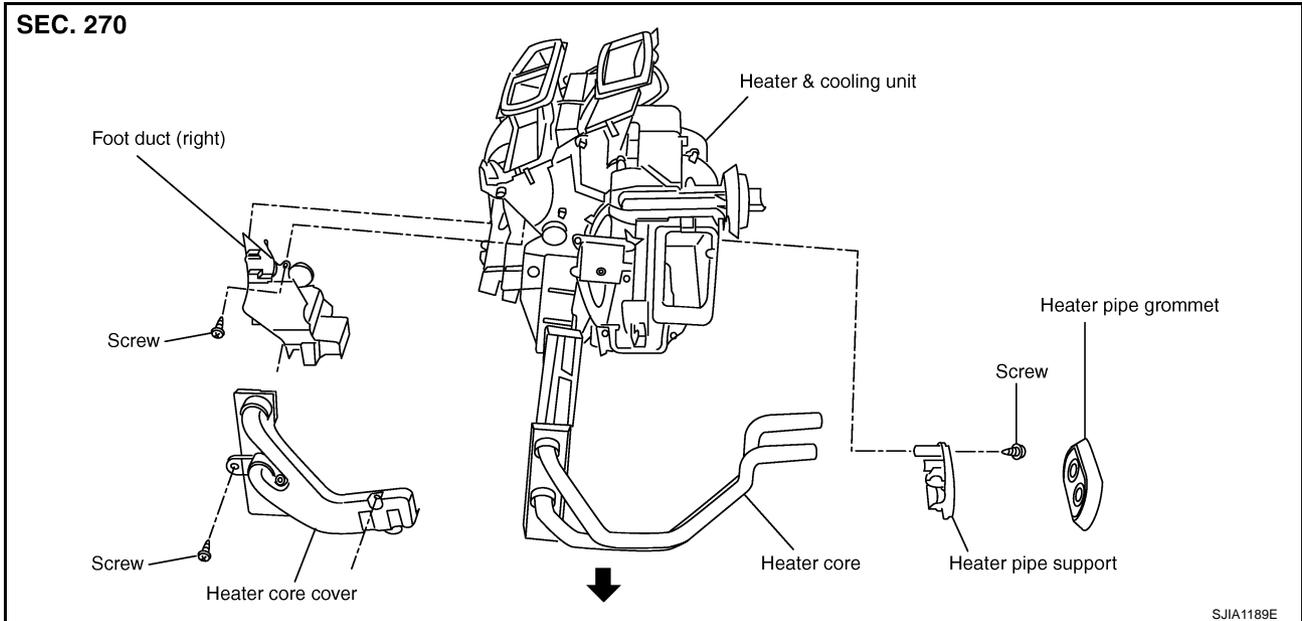
PFP:27140

## HEATER CORE

### Removal and Installation

NJS000BV

1. Remove heater & cooling unit assembly. Refer to [ATC-118, "HEATER & COOLING UNIT ASSEMBLY"](#) .
2. Remove air mix door motor (passenger side). Refer to [ATC-123, "AIR MIX DOOR MOTOR"](#) .
3. Remove foot duct (right). Refer to [ATC-129, "Removal of Foot Ducts"](#) .
4. Remove mounting screw, and then remove heater core cover.
5. Remove mounting screw, and then remove heater pipe support and heater pipe grommet.
6. Slide heater core (shown in the figure) to passenger side.



### INSTALLATION

Installation is basically the reverse order of removal.

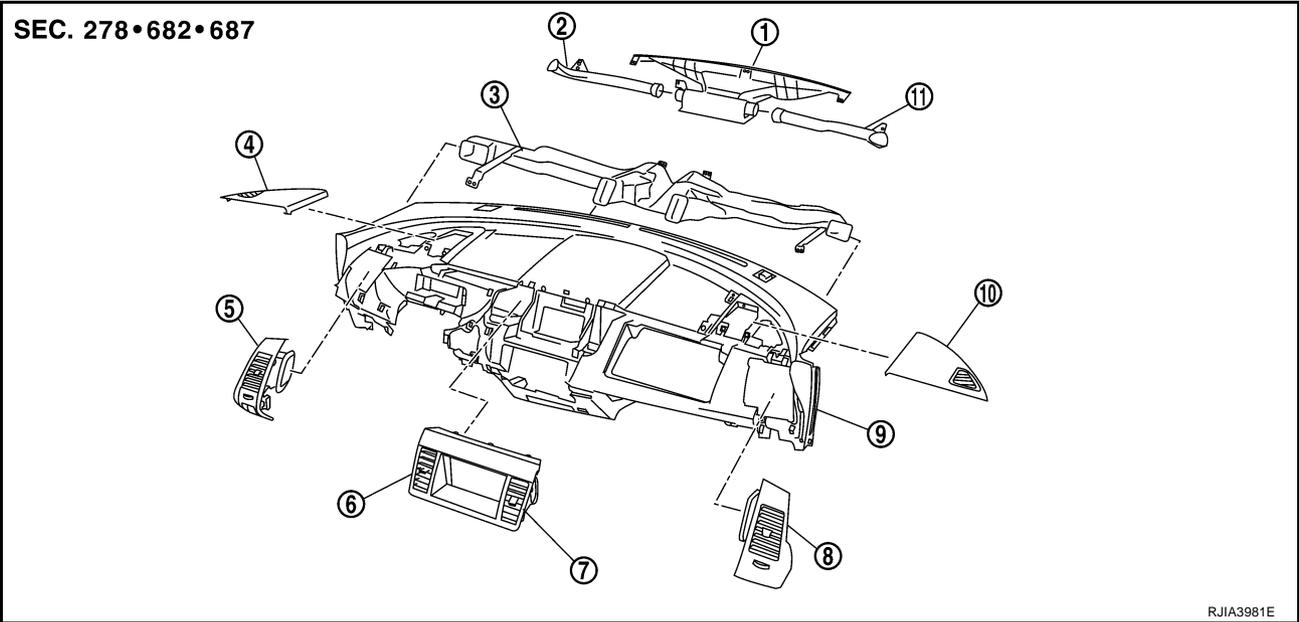
# DUCTS AND GRILLES

## DUCTS AND GRILLES

PFP:27860

### Removal and Installation COMPONENT LAYOUT

NJS000BW

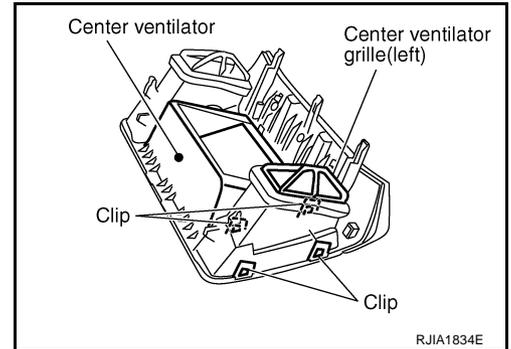


- |                                     |                                   |                                    |
|-------------------------------------|-----------------------------------|------------------------------------|
| 1. Defroster nozzle                 | 2. Side defroster duct (left)     | 3. Ventilator duct                 |
| 4. Side defroster grille (left)     | 5. Side ventilator grille (left)  | 6. Center ventilator grille (left) |
| 7. Center ventilator grille (right) | 8. Side ventilator grille (right) | 9. Instrument panel                |
| 10. Side defroster grille (right)   | 11. Side defroster duct (right)   |                                    |

### REMOVAL

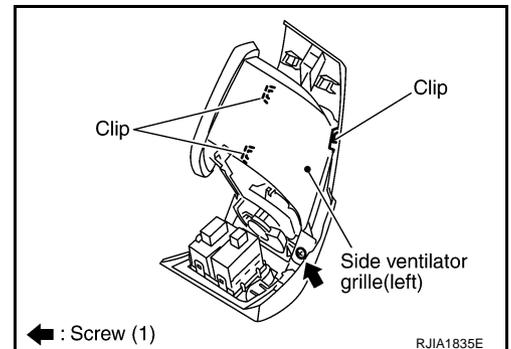
#### Removal of Center Ventilator Grilles

1. Remove center ventilator. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove mounting clips, and then remove center ventilator grilles.



#### Removal of Side Ventilator Grilles

1. Remove side ventilator assembly. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove mounting screw and clips, and then remove side ventilator grilles.



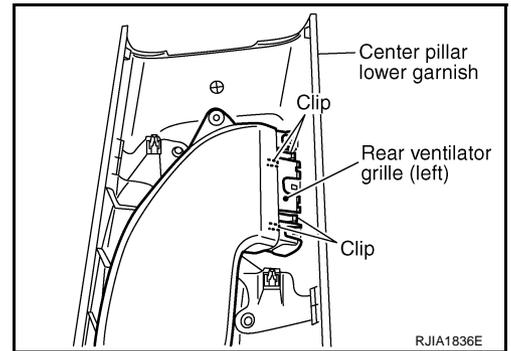
A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# DUCTS AND GRILLES

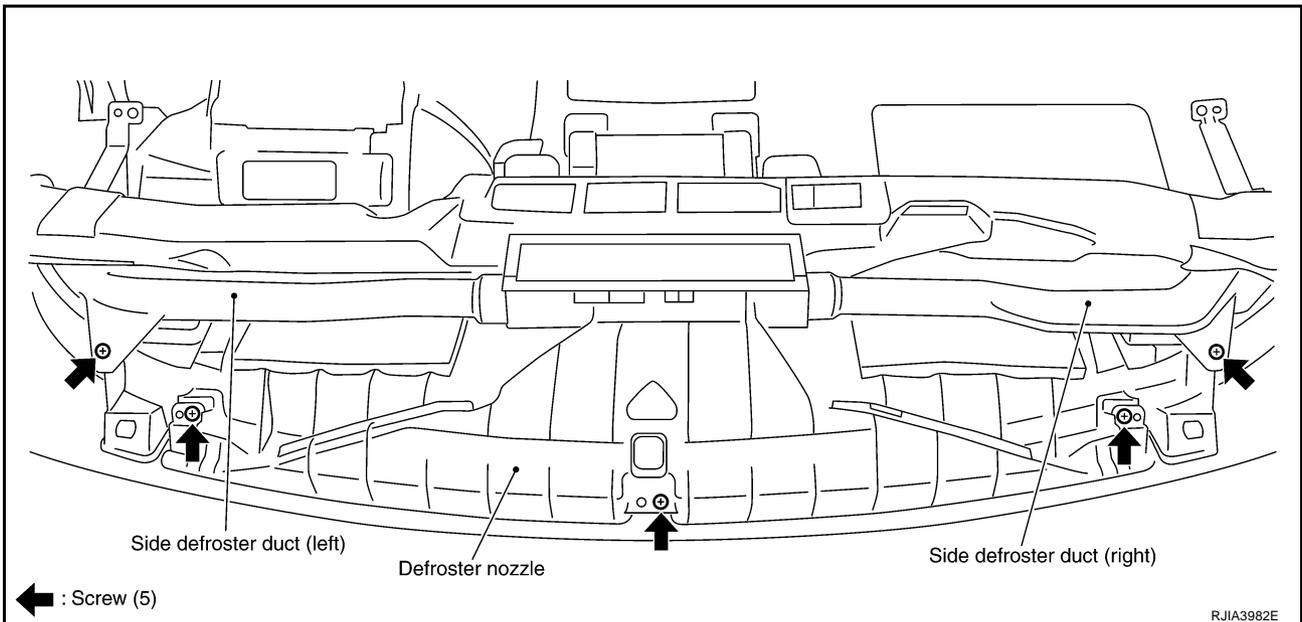
## Removal of Rear Ventilator Grilles

1. Remove center pillar lower garnish. Refer to [EI-32, "CENTER PILLAR LOWER GARNISH"](#).
2. Remove mounting clips, and then remove rear ventilator grilles.

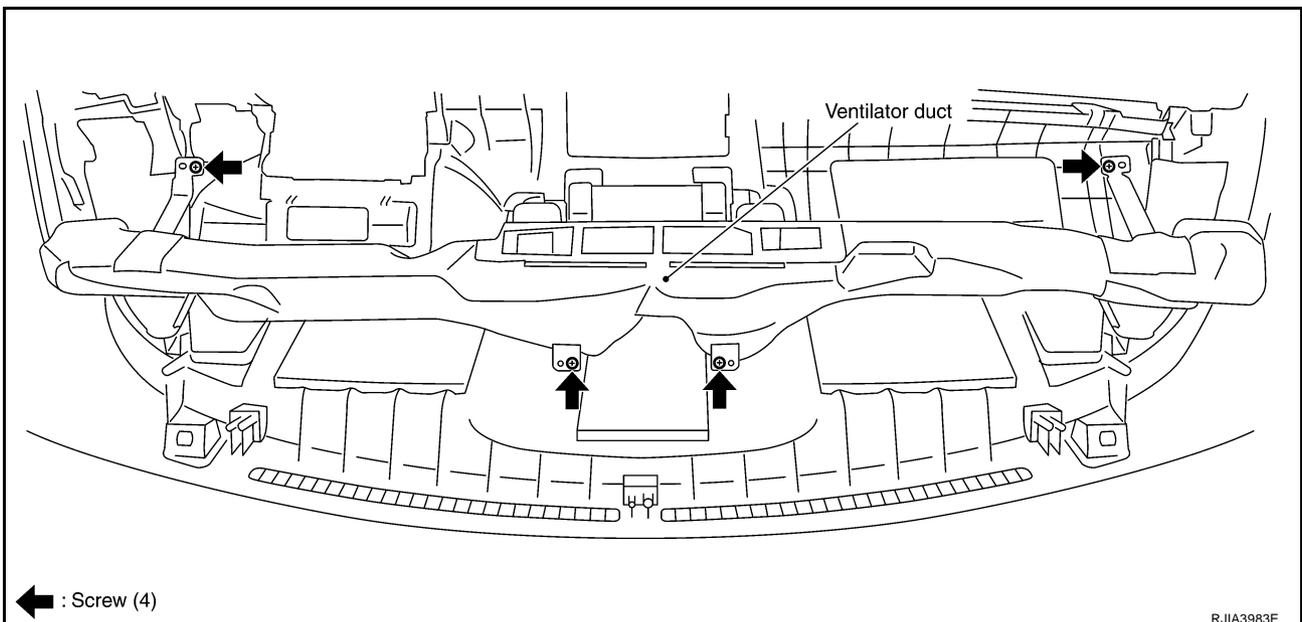


## Removal of Defroster Nozzle, Ducts and Ventilator Ducts

1. Remove instrument panel. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove mounting screws, and then remove side defroster ducts, using power tools.
3. Remove mounting screws, and then remove defroster nozzle, using power tools.



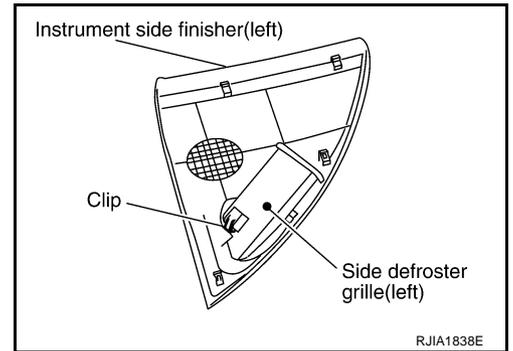
4. Remove mounting screws, and then remove ventilator duct, using power tools.



# DUCTS AND GRILLES

## Removal of Side Defroster Grilles

1. Remove instrument side finisher. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
2. Remove mounting clip, and then remove side defroster grilles.



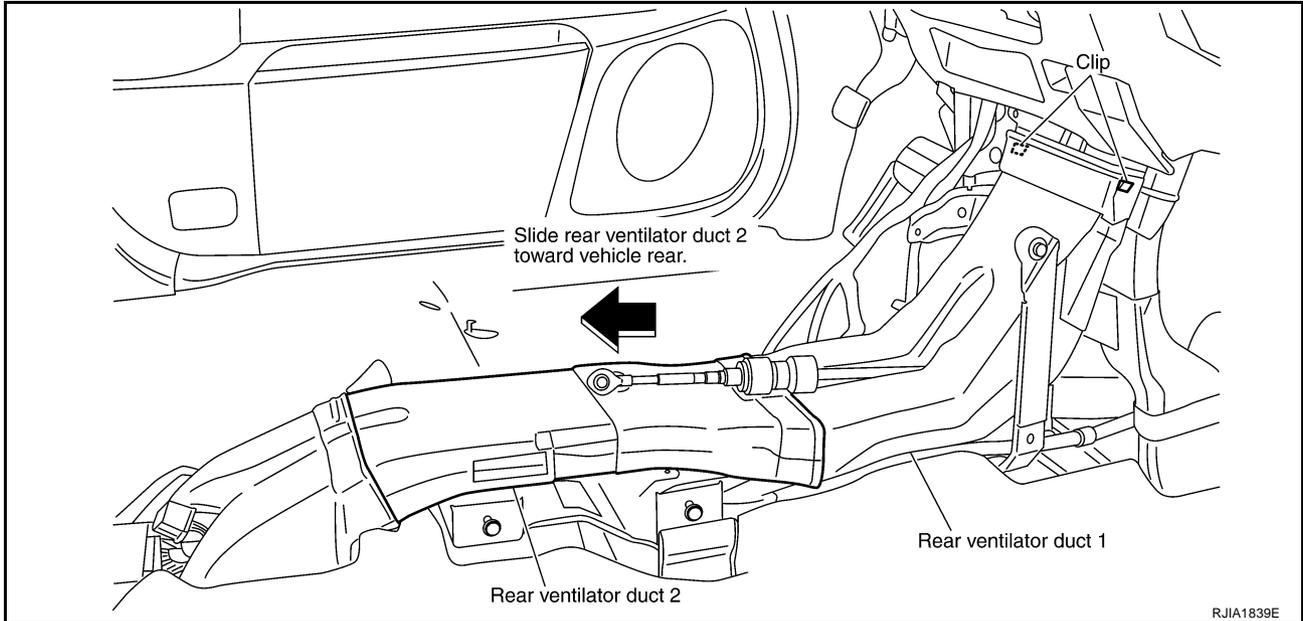
A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

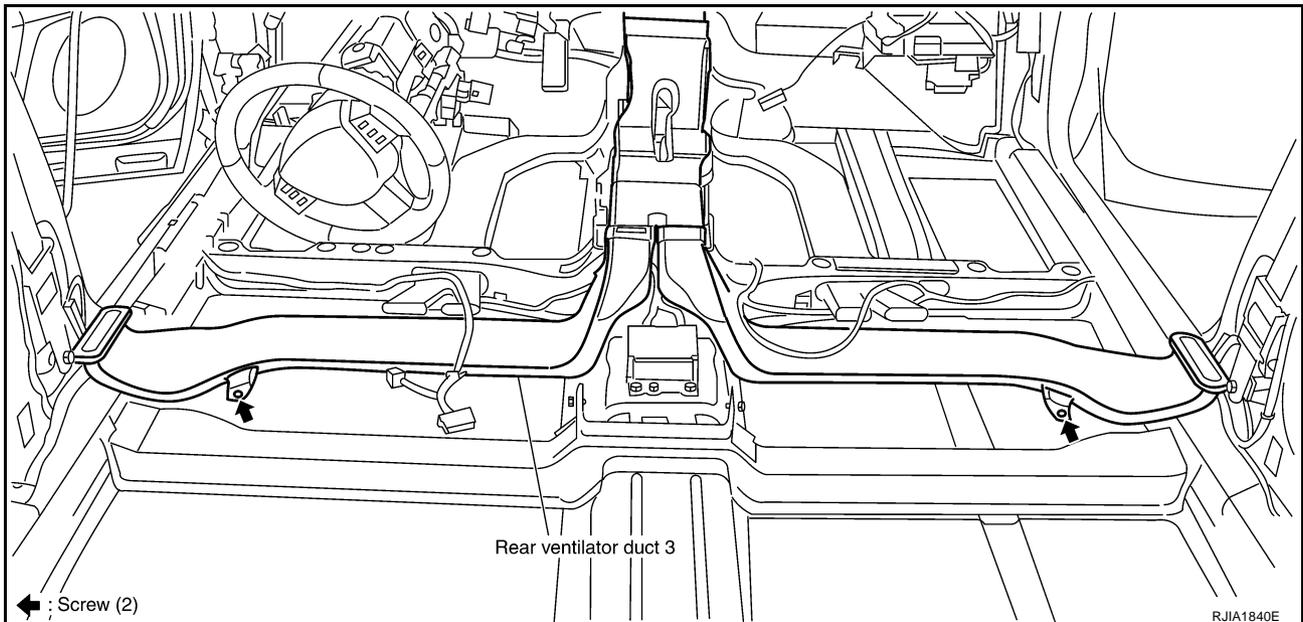
## DUCTS AND GRILLES

### Removal of Rear Ventilator Ducts

1. Remove center console assembly. Refer to [IP-17, "CENTER CONSOLE ASSEMBLY"](#) .
2. Slide rear ventilator duct 2 toward vehicle rear, and then remove it.
3. Remove mounting clips, and then remove rear ventilator duct 1.



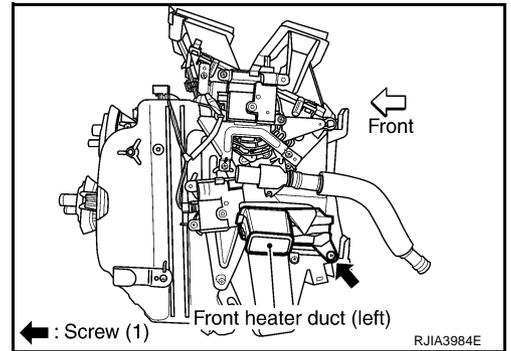
4. Remove floor carpet. Refer to [EI-34, "FLOOR TRIM"](#) .
5. Remove mounting screws, and then remove rear ventilator duct 3.



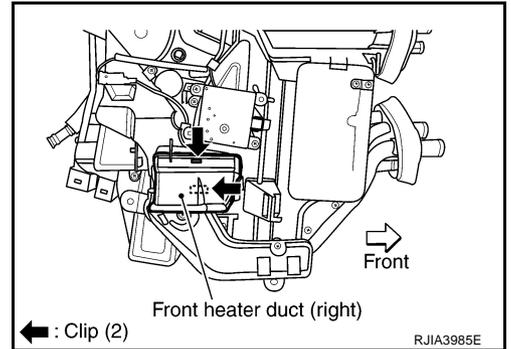
# DUCTS AND GRILLES

## Removal of Front Heater Ducts

1. Remove mounting screw, and then remove front heater duct (left).

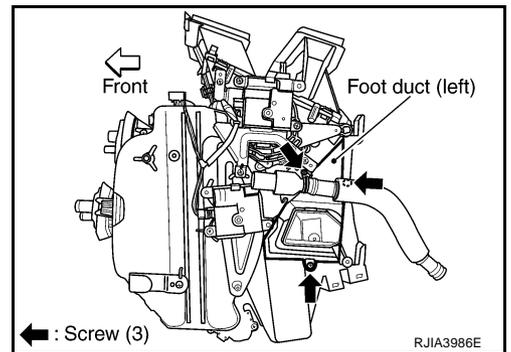


2. Remove mounting clips, and then remove front heater duct (right).

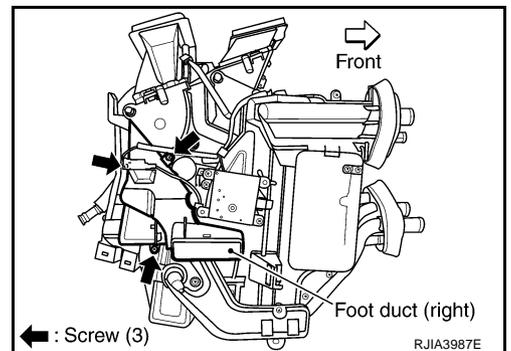


## Removal of Foot Ducts

1. Remove instrument driver lower panel. Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#).
2. Remove mounting screws, and then remove foot duct (driver side).



3. Remove blower unit. Refer to [ATC-112, "BLOWER UNIT"](#).
4. Remove mounting screws, and then remove foot duct (passenger side).



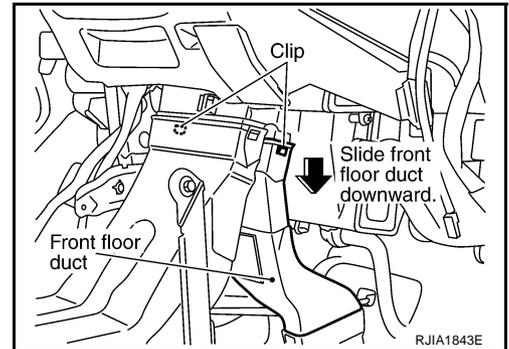
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M

ATC

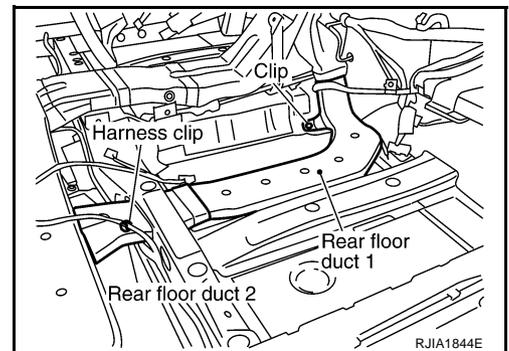
# DUCTS AND GRILLES

## Removal of Floor Ducts

1. Remove front seats and center console assembly. Refer to [SE-103, "FRONT SEAT"](#) and [IP-17, "CENTER CONSOLE ASSEMBLY"](#).
2. Slide front floor duct downward, and then remove it.



3. Peel back floor carpet to a point where rear floor duct is visible.
4. Remove mounting clip and harness clip, and then remove rear floor ducts.



## INSTALLATION

Installation is basically the reverse order of removal.

# REFRIGERANT LINES

## REFRIGERANT LINES

PFP:92600

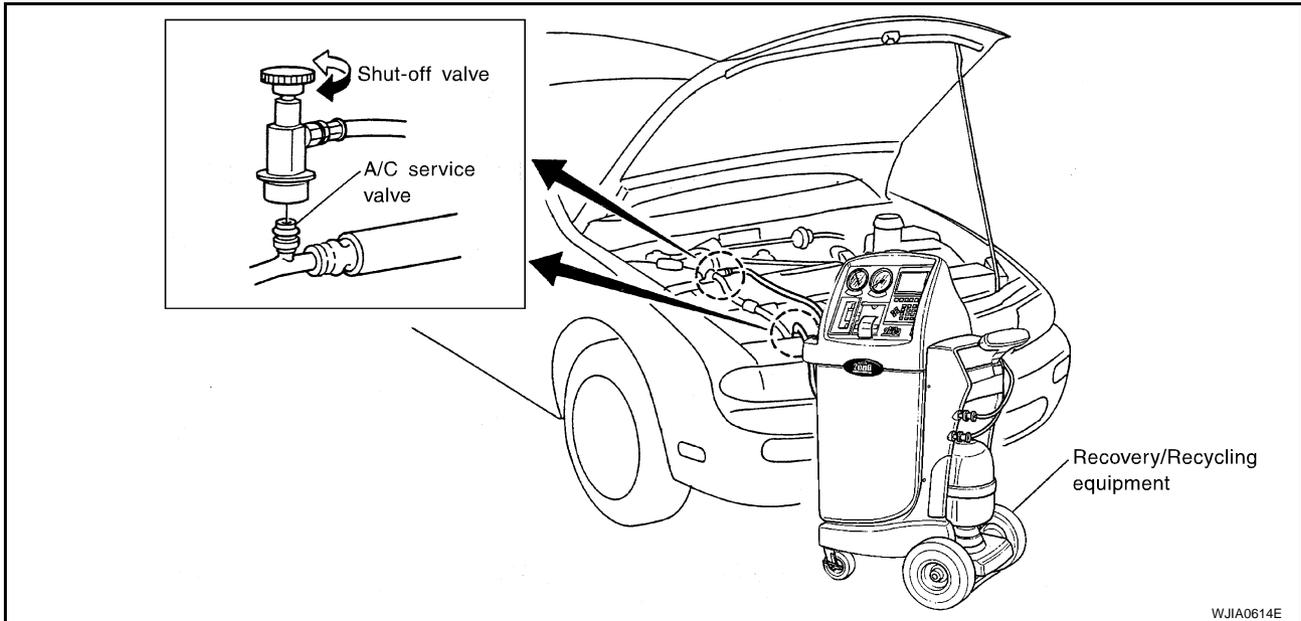
### HFC-134a (R-134a) Service Procedure SETTING OF SERVICE TOOLS AND EQUIPMENT

NJS000BX

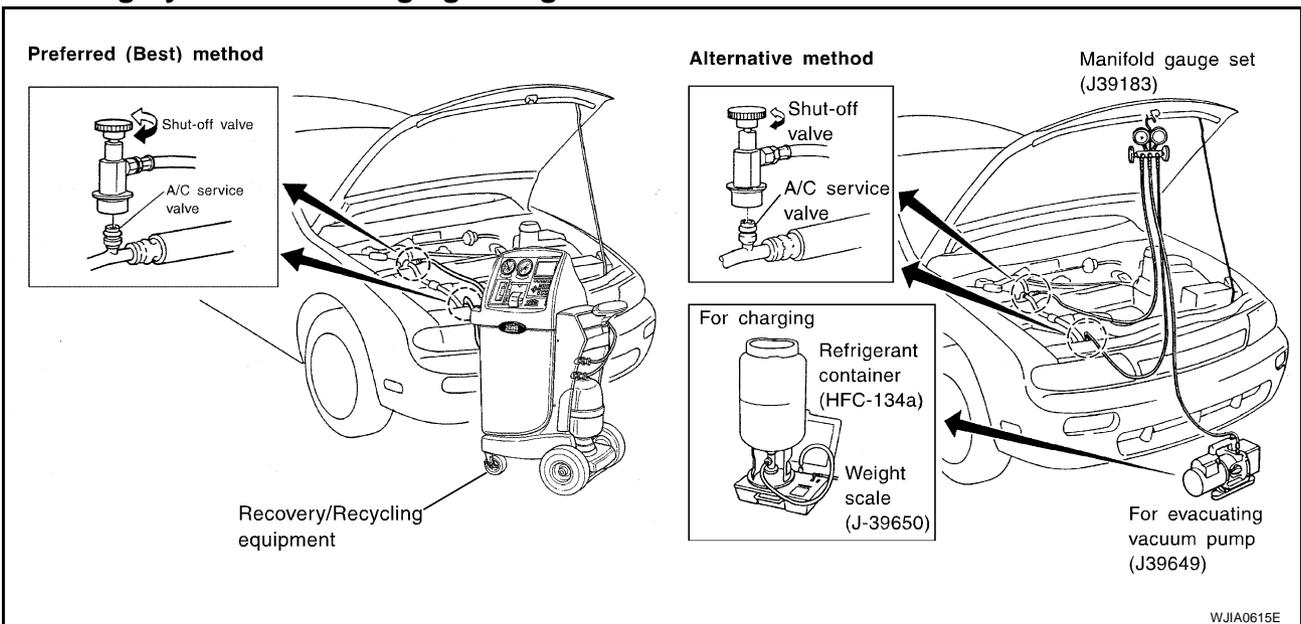
#### Discharging Refrigerant

**WARNING:**

Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from A/C system using certified service equipment meeting requirements of SAE J-2210 [HFC-134a (R-134a) recycling equipment] or J-2209 [HFC-134a (R-134a) recovery equipment]. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.



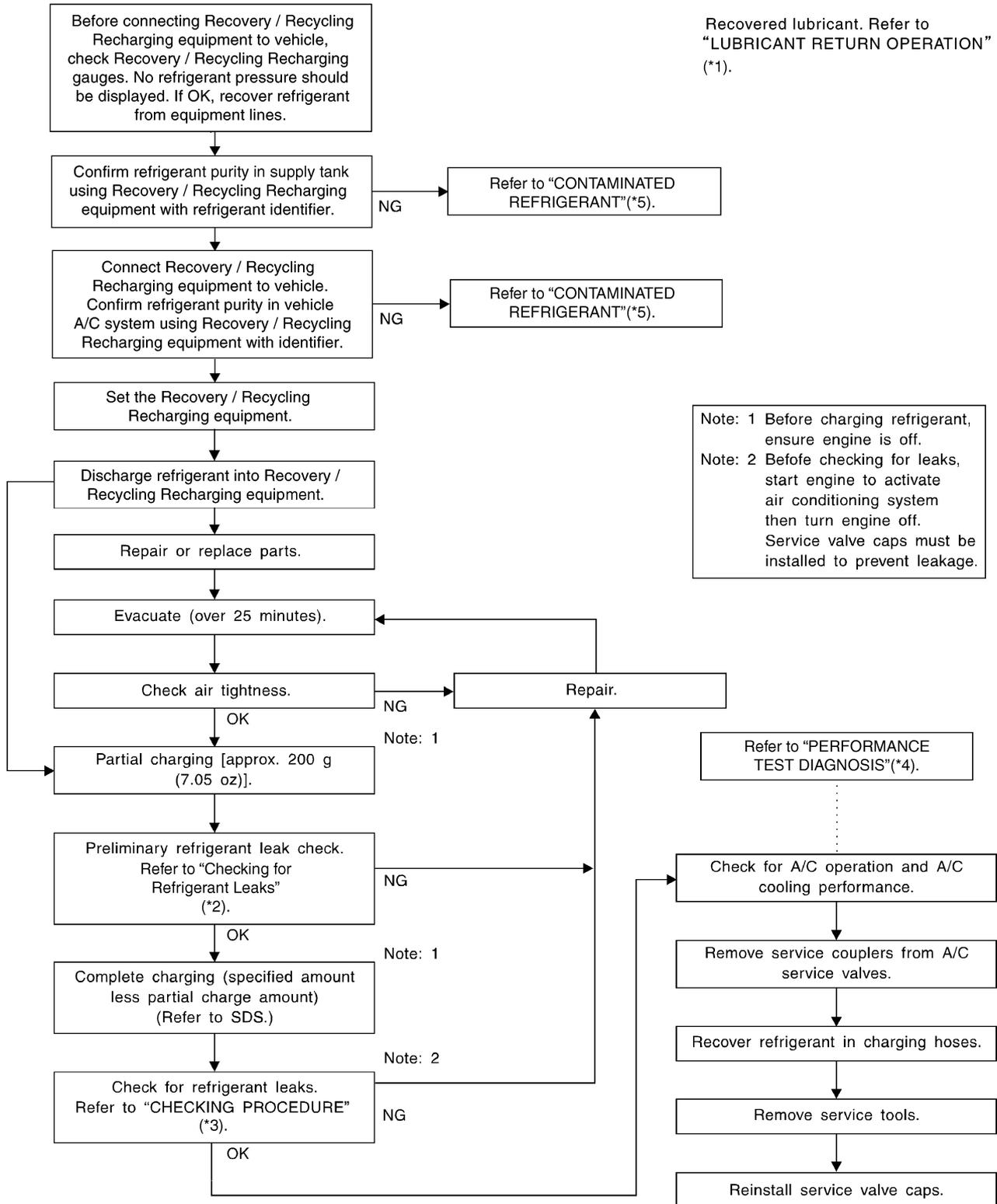
#### Evacuating System and Charging Refrigerant



A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# REFRIGERANT LINES



Recovered lubricant. Refer to "LUBRICANT RETURN OPERATION" (\*1).

Note: 1 Before charging refrigerant, ensure engine is off.  
 Note: 2 Before checking for leaks, start engine to activate air conditioning system then turn engine off. Service valve caps must be installed to prevent leakage.

\*1 [ATC-22, "LUBRICANT RETURN OPERATION"](#)

\*2 [ATC-144, "Checking for Refrigerant Leaks"](#)

\*3 [ATC-146, "CHECKING PROCEDURE"](#)

\*4 [ATC-85, "PERFORMANCE TEST DIAGNOSIS"](#)

\*5 [ATC-6, "CONTAMINATED REFRIGERANT"](#)

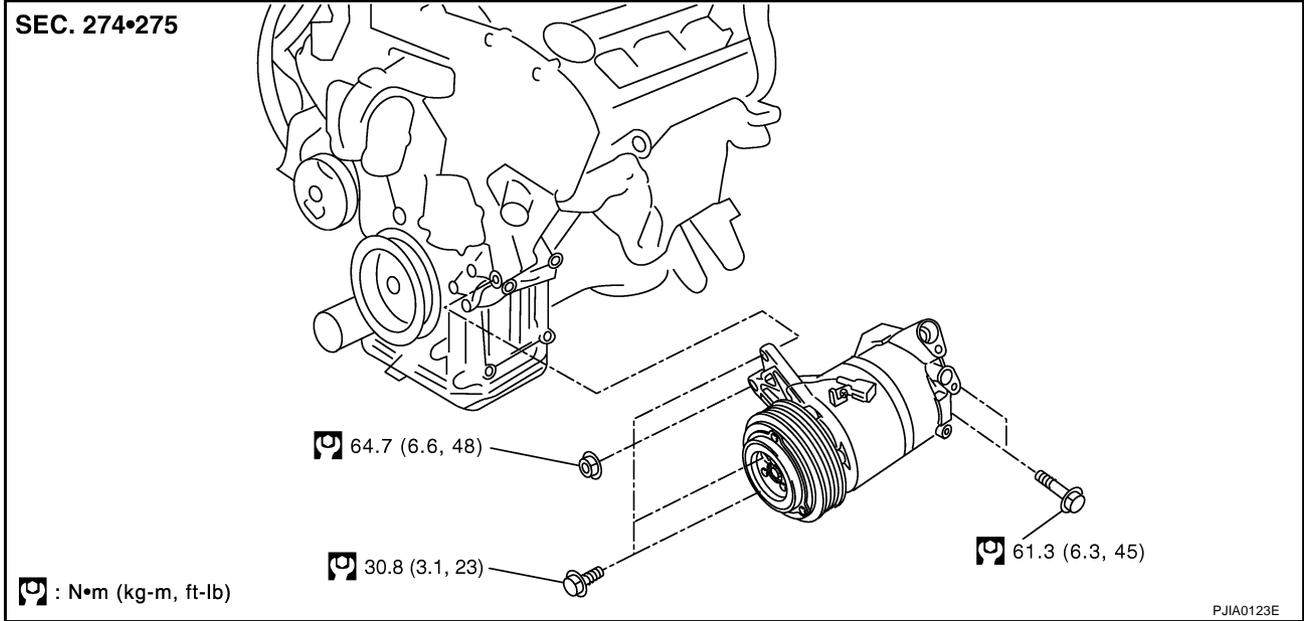
SJIA1275E



# REFRIGERANT LINES

## Removal and Installation of Compressor REMOVAL

NJS000D4

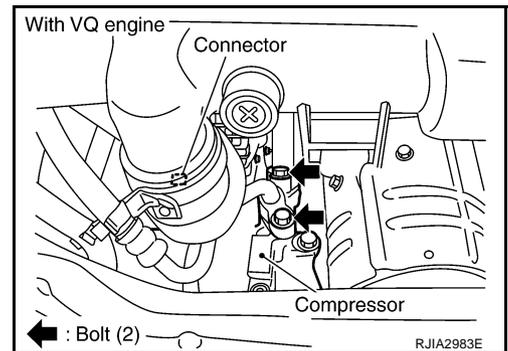


1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove air duct (inlet). Refer to [EM-16, "AIR CLEANER AND AIR DUCT"](#).
3. Remove engine undercover, using power tools.
4. Remove mounting bolts from low-pressure flexible hose and high-pressure flexible hose.

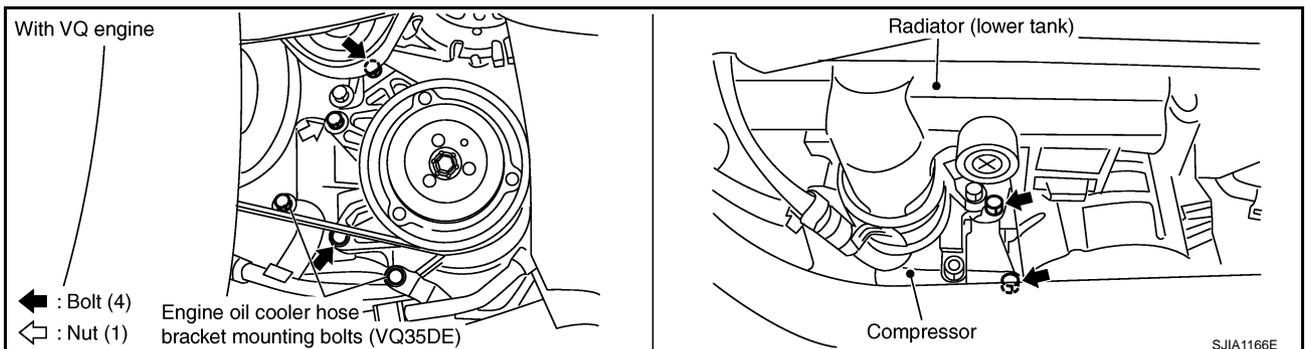
**CAUTION:**

Cap or wrap the joint of compressor, low-pressure flexible hose and high-pressure flexible hose with suitable material such as vinyl tape to avoid the entry of air.

5. Disconnect compressor connector.



6. Remove A/C compressor belt. Refer to [EM-13, "DRIVE BELTS"](#).
7. Remove idler pulley bracket.
8. Remove engine oil cooler hose bracket mounting bolts from compressor, using power tools.



9. Remove mounting bolts and nut from compressor, using power tools.
10. Remove compressor from passenger side of the vehicle.

## INSTALLATION

Installation is basically the reverse order of removal.

# REFRIGERANT LINES

## CAUTION:

- Replace O-rings of low-pressure flexible hose and high-pressure flexible hose with new ones, and then apply compressor oil to it when installing it.
- When recharging refrigerant, check for leaks.

Idler pulley bracket mounting bolts

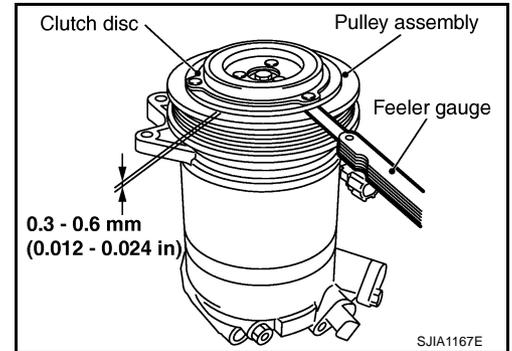
 : 28 N·m (2.9 kg·m, 21 ft·lb)

## Check Disc to Pulley Clearance

Check clearance around entire periphery of clutch disc.

Disc to pulley clearance : 0.3 - 0.60 mm (0.012 - 0.024 in)

If specified clearance is not obtained, replace compressor.



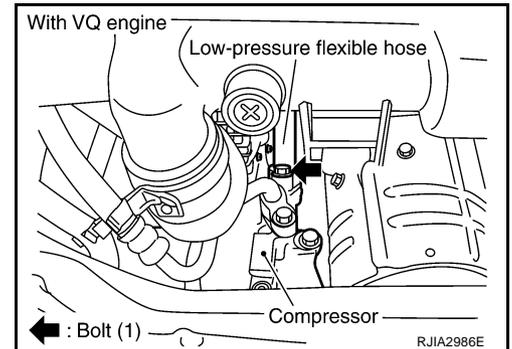
## Removal and Installation of Low-pressure Flexible Hose

### REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove cowl top cover. Refer to [EI-20, "COWL TOP"](#).
3. Remove air duct (inlet). Refer to [EM-16, "AIR CLEANER AND AIR DUCT"](#).
4. Remove mounting bolt from low-pressure flexible hose. (Compressor side)

### CAUTION:

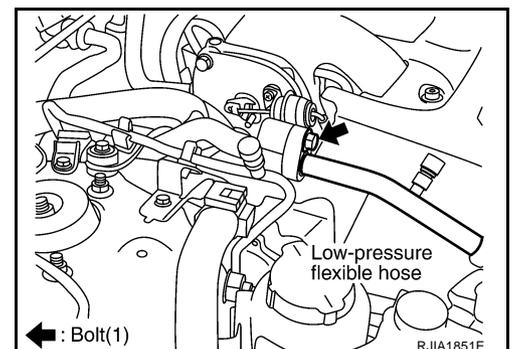
Cap or wrap the joint of low-pressure flexible hose and compressor with suitable material such as vinyl tape to avoid the entry of air.



5. Remove mounting bolt from low-pressure flexible hose.
6. Remove low-pressure flexible hose.

### CAUTION:

Cap or wrap the joint of low-pressure flexible hose and low-pressure pipe 1 with suitable material such as vinyl tape to avoid the entry of air.



### INSTALLATION

Installation is basically the reverse order of removal.

### CAUTION:

- Replace O-rings of low-pressure flexible hose with new ones, and then apply compressor oil to it when installing it.
- When recharging refrigerant, check for leaks.

# REFRIGERANT LINES

NJS000C2

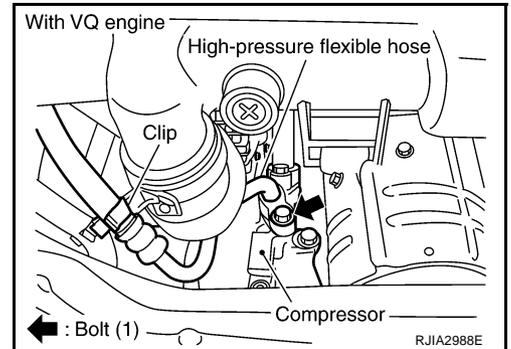
## Removal and Installation of High-pressure Flexible Hose

### REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove air duct (inlet). Refer to [EM-16, "AIR CLEANER AND AIR DUCT"](#).
3. Remove mounting bolt from high-pressure flexible hose (Compressor side), and then remove high-pressure flexible hose mounting clip.

#### CAUTION:

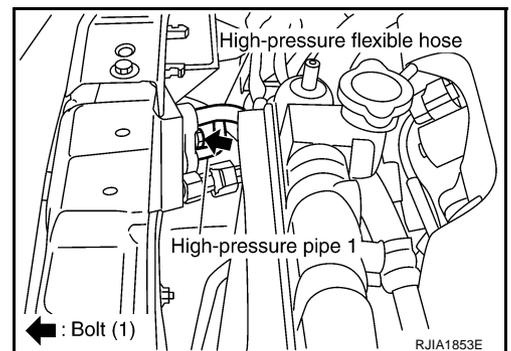
Cap or wrap the joint of high-pressure flexible hose and compressor with suitable material such as vinyl tape to avoid the entry of air.



4. Remove mounting bolt from high-pressure flexible hose (Condenser side), and then remove high-pressure flexible hose.

#### CAUTION:

Cap or wrap the joint of high-pressure flexible hose and condenser with suitable material such as vinyl tape to avoid the entry of air.



### INSTALLATION

Installation is basically the reverse order of removal.

#### CAUTION:

- Replace O-rings of high-pressure flexible hose with new ones, and then apply compressor oil to it when installing it.
- When recharging refrigerant, check for leaks.

# REFRIGERANT LINES

## Removal and Installation of Low-pressure Pipe 1 (Engine Compartment)

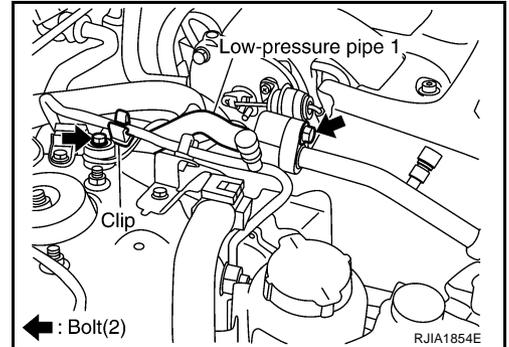
NJS000C3

### REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove cowl top cover. Refer to [EI-20. "COWL TOP"](#).
3. Remove mounting bolts from low-pressure pipe 1 and low-pressure pipe 1 bracket.
4. Remove high-pressure pipe 1 from clip.

#### CAUTION:

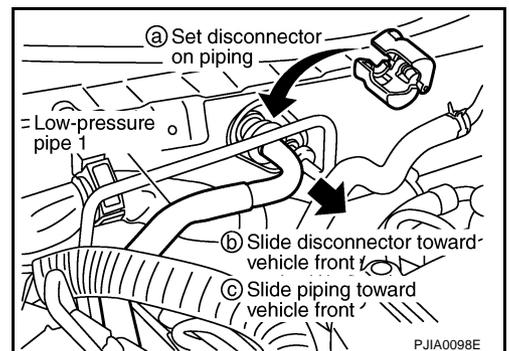
Cap or wrap the joint of low-pressure pipe 1 and low-pressure flexible hose with suitable material such as vinyl tape to avoid the entry of air.



5. Disconnect one-touch joints.
  - a. Set a disconnecter (SST: 9253089916) on A/C piping.
  - b. Slide a disconnecter toward vehicle front until it clicks.
  - c. Slide A/C piping toward vehicle front and disconnect it.
6. Remove low-pressure pipe 1.

#### CAUTION:

Cap or wrap the joint of low-pressure pipe 1 and 2 with suitable material such as vinyl tape to avoid the entry of air.



### INSTALLATION

Installation is basically the reverse order of removal.

#### CAUTION:

- Replace O-rings of low-pressure pipe 1 and low-pressure flexible hose with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

Low-pressure pipe 1 bracket mounting bolt



: 4.2 N·m (0.43 kg-m, 37 in-lb)

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

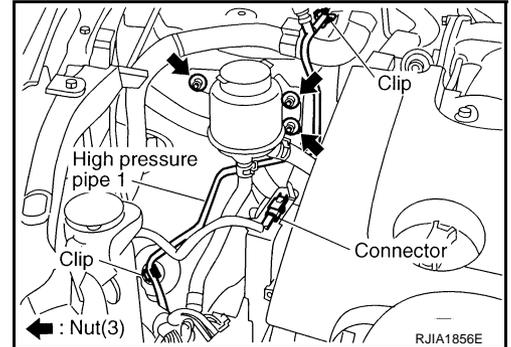
# REFRIGERANT LINES

## Removal and Installation of High-pressure Pipe 1 (Engine Compartment)

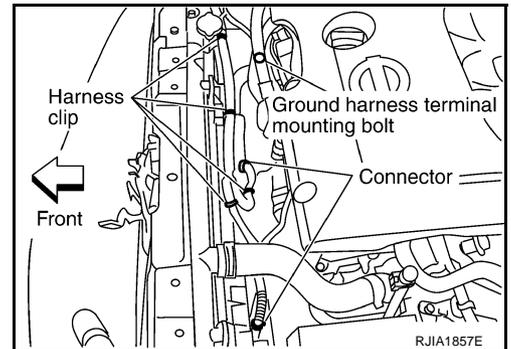
NJS000C4

### REMOVAL

1. Remove low-pressure pipe 1. Refer to [ATC-137, "Removal and Installation of Low-pressure Pipe 1 \(Engine Compartment\)"](#).
2. Remove radiator reservoir tank. Refer to [CO-13, "RADIATOR"](#).
3. Remove IPDM E/R. Refer to [PG-28, "Removal and Installation of IPDM E/R"](#).
4. Remove power steering oil tank mounting nuts.
5. Remove vehicle harness connector from bracket.
6. Remove high-pressure pipe 1 from clips.
7. Remove high-pressure flexible hose from vehicle clips.



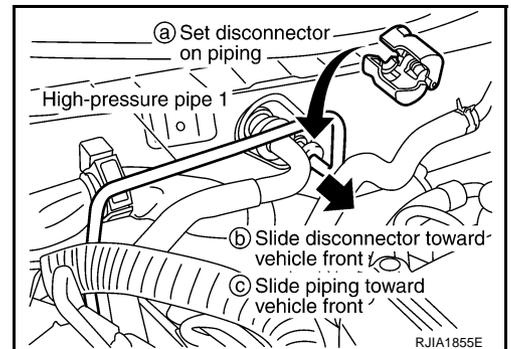
8. Disconnect cooling fan connector.
9. Remove cooling fan harness clips from fan shroud.
10. Remove ground harness terminal mounting bolt.



11. Disconnect one-touch joint of high-pressure pipe 1.
  - a. Set a disconnecter (SST: 9253089908) on A/C piping.
  - b. Slide a disconnecter toward vehicle front until it clicks.
  - c. Slide A/C piping toward vehicle front and disconnect it.

### CAUTION:

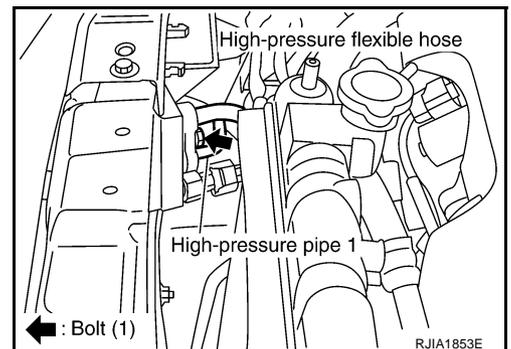
Cap or wrap the joint of high-pressure pipe 1 and 2 with suitable material such as vinyl tape to avoid the entry of air.



12. Remove mounting bolt, and then remove high-pressure pipe 1.

### CAUTION:

Cap or wrap the joint of high-pressure pipe 1 and condenser with suitable material such as vinyl tape to avoid the entry of air.



### INSTALLATION

Installation is basically the reverse order of removal.

# REFRIGERANT LINES

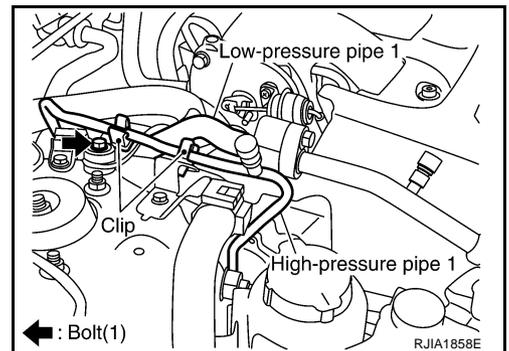
## CAUTION:

- Replace O-rings of high-pressure pipe 1 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

## Removal and Installation of Low-pressure Pipe 2 and High-pressure Pipe 2 NJS000C5

### REMOVAL

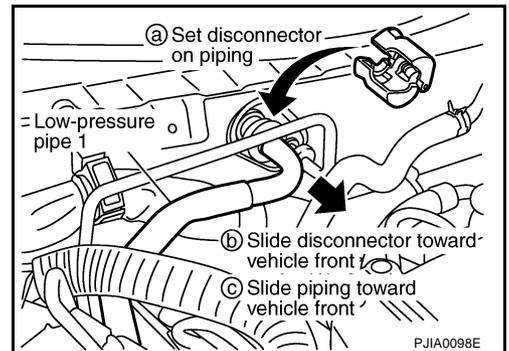
1. Set the temperature control dial (passenger side) at 18°C (60°F), and then disconnect the battery cable from the negative terminal.
2. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
3. Remove cowl top cover. Refer to [EI-20, "COWL TOP"](#) .
4. Remove mounting bolt from low-pressure flexible pipe 1 bracket.
5. Remove high-pressure pipe 1 from vehicle clips.



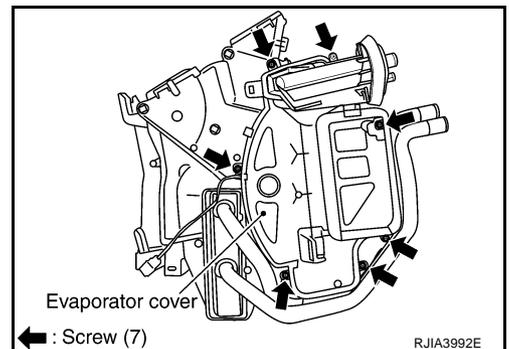
6. Disconnect one-touch joints.
  - a. Set a disconnecter [high-pressure side (SST: 9253089908), low-pressure side (SST: 9253089916)] on A/C piping.
  - b. Slide a disconnecter toward vehicle front until it clicks.
  - c. Slide A/C piping toward vehicle front and disconnect it.

## CAUTION:

Cap or wrap the joint of low-pressure pipe 1, 2 and high-pressure pipe 1, 2 with suitable material such as vinyl tape to avoid the entry of air.



7. Remove blower unit. Refer to [ATC-112, "BLOWER UNIT"](#) .
8. Remove air mix door motor (passenger side), foot duct, heater core cover. Refer to [ATC-123, "AIR MIX DOOR MOTOR"](#) , [ATC-129, "Removal of Foot Ducts"](#) and [ATC-124, "HEATER CORE"](#) .
9. Remove mounting screws, and then remove evaporator cover.

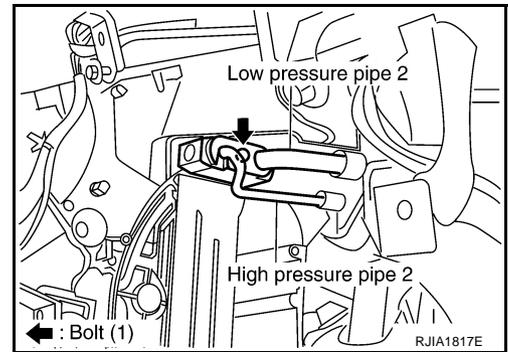


# REFRIGERANT LINES

- Remove mounting bolt, and then remove low-pressure pipe 2 and high-pressure pipe 2.

**CAUTION:**

Cap or wrap the joint of evaporator, low-pressure pipe 2 and high-pressure pipe 2 with suitable material such as vinyl tape to avoid the entry of air.



## INSTALLATION

Installation is basically the reverse order of removal.

**CAUTION:**

- Replace O-rings of low-pressure pipe 1, 2 and high-pressure pipe 1, 2 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- When recharging refrigerant, check for leaks.

Low-pressure pipe 1 bracket mounting bolt



: 4.2 N·m (0.43 kg·m, 37 in·lb)

## Removal and Installation of Liquid Tank

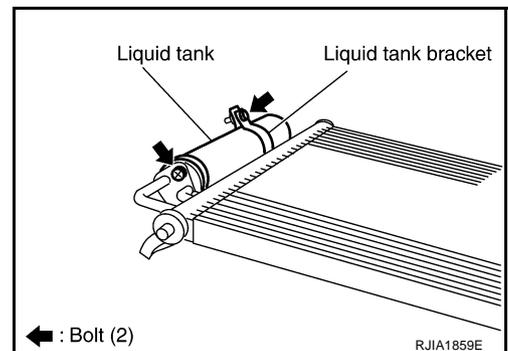
### REMOVAL

- Remove condenser. Refer to [ATC-141, "Removal and Installation of Condenser"](#).
- Clean liquid tank and its surrounding area, and remove dust and rust from tank.

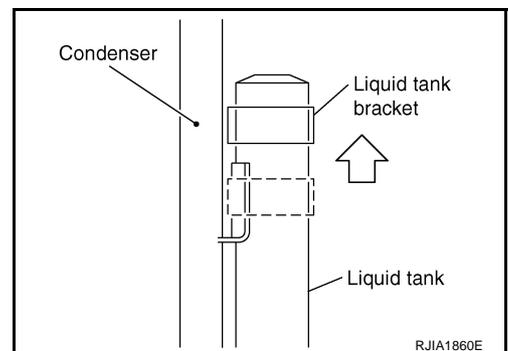
**CAUTION:**

Be sure to clean carefully.

- Remove mounting bolts from liquid tank.



- Lift liquid tank bracket upward. Remove liquid tank bracket from protruding part of condenser.
- Slide liquid tank upward, and then remove liquid tank.



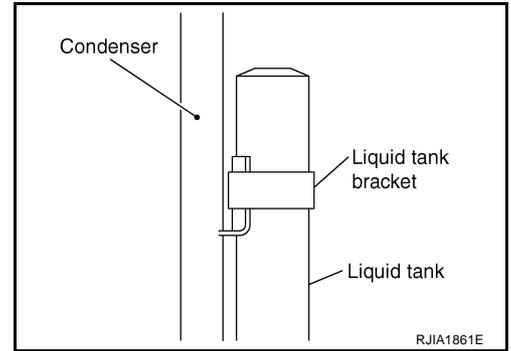
# REFRIGERANT LINES

## INSTALLATION

Install liquid tank, and then install liquid tank bracket on condenser.

### CAUTION:

- Make sure liquid tank bracket is securely installed at protrusion of condenser.
- Make sure liquid tank bracket does not move to a position below center of liquid tank.
- Replace O-rings of condenser pipe with new ones, and then apply compressor oil to it when installing it.
- When recharging refrigerant, check for leaks.



### Liquid tank bracket (upper side) mounting bolt

 : 3.4 N·m (0.34 kg·m, 30 in·lb)

### Liquid tank bracket (lower side) mounting bolt

 : 5.7 N·m (0.58 kg·m, 50 in·lb)

## Removal and Installation of Condenser

### REMOVAL

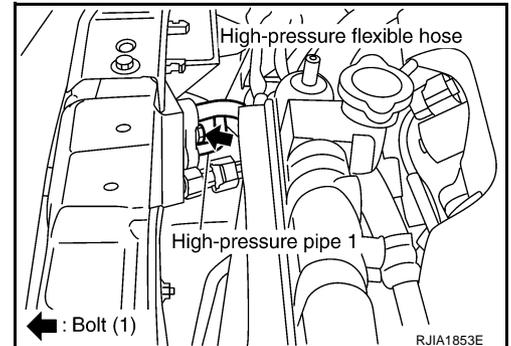
NJS000C7

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove air duct (inlet). Refer to [EM-16, "AIR CLEANER AND AIR DUCT"](#).
3. Remove engine undercover, using power tools.
4. Drain engine coolant. Refer to [CO-9, "Changing Engine Coolant"](#).
5. Remove cooling fan shroud after removing radiator upper hose. Refer to [CO-13, "RADIATOR"](#).
6. Remove mounting bolt, and then disconnect high-pressure flexible hose and high-pressure pipe 1.

### CAUTION:

Cap or wrap the joint of condenser, high-pressure flexible hose and high-pressure pipe 1 with suitable material such as vinyl tape to avoid the entry of air.

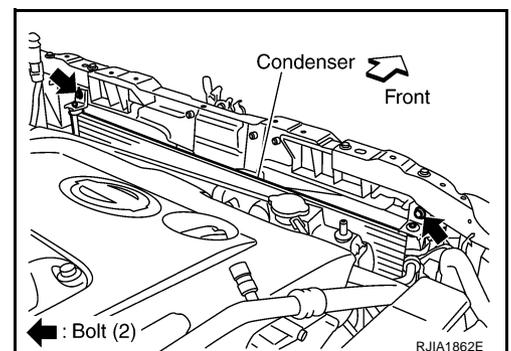
7. Remove radiator upper mount, move radiator and condenser to the engine side.



8. Remove mounting bolts, and then remove condenser.

### CAUTION:

Be careful not to damage core surface of condenser and radiator.



# REFRIGERANT LINES

## INSTALLATION

Installation is basically the reverse order of removal.

### CAUTION:

- Replace O-rings of high-pressure flexible hose and high-pressure pipe 1 with new ones, and then apply compressor oil to it when installing it.
- When recharging refrigerant, check for leaks.

### Condenser mounting bolts

 : 6.1 N·m (0.62 kg·m, 54 in·lb)

## Removal and Installation of Refrigerant Pressure Sensor

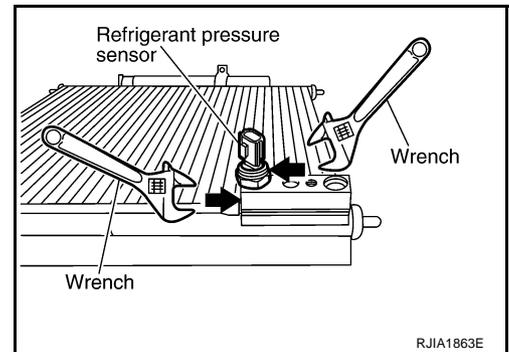
NJS000C8

### REMOVAL

1. Remove condenser. Refer to [ATC-141, "Removal and Installation of Condenser"](#).
2. Remove refrigerant pressure sensor from condenser.

### CAUTION:

When working, be careful not to damage the condenser.



## INSTALLATION

Installation is basically the reverse order of removal.

### CAUTION:

Apply compressor oil to O-ring of refrigerant pressure sensor when installing it.

### Refrigerant pressure sensor

 : 10.8 N·m (1.1 kg·m, 8.0 ft·lb)

## Removal and Installation of Evaporator

NJS000C9

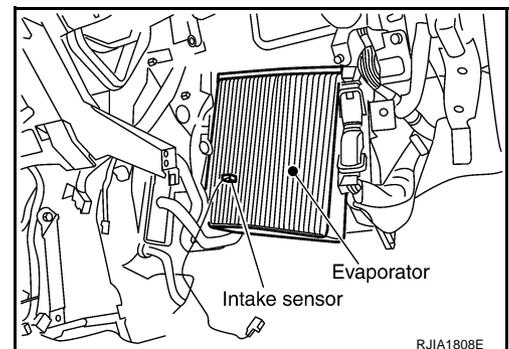
### REMOVAL

1. Remove low-pressure pipe 2 and high-pressure pipe 2. Refer to [ATC-139, "Removal and Installation of Low-pressure Pipe 2 and High-pressure Pipe 2"](#).

### CAUTION:

Cap or wrap the joint of evaporator, low-pressure pipe 1, 2 and high-pressure pipe 1, 2 with suitable material such as vinyl tape to avoid the entry of air.

2. Slide evaporator, and then remove it from heater & cooling unit assembly.
3. Remove intake sensor from evaporator, and then remove evaporator.



# REFRIGERANT LINES

## INSTALLATION

Installation is basically the reverse order of removal.

### CAUTION:

- Replace O-rings of low-pressure pipe 1, 2 and high-pressure pipe 1, 2 with new ones, and then apply compressor oil to it when installing it.
- Female-side piping connection is thin and easy to deform. Slowly insert the male-side piping straight in axial direction.
- Insert piping securely until a click is heard.
- After piping connection is completed, pull male-side piping by hand to make sure that connection does not come loose.
- O-rings are different from low-pressure pipe 1 (high-pressure pipe 1) and low-pressure pipe 2 (high-pressure pipe 2).
- Mark the mounting position of intake sensor bracket prior to removal so that the reinstalled sensor can be located in the same position.
- When recharging refrigerant, check for leaks.

Low-pressure pipe 1 bracket mounting bolt



: 4.2 N·m (0.43 kg·m, 37 in·lb)

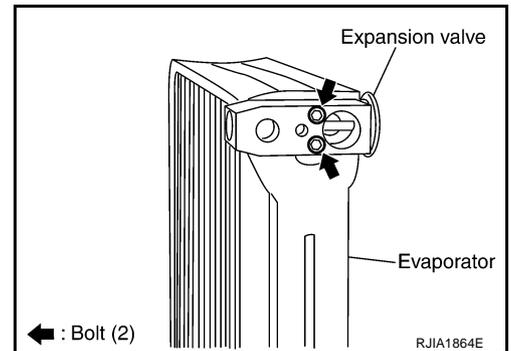
## Removal and Installation of Expansion Valve

### REMOVAL

1. Remove evaporator. Refer to [ATC-142, "Removal and Installation of Evaporator"](#) .
2. Remove mounting bolts, and then remove expansion valve.

### CAUTION:

Cap or wrap the joint of evaporator with suitable material such as vinyl tape to avoid the entry of air.



## INSTALLATION

Installation is basically the reverse order of removal.

### CAUTION:

- Replace O-rings of evaporator with new ones, and then apply compressor oil to it when installing it.
- O-rings are different from low-pressure pipe 1 (high-pressure pipe 1) and low-pressure pipe 2 (high-pressure pipe 2).
- When recharging refrigerant, check for leaks.

Expansion valve mounting bolts



: 3.9 N·m (0.4 kg·m, 35 in·lb)

# REFRIGERANT LINES

## Checking for Refrigerant Leaks

NJS000CB

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C lubricant leakage, damage and corrosion. A/C lubricant leakage may indicate an area of refrigerant leakage. Allow extra inspection time in these areas when using either an electrical leak detector or fluorescent dye leak detector (SST: J-42220).

If dye is observed, confirm the leak with an electrical leak detector. It is possible a prior leak was repaired and not properly cleaned.

When searching for leaks, do not stop when one leak is found but continue to check for additional leaks at all system components and connections.

When searching for refrigerant leaks using an electrical leak detector, move the probe along the suspected leak area at 1 to 2 inches per second and no further than 1/4 inch from the component.

### **CAUTION:**

**Moving the electrical leak detector probe slower and closer to the suspected leak area will improve the chances of finding a leak.**

## Checking System for Leaks Using the Fluorescent Leak Detector

NJS000CC

1. Check A/C system for leaks using the UV lamp and safety goggles (SST: J-42220) in a low sunlight area (area without windows preferable). Illuminate all components, fittings and lines. The dye will appear as a bright green/yellow area at the point of leakage. Fluorescent dye observed at the evaporator drain opening indicates an evaporator core assembly (tubes, core or expansion valve) leak.
2. If the suspected area is difficult to see, use an adjustable mirror or wipe the area with a clean shop rag or cloth, with the UV lamp for dye residue.
3. After the leak is repaired, remove any residual dye using dye cleaner (SST: J-43872) to prevent future misdiagnosis.
4. Perform a system performance check and verify the leak repair with an approved electrical leak detector.

### **NOTE:**

Other gases in the work area or substances on the A/C components, for example, anti-freeze, windshield washer fluid, solvents and lubricants, may falsely trigger the leak detector. Make sure the surfaces to be checked are clean.

Clean with a dry cloth or blow off with shop air.

Do not allow the sensor tip of the detector to contact with any substance. This can also cause false readings and may damage the detector.

## Dye Injection

NJS000CD

(This procedure is only necessary when recharging the system or when the compressor has seized and was replaced.)

1. Check A/C system static (at rest) pressure. Pressure must be at least 345 kPa (3.52 kg/cm<sup>2</sup>, 50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool (SST: J-41459).
3. Connect the injector tool to the A/C low-pressure side service valve.
4. Start the engine and switch A/C ON.
5. When the A/C operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool (SST: J-41459) (refer to the manufacturer's operating instructions).
6. With the engine still running, disconnect the injector tool from the service valve.

### **CAUTION:**

**Be careful the A/C system or replacing a component, pour the dye directly into the open system connection and proceed with the service procedures.**

7. Operate the A/C system for a minimum of 20 minutes to mix the dye with the system oil. Depending on the leak size, operating conditions and location of the leak, it may take from minutes to days for the dye to penetrate a leak and become visible.
8. Attach a blue label as necessary.

# REFRIGERANT LINES

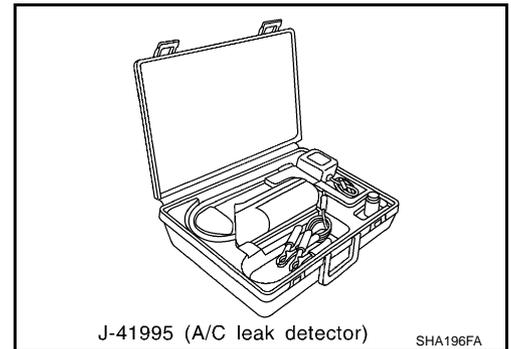
## Electrical Leak Detector

### PRECAUTIONS FOR HANDLING LEAK DETECTOR

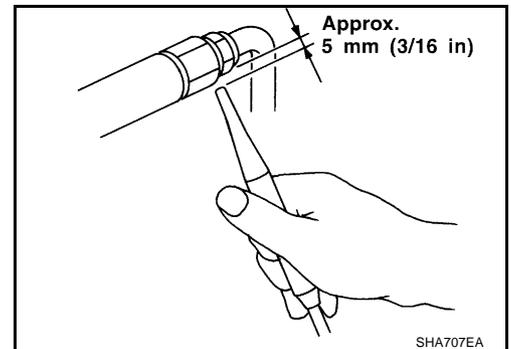
NJS000CE

When performing a refrigerant leak check, use an A/C electrical leak detector (SST) or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.

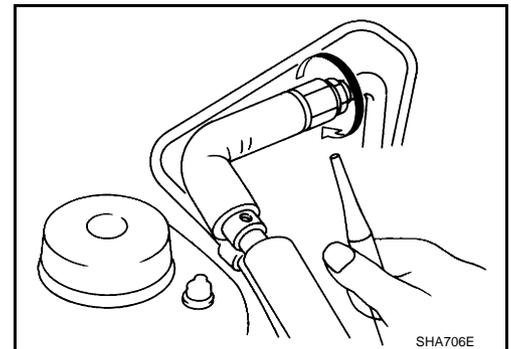
The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.



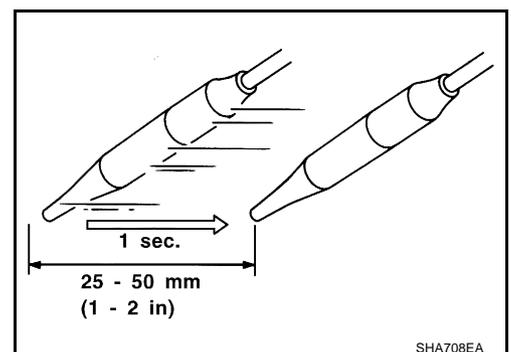
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.



2. When testing, circle each fitting completely with probe.



3. Move probe along component approximately 25 to 50 mm (1 to 2 in)/sec.



A  
B  
C  
D  
E  
F  
G  
H  
I  
ATC  
K  
L  
M

# REFRIGERANT LINES

## CHECKING PROCEDURE

To prevent inaccurate or false readings, make sure there is no refrigerant vapor, shop chemicals, or cigarette smoke in the vicinity of the vehicle. Perform the leak test in calm area (low air/wind movement) so that the leaking refrigerant is not dispersed.

1. Stop the engine.
2. Connect a suitable A/C manifold gauge set (SST: J-39183) to the A/C service valves.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm<sup>2</sup> , 50 psi) above 16°C (61°F). If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

### NOTE:

At temperatures below 16°C (61°F), leaks may not be detected since the system may not reach 345 kPa (3.52 kg/cm<sup>2</sup> , 50 psi).

4. Perform the leak test from the high-pressure side (compressor discharge a to evaporator inlet g) to the low-pressure side (evaporator drain hose h to shaft seal m). Refer to [ATC-133, "Components"](#) . Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detected probe completely around the connection/component.

### Compressor

Check the fitting of high- and low-pressure flexible hoses, relief valve and shaft seal.

### Condenser

Check the fitting of high-pressure flexible hose and pipe, refrigerant pressure sensor.

### Liquid tank

Check the fitting of refrigerant connection.

### Service valves

Check all around the service valves. Ensure service valve caps are secured on the service valves (to prevent leaks).

### NOTE:

After removing A/C manifold gauge set from service valves, wipe any residue from valves to prevent any false readings by leak detector.

### Cooling unit (Evaporator)

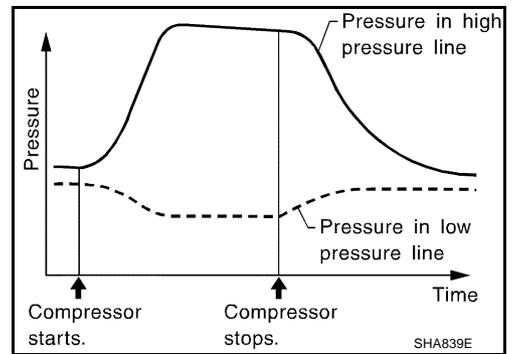
With engine OFF, turn blower fan on "High" for at least 15 seconds to dissipate any refrigerant trace in the cooling unit. Wait a minimum of 10 minutes accumulation time (refer to the manufacturer's recommended procedure for actual wait time) before inserting the leak detector probe into the drain hose.

Keep the probe inserted for at least 10 seconds. Use caution not to contaminate the probe tip with water or dirt that may be in the drain hose.

5. If a leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check as outlined above.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components. If no leaks are found, perform steps 7 - 10.
7. Start the engine.
8. Set the A/C control as follows;
  - a. A/C switch: ON
  - b. MODE door position: VENT (Ventilation)
  - c. Intake door position: Recirculation
  - d. Temperature setting: Max cold
  - e. Fan speed: High
9. Run engine at 1,500 rpm for at least 2 minutes.

## REFRIGERANT LINES

10. Stop the engine and perform leak check again following steps 4 through 6 above. Refrigerant leaks should be checked immediately after stopping the engine. Begin with the leak detector at the compressor. The pressure on the high-pressure side will gradually drop after refrigerant circulation stops and pressure on the low-pressure side will gradually rise, as shown in the graph. Some leaks are more easily detected when pressure is high.



11. Before connecting recovery/recycling recharging equipment to vehicle, check recovery/recycling recharging equipment gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines and then check refrigerant purity.
12. Confirm refrigerant purity in supply tank using recovery/recycling recharging equipment and refrigerant identifier.
13. Confirm refrigerant purity in vehicle A/C system using recovery/recycling recharging equipment and refrigerant identifier.
14. Discharge A/C system using approved refrigerant recovery equipment. Repair the leaking fitting or component if necessary.
15. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
16. Perform A/C performance test to ensure system works properly.

A  
B  
C  
D  
E  
F  
G  
H  
I  
K  
L  
M

ATC

# SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

### Compressor

NJS000CF

Model	ZEXEL VALEO CLIMATE CONTROL make DKS-17D
Type	Swash plate
Displacement cm <sup>3</sup> (cu in)/rev	175 (10.7)
Cylinder bore × stroke mm (in)	30.5 (1.20) × 24.0 (0.94)
Direction of rotation	Clockwise (viewed from drive end)
Drive belt	Poly V

### Lubricant

NJS000CG

Model	ZEXEL VALEO CLIMATE CONTROL make DKS-17D	
Name	Nissan A/C System Oil Type S (DH-PS)	
Capacity mℓ (US fl oz, Imp fl oz)	Total in system	150 (5.03, 5.3)
	Compressor (Service part) charging amount	150 (5.03, 5.3)

### Refrigerant

NJS000CH

Type	HFC-134a (R-134a)
Capacity kg (lb)	0.525 (1.16)

### Engine Idling Speed

NJS000CI

Refer to [EC-669, "Idle Speed and Ignition Timing"](#) .

### Belt Tension

NJS000CJ

Refer to [EM-143, "DRIVE BELT"](#) .