SECTION MTC

MANUAL AIR CONDITIONER

CONTENTS

PRECAUTIONS

PFP:00001

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

EJS0020W

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

EJS001ED

WARNING:

- **CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed, compressor failure is likely to occur. Refer to MTC-4, "Contaminated Refrigerant" . 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 failure 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, do not 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.**
  - **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 SAE J2210 [HFC-134a (R-134a) recycling equipment], or J2209 [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.**
  - **Do not allow A/C lubricant (NISSAN A/C system oil type DHPS) to come in contact with styrofoam parts. Damage may result.**

Contaminated Refrigerant

EJS001EE

If a refrigerant other than pure HFC-134a (R-134a) is identified in a vehicle, your options are:

- 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 your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.

- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may 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.

General Refrigerant Precautions

EJS001EF

WARNING:

- **Do not 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.**
- **Do not store or heat refrigerant containers above 52°C (125°F).**
- **Do not 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.**
- **Do not 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.**
- **Do not 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 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.**

Precautions for Leak Detection Dye

EJS001EG

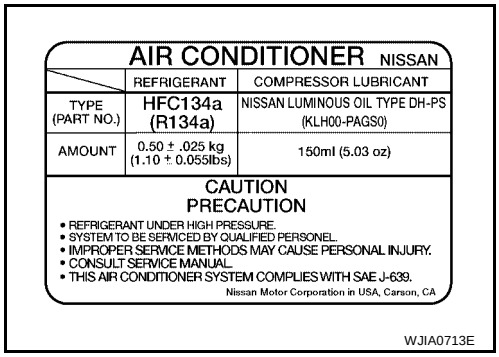
- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not 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** .
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not 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. Do not use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C systems or CFC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three (3) years unless a compressor failure occurs.

A/C Identification Label

EJS001EH

Vehicles with factory installed fluorescent dye have this identification label on the underside of hood.

NOTE:
Vehicles with factory installed fluorescent dye have a green label.



Precautions for Refrigerant Connection

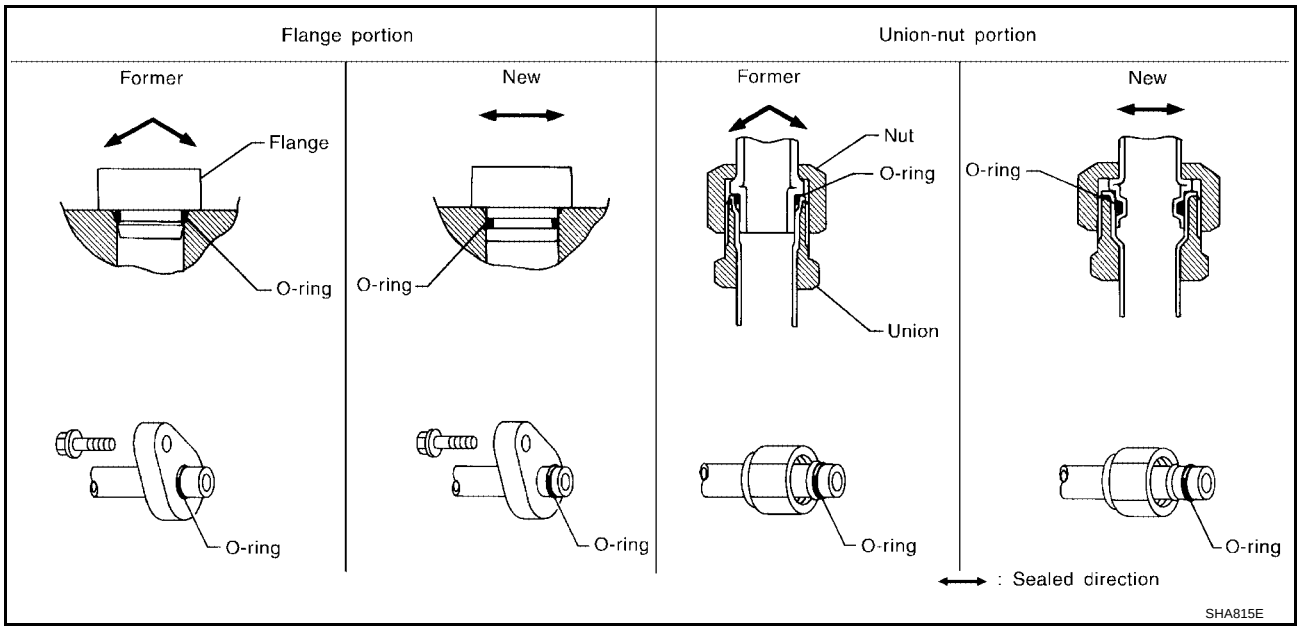
EJS001EI

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

- Expansion valve to cooling unit
- Evaporator pipes to evaporator (inside cooling unit)
- Refrigerant pressure sensor

FEATURES OF NEW TYPE REFRIGERANT CONNECTION

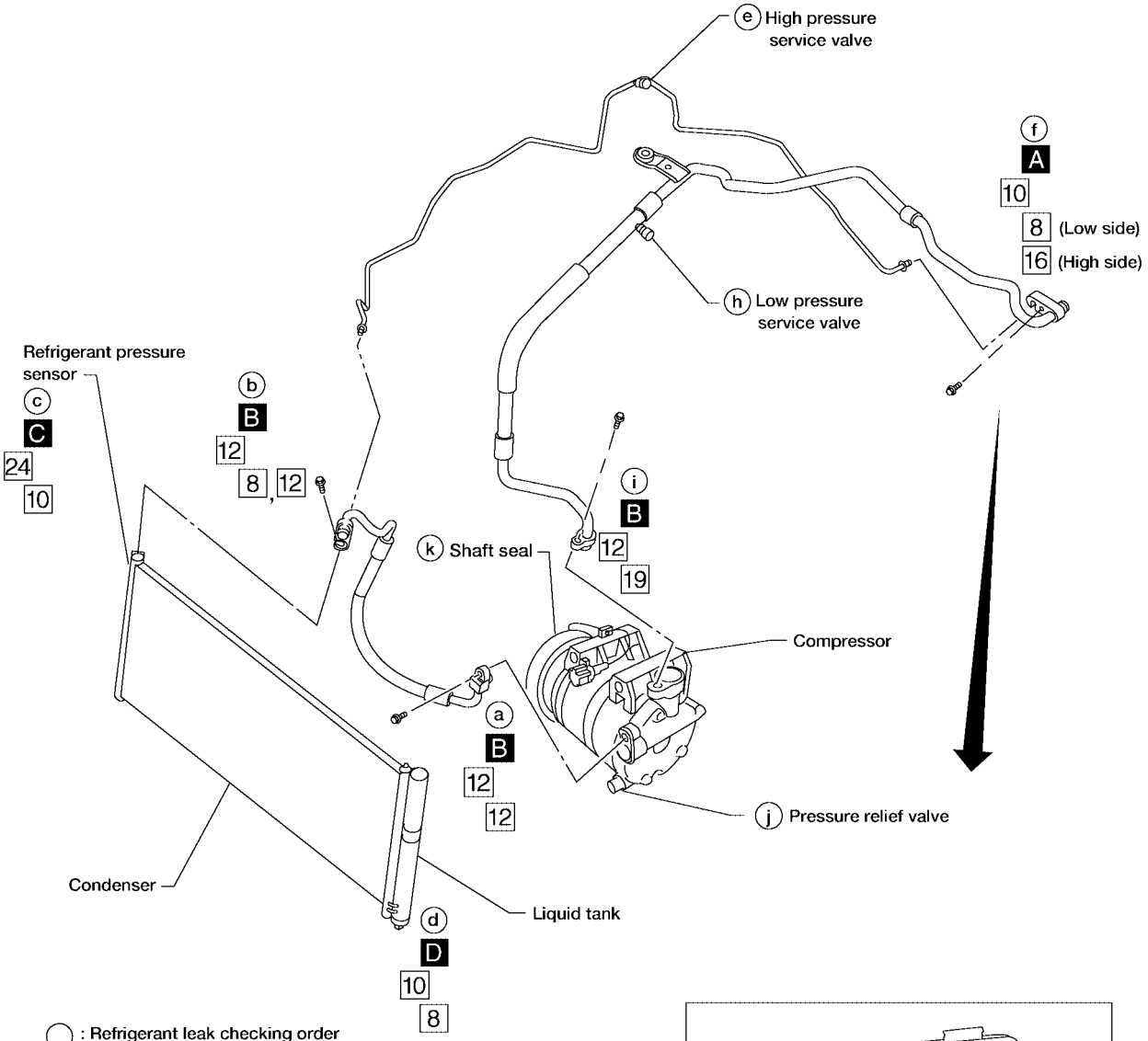
- The O-ring has been relocated. It has also been provided with a groove for proper installation. This eliminates the chance of the O-ring being caught in, or damaged by, the mating part. The sealing direction of the O-ring is now set vertically in relation to the contacting surface of the mating part 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.

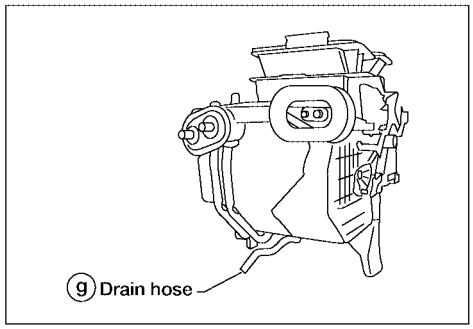


O-RING AND REFRIGERANT CONNECTION

QR25DE Models

SEC. 214 • 271 • 274 • 276





○ : Refrigerant leak checking order

□ : (Tightening torque)

□ □ : (Wrench size)

□ : (O-ring size)

: N·m (kg-m, in-lb)

: N·m (kg-m, ft-lb)

A : 2.9 – 5.9 (0.29 – 0.60, 26 – 52)

B : 7.8 – 19.6 (0.8 – 1.9, 69 – 173)

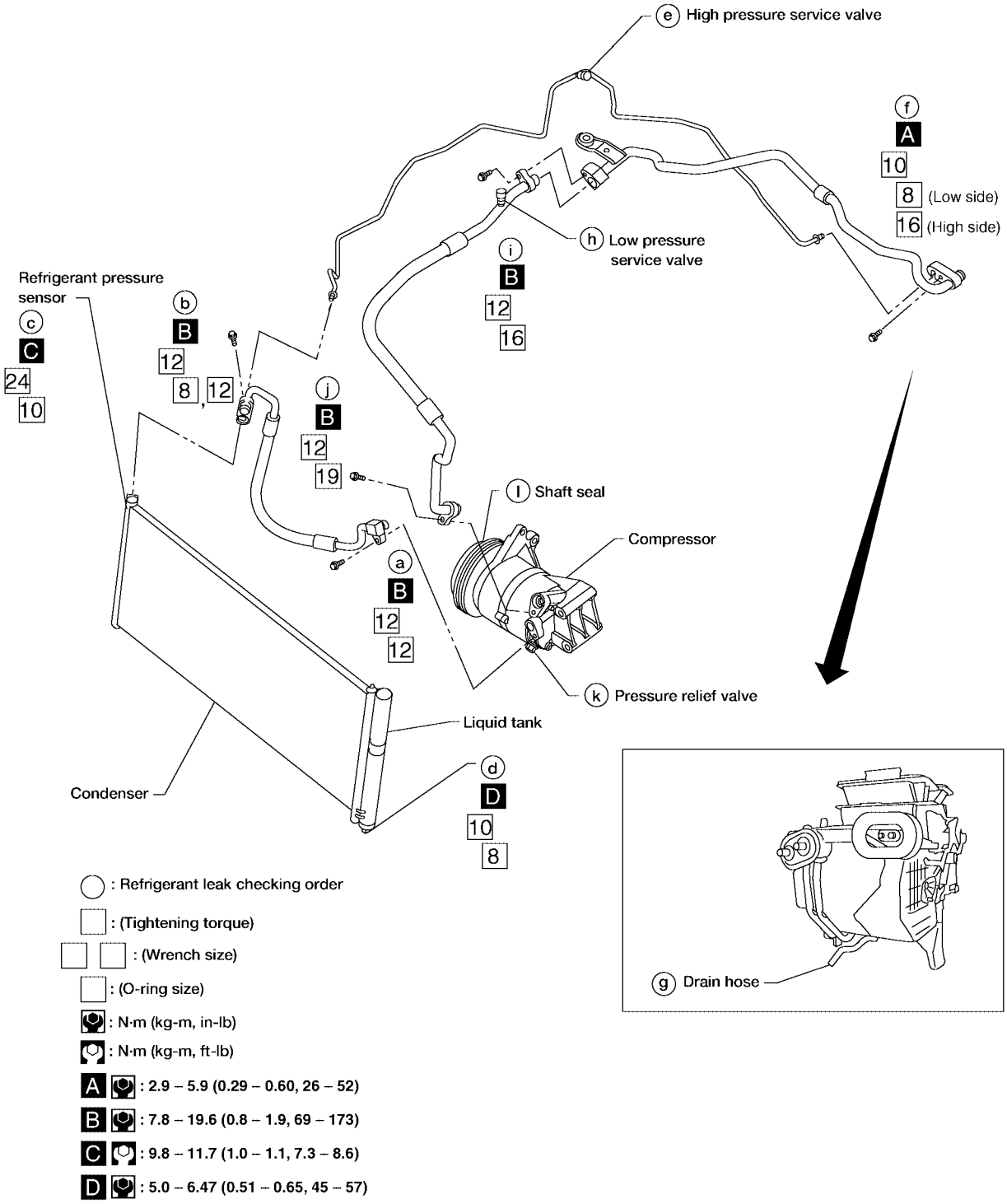
C : 9.8 – 11.7 (1.0 – 1.1, 7.3 – 8.6)

D : 5.0 – 6.47 (0.51 – 0.65, 45 – 57)

WJIA0981E

VQ35DE Models

SEC. 214 • 271 • 274 • 276

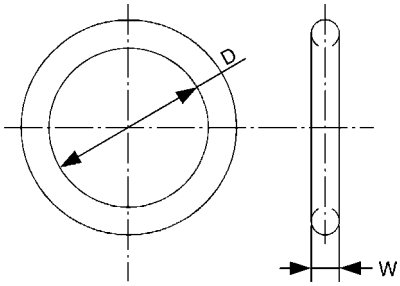


WJIA0982E

CAUTION:

The new and former refrigerant connections use different O-ring configurations. Do not confuse O-rings since they are not interchangeable. If a wrong O-ring is installed, refrigerant will leak at, or around, the connection.

O-Ring Part Numbers and Specifications



Connection type	O-ring size	Part number*	D mm (in)	W mm (in)
New	8	92471 N8210	6.8 (0.268)	1.85 (0.0728)
Former	10	J2476 89956	9.25 (0.3642)	1.78 (0.0701)
New	12	92472 N8210	10.9 (0.429)	2.43 (0.0957)
Former		92475 71L00	11.0 (0.433)	2.4 (0.094)
New	16	92473 N8210	13.6 (0.535)	2.43 (0.0957)
Former		92475 72L00	14.3 (0.563)	2.3 (0.091)
New	19	92474 N8210	16.5 (0.650)	2.43 (0.0957)

*: Always check with the Parts Department for the latest parts information.

WARNING:

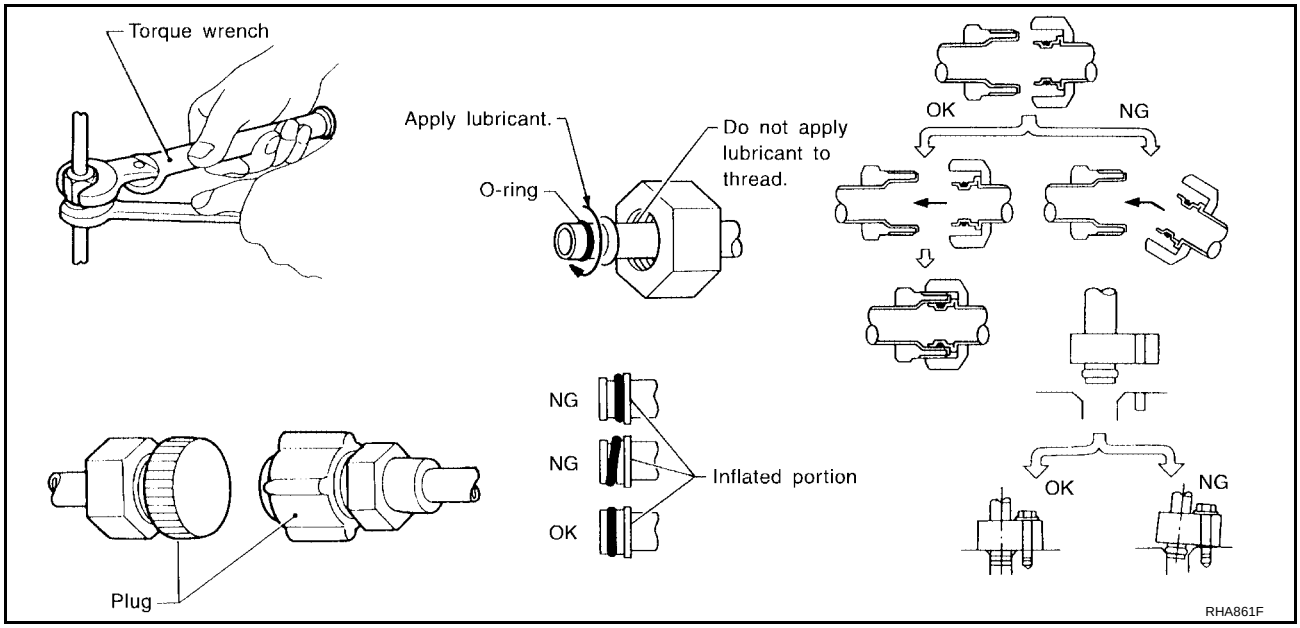
Make sure all refrigerant is discharged into the recycling equipment and the pressure in the system is less than atmospheric pressure. Then gradually loosen the discharge side hose fitting and remove it.

CAUTION:

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

- **When the compressor is removed, store it in the same position 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 dirt and moisture.**
- **When installing an air conditioner in the vehicle, connect the pipes as the final stage of the operation. Do not 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 tube, apply lubricant to circle of the O-rings shown in illustration. Be careful not to apply lubricant to threaded portion.**
  Lubricant name: NISSAN A/C System Lubricant Type DH-PS or equivalent
  Part number: KLH00-PAGS0
- **O-ring must be closely attached to dented portion of tube.**
- **When replacing the O-ring, be careful not to damage O-ring and tube.**
- **Connect tube until you hear it click, then tighten the nut or bolt by hand until snug. Make sure that the O-ring is installed to tube correctly.**

- **After connecting line, conduct leak test and make sure that there is no leakage from connections. When the gas leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.**



Precautions for Servicing Compressor

EJS001EJ

- **Plug all openings to prevent moisture and foreign matter from entering.**
- **When the compressor is removed, store it in the same position as it is when mounted on the car.**
- **When replacing or repairing compressor, follow “Maintenance of Lubricant Quantity in Compressor” exactly. Refer to MTC-19, "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 5 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 1 hour.**
- **After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation. [Gap between clutch disc and pulley is 0.3 - 0.6 mm (0.012 - 0.024 in)]**

Precautions for Service Equipment

EJS001EK

RECOVERY/RECYCLING EQUIPMENT

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

ELECTRONIC LEAK DETECTOR

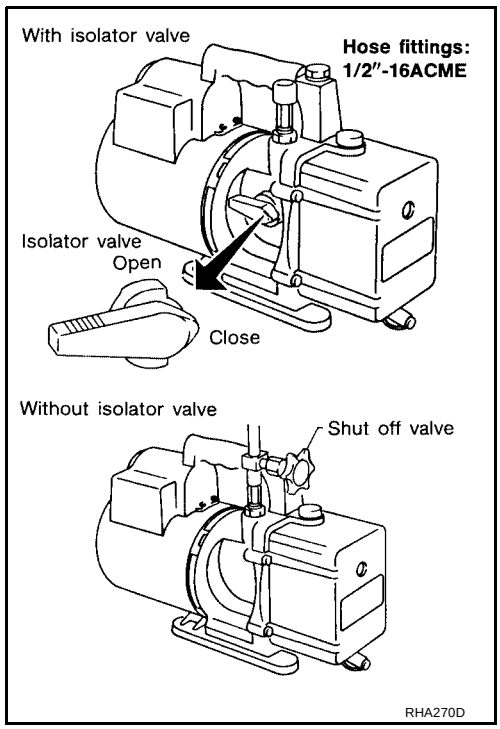
Follow the manufacturer's instructions for tester operation and tester maintenance.

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 situated near the hose-to-pump connection, as follows.

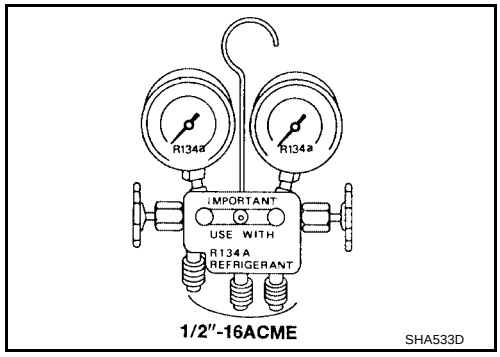
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has 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 a no vacuum condition. Such valves may restrict the pump's ability to pull a deep vacuum and are not recommended.



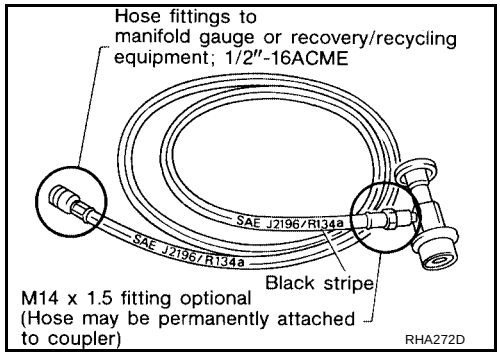
MANIFOLD GAUGE SET

Be certain that the gauge face indicates R-134a or 134a. Make 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) along with specified lubricant.



SERVICE HOSES

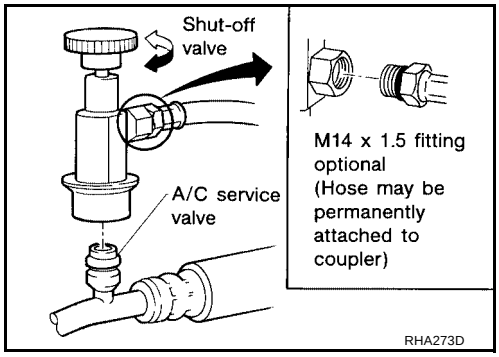
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



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



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.

Wiring Diagrams and Trouble Diagnosis

EJS001EL

When you read wiring diagrams, refer to the following:

- GI-12, "How to Read Wiring Diagrams"
- PG-4, "POWER SUPPLY ROUTING CIRCUIT"

When you perform trouble diagnosis, refer to the following:

- GI-9, "How to Follow Trouble Diagnoses"
- GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident"

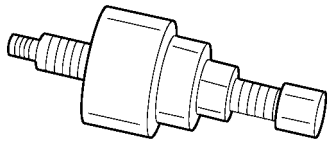
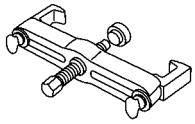
PREPARATION

PFP:00002

Special Service Tools

EJS001EM

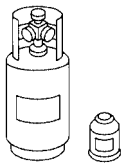
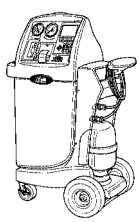
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

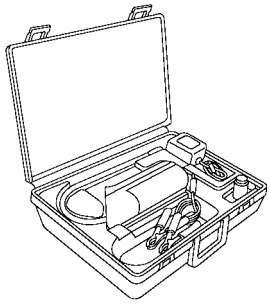
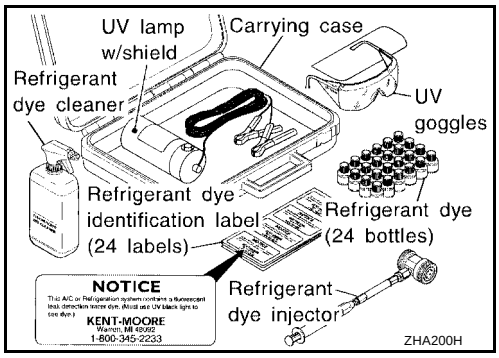
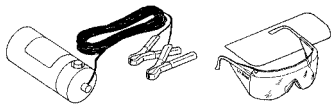
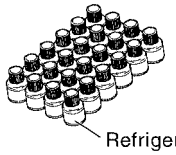
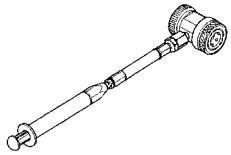
Tool number (Kent-Moore No.) Tool name	Description
(J-38873-A) Drive plate installer  WJIA0367E	Installing pulley and drive plate
KV99233130 (J-29884) Pulley puller  LHA172	Removing pulley

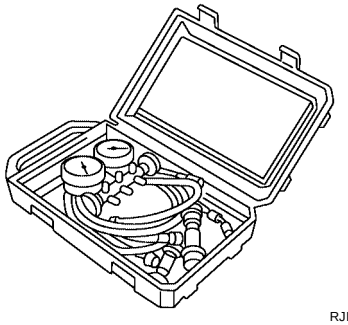
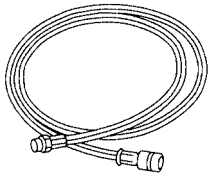
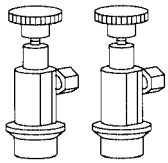
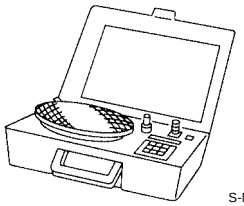
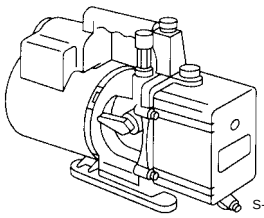
HFC-134a (R-134a) Service Tools and Equipment

EJS001EN

Never mix HFC-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.
Adapters that convert one size fitting to another must never be used: refrigerant/lubricant contamination will occur and compressor failure will result.

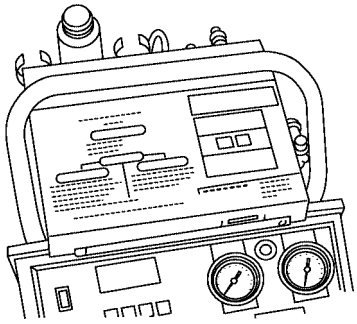
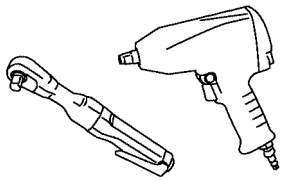
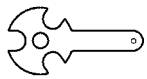
Tool number (Kent-Moore No.) Tool name	Description
HFC-134a (R-134a) refrigerant  S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● large container 1/2"-16 ACME
KLH00-PAGS0 (-) Nissan A/C System Lubricant Type DH-PS  S-NT197	Type: Poly alkylene glycol oil (PAG), type DH-PS Application: HFC-134a (R-134a) vane rotary compressors (Nissan only) Lubricity: 40 m ℓ (1.4 US fl oz, 1.4 Imp fl oz)
(J-43600) Recovery/Recycling Recharging equipment (ACR2000)  WJIA0293E	Function: Refrigerant Recovery and Recycling and Recharging

Tool number (Kent-Moore No.) Tool name		Description
(J-41995) Electronic refrigerant leak detector	 AHA281A	Power supply: ● DC 12V (Cigarette lighter)
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) qty. 24 HFC-134a (R-134a) refrigerant dye (J-43872) Refrigerant dye cleaner	 ZHA200H	Power supply: DC 12V (Battery terminal)
(J-42220) UV lamp and UV safety goggles	 SHA438F	Power supply: DC 12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles
(J-41447) HFC-134a (R-134a) Fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	 SHA439F	Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)
(J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle	 SHA440F	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.
(J-43872) Refrigerant dye cleaner	 SHA441F	For cleaning dye spills.

Tool number (Kent-Moore No.) Tool name		Description
(J-39183-C) Manifold gauge set (with hoses and couplers)	 RJIA0196E	Identification: ● The gauge face indicates HFC-134a (R-134a). Fitting size: Thread size ● 1/2"-16 ACME
Service hoses ● High pressure side hose (J-39500-72B) ● Low pressure side hose (J-39500-72R) ● Utility hose (J-39500-72Y)	 S-NT201	Hose color: ● Low side hose: Blue with black stripe ● High side hose: Red with black stripe ● Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: ● 1/2"-16 ACME
Service couplers ● High pressure side coupler (J-39500-20A) ● Low pressure side coupler (J-39500-24A)	 S-NT202	Hose fitting to service hose: ● M14 x 1.5 fitting is optional or permanently attached.
(J-39699) Refrigerant weight scale	 S-NT200	For measuring of refrigerant Fitting size: Thread size ● 1/2"16 ACME
(J-39649) Vacuum pump (Including the isolator valve)	 S-NT203	Capacity: ● Air displacement: 4 CFM ● Micron rating: 20 microns ● Oil capacity: 482 g (17 oz) Fitting size: Thread size ● 1/2"-16 ACME

Commercial Service Tools

EJS001EO

Tool name	Description
(J-41810) Refrigerant identifier equipment- [HFC-134a (R-134a)]  RJIA0197E	For checks refrigerant purity and for system contamination
Power tool  PBIC0190E	Loosening bolts and nuts
(J-44614) Clutch disc holding tool  WHA230	Clutch disc holding tool

REFRIGERATION SYSTEM

PFP:KA990

Refrigeration Cycle

EJS001EP

REFRIGERANT FLOW

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

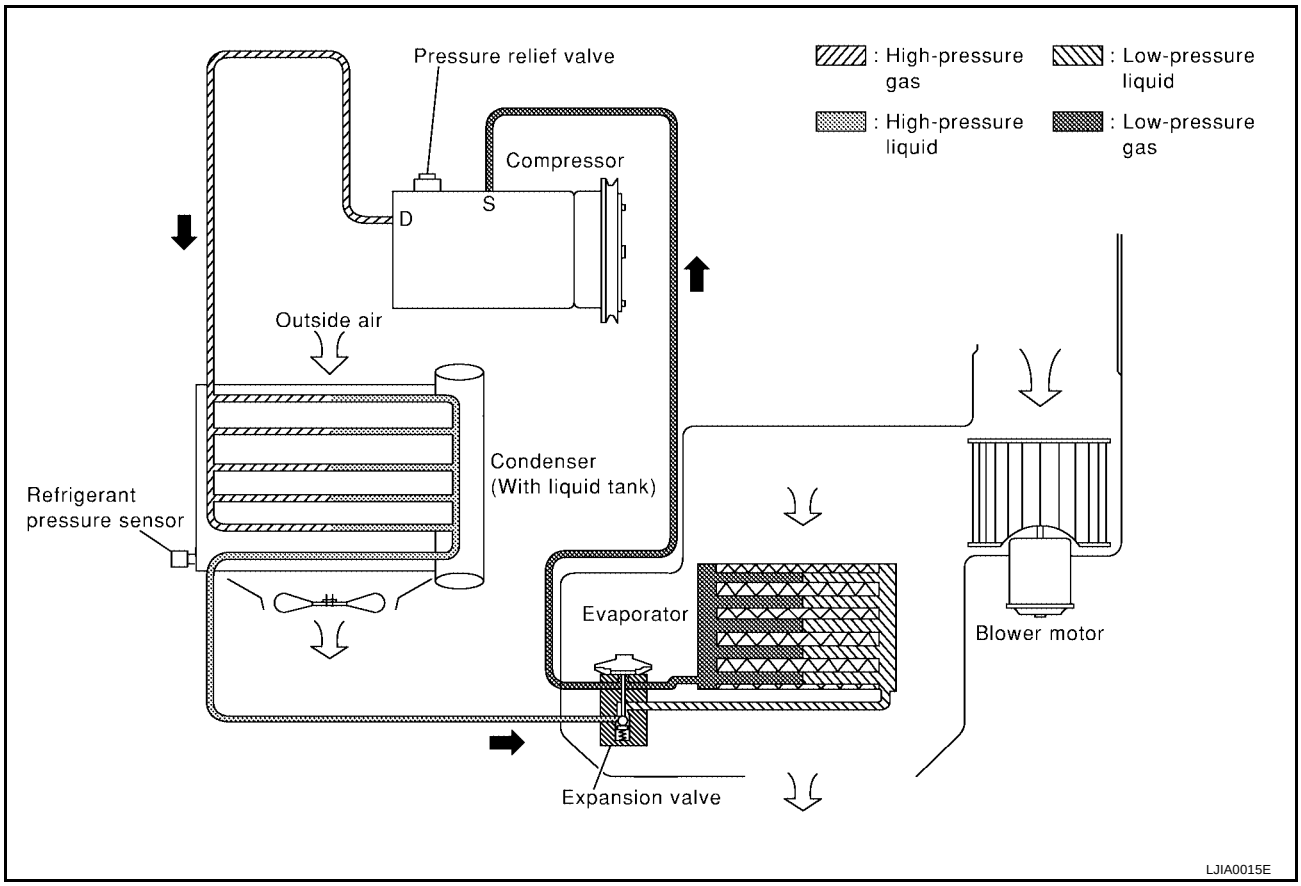
REFRIGERANT SYSTEM PROTECTION

Refrigerant Pressure Sensor

The refrigerant system is protected against excessively high or low pressures 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^2 , 398 psi) or below about 120 kPa (1.22 kg/cm^2 , 17.4 psi).

Pressure Relief Valve

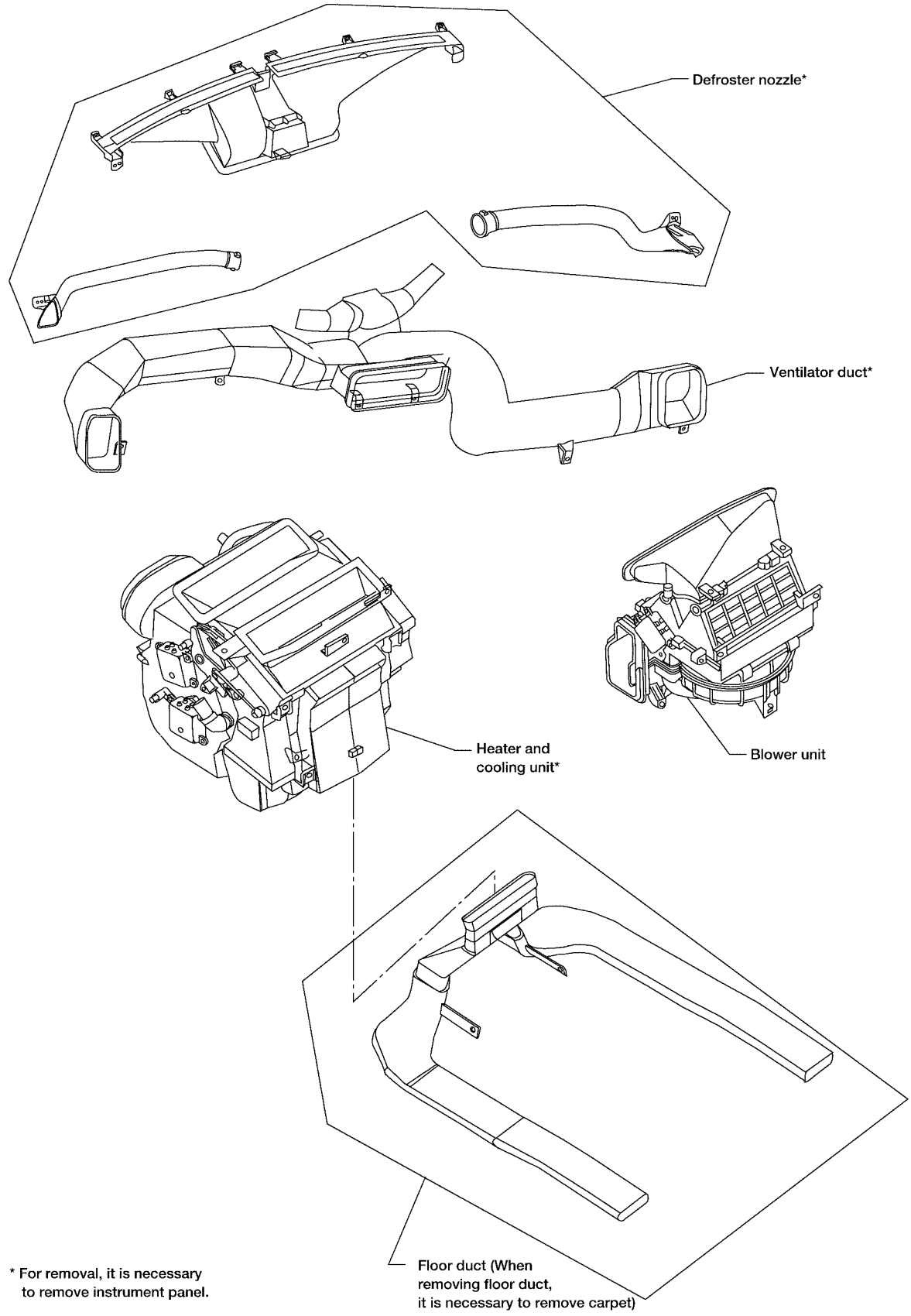
The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 3,727 kPa (38 kg/cm^2 , 540 psi)], the release port on the pressure relief valve automatically opens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



Component Layout

EJS001EQ

SEC. 270 • 271 • 272 • 273



* For removal, it is necessary to remove instrument panel.

LJIA0011E

LUBRICANT

PFP:KLG00

Maintenance of Lubricant Quantity in Compressor

EJS001ER

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 has 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 Lubricant Type DH-PS or equivalent
Part number: KLH00-PAGS0

CHECKING AND ADJUSTING

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

1. 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, do not perform the lubricant return operation.

Yes or No

Yes >> GO TO 2.
No >> GO TO 3.

2. PERFORM LUBRICANT RETURN OPERATION, PROCEEDING AS FOLLOWS

1. Start engine, and set the following conditions:

- **Test condition**
  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 engine.

>> GO TO 3.

3. CHECK COMPRESSOR

Should the compressor be replaced?

Yes or No

Yes >> GO TO MTC-20, "Lubricant Adjustment Procedure for Compressor Replacement" .
No >> GO TO 4.

4. CHECK ANY PART

Is there any part to be replaced? (Evaporator, condenser, liquid tank or in case there is evidence of a large amount of lubricant leakage.)

Yes or No

Yes >> GO TO MTC-20, "Lubricant Adjusting Procedure for Component Replacement Except Compressor" .
No >> Carry out the A/C performance test.

Lubricant Adjusting Procedure for Component 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

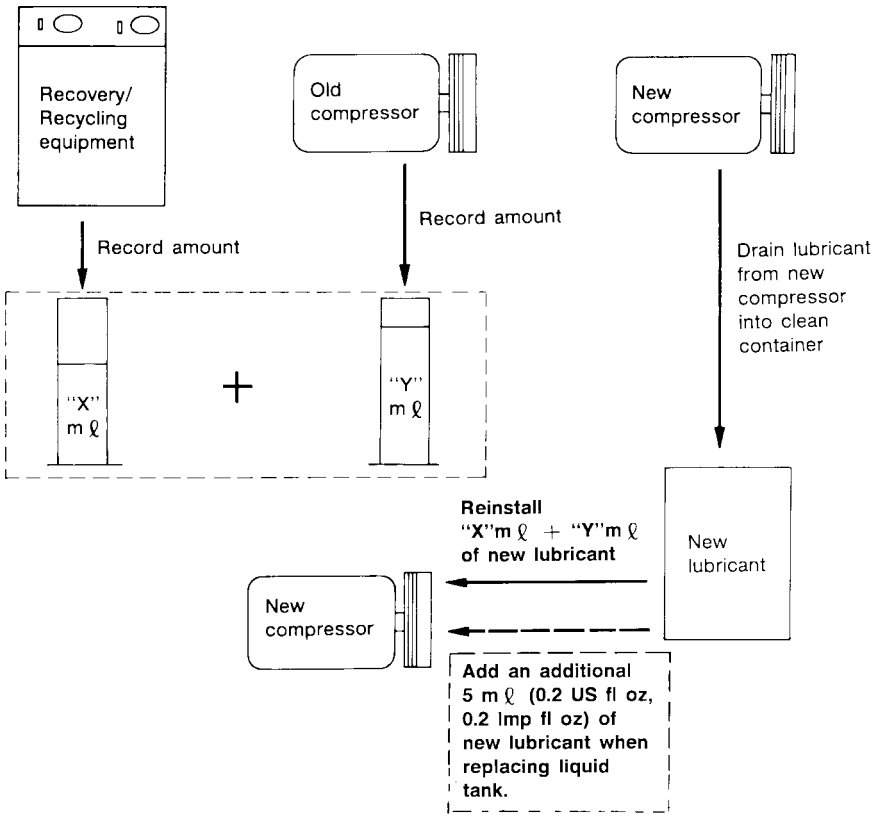
Part replaced	Lubricant to be added to system Amount of lubricant m ℓ (US fl oz, Imp fl oz)	Remarks
Evaporator	75 (2.5, 2.6)	—
Condenser	75 (2.5, 2.6)	—
Liquid tank	5 (0.2, 0.2)	Add if compressor is not replaced.
In case of refrigerant leak	30 (1.0, 1.1)	Large leak
	—	Small leak *1

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

Lubricant Adjustment Procedure for Compressor Replacement

1. Before connecting recovery/recycling equipment to vehicle, check recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If OK, recover refrigerant from equipment lines.
2. Confirm refrigerant purity in supply tank using recovery/recycling equipment and refrigerant identifier. If NG, refer to MTC-4, "Contaminated Refrigerant" .
3. Connect recovery/recycling equipment to vehicle. Confirm refrigerant purity in vehicle A/C system using recovery/recycling equipment and refrigerant identifier. If NG, refer to MTC-4, "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 an additional 5 m ℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant at this time.
   Do not add this 5 m ℓ (0.2 US fl oz, 0.2 Imp fl oz) of lubricant if only replacing the compressor.

Lubricant adjusting procedure for compressor replacement



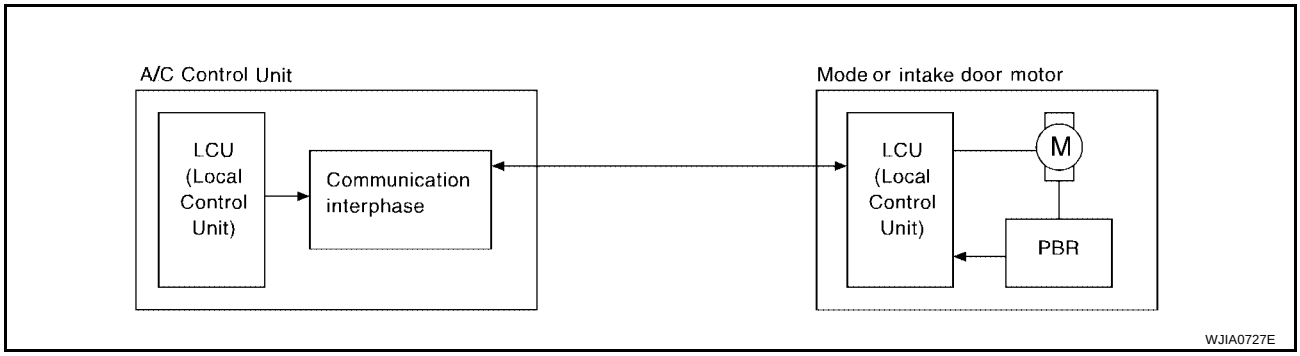
AIR CONDITIONER CONTROL

PFP:27500

Overview Air Conditioner LAN Control System

EJS002GH

The LAN (local area network) system consists of the A/C control unit, intake door motor, and mode door motor. A configuration of these components is shown in the diagram below.

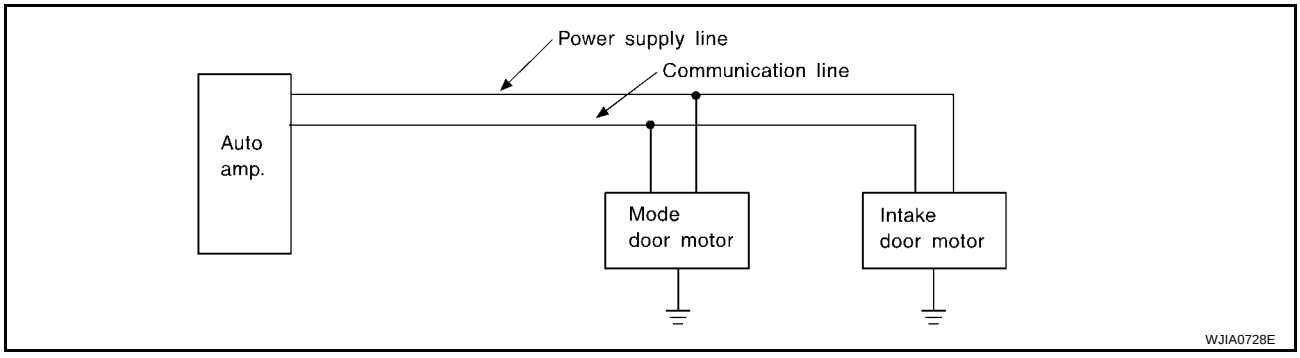


System Construction

EJS002GI

A small network is constructed between the A/C control unit, intake door motor, and mode door motor. The A/C control unit and motors are connected by data transmission lines and motor power supply lines. The LAN network is built through the ground circuits of the two motors.
Addresses, motor opening angle signals and motor stop signals are all transmitted through the data transmission lines connecting the A/C control unit and each motor.
The following functions are contained in LCUs built into the intake door motor, and the mode door motor.

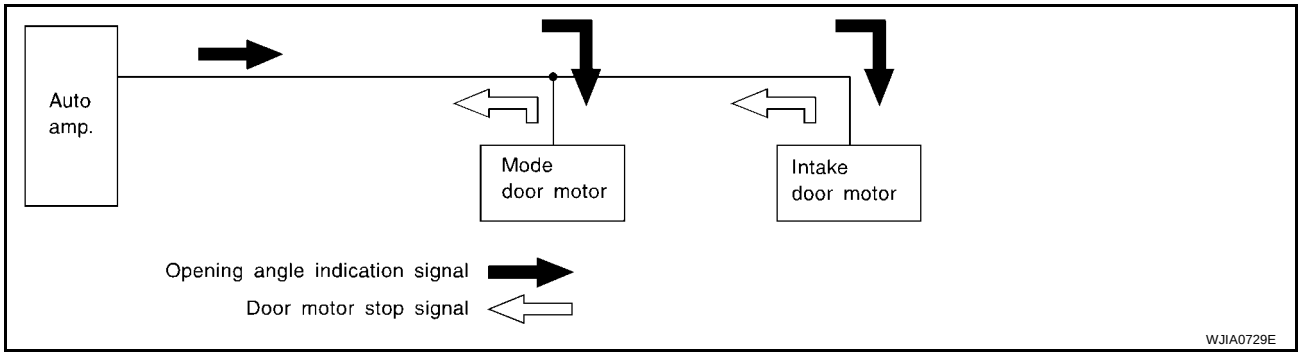
- Address
- Motor opening angle signals
- Data transmission
- Motor stop and drive decision
- Opening angle sensor (PBR function)
- Comparison
- Decision (A/C control unit indicated value and motor opening angle comparison)



OPERATION

The amplifier sends mode door and intake door opening angle data to the mode door motor LCU and intake door motor LCU.
The mode door motor and intake door motor read their respective signals according to the address signal. Opening angle indication signals received from the A/C control unit and each of the motor position sensors are compared by the LCUs in each motor with the existing decision and opening angles. Subsequently,

DEFROST/VENT or FRESH/RECIRCULATION operation is selected. The new selection data is returned to the A/C control unit.

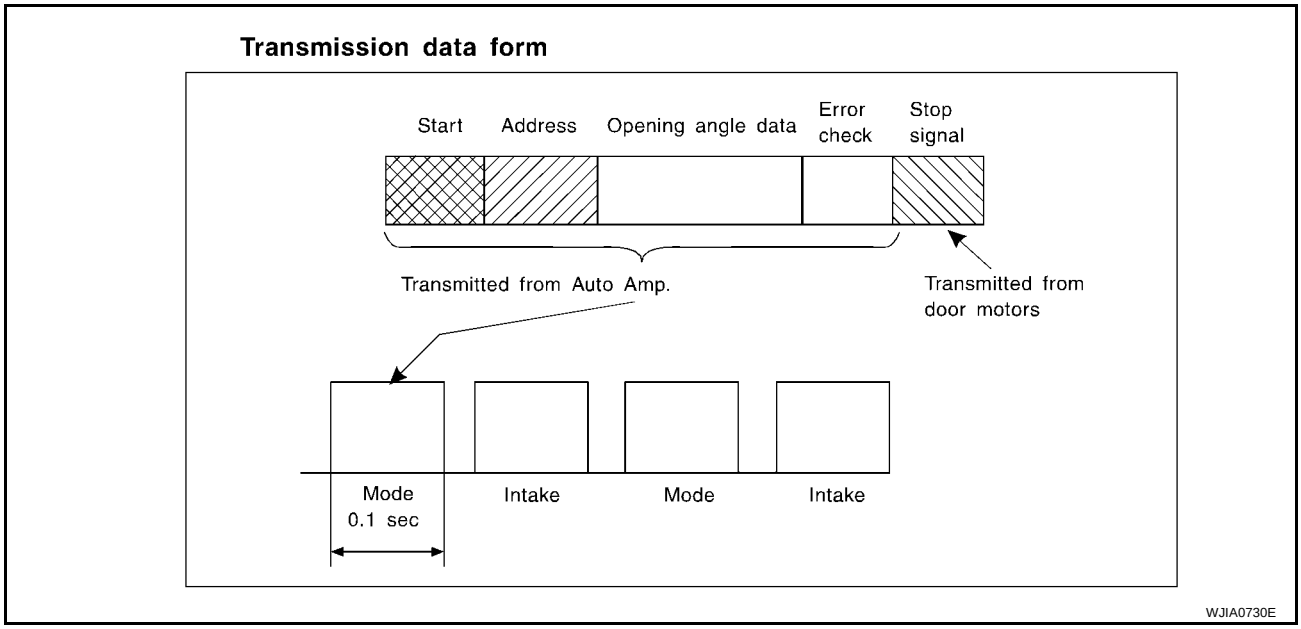


TRANSMISSION DATA AND TRANSMISSION ORDER

Amplifier data is 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 A/C control unit is selected according to data-based decisions made by the 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 is normal, door control begins.
If an error exists, the received data is 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: Procedure by which sent and received data is checked for errors. Error data is then compiled. The error check prevents corrupted data from being used by the air mix door motor, mode door motor and intake door motor. Error data can be related to the following problems.

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

Stop signal: At the end of each transmission, a stop operation, in-operation, or internal problem message is delivered to the A/C control unit. This completes one data transmission and control cycle.

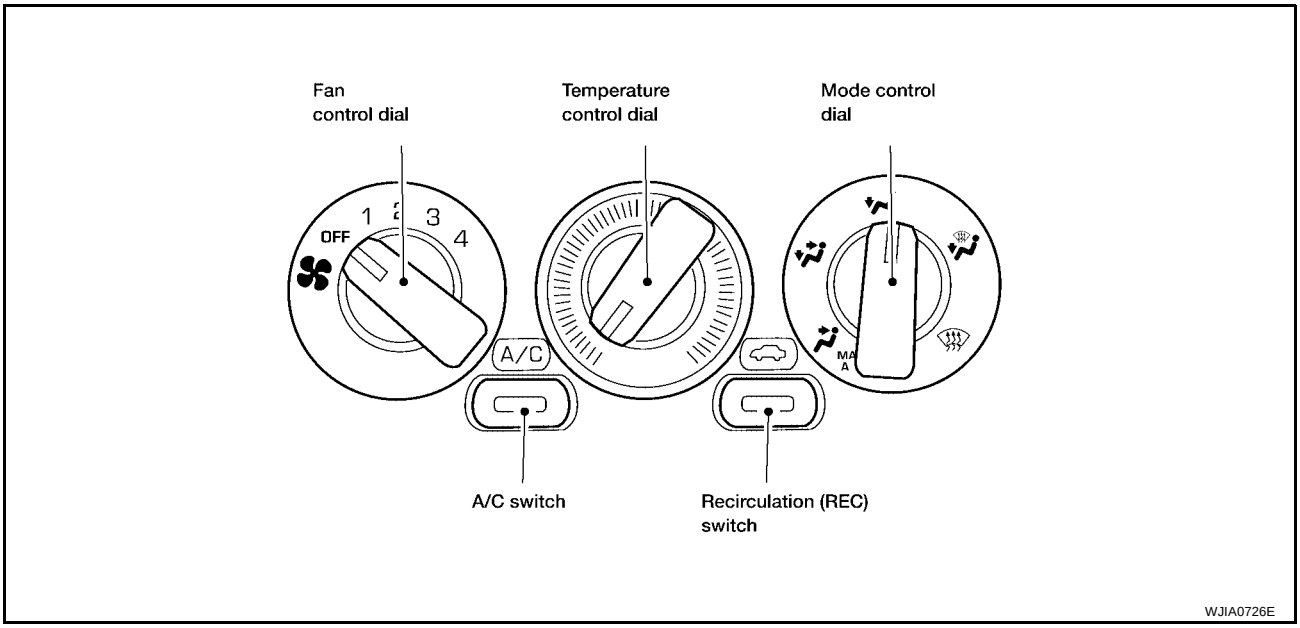


INTAKE DOOR CONTROL

The intake doors are controlled by the: temperature setting, intake temperature and ON-OFF operation of the compressor.

Control Operation

EJS001ES



FAN CONTROL DIAL

This dial turns the fan ON and OFF, and controls fan speed.

MODE CONTROL DIAL

This dial allows control of the outlet air flow.
In , or mode, the intake door is set to "FRESH".
The compressor turns on when the dial is moved to "MAX A/C" or .

TEMPERATURE CONTROL DIAL

This dial allows adjustment of the temperature of the outlet air.

RECIRCULATION (REC) SWITCH

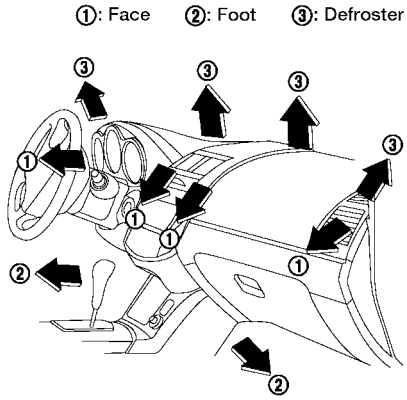
OFF position: Outside air is drawn into the passenger compartment.
ON position: Interior air is recirculated inside the vehicle. The indicator lamp will also light.
Recirculation is canceled when , or is selected, and resumes when another mode is chosen.
If the refrigerant pressure sensor input signal is high, recirculation is canceled, when , and mode is selected.

AIR CONDITIONER (A/C) SWITCH

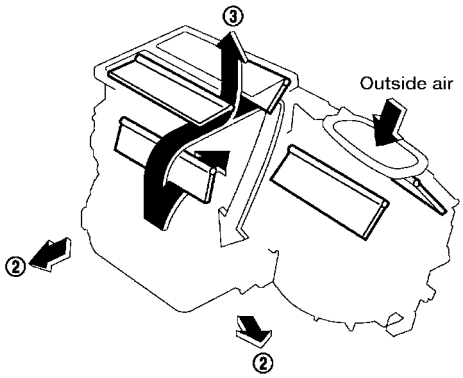
The air conditioner switch controls the A/C system. When the switch is depressed with the fan control dial is ON, the compressor will turn ON. The indicator lamp will also light.
The air conditioner cooling function operates only when the engine is running.

Discharge Air Flow

EJS001ET

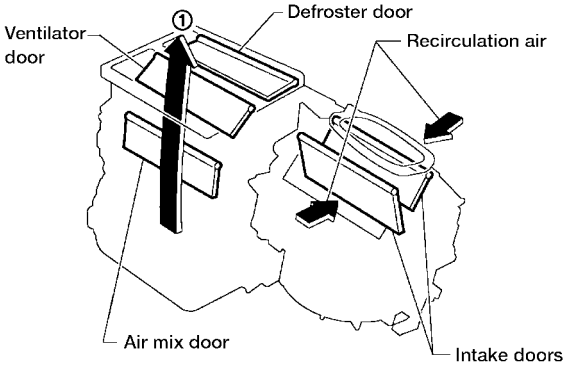


Foot

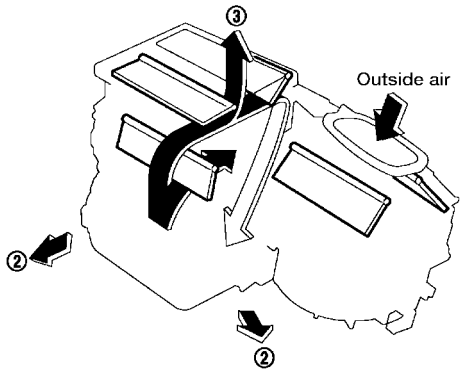


Face

(switch "ON")

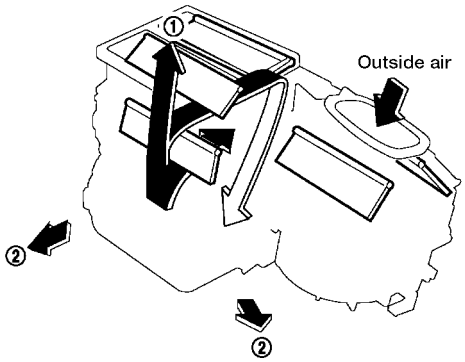


F/D

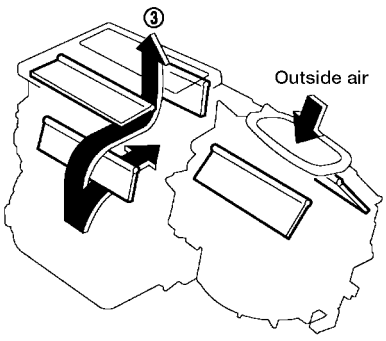


Bi-level

(switch "OFF")



Defroster



①: To face
②: To foot
③: To defroster

For air flow %, refer to "Operational Check", "TROUBLE DIAGNOSES".

WJIA0016E

System Description

EJS001EU

SWITCHES AND THEIR CONTROL FUNCTION

Dial/Switch		Dial/Switch position							Air outlet	Intake air	Compressor
		A/C									
A/C		○							——	——	ON*1
Mode			○						VENT	*4	*3
				○					B/L	*4	*3
					○				FOOT	FRE	*3
						○			D/F	FRE	*5
							○		DEF	FRE	*5
								○	——	REC*2	——

*1: Compressor is operated by ECM.
*2: In , and modes, REC switch is canceled
*3: Compressor operates if A/C switch is ON.
*4: Recirculation operates if REC switch is ON.
*5: Compressor operates if D/F or DEF switch is ON until ignition is turned OFF.

WJIA0731E

CAN Communication System Description

EJS001EV

Refer to LAN-4, "CAN COMMUNICATION" .

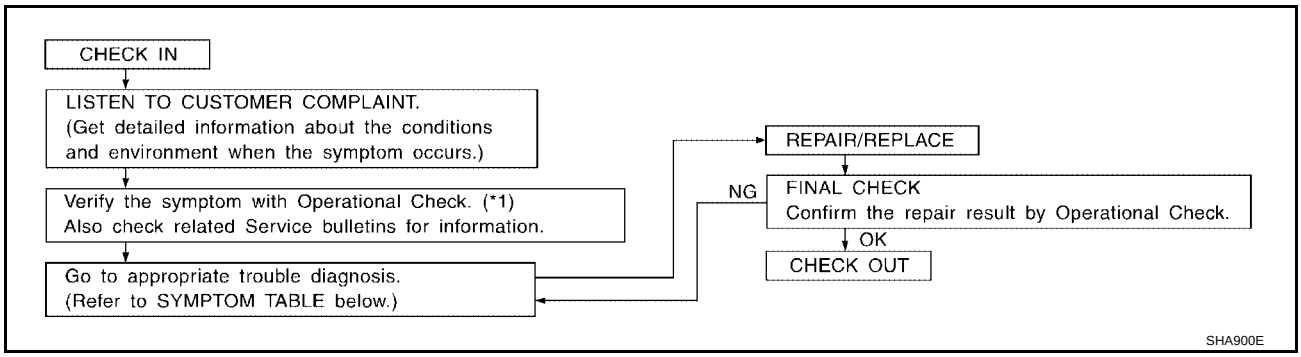
TROUBLE DIAGNOSIS

PFP:00004

How to Perform Trouble Diagnoses for Quick and Accurate Repair

EJS001EW

WORK FLOW



*1: MTC-37, "Operational Check"

SYMPTOM TABLE

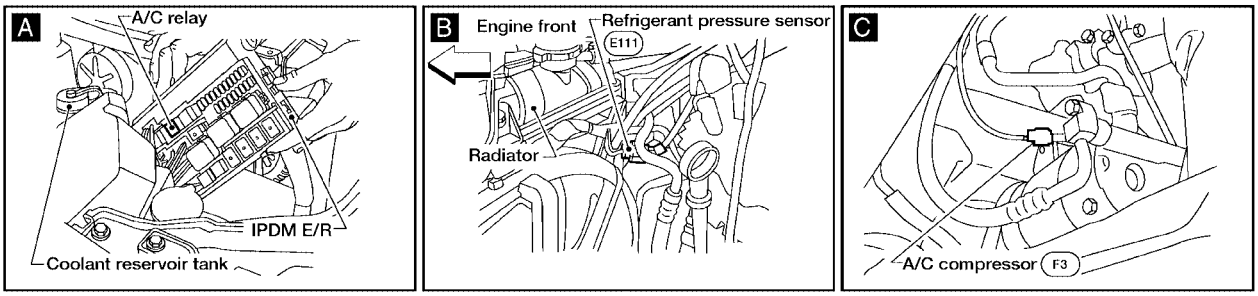
Symptom	Reference Page	
● A/C system does not come on.	● Go to Trouble Diagnosis Procedure for A/C system.	MTC-39
● Air outlet does not change. ● Mode door motor does not operate normally.	● Go to Trouble Diagnosis Procedure for Mode Door Motor (LAN).	MTC-41
● Air mix door does not change.	● Go to Trouble Diagnosis Procedure for Air Mix Door.	MTC-44
● Intake door does not change. ● Intake door motor does not operate normally.	● Go to Trouble Diagnosis Procedure for Intake Door Motor (LAN).	MTC-45
● Blower motor operation is malfunctioning.	● Go to Trouble Diagnosis Procedure for Blower Motor.	MTC-48
● Magnet clutch does not engage.	● Go to Trouble Diagnosis Procedure for Magnet Clutch.	MTC-53
● Insufficient cooling.	● Go to Trouble Diagnosis Procedure for Insufficient Cooling.	MTC-57
● Insufficient heating.	● Go to Trouble Diagnosis Procedure for Insufficient Heating.	MTC-62
● Noise.	● Go to Trouble Diagnosis Procedure for Noise.	MTC-63

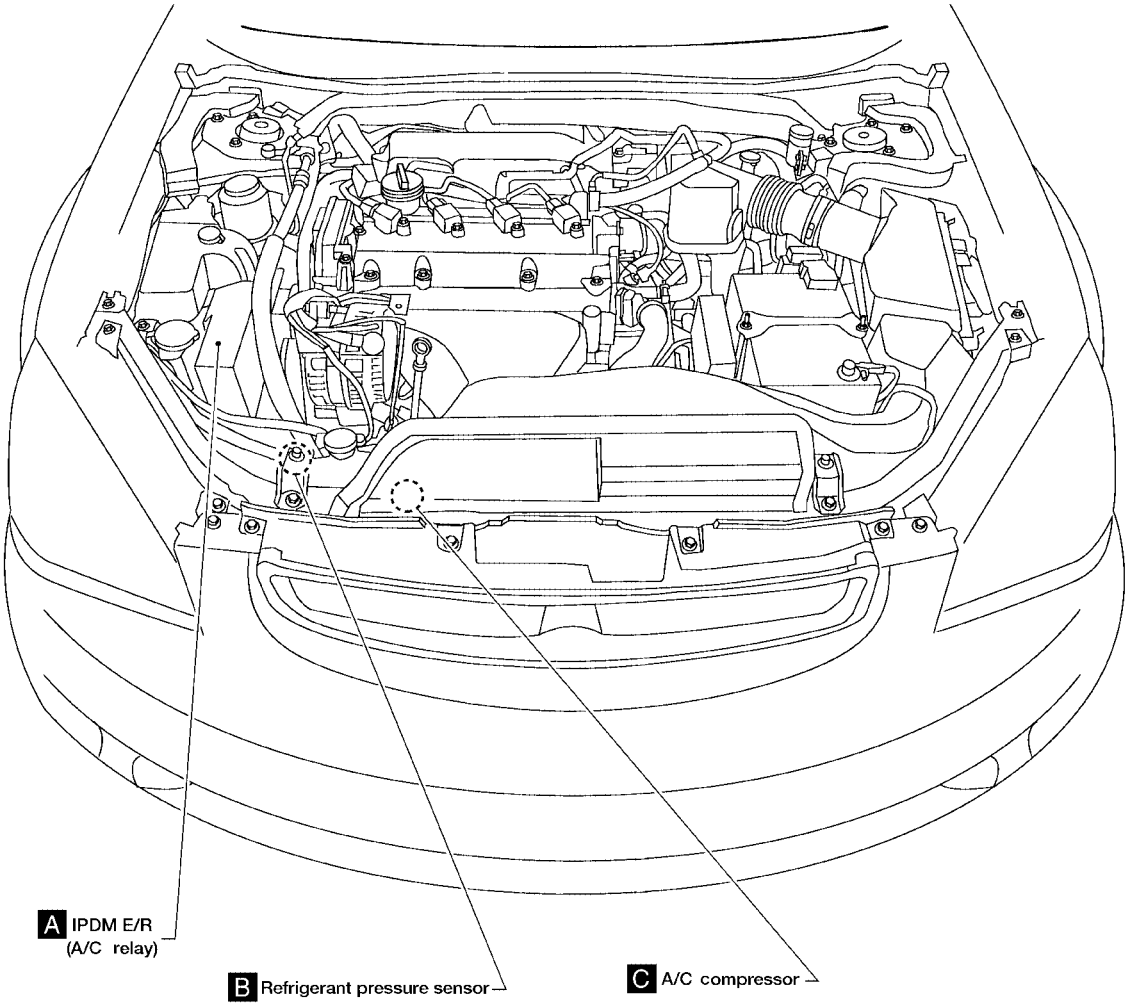
Component Parts and Harness Connector Location

EJS001EX

ENGINE COMPARTMENT

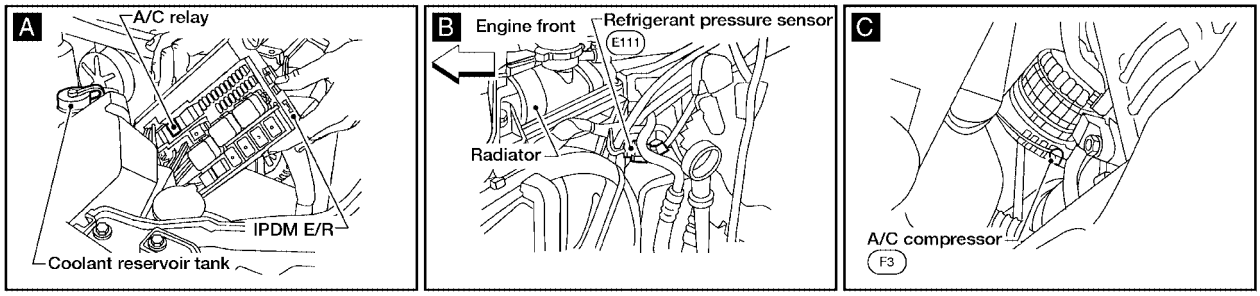
QR25DE Models

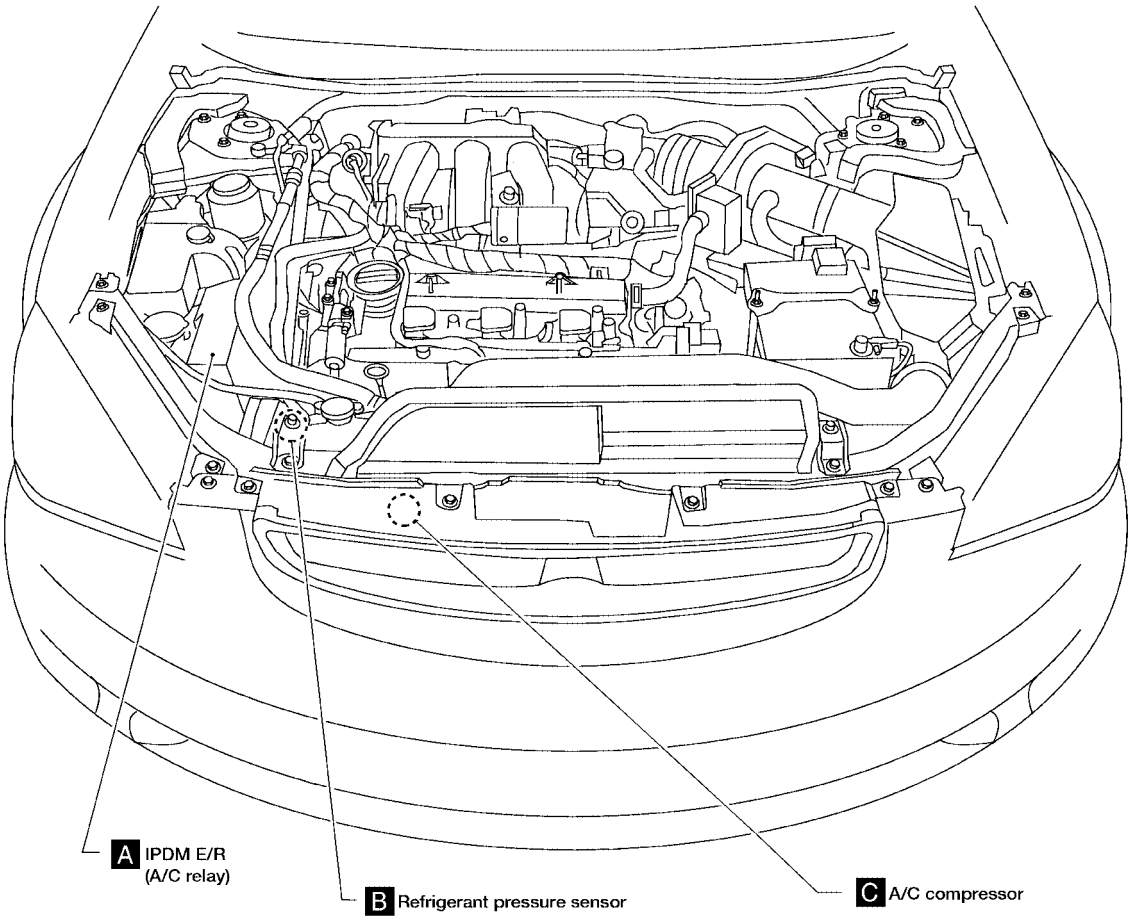




WJIA0136E

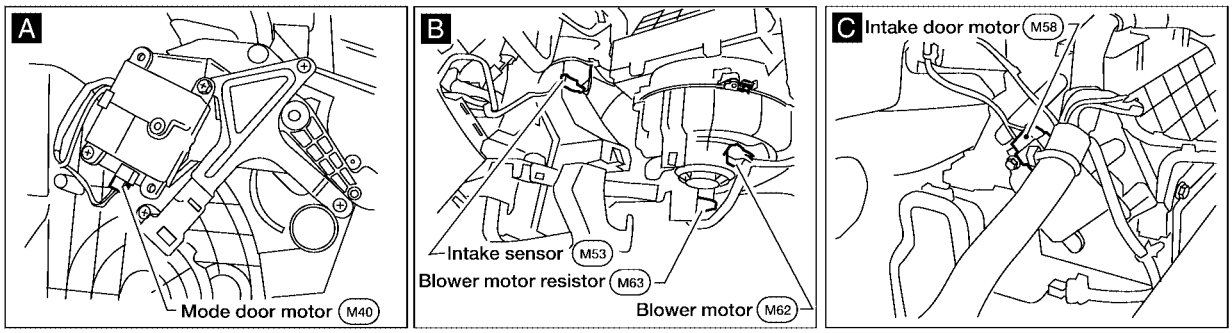
VQ35DE Models

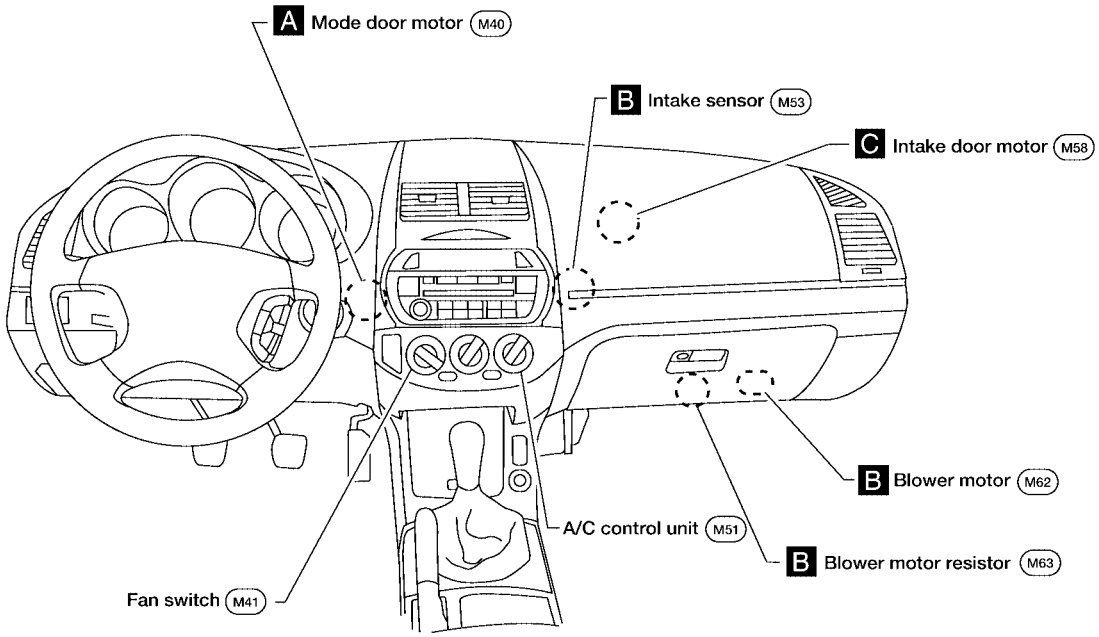




WJIA0137E

PASSENGER COMPARTMENT

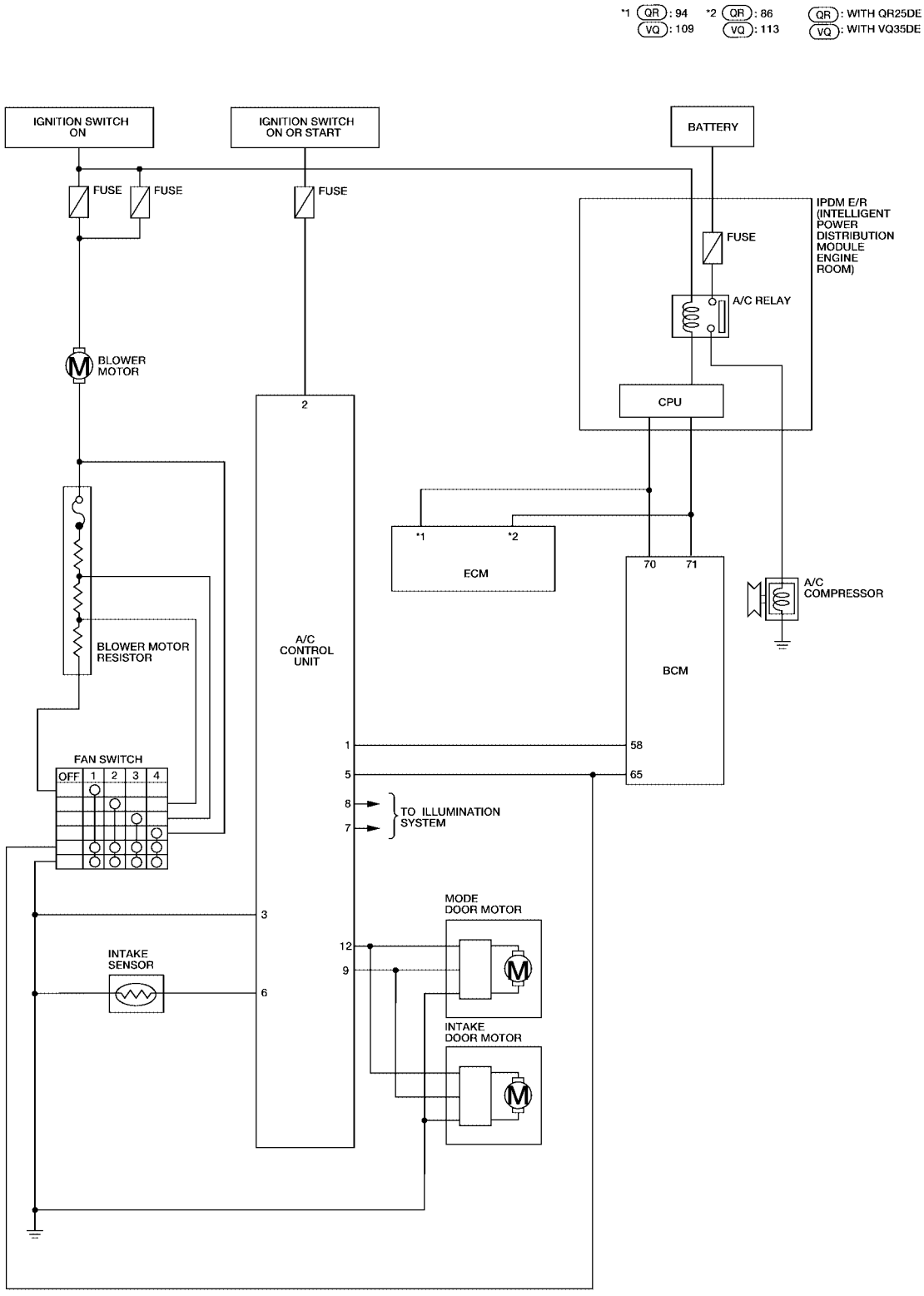




WJIA0138E

Circuit Diagram

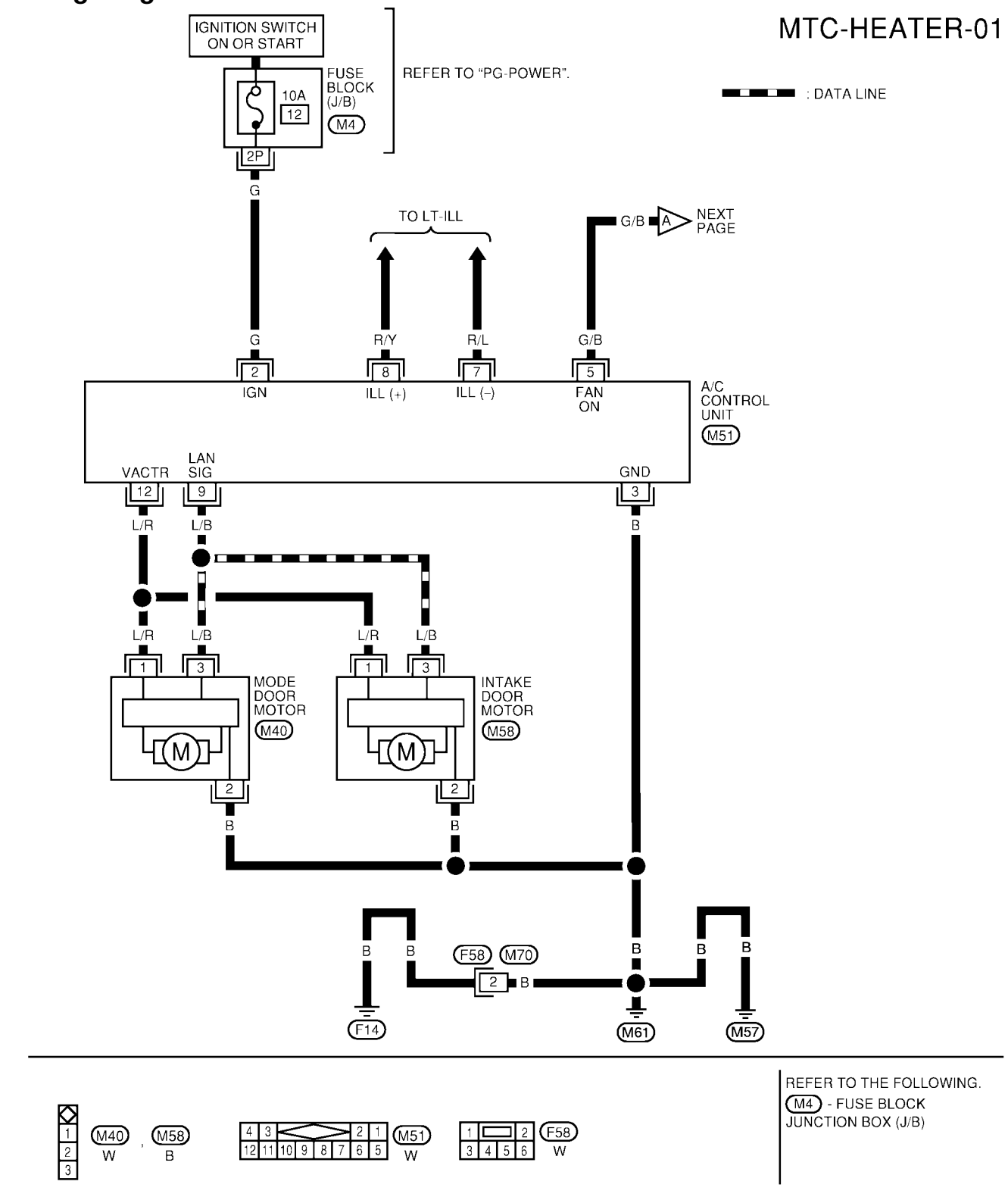
EJS001EY



WJWA0084E

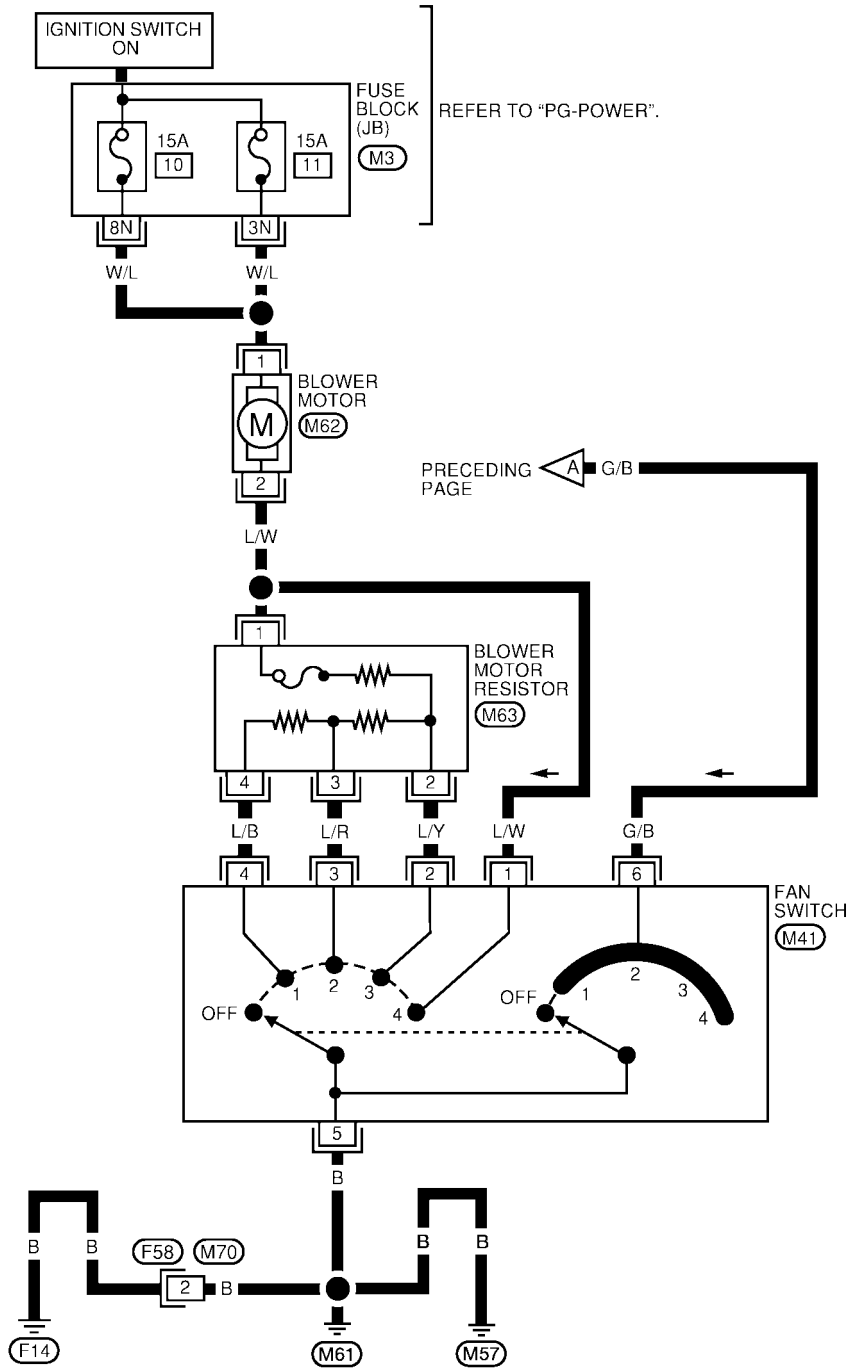
Wiring Diagram — HEATER —

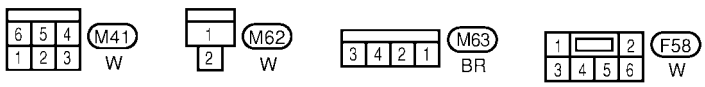
EJS001EZ



WJWA0089E

MTC-HEATER-02



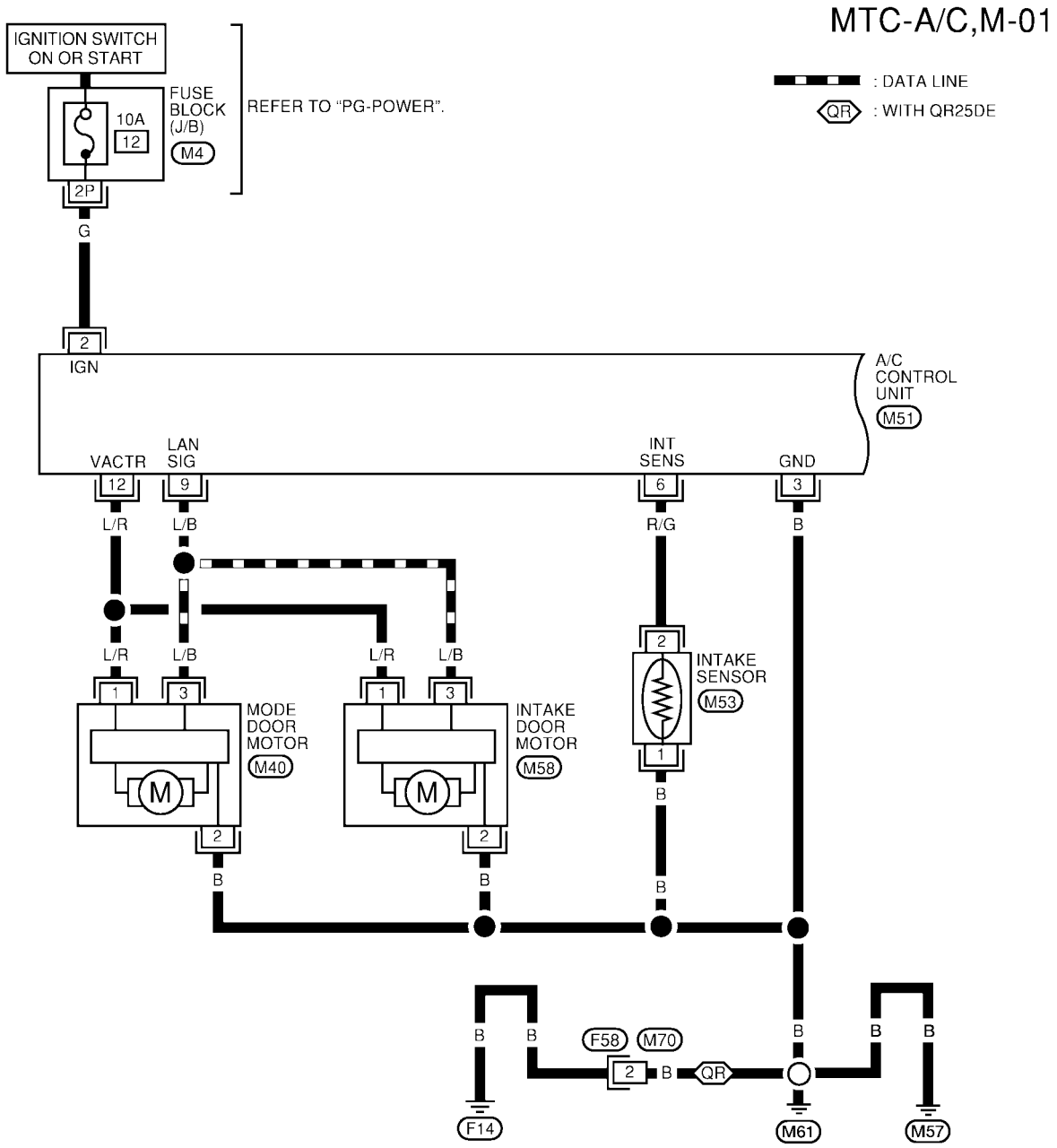


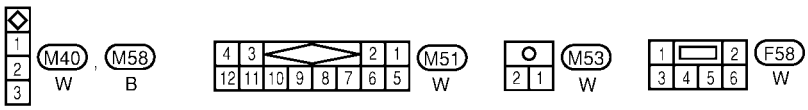
REFER TO THE FOLLOWING.
M3 - FUSE BLOCK JUNCTION BOX (J/B)

WJWA0085E

Wiring Diagram — A/C,M —

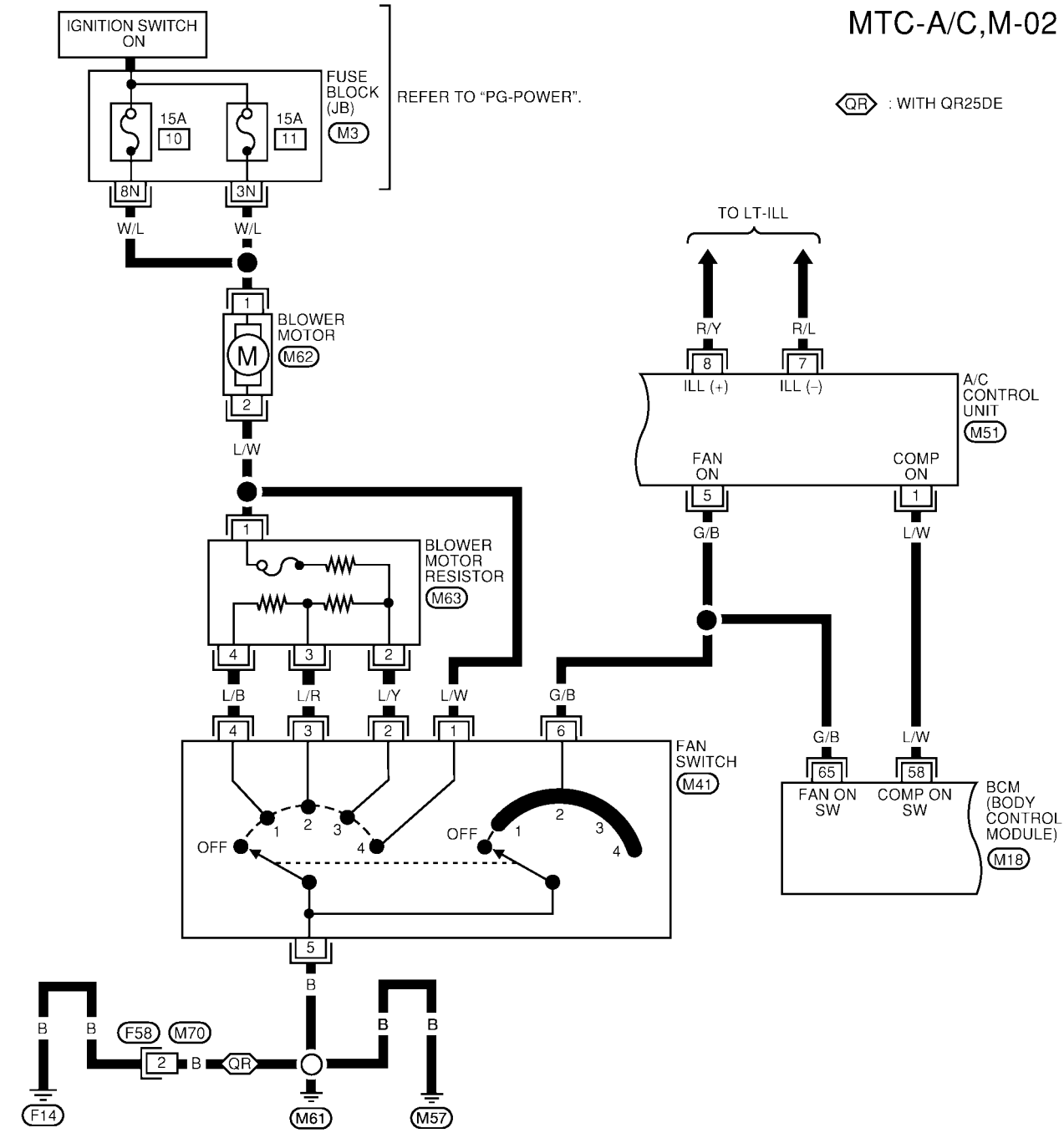
EJS001F0

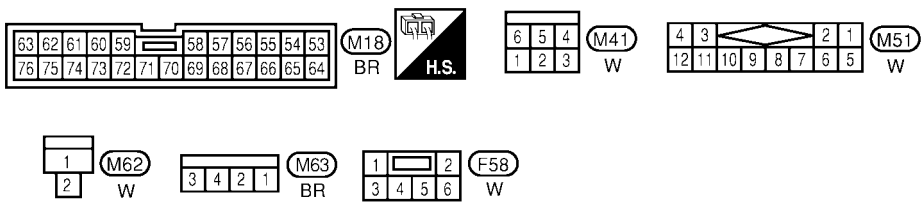




REFER TO THE FOLLOWING.
M4 - FUSE BLOCK
JUNCTION BOX (J/B)

WJWA0090E

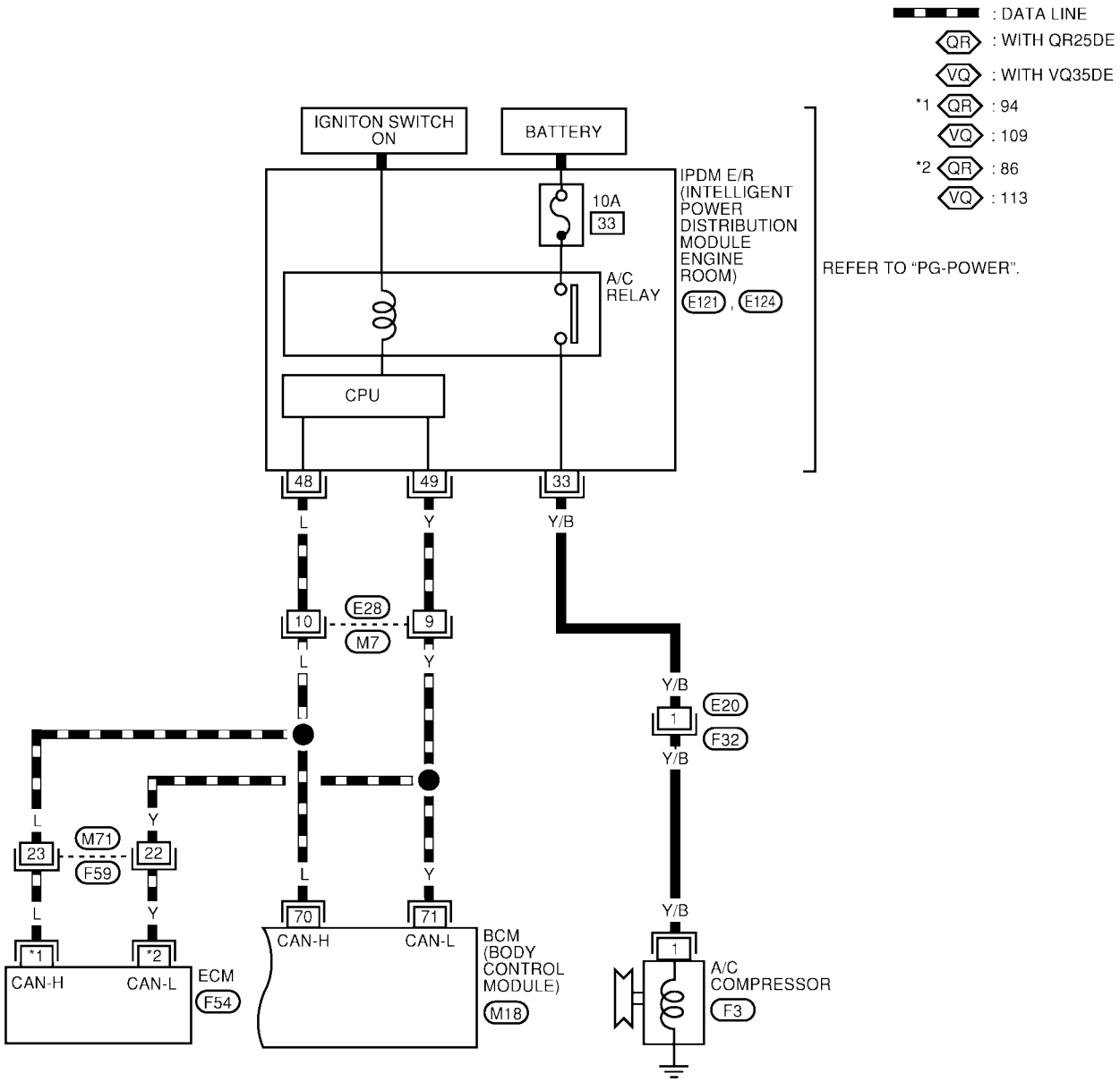


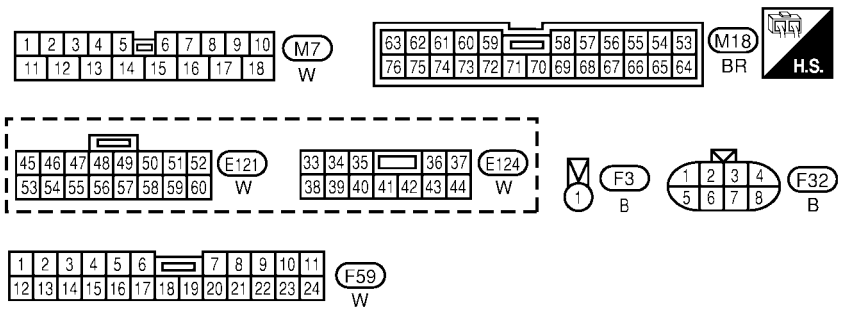


REFER TO THE FOLLOWING.
M3 - FUSE BLOCK
JUNCTION BOX (J/B)

WJWA0091E

MTC-A/C,M-03





REFER TO THE FOLLOWING.
F54 - ELECTRICAL UNITS

WJWA0086E

Operational Check

EJS001F1

The purpose of the operational check is to confirm that the system operates as it should. The systems which are checked are the blower, mode (discharge air), intake air, temperature decrease, temperature increase.

CONDITIONS:

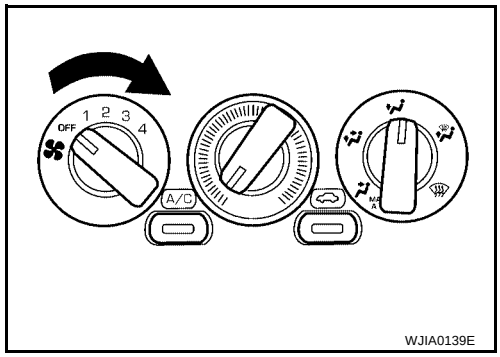
Engine running at normal operating temperature.

PROCEDURE:

1. Check Blower

1. Turn fan control dial to 1-speed.
   Blower should operate on 1-speed.
2. Then turn fan control dial to 2-speed.
3. Continue checking blower speed until all four speeds are checked.
4. Leave blower on 4-speed.

If NG, go to MTC-48, "Blower Motor Circuit" .
If OK, continue with next check.

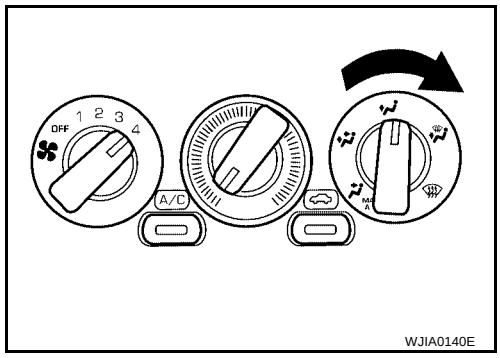


WJIA0139E

2. Check Discharge Air

1. Turn air mode control dial to each position.
2. Confirm air discharge at all air outlets.

If NG, go to MTC-41, "Mode Door Motor Circuit" .
If OK, continue with next check.



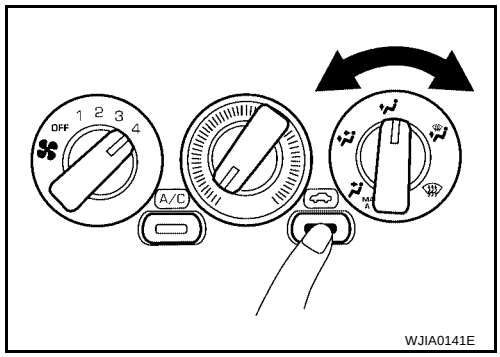
WJIA0140E

3. Check Recirculation

1. Press recirculation switch.
   Recirculation indicator should light.
2. Listen for intake door position change (you should hear blower sound change slightly).

   NOTE:
   Confirm that the recirculation switch is canceled in the FOOT ( ), D/F ( ) and DEF ( ) modes.

If NG, go to MTC-45, "Intake Door Motor Circuit" .
If OK, continue with next check.

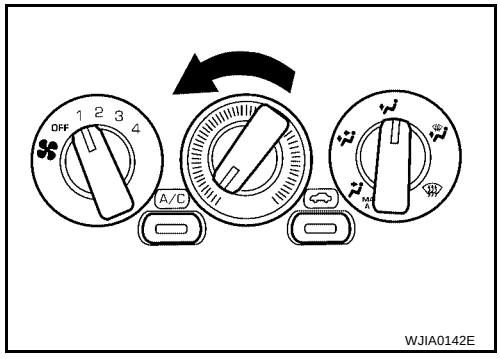


WJIA0141E

4. Check Temperature Decrease

1. Turn fan control dial to 1-speed.
2. Turn temperature control dial to full cold.
3. Check for cold air at discharge air outlets.

If NG, go to MTC-57, "Insufficient Cooling" .
If OK, continue with next check.

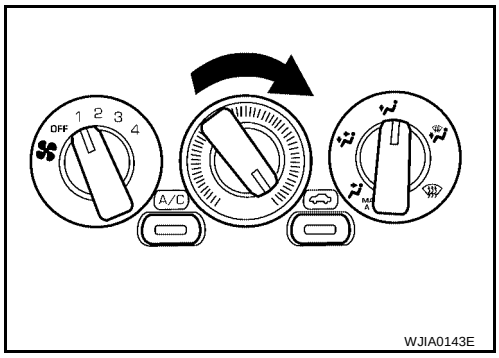


WJIA0142E

5. Check Temperature Increase

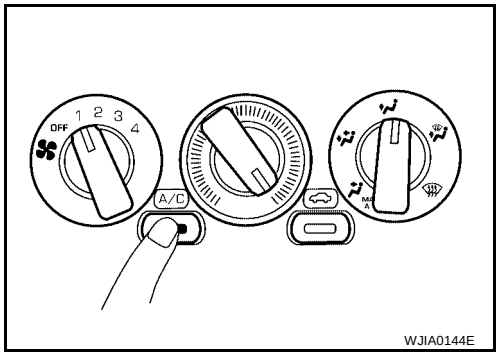
1. Turn temperature control dial to full hot.
2. Check for hot air at discharge air outlets.

If NG, go to MTC-62, "Insufficient Heating" .
If OK, continue with next check.



6. Check Air Conditioner Switch

Turn fan control dial to the desired (1- to 4-speed) position and push the air conditioner switch (if equipped) to turn ON the air conditioner. The indicator light should come on when air conditioner is ON.
If NG, go to MTC-39, "A/C System" .
If all operational checks are OK (symptom can not be duplicated), go to GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident" and perform tests as outlined to simulate driving conditions environment. If symptom appears, refer to MTC-27, "SYMPTOM TABLE" and perform applicable trouble diagnosis procedures.



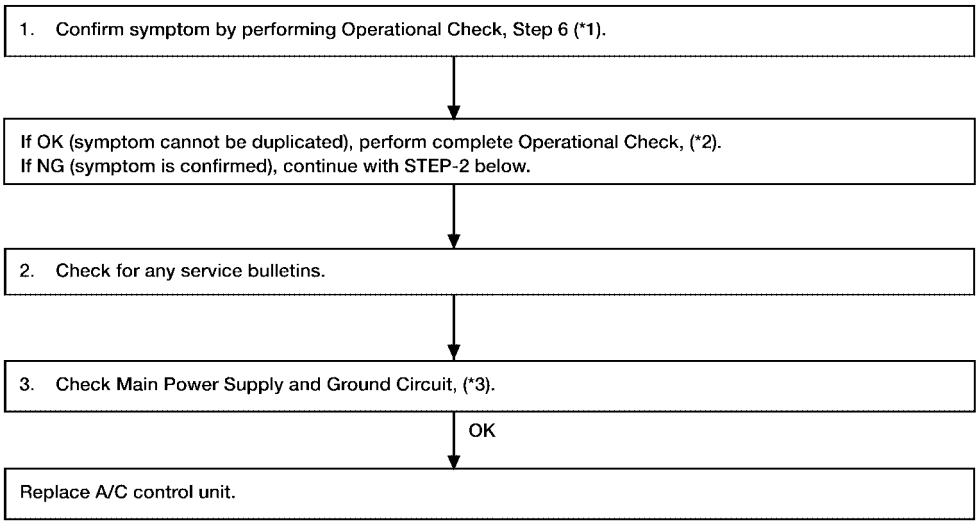
A/C System

EJS001F2

SYMPTOM:

- **A/C system does not come on.**

INSPECTION FLOW



WJIA0145E

*1: MTC-38, "6. Check Air Conditioner Switch" *2: MTC-37, "Operational Check" *3 MTC-39, "DIAGNOSTIC PROCEDURE"

DIAGNOSTIC PROCEDURE

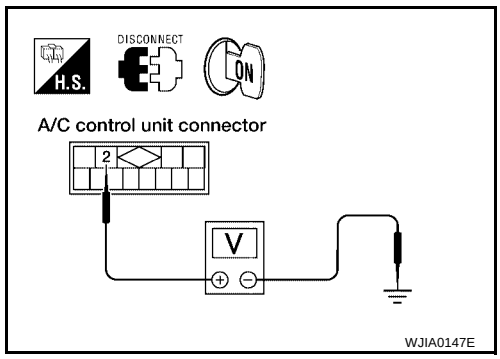
SYMPTOM:

- **A/C system does not come on.**

1. CHECK POWER SUPPLY CIRCUIT FOR A/C CONTROL UNIT

1. Disconnect A/C control unit connector.
2. Turn ignition switch ON.
3. Check voltage between A/C control unit harness connector M51 terminal 2 (G) and ground.

Terminal			Voltage (V) (Approx.)
(+)		(-)	
Connector	Wire color	Ground	12V
M51-2	G		

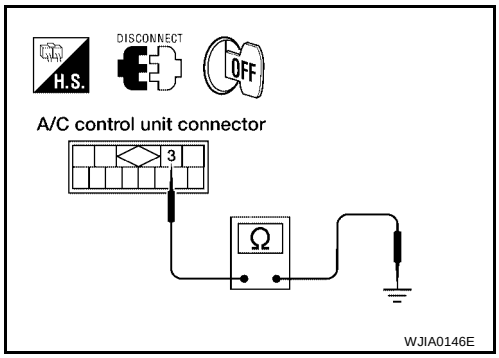


OK or NG

OK >> GO TO 2.
NG >> Check 10A fuse (No. 12) at fuse block (J/B).

2. CHECK GROUND CIRCUIT FOR A/C CONTROL UNIT

1. Turn ignition switch OFF.
2. Check continuity between A/C control unit harness connector M51 terminal 3 (B) and ground.



Terminal			Continuity
Connector	Wire color	Ground	Yes
M51-3	B		

If OK, check harness for short.

OK or NG

OK >> Inspection End.
NG >> If NG, repair harness or connector.

Mode Door Motor Circuit

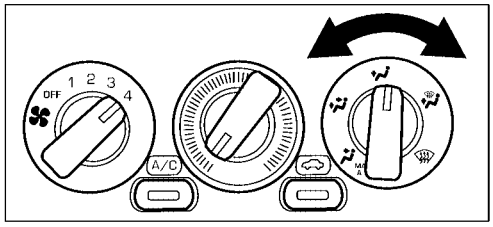
EJS001F3

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.

1) Turn mode control dial to each position.

2) Confirm that discharge air comes out according to the air distribution table at left. Refer to "Discharge Air Flow" in "DESCRIPTION" (*4).

Discharge air flow

Mode control dial	Mode door/distribution		
	Face	Foot	Defroster
	100%	–	–
	60%	40%	–
	–	80%	20%
	–	60%	40%
	–	–	100%

2. Check for any service bulletins.

3. Check mode door operation. (*1)

NG → Go to Trouble Diagnosis Procedure for mode door motor. (*5)

OK → If the symptom still exists, perform a complete operational check (*2) and check for other symptoms. [Refer to symptom table, (*3).] Does another symptom exist?

Yes → Go to Trouble Diagnosis for related symptom

[Another symptom exists.]

No → INSPECTION END

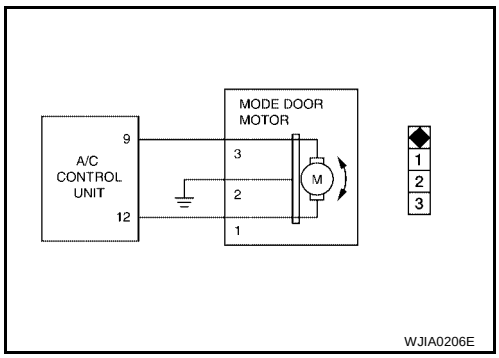
WJIA0732E

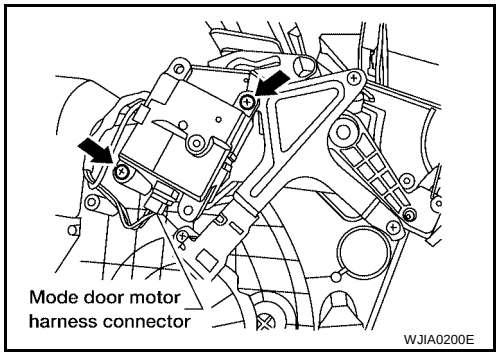
*1 MTC-43, "CONTROL LINKAGE ADJUSTMENT"
*2 MTC-37, "Operational Check"
*3 MTC-27, "SYMPTOM TABLE"
*4 MTC-25, "Discharge Air Flow"
*5 MTC-42, "DIAGNOSTIC PROCEDURE"

SYSTEN DESCRIPTION

Mode Door Motor

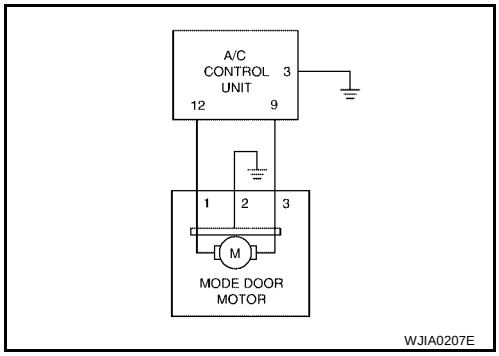
The mode door motor is installed on the heater unit. Using a link it operates the mode door. When the mode control dial is turned to each position, the mode door motor moves the mode door to control air flow direction.





DIAGNOSTIC PROCEDURE

SYMPTOM: Mode door motor does not operate normally.

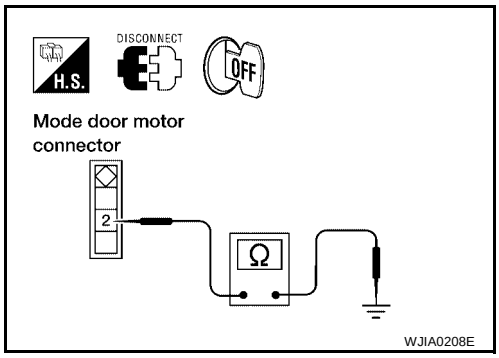


1. CHECK GROUND CIRCUIT FOR MODE DOOR MOTOR

1. Disconnect mode door motor connector.
2. Check continuity between mode door motor harness connector M40 terminal 2 (B) and ground.

Terminals			Continuity
Connector	Wire color	Ground	Yes
M40-2	B		

Continuity should exist.

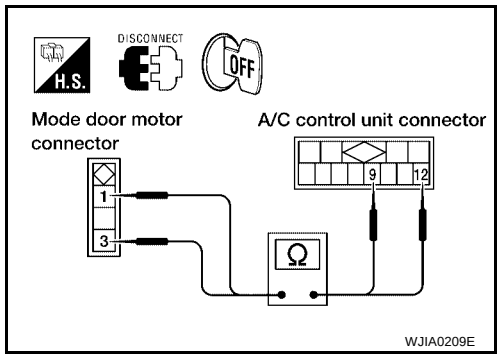


OK or NG

OK >> GO TO 2.
NG >> Repair harness or connector.

2. CHECK CIRCUIT CONTINUITY BETWEEN A/C CONTROL UNIT AND MODE DOOR MOTOR

1. Disconnect A/C control unit connector.
2. Check continuity between mode door motor harness connector M40 terminals 1 (L/R), 3 (L/B) and A/C control unit harness connector M51 terminals 12 (L/R), 9 (L/B).



Terminals				Continuity
Connectors	Wire colors	Connectors	Wire colors	
M51-9	L/B	M40-3	L/B	Yes
M51-12	L/R	M40-1	L/R	

Continuity should exist.

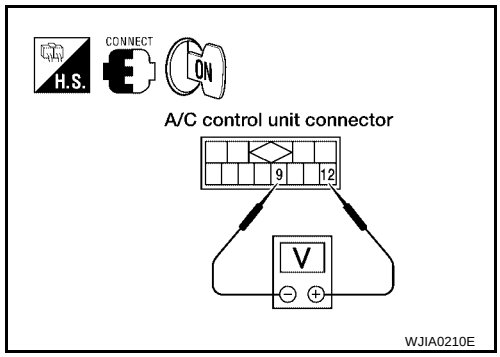
OK or NG

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

3. CHECK FOR A/C CONTROL UNIT OUTPUT

1. Reconnect mode door motor connector.
2. Measure voltage between A/C control unit harness connector M51 terminals 9 (L/B) and 12 (L/R) while turning air control dial to each position.

Voltage (V) : Approx. 12V

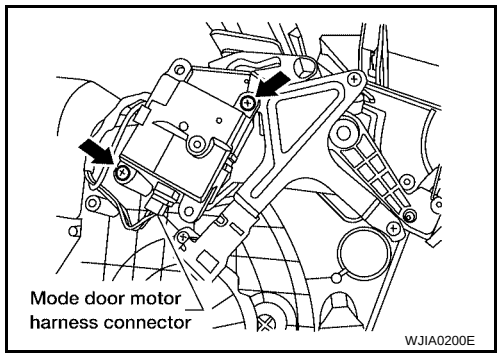


OK or NG

OK >> Replace mode door motor. Refer to MTC-74, "Removal and Installation"
NG >> Replace A/C control unit. Refer to MTC-66, "Removal and Installation"

CONTROL LINKAGE ADJUSTMENT

1. Install mode door motor on heater unit.
   Ensure that the linkage is properly attached.
2. Connect mode door motor harness connector.
3. Turn ignition switch ON.
4. Check that the mode door operates properly when air control dial is turned to each position.

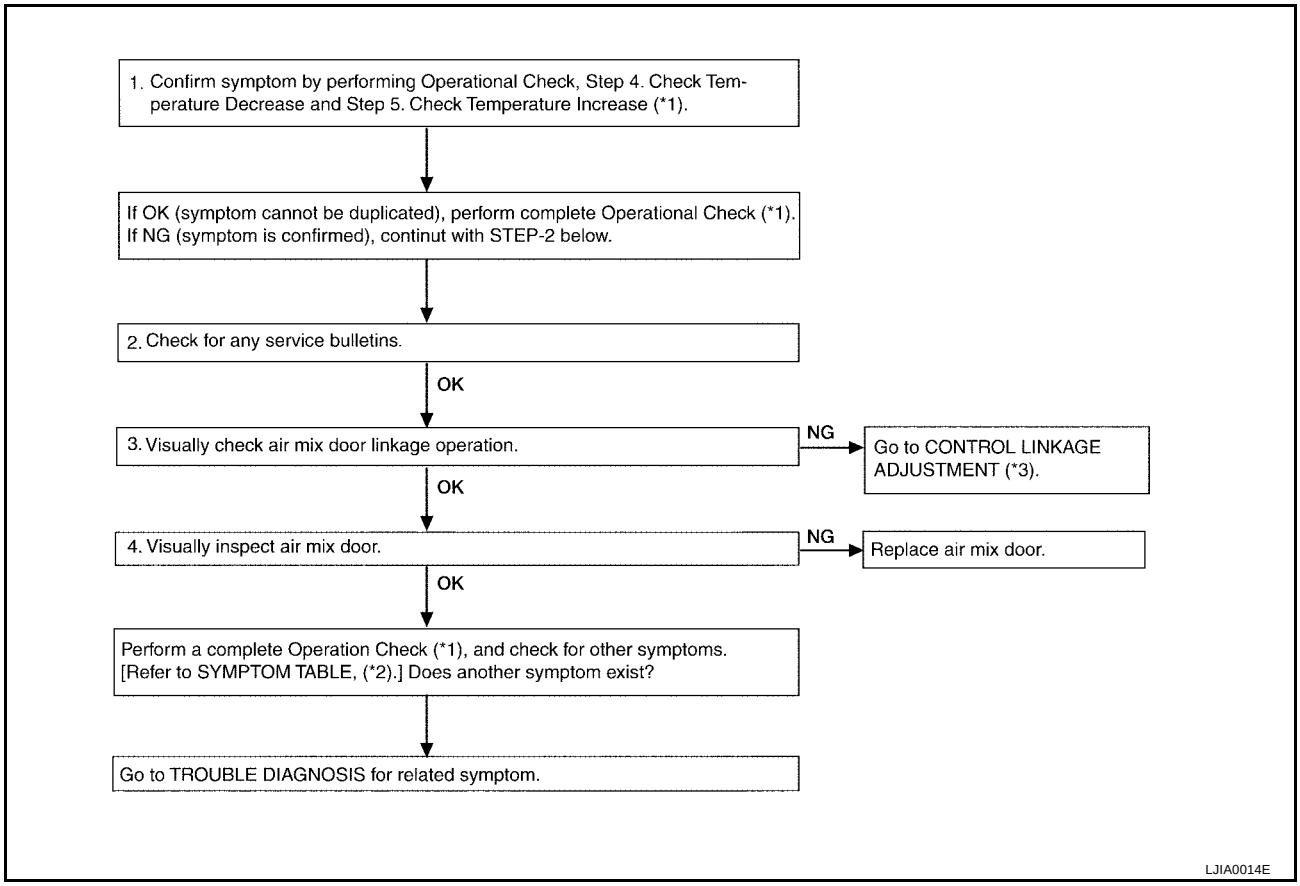


Air Mix Door

EJS001H5

SYMPTOM: Air mix door does not change.

INSPECTION FLOW



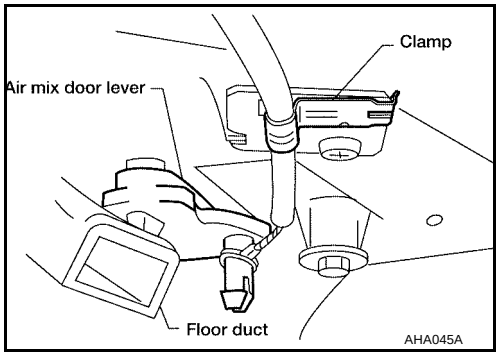
*1 MTC-37 *2 MTC-27 *3 MTC-44

CONTROL LINKAGE ADJUSTMENT

Temperature control cable

1. Move temperature control knob to full hot position.
2. Unclamp temperature control cable.
3. Move air mix door lever rearward, to full hot position.
4. Install clamp.

After positioning control cable, check for proper operation.



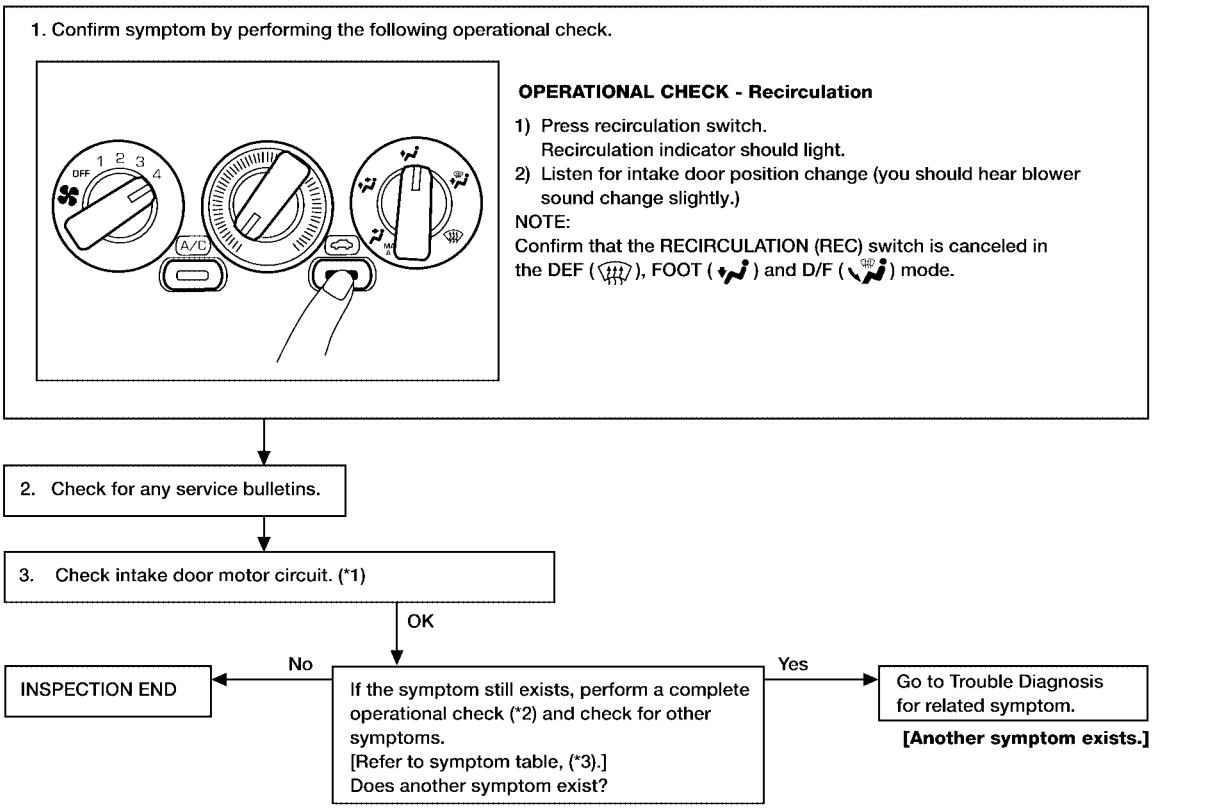
Intake Door Motor Circuit

EJS001F4

Symptom:

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

INSPECTION FLOW

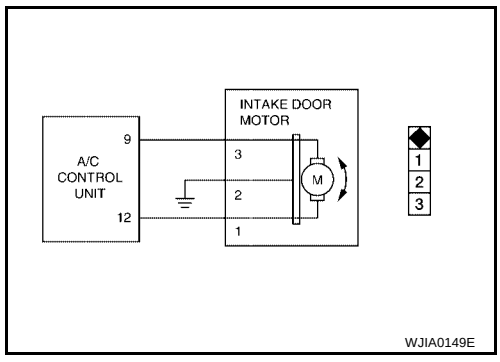


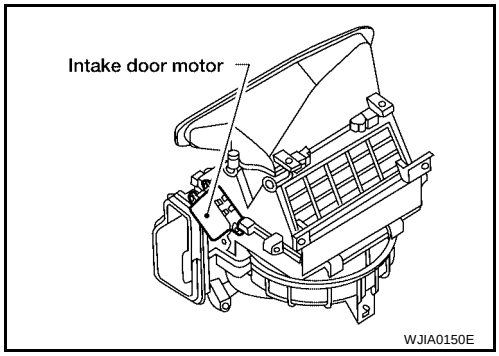
*1: MTC-45, "Intake Door Motor" *2: MTC-37, "Operational Check" *3: MTC-27, "SYMPTOM TABLE"

SYSTEM DESCRIPTION

Intake Door Motor

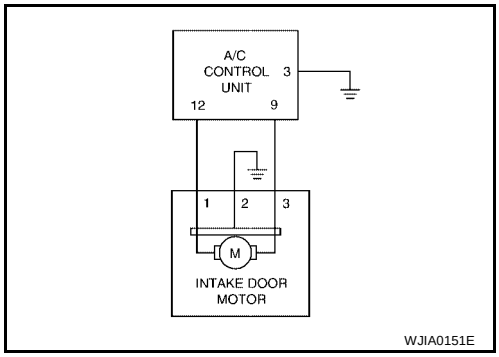
The intake door motor is installed on the blower unit. Using a link, it opens and closes the intake door.
When recirculation switch is pressed (except DEF and D/F modes), the A/C control unit sets the intake door at the recirculation position.





DIAGNOSTIC PROCEDURE

SYMPTOM: Intake door does not change position. Intake door motor does not operate normally.

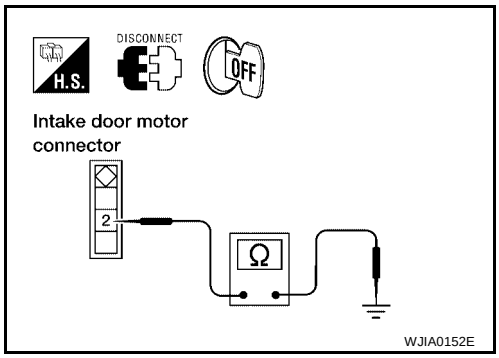


1. CHECK GROUND CIRCUIT FOR INTAKE DOOR MOTOR

1. Disconnect intake door motor connector.
2. Check continuity between intake door motor harness connector M58 terminal 2 (B) and ground.

Terminals			Continuity
Connector	Wire color	Ground	Yes
M58-2	B		

Continuity should exist.



OK or NG

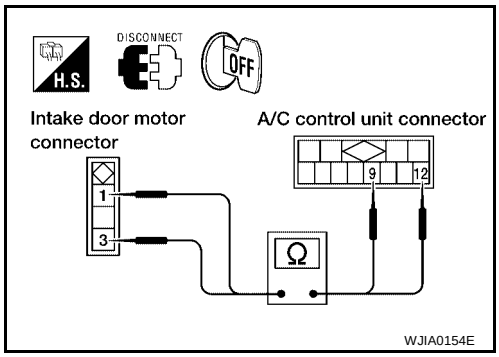
OK >> GO TO 2.
NG >> Repair harness or connector.

2. CHECK CIRCUIT CONTINUITY BETWEEN A/C CONTROL UNIT AND INTAKE DOOR MOTOR

1. Disconnect intake door motor connector.
2. Check continuity between A/C control unit harness connector M51 terminals 9 (L/B), 12 (L/R) and intake door motor harness connector M58 terminals 3 (L/B), 1 (L/R).

Terminals				Continuity
Connectors	Wire colors	Connectors	Wire colors	Yes
M51-9	L/B	M58-3	L/B	
M51-12	L/R	M58-1	L/R	

Continuity should exist.



OK or NG

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

3. CHECK FOR A/C CONTROL UNIT OUTPUT

1. Disconnect A/C control unit connector and intake door motor connector.
2. Measure voltage between A/C control unit harness terminals and ground.

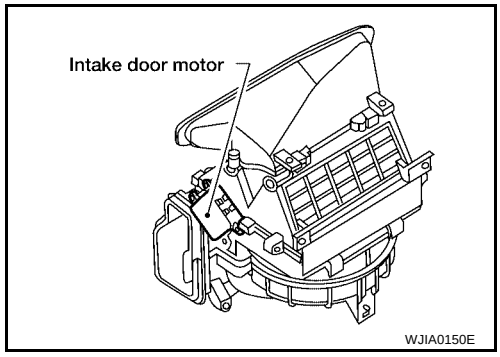
RECIRCULATION	Terminals (+) Connectors	Terminals (+) Wire colors	Terminals (-)	Condition	Voltage (V) (Approx.)
REC(ON)	M51-9	L/B	Ground	REC	12V
	M51-12	L/R			0V
FRE(OFF)	M51-9	L/B		FRE	0V
	M51-12	L/R			12V

OK or NG

OK >> Replace intake door motor. Refer to MTC-70, "Removal and Installation"
NG >> Replace A/C control unit. Refer to MTC-66, "Removal and Installation"

CONTROL LINKAGE ADJUSTMENT

1. Install intake door motor on blower unit.
   Ensure that the intake door motor lever is fitted into the slit portion of intake door link.
2. Connect the intake door motor harness connector.
3. Turn ignition switch to ON.
4. Check that intake door operates properly when recirculation switch is turned ON and OFF.



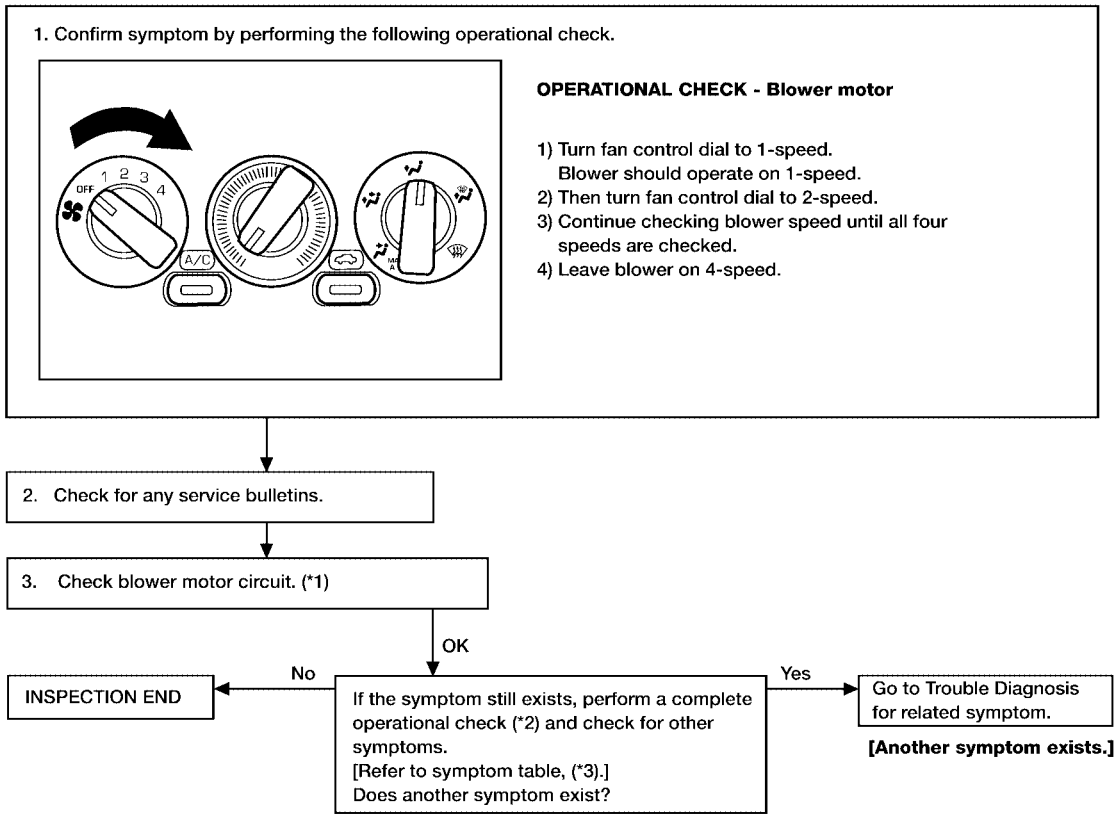
Blower Motor Circuit

EJS001F5

Symptom:

- **Blower motor operation is malfunctioning.**

INSPECTION FLOW



WJIA0156E

*1: MTC-48, "Blower Motor Circuit" *2: MTC-37, "Operational Check" *3: MTC-27, "SYMPTOM TABLE"

DIAGNOSTIC PROCEDURE

SYMPTOM:

- **Blower motor operation is malfunctioning.**

Test group No.	INCIDENT
1	Fan fails to rotate.
2	Fan does not rotate at 1-speed.
3	Fan does not rotate at 2-speed.
4	Fan does not rotate at 3-speed.
5	Fan does not rotate at 4-speed.

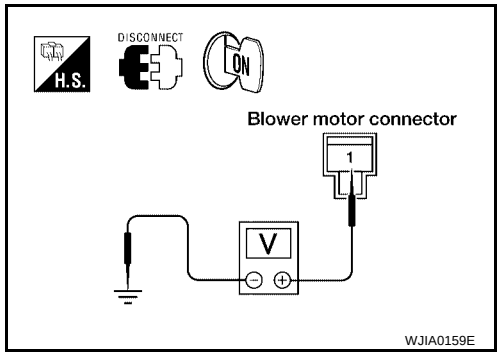
1. DIAGNOSTIC PROCEDURE

Check if blower motor rotates properly at each fan speed.
Conduct checks as per table above.

1 >> GO TO 2.
2, 3, 4 >> GO TO 8.
5 >> GO TO 10.

2. CHECK POWER SUPPLY FOR BLOWER MOTOR

1. Disconnect blower motor harness connector.
2. Turn ignition switch ON.
3. Check voltage between blower motor harness connector M62 terminal 1 (W/L) and ground.



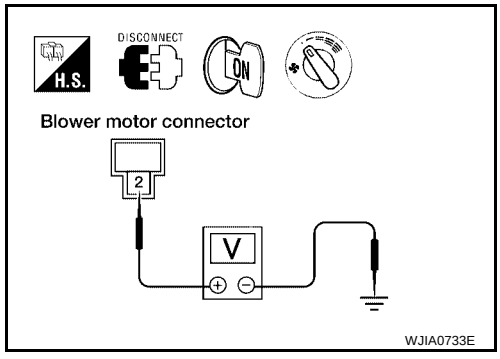
Terminals			Voltage (V) (Approx.)
(+)		(-)	
Connector	Wire color	Ground	12V
M62-1	W/L		

OK or NG

OK >> GO TO 3.
NG >> ● Check 15A fuses (No. 10 and No. 11) at fuse block (J/B).
● Check blower relay [located in fuse block (J/B)]. Refer to PG-6, "Wiring Diagram — POWER —" .

3. CHECK BLOWER MOTOR CIRCUIT

1. Turn fan control switch to any position except OFF.
2. Check voltage between blower motor harness connector M62 terminal 2 (L/W) and ground.



Terminals			Voltage (V) (Approx.)
(+)		(-)	
Connector	Wire color		12V
M62-2	L/W	Ground	

OK or NG

OK >> GO TO 5.
NG >> GO TO 4.

4. CHECK BLOWER MOTOR

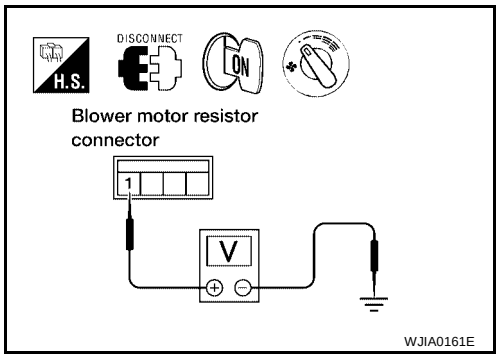
(Refer to Electrical Components Inspection.)
(MTC-52, "Blower motor")

OK or NG

OK >> Inspection End.
NG >> Replace blower motor. Refer to MTC-68, "Removal and Installation" .

5. CHECK BLOWER MOTOR CIRCUIT BETWEEN BLOWER MOTOR AND RESISTOR

1. Turn ignition switch OFF.
2. Disconnect blower motor resistor connector.
3. Reconnect blower motor connector.
4. Check voltage between blower motor resistor harness connector M63 terminal 1 (L/W) and ground.



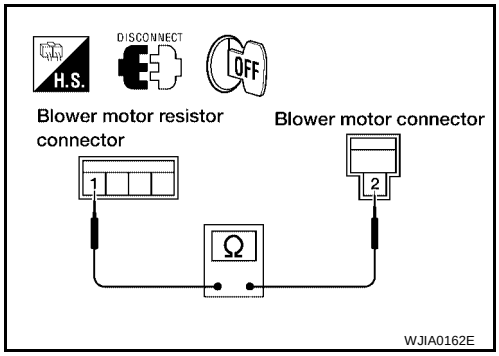
Terminals			Voltage (V) (Approx.)
(+)		(-)	
Connector	Wire color		12V
M63-1	L/W	Ground	

OK or NG

OK >> GO TO 7.
NG >> GO TO 6.

6. CHECK CIRCUIT CONTINUITY BETWEEN BLOWER MOTOR AND RESISTOR

1. Turn ignition switch OFF.
2. Disconnect blower motor connector.
3. Check continuity between blower motor harness connector M62 terminal 2 (L/W) and blower motor resistor harness connector M63 terminal 1 (L/W).



Terminals				Continuity
Connector	Wire color	Connector	Wire color	
M63-1	L/W	M62-2	L/W	Yes

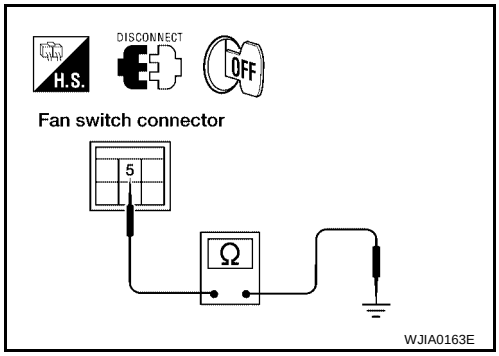
Continuity should exist.

OK or NG

OK >> Inspection End.
NG >> Repair harness or connector.

7. CHECK GROUND CIRCUIT FOR FAN SWITCH

1. Turn ignition switch OFF.
2. Reconnect blower motor resistor connector.
3. Disconnect fan switch harness connector.
4. Check circuit continuity between fan switch harness connector M41 terminal 5 (B) and ground.



Terminals			Continuity
Connector	Wire color		
M41-5	B	Ground	Yes

OK or NG

OK >> GO TO 8.
NG >> Repair harness or connector.

8. CHECK BLOWER MOTOR RESISTOR

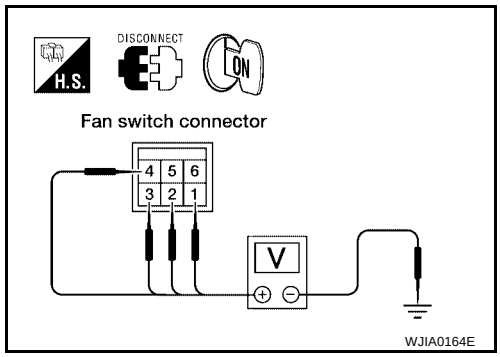
Refer to MTC-52, "Blower Motor Resistor" .

OK or NG

OK >> GO TO 9.
NG >> Replace blower motor resistor. Refer to MTC-69, "Removal and Installation" .

9. CHECK FAN SWITCH CIRCUIT

1. Reconnect blower motor resistor harness connector.
2. Do approx. 12 volts exist between each fan switch harness connector terminal and ground?



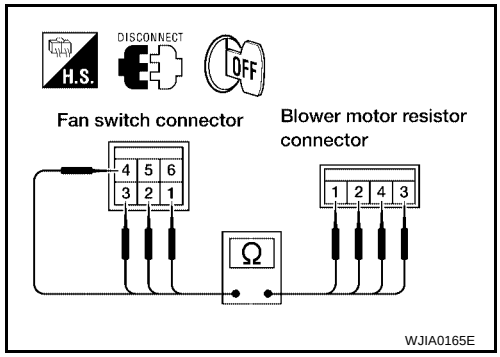
Test group No.	Terminal (+) Connector	Terminal (+) Wire color	Terminal (-)	Voltage (V) (Approx.)
2	M41-4	L/B	Ground	12V
3	M41-3	L/R		
4	M41-2	L/Y		
5	M41-1	L/W		

Yes or No

Yes >> GO TO 11.
No >> GO TO 10.

10. CHECK CIRCUIT CONTINUITY BETWEEN FAN SWITCH HARNESS TERMINAL AND RESISTOR HARNESS TERMINAL

1. Turn ignition switch OFF.
2. Disconnect blower motor resistor harness connector.
3. Check continuity between fan switch harness connector M41 terminals 1 (L/W), 2 (L/Y), 3 (L/R), 4 (L/B) and blower motor resistor harness connector M63 terminals 1 (L/W), 2 (L/Y), 3 (L/R), 4 (L/B).



Terminal No. Fan switch Connectors	Fan switch Wire colors	Resistor Connectors	Resistor Wire colors	Continuity
M41-4	L/B	M63-4	L/B	Yes
M41-3	L/R	M63-3	L/R	
M41-2	L/Y	M63-2	L/Y	
M41-1	L/W	M63-1	L/W	

OK or NG

OK >> Check harness for short.
NG >> Repair harness or connector.

11. CHECK FAN SWITCH

Refer to MTC-52, "Fan Switch" .

OK or NG

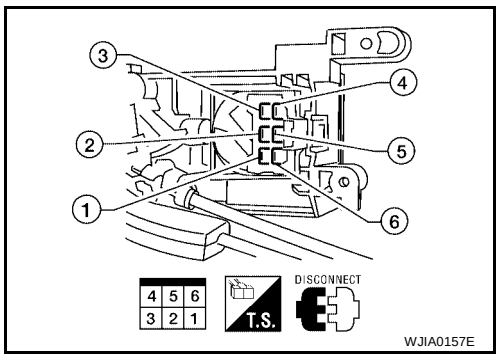
OK >> Inspection End.
NG >> Replace fan switch.

ELECTRICAL COMPONENTS INSPECTION

Fan Switch

Check continuity between terminals at each switch position.

SWITCH POSITION	Continuity between terminals
OFF	
1	4 — 5 — 6
2	3 — 5 — 6
3	2 — 5 — 6
4	1 — 5 — 6



Blower motor

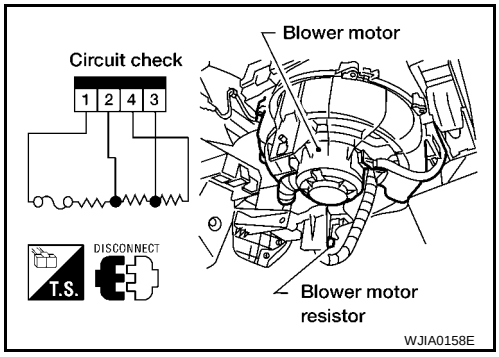
Confirm smooth rotation of the blower motor.

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

Blower Motor Resistor

Check resistance between terminals.

Terminal No.		Resistance (Ω) (Approx.)
(+)	(–)	
3	1	0.9 - 1.1Ω
4		2.27 - 2.78Ω
2		0.3 - 0.38Ω



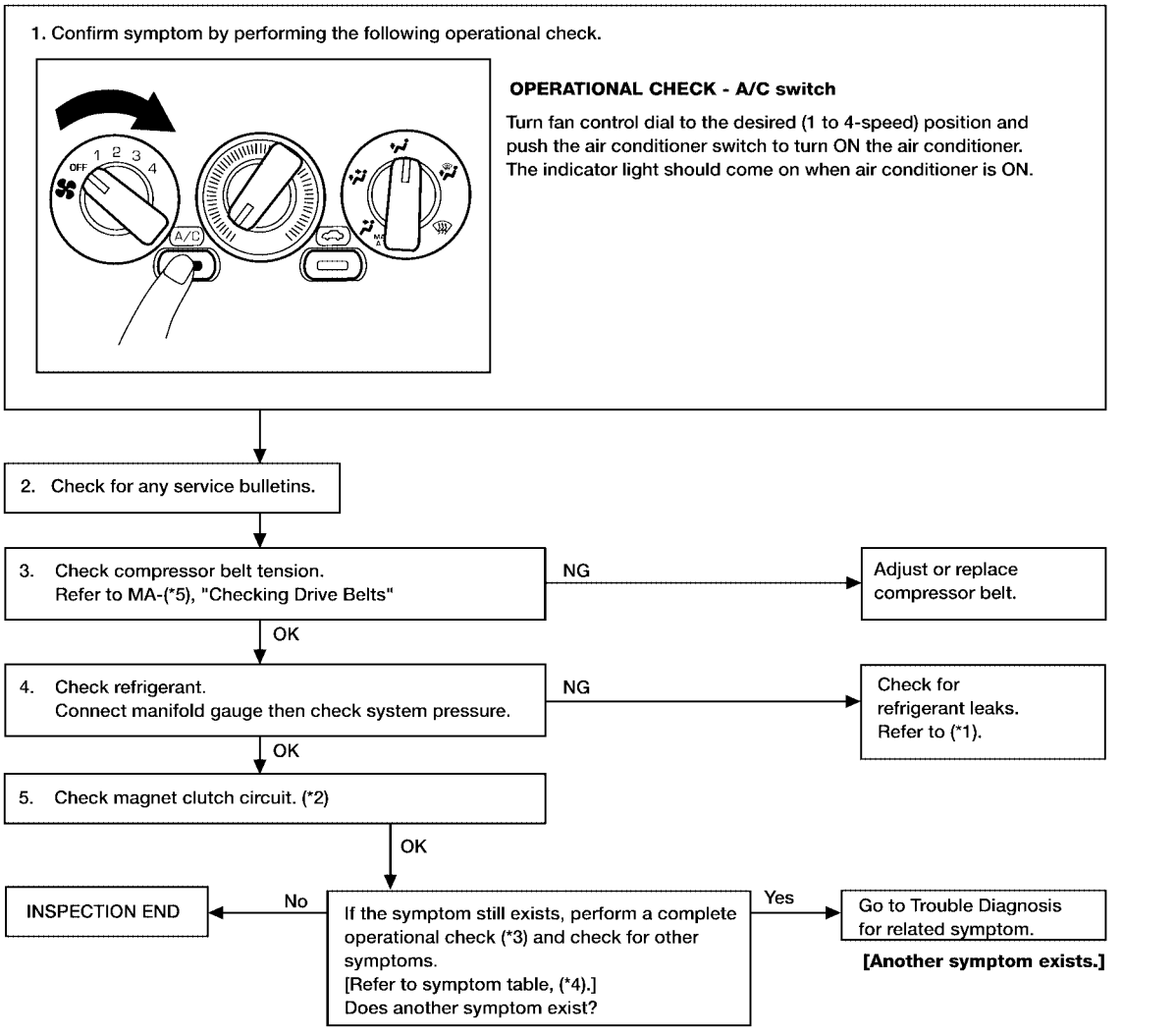
Magnet Clutch Circuit

EJS001F6

Symptom:

- **Magnet clutch does not engage when A/C switch and fan switch are ON.**

INSPECTION FLOW



WJIA0166E

*1: MTC-91, "Checking for Refrigerant Leaks"

*2: MTC-54, "DIAGNOSTIC PROCEDURE"

*3: MTC-37, "Operational Check"

*4: MTC-27, "SYMPTOM TABLE"

*5: MA-16, "Checking Drive Belts" (QR35DE), MA-23, "Checking Drive Belts" (VQ35DE)

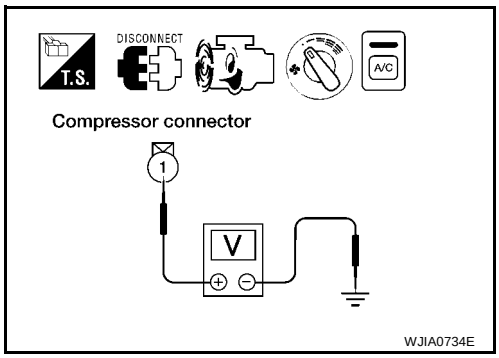
DIAGNOSTIC PROCEDURE

SYMPTOM:

- **Magnet clutch does not engage when A/C switch and fan control dial are ON.**

1. CHECK POWER SUPPLY FOR COMPRESSOR

1. Disconnect compressor connector.
2. Turn ignition switch ON.
3. Turn fan control dial and A/C switch ON.
4. Check voltage between compressor harness connector F3 terminal 1 (Y/B) and ground.



Terminals			Voltage (V) (Approx.)
(+)		(-)	
Connector	Wire color		12V
F3-1	Y/B	Ground	

OK or NG

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

2. CHECK MAGNET CLUTCH COIL

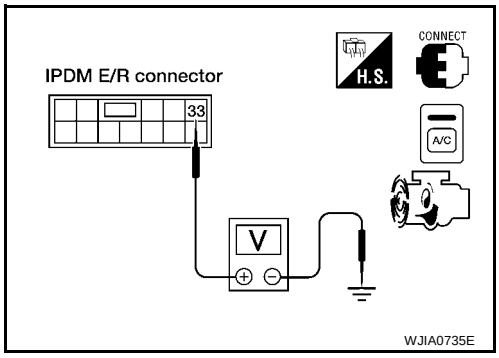
Check magnet clutch coil.

OK or NG

OK >> Check compressor mounting points for looseness or corrosion and repair as necessary.
NG >> Replace magnet clutch. Refer to MTC-84, "Removal and Installation for Compressor Clutch" .

3. CHECK MAGNET CLUTCH COIL POWER SUPPLY FROM IPDM E/R

1. Reconnect compressor harness connector.
2. Check voltage between IPDM E/R harness connector E124 terminal 33 (Y/B) and ground.



Terminals			Voltage (V) (Approx.)
(+)		(-)	
Connector	Wire color		
E124-33	Y/B	Ground	12V

OK or NG

OK >> Repair harness or connector between IPDM E/R and compressor.
NG >> Check fuse.
- If OK, GO TO 4.
- If NG, replace fuse.

4. CHECK INTAKE SENSOR CIRCUIT

Refer to MTC-64, "Intake Sensor Circuit" .

OK or NG

OK >> GO TO 5.
NG >> Repair as necessary.

5. CHECK REFRIGERANT PRESSURE SENSOR

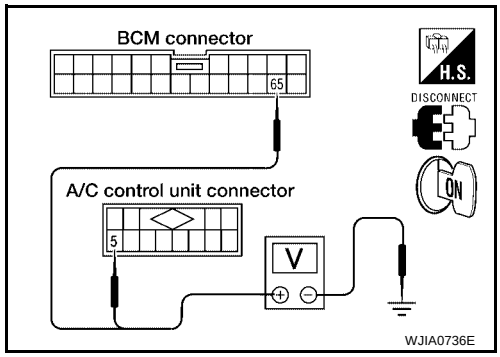
Refer to EC-572, "REFRIGERANT PRESSURE SENSOR" (QR25DE models) or EC-1211, "REFRIGERANT PRESSURE SENSOR" (VQ35DE models).

OK or NG

OK >> GO TO 6.
NG >> Repair as necessary.

6. CHECK FAN ON SIGNAL TO A/C CONTROL UNIT AND BCM

1. Disconnect A/C control unit connector M51.
2. Measure voltage between A/C control unit harness connector M51 terminal 5 (G/B) and ground.
3. Reconnect A/C control unit harness connector M51 and disconnect BCM harness connector M18.
4. Measure voltage between BCM harness connector M18 terminal 65 (G/B) and ground.



Terminals			Condition	Voltage (V) (Approx.)
(+)		(-)		
Connectors	Wire colors			
M51-5	G/B	Ground	FAN SW: OFF	5V
	G/B		FAN SW: ON	0V
M18-65	G/B		FAN SW: OFF	5V
	G/B		FAN SW: ON	0V

OK or NG

OK >> GO TO 8.
NG >> GO TO 7.

7. CHECK FAN SWITCH

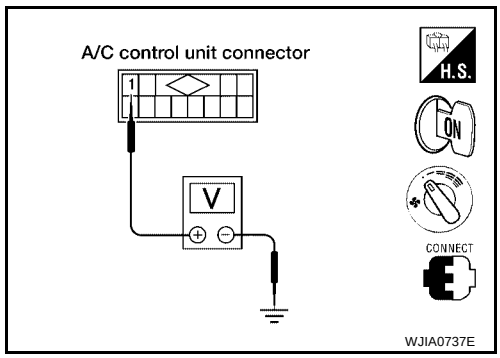
Check fan switch. Refer to MTC-66, "Removal and Installation" .

OK or NG

OK >> Repair harness or connectors between fan switch and A/C control unit and BCM.
NG >> Replace fan switch. Refer to

8. CHECK COMPRESSOR ON SIGNAL

1. Reconnect A/C control unit connector.
2. With fan control dial turned ON, measure voltage between A/C control unit harness connector M51 terminal 1 (L/W) and ground.



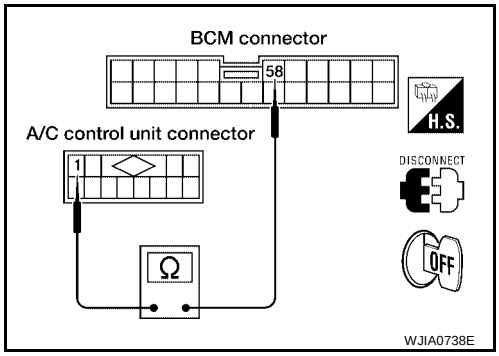
Terminals			Condition	Voltage (V) (Approx.)
(+)		(-)		
Connector	Wire color			
M51-1	L/W	Ground	A/C SW: OFF	9V
	L/W		A/C SW: ON	0V

OK or NG

OK >> GO TO 9.
NG >> Replace A/C control unit. Refer to MTC-66, "Removal and Installation" .

9. CHECK COMPRESSOR ON SIGNAL CIRCUIT

1. Disconnect A/C control unit connector.
2. Check continuity between A/C control unit harness connector M51 terminal 1 (L/W) and BCM harness connector M18 terminal 58 (L/W).



Terminals				Continuity
Connector	Wire color	Connector	Wire color	Yes
M18-58	L/W	M51-1	L/W	

OK or NG

OK >> GO TO 10.
NG >> Repair harness or connectors.

10. CHECK CAN COMMUNICATION CIRCUITS

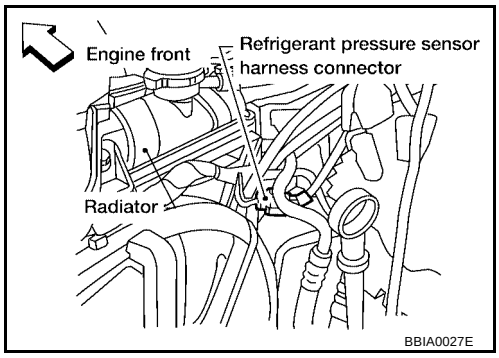
Check CAN communication circuits between BCM to ECM and between ECM to IPDM E/R. Refer to LAN-4, "CAN COMMUNICATION" .

OK or NG

OK >> ECM is malfunctioning.
NG >> Repair or replace component based on diagnosis.

REFRIGERANT PRESSURE SENSOR

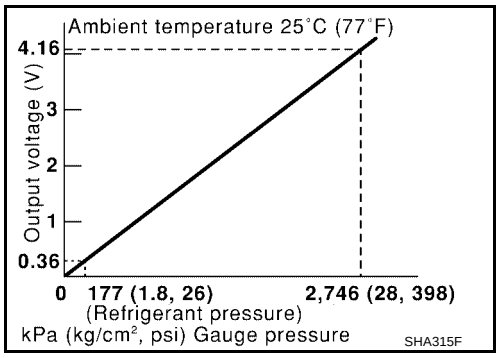
Make sure that higher A/C refrigerant pressure results in higher refrigerant pressure sensor output voltage.



	OFF kPa (kg/cm^2 , psi)
Low-pressure side	Decreasing to 0.18 (0.00184, 0.03)
High-pressure side	Increasing to 2.74 (0.0279, 0.40)

Refer to EC-572, "REFRIGERANT PRESSURE SENSOR" (QR25DE models) or EC-1211, "REFRIGERANT PRESSURE SENSOR" (VQ35DE models).

- 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.



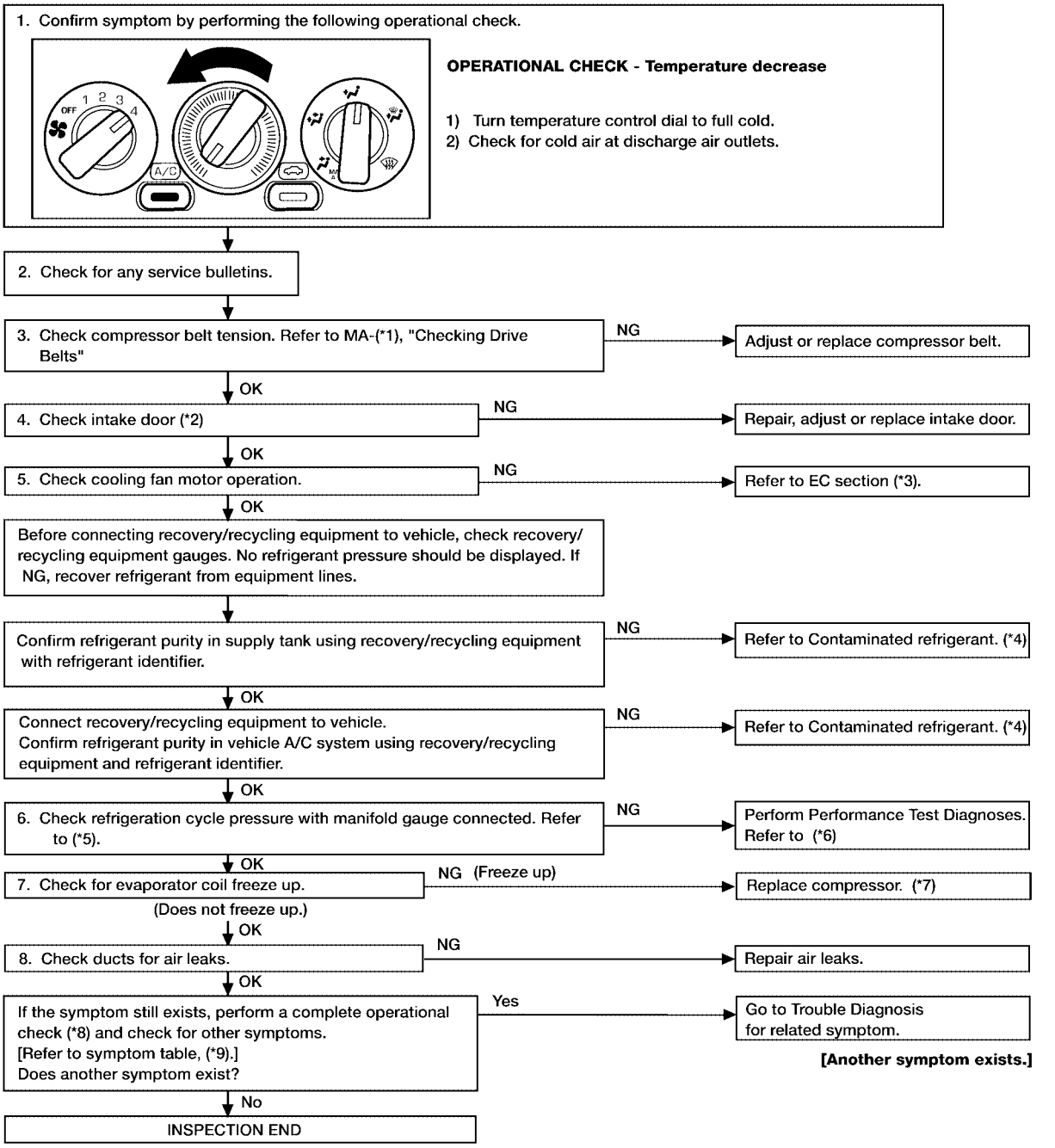
Insufficient Cooling

EJS001F7

Symptom:

- **Insufficient cooling.**

INSPECTION FLOW



WJIA0739E

*1: MA-16, "Checking Drive Belts" (QR25DE) or MA-23, "Checking Drive Belts" (VQ35DE)

*2: MTC-45, "Intake Door Motor Circuit"

*3: EC-391 (QR25DE) or EC-1066 (VQ35DE)

*4: MTC-4, "Contaminated Refrigerant"

*5: MTC-78, "HFC-134a (R-134a) Service Procedure"

*6: MTC-58, "Performance Chart"

*7: MTC-82, "Removal and Installation for Compressor — QR25DE Models" or MTC-83, "Removal and Installation for Compressor — VQ35DE Models"

*8: MTC-37, "Operational Check"

*9 MTC-27, "SYMPTOM TABLE"

PERFORMANCE CHART

Test Condition

Testing must be performed as follows:

Vehicle location	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door window	Open
Hood	Open
TEMP.	Max. COLD
Mode switch	(Ventilation) set
Intake switch	(Recirculation) set
(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	25 (77)	10.0 - 12.3 (50 - 54)
	30 (86)	13.2 - 15.3 (56 - 60)
	35 (95)	17.2 - 21.0 (63 - 70)
60 - 70	25 (77)	12.3 - 14.9 (54 - 59)
	30 (86)	15.3 - 19.3 (60 - 67)
	35 (95)	21.0 - 24.4 (70 - 76)

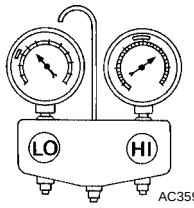
Ambient Air Temperature-to-operating Pressure Table

Ambient air		High-pressure (Discharge side) kPa (kg/cm2, psi)	Low-pressure (Suction side) kPa (kg/cm2, psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	30 (86)	1,220 - 1,500 (12.44 - 15.30, 176.9 - 217.5)	240 - 295 (2.45 - 3.01, 34.8 - 42.8)
	35 (95)	1,360 - 1,690 (13.87 - 17.24, 197.2 - 245.1)	275 - 335 (2.81 - 3.42, 39.9 - 48.6)
	40 (104)	1,500 - 1,830 (12.44 - 18.67, 176.9 - 265.4)	310 - 375 (3.16 - 3.83, 45.0 - 54.4)

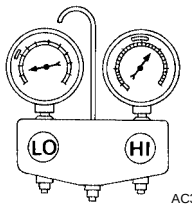
TROUBLE DIAGNOSES FOR ABNORMAL PRESSURE

Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (normal) pressure range. Since the standard (normal) pressure differs from vehicle to vehicle, refer to Ambient Air Temperature-to-operating Pressure Table above.

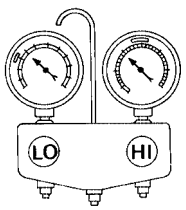
Both High and Low-pressure Sides are Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high and low-pressure sides are too high.  AC359A	Pressure is reduced soon after water is splashed on condenser.	Excessive refrigerant charge in refrigeration cycle	Reduce refrigerant until specified pressure is obtained.
	Air suction by cooling fan is insufficient.	Insufficient condenser cooling performance ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan	● Clean condenser. ● Check and repair cooling fan as necessary.
	● Low-pressure pipe is not cold. ● When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm^2 , 28 psi). It then decreases gradually thereafter.	Poor heat exchange in condenser (After compressor operation stops, high pressure decreases too slowly.) ↓ Air in refrigeration cycle	Evacuate repeatedly and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair each engine cooling system.
	● An area of the low-pressure pipe is colder than areas near the evaporator outlet. ● Plates are sometimes covered with frost.	● Excessive liquid refrigerant on low-pressure side ● Excessive refrigerant discharge flow ● Expansion valve is open a little compared with the specification. ↓ 1. Improper thermal valve installation 2. Improper expansion valve adjustment	Replace expansion valve.

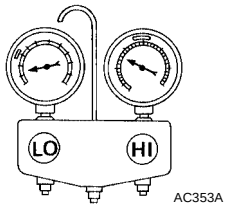
High-pressure Side is Too High and Low-pressure Side is Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
High-pressure side is too high and low-pressure side is too low.  AC360A	Upper side of condenser and high-pressure side are hot, however, liquid tank is not so hot.	High-pressure tube or parts located between compressor and condenser are clogged or crushed.	● Check and repair or replace malfunctioning parts. ● Check lubricant for contamination.

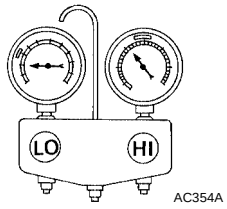
High-pressure Side is Too Low and Low-pressure Side is Too High

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.

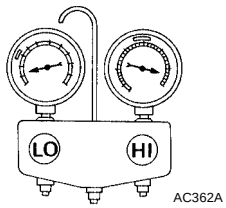
Both High- and Low-pressure Sides are Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Both high- and low-pressure sides are too low.  AC353A	● There is a big temperature difference between receiver drier outlet and inlet. Outlet temperature is extremely low. ● Liquid tank inlet and expansion valve are frosted.	Liquid tank inside is slightly clogged.	● Replace desiccant assy. ● Check lubricant for contamination.
	● Temperature of expansion valve inlet is extremely low as compared with areas near liquid tank. ● Expansion valve inlet may be frosted. ● Temperature difference occurs somewhere in high-pressure side	High-pressure pipe located between receiver drier and expansion valve is clogged.	● Check and repair malfunctioning parts. ● Check lubricant for contamination.
	Expansion valve and liquid tank are warm or only cool when touched.	Low refrigerant charge ↓ Leaking fittings or components	Check refrigerant for leaks. Refer to MTC-91, "Checking for Refrigerant Leaks" .
	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 thermal valve 3. Outlet and inlet may be clogged.	● Remove foreign particles by using compressed air. ● Check lubricant for contamination.
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	● Check and repair malfunctioning parts. ● Check lubricant for contamination.
	Air flow volume is not enough or is too low.	Evaporator is frozen.	● Check intake sensor operation. Refer to MTC-64, "Intake Sensor Circuit" . ● Replace compressor.

Low-pressure Side Sometimes Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side sometimes becomes negative.  AC354A	● Air conditioning system does not function and does not cyclically cool the compartment air. ● The system constantly functions for a certain period of time after compressor is stopped and restarted.	Refrigerant does not discharge cyclically. ↓ Moisture is frozen at expansion valve outlet and inlet. ↓ Water is mixed with refrigerant.	● Drain water from refrigerant or replace refrigerant. ● Replace desiccant assy.

Low-pressure Side Becomes Negative

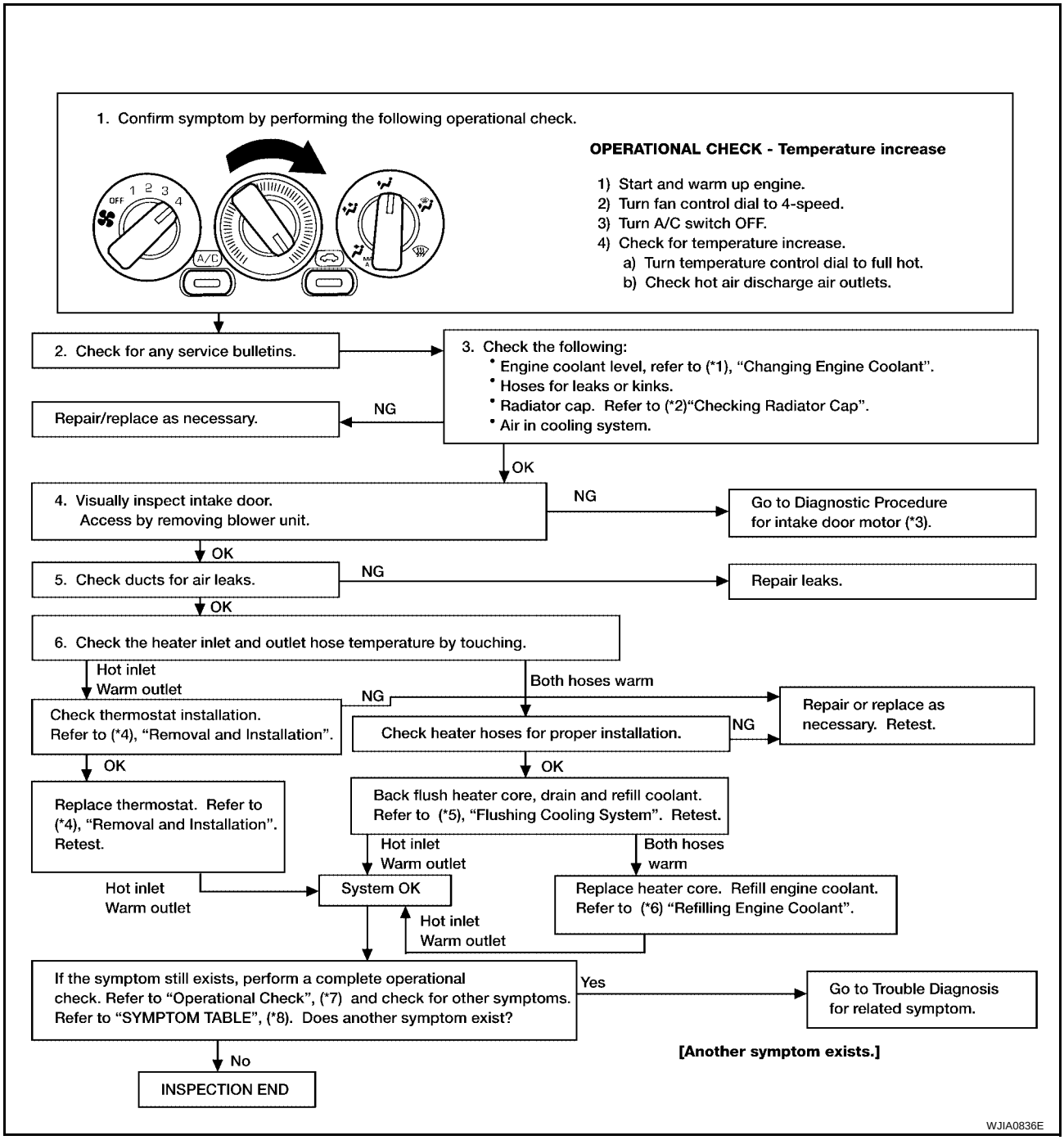
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side becomes negative.  AC362A	Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.	High-pressure side is closed and refrigerant does not flow. ↓ Expansion valve or liquid tank is frosted.	Leave the system at rest until no frost is present. Start it again to check whether or not the problem is caused by water or foreign particles. ● If water is the cause, initially cooling is okay. Then the water freezes causing a blockage. Drain water from refrigerant or replace refrigerant. ● If due to foreign particles, remove expansion valve and remove the particles with dry and compressed air (not shop air). ● If either of the above methods cannot correct the problem, replace expansion valve. ● Replace desiccant assy. ● Check lubricant for contamination.

Insufficient Heating

EJS001F8

SYMPTOM: Insufficient heating

INSPECTION FLOW



*1: MA-16, "Changing Engine Coolant" (QR25DE) or MA-24, "Changing Engine Coolant" (VQ35DE)

*2: CO-9, "CHECKING RADIATOR CAP" (QR25DE) or CO-30, "CHECKING RADIATOR CAP" (VQ35DE)

*3: MTC-45, "Intake Door Motor Circuit"

*4: CO-19, "Removal and Installation" (QR25DE) or CO-43, "Removal and Installation" (VQ35DE)

*5: MA-18, "FLUSHING COOLING SYSTEM" (QR25DE) or MA-25, "FLUSHING COOLING SYSTEM" (VQ35DE)

*6: MA-17, "REFILLING ENGINE COOLANT" (QR25DE) or MA-24, "REFILLING ENGINE COOLANT" (VQ35DE)

*7: MTC-37, "Operational Check"

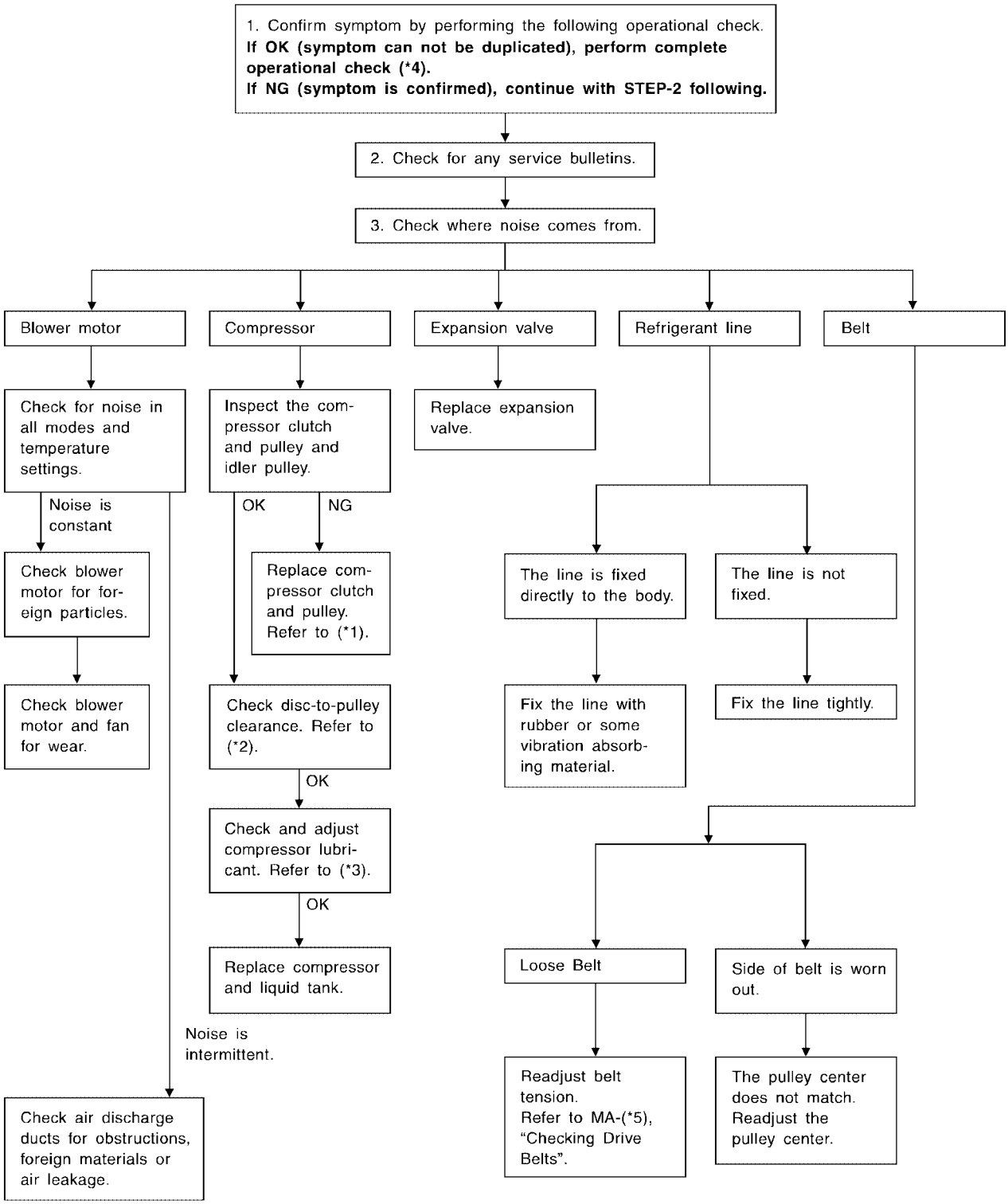
*8 MTC-27, "SYMPTOM TABLE"

Noise

EJS001F9

SYMPTOM: Noise

INSPECTION FLOW



SHA331F

*1 MTC-84, "Removal and Installation for Compressor Clutch"
*2 MTC-85, "INSTALLATION"
*3 MTC-19, "Maintenance of Lubricant Quantity in Compressor"
*4 MTC-37, "Operational Check"
*5 MA-16, "Checking Drive Belts" (QR25DE) or MA-23, "Checking Drive Belts" (VQ35DE)

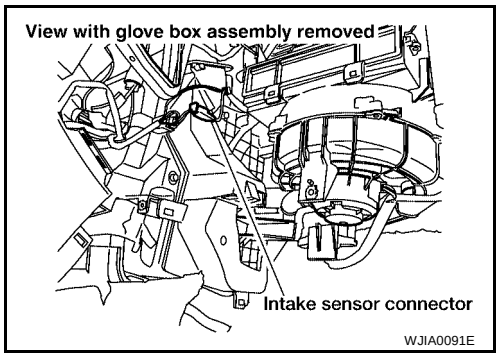
Intake Sensor Circuit

EJS001FA

COMPONENT DESCRIPTION

Intake Sensor

The intake sensor is located on the heater and cooling unit. It converts temperature of air after it passes through the evaporator into a resistance value which is then input to the A/C control unit.
After disconnecting intake sensor harness connector, measure resistance between terminals 1 and 2 at sensor harness side, using the table below.

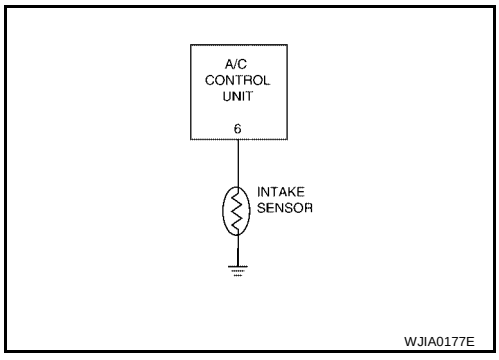


Temperature °C (°F)	Resistance kΩ
-15 (5)	12.34
-10 (14)	9.62
-5 (23)	7.56
0 (32)	6.00
5 (41)	4.80
10 (50)	3.87
15 (59)	3.15
20 (68)	2.57
25 (77)	2.12
30 (86)	1.76
35 (95)	1.47
40 (104)	1.23
45 (113)	1.04

If NG, replace intake sensor.

DIAGNOSTIC PROCEDURE

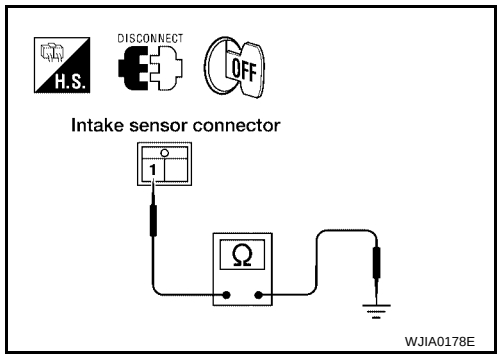
SYMPTOM: Intake sensor circuit is open or shorted.



1. CHECK INTAKE SENSOR CIRCUIT BETWEEN INTAKE SENSOR AND GROUND

1. Disconnect intake sensor harness connector.
2. Check continuity between intake sensor harness connector M53 terminal 1 (B) and ground.

Terminal			Continuity
Connector	Wire color	Ground	Yes
M53-1	B		



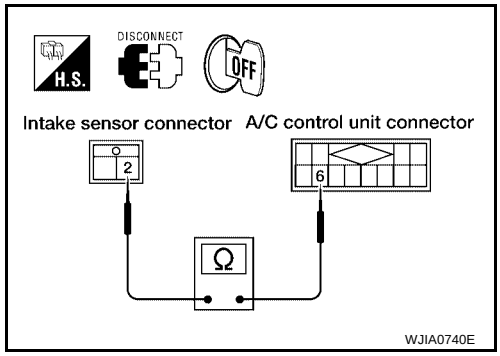
OK or NG

OK >> GO TO 2.
NG >> Repair harness or connector.

2. CHECK INTAKE SENSOR CIRCUIT BETWEEN INTAKE SENSOR AND A/C CONTROL UNIT

1. Disconnect A/C control unit connector.
2. Check continuity between intake sensor harness connector M53 terminal 2 (R/G) and A/C control unit harness connector M51 terminal 6 (R/G).

Terminals				Continuity
Connector	Wire color	Connector	Wire color	Yes
M53-2	R/G	M51-6	R/G	



OK or NG

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

3. CHECK INTAKE SENSOR

Refer to MTC-64, "Intake Sensor" .

OK or NG

OK >> Replace A/C control unit. Refer to MTC-66, "Removal and Installation" .
NG >> Replace intake sensor. Refer to MTC-70, "Removal and Installation" .

CONTROL UNIT

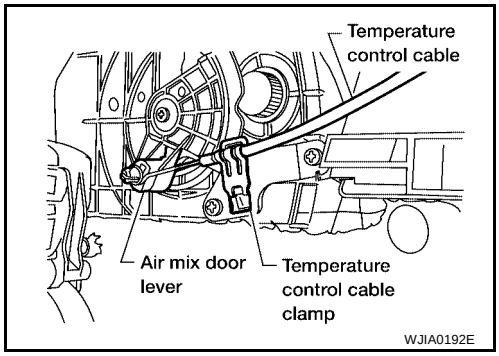
PFP:27500

Removal and Installation

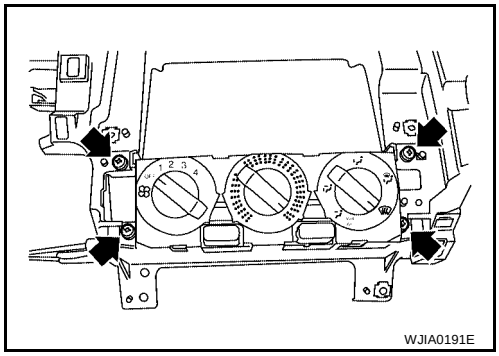
EJS001FB

REMOVAL

1. Remove cluster lid C. Refer to IP-12, "Cluster Lid C" .
2. Remove audio unit. Refer to AV-22, "AUDIO UNIT" .
3. Remove the temperature control cable clamp and then remove the cable from the air mix door lever.



4. Remove the A/C control unit screws and then remove it from the instrument panel.
5. Disconnect the A/C control unit connectors and then remove it.



INSTALLATION

Installation is in the reverse order of removal.

Adjustment

1. Attach temperature control cable.
2. Rotate control knob to full cold position.
3. Remove slack from cable and install temperature control cable clamp.

INTAKE SENSOR

PFP:27723

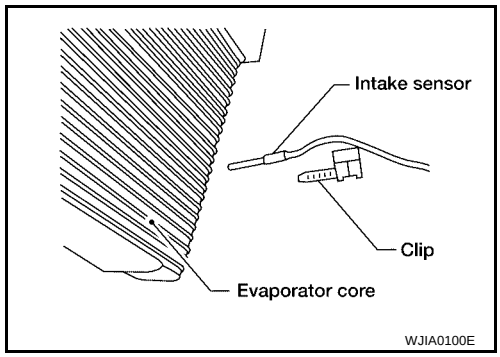
Removal and Installation

EJS001FC

REMOVAL

1. Remove the evaporator. Refer to MTC-89, "Removal and Installation for Evaporator" .
2. Remove the intake sensor clip and then the sensor.

CAUTION:
Be careful not to damage the core surface.



INSTALLATION

Installation is in the reverse order of removal.

BLOWER UNIT

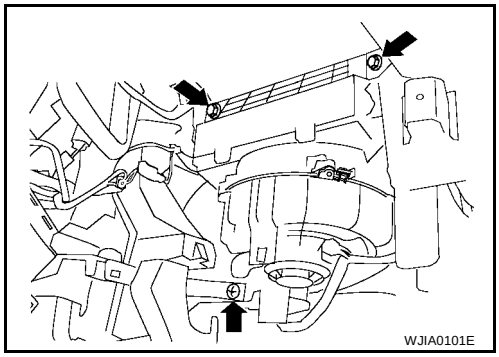
PFP:27200

Removal and Installation

EJS001FD

REMOVAL

1. Remove the glove box assembly. Refer to IP-14, "Glove Box Assembly" .
2. Remove the ECM.
3. Disconnect the blower motor, intake door motor and fan control amp. connector.
4. Remove the 2 bolts and 1 screw from the blower unit, then remove it.



INSTALLATION

Installation is in the reverse order of removal.

BLOWER MOTOR

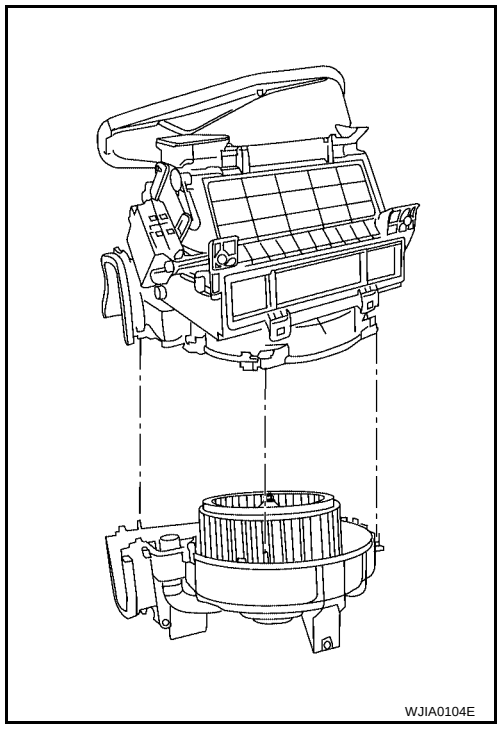
PFP:27226

Removal and Installation

EJS001FE

REMOVAL

1. Remove the blower unit. Refer to MTC-68, "Removal and Installation" .
2. Release the 8 tabs attaching blower motor to blower unit case and then remove it.



INSTALLATION

Installation is in the reverse order of removal.

INTAKE DOOR MOTOR

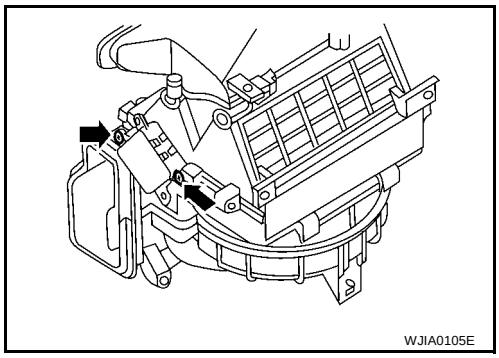
PFP:27730

Removal and Installation

EJS001FF

REMOVAL

1. Remove the blower unit. Refer to MTC-68, "Removal and Installation" .
2. Remove the screws and then the intake door motor from the blower unit.



INSTALLATION

Installation is in the reverse order of removal.

IN-CABIN MICROFILTER

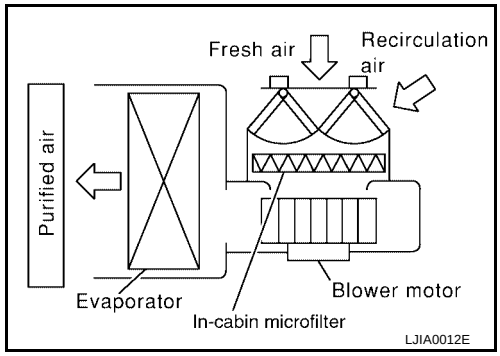
PFP:27277

Removal and Installation

EJS001GA

FUNCTION

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

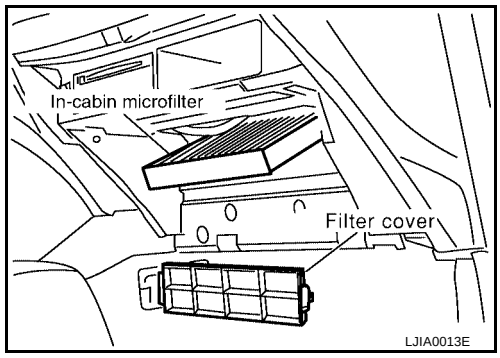


REPLACEMENT TIMING

Replace in-cabin microfilter.
Refer to MA-8, "SCHEDULE 1" and MA-11, "SCHEDULE 2" .
Caution label is fixed inside the glove box.

REPLACEMENT PROCEDURES

1. Remove glove box assembly. Refer to IP-14, "Glove Box Assembly" .
2. Remove in-cabin microfilter cover.
3. Take out the ventilation air filter from blower unit.
4. Replace with new in-cabin microfilter and reinstall on blower unit.
5. Reinstall glove box assembly.



HEATER & COOLING UNIT ASSEMBLY

PFP:27110

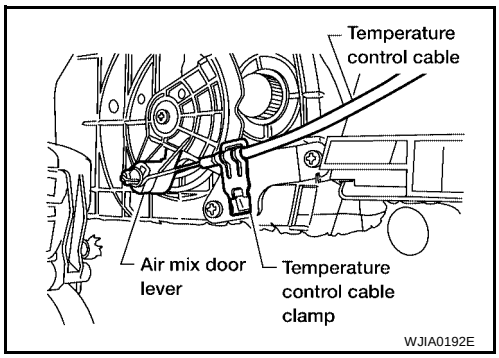
Removal and Installation

EJS001FG

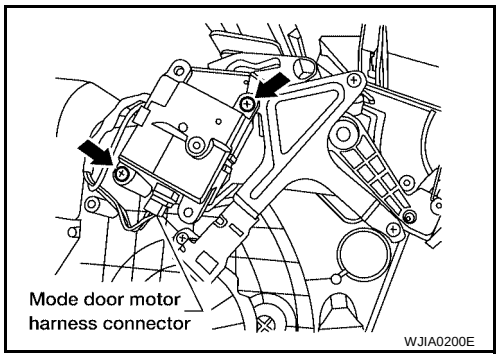
REMOVAL

1. Discharge refrigerant from A/C system. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Drain coolant from cooling system. Refer to MA-16, "Changing Engine Coolant" (QR25DE models) or MA-24, "Changing Engine Coolant" (VQ35DE models).
3. Remove wiper motor and linkage. Refer to WW-31, "REMOVAL" .
4. Remove fasteners and cowl.
5. Disconnect heater hoses from heater core pipes.
6. Disconnect refrigerant lines from evaporator. Refer to MTC-78, "REFRIGERANT LINES" .

   CAUTION:
   Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid entry of contaminants.
7. Remove the steering member. Refer to IP-10, "INSTRUMENT PANEL ASSEMBLY" .
8. Remove the blower unit. Refer to MTC-68, "Removal and Installation" .
9. Remove the temperature control cable clamp and then remove the cable from the air mix door lever.



10. Disconnect mode door motor connector.
11. Remove the heater and cooling unit.



INSTALLATION

Installation is in the reverse order of removal.

NOTE:
Fill the radiator with the specified water and coolant mixture. Refer to MA-17, "REFILLING ENGINE COOLANT" (QR25DE) or MA-24, "REFILLING ENGINE COOLANT" (VQ35DE). Recharge the A/C system. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .

HEATER CORE

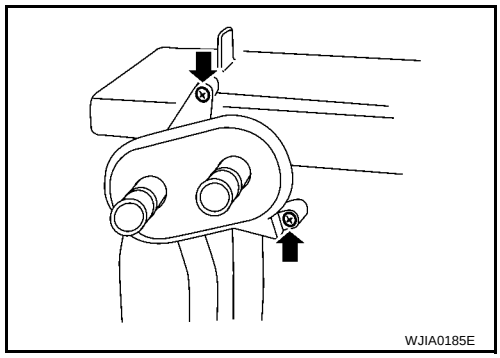
PFP:27140

Removal and Installation

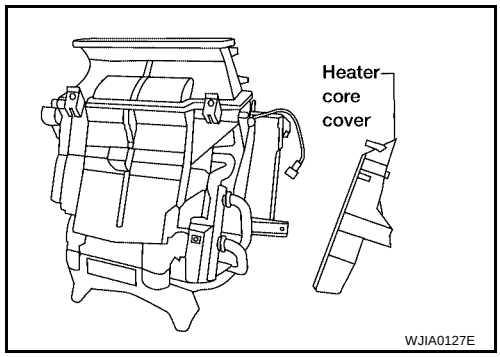
EJS001FH

REMOVAL

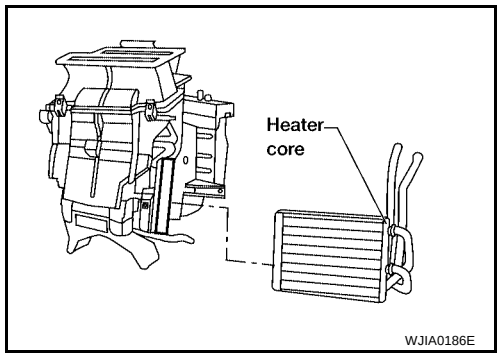
1. Remove heater and cooling unit. Refer to MTC-72, "Removal and Installation" .
2. Remove heater core pipe support screws and then remove it.



3. Remove heater core cover screws and then remove it.



4. Remove heater core.



INSTALLATION

Installation is in the reverse order of removal.

MODE DOOR MOTOR

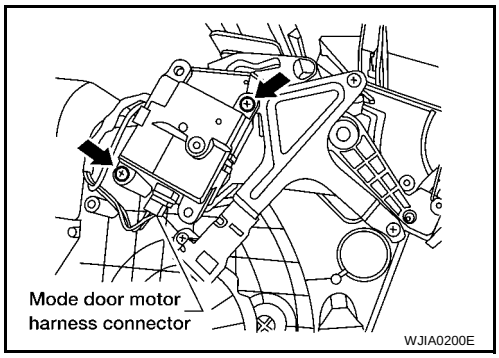
PFP:27731

Removal and Installation

EJS001FI

REMOVAL

1. Remove the driver lower instrument panel assembly. Refer to IP-12, "Instrument Lower Cover LH" .
2. Disconnect the mode door motor connector.
3. Remove the mode door motor screws and then remove it.



INSTALLATION

Installation is in the reverse order of removal.

BLOWER FAN RESISTER

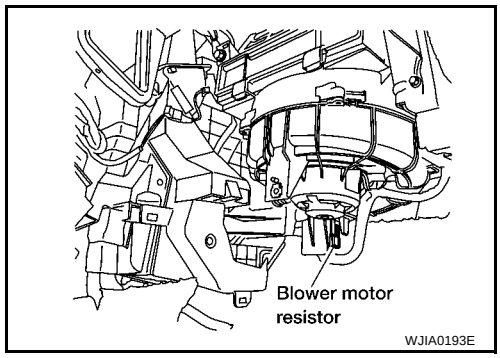
PFP:27150

Removal and Installation

EJS001FJ

REMOVAL

1. Disconnect blower motor resistor connector.
2. Remove blower motor resistor screws and then remove it.



INSTALLATION

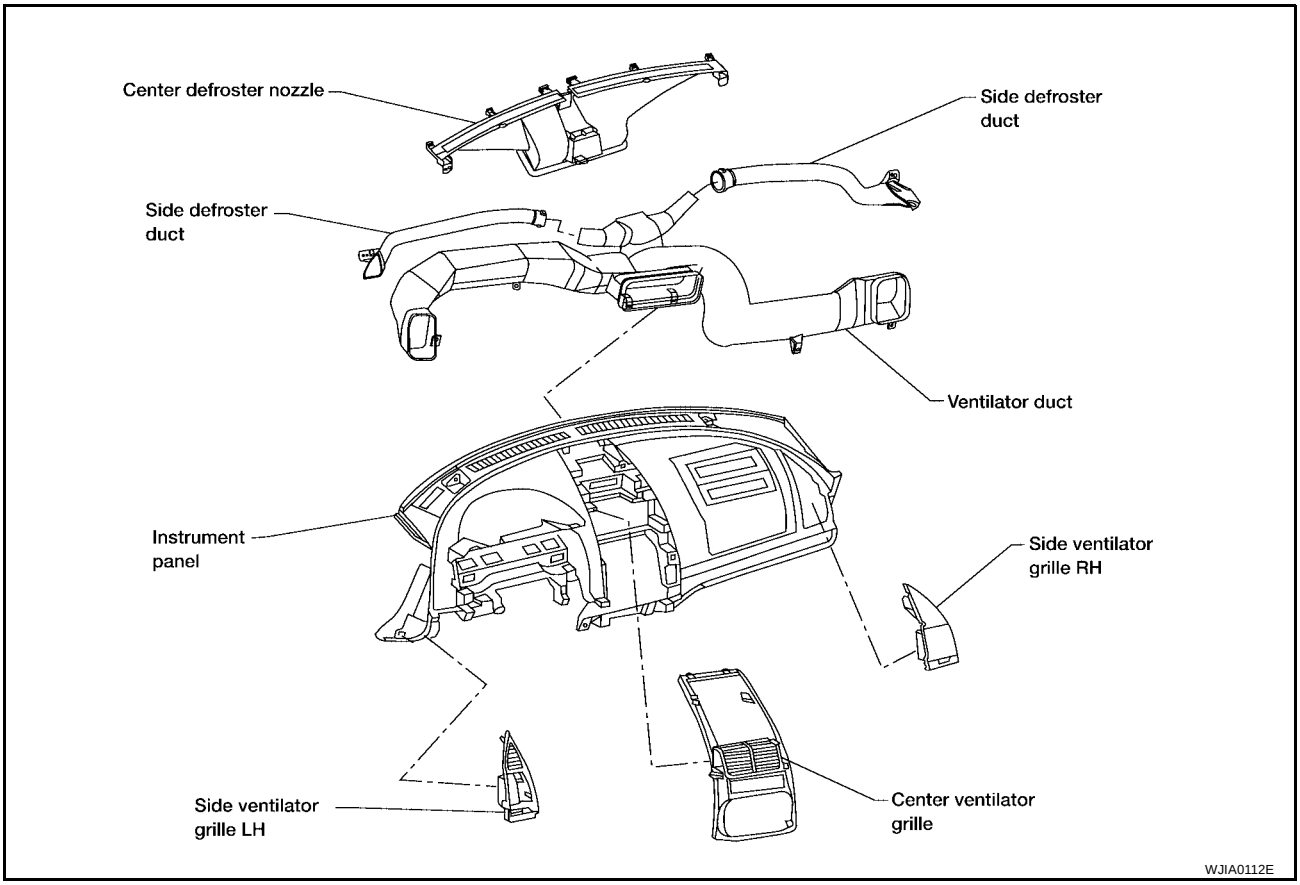
Installation is in the reverse order of removal.

DUCTS AND GRILLES

PFP:27860

Removal and Installation

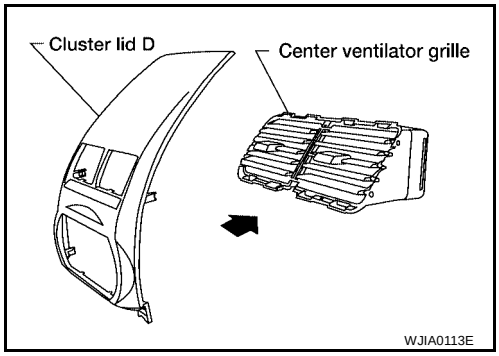
EJS001FK



REMOVAL

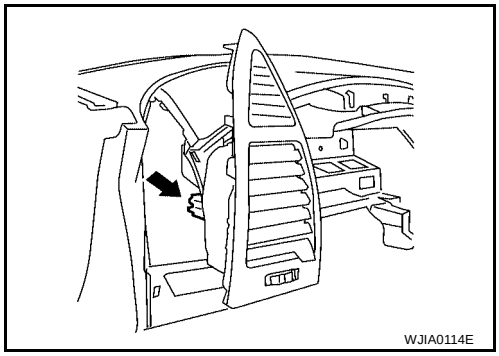
Center Ventilator Grille

1. Remove cluster lid D. Refer to IP-12, "Cluster Lid D" .
2. Release the tabs to remove center ventilator grille.



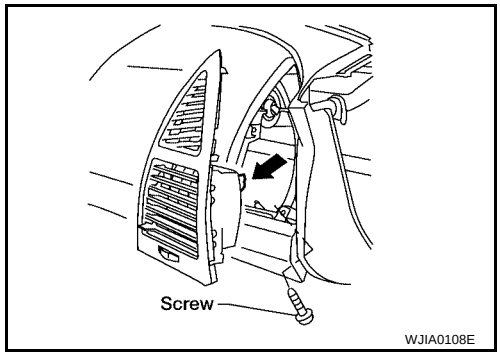
Side Ventilator Grille LH

1. Remove cluster lid A. Refer to IP-13, "Cluster Lid A" .
2. Remove side ventilator grille LH.



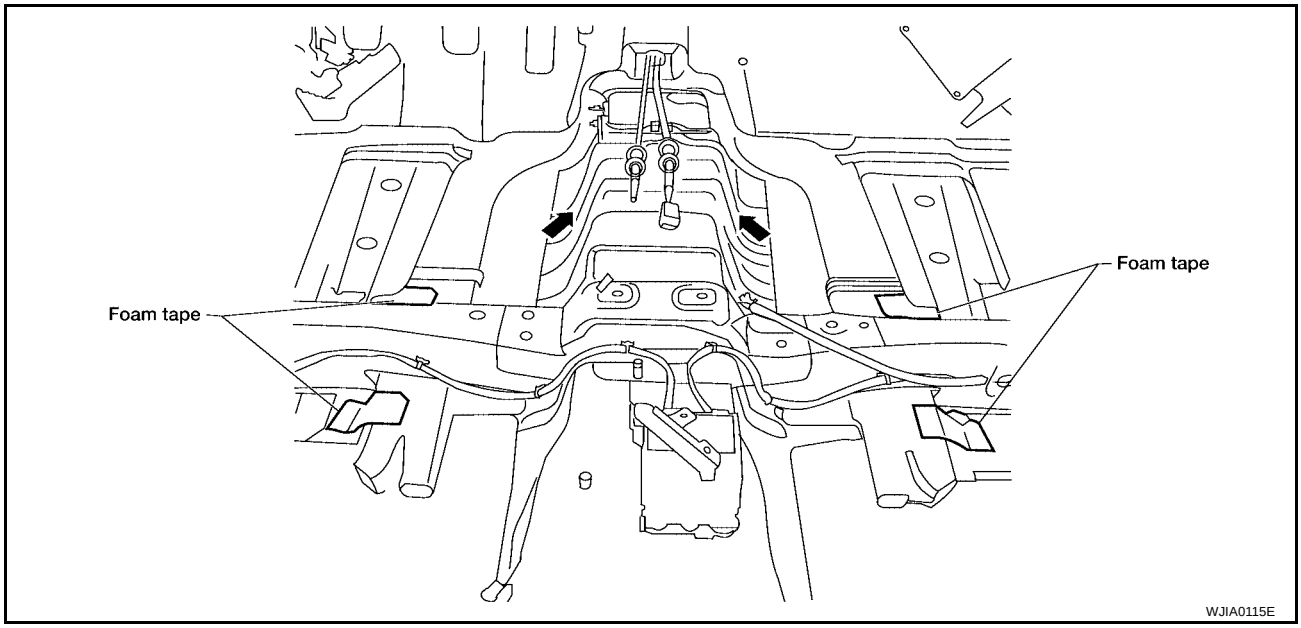
Side Ventilator Grille RH

1. Remove glove box assembly. Refer to IP-14, "Glove Box Assembly" .
2. Remove side ventilator grille RH screw and then remove it.



Floor duct

1. Remove the carpet. Refer to EI-32, "FLOOR TRIM" .
2. Release foam tape and slide floor duct rearward to release from clips.



INSTALLATION

Installation is in the reverse order of removal.

REFRIGERANT LINES

PFP:92600

HFC-134a (R-134a) Service Procedure

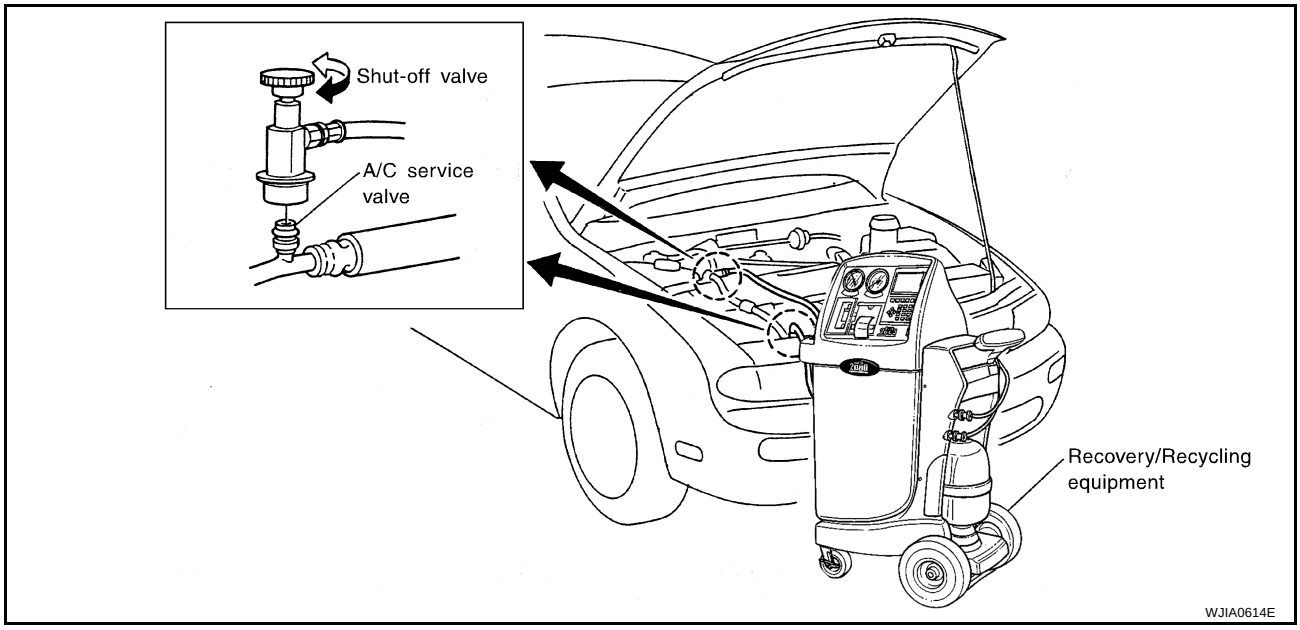
EJS001FQ

SETTING OF SERVICE TOOLS AND EQUIPMENT

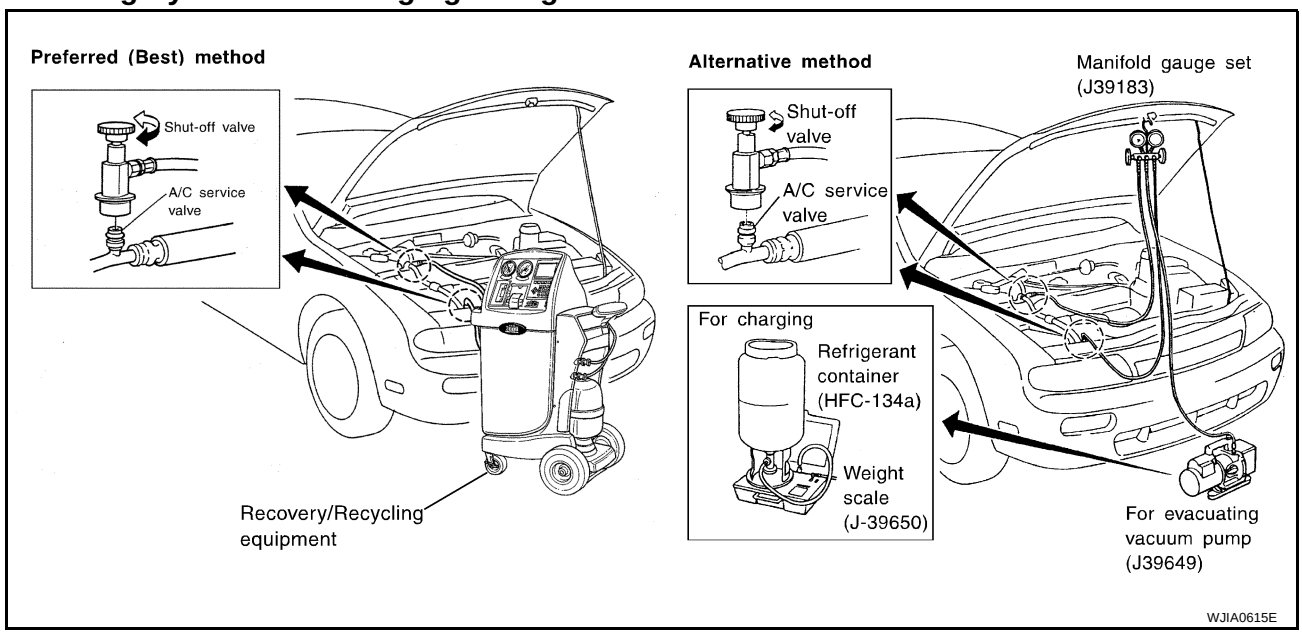
Discharging Refrigerant

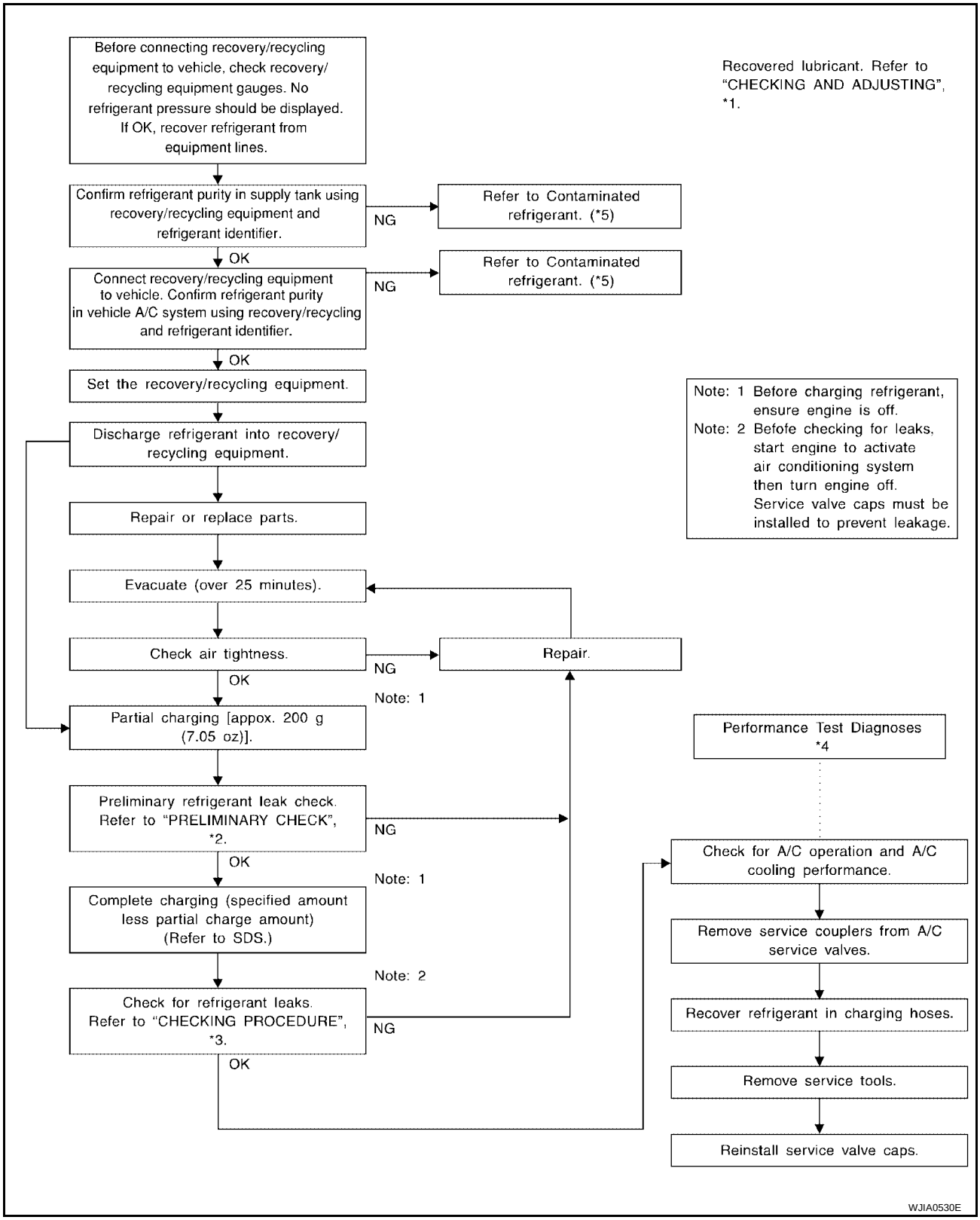
WARNING:

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 J2210 [HFC-134a (R-134a) recycling equipment] or J2201 [HFC-134a (R-134a) recycling 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





*1 MTC-19, "LUBRICANT"
*2 MTC-91, "Checking for Refrigerant Leaks"
*3 MTC-91, "Checking for Refrigerant Leaks"
*4 MTC-58, "Performance Chart"
*5 MTC-4, "Contaminated Refrigerant"

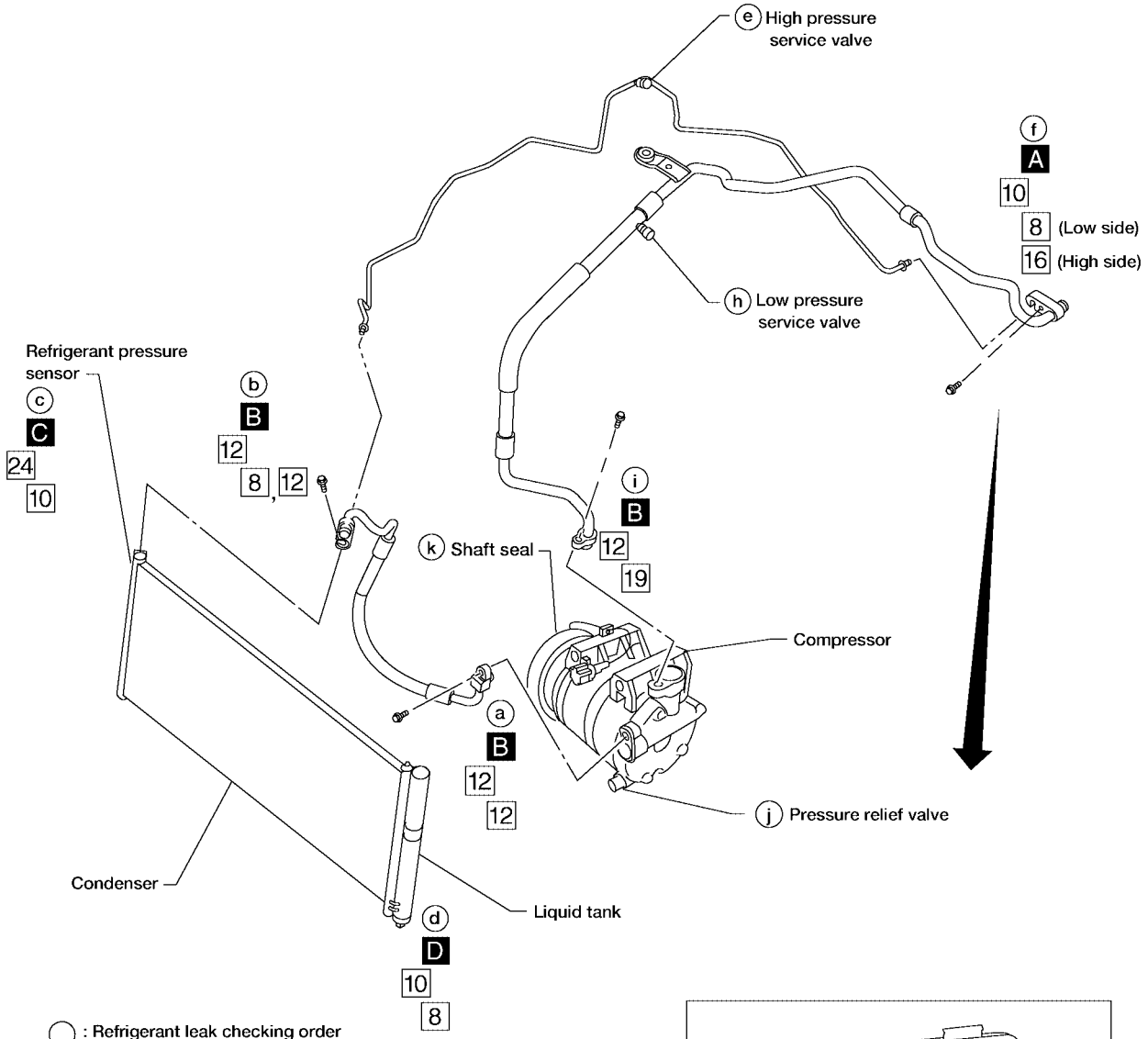
Components

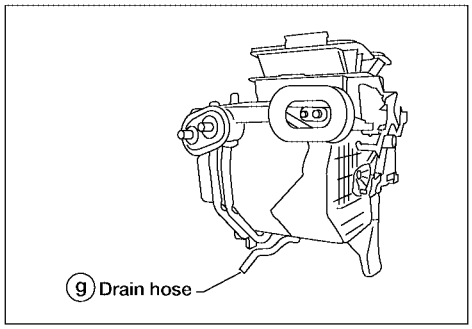
EJS001FR

Refer to MTC-6, "Precautions for Refrigerant Connection" .

QR25DE Models

SEC. 214 • 271 • 274 • 276

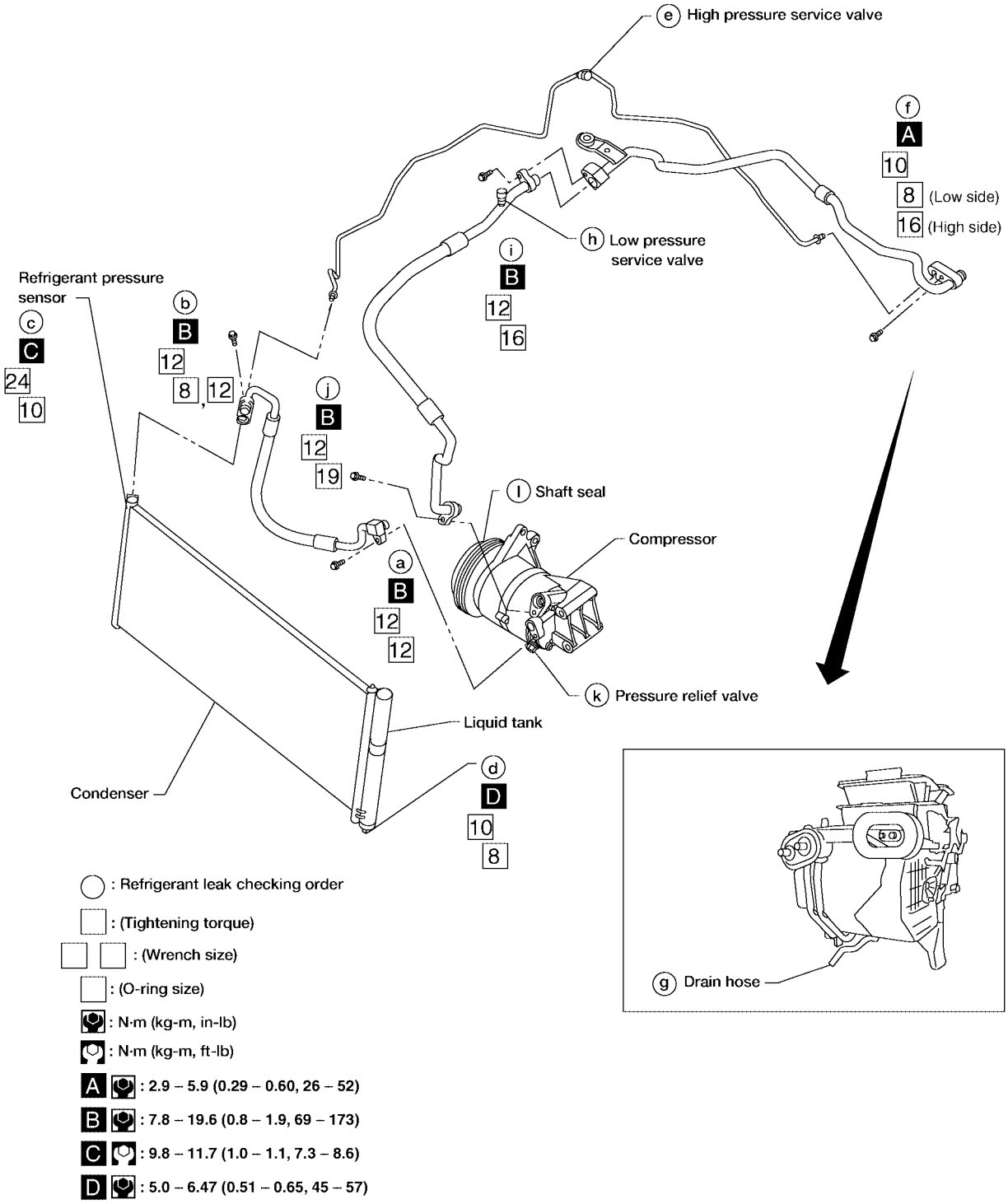




WJIA0981E

VQ35DE Models

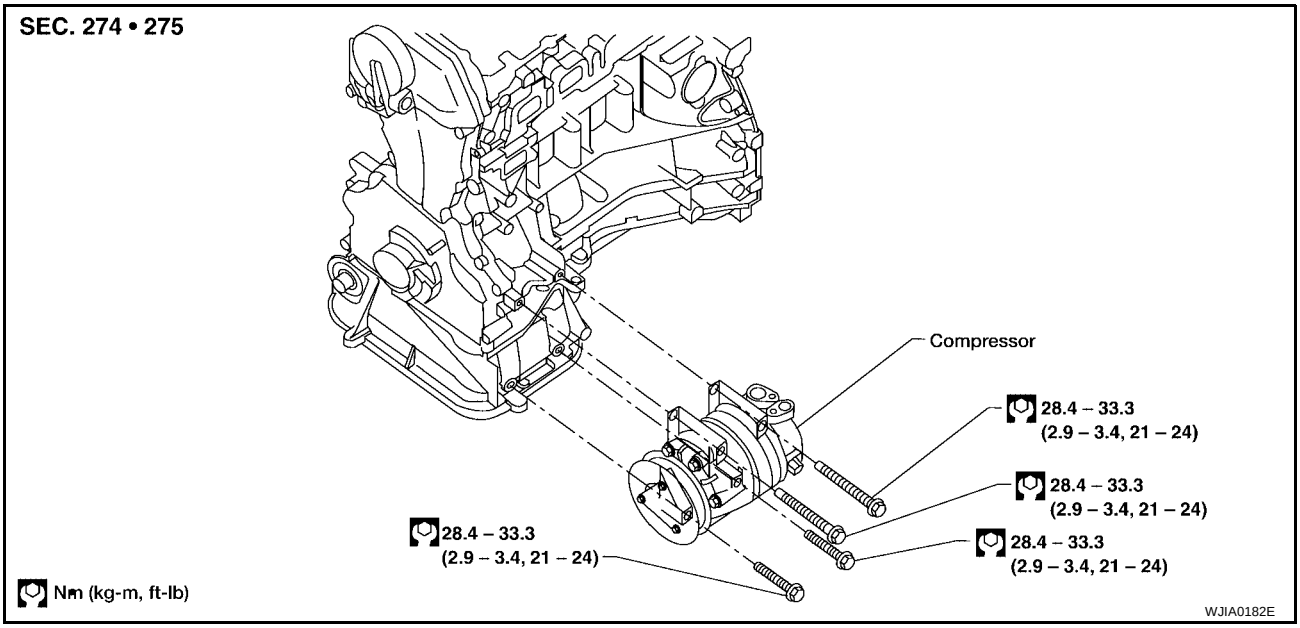
SEC. 214 • 271 • 274 • 276



WJIA0982E

Removal and Installation for Compressor — QR25DE Models

EJS001FS



REMOVAL

1. Discharge the refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Remove the drive belt.
   Refer to MA-16, "ENGINE MAINTENANCE (QR25DE ENGINE)" .
3. Disconnect the compressor connector.
4. Remove the high-pressure flexible hose and low-pressure flexible hose.

   CAUTION:
   Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.
5. Remove the mounting bolts from compressor using power tools.

INSTALLATION

CAUTION:

- **Replace the O-ring of the low-pressure flexible hose and high-pressure flexible hose with a new one, then apply compressor oil to it when installing it.**
- **When charging refrigerant, check for leaks.**

Bolts mounting the compressor

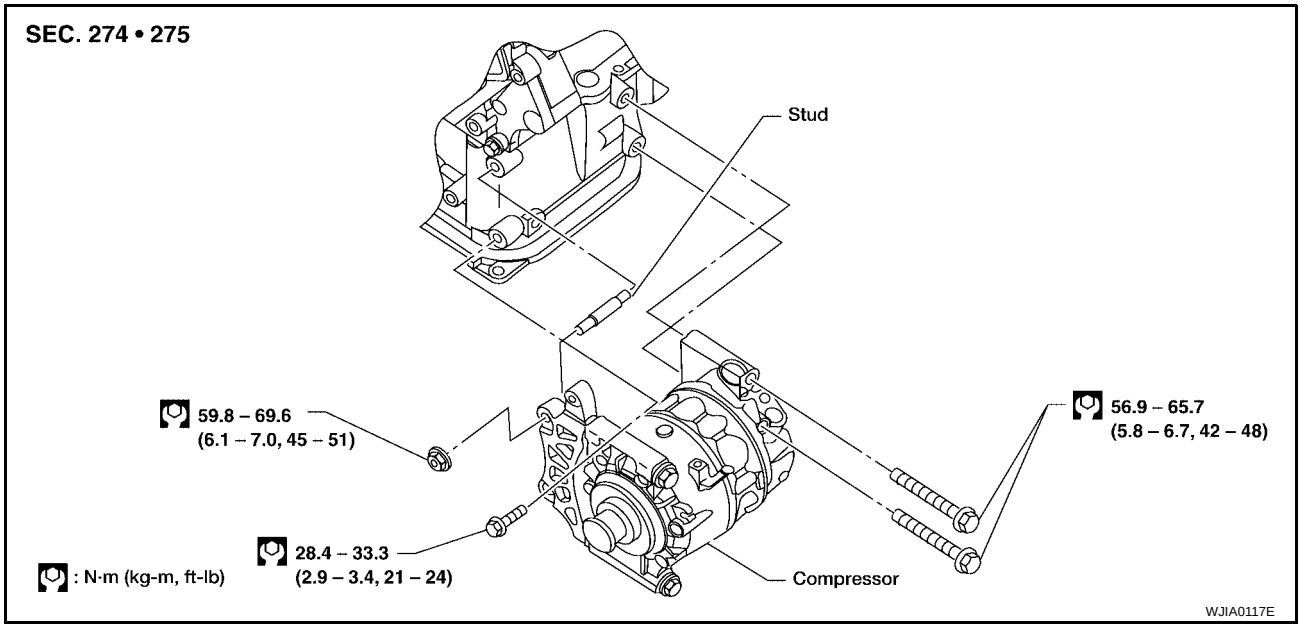
Tightening torque : 28.4 - 33.3 N·m (2.9 - 3.4 kg-m, 21 - 24 ft-lb)

Bolt mounting the high- and low-pressure flexible hoses

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Removal and Installation for Compressor — VQ35DE Models

EJS001FT



REMOVAL

1. Discharge the refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Remove the drive belt.
   Refer to MA-23, "ENGINE MAINTENANCE (VQ35DE ENGINE)" .
3. Remove the coolant pipe bracket bolt.
4. Remove compressor mounting stud.
5. Disconnect the compressor connector.
6. Remove the high-pressure flexible hose and low-pressure flexible hose.
   CAUTION:
   Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.
7. Remove the mounting bolts and nut from compressor using power tools.

INSTALLATION

CAUTION:

- **Replace the O-ring of the low-pressure flexible hose and high-pressure flexible hose with a new one, then apply compressor oil to it when installing it.**
- **When charging refrigerant, check for leaks.**

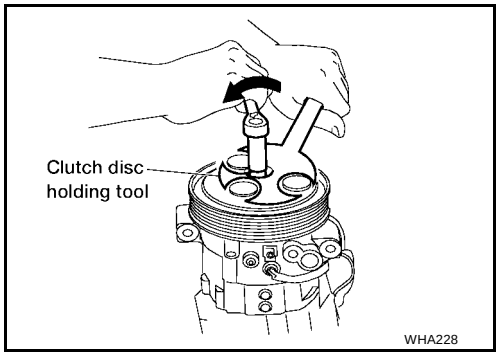
Bolts mounting the compressor (rear side)
Tightening torque : 56.9 - 65.7 N·m (5.8 - 6.8 kg-m, 42 - 48 ft-lb)
Bolt mounting the compressor (front side)
Tightening torque : 28.4 - 33.3 N·m (2.9 - 3.4 kg-m, 21 - 24 ft-lb)
Nut mounting the compressor (front side)
Tightening torque : 59.8 - 69.6 N·m (6.1 - 7.0 kg-m, 45 - 51 ft-lb)
Bolt mounting the high- and low-pressure flexible hoses
Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Removal and Installation for Compressor Clutch

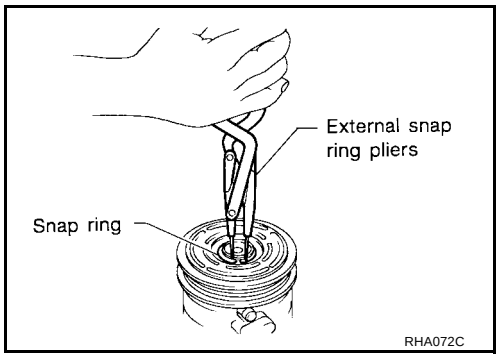
EJS001FU

REMOVAL

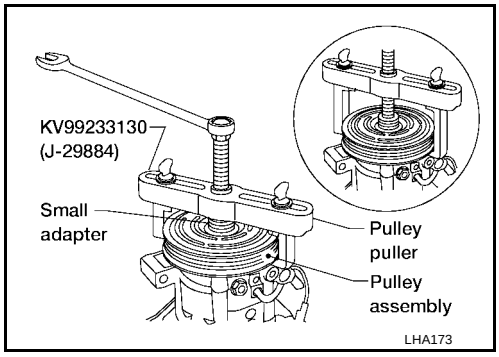
- When removing center bolt, hold clutch disc with clutch disc tool.
- Remove the clutch disc.
  Clutch disc holding tool:
  (J-44614) Commercial service tool



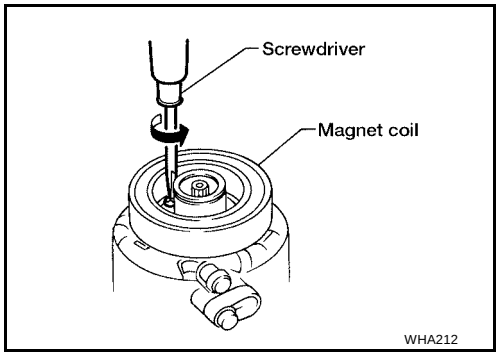
- Remove the snap ring using external snap ring pliers.



- Pulley removal:
  Use a pulley puller with small adapter. Position the small adapter on the end of the drive shaft and the center of the puller on the small adapter. Remove the pulley assembly with the puller.
  To prevent deformation of the pulley groove, the puller claws should be hooked under (not into) the pulley groove.
- Remove the snap ring using external snap ring pliers.



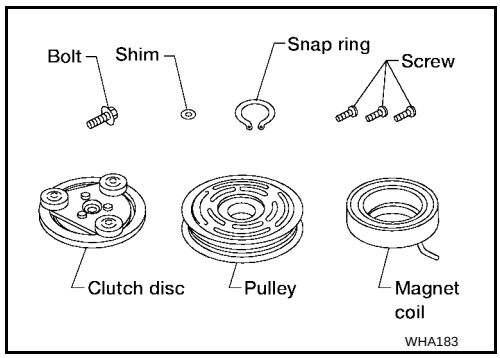
- Remove the magnet coil harness clip using a screwdriver, remove the three magnet coil fixing screws and remove the magnet coil.



INSPECTION

Clutch Disc

If the contact surface shows signs of damage due to excessive heat, replace clutch disc and pulley.



Pulley

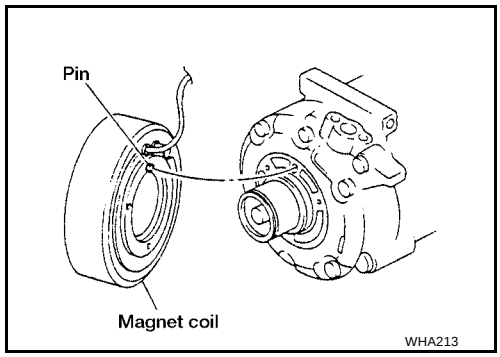
Check the appearance of the pulley assembly. If contact surface of pulley shows signs of excessive grooving, replace clutch disc and pulley. The contact surfaces of the pulley assembly should be cleaned with a suitable solvent before reinstallation.

Coil

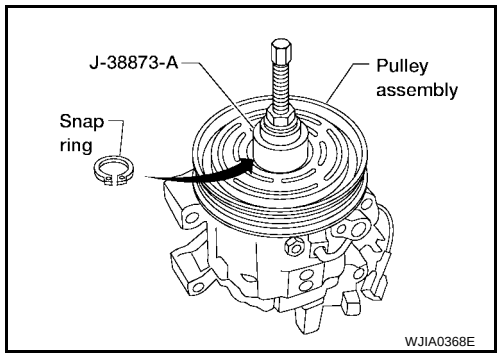
Check magnet coil for loose connection or cracked insulation.

INSTALLATION

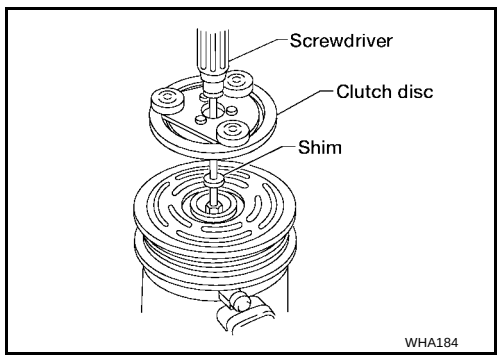
- Install the magnet coil.
  Be sure to align the magnet coil pin with the hole in the compressor front head.
- Install the magnet coil harness clip using a screwdriver.



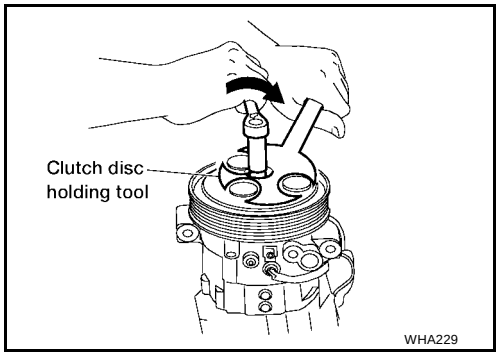
- Install the pulley assembly using the installer and a wrench, and then install the snap ring using snap ring pliers.



- Install the clutch disc on the drive shaft, together with the original shim(s). Press the clutch disc down using the drive plate installer.



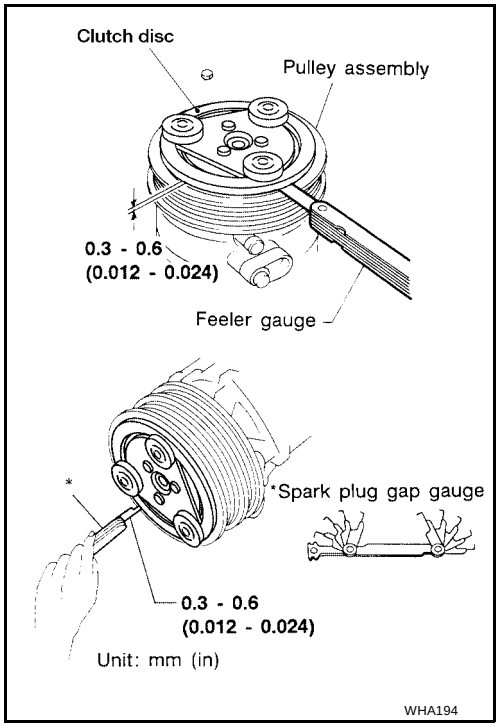
- Using the clutch disc tool to prevent clutch disc rotation, tighten the bolt to 12 N·m (1.2 kg-m, 9 ft-lb).
- **After tightening the bolt, check that the pulley rotates smoothly.**



- Check clearance all the way around the clutch disc.

  Clutch disc-to-pulley clearance : 0.3 - 0.6 mm (0.012 - 0.024 in)

  If the specified clearance is not obtained, replace adjusting spacer and readjust.



BREAK-IN OPERATION

When replacing compressor clutch assembly, always conduct the break-in operation. This is done by engaging and disengaging the clutch about 30 times. Break-in operation raises the level of transmitted torque.

Removal and Installation for Low-pressure Flexible Hose

EJS001FV

REMOVAL

1. Discharge the refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Remove the refrigerant pressure sensor.

   CAUTION:
   Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.
3. Remove the low-pressure flexible hose. Refer to MTC-79, "Components" .

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Replace the O-ring of the low-pressure flexible hose with a new one, then apply compressor oil to it when installing it.**
- **When charging refrigerant, check for leaks.**

Bolt mounting the low-pressure flexible hose (evaporator side)

Tightening torque : 2.9 - 5.9 N·m (0.29 - 0.60 kg-m, 26 - 52 in-lb)

Bolt mounting the low-pressure flexible hose (compressor side)

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Bolt connecting the low-pressure flexible hose in-line connection (VQ35DE models)

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Removal and Installation for High-pressure Flexible Hose

EJS001FW

REMOVAL

1. Discharge the refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Reposition the power steering reservoir out of the way without disconnecting the hose.
3. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
4. Remove the high-pressure flexible hose. Refer to MTC-79, "Components" .

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

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Replace the O-ring of the high-pressure flexible hose with a new one, then apply compressor oil to it when installing it.**
- **When charging refrigerant, check for leaks.**

Bolts mounting the high-pressure flexible hose

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Removal and Installation for High-pressure Pipe

EJS001FX

REMOVAL

1. Discharge the refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Reposition the power steering reservoir out of the way without disconnecting the hose.
3. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
4. Remove the high-pressure pipe. Refer to MTC-79, "Components" .

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

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Replace the O-ring of the high-pressure pipe with a new one, then apply compressor oil to it when installing it.**
- **When charging refrigerant, check for leaks.**

Bolt mounting the high-pressure pipe (evaporator side)

Tightening torque : 2.9 - 5.9 N·m (0.29 - 0.60 kg-m, 26 - 52 in-lb)

Bolt mounting the high-pressure pipe (condenser side)

Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Removal and Installation for Refrigerant Pressure Sensor

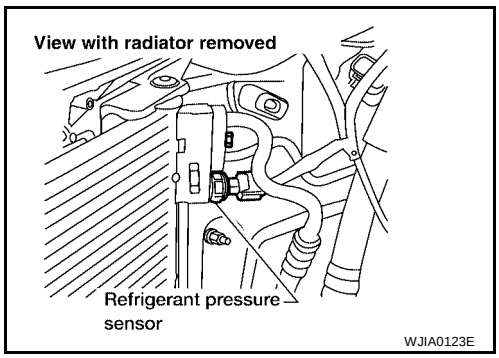
EJS001FY

REMOVAL

1. Discharge the refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .

2. Disconnect the refrigerant pressure sensor connector and remove the refrigerant pressure sensor from condenser.

CAUTION:
Please be careful not to damage the condenser fins.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:
- **Please be careful not to damage the condenser fins.**
- **Apply compressor oil to the O-ring of the refrigerant pressure sensor when installing it.**

Refrigerant pressure sensor : 9.8 - 11.7 N·m (1.0 - 1.2 kg-m, 7.3 - 8.6 ft-lb)

Removal and Installation for Condenser

EJS001FZ

REMOVAL

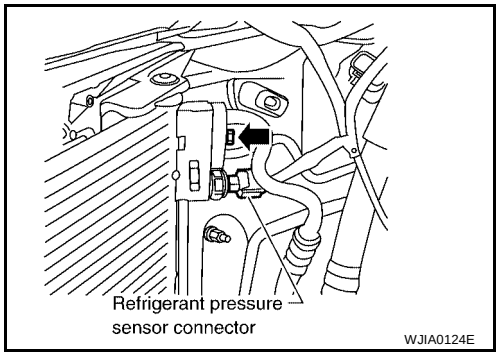
1. Discharge the refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Remove the radiator. Refer to CO-11, "RADIATOR" (QR25DE) or CO-32, "RADIATOR" (VQ35DE).

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

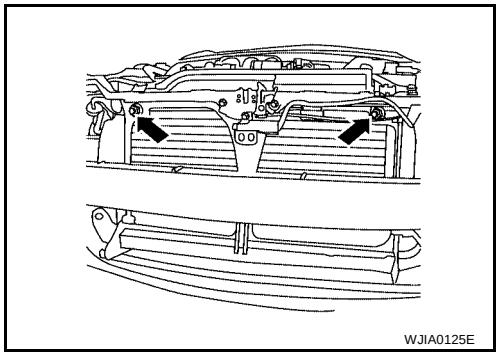
3. Disconnect the high-pressure flexible hose and the high-pressure pipe from the condenser.

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

4. Disconnect the refrigerant pressure sensor connector.
5. Remove the front fascia. Refer to EI-13, "FRONT BUMPER" .



6. Remove the mounting nuts from condenser mounting brackets.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:
- **Replace the O-rings of the high-pressure pipe and the high-pressure flexible hose with new ones, then apply compressor oil to them when installing them.**
- **When charging refrigerant, check for leaks.**

High-pressure flexible hose and pipe mounting bolt

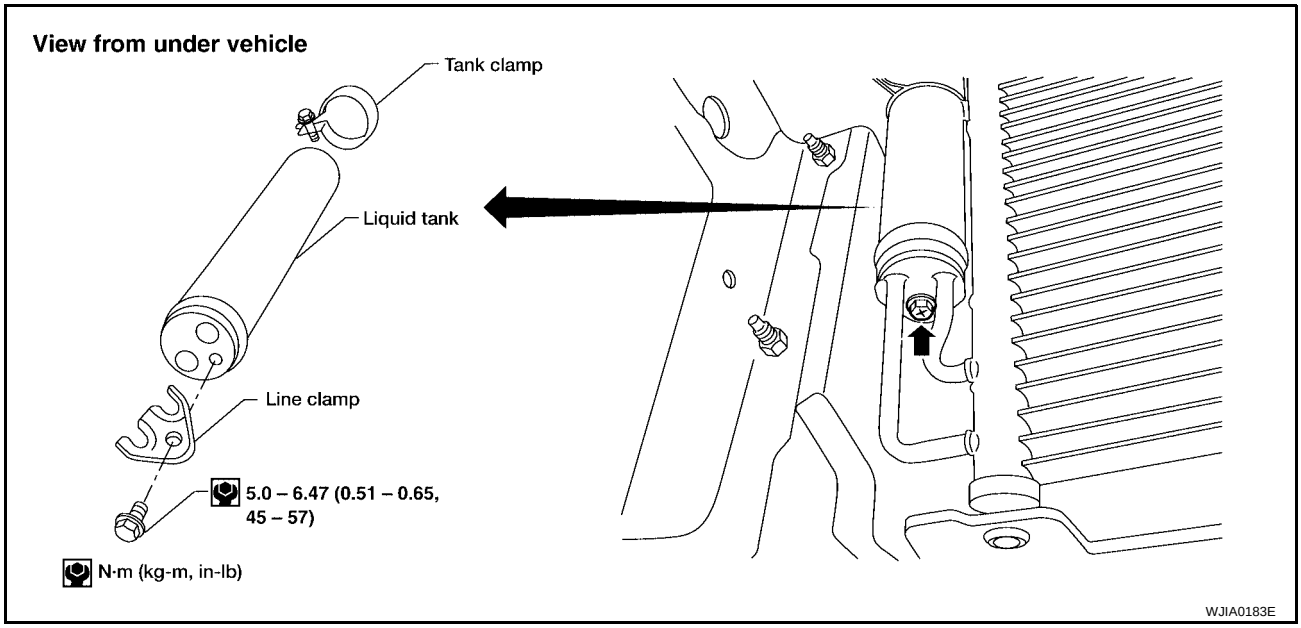
Tightening torque : 7.8 - 19.6 N·m (0.8 - 1.9 kg-m, 69 - 173 in-lb)

Condenser mounting nuts

Tightening torque : 5.0 - 6.79 N·m (0.51 - 0.69 kg-m, 45 - 60 in-lb)

Removal and Installation for Liquid Tank

EJS001G0



REMOVAL

1. Discharge the refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Remove the battery.
3. Remove the hood switch (if equipped).
4. Remove the engine undercover using power tools.
5. Remove the bolt and line clamp.
6. Loosen the tank clamp and remove the liquid tank.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Replace the O-rings with new ones, then apply compressor oil to them when installing them.**
- **When charging refrigerant, check for leaks.**

Liquid tank line clamp mounting bolt

Tightening torque : 5.0 - 6.47 N·m (0.51 - 0.65 kg-m, 45 - 57 in-lb)

Removal and Installation for Evaporator

EJS00313

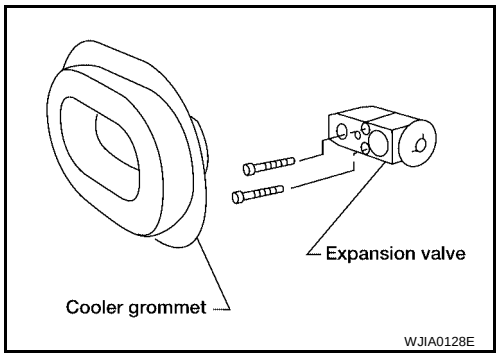
REMOVAL

1. Evacuate and recover the A/C system refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Disconnect the battery negative terminal.
3. Disconnect the air cleaner to electronic throttle control actuator tube. Refer to EM-17, "AIR CLEANER AND AIR DUCT" (QR25DE), EM-120, "AIR CLEANER AND AIR DUCT" (VQ35DE).

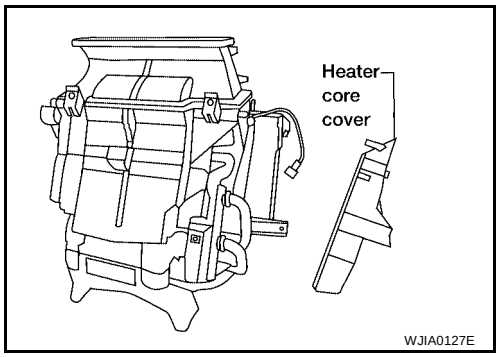
   NOTE:
   The tube is located between the air cleaner assembly and the intake manifold and is removed to access the expansion valve.
4. Disconnect the A/C pipe from the expansion valve.

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

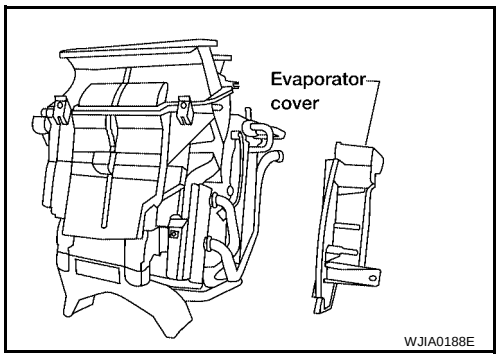
5. Remove the cooler grommet.
6. Remove the expansion valve.
7. Remove the center console side finisher RH. Refer to IP-15, "CENTER CONSOLE ASSEMBLY" .
8. Remove the glove box assembly. Refer to IP-14, "Glove Box Assembly" .
9. Remove the ECM.
   - Disconnect the ECM connector.
   - Remove the wire harness from the ECM mounting bracket.
   - Remove the two ECM mounting bracket nuts and disconnect the ground wire.
10. Remove the blower unit. Refer to MTC-68, "BLOWER UNIT" .



11. Remove the heater core cover.

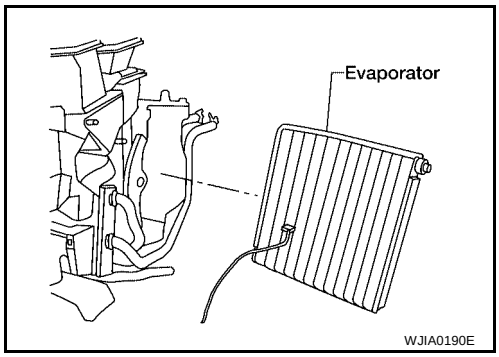


12. Remove the evaporator cover.



13. Remove the evaporator.
    - Remove the thermo control amplifier.
    - Remove the intake sensor.

    CAUTION:
    - **Mark the mounting position of the intake sensor and thermo control amplifier.**



INSTALLATION

Installation is in the reverse order of removal.

Expansion valve mounting bolts : 2.9 - 5.0 N·m (0.29 - 0.51 kg-m, 26 - 44 in-lb)

CAUTION:
- **Replace the O-rings with new ones, then apply compressor oil to them when installing them.**

Removal and Installation for Expansion Valve

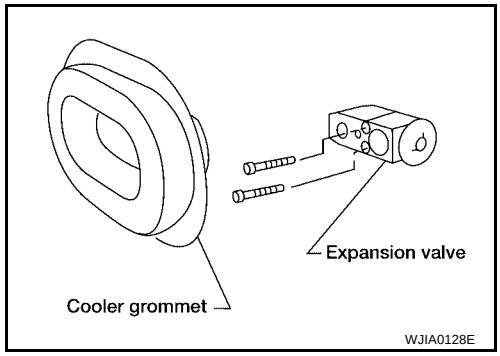
EJS00314

REMOVAL

1. Evacuate and recover the A/C system refrigerant. Refer to MTC-78, "HFC-134a (R-134a) Service Procedure" .
2. Disconnect the air cleaner to electronic throttle control actuator tube. Refer to EM-17, "AIR CLEANER AND AIR DUCT" (QR25DE), EM-120, "AIR CLEANER AND AIR DUCT" (VQ35DE).

   NOTE:
   The tube is located between the air cleaner assembly and the intake manifold and is removed to access the expansion valve.
3. Disconnect the A/C pipe from the expansion valve.

   CAUTION:
   Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.
4. Remove the cooler grommet.
5. Remove the expansion valve.



INSTALLATION

Installation is in the reverse order of removal.

Expansion valve mounting bolts : 2.9 - 5.0 N·m (0.29 - 0.51 kg-m, 26 - 44 in-lb)

CAUTION:

- **Replace the O-rings with new ones, then apply compressor oil to them when installing them.**

Checking for Refrigerant Leaks

EJS001G3

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 electronic refrigerant leak detector or fluorescent dye leak detector.
If dye is observed, confirm the leak with an electronic refrigerant 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 electronic leak detector, move the probe along the suspected leak area at 25 - 50 mm (1 - 2 in) per second and no further than 6 mm (1/4 in) from the component.

CAUTION:
Moving the electronic 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

EJS001G4

1. Check A/C system for leaks using the UV lamp and safety goggles (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 TXV) 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 (J-43872) to prevent future misdiagnosis.
4. Perform a system performance check and verify the leak repair with an approved electronic refrigerant 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

EJS001G5

(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^2 , 50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool (J-41459).
3. Connect the injector tool to the A/C LOW PRESSURE side service fitting.
4. Start engine and switch A/C ON and fan 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 J-41459 (refer to the manufacturer's operating instructions).
6. With the engine still running, disconnect the injector tool from the service fitting.

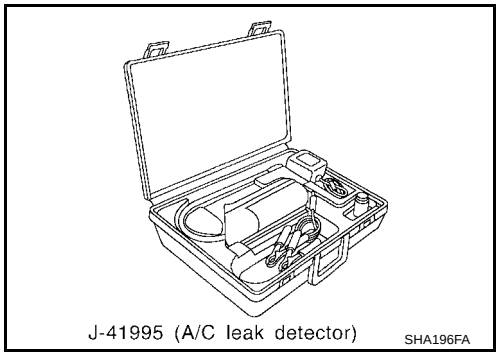
   CAUTION:
   Be careful the A/C system or replacing a component, pour the dye directly into the open system connection and proceed with the service procedures.
7. Operate the A/C system for a minimum of 20 minutes to mix the dye with the system oil. Depending on the leak size, operating conditions and location of the leak, it may take from minutes to days for the dye to penetrate a leak and become visible.

Electronic Refrigerant Leak Detector

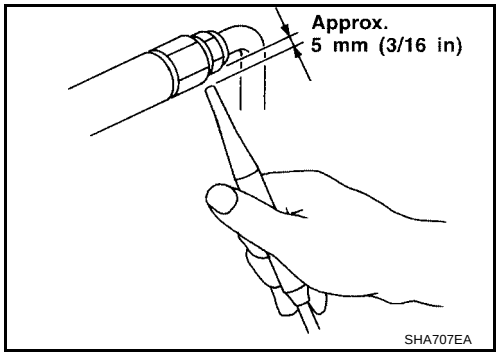
EJS001G6

PRECAUTIONS FOR HANDLING LEAK DETECTOR

When performing a refrigerant leak check, use a J-41995 A/C leak detector 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.

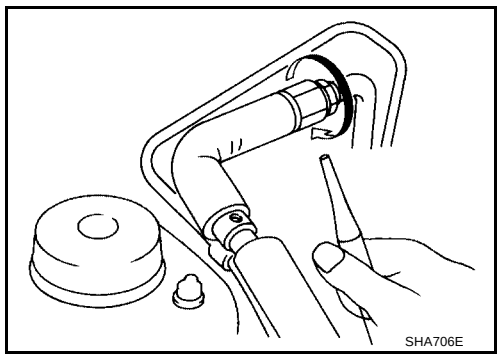

J-41995 (A/C leak detector) SHA196FA

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

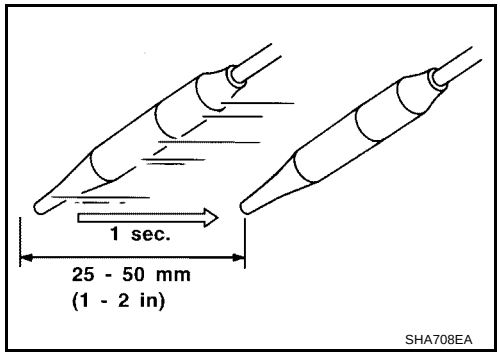


SHA707EA

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



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



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. Turn engine OFF.
2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm^2 , 50 psi) above 16°C (61°F). If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

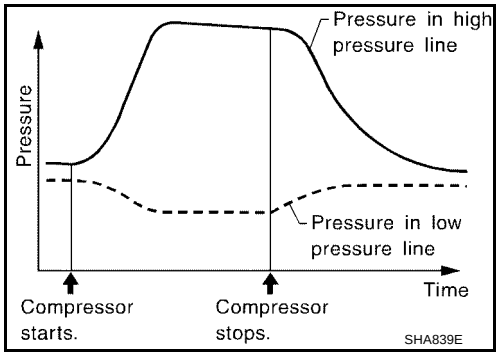
   NOTE:
   At temperatures below 16°C (61°F), leaks may not be detected since the system may not reach 345 kPa (3.52 kg/cm^2 , 50 psi).
4. Conduct the leak test from the high side (compressor discharge a to evaporator inlet f) to the low side [evaporator drain hose g to shaft seal k (QR25DE models) or l (VQ35DE models)]. Refer to MTC-79 . 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 hoses, relief valve and shaft seal.
   - Liquid tank
   - Check the refrigerant pressure sensor.
   - 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 engine.
8. Set the heater A/C control as follows;

a. A/C switch: ON
b. Face mode
c. Intake position: Recirculation
d. Max cold temperature
e. Blower speed: High

9. Run engine at 1,500 rpm for at least 2 minutes.
10. Turn engine off 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 equipment to vehicle, check recovery/recycling 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 equipment and refrigerant identifier.
13. Confirm refrigerant purity in vehicle A/C system using recovery/recycling equipment and refrigerant identifier.
14. Discharge A/C system using approved refrigerant recovery equipment. Repair the leaking fitting or component as necessary.
15. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
16. Conduct A/C performance test to ensure system works properly.

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Service Data and Specifications (SDS)

EJS001G7

COMPRESSOR

Model	CALSONIC KANSEI
Type	DKS-17D
Displacement cm3 (cu in)/rev	175.5 (10.7)/rev
Cylinder bore × stroke mm (in)	30.5 (1.201) x 21.4 (0.84)
Direction of rotation	Clockwise (viewed from drive end)
Drive belt	Poly V

LUBRICANT

Model		CALSONIC KANSEI make DKS-17D
Name		NISSAN A/C System Lubricant Type DH-PS or equivalent
Part number		KLH00-PAGS0
Capacity m ℓ (US fl oz, Imp fl oz)	Total in system	150 (5.1, 5.3)
	Compressor (service part) charging amount	Refer to MTC-20, "Lubricant Adjustment Procedure for Compressor Replacement" .

REFRIGERANT

Type	HFC-134a (R-134a)
Capacity kg (lb)	0.475 - 0.525 (1.045 - 1.155)

ENGINE IDLING SPEED

Refer to EC-35, "Idle Speed and Ignition Timing Check" (QR25DE) or EC-632, "Idle Speed and Ignition Timing Check" (VQ35DE).

BELT TENSION

Refer to MA-16, "ENGINE MAINTENANCE (QR25DE ENGINE)" or MA-23, "ENGINE MAINTENANCE (VQ35DE ENGINE)" .