SECTION MTC
MANUAL AIR CONDITIONER

CONTENTS

PRECAUTIONS

PFP:00001

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

BJS000CW

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. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

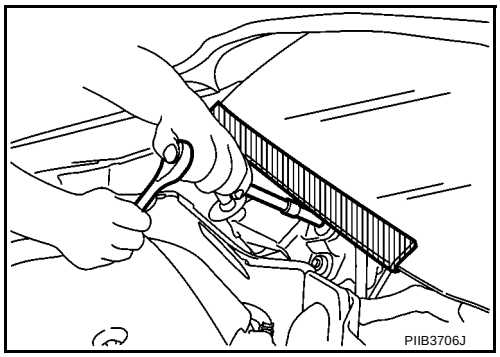
WARNING:

- **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 Procedures without Cowl Top Cover

BJS000CX

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



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

BJS000CY

WARNING:

- **Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor malfunction is likely to occur.**
- **The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:**

- **When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.**
- **When installing refrigerant components to a vehicle, 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. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. 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 lubricant (Nissan A/C System Oil Type R) to come in contact with styrofoam parts. Damage may result.**

General Refrigerant Precautions

BJS000CZ

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.**
- **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 HFC-134a (R-134a) have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.**

Lubricant Precautions

BJS000D0

- Use only specified lubricant for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If lubricant other than that specified is used, compressor malfunction is likely to occur.
- The specified HFC-134a (R-134a) lubricant rapidly absorbs moisture from the atmosphere. The following handling precautions must be observed:
  - When removing refrigerant components from a vehicle, immediately cap (seal) the component to minimize the entry of moisture from the atmosphere.
  - When installing refrigerant components to a vehicle, 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. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. 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 lubricant (Nissan A/C System Oil Type R) to come in contact with styrofoam parts. Damage may result.

Precautions for Refrigerant Connection

BJS000D1

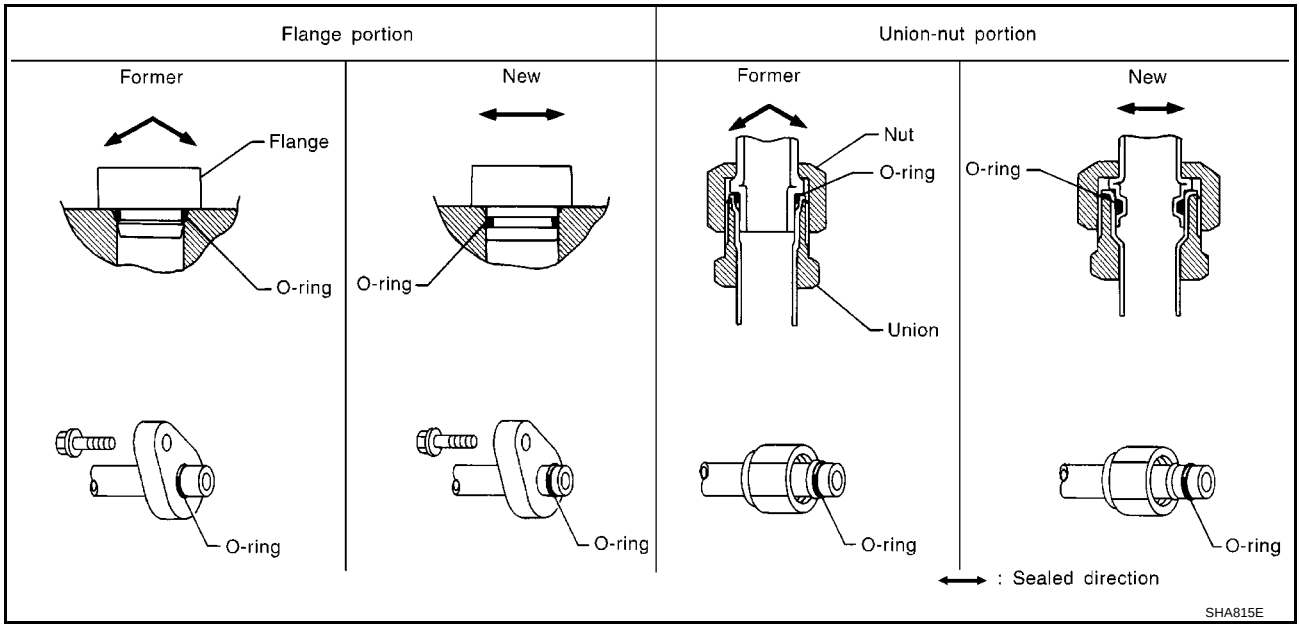
A new type refrigerant connection has been introduced to all refrigerant lines except the following location.

- Expansion valve to evaporator
- Refrigerant pressure sensor to condenser

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

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 (CR Engine Models)

Connection type	Piping connection point		Part number	Qty.	Remarks
New	Low-pressure flexible hose to heater & cooling unit		92473 BC700	1	
	High-pressure pipe to heater & cooling unit		92471 BC700	1	
	Condenser to high-pressure flexible hose		92472 BC700	1	
	Condenser to high-pressure pipe		92471 BC700	1	
	Compressor to low-pressure flexible hose		92474 BC700	1	
	Compressor to high-pressure flexible hose		92472 BC700	1	
	Liquid tank to condenser pipe		92471 N8210	1	
Former	Refrigerant pressure sensor		—	–	
	Expansion valve to evaporator	Inlet	92477 AX000	1	
		Outlet	92477 AX005	1	

O-Ring Part Numbers and Specifications (HR Engine Models)

Connection type	Piping connection point		Part number	Qty.	Remarks
New	Low-pressure flexible hose to heater & cooling unit		92473 N8210	1	
	High-pressure pipe to heater & cooling unit		92471 N8210	1	
	Condenser to high-pressure flexible hose		92472 N8210	1	
	Condenser to high-pressure pipe		92471 N8210	1	
	Compressor to low-pressure flexible hose		92474 N8210	1	
	Compressor to high-pressure flexible hose		92472 N8210	1	
	Liquid tank to condenser pipe		92471 N8210	1	
Former	Refrigerant pressure sensor		—	–	
	Expansion valve to evaporator	Inlet	92477 AX000	1	
		Outlet	92477 AX005	1	

O-Ring Part Numbers and Specifications (K9K Engine Models)

Connection type	Piping connection point		Part number	Qty.	Remarks
New	Low-pressure flexible hose to heater & cooling unit		92473 N8210	1	
	Low-pressure flexible hose to Low-pressure pipe		92473 N8210	1	
	High-pressure pipe to heater & cooling unit		92471 N8210	1	
	Condenser to high-pressure flexible hose		92472 N8210	1	
	Condenser to high-pressure pipe		92471 N8210	1	
	Compressor to low-pressure flexible hose		92474 N8210	1	
	Compressor to high-pressure flexible hose		92472 N8210	1	
	Liquid tank to condenser pipe		92471 N8210	1	
Former	Refrigerant pressure sensor		—	–	
	Expansion valve to evaporator	Inlet	92477 AX000	1	
		Outlet	92477 AX005	1	

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:

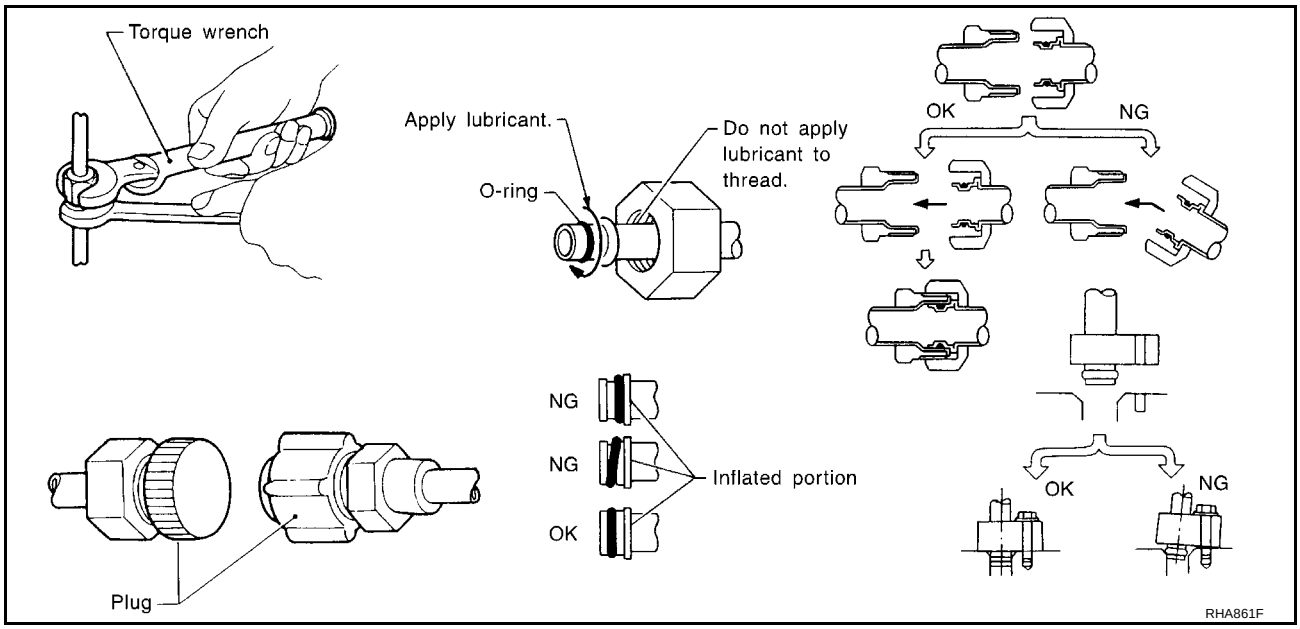
When replacing or cleaning refrigerant cycle components, observe the following.

- **When the compressor is removed, store it in the same position as it is when mounted on the car. Malfunction 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.**

	Gasoline engine	K9K engine
Name	Nissan A/C System Oil Type R	Nissan A/C System Oil Type S
Parts number	KLH00 - PAGR0	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, perform leak test and make sure that there is no leakage from connections. When the refrigerant leaking point is found, disconnect that line and replace the O-ring. Then tighten connections of seal seat to the specified torque.**



Precautions for Servicing Compressor

BJS000D2

- **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-17, "Maintenance of Lubricant Quantity in Compressor" .**
- **Keep friction surfaces between clutch and pulley clean. If the surface is contaminated, with lubricant, wipe it off by using a clean waste cloth moistened with thinner.**
- **After compressor service operation, turn the compressor shaft by hand more than five turns in both directions. This will equally distribute lubricant inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for one hour.**
- **After replacing the compressor magnet clutch, apply voltage to the new one and check for usual operation.**

Precautions for Service Equipment

BJS000D3

RECOVERY/RECYCLING EQUIPMENT

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

ELECTRONIC LEAK DETECTOR

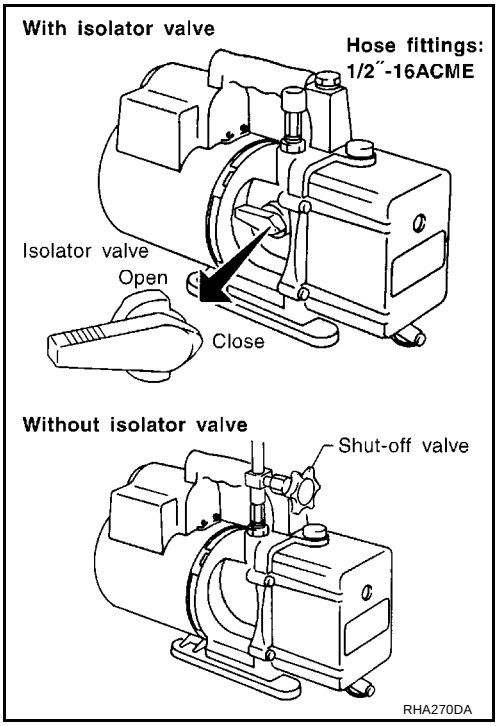
Be certain to follow the manufacturer’s instructions for tester operation and tester maintenance.

VACUUM PUMP

The lubricant contained inside the vacuum pump is not compatible with the specified lubricant for HFC-134a (R-134a) A/C systems. The vent side of the vacuum pump is exposed to atmospheric pressure. So the vacuum pump lubricant may migrate out of the pump into the service hose. This is possible when the pump is switched off after evacuation (vacuuming) and hose is connected to it.
To prevent this migration, use a manual valve placed near the hose-to-pump connection, as follows.

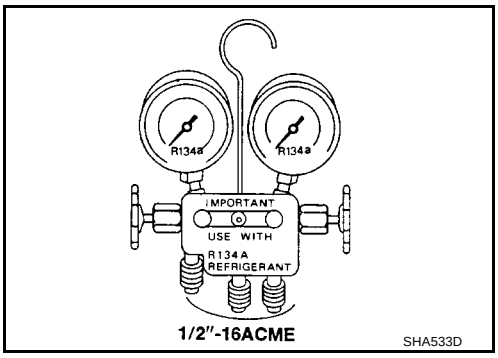
- Usually vacuum pumps have a manual isolator valve as part of the pump. Close this valve to isolate the service hose from the pump.
- For pumps without an isolator, use a hose equipped with a manual shut-off valve near the pump end. Close the valve to isolate the hose from the pump.
- If the hose has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

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



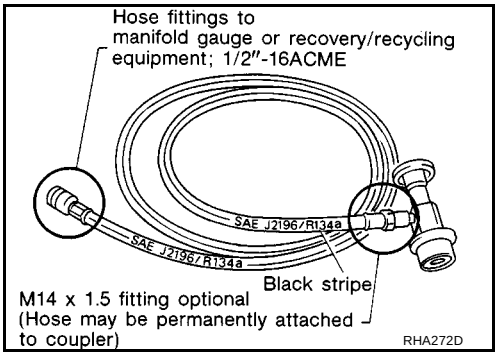
MANIFOLD GAUGE SET

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



SERVICE HOSES

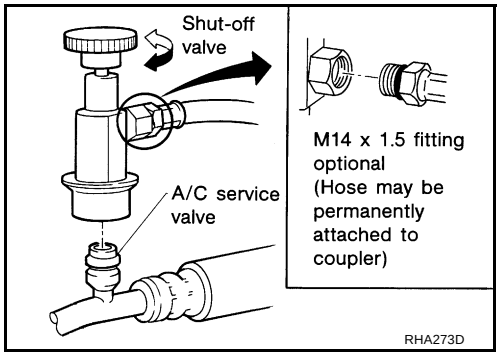
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

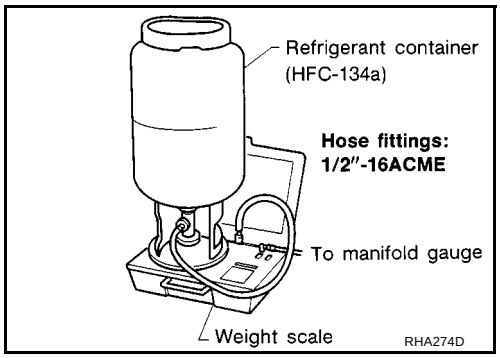
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



REFRIGERANT WEIGHT SCALE

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



CALIBRATING ACR4 WEIGHT SCALE

Calibrate the scale every three months.
To calibrate the weight scale on the ACR4:

1. Press **“Shift/Reset”** and **“Enter”** at the same time.
2. Press **“8787”** . **“A1”** will be displayed.
3. Remove all weight from the scale.
4. Press **“0”** , then press **“Enter”** . **“0.00”** will be displayed and change to **“A2”** .
5. Place a known weight (dumbbell or similar weight), between 4.5 and 8.6 kg (10 and 19 lb) on the center of the weight scale.
6. Enter the known weight using four digits. (Example 10 lb = 10.00, 10.5 lb = 10.50)
7. Press **“Enter”** — the display returns to the vacuum mode.
8. Press **“Shift/Reset”** and **“Enter”** at the same time.
9. Press **“6”** — the known weight on the scale is displayed.
10. Remove the known weight from the scale. **“0.00”** will be displayed.
11. Press **“Shift/Reset”** to return the ACR4 to the program mode.

CHARGING CYLINDER

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

Precautions for Leak Detection Dye

BJS000D4

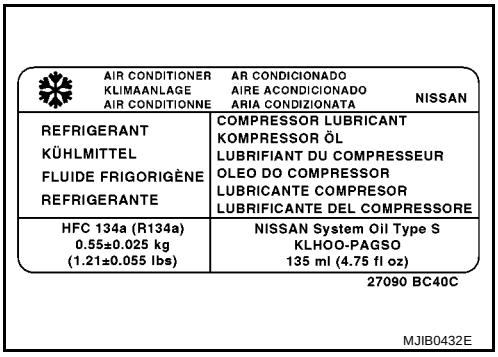
- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- The fluorescent dye leak detector is not a replacement for an electronic refrigerant leak detector. The fluorescent dye leak detector should be used in conjunction with an electronic refrigerant leak detector to pinpoint refrigerant leaks.
- For your safety and your customer's satisfaction, read and follow all manufacture's operating instructions and precautions prior to performing the work.
- 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.
- Always remove any remaining 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 system or CFC-12 (R-12) leak detector dye in HFC-134a (R-134a) A/C system or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three (3) years unless a compressor malfunction occurs.

IDENTIFICATION

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

IDENTIFICATION LABEL FOR VEHICLE

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



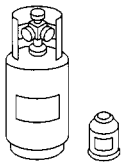
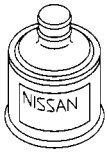
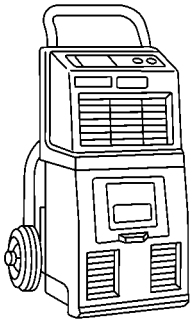
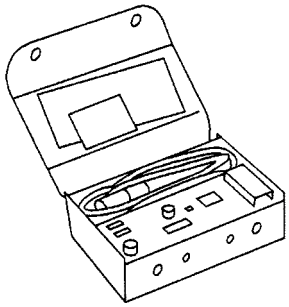
PREPARATION

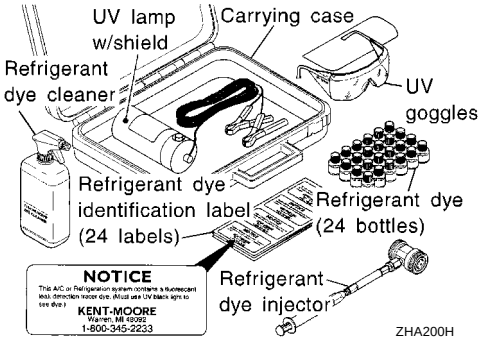
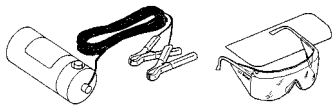
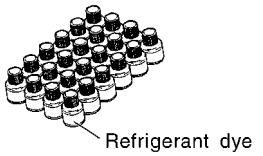
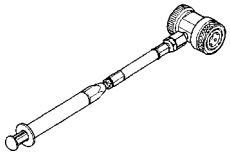
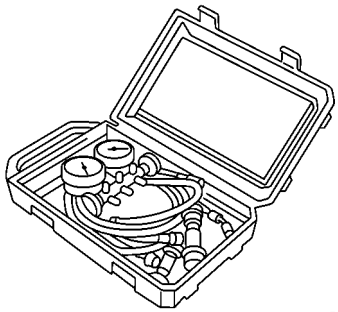
PFP:00002

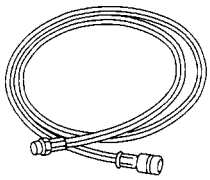
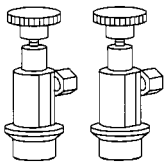
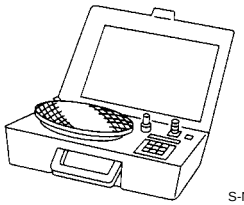
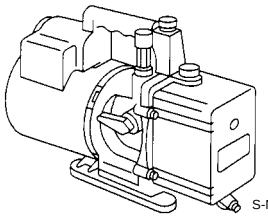
HFC-134a (R-134a) Service Tools and Equipment

BJS000D6

Never mix HFC-134a (R-134a) refrigerant and/or its specified lubricant with CFC-12 (R-12) refrigerant and/or its lubricant.
Separate and non-interchangeable service equipment must be used for handling each type of refrigerant/lubricant.
Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and/or lubricant) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerants/lubricant.
Adapters that convert one size fitting to another must never be used: refrigerant/lubricant contamination will occur and compressor malfunction will result.

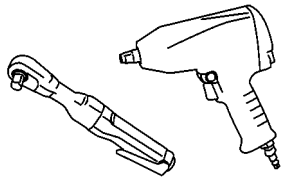
Tool number Tool name		Description
HFC-134a (R-134a) refrigerant	 S-NT196	Container color: Light blue Container marking: HFC-134a (R-134a) Fitting size: Thread size ● Large container 1/2″ -16 ACME
KLH00-PAGR0 Nissan A/C System Oil Type R (DH-PR)	 S-NT197	Type: Polyalkylene glycol oil (PAG), type R (DH-PR) Application: HFC-134a (R-134a) vane rotary compressors (Nissan only) Lubricity: 40 m ℓ (1.4 Imp fl oz.)
Recovery/Recycling/ Recharging equipment (ACR4)	 RJIA0195E	Function: Refrigerant recovery and recycling and recharging
Electrical leak detector	 A/C leak detector SHA705EB	Power supply: DC 12V (Cigarette lighter)

Tool number Tool name		Description
(J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) HFC-134a (R-134a) dye injector Use with J-41447, 1/4 ounce bottle (J-41447) HFC-134a (R-134a) fluorescent leak detection dye (Box of 24, 1/4 ounce bottles) (J-43872) Refrigerant dye cleaner	 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 (7.4 cc) 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
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

Tool number Tool name	Description
Service hoses ● High-pressure side hose ● Low-pressure side hose ● Utility hose  S-NT201	Hose color: ● Low hose: Blue with black stripe ● High 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 ● Low-pressure side coupler  S-NT202	Hose fitting to service hose: ● M14 x 1.5 fitting is optional or permanently attached.
Refrigerant weight scale  S-NT200	For measuring of refrigerant Fitting size: Thread size ● 1/2″ -16 ACME
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

BJS000D7

Tool name	Description
Power tool  PBIC0190E	For loosening bolts and nuts

REFRIGERATION SYSTEM

PFP:KA990

Refrigerant Cycle

BJS000D8

REFRIGERANT FLOW

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

FREEZE PROTECTION

Under usual operating conditions, when the A/C is switched ON, the compressor runs continuously, and the evaporator pressure, and therefore, temperature is controlled by the compressor to prevent freeze up.

Refrigerant System Protection

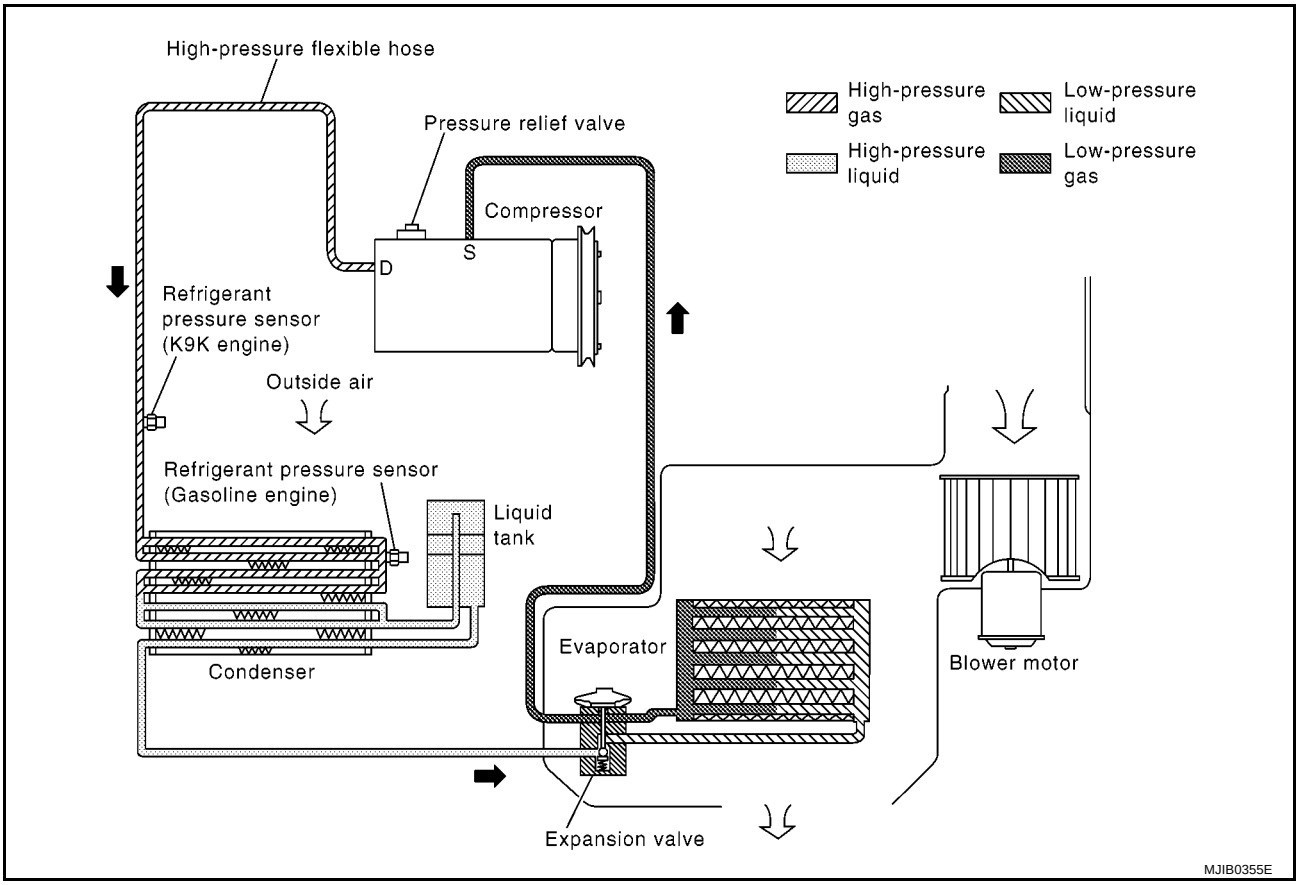
BJS000D9

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 (27.46 bar, 28.0 kg/cm^2 , 398 psi), or below about 134 kPa (1.34 bar, 1.4 kg/cm^2 , 20 psi).

PRESSURE RELIEF VALVE

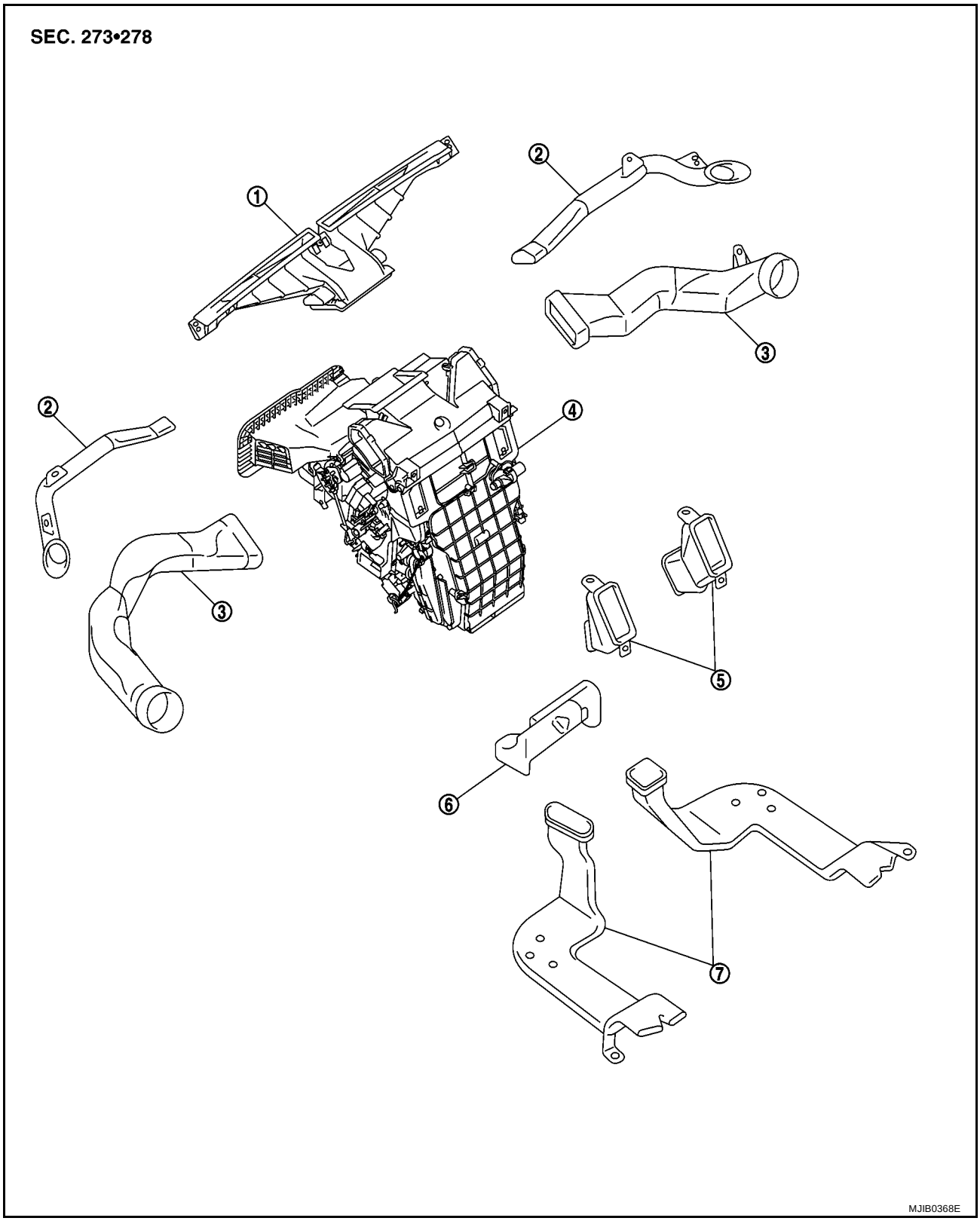
The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an unusual level [more than 3.8 MPa (38 bar, 38.76 kg/cm^2 , 551 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.



Component Layout

BJS000DA

SEC. 273•278



1. Defroster nozzle
2. Side defroster duct
3. Side ventilator duct
4. A/C unit
5. Center ventilator duct
6. Front floor duct
7. Rear floor duct

LUBRICANT

PFP:KLG00

Maintenance of Lubricant Quantity in Compressor

BJS000DB

The lubricant in the compressor circulates through the system with the refrigerant. Add lubricant to compressor when replacing any component or after a large refrigerant leakage occurred. It is important to maintain the specified amount.
If lubricant quantity is not maintained properly, the following malfunctions may result:

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

LUBRICANT

	Gasoline engine	K9K engine
Name	Nissan A/C System Oil Type R	Nissan A/C System Oil Type S
Parts number	KLH00 - PAGR0	KLH00 - PAGS0

LUBRICANT RETURN OPERATION

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

1. CHECK LUBRICANT RETURN OPERATION

Can lubricant return operation be performed?

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

CAUTION:
If excessive lubricant leakage is noted, do not perform the lubricant return operation.

OK or NG

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

2. PERFORM LUBRICANT RETURN OPERATION, PROCEEDING AS FOLLOWS

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

>> GO TO 3.

3. CHECK REPLACEMENT PART

Should the compressor be replaced?

YES >> GO TO MTC-18, "LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT" .
NO >> GO TO MTC-18, "LUBRICANT ADJUSTING PROCEDURE FOR COMPONENTS REPLACEMENT EXCEPT COMPRESSOR" .

LUBRICANT ADJUSTING PROCEDURE FOR COMPONENTS REPLACEMENT EXCEPT COMPRESSOR

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

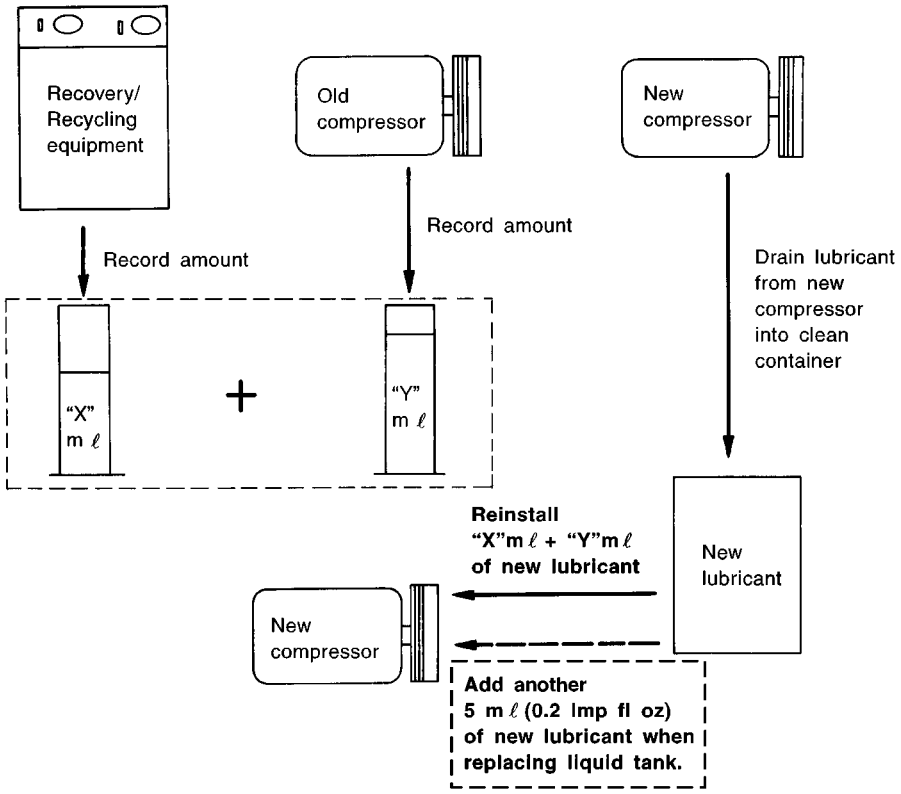
Part replaced	Lubricant to be added to system	Remarks
	Amount of lubricant m ℓ (Imp fl oz.)	
Evaporator	35 (1.2)	-
Condenser	15 (0.5)	-
Liquid tank	5 (0.2)	-
In case of refrigerant leak	30 (1.1)	Large leak
	-	Small leak *1

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

LUBRICANT ADJUSTING PROCEDURE FOR COMPRESSOR REPLACEMENT

1. Before connecting ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed. If NG, recover refrigerant from equipment lines.
2. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure lubricant discharged into the recovery/recycling equipment.
3. Drain the lubricant from the old (removed) compressor into a graduated container and recover the amount of lubricant drained.
4. Drain the lubricant from the new compressor into a separate, clean container.
5. 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.
6. Measure an amount of new lubricant equal to the amount recovered during discharging. Add this lubricant to new compressor through the suction port opening.
7. If the liquid tank also needs to be replaced, add another 5 m ℓ (0.2 Imp fl oz.) of lubricant at this time. Do not add this 5 m ℓ (0.2 Imp fl oz.) of lubricant only when replaces the compressor.

Lubricant adjusting procedure for compressor replacement



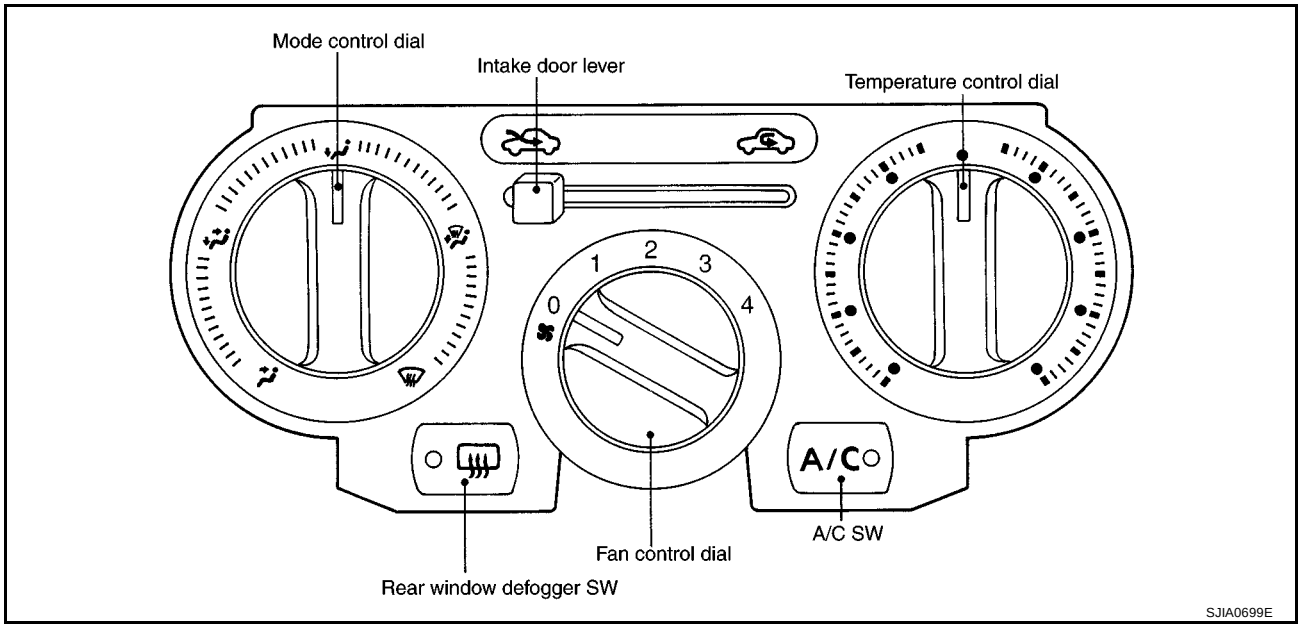
SJIA0596E

AIR CONDITIONER CONTROL

PFP:27500

Control Operation

BJS000DC



FAN CONTROL DIAL

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

TEMPERATURE CONTROL DIAL

This dial allows you to adjust the temperature of the discharge air.

MODE CONTROL DIAL

This dial controls the outlet air flow.

INTAKE DOOR LEVER

- Recirculation (REC) position: Interior air is recirculated inside the vehicle.
- Fresh (FRE) position: Outside air is drawn into the passenger compartment.

REAR WINDOW DEFOGGER SWITCH

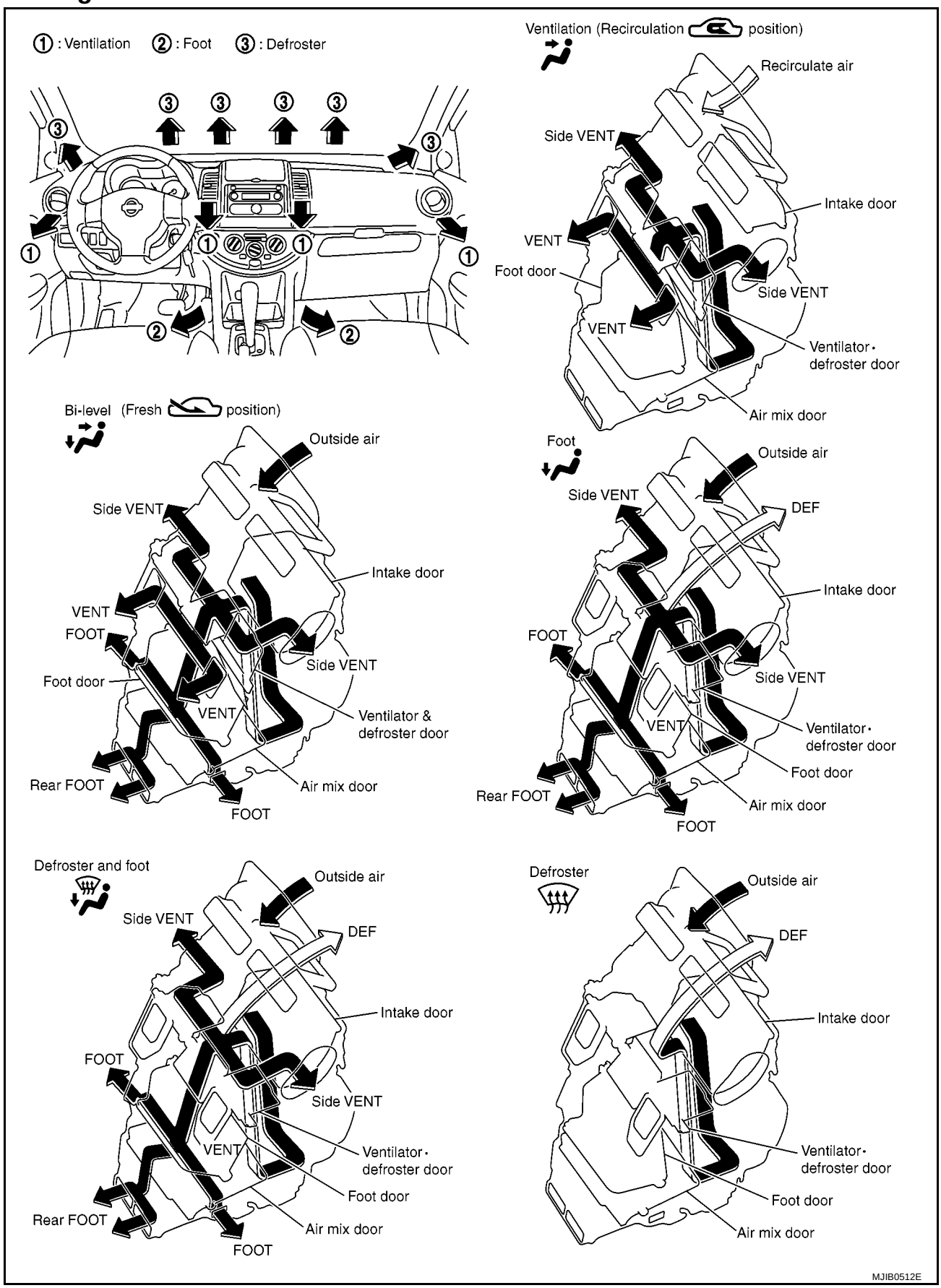
When illumination is ON, rear window is defogged.

A/C SWITCH

The A/C switch controls the air conditioner system. When the switch is depressed with the fan ON, the compressor will turn ON. The indicator lamp also illuminates.

Discharge Air Flow

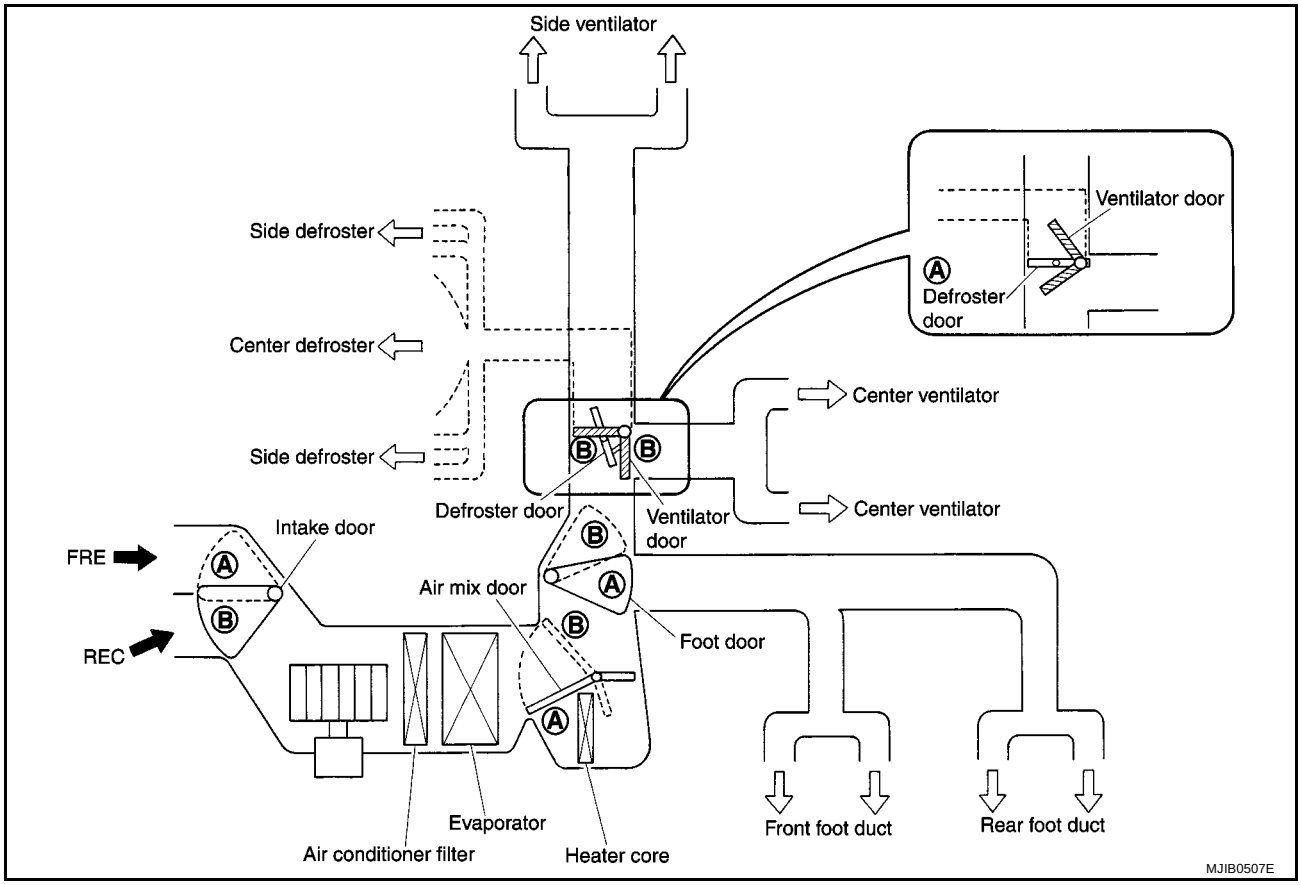
BJS000JC



System Description

BJS000DE

SWITCHES AND THEIR CONTROL FUNCTION



Door \ Mode control dial	MODE Position					Intake door lever		Temperature control dial		
	VENT	B/L	FOOT	D/F	DEF	FRE	REC	Full cold	◄—►	Full hot
Ventilator door	Ⓐ	Ⓐ	Ⓑ *1	Ⓑ *1	Ⓑ *1	—		—		
Sub ventilator door	Ⓐ	Ⓐ	Ⓑ	Ⓑ	Ⓑ	—		—		
Defroster door	Ⓐ	Ⓐ	Ⓑ	Ⓑ	Ⓑ	—		—		
Foot door	Ⓐ	Ⓐ ~ Ⓑ	Ⓑ *1	Ⓐ ~ Ⓑ	Ⓐ	—		—		
Intake door	—					Ⓑ	Ⓐ	—		
Air mix door	—					—		Ⓐ	Ⓐ ~ Ⓑ	Ⓑ

*1 When the Ⓑ position, ventilator door and foot door is not shuted perfectly.

SJIA0701E

CAN Communication System Description

BJS000DF

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. For details, refer to LAN-27, "CAN Communication Unit" .

TROUBLE DIAGNOSIS

PFP:00004

CONSULT-II Function (BCM)

BJS000DG

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

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

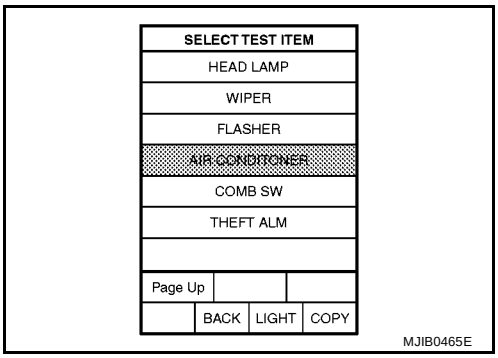
CONSULT-II BASIC OPERATION

Refer to GI-36, "CONSULT-II Start Procedure" .

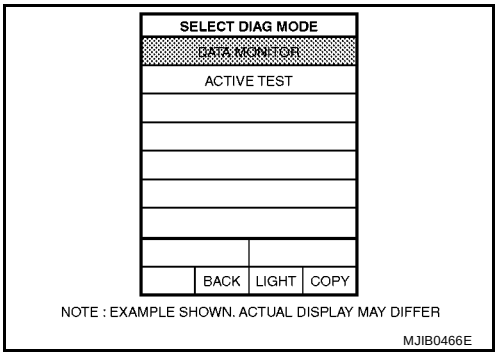
DATA MONITOR

Operation Procedure

1. Touch “AIR CONDITIONER” on “SELECT TEST ITEM” screen.



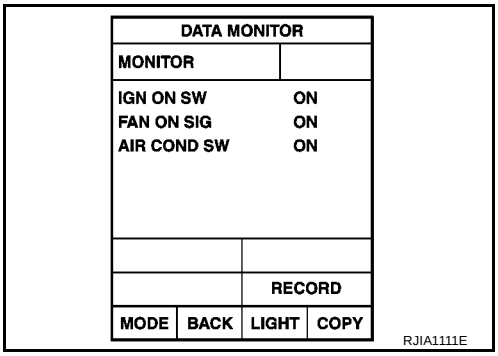
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.



3. Touch either “ALL SIGNALS” or “SELECTION FROM MENU” on “DATA MONITOR” screen.

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

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



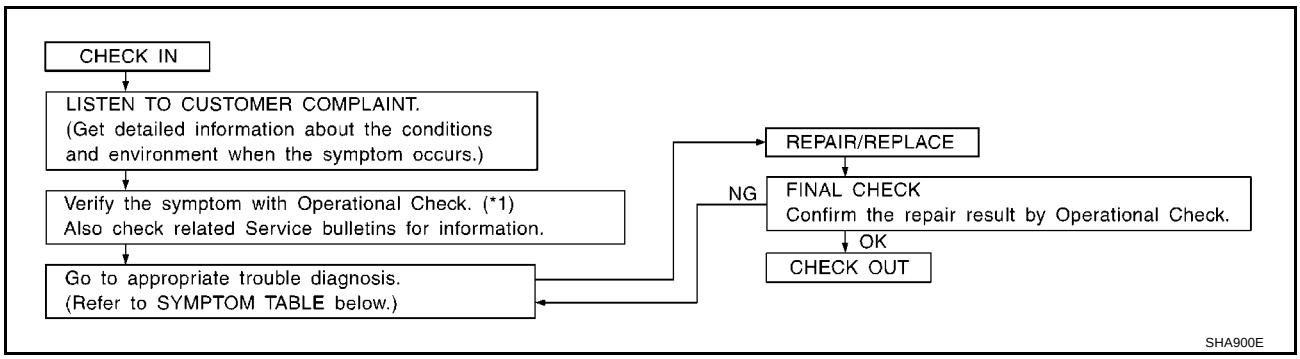
Display Item List

Monitor item name “operation or unit”		Contents
IGN ON SW	“ON/OFF”	Displays “IGN Position (ON)/OFF, ACC Position (OFF)” status as judged from ignition switch signal.
FAN ON SIG	“ON/OFF”	Displays “FAN (ON)/FAN (OFF)” status as judged from blower fan motor switch signal.
AIR COND SW	“ON/OFF”	Displays “COMP (ON)/COMP (OFF)” status as judged from air conditioner switch signal.

How to Perform Trouble Diagnosis for Quick and Accurate Repair

BJS000DH

WORK FLOW



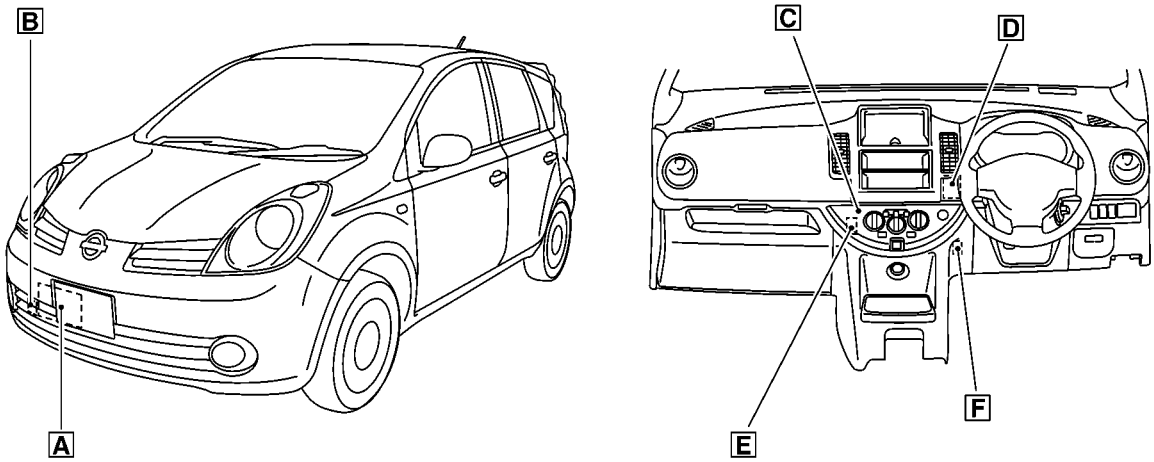
*1 MTC-34, "Operational Check"

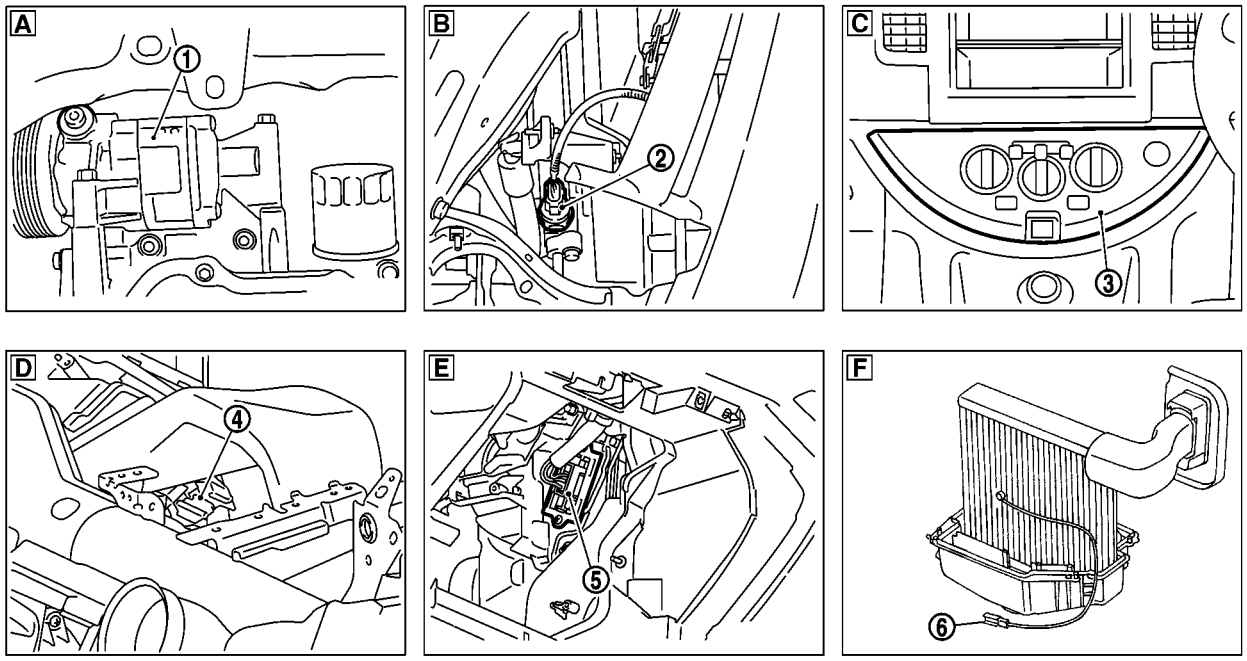
SYMPTOM TABLE

Symptom	Reference Page	
Air outlet does not change.	Go to Trouble Diagnosis Procedure for mode door.	MTC-36, "Mode Door"
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door.	MTC-37, "Air Mix Door"
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door.	MTC-38, "Intake Door"
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	MTC-39, "Blower Motor Circuit"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	MTC-43, "Magnet Clutch Circuit"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	MTC-52, "Insufficient Cooling"
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	MTC-59, "Insufficient Heating"
Noise	Go to Trouble Diagnosis Procedure for Noise.	MTC-60, "Noise"

Component Parts and Harness Connector Location

BJS000DI



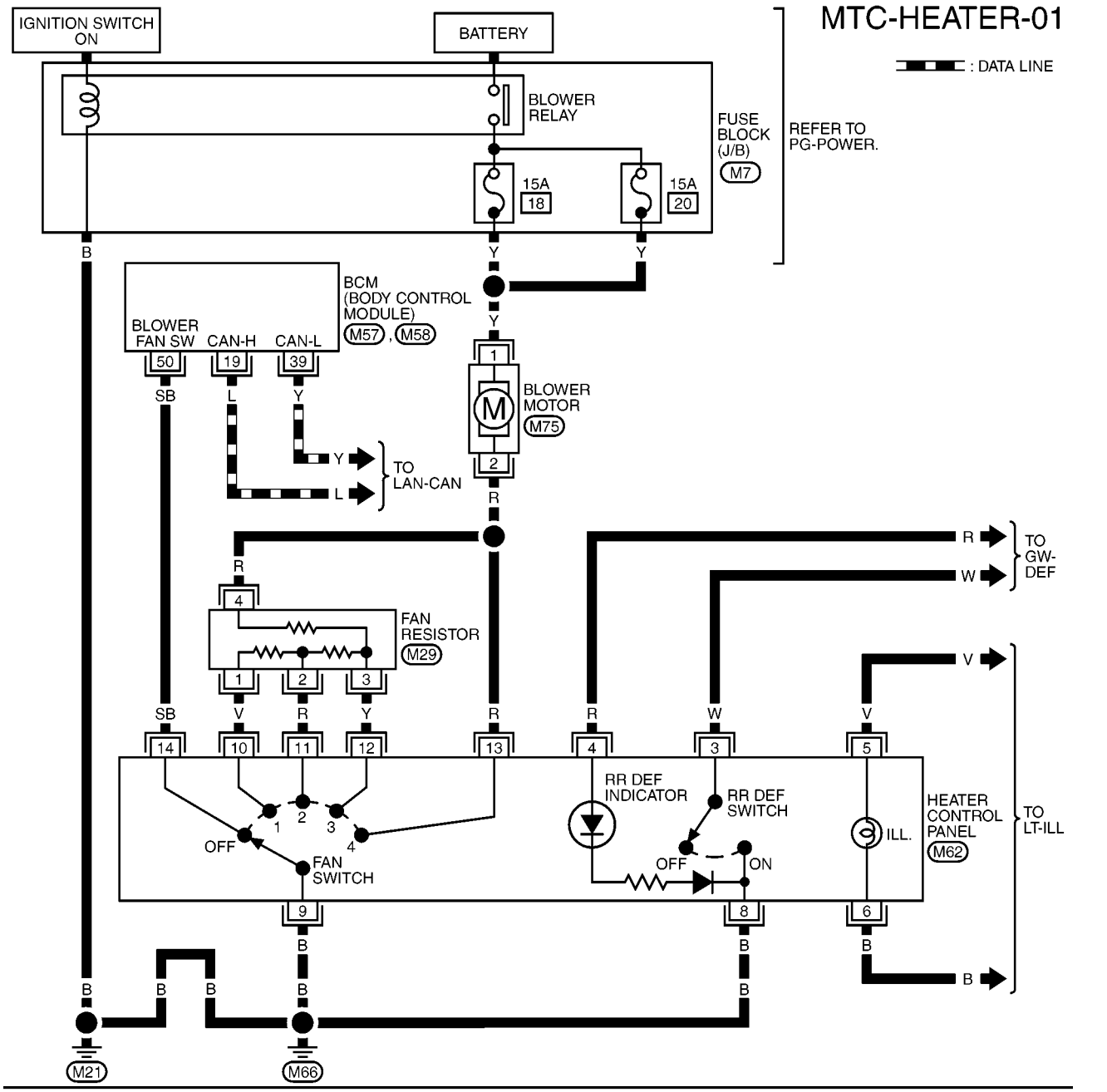


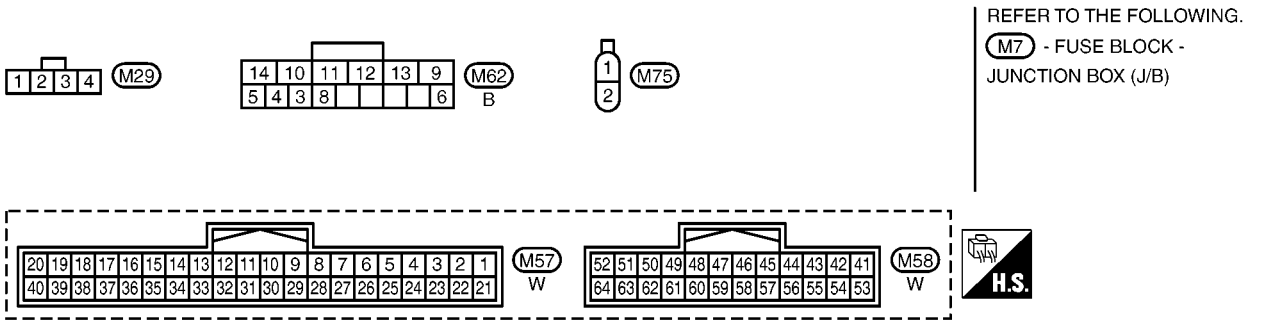
MJIB0491E

1. Compressor (CR & HR engine F28) (K9K engine F129)
2. Refrigerant pressure sensor (CR & HR engine E21) (K9K engine E65)
3. Heater control panel M62
4. Blower motor M56
5. Fan resistor M29
6. Thermo control amp. M44

Wiring Diagram — HEATER —

BJS000DK



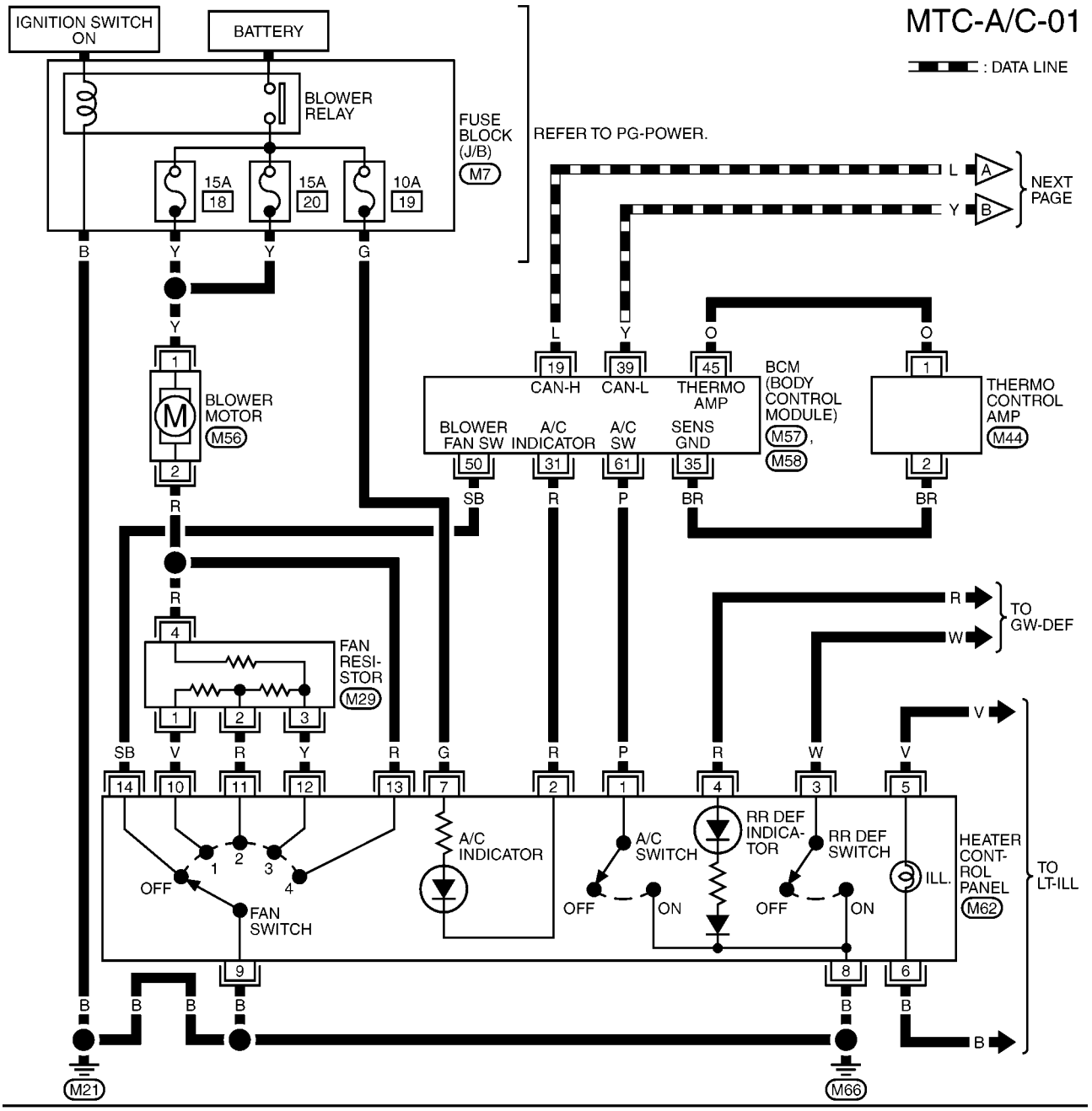


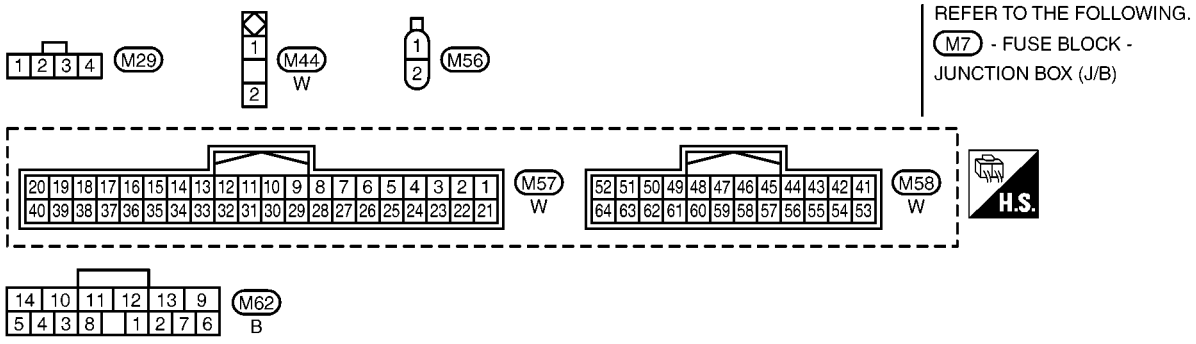
REFER TO THE FOLLOWING.
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

MJWA0265E

Wiring Diagram — A/C — CR Engine Models

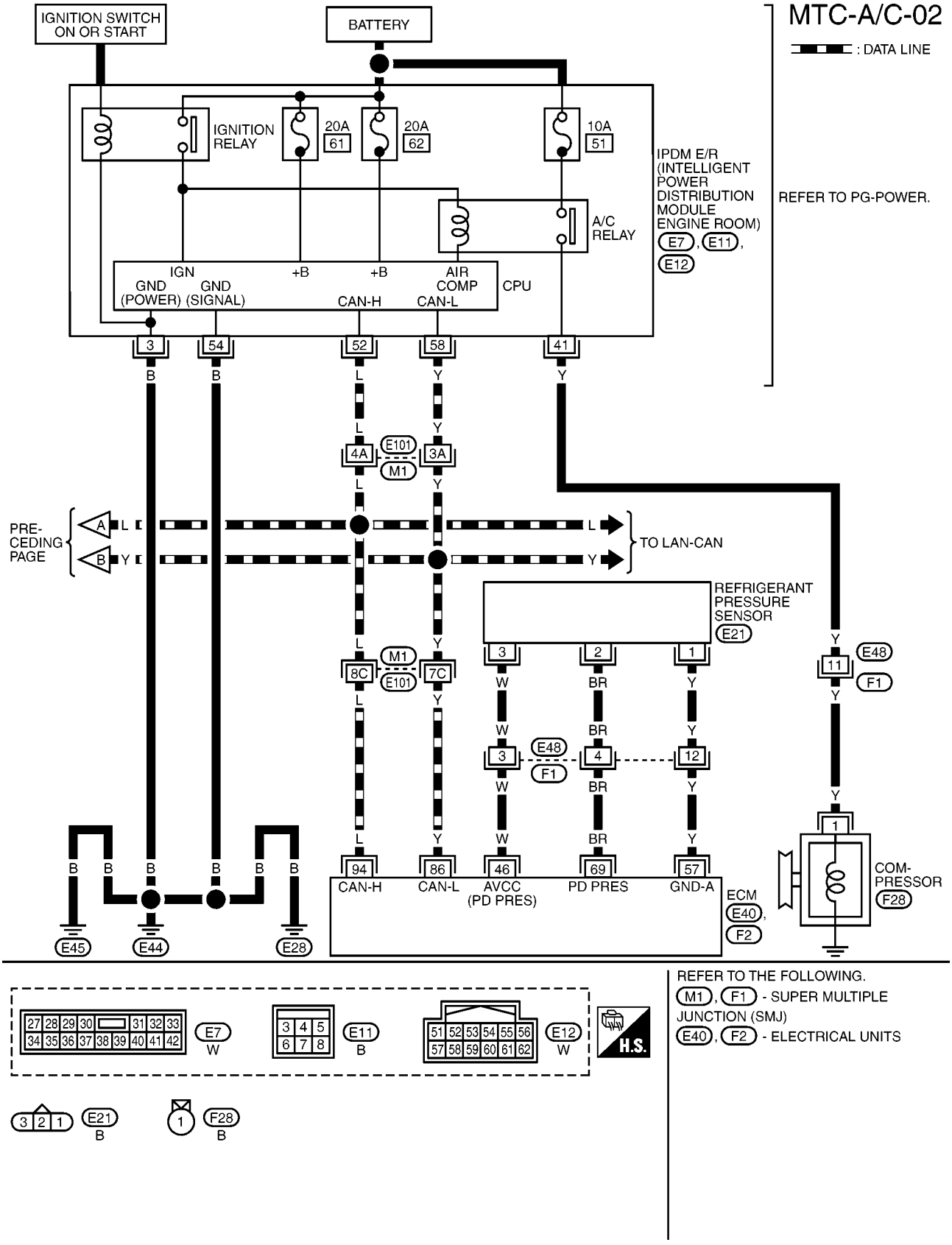
BJS000IM





REFER TO THE FOLLOWING.
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

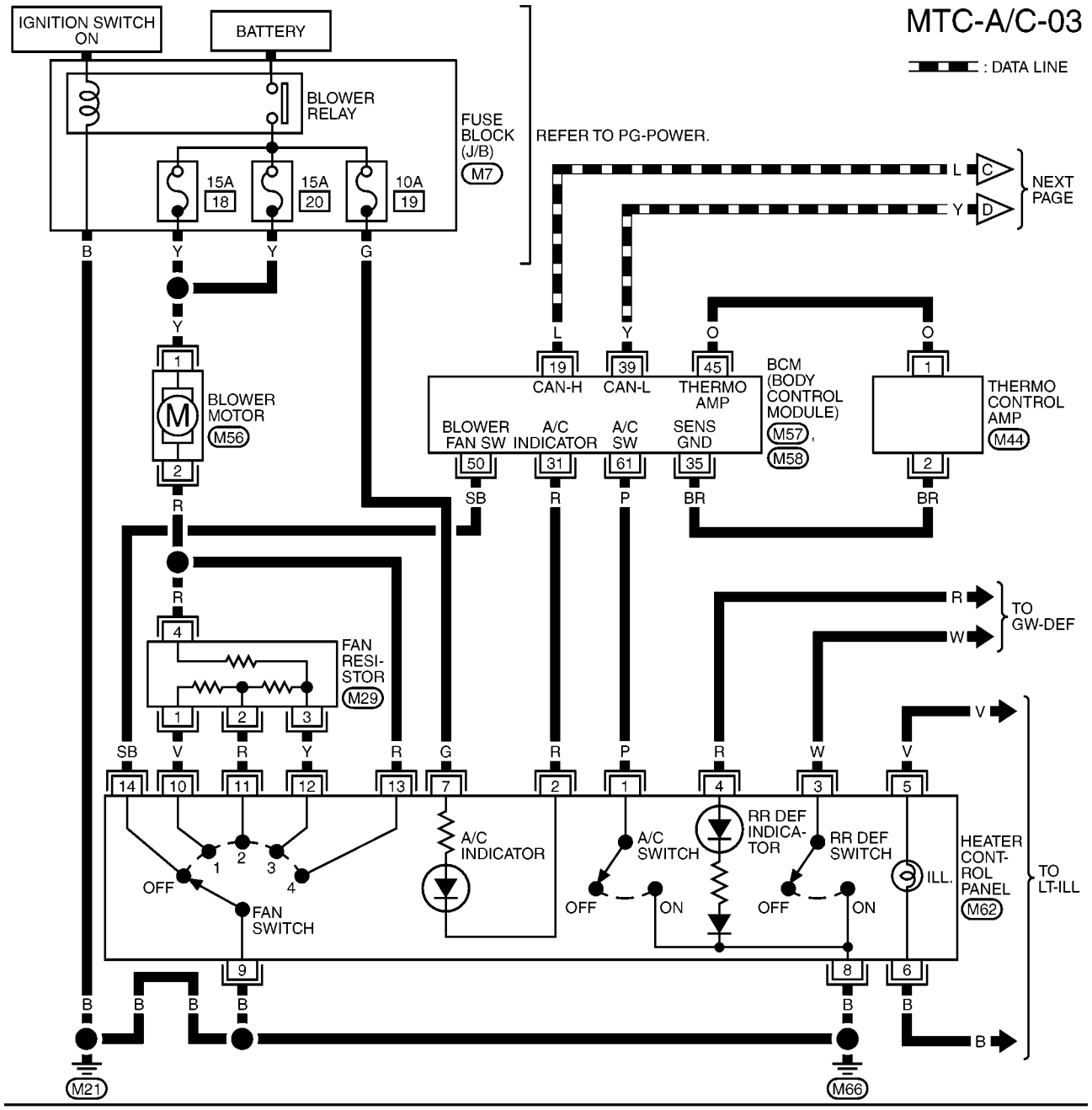
MJWA0266E

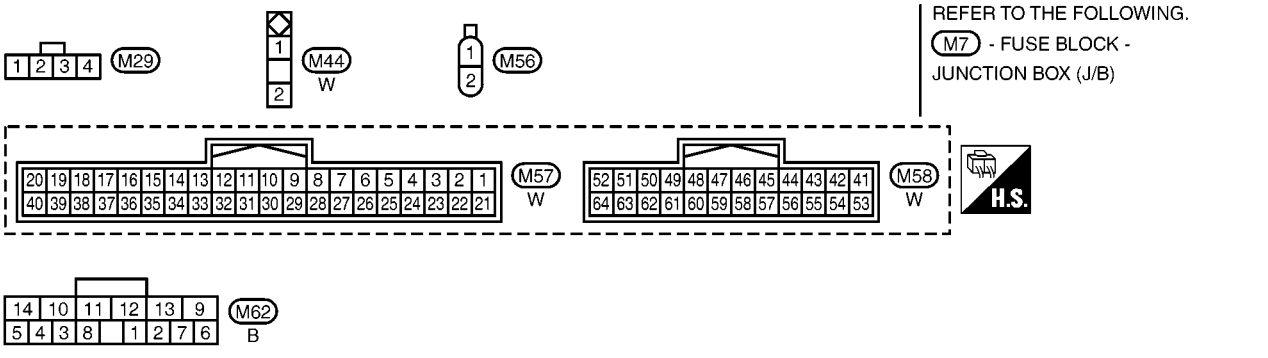

MTC-A/C-02
: DATA LINE
REFER TO PG-POWER.
IGNITION SWITCH ON OR START
BATTERY
IGNITION RELAY
20A 61
20A 62
10A 51
A/C RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E7, E11, E12
IGN
GND (POWER)
GND (SIGNAL)
+B
+B
AIR COMP
CAN-H
CAN-L
CPU
3
54
52
58
41
E101
M1
4A
3A
8C
7C
PRE-CEDING PAGE
TO LAN-CAN
REFRIGERANT PRESSURE SENSOR E21
E48
F1
11
12
4
E45
E44
E28
94
86
46
69
57
CAN-H
CAN-L
AVCC (PD PRES)
PD PRES
GND-A
ECM E40, F2
COM-PRESSOR F28
E7 W
E11 B
E12 W
H.S.
E21 B
F28 B
REFER TO THE FOLLOWING.
M1, F1 - SUPER MULTIPLE JUNCTION (SMJ)
E40, F2 - ELECTRICAL UNITS

MJWA0267E

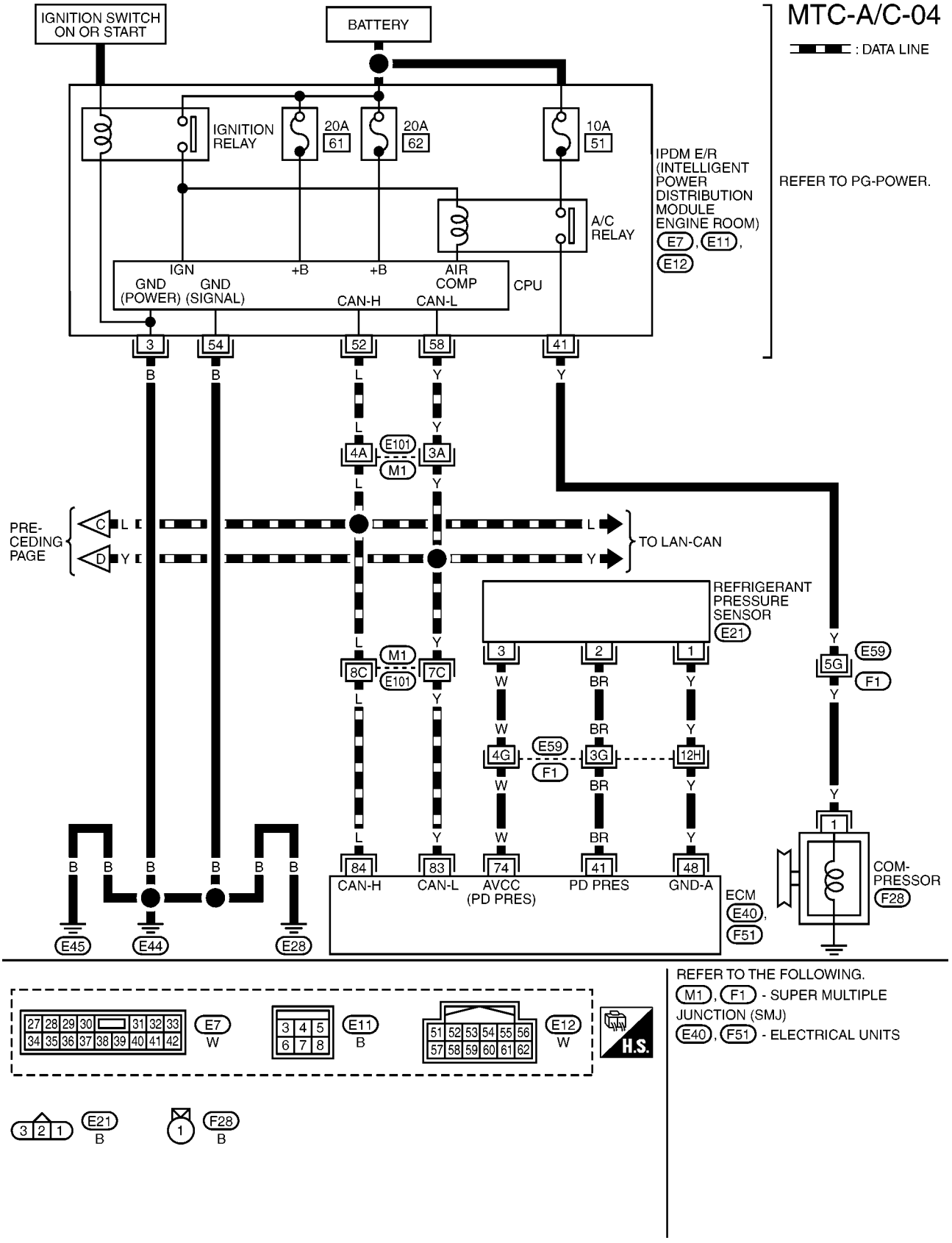
Wiring Diagram — A/C — HR Engine Models

BJS000IN





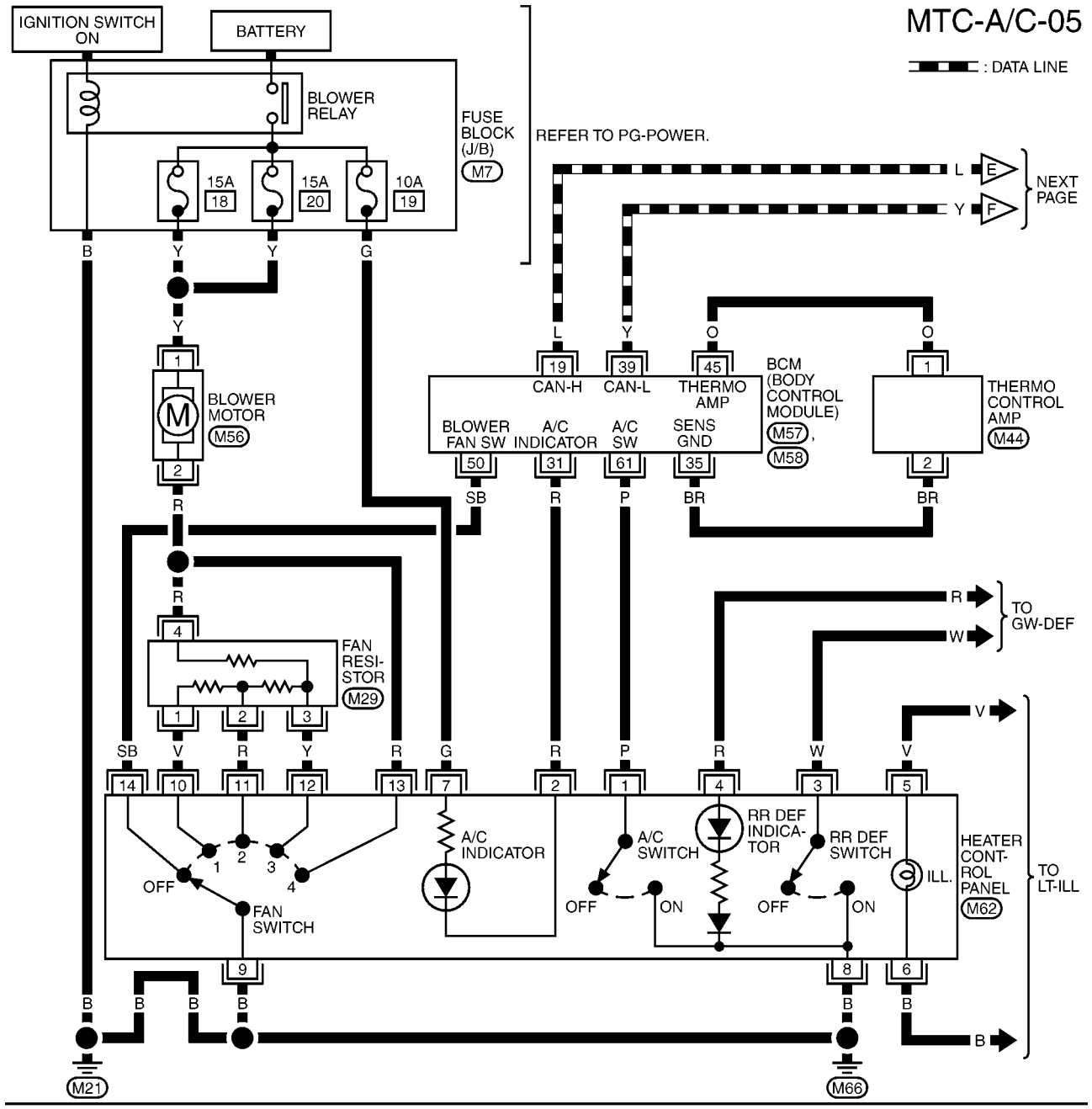
MJWA0268E

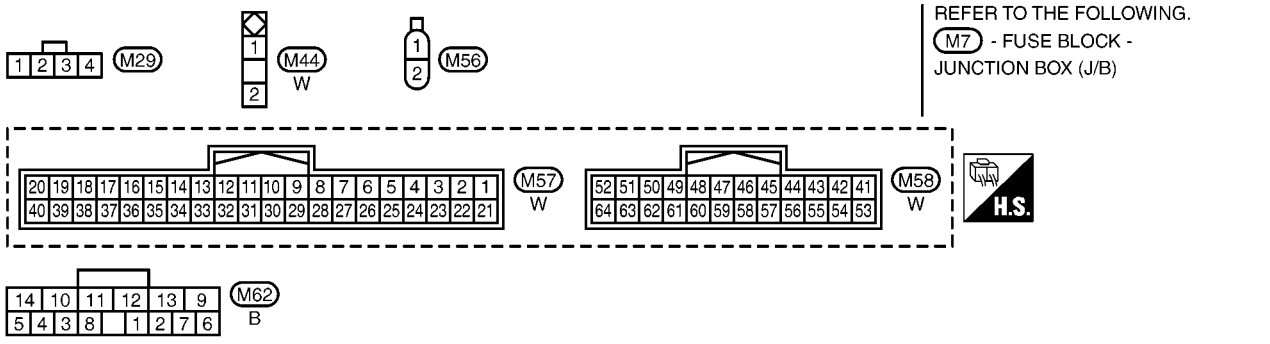

MTC-A/C-04
: DATA LINE
REFER TO PG-POWER.
IGNITION SWITCH ON OR START
BATTERY
IGNITION RELAY
20A 61
20A 62
10A 51
A/C RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E7, E11, E12
IGN
GND (POWER)
GND (SIGNAL)
+B
+B
AIR COMP
CAN-H
CAN-L
CPU
3
54
52
58
41
E101
M1
4A
3A
8C
7C
PRE-CEDING PAGE
C
D
TO LAN-CAN
REFRIGERANT PRESSURE SENSOR E21
3
2
1
4G
3G
12H
E59
F1
5G
E45
E44
E28
84
83
74
41
48
CAN-H
CAN-L
AVCC (PD PRES)
PD PRES
GND-A
ECM E40, F51
COM-PRESSOR F28
E7 W
E11 B
E12 W
H.S.
E21 B
F28 B
REFER TO THE FOLLOWING.
M1, F1 - SUPER MULTIPLE JUNCTION (SMJ)
E40, F51 - ELECTRICAL UNITS

MJWA0269E

Wiring Diagram — A/C — K9K Engine Models

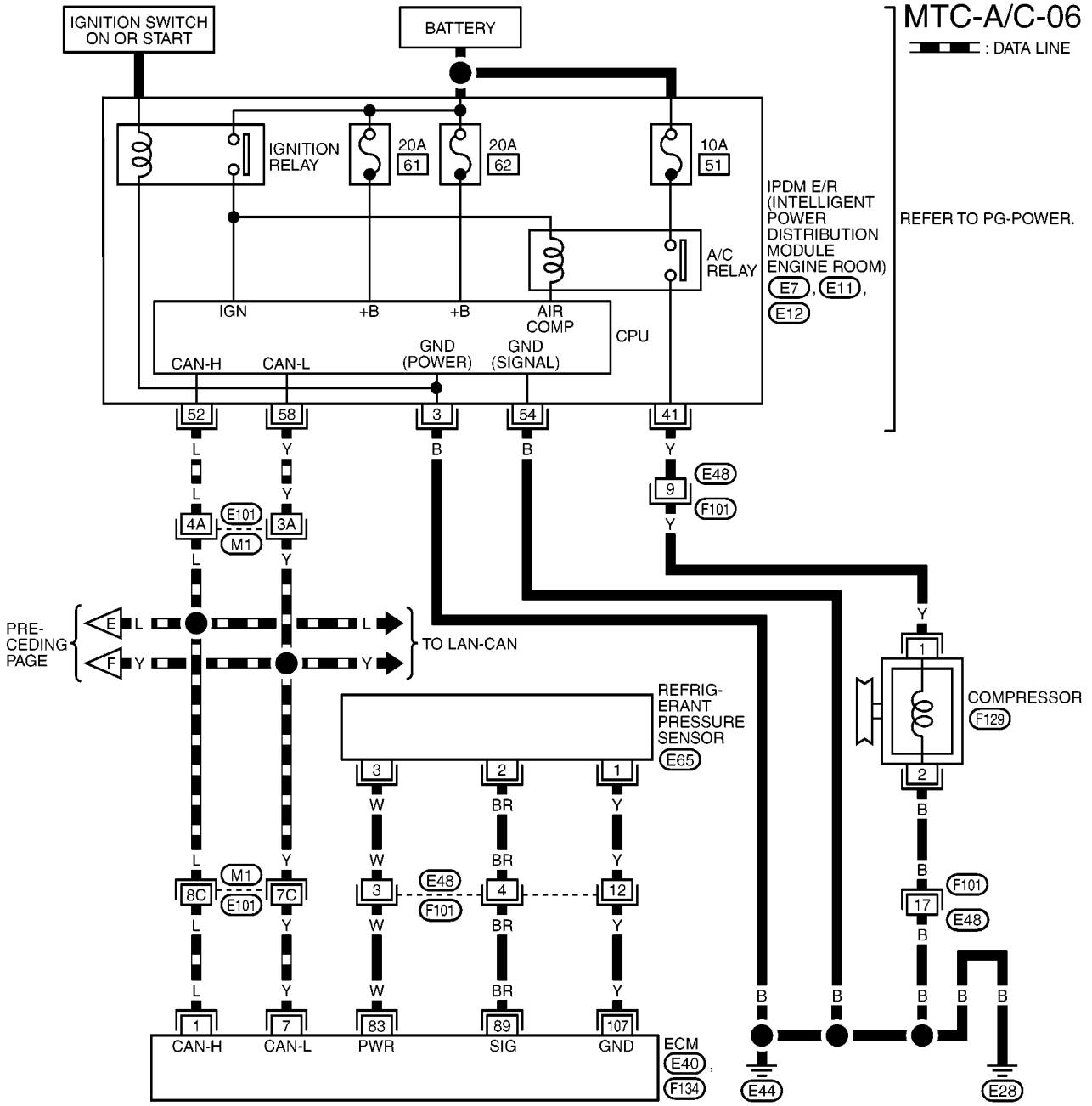
BJS000IO





REFER TO THE FOLLOWING.
M7 - FUSE BLOCK - JUNCTION BOX (J/B)

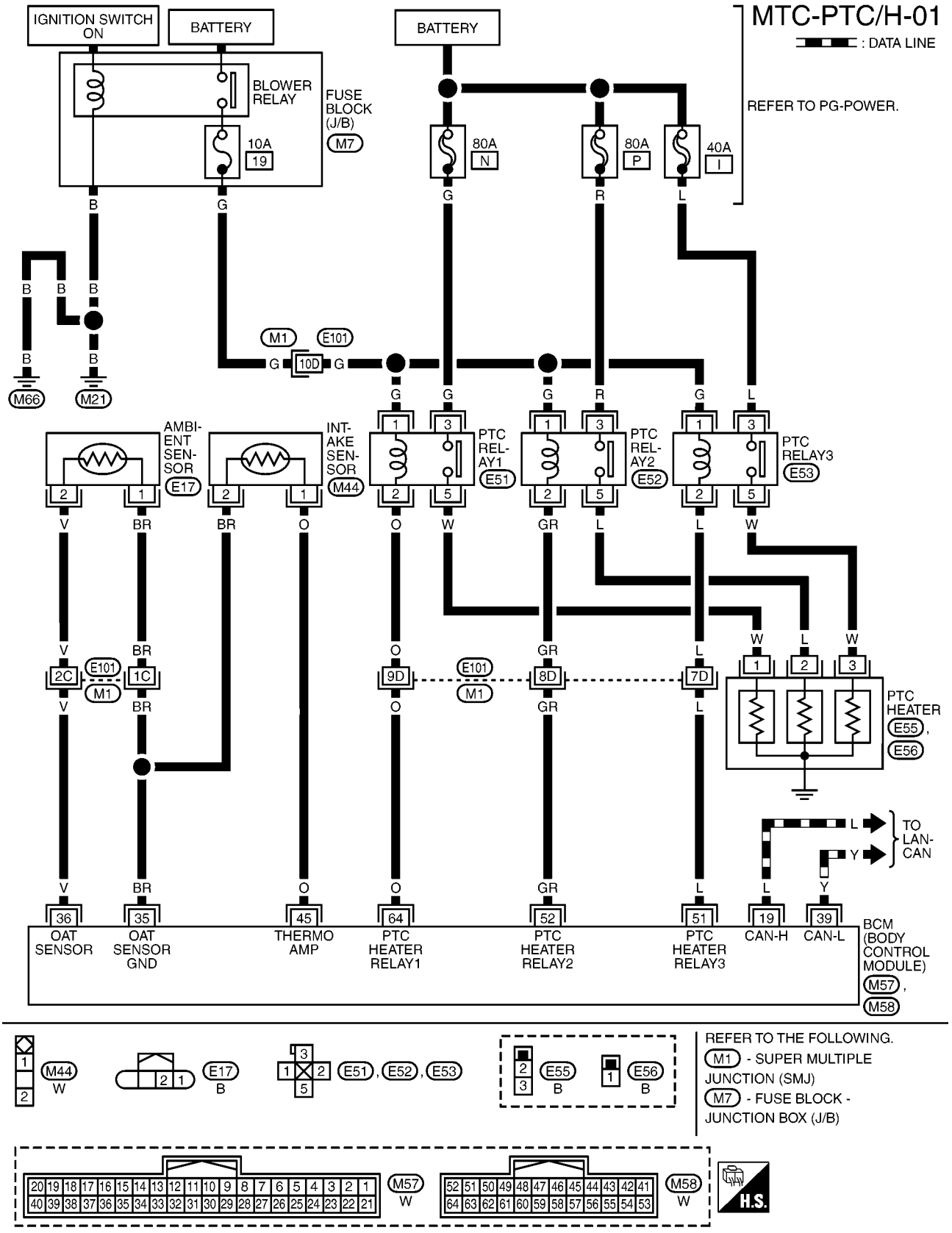
MJWA0270E


MTC-A/C-06
: DATA LINE
IGNITION SWITCH ON OR START
BATTERY
IGNITION RELAY
20A 61
20A 62
10A 51
A/C RELAY
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) E7, E11, E12
REFER TO PG-POWER.
IGN
+B
+B
AIR COMP
GND (POWER)
GND (SIGNAL)
CPU
CAN-H
CAN-L
52
58
3
54
41
E48
9
F101
E101
M1
4A
3A
8C
7C
PRE-CEDING PAGE
TO LAN-CAN
REFRIG-ERANT PRESSURE SENSOR E65
COMPRESSOR F129
F101
17
E48
E44
E28
1
7
83
89
107
ECM E40, F134
E7 W
E11 B
E12 W
H.S.
E65
F129 GR
REFER TO THE FOLLOWING.
M1, F101 - SUPER MULTIPLE JUNCTION (SMJ)
E40, F134 - ELECTRICAL UNITS

MJWA0271E

Wiring Diagram — PTC/H —

BJS000IP



MJWA0272E

PTC heater function is intended to improve the heating performance with CTP electrical system for air heating system which is broken down into several stages controlled by relays.

Operational Check

BJS000DL

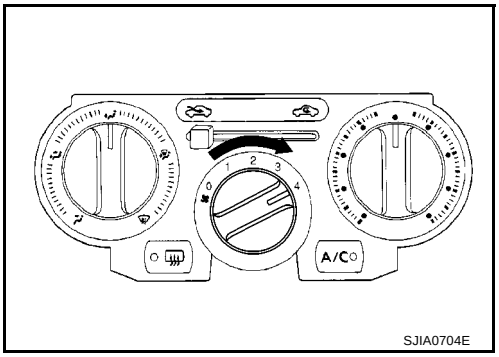
The purpose of the operational check is to confirm that the system operates properly.

Conditions : Engine running at usual operating temperature

CHECKING BLOWER

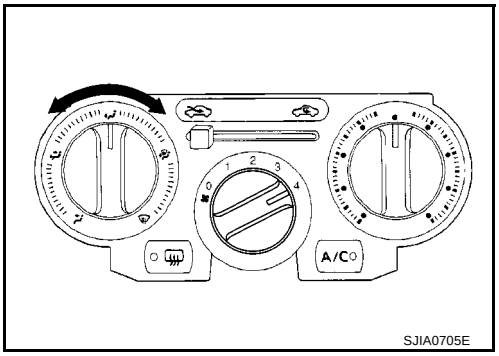
1. Turn fan control dial to 1-speed. Blower should operate on low speed.
2. Then turn fan control dial to 2-speed, and continue checking blower speed until all speeds are checked.
3. Leave blower on Max. speed.

If NG, go to trouble diagnosis procedure for MTC-39, "Blower Motor Circuit" .
If OK, continue the check.



CHECKING DISCHARGE AIR

1. Turn mode control dial to each position.



2. Confirm that discharge air comes out according to the air distribution table. Refer to MTC-21, "Discharge Air Flow" .

If NG, go to trouble diagnosis procedure for MTC-36, "Mode Door" .
If OK, continue the check.

Discharge air flow

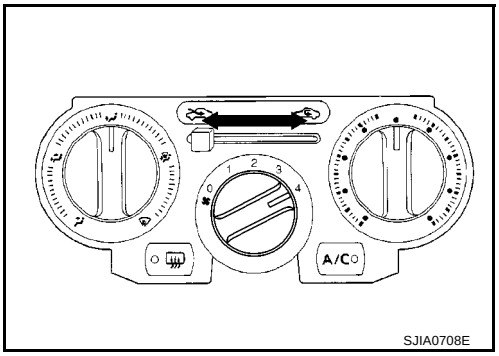
Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	80%	5%	15%
	55%	30%	15%
	21%	60%	19%
	16%	35%	49%
	15%	5%	80%

MJIB0374E

CHECKING RECIRCULATION

1. Set intake door lever to REC position.
2. Operate intake door lever to FRE position.
3. Listen for intake door position change (you should hear blower sound change slightly).

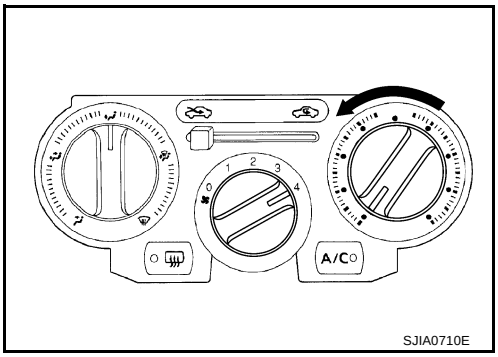
If NG, go to trouble diagnosis procedure for MTC-38, "Intake Door" .
If OK, continue the check.



CHECKING TEMPERATURE DECREASE

1. Turn temperature control dial counterclockwise until full cold position.
2. Check for cold air at discharge air outlets.

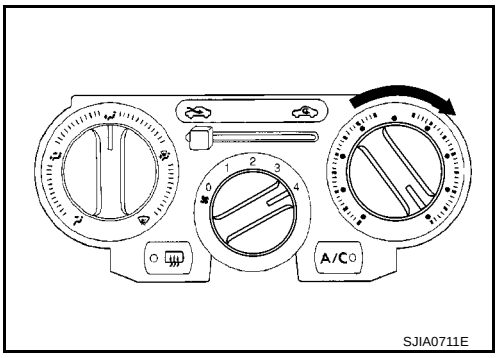
If NG, go to trouble diagnosis procedure for MTC-52, "Insufficient Cooling" .
If OK, continue the check.



CHECKING TEMPERATURE INCREASE

1. Turn temperature control dial clockwise until full hot position.
2. Check for hot air at discharge air outlets.

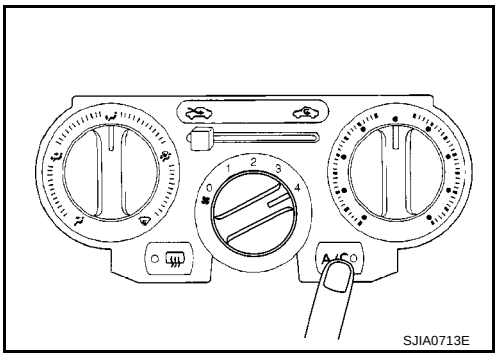
If NG, go to trouble diagnosis procedure for MTC-59, "Insufficient Heating" .
If OK, continue the check.



CHECKING A/C SWITCH

1. Turn fan control dial to the desired (1 to 4 speed) position.
2. Press A/C switch.
3. A/C switch indicator will turn ON.
   - Confirm that the compressor clutch engages (sound or visual inspection).

If NG, go to trouble diagnosis procedure for MTC-43, "Magnet Clutch Circuit" .
If all operational checks are OK (symptom cannot be duplicated), go to Incident Simulation Tests in 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-24, "SYMPTOM TABLE" and perform applicable trouble diagnosis procedures.



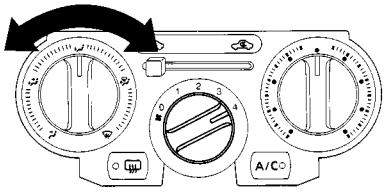
Mode Door

BJS000DM

SYMPTOM: Air outlet does not change.

INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



Discharge air flow

Mode door position	Air outlet/distribution		
	Vent	Foot	Defroster
	80%	5%	15%
	55%	30%	15%
	21%	60%	19%
	16%	35%	49%
	15%	5%	80%

OPERATIONAL CHECK – Mode door

a. Turn the mode control dial to each position.

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

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

2. Check for any service bulletins.

3. Check mode door control cable (*3).

OK

4. If the symptom still exists, perform a complete operational check (*2) and check for other symptoms. [Refer to symptom table (*4).] Does another symptom exist?

YES → Go to Trouble Diagnosis for related symptom.

[Another symptom exists.]

NO

INSPECTION END

MJIB0493E

*1 MTC-21, "Discharge Air Flow"

*2 MTC-34, "Operational Check"

*3 MTC-72, "Mode Door Cable Adjustment"

*4 MTC-24, "SYMPTOM TABLE"

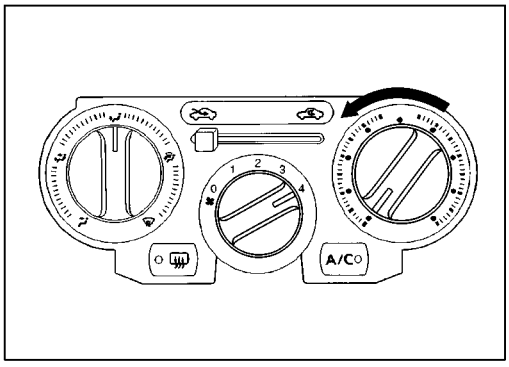
Air Mix Door

BJS000DN

SYMPTOM: Air mix door does not change.

INSPECTION FLOW

1. Confirm symptom by performing the following operational check.

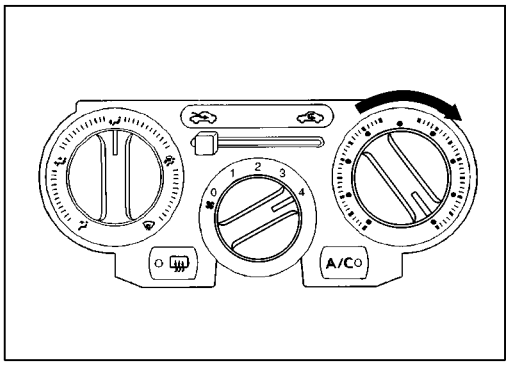


OPERATIONAL CHECK

Temperature decrease

a. Turn temperature control dial counterclockwise until full cold position.

b. Check for cold air at discharge air outlets.



Temperature Increase

a. Turn temperature control dial clockwise until full hot position.

b. Check for hot air at discharge air outlets.

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

2. Check for any service bulletins.

3. Check air mix door cable (*2).

OK

If the symptom still exists, perform a complate operational check (*1) 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

SJIA0720E

*1 MTC-34, "Operational Check" *2 MTC-71, "Air Mix Door Cable Adjustment" *3 MTC-24, "SYMPTOM TABLE"

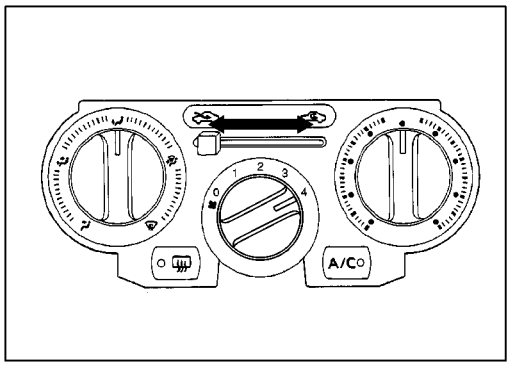
Intake Door

BJS000DO

SYMPTOM:
Intake door does not change.

INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Recirculation

a. Set intake door lever to REC position.

b. Operate intake door lever to FRE position.

c. Listen for intake door position change (you should hear blower sound change slightly).

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

2. Check for any service bulletins.

3. Check intake door cable (*2).

OK

If the symptom still exists, perform a complate operational check (*1) 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

SJIA0722E

*1 MTC-34, "Operational Check"

*2 MTC-70, "Intake Door Cable Adjustment"

*3 MTC-24, "SYMPTOM TABLE"

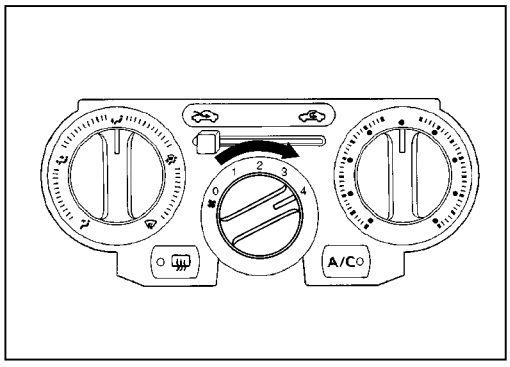
Blower Motor Circuit

BJS000DP

SYMPTOM: Blower motor operation is malfunctioning.

INSPECTION FLOW

1. Confirm symptom by performing the following operational check.



OPERATIONAL CHECK – Blower motor

a. Turn fan control dial to 1-speed.
Blower should operate on low speed.

b. Then turn fan control dial to 2-speed, and continue checking blower speed until all speeds are checked.

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

2. Check for any service bulletins.

3. Check blower motor circuit (*2).

OK

If the symptom still exists, perform a complate operational check (*1) 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.]

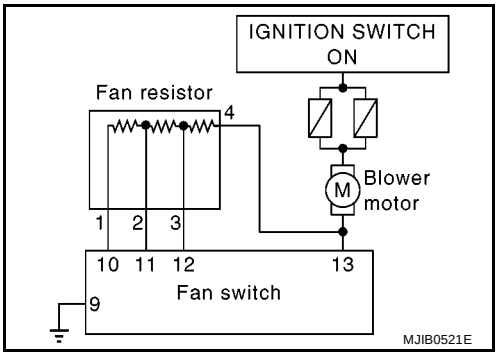
NO → INSPECTION END

SJIA0723E

*1 MTC-34, "Operational Check" *2 MTC-39, "DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR" *3 MTC-24, "SYMPTOM TABLE"

DIAGNOSTIC PROCEDURE FOR BLOWER MOTOR

SYMPTOM: Blower motor operation is malfunctioning.



1. CHECK BLOWER MOTOR OPERATION

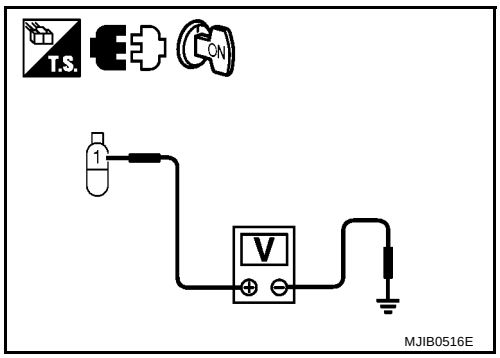
1. Turn ignition switch ON.
2. Check blower motor operation at each fan speed.

OK or NG

Blower motor does not operate at all speed.>>GO TO 2.
Blower motor does not operate at one of speeds 1-4.>>GO TO 6.

2. CHECK POWER SUPPLY FOR BLOWER MOTOR

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



Terminals			Voltage (Approx.)
(+)		(–)	
Connector	Terminal	Ground	
Blower motor: M56	1		Battery voltage

OK or NG

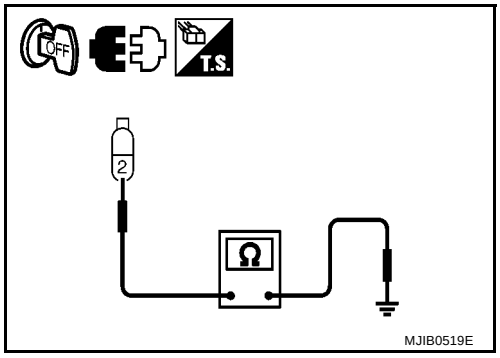
OK >> GO TO 3.

NG >> Check power supply circuit and 15A fuses (Nos. 18 and 20, located in the fuse block). Refer to PG-95, "FUSE BLOCK" .

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

3. CHECK GROUND CIRCUIT FOR BLOWER MOTOR

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



Connector	Terminal	Ground	Continuity
Blower motor: M56	2		Yes

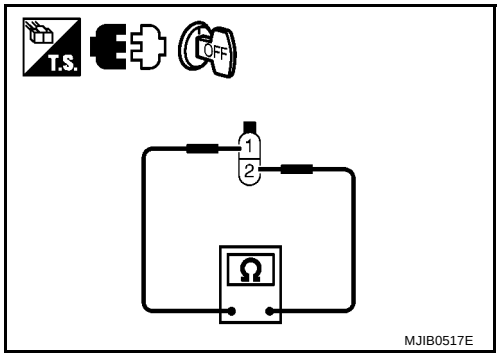
OK or NG

OK >> GO TO 4.

NG >> GO TO 5.

4. CHECK BLOWER MOTOR

Check continuity between blower motor harness connector terminal 1 and 2.



Connector	Terminals		Continuity
Blower motor: M56	1	2	Yes

OK or NG

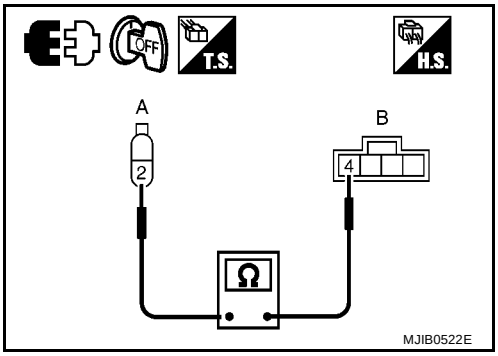
OK >> GO TO 9.

NG >> Replace blower motor.

5. CHECK CIRCUIT CONTINUITY BETWEEN BLOWER MOTOR AND BLOWER FAN RESISTOR

1. Disconnect fan resistor connector.
2. Check continuity between blower motor harness connector (A) and fan resistor harness connector (B).

A		B		Continuity
Connector	Terminal	Connector	Terminal	
Blower motor: M56	2	Fan resistor: M29	4	Yes



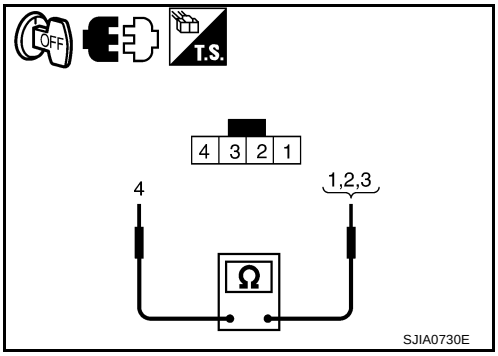
OK or NG

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

6. CHECK BLOWER FAN RESISTOR

1. Turn ignition switch OFF.
2. Disconnect fan resistor connector.
3. Check resistance between fan resistor connector terminal 4 and 1, 2, 3.

Connector	Terminals		Resistance
Fan resistor: M29	4	1	Approx. 2.15Ω
		2	Approx. 1.10Ω
		3	Approx. 0.46Ω



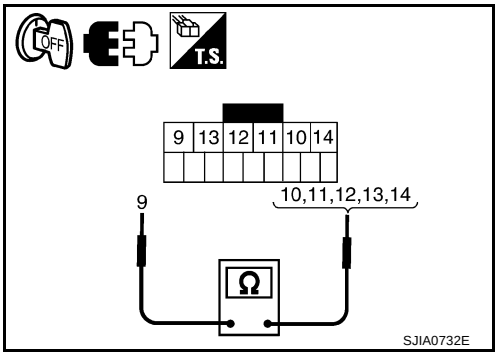
OK or NG

OK >> GO TO 7.
NG >> Replace fan resistor.

7. CHECK FAN SWITCH

1. Disconnect heater control panel connector.
2. Check continuity between heater control panel connector terminal 9 and 10, 11, 12, 13, 14.

Connector	Terminals		Condition	Continuity
Heater control panel: M62	9	14	Fan control dial: OFF	Yes
		10	Fan control dial: 1-speed	
		11	Fan control dial: 2-speed	
		12	Fan control dial: 3-speed	
		13	Fan control dial: 4-speed	

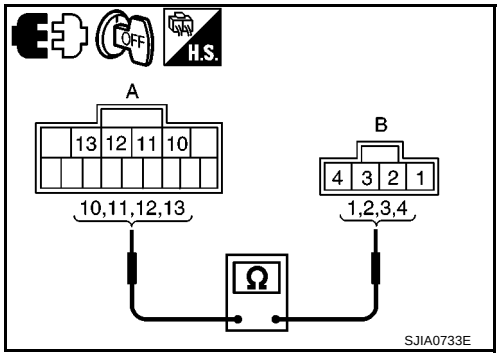


OK or NG

OK >> GO TO 8.
NG >> Replace heater control panel.

8. CHECK CIRCUIT CONTINUITY BETWEEN HEATER CONTROL PANEL AND BLOWER FAN RESISTOR

Check continuity between heater control panel harness connector (A) and blower fan resistor harness connector (B).



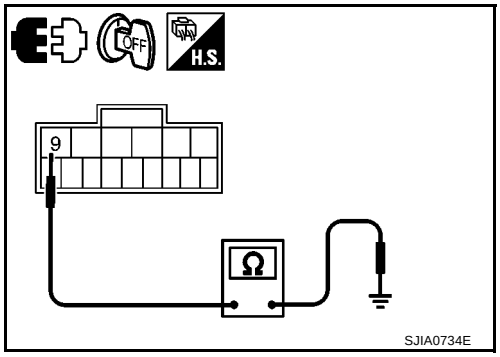
A		B		Continuity
Connector	Terminal	Connector	Terminal	
Heater control panel: M62	10	Fan resistor: M29	1	Yes.
	11		2	
	12		3	
	13		4	

OK or NG

OK >> Check harness connector and connector for open circuit.
NG >> Repair harness and connector.

9. CHECK FAN SWITCH GROUND CIRCUIT

1. Disconnect heater control panel connector.
2. Check continuity between heater control panel harness connector and ground.



Connector	Terminal		Continuity
Heater control panel: M62	9	Ground	Yes

OK or NG

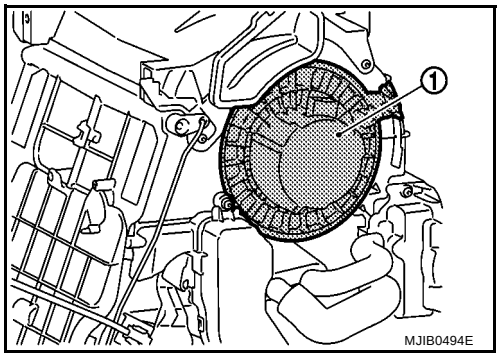
OK >> INSPECTION END
NG >> Repair harness and connector.

COMPONENT INSPECTION

Blower Motor

Confirm smooth rotation of the blower motor (1).

- Ensure that there are no foreign particles inside the A/C unit assembly.



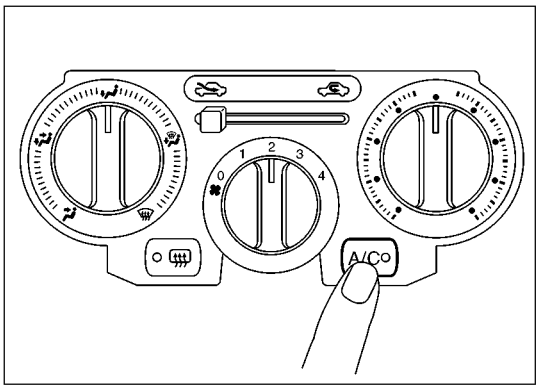
Magnet Clutch Circuit

BJS000DQ

SYMPTOM: Magnet clutch does not engage.

INSPECTION FLOW

1. Confirm symptom by performing the operational check.



OPERATIONAL CHECK - A/C switch

a. Turn fan control dial to the desired (1 to 4 speed) position.

b. Press A/C switch.

c. A/C switch indicator will turn ON.
Confirm that the compressor clutch engages (sound or visual inspection).

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

2. Check for any service bulletins.

3. Check compressor belt tension. Refer to (*2).
NG → Adjust or replace compressor belt.
OK ↓

4. Check refrigerant. Connect manifold gauge then check system pressure.
NG → Check for refrigerant pressure. Refer to (*5).
OK ↓

5. Check magnet clutch circuit (*3).
OK ↓

If the symptom still exists, perform a complate operational check (*1) and check for other symptoms.
[Refer to symptom table (*4).]
Does another symptom exist?
YES → Go to Trouble Diagnosis for related symptom.
[Another symptom exists.]
NO → INSPECTION END

SJIA0740E

*1 MTC-34, "Operational Check"

*2 CR: EM-14, "Checking drive Belts"
HR: EM-114, "Checking Drive Belts"
K9K: EM-242, "Checking Drive Belts"

*3 MTC-44, "DIAGNOSTIC PROCEDURE FOR MAGNET CLUTCH"

*4 MTC-24, "SYMPTOM TABLE"

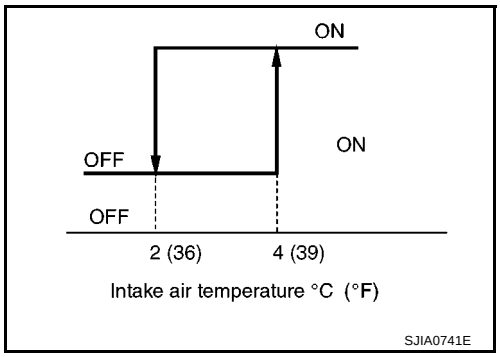
*5 MTC-56, "TROUBLE DIAGNOSIS FOR UNUSUAL PRESSURE"

SYSTEM DESCRIPTION

Thermo control amp. controls compressor operation by intake air temperature and signal from ECM.

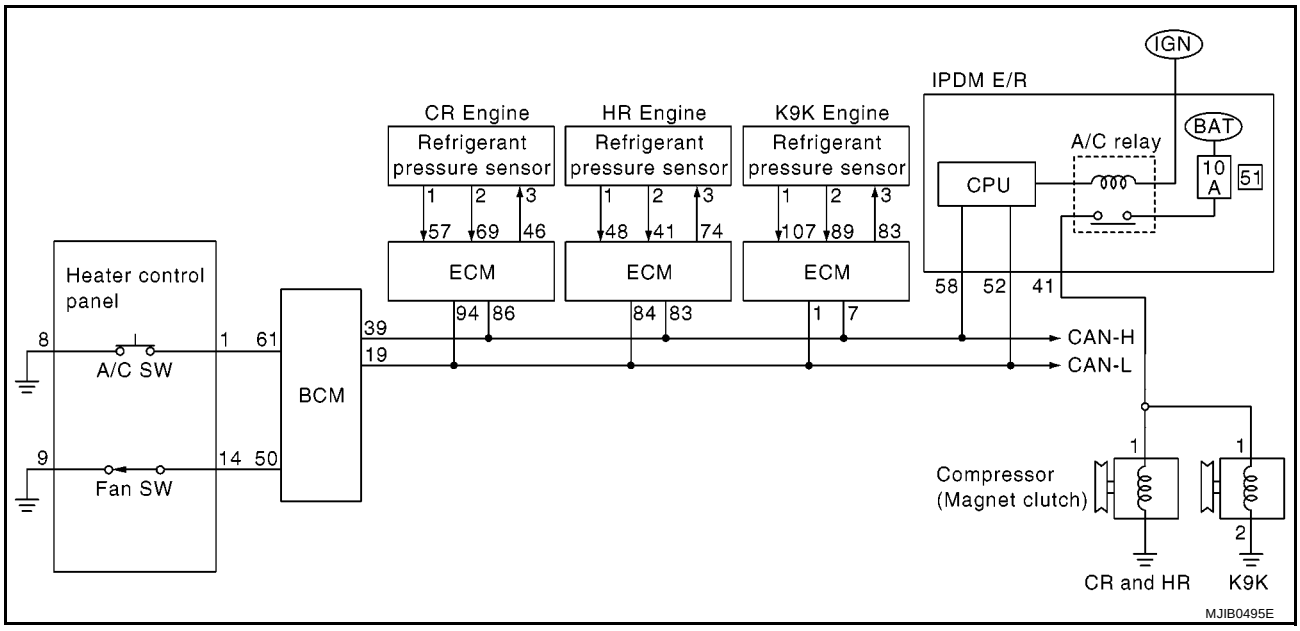
Low Temperature Protection Control

When intake air temperatures are higher than 4°C (39°F), the compressor turns ON. The compressor turns OFF when intake air temperatures are lower than 2°C (36°F).



DIAGNOSTIC PROCEDURE FOR MAGNET CLUTCH

SYMPTOM: Magnet clutch does not engage when A/C switch and fan switch are ON.



1. PERFORM AUTO ACTIVE TEST

Refer to PG-22, "Auto Active Test" .

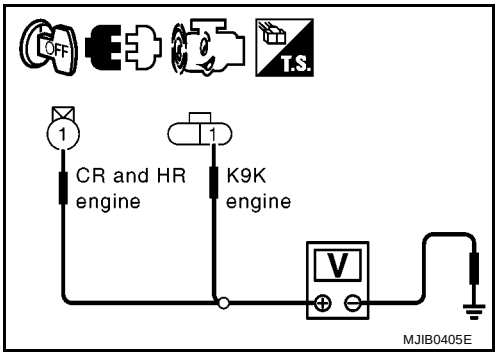
Does the magnet clutch operate?

YES >> ● WITH CONSULT-II
GO TO 6.
● WITHOUT CONSULT-II
GO TO 7.

NO >> GO TO 2.

2. CHECK POWER SUPPLY FOR COMPRESSOR

1. Turn ignition switch OFF.
2. Disconnect compressor connector.
3. Start the engine.
4. Turn fan control dial and A/C switch ON.
5. Check voltage between compressor harness connector and ground.



Terminals				Voltage (Approx.)
(+)			(–)	
Engine	Connector	Terminal	Ground	
CR and HR	Compressor: F28	1		12V
K9K	Compressor: F129			

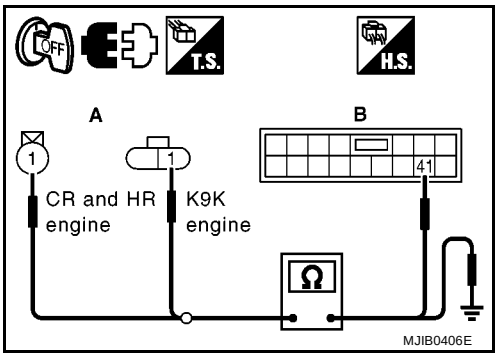
OK or NG

OK >> GO TO 4.
NG >> Check 10A fuse (No. 51, located in the fuse block)

- If fuse is OK, GO TO 3.
- If fuse is NG, replace fuse and GO TO 3.

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

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between compressor harness connector (A) and IPDM E/R harness connector (B).



	A		B		Continuity
Engine	Connector	Terminal	Connector	Terminal	
CR and HR	Compressor: F28	1	IPDM E/R: E7	41	Yes
K9K	Compressor: F129				

4. Check continuity between compressor harness connector (A) and ground.

	A		Ground	Continuity
Engine	Connector	Terminal		
CR and HR	Compressor: F28	1		NO.
K9K	Compressor: F129			

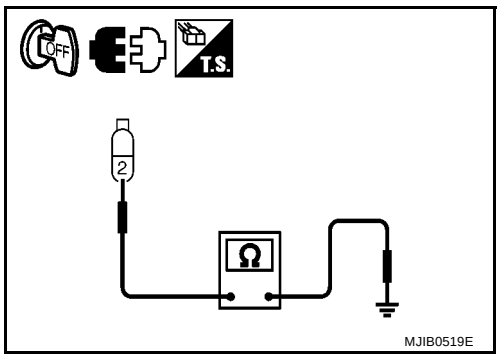
OK or NG

OK >> GO TO 4.
NG >> Repair harness and connector.

4. CHECK COMPRESSOR GROUND CIRCUIT

Check continuity between compressor harness connector and ground.

Connector	Terminal	Ground	Continuity
Compressor: F129	2		Yes



OK or NG

OK >> GO TO 5.
NG >> Repair harness and connector.

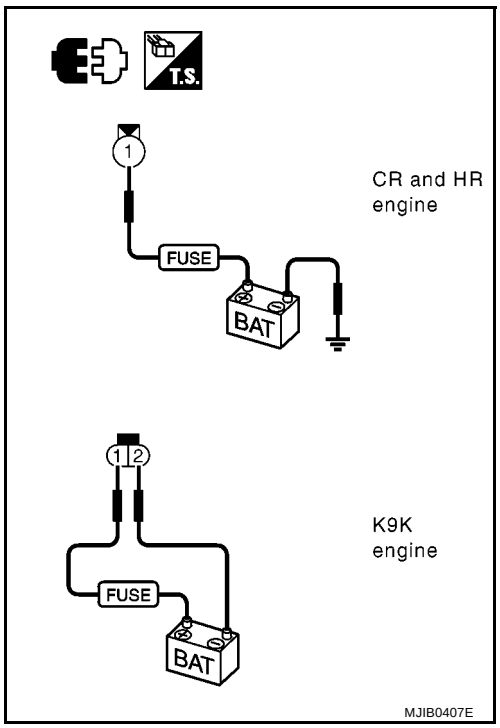
5. CHECK COMPRESSOR

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

OK or NG

OK >> 1. Check harness and connector for open circuit.
2. Repair or replace if necessary.

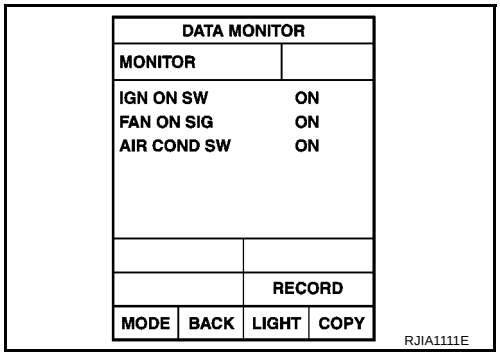
NG >> 1. Replace magnet clutch.
2. Go to operational check. Refer to MTC-35, "CHECKING A/C SWITCH" . Confirm that magnet clutch operation is usual.



6. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

Check compressor ON/OFF signal. Refer to MTC-23, "CONSULT-II Function (BCM)" .

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

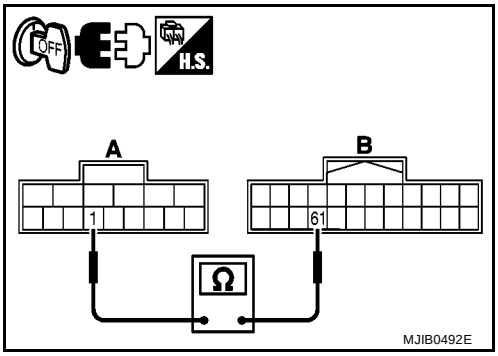


OK or NG

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

7. CHECK CIRCUIT CONTINUITY BETWEEN HEATER CONTROL PANEL AND BCM

1. Turn ignition switch OFF.
2. Disconnect heater control panel and BCM connector.
3. Check continuity between heater control panel harness connector (A) and BCM harness connector (B).



A		B		Continuity
Connector	Terminal	Connector	Terminal	
Heater control panel: M62	1	BCM: M58	61	Yes

OK or NG

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

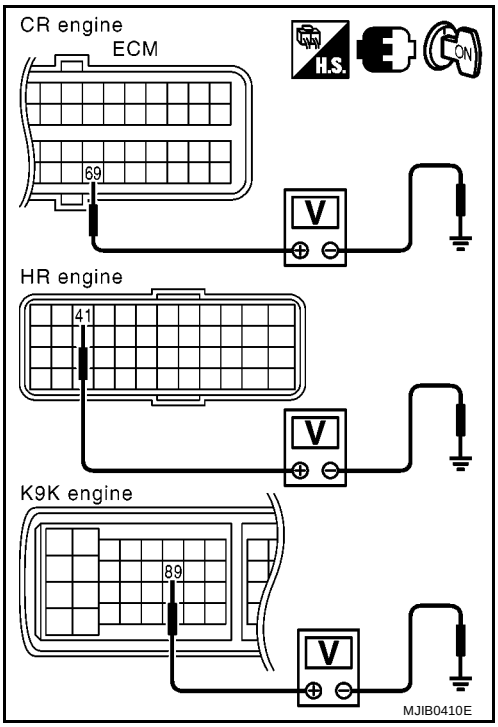
8. CHECK REFRIGERANT PRESSURE SENSOR

WITH CONSULT-II

1. Reconnect heater control panel connector and BCM connector.
2. Start the engine.
3. Check voltage of refrigerant pressure sensor.
   CR (WITH EURO–OBD): Refer to EC-112, "CONSULT-II Reference Value in Data Monitor Mode" .
   CR (WITHOUT EURO–OBD): Refer to EC-527, "CONSULT-II Reference Value in Data Monitor Mode" .
   HR (WITH EURO–OBD): Refer to EC-902, "CONSULT-II Reference Value in Data Monitor" .
   HR (WITHOUT EURO–OBD): Refer to EC-1321, "CONSULT-II Reference Value in Data Monitor" .
   K9K: Refer to EC-1694, "CONSULT-II Reference Value in Data Monitor Mode" .
   *For further information refer to EC-21, "APPLICATION NOTICE" .

WITHOUT CONSULT-II

1. Reconnect heater control panel connector and BCM connector.
2. Start the engine.
3. Check voltage between ECM harness connector and ground.



Engine	Terminals			Condition	Voltage (Approx.)
	(+)		(–)		
	Connector	Terminal			
CR	ECM: F2	69	Ground	A/C switch: ON (Blower motor operates.)	1 - 4V
HR	ECM: F51	41			
K9K	ECM: F134	89			

OK or NG

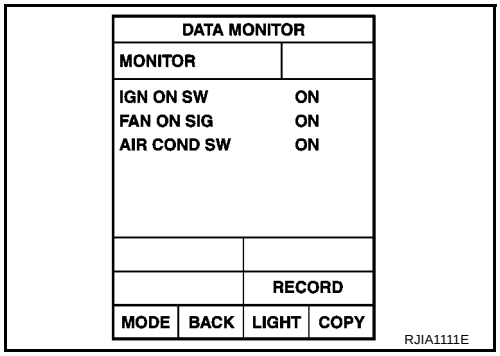
OK >> ● WITH CONSULT-II
GO TO 9.
● WITHOUT CONSULT-II
GO TO 10.

NG >> ● CR (WITH EURO–OBD): Refer to EC-443 ...
● CR (WITHOUT EURO–OBD): Refer to EC-794 .
● HR (WITH EURO–OBD): Refer to EC-1231 .
● HR (WITHOUT EURO–OBD): Refer to EC-1590 .
● K9K: Refer to EC-1811 .

9. CHECK BCM INPUT (FAN ON) SIGNAL

Check FAN ON/OFF signal. Refer to MTC-23, "CONSULT-II Function (BCM)" .

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

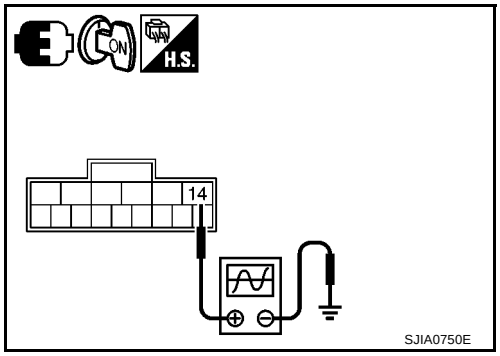


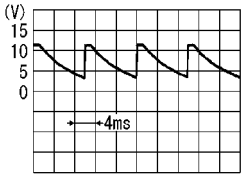
OK or NG

OK >> Stop the engine and GO TO 14.
NG >> GO TO 10.

10. CHECK BCM INPUT (FAN ON) SIGNAL

1. Stop the engine and turn ignition switch ON.
2. Turn fan control dial to 1-speed.
3. Confirm fan on signal between heater control panel harness connector and ground using oscilloscope.



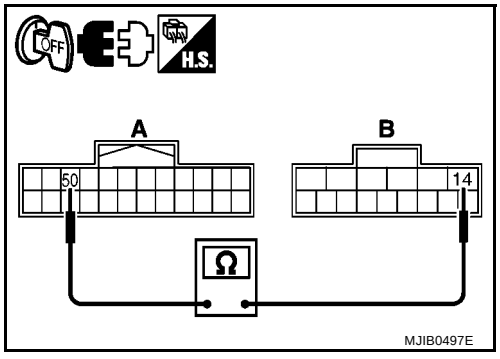
Terminals			Voltage (Approx.)
(+)		(-)	
Connector	Terminal		
Heater control panel: M62	14	Ground	

OK or NG

OK >> Turn ignition switch OFF and disconnect heater control panel connector, GO TO 12.
NG >> GO TO 11.

11. CHECK CIRCUIT CONTINUITY BETWEEN BCM AND HEATER CONTROL PANEL

1. Turn ignition switch OFF.
2. Disconnect heater control panel connector and BCM connector.
3. Check continuity between BCM harness connector (A) and heater control panel harness connector (B).



A		B		Continuity
Connector	Terminal	Connector	Terminal	
BCM: M58	50	Heater control panel: M62	14	Yes

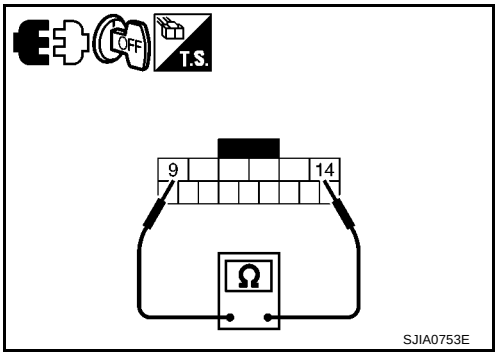
OK or NG

OK >> GO TO 12.
NG >> Repair harness or connector.

12. CHECK FAN SWITCH CIRCUIT

1. Turn fan control dial to the OFF position.
2. Check continuity between heater control panel connector terminal 9 and 14.

Connector	Terminals		Continuity
Heater control panel: M62	9	14	Yes



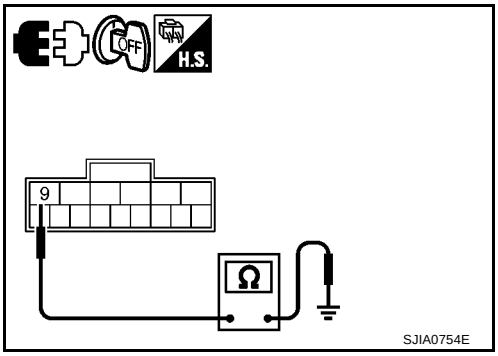
OK or NG

OK >> GO TO 13.
NG >> Replace heater control panel.

13. CHECK HEATER CONTROL PANEL GROUND CIRCUIT

Check continuity between heater control panel harness connector and ground.

Connector	Terminal	Ground	Continuity
Heater control panel: M62	9		Yes

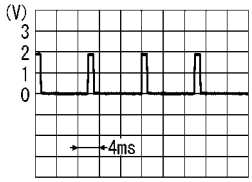


OK or NG

OK >> GO TO 14.
NG >> Repair harness or connector.

14. CHECK BCM INPUT (COMPRESSOR ON) SIGNAL

1. Reconnect BCM connector and heater control panel connector.
2. Turn ignition switch ON.
3. Confirm compressor on signal between heater control panel harness connector and ground using oscilloscope.

Terminals			Voltage (Approx.)
(+)		(-)	
Connector	Terminal		
Heater control panel: M62	1	Ground	

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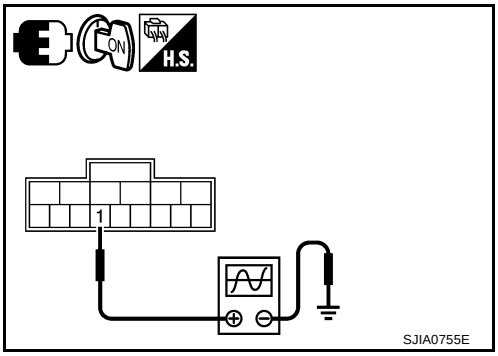
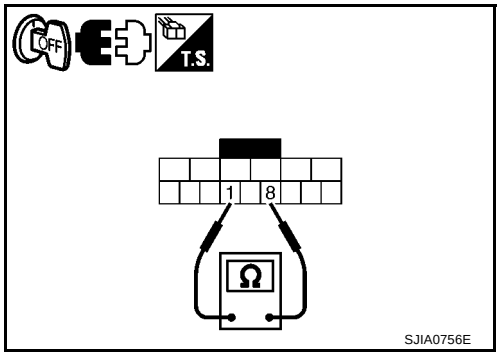


OK or NG

OK >> GO TO 15.
NG >> GO TO 17.

15. CHECK A/C SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect heater control panel connector.
3. Pressing A/C switch.
4. Check continuity between heater control panel connector terminal 1 and 8.



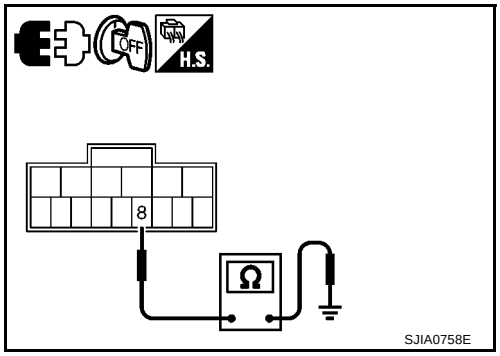
Connector	Terminals		Condition	Continuity
Heater control panel: M62	1	8	Pressing A/C switch.	Yes

OK or NG

OK >> GO TO 16.
NG >> Replace heater control panel.

16. CHECK HEATER CONTROL PANEL GROUND CIRCUIT

Check continuity between heater control panel harness connector and ground.



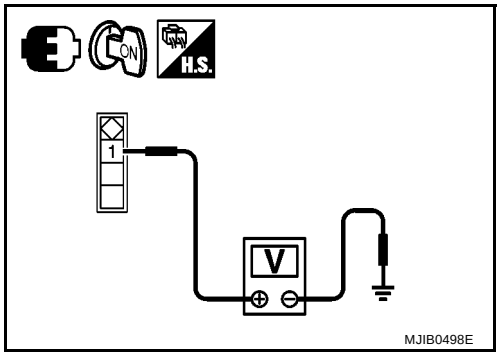
Connector	Terminal		Continuity
Heater control panel: M62	8	Ground	Yes

OK or NG

OK >> GO TO 19.
NG >> Repair harness or connector.

17. CHECK POWER SUPPLY THERMO CONTROL AMP.

1. Turn ignition switch ON.
2. Check voltage thermo control amp. harness connector and ground.



Terminals			Voltage (Approx.)
(+)		(–)	
Connector	Terminal	Ground	
Thermo control amp.: M44	1		Battery voltage

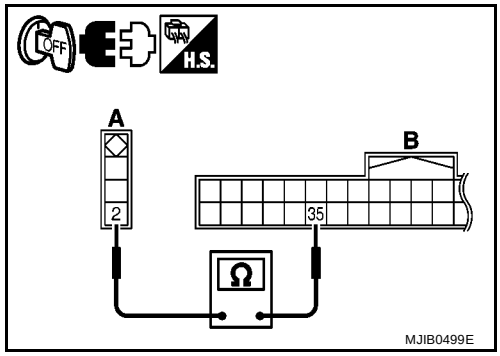
OK or NG

OK >> GO TO 18.
NG >> Check power supply circuit and 10A fuse (No. 19, located in the fuse block). Refer to PG-95, "FUSE BLOCK" .

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

18. CHECK CIRCUIT CONTINUITY THERMO CONTROL AMP. AND BCM

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity thermo control amp. harness connector (A) and BCM harness connector (B).



A		B		Continuity
Connector	Terminal	Connector	Terminal	
Thermo control amp.: M44	2	BCM: M57	35	Yes

OK or NG

OK >> GO TO 19.
NG >> Repair harness or connector.

19. CHECK CAN COMMUNICATION

Check CAN communication. Refer to BCS-17, "CAN Communication Inspection With CONSULT-II (Self-Diagnosis)" .

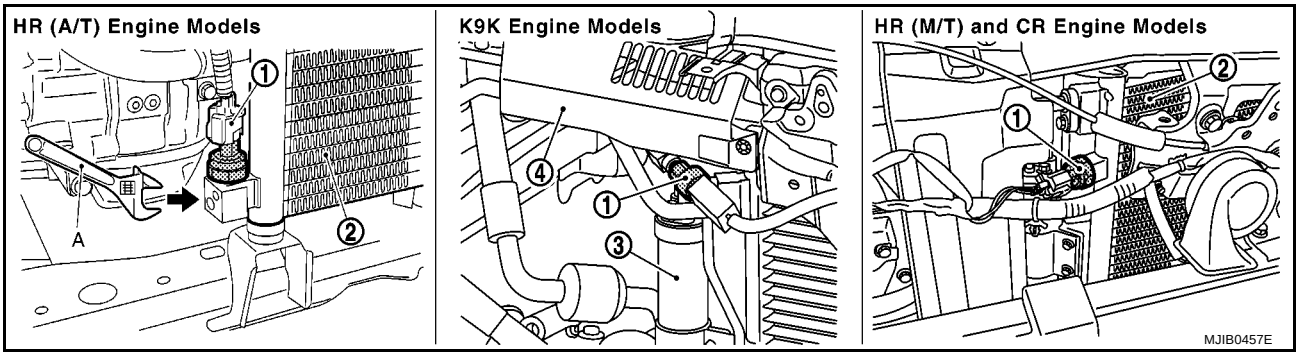
- BCM – ECM
- ECM – IPDM E/R

OK or NG

OK >> Replace BCM.
NG >> Repair or replace malfunction part(s).

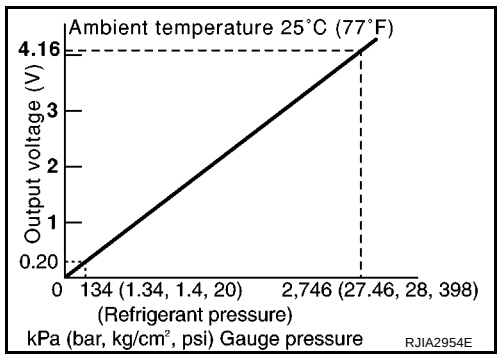
COMPONENT INSPECTION

Refrigerant Pressure Sensor



1. Refrigerant pressure sensor
2. Condenser
3. Liquid tank
4. Air guide

The refrigerant pressure sensor (1) is attached to the condenser.
Make sure that the A/C refrigerant pressure and the sensor output voltage are within the specified range as shown in the A/C operating condition figure.
CR (WITH EURO–OBD): Refer to EC-443 .
CR (WITHOUT EURO–OBD): Refer to EC-794 .
HR (WITH EURO–OBD): Refer to EC-1231 .
HR (WITHOUT EURO–OBD): Refer to EC-1590 .
K9K: Refer to EC-1811 .
*For further information refer to EC-21, "APPLICATION NOTICE" .

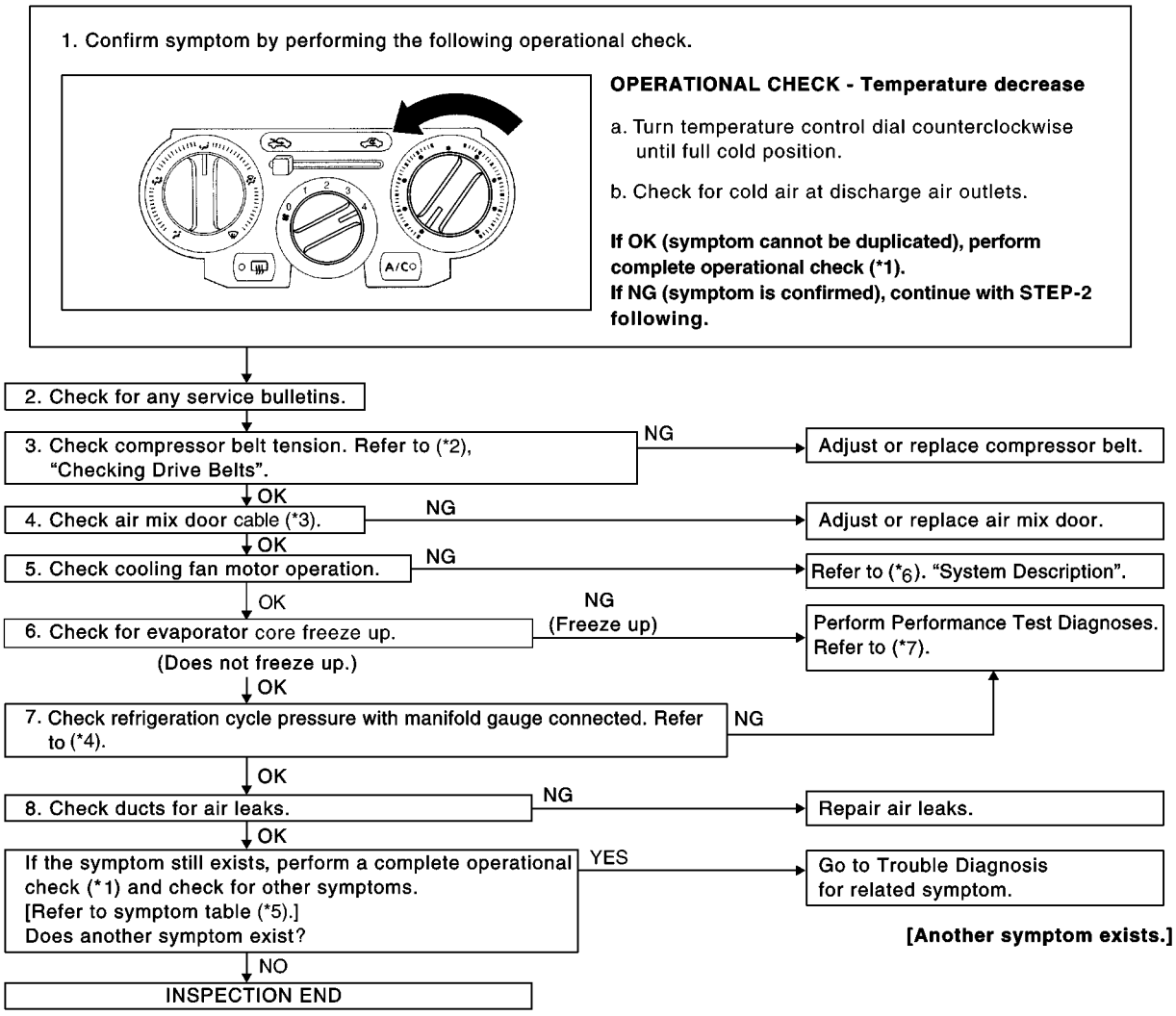


Insufficient Cooling

BJS000DR

SYMPTOM: Insufficient cooling

INSPECTION FLOW

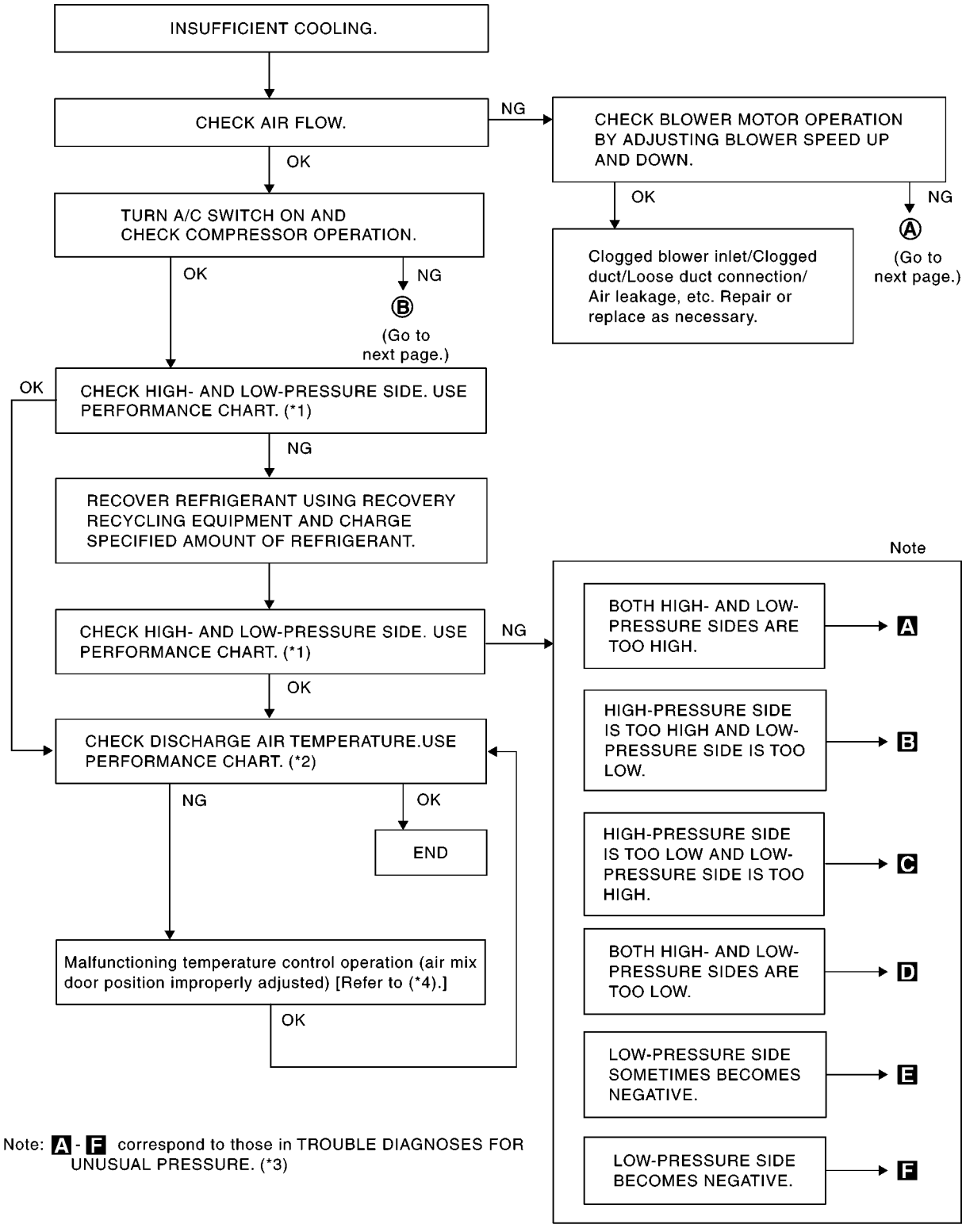


SJIA0766E

*1	MTC-34, "Operational Check"	*2	CR: EM-14, "Checking drive Belts" HR: EM-114, "Checking Drive Belts" K9K: EM-242, "Checking Drive Belts"	*3	MTC-71, "Air Mix Door Cable Adjustment"
*4	MTC-55, "Test Reading"	*5	MTC-24, "SYMPTOM TABLE"	*6	CR (WITH EURO–OBD): EC-345 CR (WITHOUT EUROOBD): EC-662 HR (WITH EUROOBD): EC-1130 HR (WITHOUT EUROOBD): EC-1451 K9K: EC-1864
*7	MTC-53, "PERFORMANCE TEST DIAGNOSIS"				

*For further information refer to EC-21, "APPLICATION NOTICE" .

PERFORMANCE TEST DIAGNOSIS

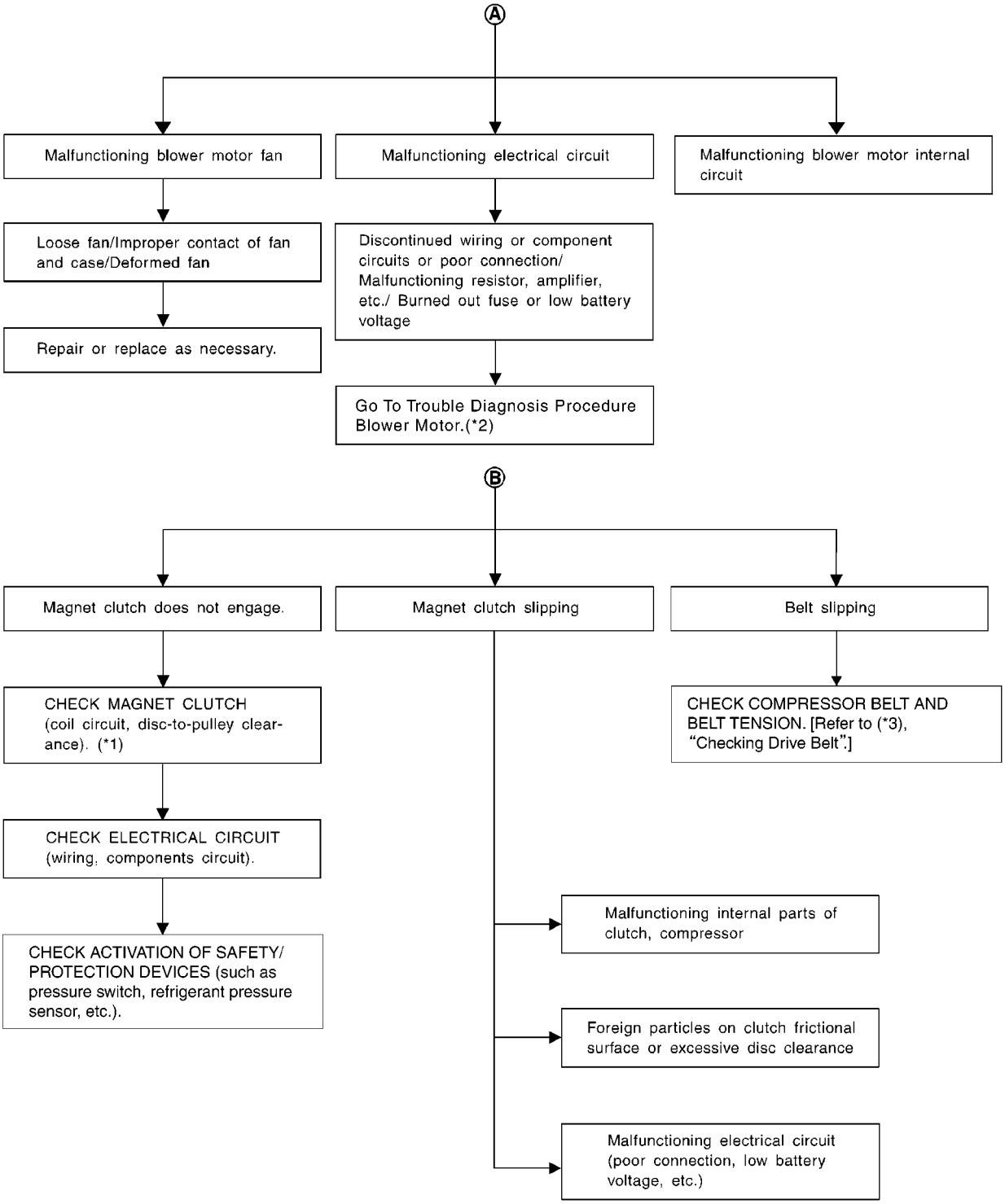


Note: A - F correspond to those in TROUBLE DIAGNOSES FOR UNUSUAL PRESSURE. (*3)

RJIA1601E

*1 MTC-55, "PERFORMANCE CHART" *2 MTC-55, "PERFORMANCE CHART" *3 MTC-56, "TROUBLE DIAGNOSIS FOR UNUSUAL PRESSURE"

*4 MTC-71, "Air Mix Door Cable Adjustment"



RJIA3107E

*1 MTC-87, "CHECK DISC TO PULLEY CLEARANCE"

*2 MTC-39, "Blower Motor Circuit"

*3 CR: EM-14, "Checking drive Belts"
HR: EM-114, "Checking Drive Belts"
K9K: EM-242, "Checking Drive Belts"

PERFORMANCE CHART

Test Condition

Testing must be performed as follows:

Vehicle condition	Indoors or in the shade (in a well-ventilated place)
Doors	Closed
Door window	Open
Hood	Open
TEMP.	Max. COLD
Mode control dial	(Ventilation) set
Intake door lever	(Recirculation) set
Fan (blower) speed	Max. speed set
Engine speed	Idle speed
Operate the air conditioning system for 10 minutes before taking measurements.	

Test Reading

Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	20 (68)	7.2 - 9.1 (45 - 48)
	25 (77)	11.4 - 13.8 (53 - 57)
	30 (86)	15.5 - 18.4 (60 - 65)
	35 (95)	20.3 - 23.7 (69 - 75)
60 - 70	20 (68)	9.1 - 10.9 (48 - 52)
	25 (77)	13.8 - 16.2 (57 - 61)
	30 (86)	18.4 - 21.3 (65 - 70)
	35 (95)	23.7 - 27.1 (75 - 81)

Ambient Air Temperature-to-operating Pressure Table

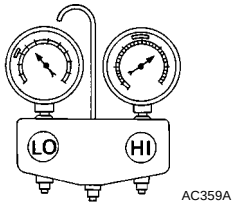
Ambient air		High-pressure (Discharge side) kPa (bar, kg/cm^2 , psi)	Low-pressure (Suction side) kPa (bar, kg/cm^2 , psi)
Relative humidity %	Air temperature °C (°F)		
50 - 70	20 (68)	843 - 1,036 *1 (11.08 - 13.63, 8.6 - 10.6, 122 - 150)	159.0 - 194.0 (1.59 - 1.94, 1.62 - 1.98, 23.1 - 28.1)
	25 (77)	1,094 - 1,338 *1 (10.94 - 13.38, 11.2 - 13.6, 159 - 194)	196.3 - 240.0 (1.96 - 2.40, 2.00 - 2.45, 28.5 - 34.8)
	30 (86)	1,298 - 1,590 *1 (12.98 - 15.90, 13.2 - 16.2, 188 - 231)	248.0 - 302.7 (2.48 - 3.03, 2.53 - 3.09, 36.0 - 43.9)
	35 (95)	1,383 - 1,688 *2 (13.83 - 16.88, 14.1 - 17.2, 201 - 245)	308.8 - 377.4 (3.09 - 3.77, 3.15 - 3.85, 44.8 - 54.7)
	40 (104)	1,628 - 1,988 *2 (16.28 - 19.88, 16.6 - 20.3, 236 - 288)	377.4 - 461.2 (3.77 - 4.61, 3.85 - 4.70, 54.7 - 66.8)

*1: In the motor fan low-speed control
*2: In the motor fan high-speed control

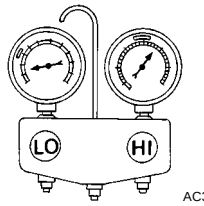
TROUBLE DIAGNOSIS FOR UNUSUAL PRESSURE

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

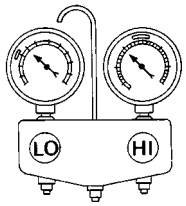
Both High- and Low-pressure Sides are Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
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 if necessary.
	● Low-pressure pipe is not cold. ● When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (1.96 bar, 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. ↓ Improper expansion valve adjustment.	Replace expansion valve.

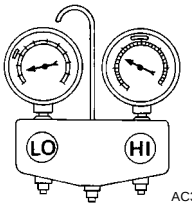
High-pressure Side is Too High and Low-pressure Side is Too Low

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.

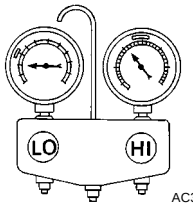
High-pressure Side is Too Low and Low-pressure Side is Too High

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.

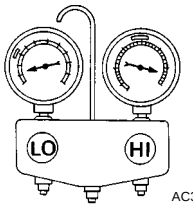
Both High- and Low-pressure Sides are Too Low

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 liquid tank outlet and inlet. Outlet temperature is extremely low. ● Liquid tank inlet and expansion valve are frosted.	Liquid tank inside is slightly clogged.	● Replace liquid tank. ● 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 liquid tank 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-93, "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 expansion valve. 3. Outlet and inlet may be clogged.	● Remove foreign particles by using compressed air. ● Replace expansion valve. ● 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 thermo control amp. Refer to MTC-43, "Magnet Clutch Circuit" . ● Replace compressor. ● Repair evaporator fins. ● Replace evaporator. ● Refer to MTC-39, "Blower Motor Circuit" .

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 liquid tank.

Low-pressure Side Becomes Negative

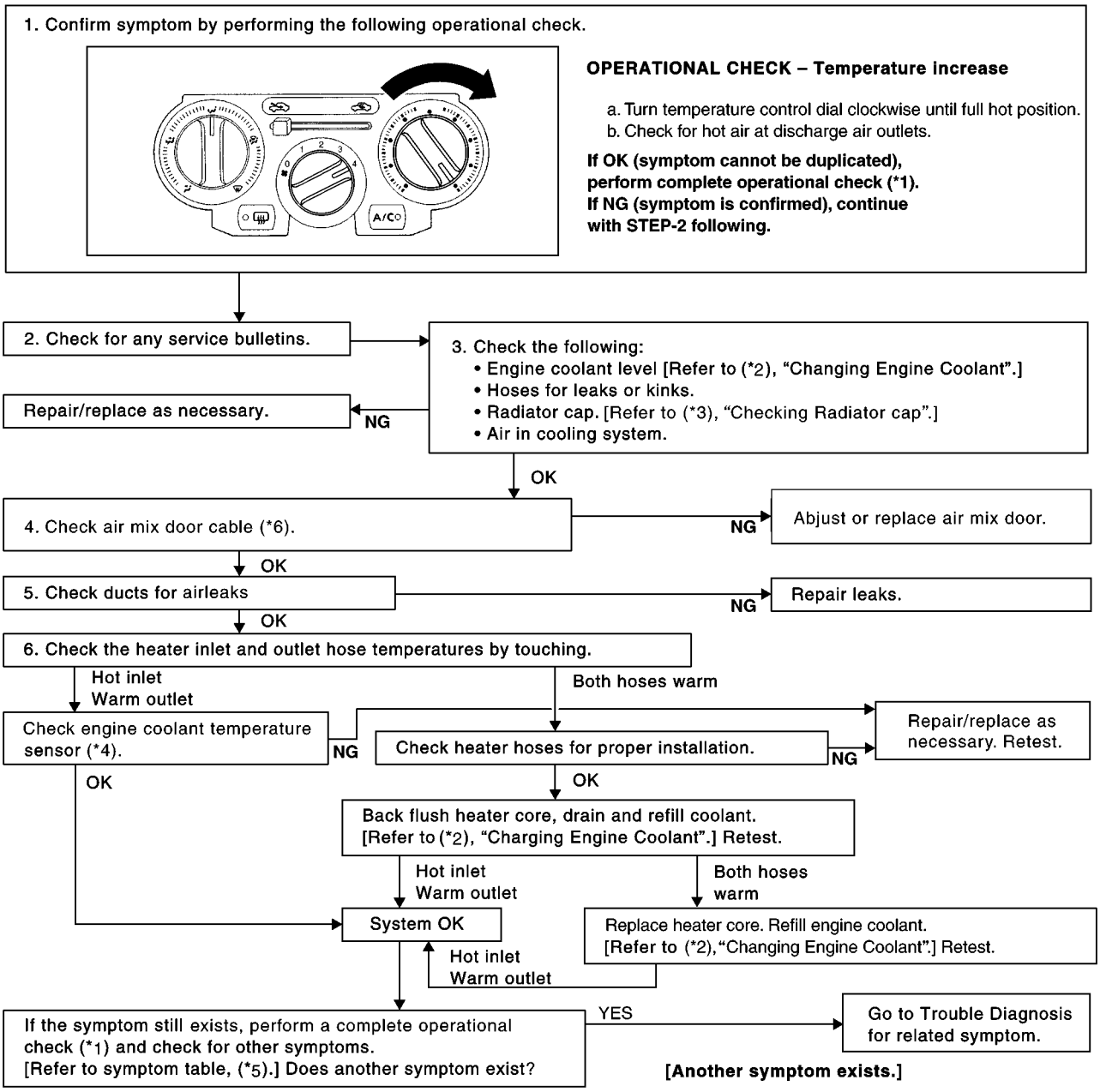
Gauge indication	Refrigerant cycle	Probable cause	Corrective action
Low-pressure side becomes negative.  AC362A	Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.	High-pressure side is closed and refrigerant does not flow. ↓ Expansion valve or liquid tank is frosted.	Leave the system at rest until no frost is present. Start it again to check whether or not the malfunction 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 malfunction, replace expansion valve. ● Replace liquid tank. ● Check lubricant for contamination.

Insufficient Heating

BJS000DS

SYMPTOM: Insufficient heating

INSPECTION FLOW



SJIA0767E

*1 MTC-34, "Operational Check"

*2 CR: CO-9, "Changing Engine coolant"
HR: CO-28, "Changing Engine coolant"
K9K: CO-49, "Changing Engine Coolant"

*3 CR: CO-15 or CO-16
HR: CO-34 or CO-35
K9K: CO-53

*4 CR (WITH EURO–OBD): EC-166
CR (WITHOUT EURO–OBD): EC-565
HR (WITH EURO–OBD): EC-947
HR: (WITHOUT EURO–OBD): EC-1361
K9K: EC-1727

*5 MTC-24, "SYMPTOM TABLE"

*6 MTC-71, "Air Mix Door Cable Adjustment"

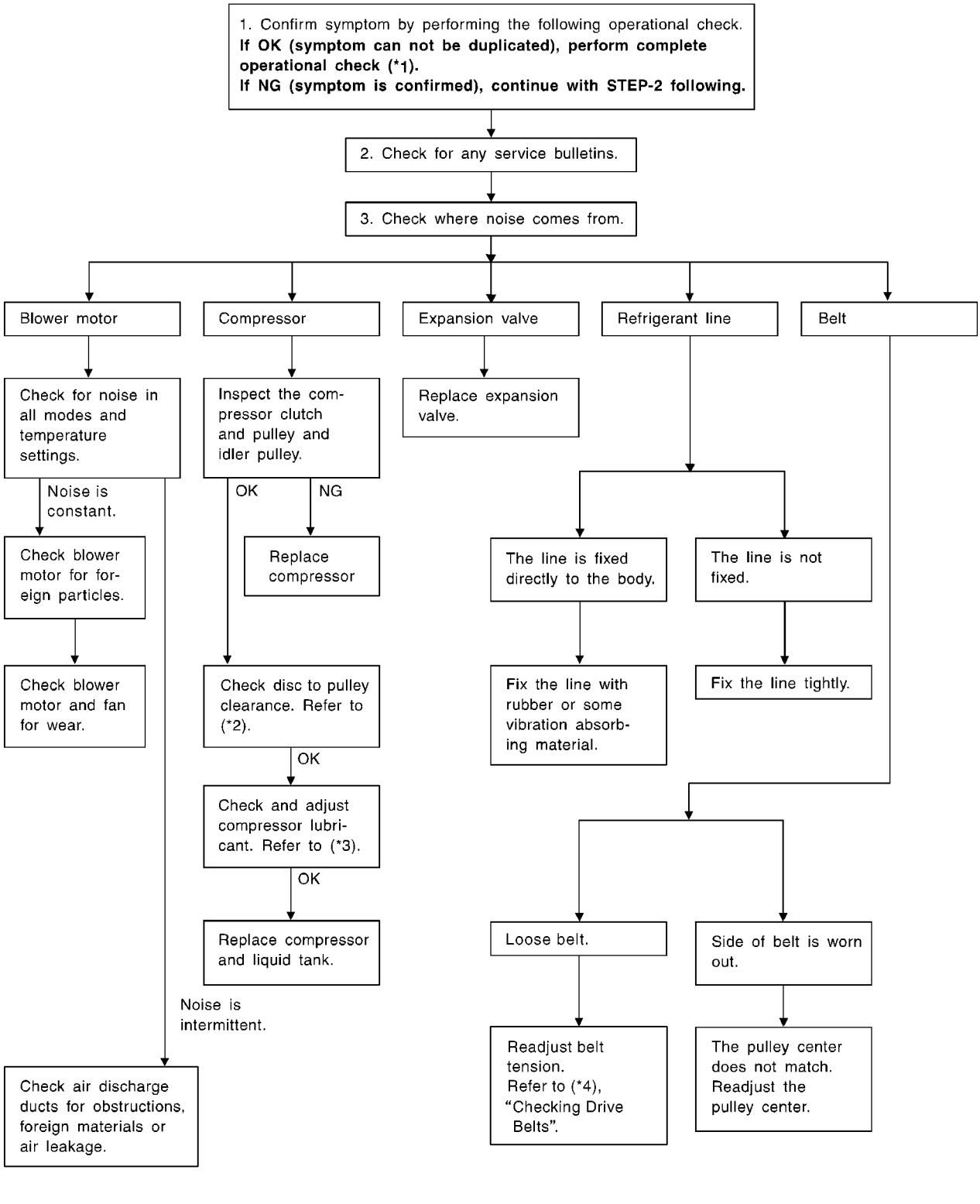
*For further information refer to EC-21, "APPLICATION NOTICE" .

Noise

BJS000DT

SYMPTOM: Noise

INSPECTION FLOW



SJIA0843E

*1 MTC-34, "Operational Check"

*2 MTC-87, "CHECK DISC TO PULLEY CLEARANCE"

*3 MTC-17, "Maintenance of Lubricant Quantity in Compressor"

*4 CR: EM-14, "Checking drive Belts"
HR: EM-114, "Checking Drive Belts"
K9K: EM-242, "Checking Drive Belts"

CONTROLLER

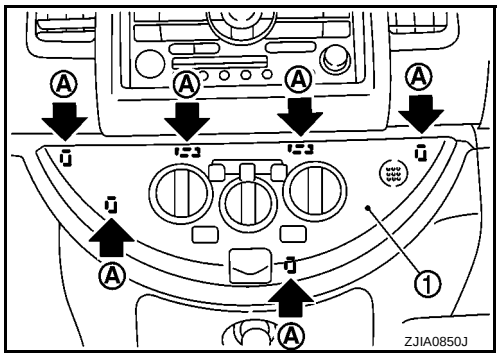
PFP:28074

Removal and Installation

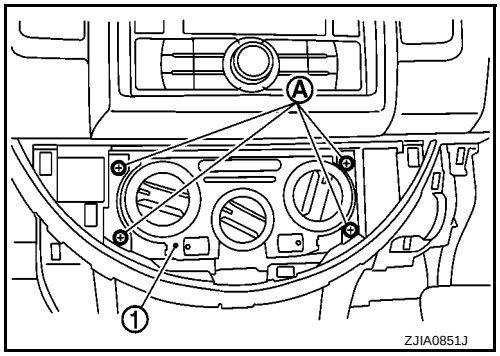
BJS000E2

REMOVAL

1. Remove intake door lever knob. Refer to MTC-63, "Disassembly and Assembly" .
2. Remove controller mounting clips (A) using remover tool, and then remove controller finisher (1).
3. Disconnect front passenger air bag OFF indicator harness connector.



4. Remove mounting screws, and then pull out controller.



5. Remove instrument panel & pad. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
6. Remove air mix door cable, mode door cable and intake door cable from A/C unit assembly.
7. Disconnect connector, and then remove controller.

INSTALLATION

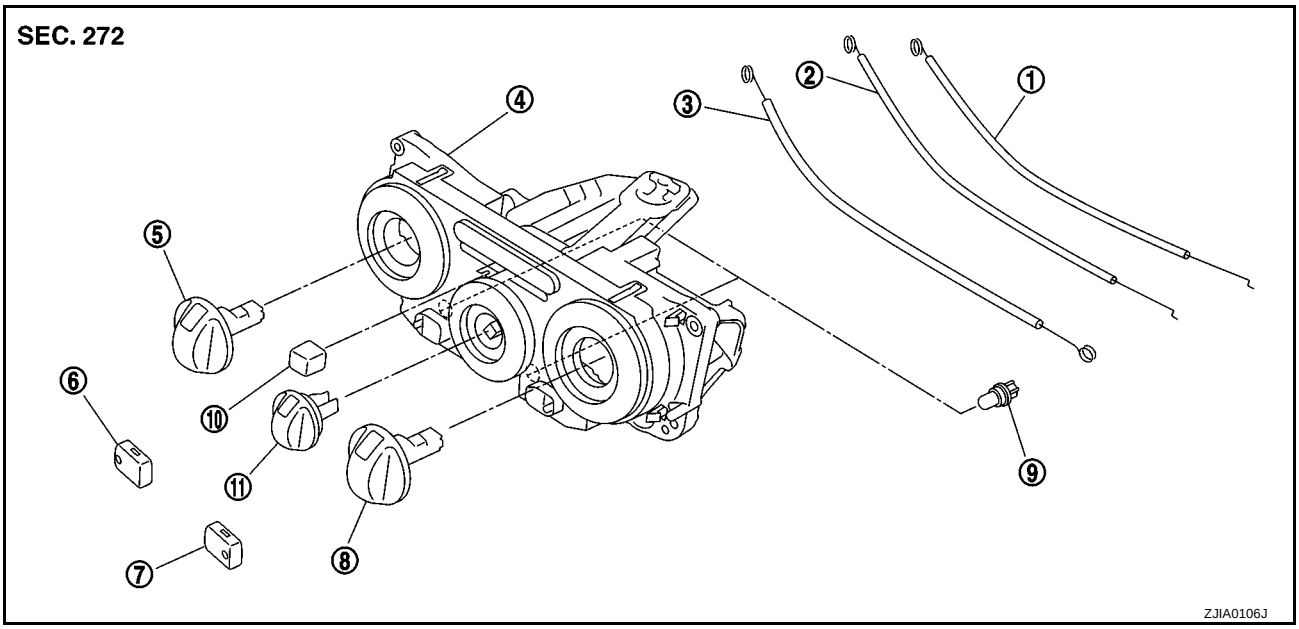
Installation is basically the reverse order of removal.

CAUTION:

Adjust the door cables during installation. Refer to MTC-70, "Intake Door Cable Adjustment" , MTC-71, "Air Mix Door Cable Adjustment" and MTC-72, "Mode Door Cable Adjustment" .

Disassembly and Assembly

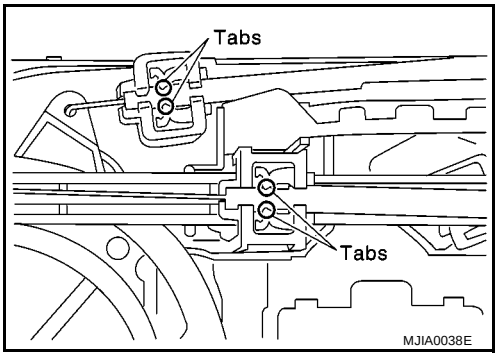
BJS000E3



1. Air mix door cable
2. Intake door cable
3. Mode door cable
4. A/C controller assembly
5. Mode control dial
6. Rear DEF button
7. A/C button
8. Temperature control dial
9. Illumination bulb
10. Intake door lever knob
11. Fan control dial

CAUTION:

Install inner cable of each door cable to the corresponding lever, as shown in the figure. Press outer cable until it hooks on the tabs and becomes fixed.



THERMO CONTROL AMPLIFIER

PFP:27675

Removal and Installation

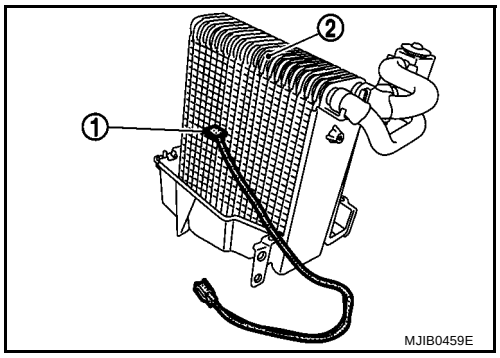
BJS000E4

REMOVAL

1. Remove evaporator. Refer to MTC-91, "Removal and Installation for Evaporator" .

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

2. Remove thermo control amp. (1) from evaporator (2).



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- **Replace O-rings for A/C piping with new ones, and then apply compressor oil to it when installing it.**
- **Mark the mounting position of thermo control amp.**
- **When recharging refrigerant, check for leaks.**

A/C UNIT ASSEMBLY

PFP:27110

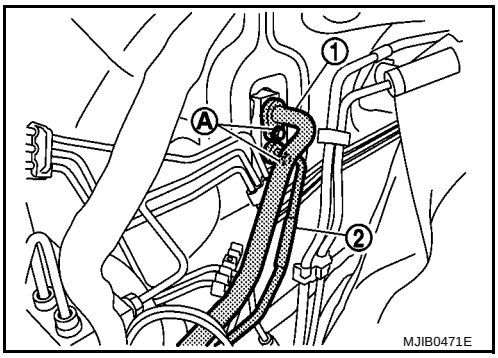
Removal and Installation

BJS000E5

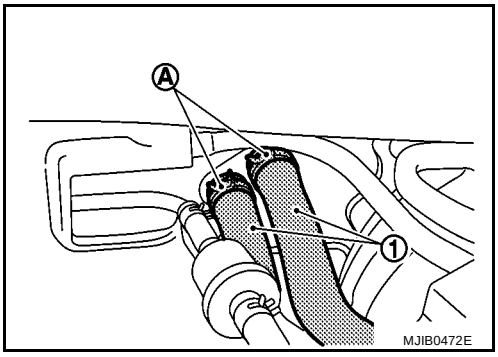
REMOVAL

1. Use a refrigerant collecting equipment (for HFC-134a) to discharge refrigerant.
2. Drain coolant from cooling system.
   CR: Refer to CO-9, "Changing Engine coolant" .
   HR: Refer to CO-28, "Changing Engine coolant" .
   K9K: Refer to CO-49, "Changing Engine Coolant" .
3. Remove cowl top cover. Refer to EI-12, "Removal and Installation" .
4. Remove lower dash insulator.
5. Remove mounting bolt (A), and then disconnect low-pressure flexible hose (1) and high-pressure pipe (2) from evaporator.

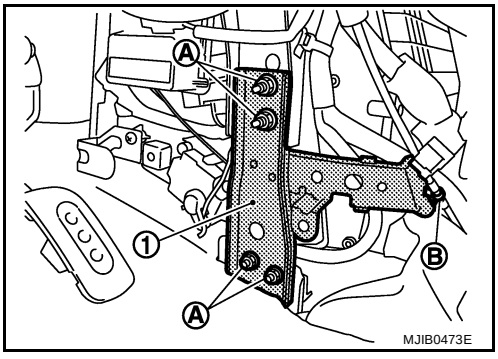
   CAUTION:
   Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.



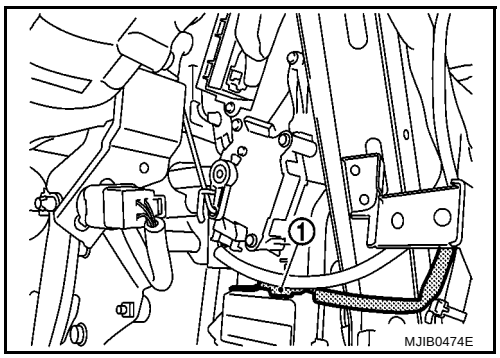
6. Remove clamps (A), and then disconnect heater hoses (1) from heater core.



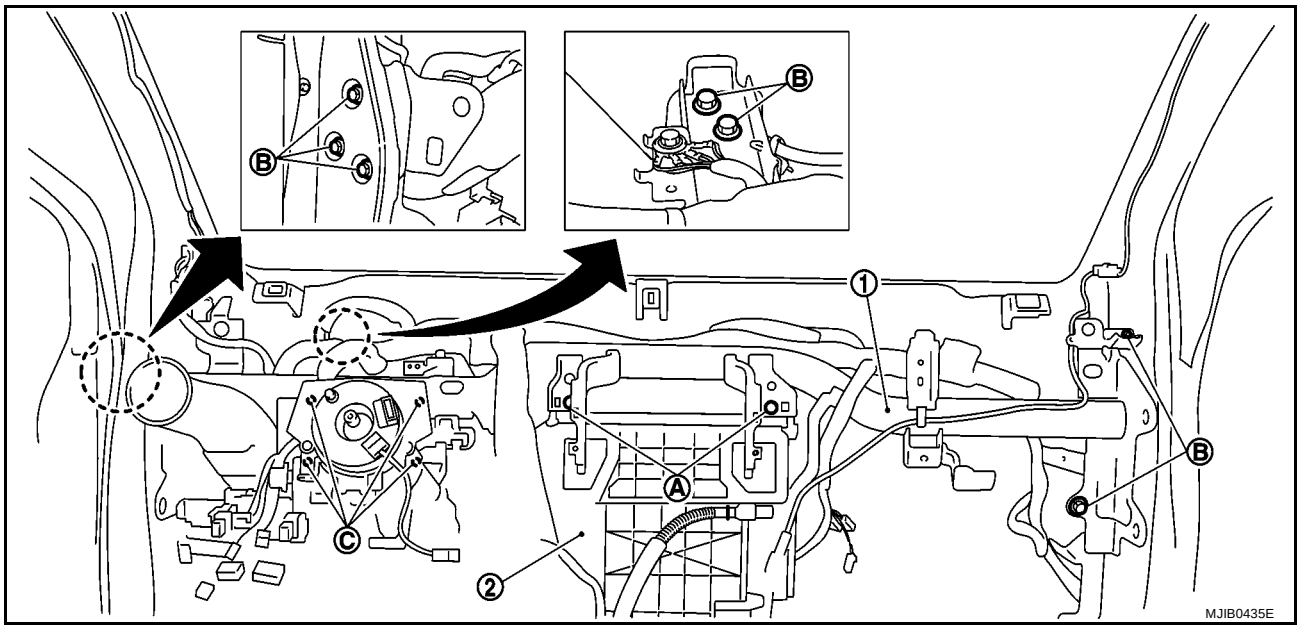
7. Remove console box assembly. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
8. Remove mounting nuts (A) and harness clamps (B), and then remove instrument stay (1).



9. Disconnect thermo control amp. connector (1).



10. Remove instrument panel & pad. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
11. Remove side ventilator ducts. Refer to MTC-78, "Removal of Side Ventilator Ducts" .
12. Remove center ventilator ducts. Refer to MTC-78, "Removal of Center Ventilator Ducts" .
13. Remove A/C unit assembly mounting bolts (A), steering member mounting bolts (B), steering column mounting nuts (C) and harness clips.



14. Remove steering member, and then remove A/C unit assembly.

INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

- **Replace O-rings for A/C piping with new ones, and then apply compressor oil to it when installing it.**
- **When recharging refrigerant, check for leaks.**

NOTE:

- When filling radiator with coolant.
  CR: Refer to CO-9, "Changing Engine coolant" .
  HR: Refer to CO-28, "Changing Engine coolant" .
  K9K: Refer to CO-49, "Changing Engine Coolant" .
- Recharge the refrigerant.

A/C unit assembly mounting bolt

Tightening torque : 6.9 N·m (0.7 kg-m, 61 in-lb)

Steering member mounting bolt

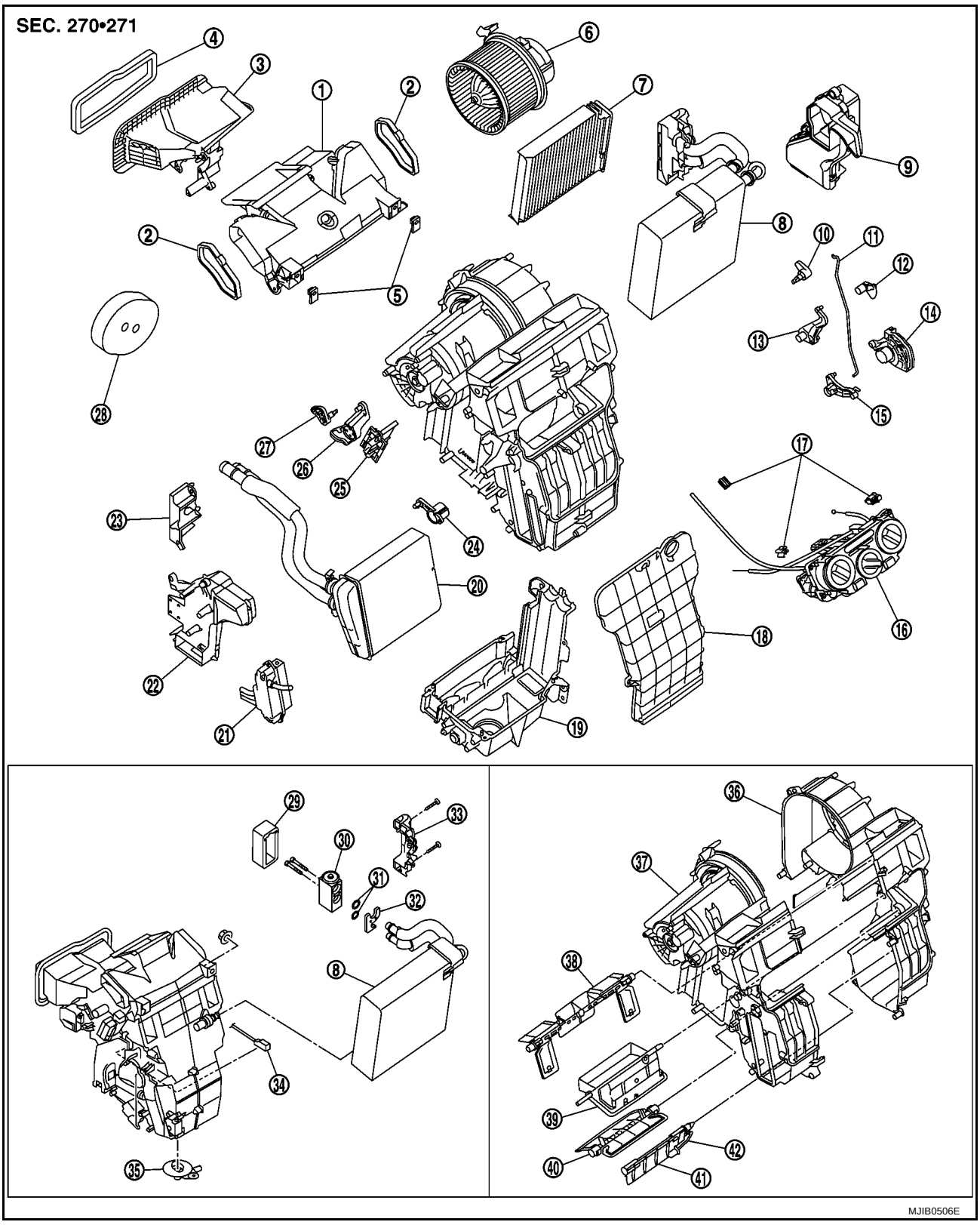
Tightening torque : 12 N·m (1.25 kg-m, 9 ft-lb)

Steering column mounting nut

Tightening torque : 12 N·m (1.25 kg-m, 9 ft-lb)

Disassembly and Assembly

BJS000E6



1. Center defroster duct
2. Seal
3. Intake case
4. Insulator
5. Nut
6. Blower unit
7. Air conditioner filter
8. Evaporator assembly
9. Foot duct assembly (RH)

10. Ventilator-defroster door lever
11. Rod
12. Foot door lever
13. Air mix door link
14. Main link
15. Foot door link
16. A/C controller assembly
17. Clip
18. Heater cover
19. Lower blower case
20. Heater core assembly
21. PTC heater
22. Foot duct assembly (LH)
23. Heater hose cover
24. Air mix door lever
25. Blower fan resistor
26. Intake door link
27. Intake door lever
28. Heater pipe packing
29. Cover
30. Expansion valve assembly
31. O-ring
32. Evaporator valve block
33. Expansion valve cover
34. Thermal control amplifier
35. Drain hose
36. Blower case (RH)
37. Blower case (LH)
38. Ventilator-defroster door
39. Air mix door 1
40. Air mix door 2
41. Foot duct
42. Foot door link

BLOWER MOTOR

PFP:27226

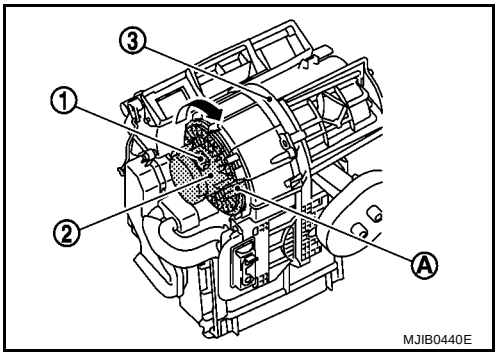
Removal and Installation

BJS000E7

REMOVAL

1. Remove instrument panel & pad. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove side ventilator duct (right). Refer to MTC-78, "Removal of Side Ventilator Ducts" .
3. Disconnect blower motor connector (1).
4. Push flange holding hook (A), and then remove blower motor (2) from A/C unit assembly (3).

CAUTION:
When blower fan and blower motor are assembled, the balance is adjusted, so do not replace the individual parts.



INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:
Correctly install blower motor flange holding hook in A/C unit assembly.

INTAKE DOOR

PFP:27245

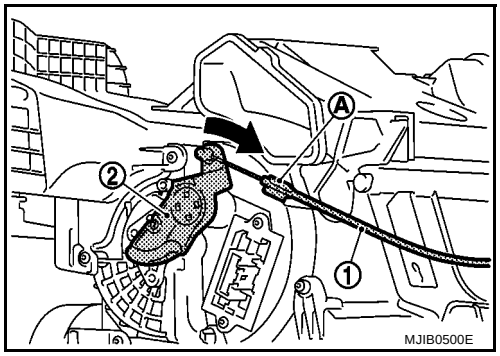
Intake Door Cable Adjustment

BJS000E8

1. Remove instrument lower finisher. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove outer cable of intake door cable (1) from clamp (A).
3. Set intake door lever to REC position.
4. Push intake door link (2) in the direction shown by the arrow, and then carefully pulling outer cable to controller side, and install clamp (A).
5. Operate intake door lever to insure that inner cable moves smoothly.

CAUTION:

When clamping the outer cable, do not move the inner cable.



AIR MIX DOOR

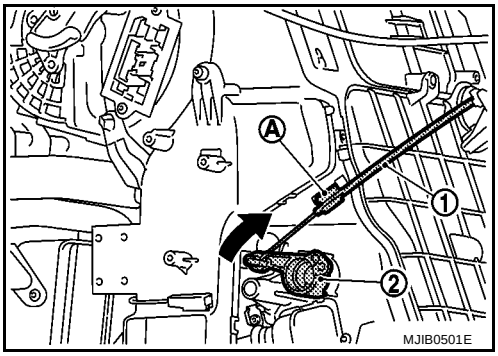
PFP:27180

Air Mix Door Cable Adjustment

BJS000E9

1. Remove steering member. Refer to MTC-65, "A/C UNIT ASSEMBLY" .
2. Remove outer cable of air mix door cable (1) from clamp (A).
3. Set temperature control dial to full cold position.
4. Push air mix door lever (2) in the direction shown by arrow, and then carefully pull outer cable toward controller side, and install clamp (A).
5. Operate temperature control dial to insure that inner cable moves smoothly.

CAUTION:
When clamping the outer cable, do not move the inner cable.



MODE DOOR

PFP:27181

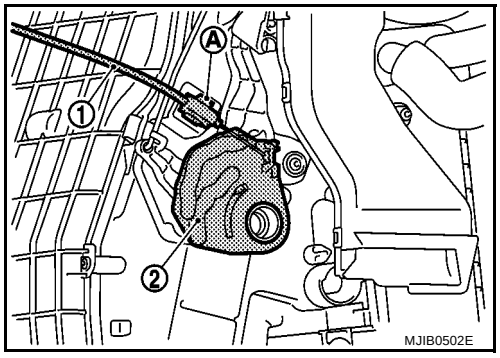
Mode Door Cable Adjustment

BJS000EA

1. Remove glove box assembly and instrument lower cover (RH). Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove outer cable of mode door cable (1) from clamp (A).
3. Set mode control dial to VENT position.
4. Push main link (2) in the direction shown by the arrow, and then carefully pull outer cable to controller side, and install clamp (A).
5. Operate mode control dial to insure that inner cable moves smoothly.

CAUTION:

When clamping the outer cable, do not move the inner cable.



BLOWER FAN RESISTOR

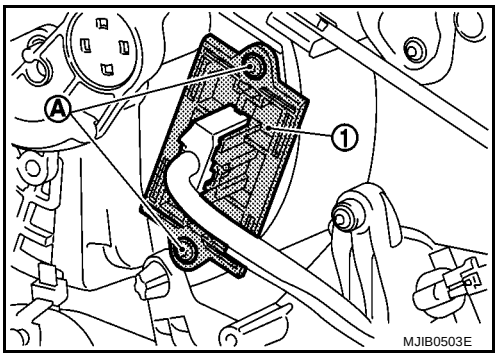
PFP:27150

Removal and Installation

BJS000EB

REMOVAL

1. Remove instrument panel & pad. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Disconnect blower fan resistor connector.
3. Remove mounting screws (A), and then remove blower fan resistor (1).



INSTALLATION

Installation is basically the reverse order of removal.

HEATER CORE

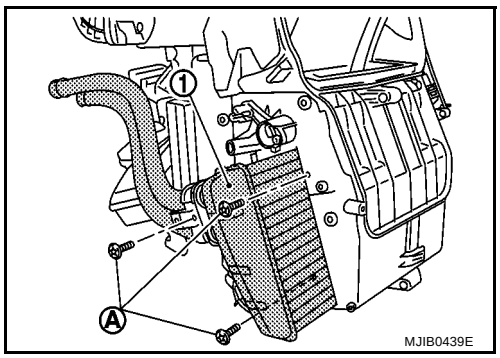
PFP:27140

Removal and Installation

BJS000EC

REMOVAL

1. Remove A/C unit assembly. Refer to MTC-65, "A/C UNIT ASSEMBLY" .
2. Remove foot duct (left). Refer to MTC-78, "Removal of Foot Ducts" .
3. Remove mounting screws (A).
4. Slide heater core (1) to leftward.



INSTALLATION

Installation is basically the reverse order of removal.

AIR CONDITIONER FILTER

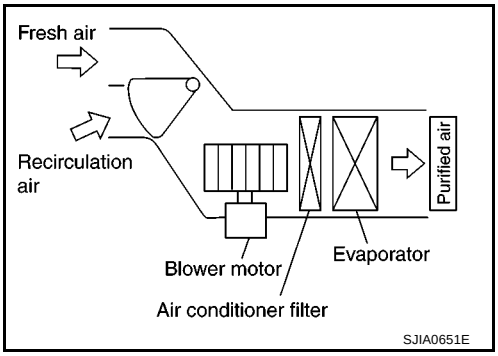
PFP:27277

Removal and Installation

BJS000ED

FUNCTION

Air inside passenger compartment is kept clean at either recirculation or fresh mode by installing air conditioner filter into A/C unit assembly.

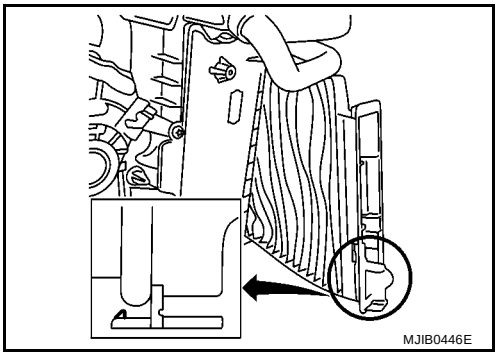


REPLACEMENT TIMING

Replace air conditioner filter.
Refer to MA-55, "CHASSIS AND BODY MAINTENANCE" .
Caution label is fixed inside glove box.

REPLACEMENT PROCEDURES

1. Remove glove box assembly. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Compress air conditioner filter downward while sliding it to the right side of the vehicle.
3. Turn the bottom of air conditioner filter upward, and then remove it.
4. Replace with new one and reinstall on A/C unit assembly.
5. Reinstall glove box assembly.



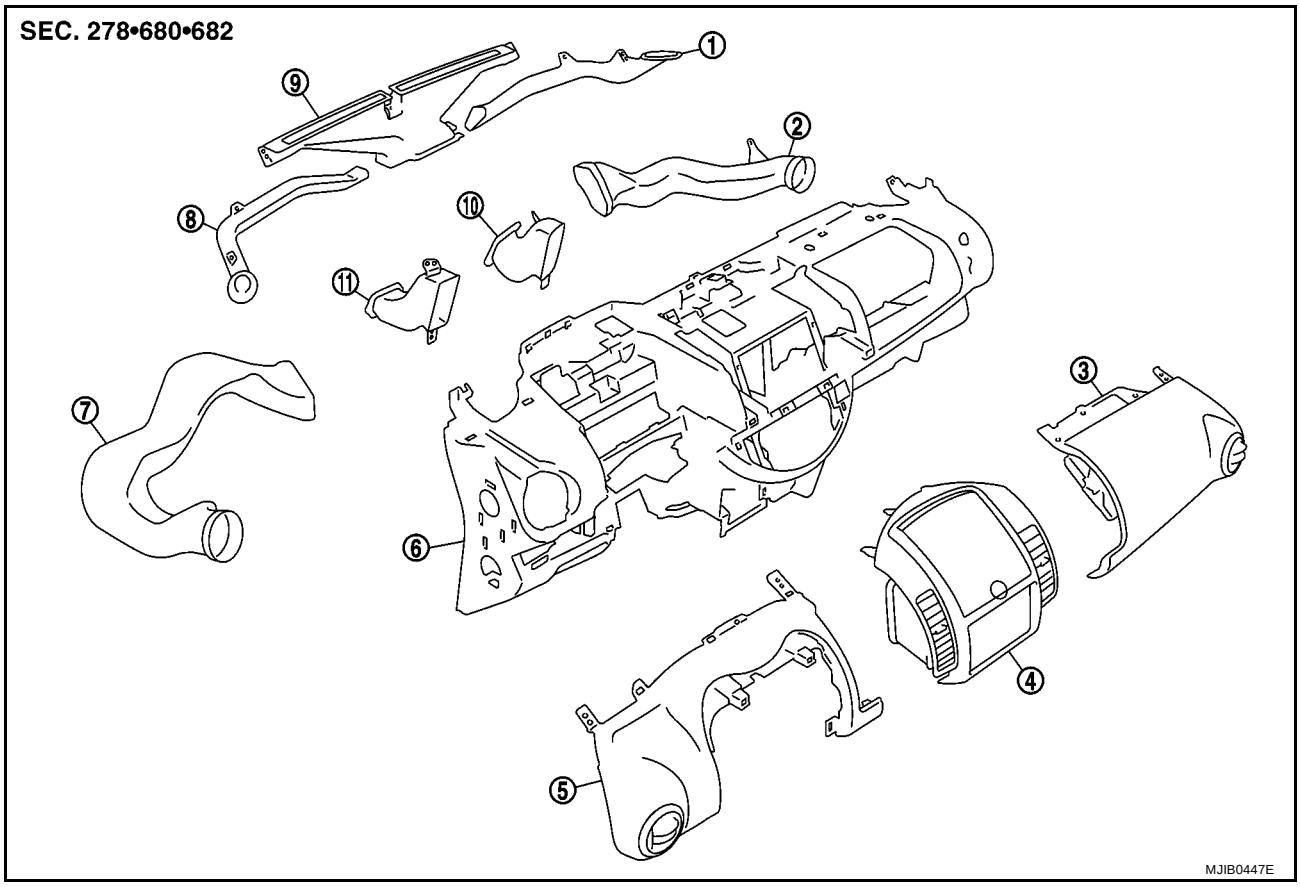
DUCTS AND GRILLES

PFP:27860

Removal and Installation

BJS000EE

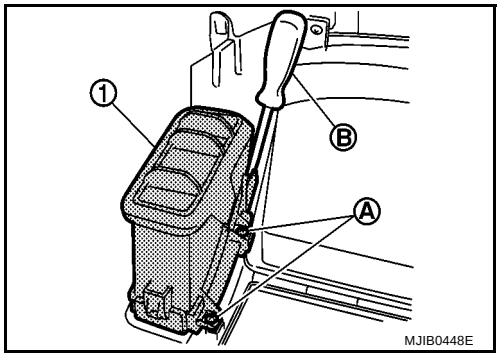
REMOVAL



1. Side defroster duct (right)
2. Defroster nozzle
3. Side defroster duct (left)
4. Side defroster grille (left)
5. Instrument side panel (left)
6. Instrument panel & pad
7. Side ventilator assembly (left)
8. Cluster lid C
9. Side ventilator assembly (right)
10. Instrument finisher E
11. Instrument side panel (right)

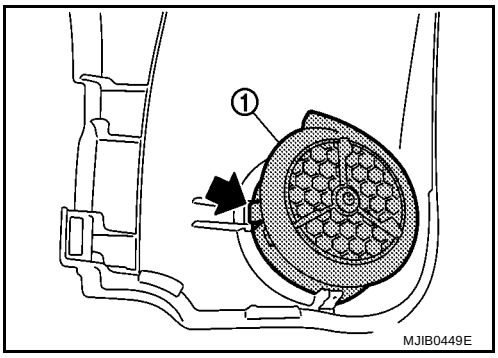
Removal of Center Ventilator Grilles

1. Remove cluster lid C. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove center ventilator grilles (1) mounting screws (A) using a screwdriver (B), and then remove center ventilator grilles (1).

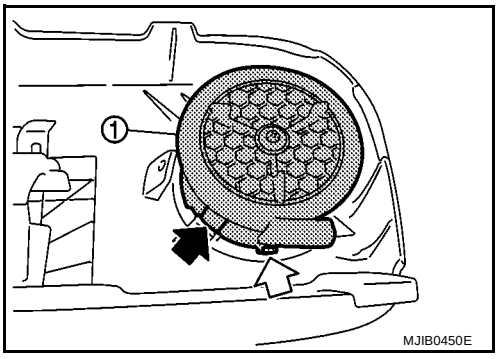


Removal of Side Ventilator Grilles

1. Remove instrument pad assembly (left). Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Side ventilator grille (left) (1) mounting pawl (⬅) is pushed, and side ventilator grille (left)(1) is pulled out.

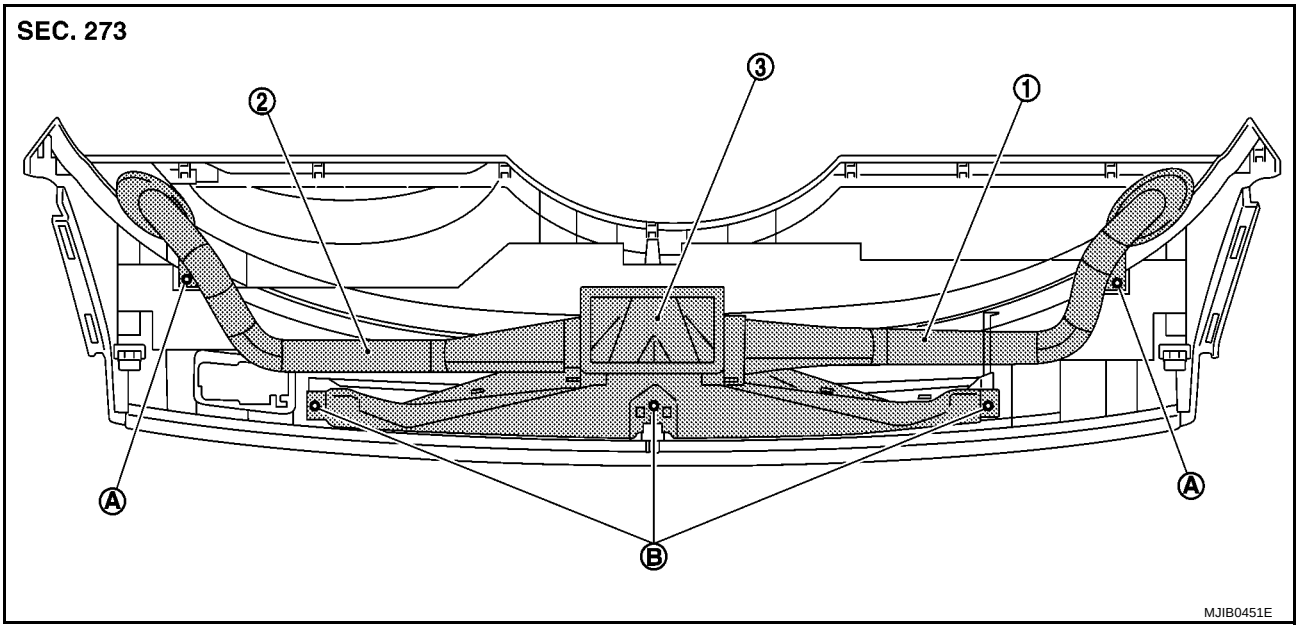


3. Remove instrument pad assembly (right). Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
4. Side ventilator grille (right) (1) mounting pawl (⬅) is pushed, and side ventilator grille (right)(1) is pulled out.



Removal of Defroster Nozzle and Ducts

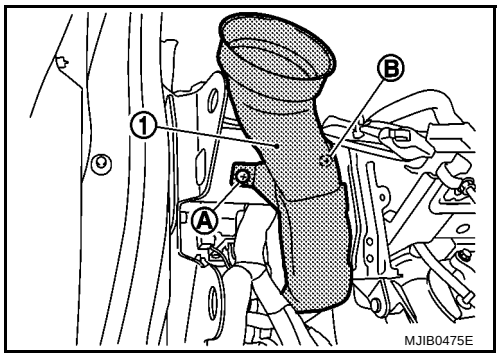
1. Remove instrument upper finisher. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove mounting screws (A) and then remove side defroster duct (right) (1) and side defroster duct (left) (2).



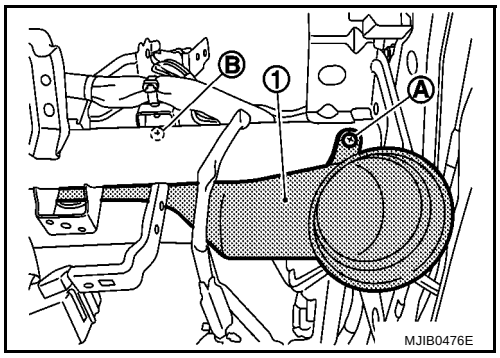
3. Remove mounting screws (B), and then remove defroster nozzle (3).

Removal of Side Ventilator Ducts

1. Remove instrument panel & pad. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove mounting screws (A) and clip (B), and then remove side ventilator duct (left) (1).

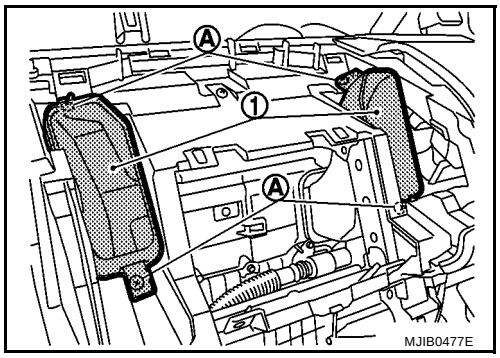


3. Remove mounting screw (A) and clip (B), and then remove side ventilator duct (right) (1).



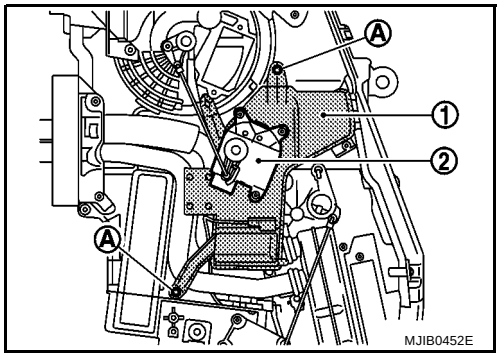
Removal of Center Ventilator Ducts

1. Remove instrument panel & pad. Refer to IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Remove mounting screws (A), and then remove center ventilator ducts (1).

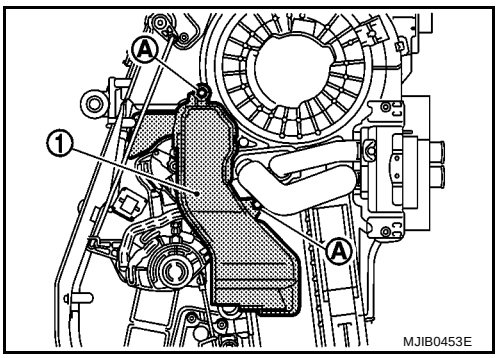


Removal of Foot Ducts

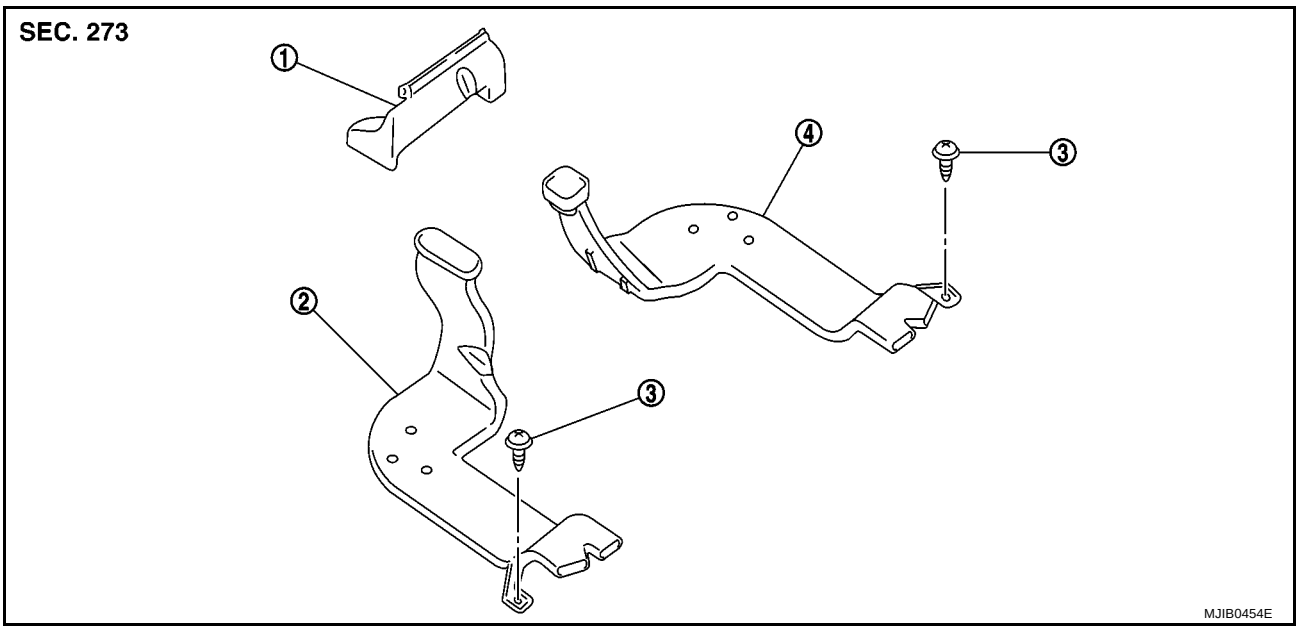
1. Remove A/C unit assembly. Refer to MTC-65, "A/C UNIT ASSEMBLY" .
2. Remove intake door motor (2). Refer to MTC-70, "INTAKE DOOR" .
3. Remove mounting screws (A), and then remove foot duct (left) (1).



4. Remove mounting screws (A), and then remove foot duct (right) (1).

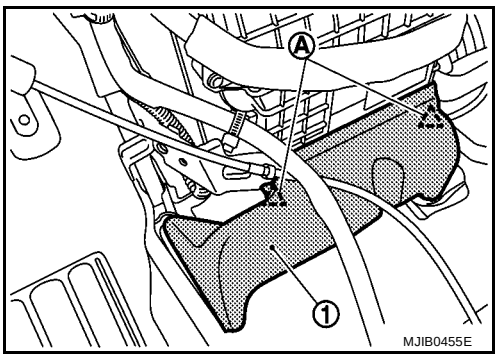


Removal of Floor Ducts



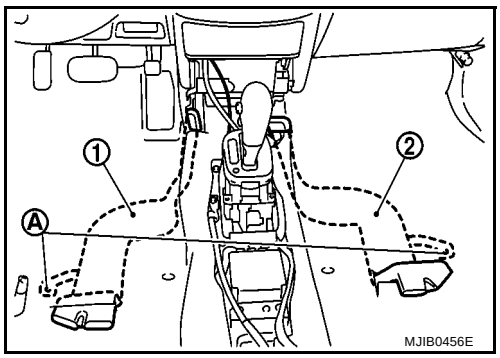
1. Front floor duct
2. Rear floor duct (left)
3. Clip
4. Rear floor duct (right)

1. Remove front seat and center console assembly. Refer to SE-8, "Removal and Installation" and IP-4, "INSTRUMENT PANEL ASSEMBLY" .
2. Disengage claws (A), and then remove front floor duct (1).



3. Peel back floor trim to a point where floor duct is visible.

4. Remove mounting clips (A), and then remove rear floor duct (left) (1) and rear floor duct (right) (2).



INSTALLATION

Installation is basically the reverse order of removal.

REFRIGERANT LINES

PFP:92600

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

BJS000EF

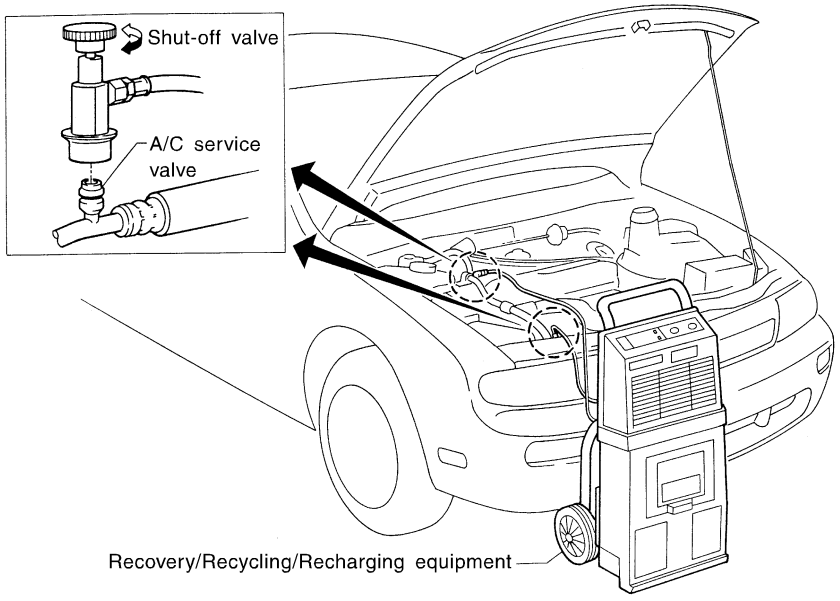
SETTING OF SERVICE TOOLS AND EQUIPMENT

Discharging Refrigerant

WARNING:

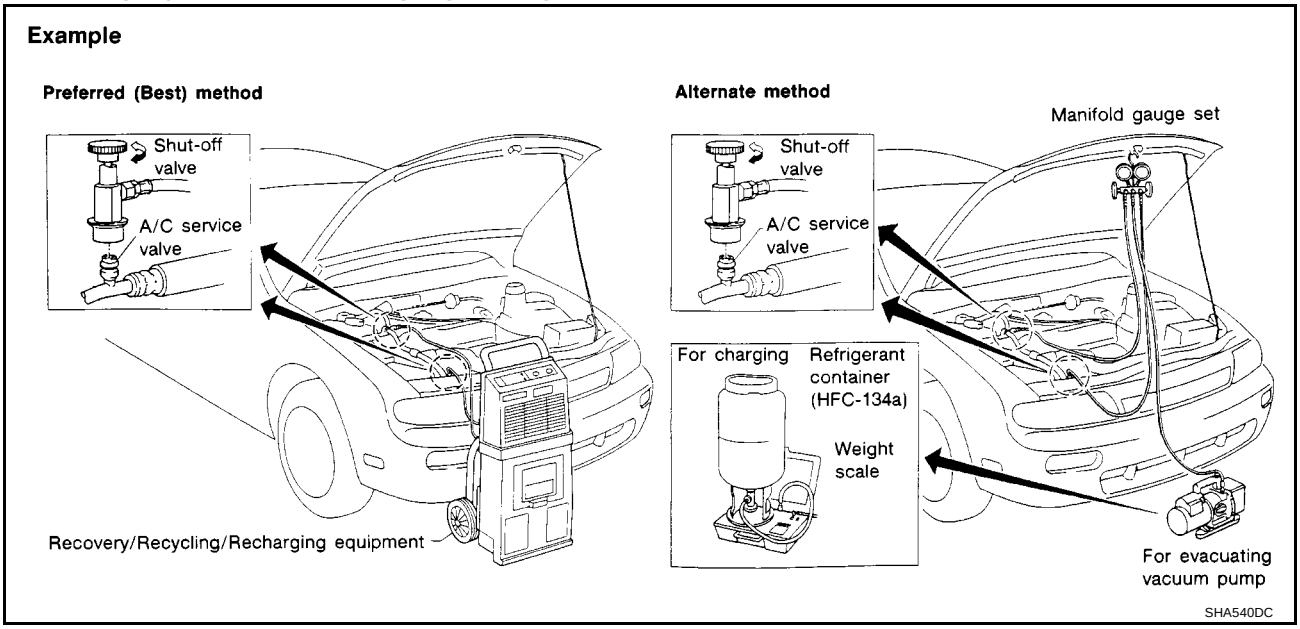
Avoid breathing A/C refrigerant and lubricant vapor or mist. Exposure may irritate eyes, nose and throat. Use only approved recovery/recycling equipment to discharge HFC-134a (R-134a) refrigerant. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.

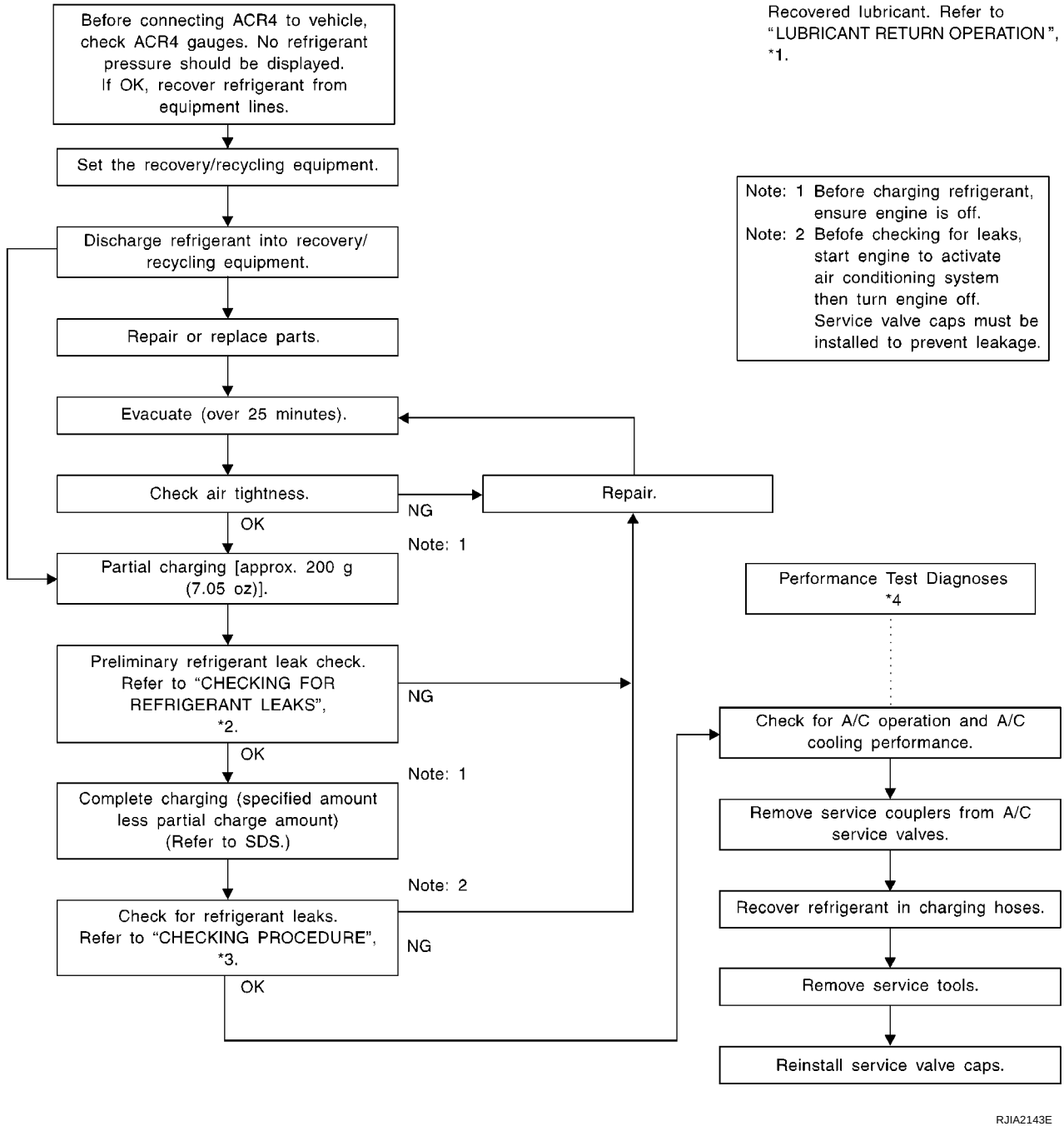
Example



Evacuating System and Charging Refrigerant

Example





RJIA2143E

*1 MTC-17, "LUBRICANT RETURN OPERATION"

*2 MTC-93, "Checking for Refrigerant Leaks"

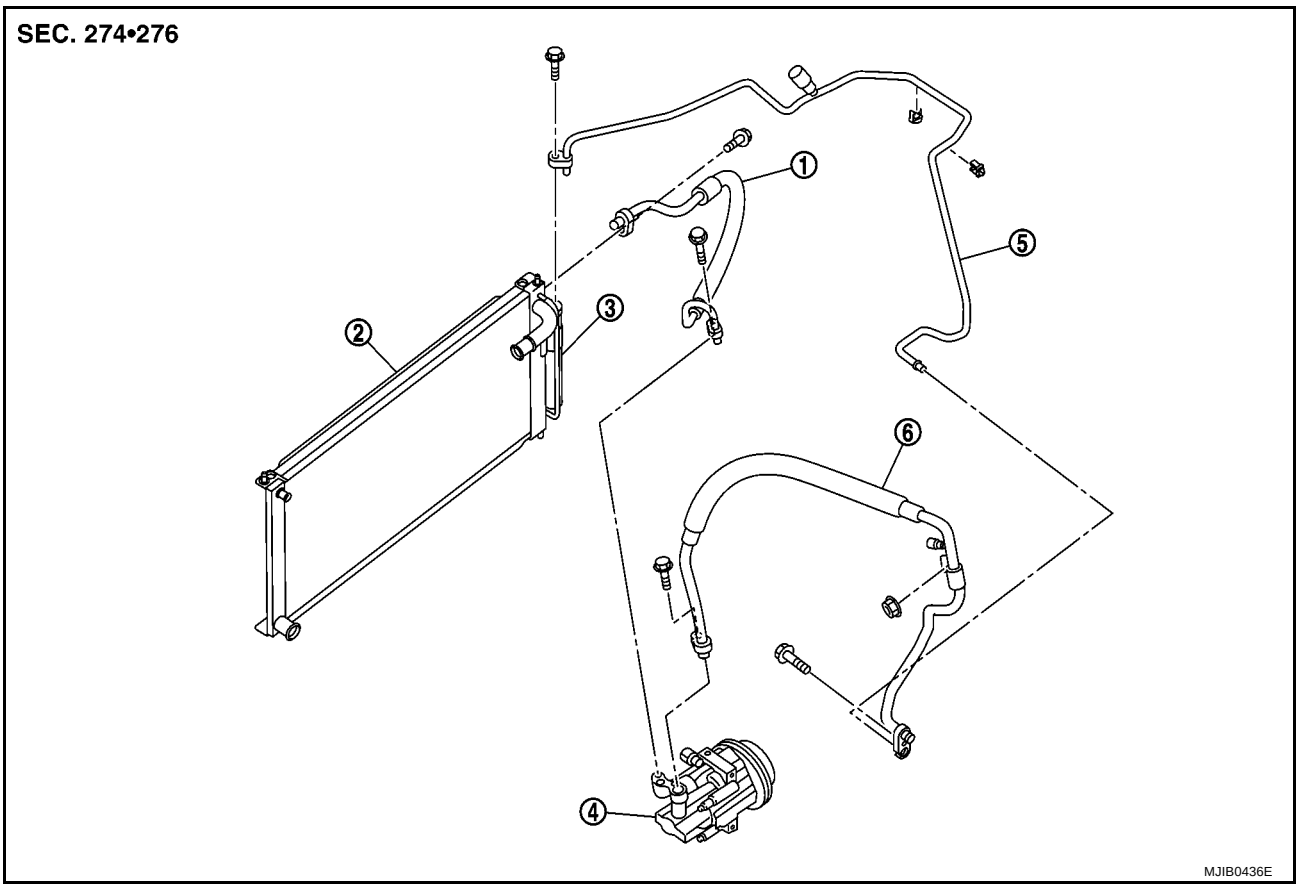
*3 MTC-95, "CHECKING PROCEDURE"

*4 MTC-53, "PERFORMANCE TEST DIAGNOSIS"

Components

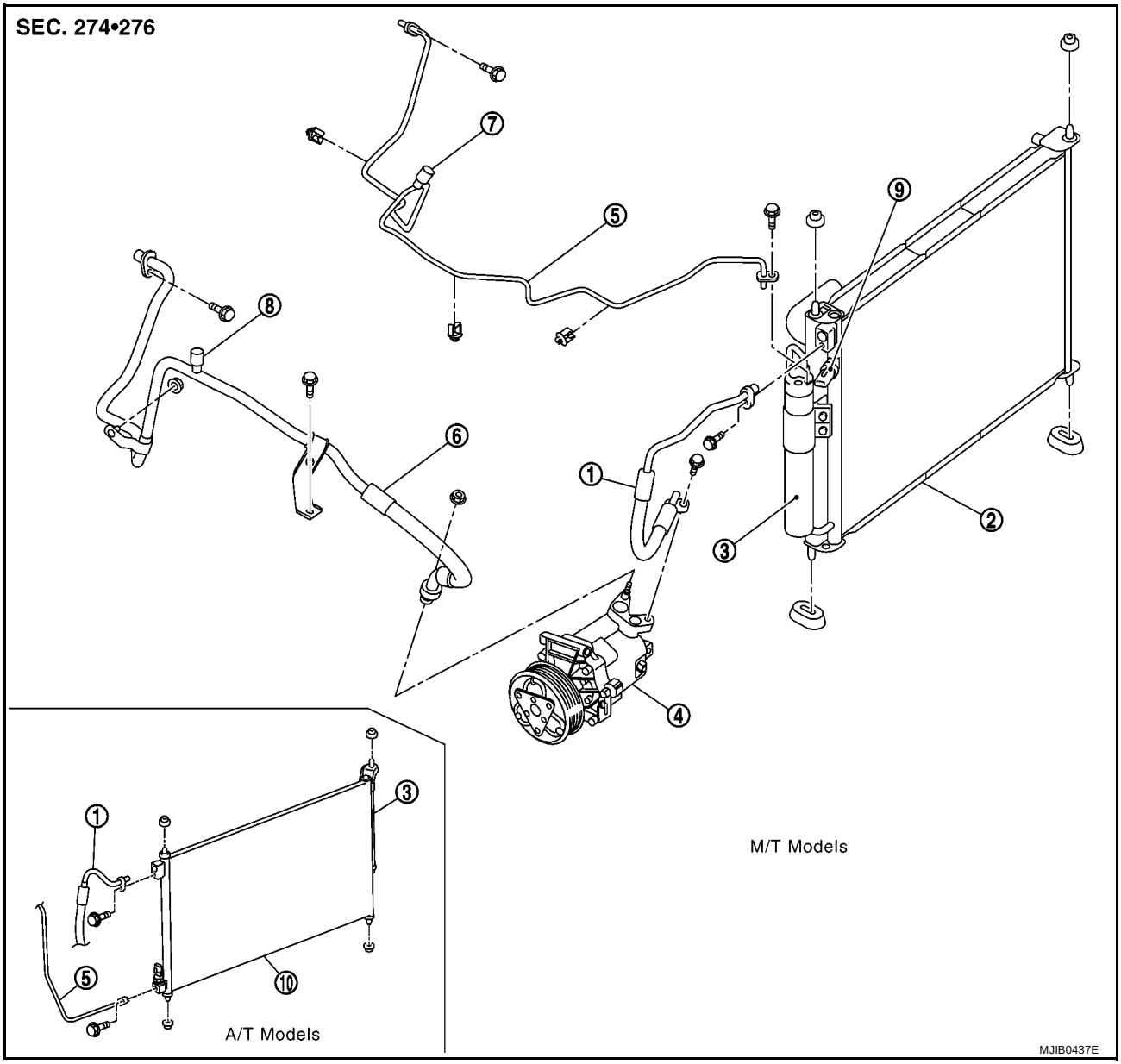
BJS000IQ

CR ENGINE MODELS



1. High-pressure flexible hose
2. Radiator (Condenser)
3. Liquid tank
4. Compressor
5. High-pressure pipe
6. Low-pressure flexible hose

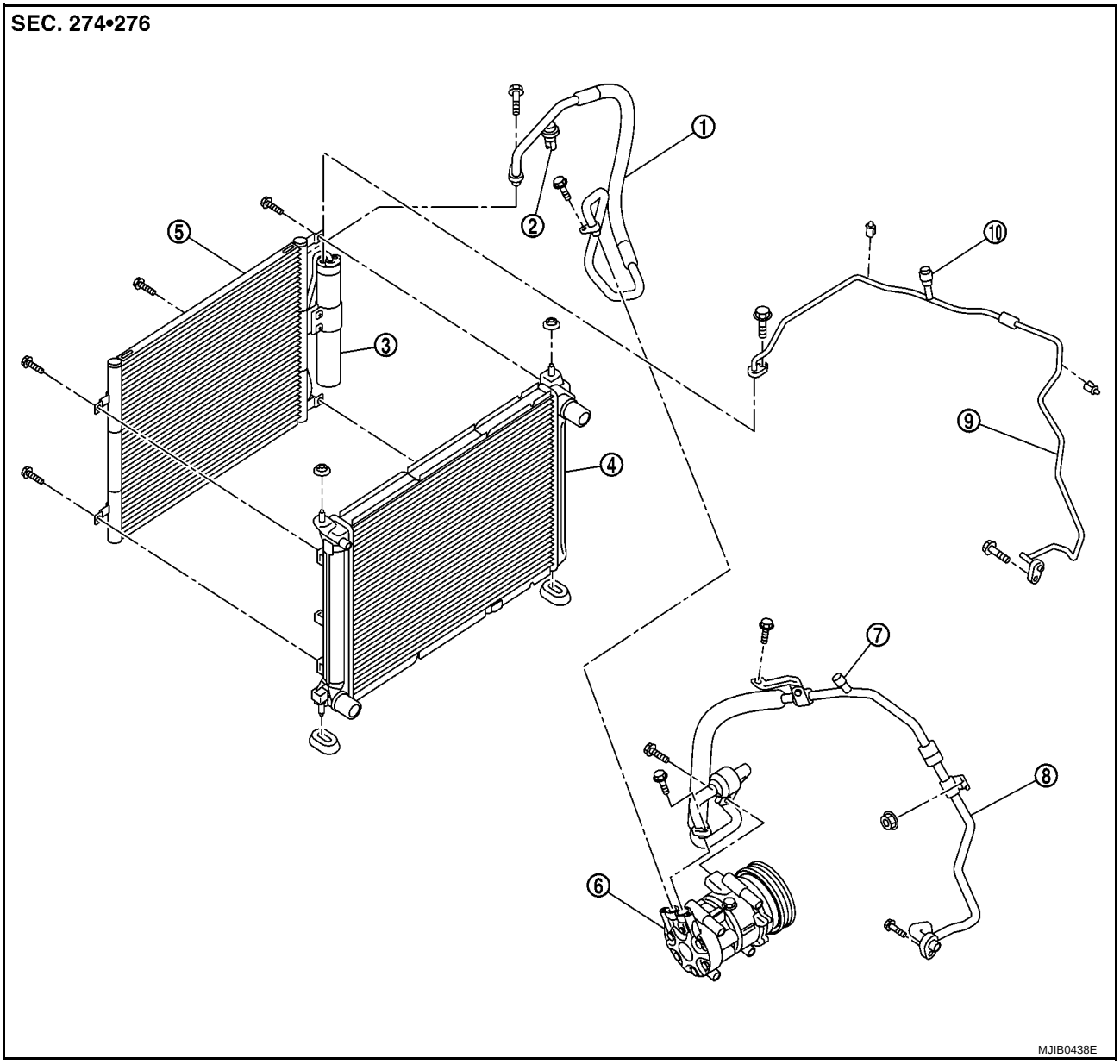
HR ENGINE MODELS



1. High-pressure flexible hose
2. Radiator (Condenser)
3. Liquid tank
4. Compressor
5. High-pressure pipe
6. Low-pressure flexible hose
7. Service valve (High pressure)
8. Service valve (Low pressure)
9. Refrigerant pressure sensor
10. Condenser

K9K ENGINE MODELS

SEC. 274•276



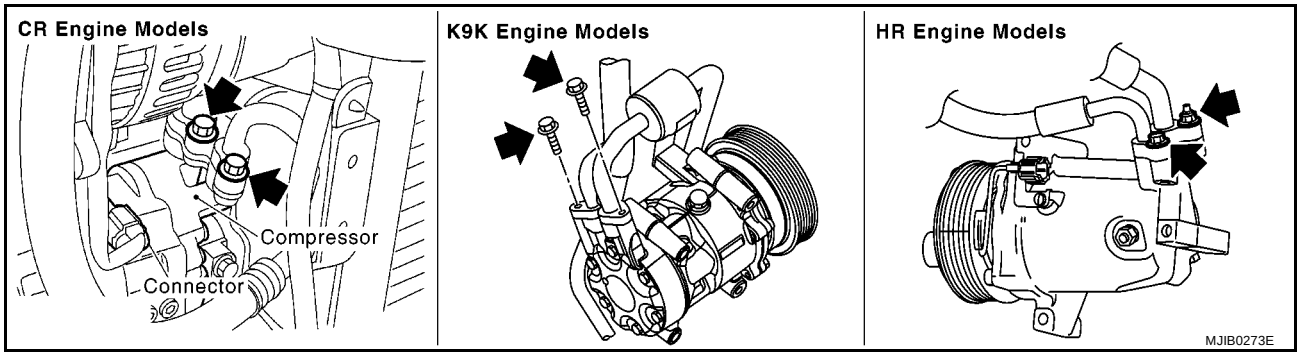
1. High-pressure flexible hose
2. Refrigerant pressure sensor
3. Liquid tank
4. Radiator (Condenser)
5. Condenser
6. Compressor
7. Service valve (Low pressure)
8. Low-pressure flexible hose
9. High-pressure pipe
10. Service valve (High pressure)

Removal and Installation of Compressor

BJS000IR

REMOVAL

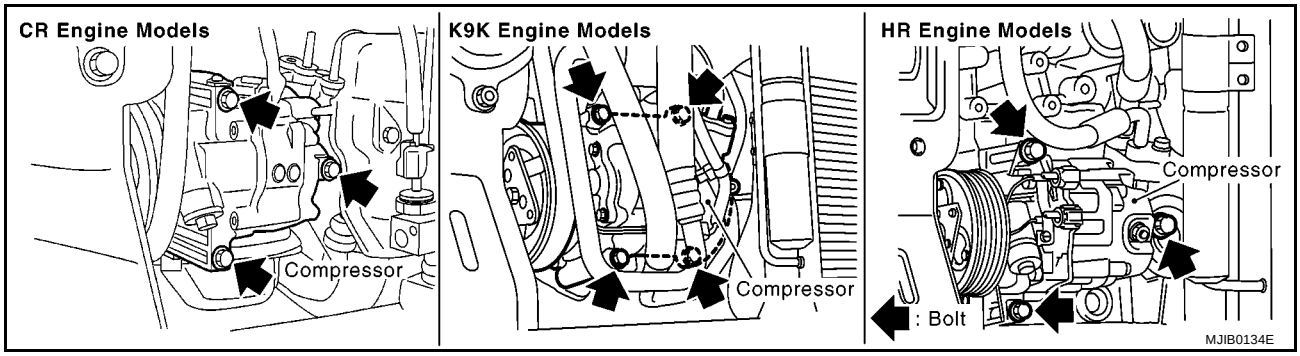
1. Use a refrigerant collecting equipment (for HFC-134a) to discharge the refrigerant.
2. Remove engine undercover, using power tools.
3. Remove low-pressure flexible hose mounting nut and high-pressure flexible hose mounting bolt from compressor.



CAUTION:

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

4. Remove A/C compressor belt.
   CR: Refer to EM-14, "DRIVE BELTS" .
   HR: Refer to EM-114, "DRIVE BELTS" .
   K9K: Refer to EM-242, "DRIVE BELTS" .
5. Disconnect compressor connector.
6. Remove mounting bolts from compressor, using power tools.



7. Remove compressor downward of the vehicle.

INSTALLATION

Installation is basically the reverse order of removal.

CAUTION:

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

Compressor mounting bolt

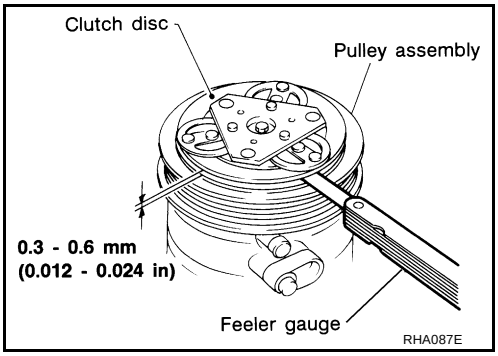
Tightening torque : 20.0 N·m (2.05 kg-m, 14.8 ft-lb)

CHECK DISC TO PULLEY CLEARANCE

Check clearance around entire periphery of clutch disc.

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

If specified clearance is not obtained, replace compressor.



Removal and Installation for Pipe and Hose

BJS000IS

REMOVAL

1. Use recovery/recycling recharging equipment [for HFC-134a (R-134a)] to discharge refrigerant.
2. Remove the low-pressure flexible hose bracket mounting bolt and nut.
3. Remove the high-pressure pipe and low-pressure flexible hose mounting bolts (air conditioner unit side).

   CAUTION:
   Seal the connecting points of the pipe and hose with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
4. Remove the low-pressure flexible hose mounting bolt or nut (compressor side) and then remove the low-pressure flexible hose.

   CAUTION:
   Seal the connecting points of the hose with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
5. Remove the front bumper and air guide (RH). Refer to EI-4, "Removal and Installation" and BL-13, "Removal and Installation" .
6. Remove the high-pressure pipe mounting bolt (liquid tank side) and then remove the high-pressure pipe.

   CAUTION:
   Seal the connecting points of the pipe with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
7. Remove the high-pressure flexible hose mounting bolts and then remove the high-pressure flexible hose.

   CAUTION:
   Seal the connecting points of the hoses with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

INSTALLATION

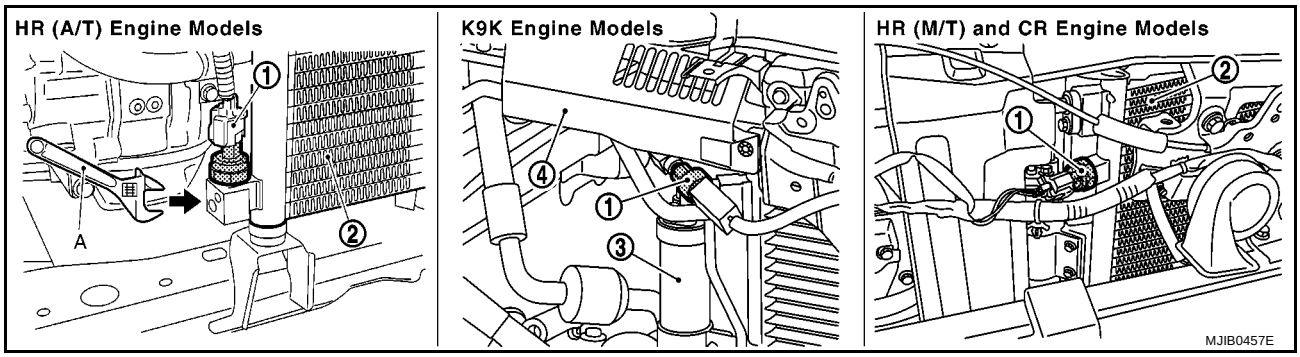
CAUTION:

- **Replace the O-rings on the high-pressure pipe, low-pressure flexible hose, and high-pressure flexible hose with new ones, and apply compressor lubricant to O-rings before installing.**
- **When charging refrigerant, check for refrigerant leaks.**

High-pressure pipe mounting bolt
Tightening torque : 4.4 N·m (0.45 kg-m, 39.0 in-lb)
Low-pressure flexible hose and high-pressure pipe mounting bolts (evaporator side)
Tightening torque : 4.4 N·m (0.45 kg-m, 39.0 in-lb)
Low-pressure flexible hose mounting bolt (compressor side)
Tightening torque : 13.7 N·m (1.4 kg-m, 10.1 ft-lb)
Low-pressure flexible hose bracket mounting bolt/nut
Tightening torque : 4.2 N·m (0.43 kg-m, 37.2 in-lb)
High-pressure flexible hose mounting bolt
Tightening torque : 13.7 N·m (1.4 kg-m, 10.1 ft-lb)

Removal and Installation for Refrigerant Pressure Sensor

BJS000IT



1. Refrigerant pressure sensor
2. Condenser
3. Liquid tank
4. Air guide

REMOVAL AND INSTALLATION

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the front bumper and air guide (RH) (4). Refer to EI-4, "Removal and Installation" and BL-13, "Removal and Installation" .
3. Use a adjustable wrench A or other tool to hold the refrigerant pressure sensor mounting block, and then remove the refrigerant pressure sensor from the condenser (CR and HR engine models) or the high-pressure flexible hose (K9K engine models).

   CAUTION:
   - **Be careful when working so as not to damage the condenser core.**
   - **When installing refrigerant pressure sensor, apply compressor lubricant to the O-rings.**

   Refrigerant pressure sensor

   Tightening torque : 10.8 N·m (1.1 kg-m, 8.0 ft-lb)

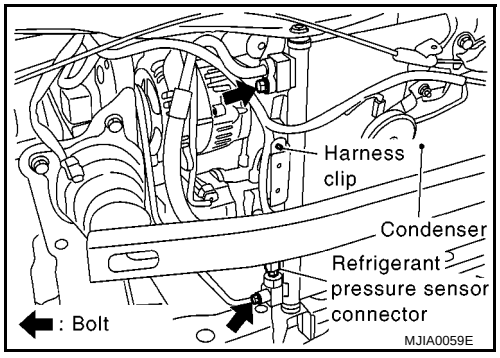
Removal and Installation for Condenser (Models without Integrated Condenser)

BJS000IU

REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the front bumper and air guide (RH). Refer to EI-4, "Removal and Installation" and BL-13, "Removal and Installation" .
3. Disconnect the high-pressure flexible hose and high-pressure pipe from the condenser.

   CAUTION:
   Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.
4. Disconnect the refrigerant pressure sensor connector, and then remove the harness clip (CR engine models).

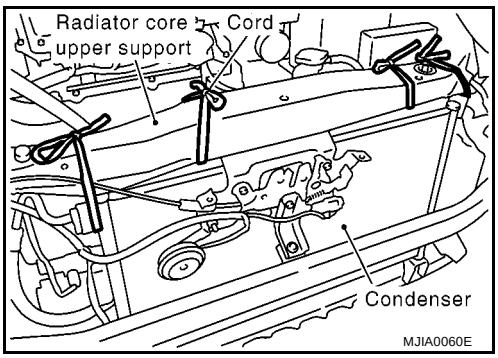


5. Use cord, etc., to hold the condenser and radiator to each radiator core support upper.

   NOTE:
   To prevent the condenser and radiator from being dropped when the radiator core lower support is removed.

6. Remove the mounting bolts, and then remove the radiator core lower support.
7. Remove the condenser from underneath the vehicle.

   CAUTION:
   Do not damage the condenser core.



INSTALLATION

CAUTION:

- **Replace O-rings on the high-pressure pipe and high-pressure flexible hose with new ones. Apply compressor lubricant to O-rings when installing them.**
- **When charging refrigerant, check for refrigerant leaks.**

High-pressure flexible hose bolt
Tightening torque : 13.7 N·m (1.4 kg-m, 10.1 ft-lb)
High-pressure pipe mounting bolt
Tightening torque : 4.4 N·m (0.45 kg-m, 39.0 in-lb)
Radiator core lower support mounting bolts.
Tightening torque : 51.1 N·m (5.3 kg-m, 37.7 ft-lb)

Removal and Installation for Condenser (Models with Integrated Condenser)

BJS000IV

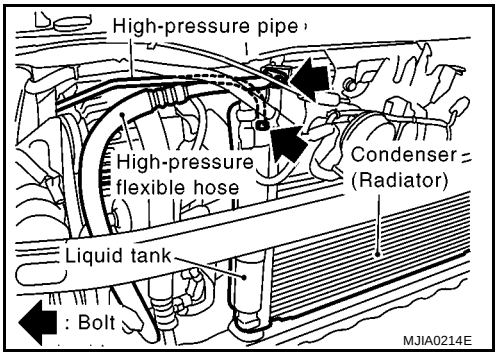
REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the front bumper and air guide (RH). Refer to EI-4, "Removal and Installation" and BL-13, "Removal and Installation" .
3. Disconnect the high-pressure flexible hose from the condenser. Disconnect the high-pressure pipe from the liquid tank.

   CAUTION:
   Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

4. Remove the radiator assembly.
   CR: Refer to CO-12, "RADIATOR" .
   HR: Refer to CO-31, "RADIATOR" .

   CAUTION:
   Do not damage the radiator and condenser core.



INSTALLATION

CAUTION:

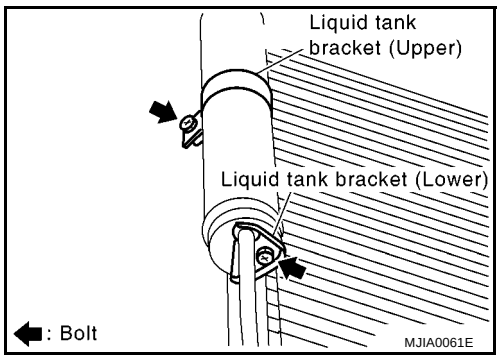
- **Replace O-rings on the high-pressure pipe and high-pressure flexible hose with new ones. Apply compressor lubricant to O-rings when installing them.**
- **When charging refrigerant, check for refrigerant leaks.**

Removal and Installation for Liquid Tank (HR Engine with A/T Models)

BJS000IW

REMOVAL

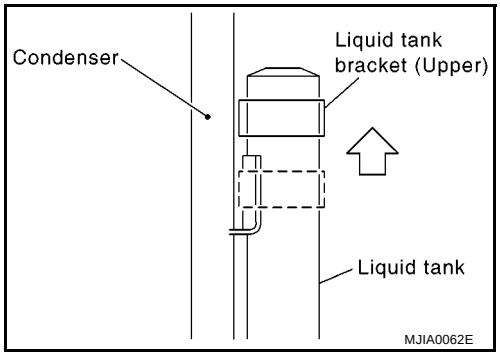
1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove condenser. Refer to MTC-88, "Removal and Installation for Condenser (Models without Integrated Condenser)" .
3. Clean around the liquid tank to remove foreign material and corrosion.
4. Remove the liquid tank bracket (upper/lower) mounting bolts.



5. Lift up the liquid tank bracket, and remove it from the condenser protruding area.
6. Lift up the liquid tank and remove it.

CAUTION:

Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

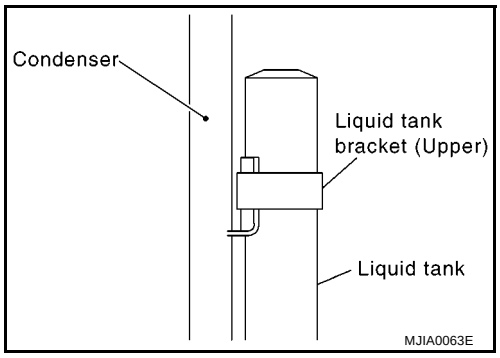


INSTALLATION

Install the liquid tank, and then install liquid tank bracket to the condenser.

CAUTION:

- **Make sure the liquid tank bracket is correctly inserted into the condenser's protruding area (the liquid tank bracket does not move below the center of the liquid tank).**
- **Replace the condenser pipe O-rings with new ones. Apply a coat of compressor lubricant to the O-rings prior to installation.**



Liquid tank bracket (upper) mounting bolt

Tightening torque : 3.38 N·m (0.35 kg-m, 30.0 in-lb)

Liquid tank bracket (lower) mounting bolt

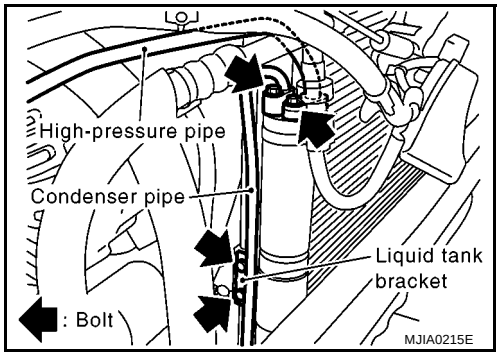
Tightening torque : 5.74 N·m (0.58 kg-m, 50.8 in-lb)

Removal and Installation for Liquid Tank (Except HR Engine with A/T Models)

BJS000IX

REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Clean around the liquid tank to remove foreign material and corrosion.
3. Remove the high-pressure pipe from the liquid tank.
4. Remove the condenser pipe mounting bolt from the liquid tank, and remove pipe from the condenser protruding area.
5. Remove the liquid tank bracket bolts and then remove the liquid tank.



CAUTION:
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

INSTALLATION

Install the liquid tank, and then install liquid tank bracket to the condenser.

CAUTION:
Replace the condenser pipe O-rings with new ones. Apply a coat of compressor lubricant to the O-rings prior to installation.

Removal and Installation for Evaporator

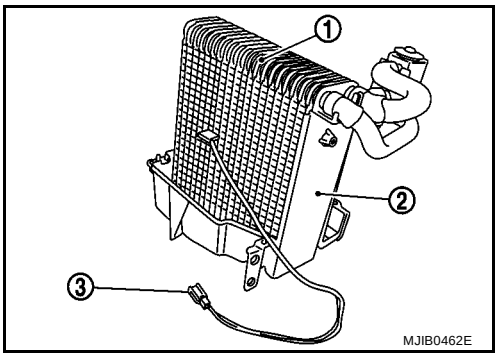
BJS000IY

REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Remove the A/C unit. Refer to MTC-65, "A/C UNIT ASSEMBLY" .

CAUTION:
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

3. Remove the air conditioner filter, mode door motor, and foot duct (RH). Refer to MTC-75, "AIR CONDITIONER FILTER" , MTC-72, "MODE DOOR" and MTC-78, "Removal of Foot Ducts" .
4. Remove the lower blower case and expansion valve cover.
5. Slide the evaporator (1) and lower blower case (2) downward, and remove the intake sensor (3).
6. Remove the evaporator from the lower blower case.



INSTALLATION

CAUTION:

- **Replace low-pressure flexible hose and high-pressure pipe O-rings with new ones. Apply a coat of compressor lubricant prior to installation.**
- **When installing a new evaporator, install the thermistor of intake air temperature in the same position as the removed intake sensor.**
- **When removing and installing the intake sensor, do not rotate the thermistor insertion part.**

Mounting bolts for the low-pressure flexible hoses and high-pressure pipes.

Tightening torque : 4.4 N·m (0.45 kg-m, 39.0 in-lb)

Removal and Installation for Expansion Valve

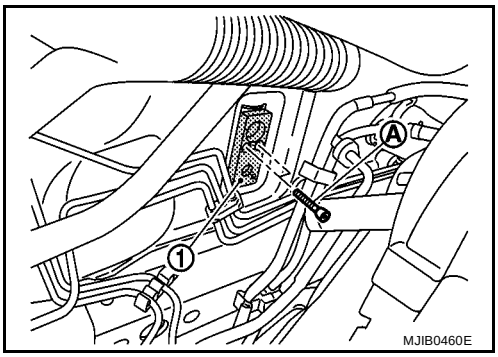
BJS000IZ

REMOVAL

1. Use refrigerant collecting equipment (for HFC134a) to discharge refrigerant.
2. Disconnect the low-pressure flexible hose and high-pressure pipe from the evaporator.

CAUTION:
Seal the connecting points of the pipes with caps and vinyl tape, etc. to prevent them from being exposed to the atmosphere.

3. Remove the two bolts (A) from the expansion valve, and then remove the expansion valve (1).



INSTALLATION

CAUTION:

Replace the removed O-rings with new ones. Apply a coat of compressor lubricant to the O-rings prior to installation.

Expansion valve mounting bolts

Tightening torque : 4.0 N·m (0.41 kg-m, 35.4 in-lb)

Mounting bolts for the low-pressure flexible hoses and high-pressure pipes.

Tightening torque : 4.4 N·m (0.45 kg-m, 39.0 in-lb)

Checking for Refrigerant Leaks

BJS000J0

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 1 to 2 inches per second and no further than 1/4 inch 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

BJS000J1

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

BJS000J2

(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 (3.45 bar, 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 [SST: J-41459].
3. Connect the injector tool to the A/C low-pressure side service fitting.
4. Start engine and switch A/C ON.
5. When the A/C operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool J-41459 (refer to the manufacture's operating instructions).
6. With the engine still running, disconnect the injector tool from the service fitting.

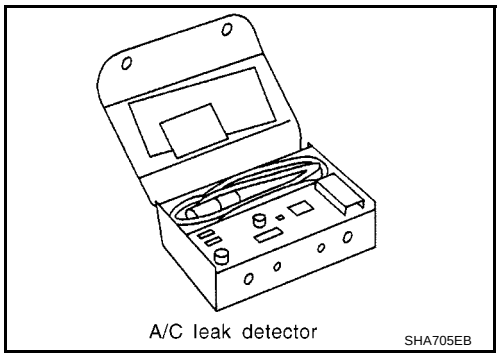
   CAUTION:
   Be careful the A/C system or replacing a component, pour the dye directly into the open system connection and proceed with the service procedures.
7. Operate the A/C system for a minimum of 20 minutes to mix the dye with the system oil. Depending on the leak size, operating conditions and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

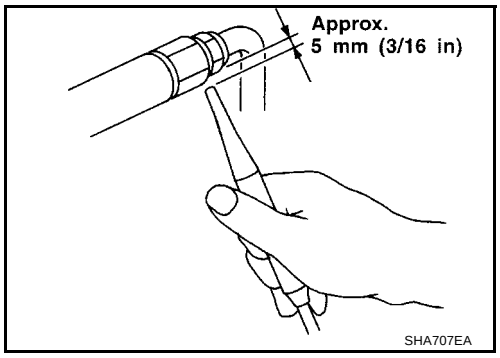
BJS000J3

PRECAUTIONS FOR HANDLING LEAK DETECTOR

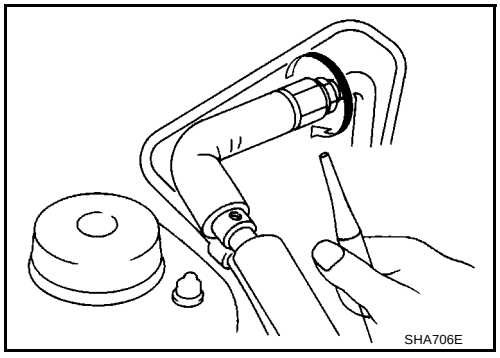
When performing a refrigerant leak check, use an A/C electrical leak detector (SST) or equivalent. Ensure that the instrument is calibrated and set properly per the operating instructions.
The leak detector is a delicate device. In order to use the leak detector properly, read the operating instructions and perform any specified maintenance.



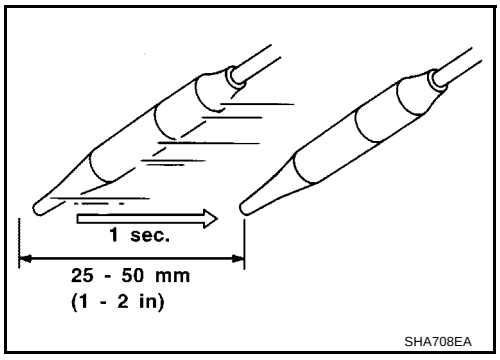
1. Position probe approximately 5 mm (3/16 in) away from point to be checked.



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



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



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 (3.45 bar, 3.52 kg/cm^2 , 50 psi) above 16°C. If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

   NOTE:
   At temperatures below 16°C, leaks may not be detected since the system may not reach 345 kPa (3.45 bar, 3.52 kg/cm^2 , 50 psi).
4. Perform the leak test from the high-pressure side (compressor discharge a to evaporator inlet f) to the low-pressure side (evaporator drain hose g to shaft seal k). Refer to MTC-83, "Components" . Perform a leak check for the following areas carefully. Clean the component to be checked and move the leak detected probe completely around the connection/component.

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

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

   Liquid tank
   Check the refrigerant connection.

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

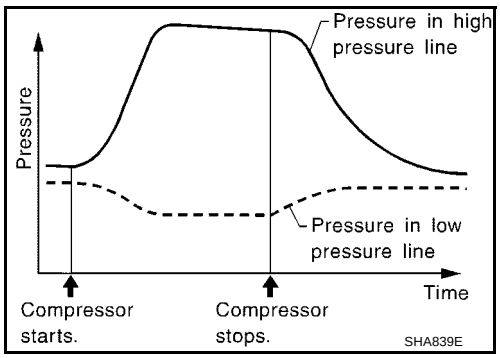
   NOTE:
   After removing A/C manifold gauge set from service valves, wipe any residue from valves to prevent any false readings by leak detector.

   Cooling unit (Evaporator)
   With engine OFF, turn blower fan on “High” for at least 15 seconds to dissipate any refrigerant trace in the cooling unit. Wait a minimum of 10 minutes accumulation time (refer to the manufacturer’s recommended procedure for actual wait time) before inserting the leak detector probe into the drain hose.
   Keep the probe inserted for at least 10 seconds. Use caution not to contaminate the probe tip with water or dirt that may be in the drain hose.
5. If a leak detector detects a leak, verify at least once by blowing compressed air into area of suspected leak, then repeat check as outlined above.
6. Do not stop when one leak is found. Continue to check for additional leaks at all system components.
   If no leaks are found, perform steps 7-10.
7. Start engine.
8. Set the heater A/C control as follows;

a. A/C switch: ON
b. MODE door position: VENT (Ventilation)
c. Intake door position: Recirculation
d. Temperature control dial: Max. cold
e. Fan 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 ACR4 to vehicle, check ACR4 gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover refrigerant from equipment lines.
12. Discharge A/C system using approved refrigerant recovery equipment. Repair the leaking fitting or component if necessary.



13. Evacuate and recharge A/C system and perform the leak test to confirm no refrigerant leaks.
14. Perform A/C performance test to ensure system works properly.

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

COMPRESSOR

BJS000J4

Model		CR engine models	HR engine models	K9K engine models
		ZEXEL VALEO CLIMATE CONTROL make KC59G	CR-10	SANDEN make SD6V12
Type		Vane rotary		Variable volume piston
Displacement cm^3 (cu in)/rev	Max.	80 (4.88) Theoretical displacement	96 (5.86) Theoretical displacement	125.1 (7.63) 6.2 (0.38)
	Min.			
Cylinder bore × stroke mm (in)		5 vanes, $\phi 51.0 \times 7.28$	5 vanes, $\phi 50.2 \times 8.5$	—
Direction of rotation		Clockwise (viewed from drive end)		
Drive belt		Poly V (4grooves)	V-Ribbed (7 grooves)	Poly V (6 grooves)

LUBRICANT

BJS000J5

Model		CR engine models	HR engine models	K9K engine models
		ZEXEL VALEO CLIMATE CONTROL make KC59G	CR-10	SANDEN make SD6V12
Name		Nissan A/C System Oil Type R		Nissan A/C System Oil Type S
Part number		KLH00-PAGR0		KLH00-PAGS0
Capacity m ℓ (Imp fl oz)	Total in system	—	—	135 (4.75)
	Compressor (Service part) charging amount	—	—	135 (4.75)

REFRIGERANT

BJS000J6

Model	CR engine models	HR engine models	K9K engine models
	ZEXEL VALEO CLIMATE CONTROL make KC59G	CR-10	SANDEN make SD6V12
Type	HFC-134a (R-134a)		
Capacity kg (lb)	0.475 ± 0.025 (1.04 ± 0.055)	0.475 ± 0.025 (1.04 ± 0.055)	0.55 ± 0.05 (1.21 ± 0.11)

ENGINE IDLING SPEED

BJS000J7

Refer to EC-449, "SERVICE DATA AND SPECIFICATIONS (SDS)" . CR (WITH EURO–OBD).
Refer to EC-801, "SERVICE DATA AND SPECIFICATIONS (SDS)" . CR (WITHOUT EURO–OBD).
Refer to EC-1237, "SERVICE DATA AND SPECIFICATIONS (SDS)" . HR (WITH EURO–OBD).
Refer to EC-1597, "SERVICE DATA AND SPECIFICATIONS (SDS)" . HR (WITHOUT EURO–OBD).
Refer to EC-1870, "SERVICE DATA AND SPECIFICATIONS (SDS)" . K9K.

BELT TENSION

BJS000J8

Refer to EM-14, "Tension Adjustment" . (CR engine models).
Refer to EM-114, "Tension Adjustment" . (HR engine models).
Refer to EM-242, "Tension Adjustment" . (K9K engine models).