

SECTION **HA**

HEATER & AIR CONDITIONING SYSTEM

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DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW WITH COLOR DISPLAY

WITH COLOR DISPLAY : How to Perform Trouble Diagnosis For Quick And Accurate Repair

INFOID:000000004335598

WORK FLOW

1. LISTEN TO CUSTOMER COMPLAINT

Interview the customer to obtain as much information as possible about the conditions and environment under which the symptom occurs.

>> GO TO 2.

2. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 3.

3. CHECK FOR HVAC DTCS WITH CONSULT-III

Using CONSULT-III, perform "SELF-DIAGNOSIS RESULTS" of HVAC. Refer to [HAC-96, "DTC Index"](#).

Are there any HVAC DTCS present?

YES >> Go to HVAC DTC index. Refer to [HAC-96, "DTC Index"](#).

NO >> GO TO 4.

4. CHECK FOR AUDIO DTCS WITH CONSULT-III

Using CONSULT-III, perform "SELF-DIAGNOSIS RESULTS" of MULTI AV. Refer to [HAC-96, "DTC Index"](#).

Are there any audio DTCS present?

YES >> Go to audio DTC index. Refer to [HAC-96, "DTC Index"](#).

NO >> GO TO 5.

5. PERFORM OPERATIONAL CHECK

Verify the symptom with operational check based on the information obtained from the customer. Refer to [HAC-5, "Operational Check \(Front\)"](#) and [HAC-6, "Operational Check \(Rear\)"](#).

>> GO TO 6.

6. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to [HA-16, "WITH COLOR DISPLAY : Symptom Matrix Chart"](#).

NOTE:

If DTC is displayed, erase DTC after repairing or replacing malfunctioning parts.

Can a symptom be duplicated?

YES >> Repair or replace malfunctioning parts.

NO >> GO TO 7.

7. FINAL CHECK

Check that the A/C system operates normally.

Is the inspection result normal?

YES >> Inspection End

NO >> GO TO 3.

WITH MONOCHROME DISPLAY

WITH MONOCHROME DISPLAY : How to Perform Trouble Diagnosis For Quick And

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DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

Accurate Repair

INFOID:000000004392471

WORK FLOW

1. LISTEN TO CUSTOMER COMPLAINT

Interview the customer to obtain as much information as possible about the conditions and environment under which the symptom occurs.

>> GO TO 2.

2. CHECK FOR SERVICE BULLETINS

Check for any service bulletins.

>> GO TO 3.

3. CHECK FOR HVAC DTCs WITH CONSULT-III

Using CONSULT-III, perform "SELF-DIAGNOSIS RESULTS" of HVAC. Refer to [HAC-204, "DTC Index"](#).

Are there any HVAC DTCs present?

YES >> Go to HVAC DTC index. Refer to [HAC-204, "DTC Index"](#).

NO >> GO TO 4.

4. PERFORM OPERATIONAL CHECK

Verify the symptom with operational check based on the information obtained from the customer. Refer to [HAC-131, "Operational Check"](#).

>> GO TO 5.

5. GO TO APPROPRIATE TROUBLE DIAGNOSIS

Go to appropriate trouble diagnosis. Refer to [HA-20, "WITH MONOCHROME DISPLAY : Symptom Matrix Chart"](#).

NOTE:

If DTC is displayed, erase DTC after repairing or replacing malfunctioning parts.

Can a symptom be duplicated?

YES >> Repair or replace malfunctioning parts.

NO >> GO TO 6.

6. FINAL CHECK

Check that the A/C system operates normally.

Is the inspection result normal?

YES >> Inspection End

NO >> GO TO 3.

REFRIGERATION SYSTEM

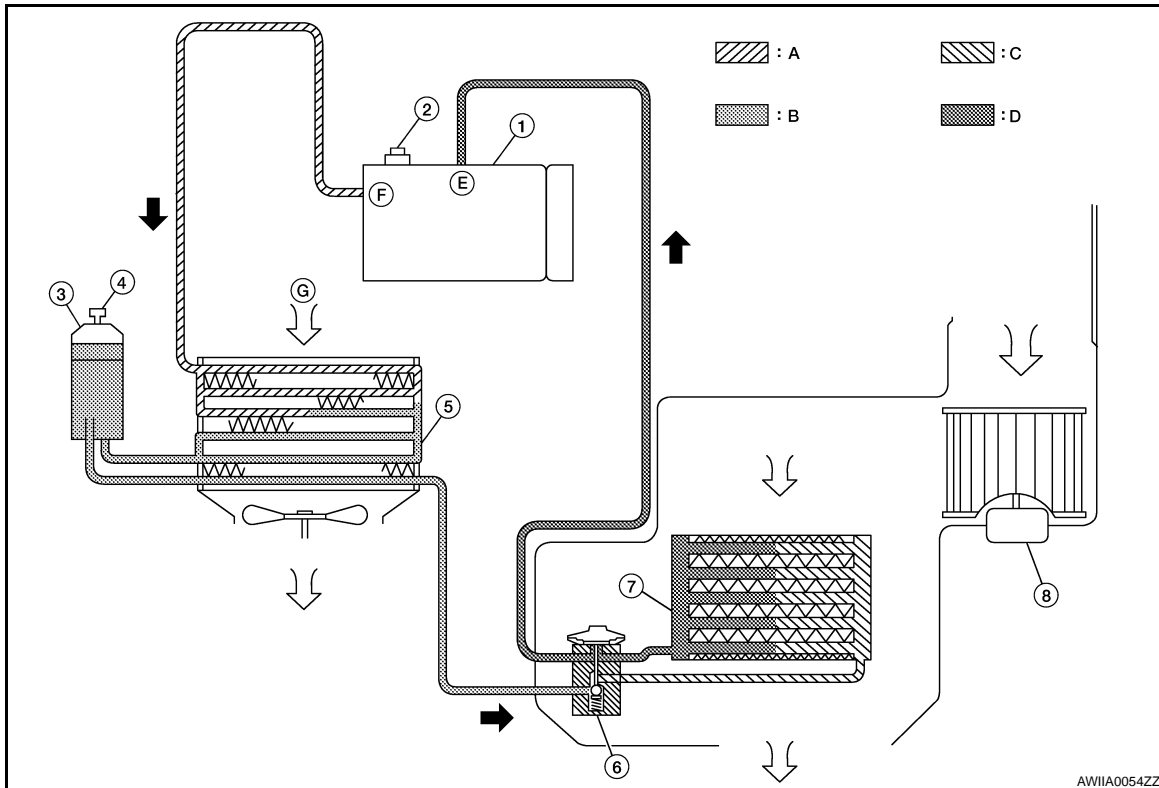
< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

REFRIGERATION SYSTEM
WITH COLOR DISPLAY

WITH COLOR DISPLAY : System Diagram

INFOID:000000003897363



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- | | | |
|--------------------------------|--------------------------|----------------------|
| 1. Electric compressor | 2. Pressure relief valve | 3. Liquid tank |
| 4. Refrigerant pressure sensor | 5. Condenser | 6. Expansion valve |
| 7. Evaporator | 8. Blower motor | A. High-pressure gas |
| B. High-pressure liquid | C. Low-pressure liquid | D. Low-pressure gas |
| E. Suction port | F. Discharge port | G. Outside air |

WITH COLOR DISPLAY : System Description

INFOID:000000003897362

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 coil is controlled by an externally equalized expansion valve, located inside the evaporator case.

REFRIGERANT PRESSURE SENSOR

The refrigerant system is protected against excessively high or low pressures by the refrigerant pressure sensor, located on the liquid tank attached to 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. The ECM then ceases to supply power to the A/C relay which disengages and stops the compressor when pressure on the high pressure side (as detected by refrigerant pressure sensor) is over approximately 2,746 kPa (28 kg/cm², 398 psi), or below approximately 120 kPa (1.22 kg/cm², 17.4 psi).

PRESSURE RELIEF VALVE

The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 3,600 kPa (36.7 kg/

REFRIGERATION SYSTEM

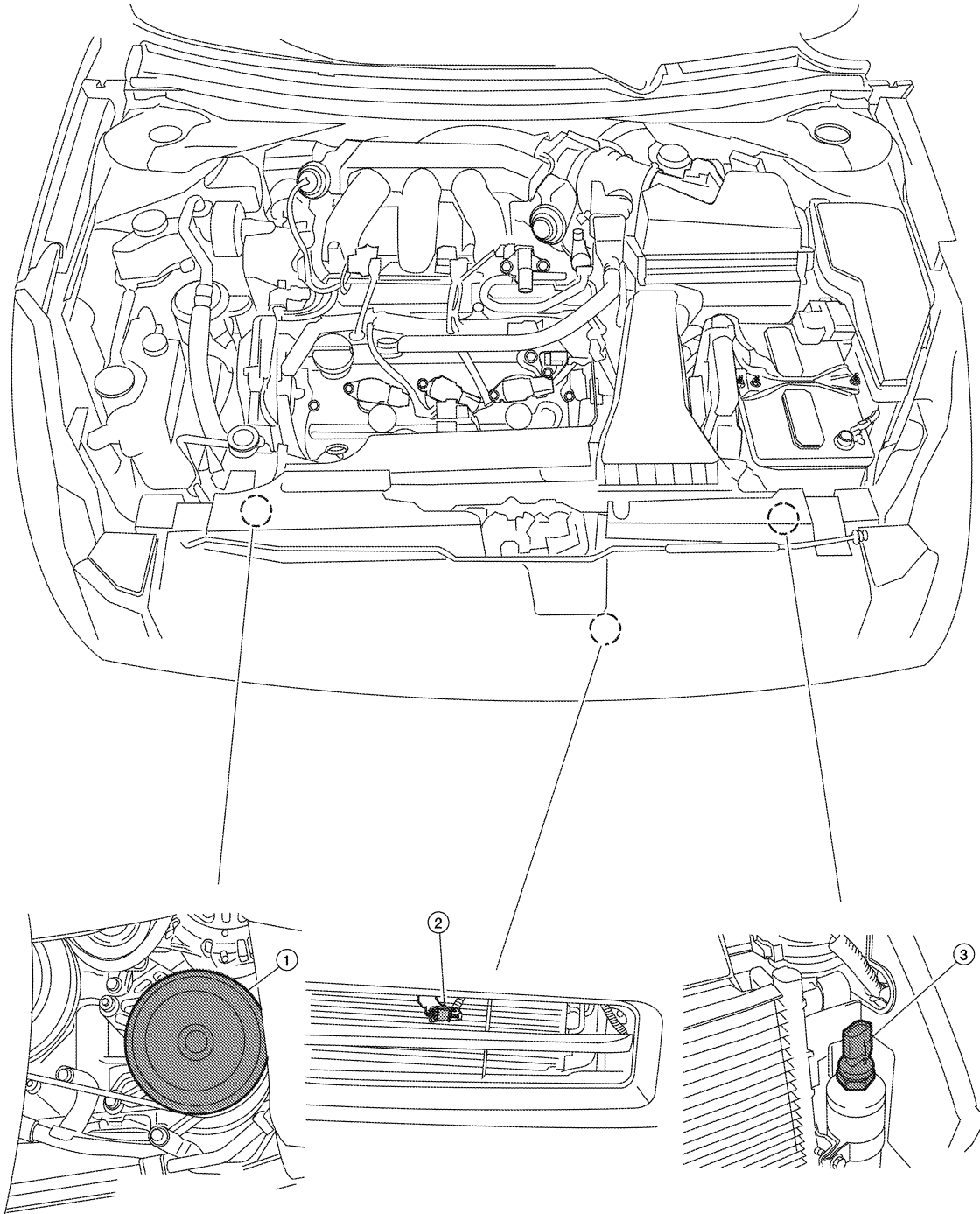
< FUNCTION DIAGNOSIS >

cm², 522 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

WITH COLOR DISPLAY : Component Part Location

INFOID:000000004335599

ENGINE COMPARTMENT



1. A/C compressor F3

2. Ambient Sensor E211

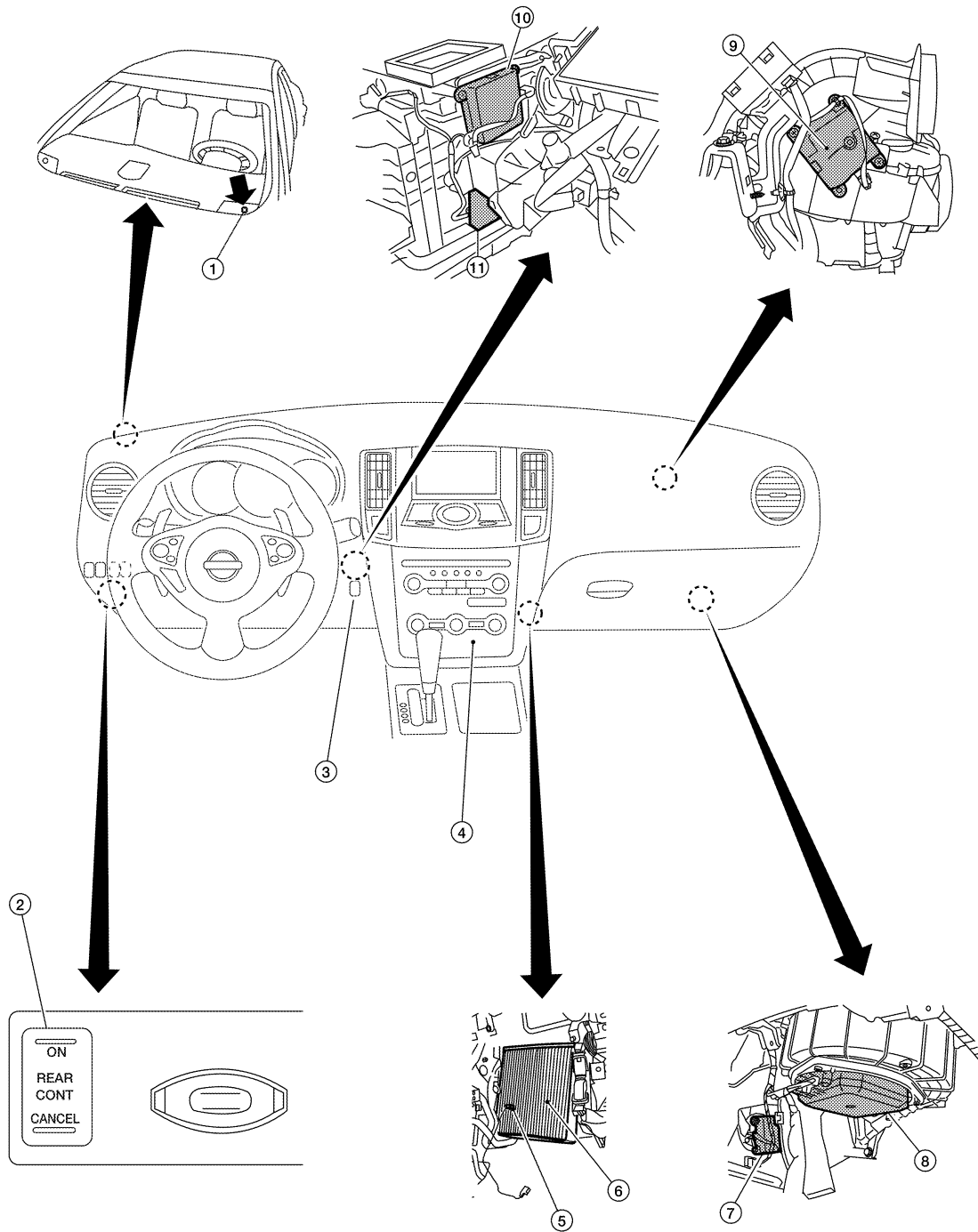
3. Refrigerant pressure sensor E219

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REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

PASSENGER COMPARTMENT



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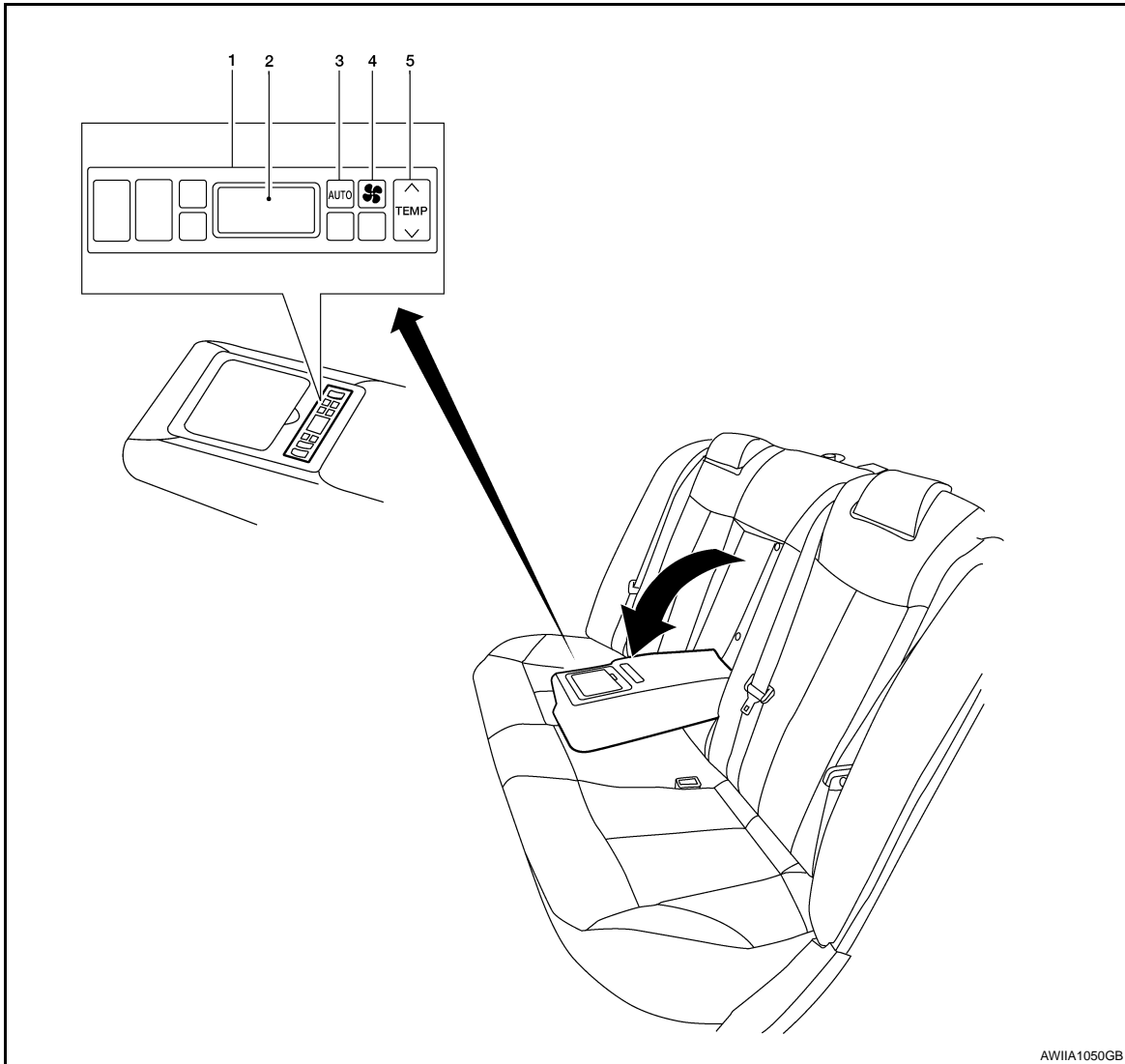
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|--|--------------------------------------|--------------------------|
| 1. Sun load sensor M56 | 2. Rear control cancel switch M89 | 3. In-vehicle sensor M34 |
| 4. A/V and AV switch assembly M98 | 5. Intake sensor M69 | 6. Evaporator |
| 7. Air mix door motor (passenger side) | 8. Blower motor | 9. Intake door motor |
| 10. Mode door motor | 11. Air mix door motor (driver side) | |

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REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

REAR PASSENGER COMPARTMENT



- 1. Rear control switch B402, B404
- 2. Display
- 3. AUTO switch (rear)
- 4. Blower control switch (rear)
- 5. Temperature control (rear)

WITH COLOR DISPLAY : Component Description

INFOID:000000004335600

Component	Reference
Refrigerant pressure sensor	EC-481, "Description"
A/C compressor	HAC-60, "Description"
Ambient sensor	HAC-33, "Description"
Intake door motor	HAC-51, "Description"
Air mix door motor (driver side)	HAC-45, "Description"

REFRIGERATION SYSTEM

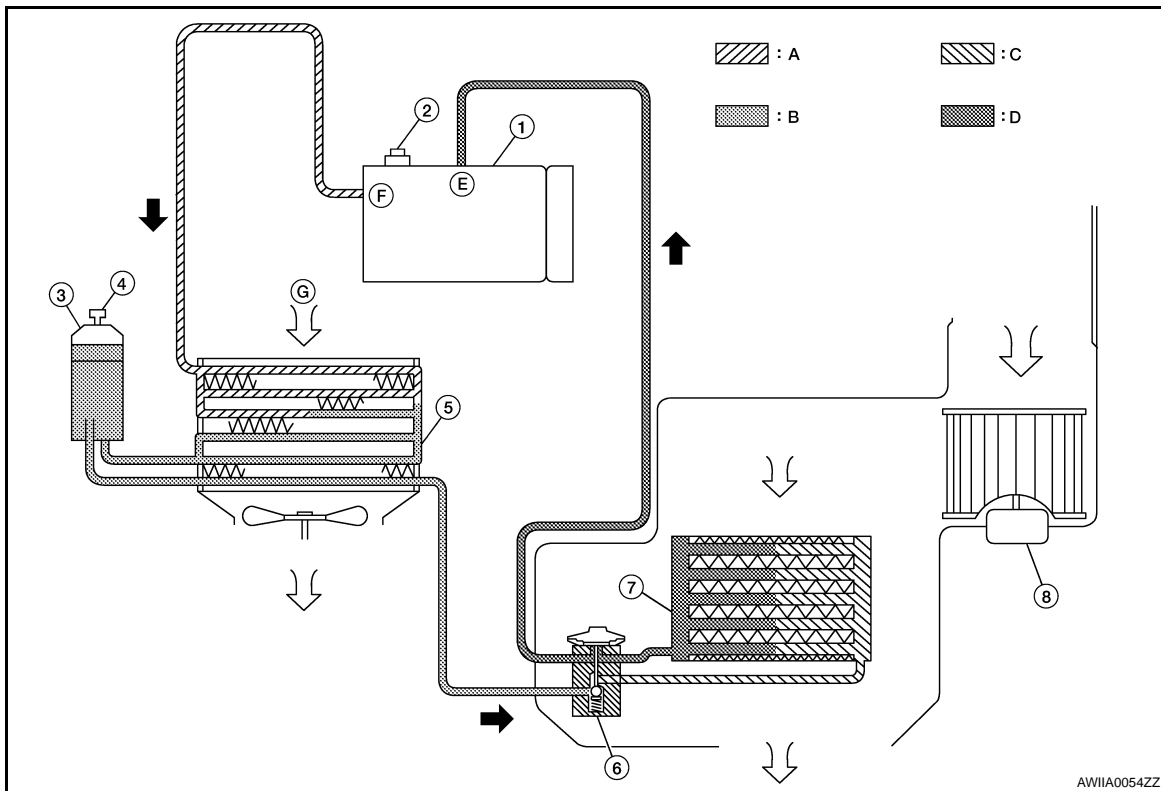
< FUNCTION DIAGNOSIS >

Component	Reference
Air mix door motor (passenger side)	HAC-47. "Description"
Mode door motor	HAC-49. "Description"
Sunload sensor	HAC-42. "Description"
In-vehicle sensor	HAC-36. "Description"
A/C auto amp.	HAC-63. "A/C AUTO AMP. : Description"
Intake sensor	HAC-39. "Description"
Blower motor	HAC-53. "Description"

WITH MONOCHROME DISPLAY

WITH MONOCHROME DISPLAY : System Diagram

INFOID:000000004392518



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|--------------------------------|--------------------------|----------------------|
| 1. Electric compressor | 2. Pressure relief valve | 3. Liquid tank |
| 4. Refrigerant pressure sensor | 5. Condenser | 6. Expansion valve |
| 7. Evaporator | 8. Blower motor | A. High-pressure gas |
| B. High-pressure liquid | C. Low-pressure liquid | D. Low-pressure gas |
| E. Suction port | F. Discharge port | G. Outside air |

WITH MONOCHROME DISPLAY : System Description

INFOID:000000004392519

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 coil is controlled by an externally equalized expansion valve, located inside the evaporator case.

REFRIGERANT PRESSURE SENSOR

The refrigerant system is protected against excessively high or low pressures by the refrigerant pressure sensor, located on the liquid tank attached to 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

REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

voltage signal to the ECM. The ECM then ceases to supply power to the A/C relay which disengages and stops the compressor when pressure on the high pressure side (as detected by refrigerant pressure sensor) is over approximately 2,746 kPa (28 kg/cm², 398 psi), or below approximately 120 kPa (1.22 kg/cm², 17.4 psi).

PRESSURE RELIEF VALVE

The refrigerant system is also protected by a pressure relief valve, located in the rear head of the compressor. When the pressure of refrigerant in the system increases to an abnormal level [more than 3,600 kPa (36.7 kg/cm², 522 psi)], the release port on the pressure relief valve automatically opens and releases refrigerant into the atmosphere.

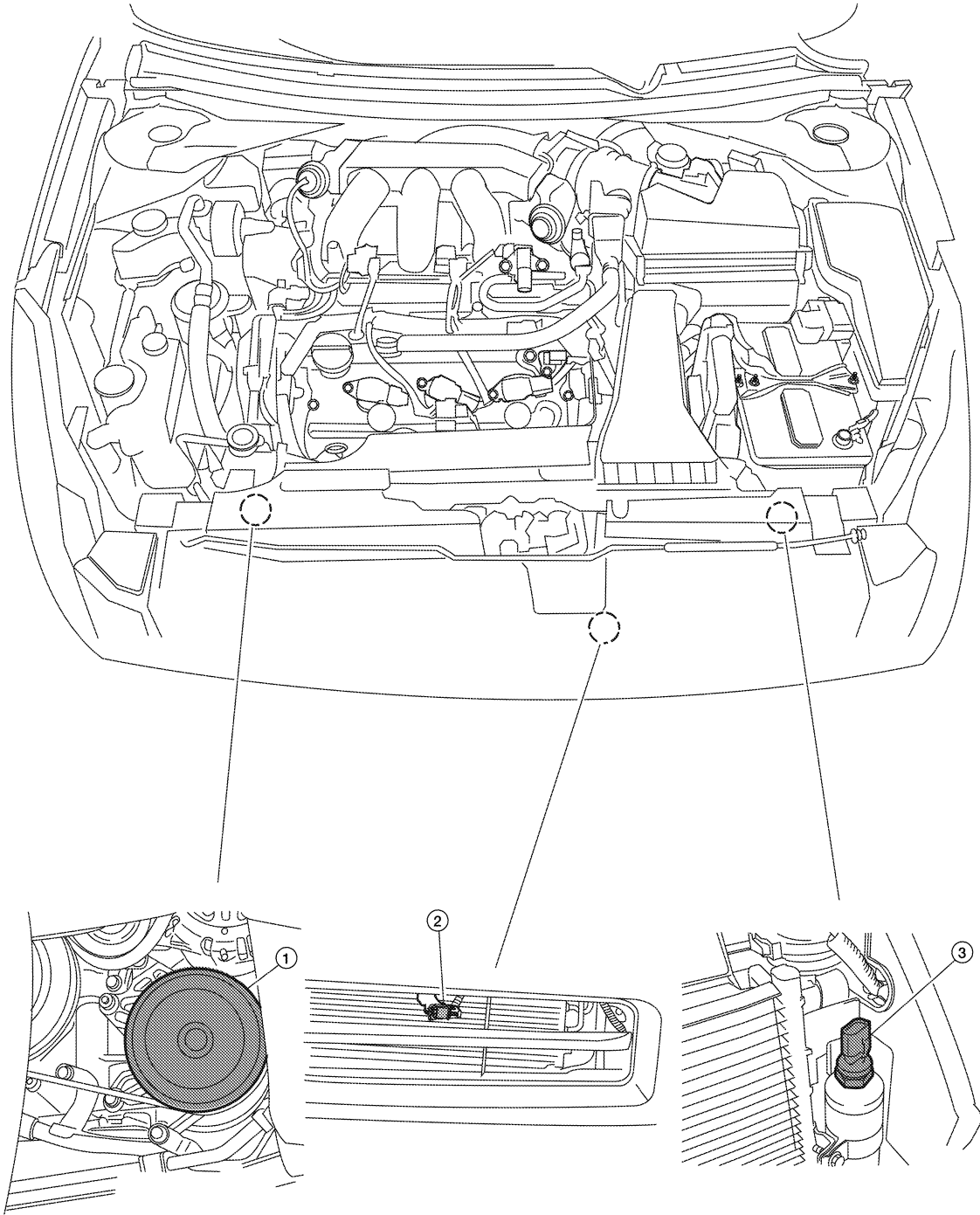
WITH MONOCHROME DISPLAY : Component Part Location

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ENGINE COMPARTMENT

REFRIGERATION SYSTEM

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1. A/C compressor F3

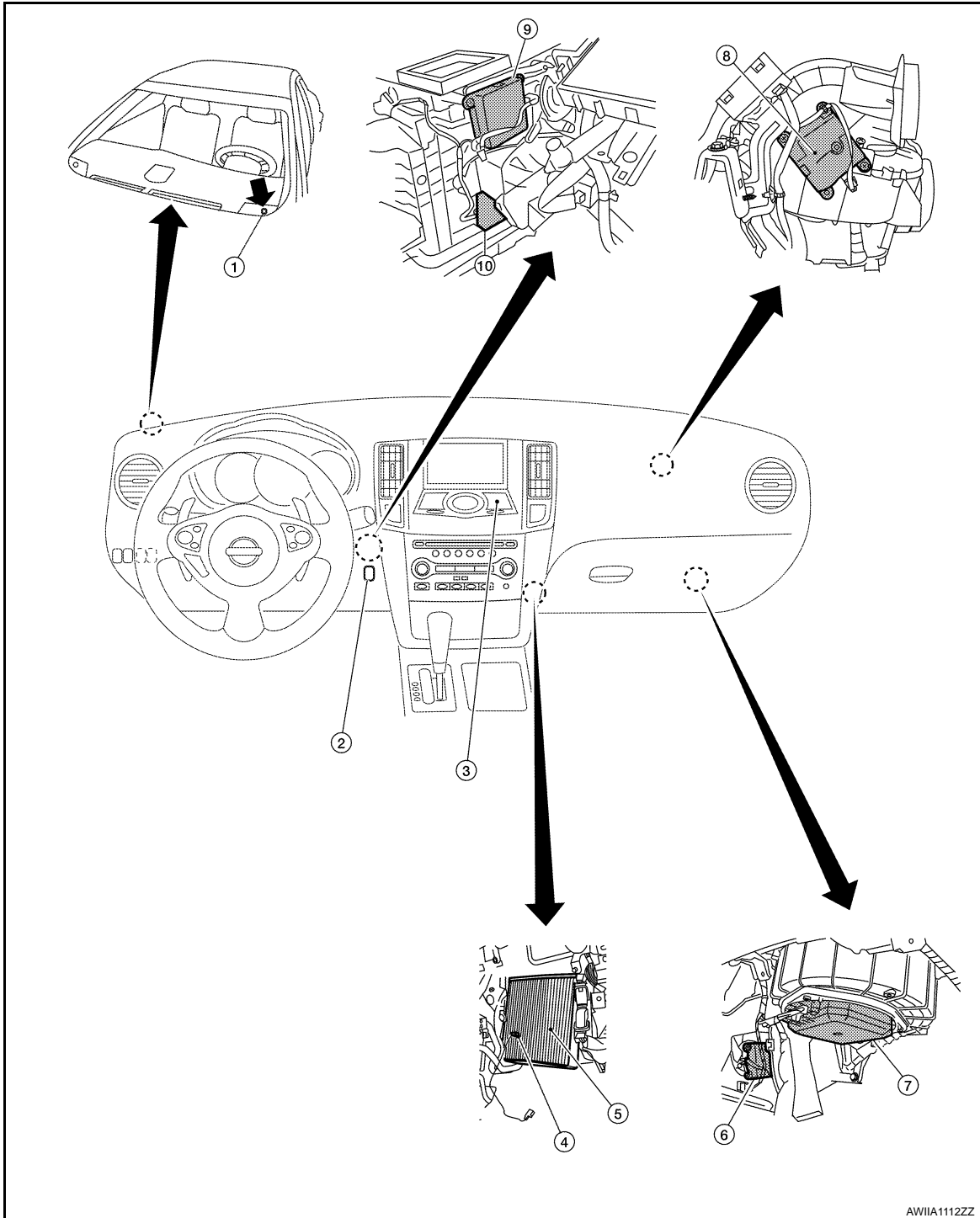
2. Ambient Sensor E211

3. Refrigerant pressure sensor E219

PASSENGER COMPARTMENT

REFRIGERATION SYSTEM

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|---|---------------------------|---|
| 1. Sun load sensor M56 | 2. In-vehicle sensor M34 | 3. A/C switch assembly M104 |
| 4. Intake sensor M69 | 5. Evaporator | 6. Air mix door motor (passenger side) M129 |
| 7. Blower motor M31 | 8. Intake door motor M126 | 9. Mode door motor M127 |
| 10. Air mix door motor (driver side) M128 | | |

WITH MONOCHROME DISPLAY : Component Description

INFOID:000000004392481

REFRIGERATION SYSTEM

< FUNCTION DIAGNOSIS >

Component	Reference	
Refrigerant pressure sensor	EC-481, "Description"	A
A/C Compressor	HAC-182, "Description"	
Ambient sensor	HAC-158, "Description"	B
Intake door motor	HAC-176, "Description"	
Air mix door motor (driver side)	HAC-170, "Description"	
Air mix door motor (passenger side)	HAC-172, "Description"	C
Mode door motor	HAC-174, "Description"	
Sunload sensor	HAC-167, "Description"	D
In-vehicle sensor	HAC-161, "Description"	
A/C auto amp.	HAC-186, "A/C AUTO AMP. : Description"	
Intake sensor	HAC-164, "Description"	E
Blower motor	HAC-178, "Description"	

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REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

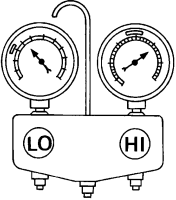
REFRIGERATION SYSTEM SYMPTOMS WITH COLOR DISPLAY

WITH COLOR DISPLAY : Trouble Diagnoses for Abnormal Pressure

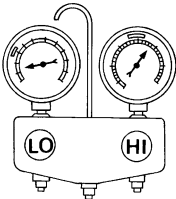
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Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (usual) pressure range. Since the standard (usual) pressure, however, differs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

Both High- and Low-pressure Sides are Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>A Both high- and low-pressure sides are too high.</p>  <p>AC359A</p>	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	<ul style="list-style-type: none"> Clean condenser. Check and repair cooling fan if necessary.
	<ul style="list-style-type: none"> Low-pressure pipe is not cold. When compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm², 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 and recharge system.
	Engine tends to overheat.	Engine cooling systems malfunction.	Check and repair engine cooling system.
	<ul style="list-style-type: none"> An area of the low-pressure pipe is colder than areas near the evaporator outlet. Plates are sometimes covered with frost. 	<ul style="list-style-type: none"> 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.

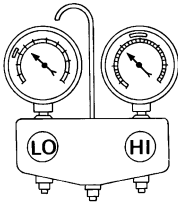
High-pressure Side is Too High and Low-pressure Side is Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>B High-pressure side is too high and low-pressure side is too low.</p>  <p>AC360A</p>	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.	<ul style="list-style-type: none"> Check and repair or replace malfunctioning parts. Check oil for contamination.

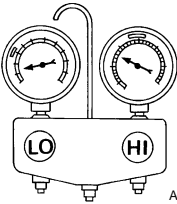
REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

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

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
C 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.

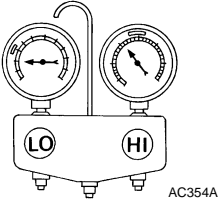
Both High- and Low-pressure Sides are Too Low

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
D Both high- and low-pressure sides are too low.  AC353A	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Replace liquid tank. Check oil for contamination.
	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Check and repair malfunctioning parts. Check oil for contamination.
	Expansion valve and liquid tank are warm or only cool when touched.	Low refrigerant charge. ↓ Leaking fittings or components.	Check refrigerant system for leaks. Refer to HA-42. "Inspection" .
	There is a big temperature difference between expansion valve inlet and outlet while the valve itself is frosted.	Expansion valve closes a little compared with the specification. ↓ 1. Improper expansion valve adjustment. 2. Malfunctioning expansion valve. 3. Outlet and inlet may be clogged.	<ul style="list-style-type: none"> Remove foreign particles by using compressed air. Check oil for contamination.
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	<ul style="list-style-type: none"> Check and repair malfunctioning parts. Check oil for contamination.
	Airflow volume is too low.	Evaporator is frozen.	<ul style="list-style-type: none"> Check intake sensor circuit. Refer to HAC-39. "Diagnosis Procedure". Repair evaporator fins. Replace evaporator. Refer to HAC-53. "Component Function Check".

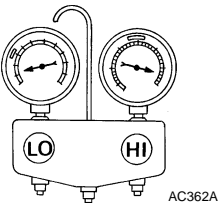
Low-pressure Side Sometimes Becomes Negative

REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>E Low-pressure side sometimes becomes negative.</p>  <p style="text-align: right; font-size: small;">AC354A</p>	<ul style="list-style-type: none"> 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. 	<p>Refrigerant does not discharge cyclically.</p> <p>↓</p> <p>Moisture is frozen at expansion valve outlet and inlet.</p> <p>↓</p> <p>Water is mixed with refrigerant.</p>	<ul style="list-style-type: none"> Drain water from refrigerant or replace refrigerant. Replace liquid tank.

Low-pressure Side Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>F Low-pressure side becomes negative.</p>  <p style="text-align: right; font-size: small;">AC362A</p>	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p>	<p>High-pressure side is closed and refrigerant does not flow.</p> <p>↓</p> <p>Expansion valve or liquid tank is frosted.</p>	<p>Leave the system at rest until no frost is present. Start it again to check whether or not the malfunction is caused by water or foreign particles.</p> <ul style="list-style-type: none"> 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 oil for contamination.

WITH COLOR DISPLAY : Symptom Matrix Chart

INFOID:000000004335602

Symptom	Reference	
A/C system cannot be controlled from the A/C & AV switch. Rear control switch operates properly.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-64, "A/C AND AV SWITCH ASSEMBLY : Diagnosis Procedure"
A/C system cannot be controlled from the rear control switch. A/C and AV switch assembly operates properly.	Go to Trouble Diagnosis Procedure for Rear Control Switch.	HAC-57, "Diagnosis Procedure"
A/C system cannot be controlled from either A/C & AV switch assembly or Rear control switch.	Go to Trouble Diagnosis Procedure for A/C and AV switch assembly System.	HAC-63, "A/C AUTO AMP. : Diagnosis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HAC-50, "Diagnosis Procedure"
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	HAC-46, "Diagnosis Procedure" (driver side) or HAC-48, "Diagnosis Procedure" (passenger side)
Air mix door motor does not operate normally.		

REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom	Reference	
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	HAC-52. "Diagnosis Procedure"
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-53. "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-61. "Diagnosis Procedure"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-98. "Component Function Check"
No cool air comes out. (Airflow volume is normal.)		
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-104. "Component Function Check"
No warm air comes out. (Airflow volume is normal.)		
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-107. "Component Function Check"
Memory function does not operate.	Go to Trouble Diagnosis Procedure for Memory Function.	HAC-109. "Component Function Check"

WITH MONOCHROME DISPLAY

WITH MONOCHROME DISPLAY : Trouble Diagnoses for Abnormal Pressure

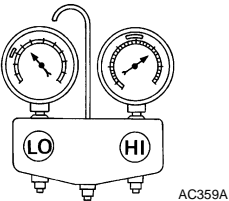
INFOID:000000004392491

Whenever system's high and/or low side pressure is abnormal, diagnose using a manifold gauge. The marker above the gauge scale in the following tables indicates the standard (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).

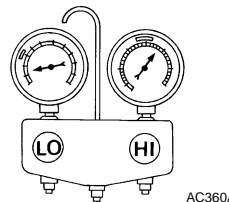
Both High- and Low-pressure Sides are Too High

REFRIGERATION SYSTEM SYMPTOMS

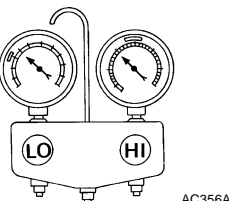
< SYMPTOM DIAGNOSIS >

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>A Both high- and low-pressure sides are too high.</p>  <p style="text-align: right; font-size: small;">AC359A</p>	<p>Pressure is reduced soon after water is splashed on condenser.</p>	<p>Excessive refrigerant charge in refrigeration cycle</p>	<p>Reduce refrigerant until specified pressure is obtained.</p>
	<p>Air suction by cooling fan is insufficient.</p>	<p>Insufficient condenser cooling performance ↓ 1. Condenser fins are clogged. 2. Improper fan rotation of cooling fan</p>	<ul style="list-style-type: none"> • Clean condenser. • Check and repair cooling fan if necessary.
	<ul style="list-style-type: none"> • Low-pressure pipe is not cold. • When A/C compressor is stopped high-pressure value quickly drops by approximately 196 kPa (2 kg/cm², 28 psi). It then decreases gradually thereafter. 	<p>Poor heat exchange in condenser (After A/C compressor operation stops, high-pressure decreases too slowly.) ↓ Air in refrigeration cycle</p>	<p>Evacuate and recharge system.</p>
	<p>Engine tends to overheat.</p>	<p>Engine cooling systems malfunction.</p>	<p>Check and repair engine cooling system.</p>
	<ul style="list-style-type: none"> • An area of the low-pressure pipe is colder than areas near the evaporator outlet. • Plates are sometimes covered with frost. 	<ul style="list-style-type: none"> • Excessive liquid refrigerant on low-pressure side • Excessive refrigerant discharge flow • Expansion valve is open a little compared with the specification. <p>↓ Improper expansion valve adjustment</p>	<p>Replace expansion valve.</p>

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

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

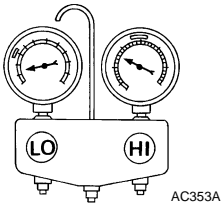
High-pressure Side is Too Low and Low-pressure Side is Too High

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>C High-pressure side is too low and low-pressure side is too high.</p>  <p style="text-align: right; font-size: small;">AC356A</p>	<p>High- and low-pressure sides become equal soon after A/C compressor operation stops.</p>	<p>A/C compressor pressure operation is improper. ↓ Damaged inside A/C compressor packings.</p>	<p>Replace A/C compressor.</p>
	<p>No temperature difference between high- and low-pressure sides.</p>	<p>A/C compressor pressure operation is improper. ↓ Damaged inside A/C compressor packings.</p>	<p>Replace A/C compressor.</p>

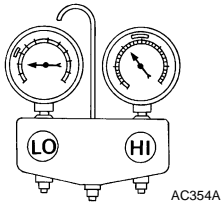
Both High- and Low-pressure Sides are Too Low

REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Replace liquid tank. Check oil for contamination.
	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Check and repair malfunctioning parts. Check oil for contamination.
<p>D Both high- and low-pressure sides are too low.</p>  <p style="text-align: right; font-size: small;">AC353A</p>	Expansion valve and liquid tank are warm or only cool when touched.	Low refrigerant charge. ↓ Leaking fittings or components.	Check refrigerant system for leaks. Refer to HA-40, "Checking of 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.	<ul style="list-style-type: none"> Remove foreign particles by using compressed air. Check oil for contamination.
	An area of the low-pressure pipe is colder than areas near the evaporator outlet.	Low-pressure pipe is clogged or crushed.	<ul style="list-style-type: none"> Check and repair malfunctioning parts. Check oil for contamination.
	airflow volume is too low.	Evaporator is frozen.	<ul style="list-style-type: none"> Check intake sensor circuit. Refer to HAC-164, "Diagnosis Procedure". Repair evaporator fins. Replace evaporator. Refer to HAC-178, "Component Function Check".

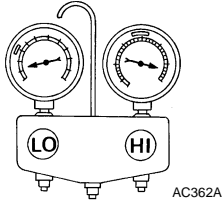
Low-pressure Side Sometimes Becomes Negative

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>E Low-pressure side sometimes becomes negative.</p>  <p style="text-align: right; font-size: small;">AC354A</p>	<ul style="list-style-type: none"> 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 A/C compressor is stopped and restarted. 	Refrigerant does not discharge cyclically. ↓ Moisture is frozen at expansion valve outlet and inlet. ↓ Water is mixed with refrigerant.	<ul style="list-style-type: none"> Drain water from refrigerant or replace refrigerant. Replace liquid tank.

Low-pressure Side Becomes Negative

REFRIGERATION SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Gauge indication	Refrigerant cycle	Probable cause	Corrective action
<p>F Low-pressure side becomes negative.</p> 	<p>Liquid tank or front/rear side of expansion valve's pipe is frosted or dewed.</p>	<p>High-pressure side is closed and refrigerant does not flow. ↓ Expansion valve or liquid tank is frosted.</p>	<p>Leave the system at rest until no frost is present. Start it again to check whether or not the malfunction is caused by water or foreign particles.</p> <ul style="list-style-type: none"> • 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 oil for contamination.

WITH MONOCHROME DISPLAY : Symptom Matrix Chart

INFOID:000000004392490

Symptom	Reference	
A/C system cannot be controlled from the A/C switch assembly.	Go to Trouble Diagnosis Procedure for A/C System.	HAC-187. "A/C SWITCH ASSEMBLY : Diagnosis Procedure"
A/C display does not operate.	Go to Trouble Diagnosis Procedure for A/C display unit.	HAC-188. "A/C DISPLAY UNIT : Diagnosis Procedure"
Air outlet does not change.	Go to Trouble Diagnosis Procedure for Mode Door Motor. (LAN)	HAC-175. "Diagnosis Procedure"
Mode door motor does not operate normally.		
Discharge air temperature does not change.	Go to Trouble Diagnosis Procedure for Air Mix Door Motor. (LAN)	HAC-171. "Diagnosis Procedure" (driver side) or HAC-173. "Diagnosis Procedure" (passenger side)
Air mix door motor does not operate normally.		
Intake door does not change.	Go to Trouble Diagnosis Procedure for Intake Door Motor. (LAN)	HAC-177. "Diagnosis Procedure"
Intake door motor does not operate normally.		
Blower motor operation is malfunctioning.	Go to Trouble Diagnosis Procedure for Blower Motor.	HAC-178. "Diagnosis Procedure"
Magnet clutch does not engage.	Go to Trouble Diagnosis Procedure for Magnet Clutch.	HAC-183. "Diagnosis Procedure"
Insufficient cooling	Go to Trouble Diagnosis Procedure for Insufficient Cooling.	HAC-206. "Component Function Check"
No cool air comes out. (Airflow volume is normal.)		
Insufficient heating	Go to Trouble Diagnosis Procedure for Insufficient Heating.	HAC-212. "Component Function Check"
No warm air comes out. (Airflow volume is normal.)		
Noise	Go to Trouble Diagnosis Procedure for Noise.	HAC-215. "Component Function Check"
Memory function does not operate.	Go to Trouble Diagnosis Procedure for Memory Function.	HAC-217. "Component Function Check"

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000003897348

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR 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 SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precautions Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:000000004399687

NOTE:

- Before removing and installing any control units, first turn the push-button ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

This vehicle is equipped with a push-button ignition switch and a steering lock unit.

If the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.

If turning the steering wheel is required with the battery disconnected or discharged, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

2. Carry the Intelligent Key or insert it to the key slot and turn the push-button ignition switch to ACC position. (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the push-button ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the push-button ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

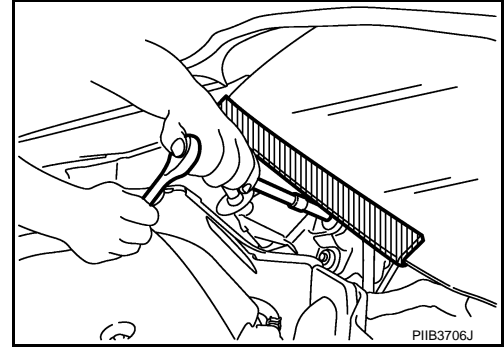
PRECAUTIONS

< PRECAUTION >

Precaution for Procedure without Cowl Top Cover

INFOID:000000003897350

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



Precautions For Xenon Headlamp Service

INFOID:000000004335464

WARNING:

Comply with the following warnings to prevent any serious accident.

- Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.
- Never work with wet hands.
- Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector. (Turning it ON outside the lamp case may cause fire or visual impairments.)
- Never touch the bulb glass immediately after turning it OFF. It is extremely hot.

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)
- Never perform HID circuit inspection with a tester.
- Never touch the xenon bulb glass with hands. Never put oil and grease on it.
- Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.
- Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).

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

INFOID:000000003897351

WARNING:

- CFC-12 (R-12) refrigerant and HFC-134a (R-134a) refrigerant are not compatible. If the refrigerants are mixed compressor failure is likely to occur. Refer to [HA-40, "Checking of Refrigerant Leaks"](#). To determine the purity of HFC-134a (R-134a) in the vehicle and recovery tank, use Refrigerant Recovery/Recycling Recharging equipment and Refrigerant Identifier.
- Use only specified oil for the HFC-134a (R-134a) A/C system and HFC-134a (R-134a) components. If oil other than that specified is used, compressor failure is likely to occur.
- The specified HFC-134a (R-134a) oil 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 oil from a sealed container. Immediately reseal containers of oil. Without proper sealing, oil will become moisture saturated and should not be used.
 - Avoid breathing A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose and throat. Remove HFC-134a (R-134a) from the A/C system using certified service equipment meeting requirements of SAE J2210 [HFC-134a (R-134a) recycling equipment], or J2209 [HFC-134a (R-134a) recycling equipment]. If accidental system discharge occurs, ventilate work area before resuming service. Additional health and safety information may be obtained from refrigerant and oil manufacturers.
 - Do not allow A/C oil to come in contact with styrofoam parts. Damage may result.

PRECAUTIONS

< PRECAUTION >

CONTAMINATED REFRIGERANT

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

- Explain to the customer that environmental regulations prohibit the release of contaminated refrigerant into the atmosphere.
- Explain that recovery of the contaminated refrigerant could damage your service equipment and refrigerant supply.
- Suggest the customer return the vehicle to the location of previous service where the contamination may have occurred.
- If you choose to perform the repair, recover the refrigerant using only **dedicated equipment and containers. Do not recover contaminated refrigerant into your existing service equipment.** If your facility does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.
- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact NISSAN Customer Affairs for further assistance.

General Refrigerant Precaution

INFOID:000000003897353

WARNING:

- **Do not release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant every time an air conditioning system is discharged.**
- **Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Do not store or heat refrigerant containers above 52°C (125°F).**
- **Do not heat a refrigerant container with an open flame; if container warming is required, place the bottom of the container in a pail of warm 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.**

Refrigerant Connection

INFOID:000000003897356

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

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

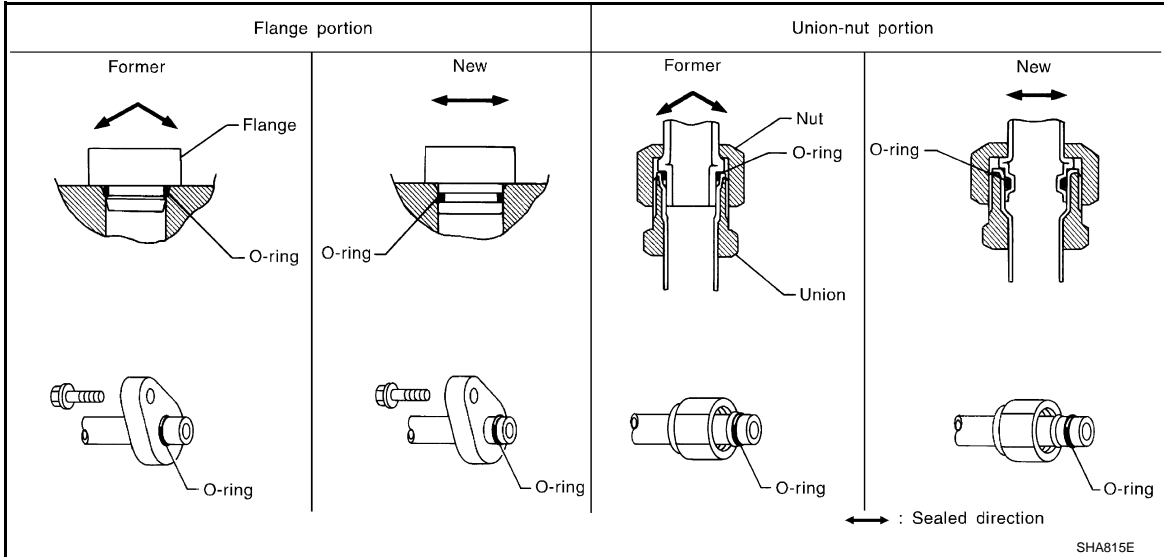
FEATURES OF NEW TYPE REFRIGERANT CONNECTION

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

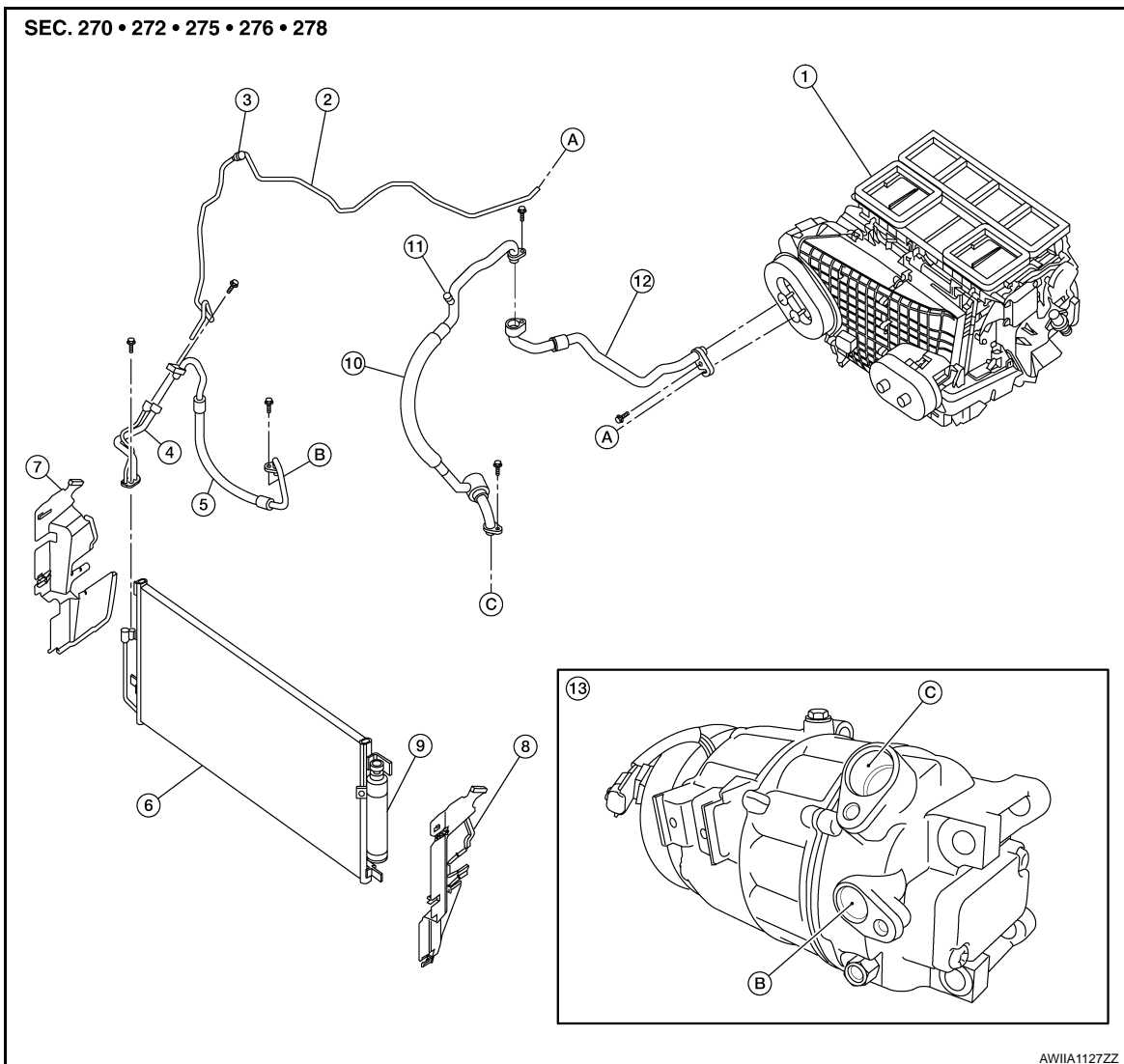
PRECAUTIONS

< PRECAUTION >

- 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



PRECAUTIONS

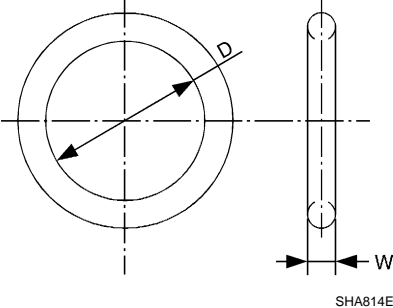
< PRECAUTION >

- | | | | |
|---|---|--|---|
| 1. Heater and cooling unit assembly | 2. High-pressure pipe | 3. High-pressure A/C service valve | A |
| 4. Junction pipe | 5. High-pressure flexible hose | 6. Condenser and liquid tank | |
| 7. Air deflector RH | 8. Air deflector LH | 9. Liquid tank and refrigerant pressure sensor | B |
| 10. Low-pressure flexible hose | 11. Low-pressure A/C service valve | 12. Low-pressure pipe | |
| 13. Compressor | A. High-pressure pipe to heater and cooling unit assembly | B. High-pressure flexible hose to compressor | C |
| C. Low-pressure flexible hose to compressor | | | |

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

	Connec- tion type	O-ring size	Part number*	D mm (in)	W mm (in)
	New	8	92471 N8210	6.8 (0.268)	1.85 (0.0728)
Former	10	J2476 89956	9.25 (0.3642)	1.78 (0.0701)	
New	12	92472 N8210	10.9 (0.429)	2.43 (0.0957)	
Former		92475 71L00	11.0 (0.433)	2.4 (0.094)	
New	16	92473 N8210	13.6 (0.535)	2.43 (0.0957)	
Former		92475 72L00	14.3 (0.563)	2.3 (0.091)	
New	19	92474 N8210	16.5 (0.650)	2.43 (0.0957)	
Former		92477 N8200	17.12 (0.6740)	1.78 (0.0701)	
New	24	92195 AH300	21.8 (0.858)	2.4 (0.094)	

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

WARNING:

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

CAUTION:

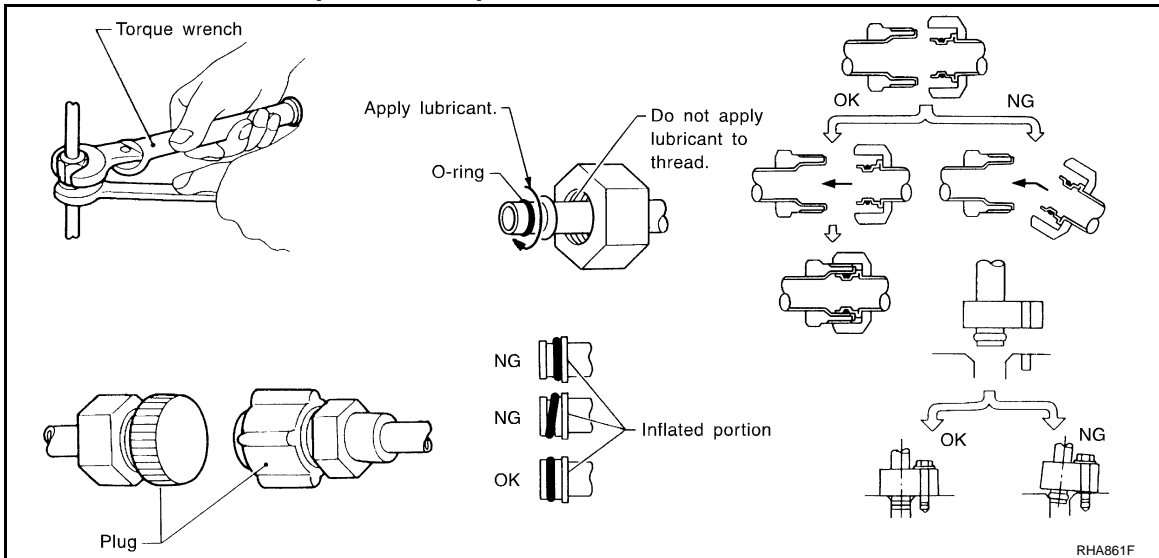
When replacing or cleaning refrigerant cycle components, observe the following.

- When the compressor is removed, store it in the same position as it is when mounted on the car. Failure to do so will cause oil 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 oil to circle of the O-rings shown in illustration. Be careful not to apply oil to threaded portion.
Oil name: NISSAN A/C System Oil Type S or equivalent
- 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.

PRECAUTIONS

< PRECAUTION >

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



Service Equipment

INFOID:000000003897358

RECOVERY/RECYCLING EQUIPMENT

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

ELECTRONIC LEAK DETECTOR

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

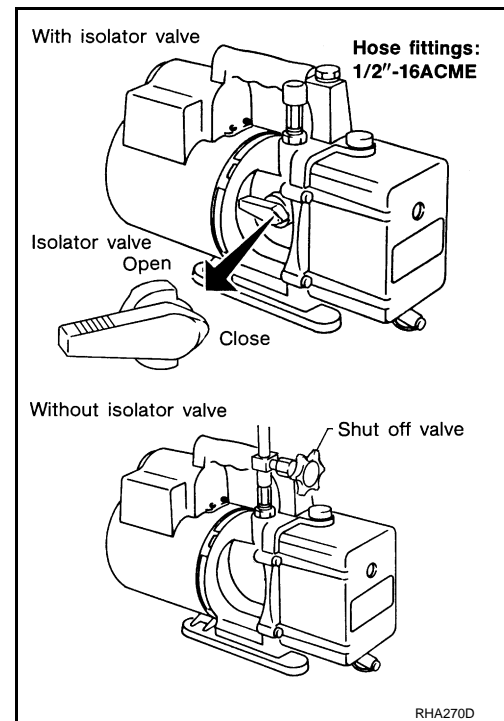
VACUUM PUMP

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

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

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

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

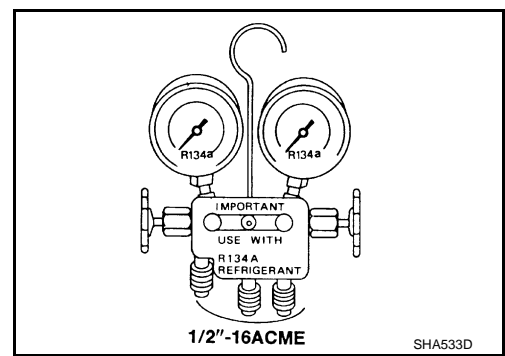


MANIFOLD GAUGE SET

PRECAUTIONS

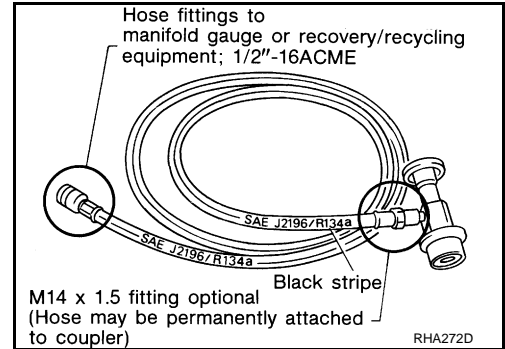
< PRECAUTION >

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



SERVICE HOSES

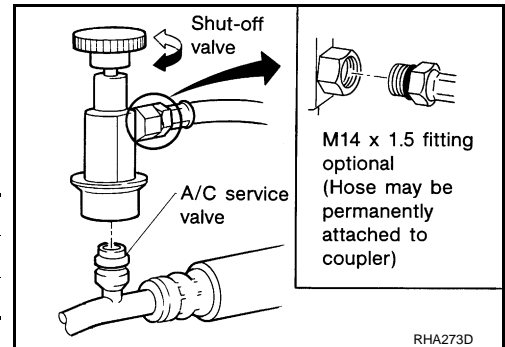
Be certain that the service hoses display the markings described (colored hose with black stripe). All hoses must include positive shut-off devices (either manual or automatic) near the end of the hoses opposite the manifold gauge.



SERVICE COUPLERS

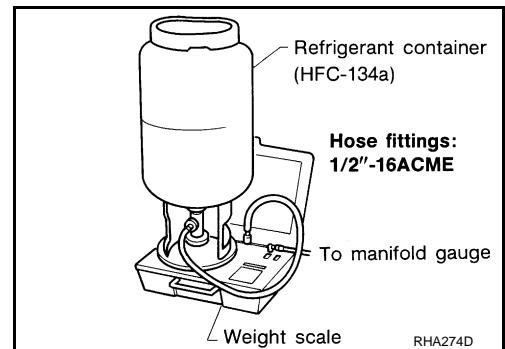
Never attempt to connect HFC-134a (R-134a) service couplers to a CFC-12 (R-12) A/C system. The HFC-134a (R-134a) couplers will not properly connect to the CFC-12 (R-12) system. However, if an improper connection is attempted, discharging and contamination may occur.

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



WEIGHT SCALE

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



CHARGING CYLINDER

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

COMPRESSOR

< PRECAUTION >

COMPRESSOR

General Precautions

INFOID:000000004335466

- 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 Oil Quantity in Compressor” exactly. Refer to [HA-36, "Maintenance of Oil Quantity"](#).
- Keep friction surfaces between clutch and pulley clean. If the surface is contaminated with oil, wipe it off by using a clean waste cloth moistened with thinner.
- After compressor service operation, turn the compressor shaft by hand more than 5 turns in both directions. This will equally distribute oil inside the compressor. After the compressor is installed, let the engine idle and operate the compressor for 1 hour.
- After replacing the compressor magnet clutch, apply voltage to the new one and check for normal operation.

LEAK DETECTION DYE

< PRECAUTION >

LEAK DETECTION DYE

General Precautions

INFOID:000000004335465

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time **cannot be removed**.
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 cc) per A/C system.
- Leak detection dyes for HFC-134a (R-134a) and HC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in R-12 A/C systems or HC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three years unless a compressor failure occurs.

IDENTIFICATION

Vehicles with factory installed fluorescent dye have a green label.

IDENTIFICATION LABEL FOR VEHICLE

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

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PREPARATION

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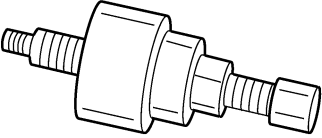
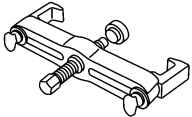

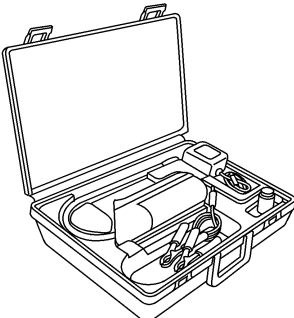
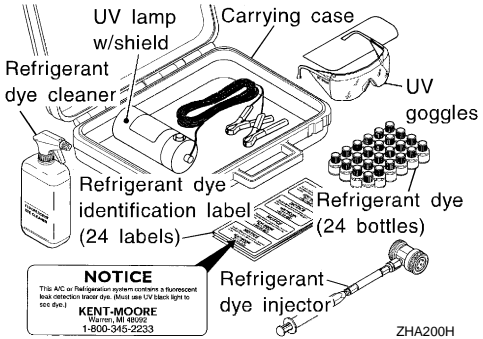
PREPARATION

PREPARATION

Special Service Tool

INFOID:000000003897359

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

Tool number (Kent-Moore No.) Tool name	Description
<p>— (J-38873-A) Drive plate installer</p>  <p style="text-align: right;">WJIA0367E</p>	<p>Installing pulley and drive plate</p>
<p>KV99233130 (J-29884) Pulley puller</p>  <p style="text-align: right;">LHA172</p>	<p>Removing pulley</p>
<p>K991J0130 (ACR2005-NI) ACR A/C Service Center</p>  <p style="text-align: right;">WJIA0293E</p>	<p>Refrigerant recovery, recycling and recharging</p>
<p>— (J-41995) Electronic refrigerant leak detector</p>  <p style="text-align: right;">AHA281A</p>	<p>Power supply: DC 12V (Battery terminal)</p>
<p>— (J-43926) Refrigerant dye leak detection kit Kit includes: (J-42220) UV lamp and UV safety goggles (J-41459) Refrigerant dye injector (J-41447) quantity 24 HFC-134a (R-134a) refrigerant dye (J-43872) Refrigerant dye cleaner</p>  <p style="text-align: right;">ZHA200H</p>	<p>Power supply: DC 12V (Battery terminal)</p>

PREPARATION

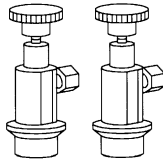
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Tool number (Kent-Moore No.) Tool name	Description	
— (J-42220) Fluorescent dye leak detector	Power supply: DC 12V (Battery terminal) For checking refrigerant leak when fluorescent dye is installed in A/C system. Includes: UV lamp and UV safety goggles	A B C
— (J-41447) HFC-134a (R-134a) Fluorescent leak detection dye (Box of 24, 1/4 ounce bottles)	Application: For HFC-134a (R-134a) PAG oil Container: 1/4 ounce (7.4cc) bottle (Includes self-adhesive dye identification labels for affixing to vehicle after charging system with dye.)	D E F
— (J-41459) HFC-134a (R-134a) Dye injector Use with J-41447, 1/4 ounce bottle	For injecting 1/4 ounce of fluorescent leak detection dye into A/C system.	G H
— (J-43872) Refrigerant dye cleaner	For cleaning dye spills.	HA J
— (J-39183-C) Manifold gauge set (with hoses and couplers)	Identification: • The gauge face indicates R-134a. Fitting size: Thread size • 1/2" -16 ACME	K L M N
Service hoses • (J-39500-72B) High side hose • (J-39500-72R) Low side hose • (J-39500-72Y) Utility hose	Hose color: • Low side hose: Blue with black stripe • High side hose: Red with black stripe • Utility hose: Yellow with black stripe or green with black stripe Hose fitting to gauge: • 1/2" -16 ACME	O P

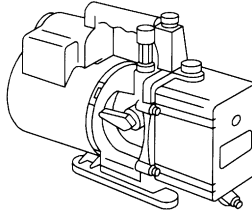
PREPARATION

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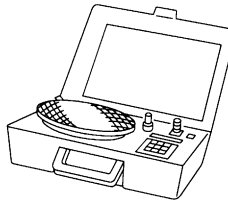
Tool number (Kent-Moore No.) Tool name	Description
Service couplers <ul style="list-style-type: none"> (J-39500-20A) High side coupler (J-39500-24A) Low side coupler 	Hose fitting to service hose: <ul style="list-style-type: none"> M14 x 1.5 fitting is optional or permanently attached.
— (J-39649) Vacuum pump (Including the isolator valve)	Capacity: <ul style="list-style-type: none"> Air displacement: 4 CFM Micron rating: 20 microns Oil capacity: 482 g (17 oz) Fitting size: Thread size 1/2" -16 ACME
— (J-39650) Weight scale	For measuring of refrigerant Fitting size: Thread size 1/2"-16 ACME



S-NT202



S-NT203

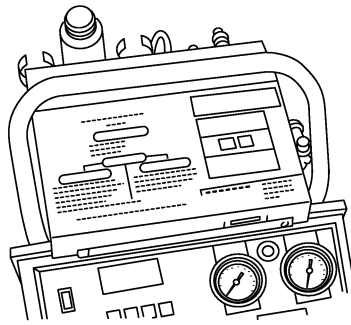


S-NT200

Commercial Service Tool

INFOID:000000003897361

Tool number Tool name	Description
J-41810-NI Refrigerant identifier equipment HFC-134a (R-134a)	Checking refrigerant purity and system contamination
Power tool	Removing bolts and nuts



RJIA0197E



PIIB1407E

Sealant or/and Oil

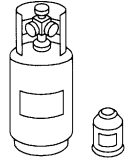

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- Never mix HFC-134a refrigerant and oil with CFC-12 (R-12) refrigerant and oil.
- Separate and non-interchangeable service equipment must be used for handling each type of refrigerant and oil.

PREPARATION

< PREPARATION >

- Refrigerant container fittings, service hose fittings and service equipment fittings (equipment which handles refrigerant and oil) are different between CFC-12 (R-12) and HFC-134a (R-134a). This is to avoid mixed use of the refrigerant and oil.
- Never use adapters that convert one size fitting to another, as refrigerant and oil contamination will occur and compressor failure will result.

Tool name	Description
Refrigerant HFC-134a (R-134a) <div style="text-align: center;">  <p>S-NT196</p> </div>	Container color: light blue Container marking: HFC-134a (R-134a) Fitting size: thread size <ul style="list-style-type: none"> • large container 1/2" -16 ACME
Genuine NISSAN A/C System Oil Type S <div style="text-align: center;">  <p>S-NT197</p> </div>	Type: poly alkaline glycol oil (PAG), type S Application: HFC-134a (R-134a) swash plate compressors (NISSAN only) Lubricity: 40 m ℓ (1.4 US fl oz, 1.4 Imp fl oz)

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REFRIGERANT

< ON-VEHICLE MAINTENANCE >

ON-VEHICLE MAINTENANCE

REFRIGERANT

Collection and Charge

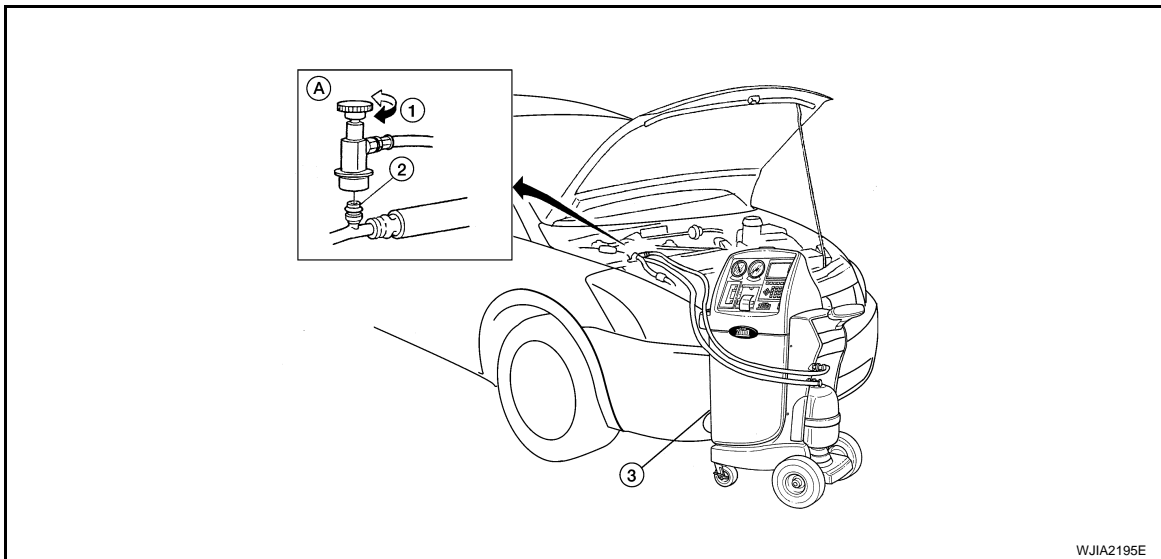
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SETTING OF SERVICE TOOLS AND EQUIPMENT

WARNING:

Avoid breathing the A/C refrigerant and oil vapor or mist. Exposure may irritate eyes, nose, and throat. Remove the HFC-134a (R-134a) from the A/C system using certified service equipment meeting the requirements of SAE J2210 (R-134a recycling equipment) or SAE J2201 (R-134a recovery equipment). If an accidental system discharge occurs, ventilate the work area before resuming service. Additional health and safety information may be obtained from the refrigerant and oil manufacturers.

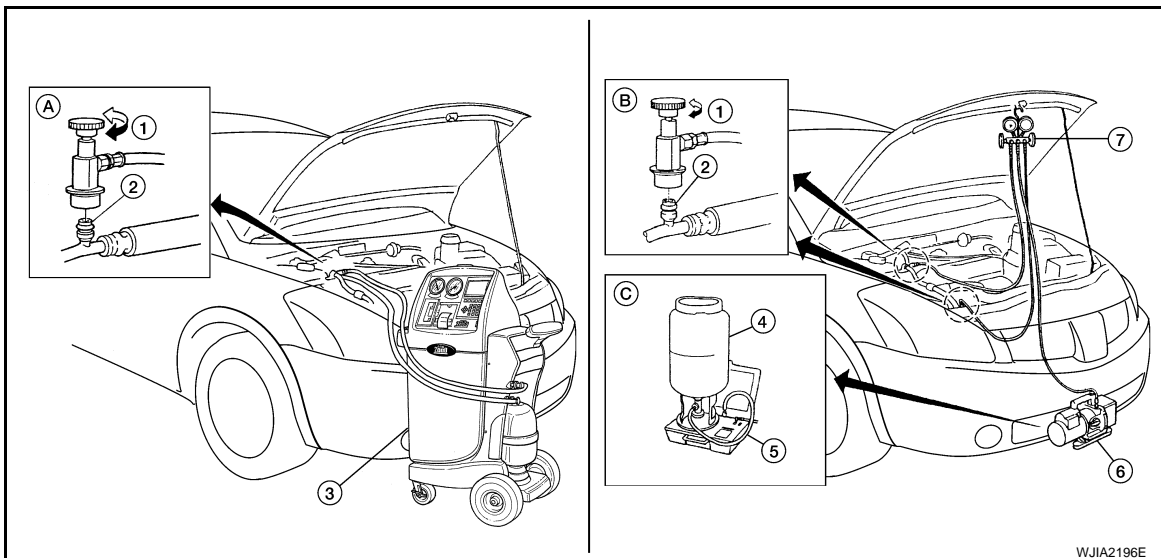
Discharging Refrigerant



WJIA2195E

- 1. Shut-off valve
- 2. A/C service valve
- 3. Recovery/recycling equipment
- A. Preferred (best) method

Evacuating System and Charging Refrigerant



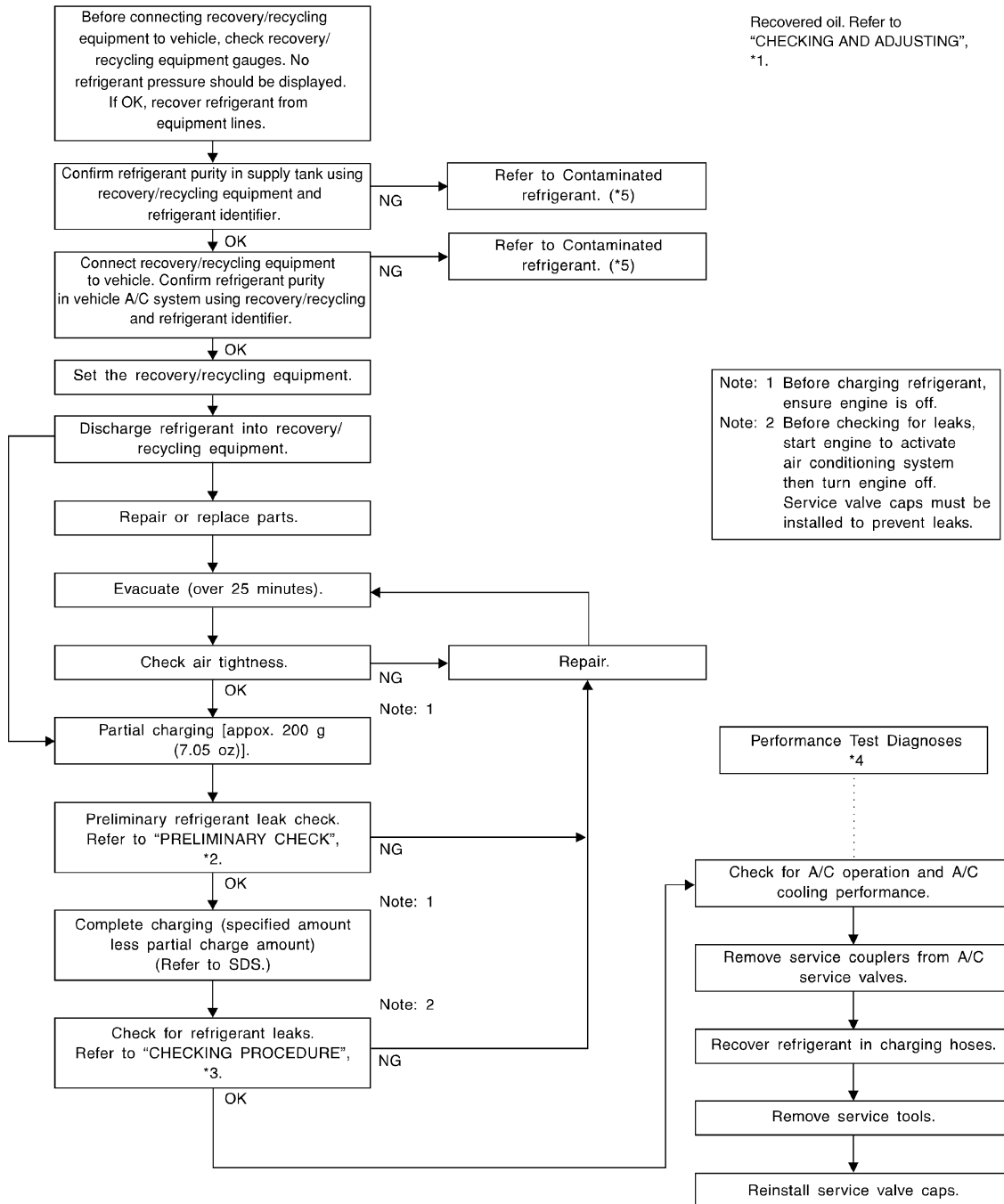
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REFRIGERANT

< ON-VEHICLE MAINTENANCE >

- | | | |
|-------------------------------------|----------------------------|-------------------------------------|
| 1. Shut-off valve | 2. A/C service valve | 3. Recovery/recycling equipment |
| 4. Refrigerant container (HFC-134a) | 5. Weight scale (J-39650) | 6. Evacuating vacuum pump (J-39699) |
| 7. Manifold gauge set (J-39183-C) | A. Preferred (best) method | B. Alternative method |
| C. For charging | | |

Discharging, Evacuating, and Recharging the A/C System



Recovered oil. Refer to "CHECKING AND ADJUSTING", *1.

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

*1 [HA-36. "Maintenance of Oil Quantity"](#)

*3 [HA-40. "Checking of Refrigerant Leaks"](#)

*5 [HA-22. "Working with HFC-134a \(R-134a\)"](#)

*2 [HA-40. "Checking of Refrigerant Leaks"](#)

*4 [HA-39. "Inspection"](#)

WJIA1923E

OIL

< ON-VEHICLE MAINTENANCE >

OIL

Maintenance of Oil Quantity

INFOID:000000003897366

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

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

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

OIL

- Oil type: NISSAN A/C System Oil Type S or equivalent


CHECKING AND ADJUSTING

CAUTION:

If excessive oil leakage is noted, do not perform the oil return operation.

Start the engine and set the following conditions:

Test Condition

- Engine speed: Idling to 1,200 rpm
- A/C switch: On
- Blower fan speed: Max. position
- Temperature control: Optional [Set so that intake air temperature is 25° to 30°C (77° to 86°F).]
- Intake position: Recirculation ()
- Perform oil return operation for about ten minutes

Oil Adjusting Procedure for Components Replacement Except Compressor

INFOID:000000004336265

After replacing any of the following major components, add the correct amount of oil to the system. Adjust the oil quantity according to the following table.

Amount of Oil to be Added

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

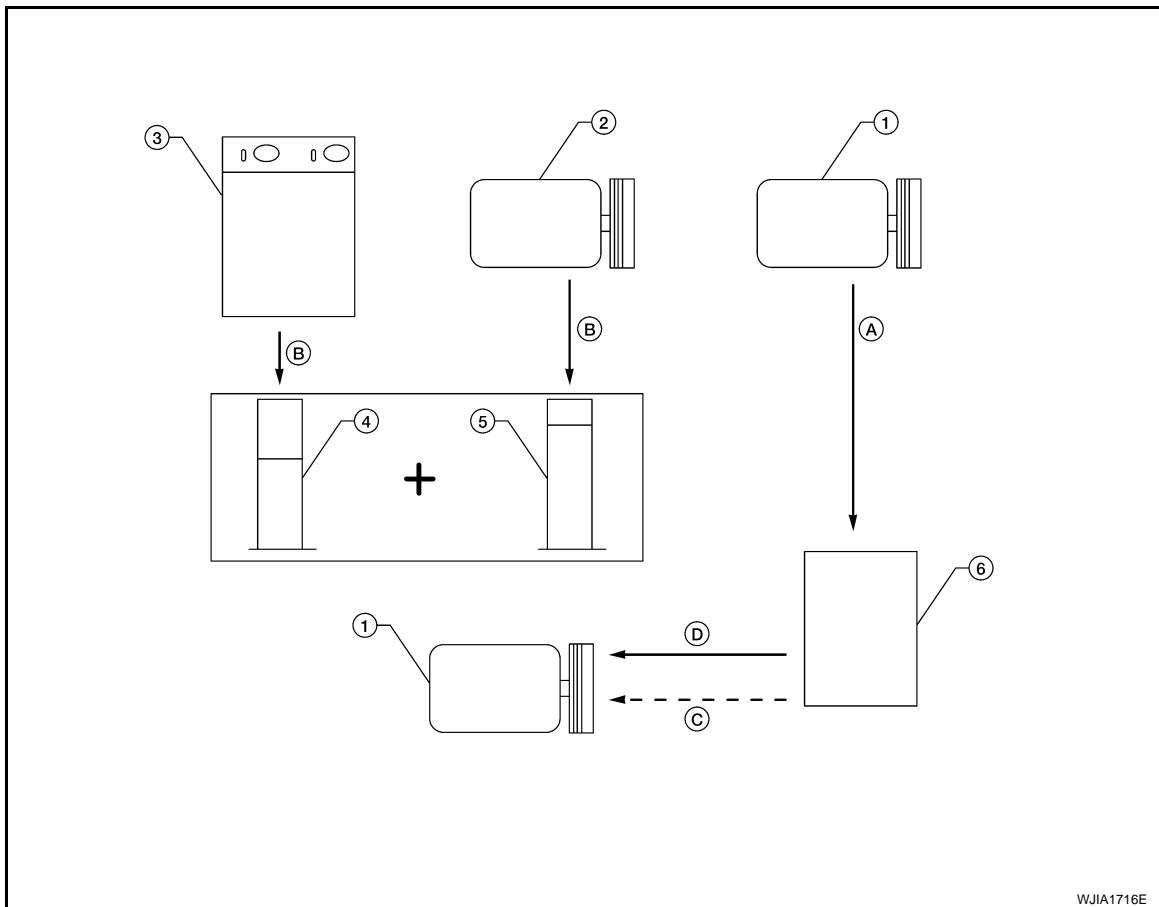
- *1: If refrigerant leak is small, no addition of oil is needed.

OIL

< ON-VEHICLE MAINTENANCE >

Oil Adjusting Procedure for Compressor Replacement

INFOID:000000004336266



- | | | |
|---|-----------------------------------|--|
| 1. New compressor | 2. Old compressor | 3. Recovery/recycling equipment |
| 4. Measuring cup X | 5. Measuring cup Y | 6. New oil |
| A. Drain oil from the new compressor into clean container | B. Record amount of oil recovered | C. Add an additional 5 m ℓ (0.2 US fl oz, 0.2 Imp fl oz) of new oil when replacing liquid tank |
| D. Install new oil equal to recorded amounts in measuring cups X plus Y | | |

1. Before connecting recovery/recycling equipment to vehicle, check recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If NG, recover refrigerant from equipment lines.
2. Connect recovery/recycling equipment to vehicle. Confirm refrigerant purity in supply tank using recovery/recycling equipment and refrigerant identifier. If NG, refer to [HA-22, "Working with HFC-134a \(R-134a\)"](#).
3. Confirm refrigerant purity in vehicle A/C system using recovery/recycling equipment and refrigerant identifier. If NG, refer to [HA-22, "Working with HFC-134a \(R-134a\)"](#).
4. Discharge refrigerant into the refrigerant recovery/recycling equipment. Measure oil discharged into the recovery/recycling equipment.
5. Drain the oil from the "old" (removed) compressor into a graduated container and recover the amount of oil drained.
6. Drain the oil from the "new" compressor into a separate, clean container.
7. Measure an amount of new oil installed equal to amount drained from "old" compressor. Add this oil to "new" compressor through the suction port opening.
8. Measure an amount of new oil equal to the amount recovered during discharging. Add this oil to "new" compressor through the suction port opening.
9. If the liquid tank also needs to be replaced, add an additional 5 m ℓ (0.2 US fl oz, 0.2 Imp fl oz) of oil at this time.

OIL

< ON-VEHICLE MAINTENANCE >

CAUTION:

Do not add the 5 mℓ (0.2 US fl oz, 0.2 Imp fl oz) of oil if only replacing the compressor and not the liquid tank.

REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

REFRIGERATION SYSTEM

Inspection

INFOID:000000004353573

1. CHECK BLOWER MOTOR OPERATION

Check blower motor operation. Refer to [HAC-53, "Component Function Check"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the parts according to the inspection results.

2. CHECK COMPRESSOR OPERATION

Check compressor operation. Refer to [HAC-60, "Component Function Check"](#).

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the parts according to the inspection results.

3. CHECK REFRIGERANT CYCLE PRESSURE

Connect recovery/recycling/recharging equipment to the vehicle and perform the diagnosis with the gauge pressure. Refer to [HA-14, "WITH COLOR DISPLAY : Trouble Diagnoses for Abnormal Pressure"](#) (with color display) or [HA-17, "WITH MONOCHROME DISPLAY : Trouble Diagnoses for Abnormal Pressure"](#) (with monochrome display).

Is the inspection result normal?

YES >> Perform the performance test. Refer to [HAC-102, "Performance Chart"](#).




NO >> Repair or replace the parts according to the inspection results.

Performance Chart

INFOID:000000004335605

TEST CONDITION

Testing must be performed as follows:

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

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

TEST READING

Recirculating-to-discharge Air Temperature Table

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
50 - 60	25 (77)	10.0 - 12.3 (50 - 54)
	30 (86)	13.2 - 15.3 (56 - 60)
	35 (95)	17.2 - 21.0 (63 - 70)

REFRIGERATION SYSTEM

< ON-VEHICLE MAINTENANCE >

Inside air (Recirculating air) at blower assembly inlet		Discharge air temperature at center ventilator °C (°F)
Relative humidity %	Air temperature °C (°F)	
60 - 70	25 (77)	12.3 - 14.9 (54 - 59)
	30 (86)	15.3 - 19.3 (60 - 67)
	35 (95)	21.0 - 24.4 (70 - 76)

Ambient Air Temperature-to-operating Pressure Table

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

Checking of Refrigerant Leaks

INFOID:000000003897368

Perform a visual inspection of all refrigeration parts, fittings, hoses and components for signs of A/C oil leakage, damage and corrosion. A/C oil 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 a maximum speed of 30 mm (1.18 in) per second and at a maximum distance of 3 mm (0.12 in) from the component.

CAUTION:

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

FLUORESCENT LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

FLUORESCENT LEAK DETECTOR

Inspection

INFOID:000000003897369

CHECKING SYSTEM FOR LEAKS USING FLUORESCENT LEAK DETECTOR

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

NOTE:

Other gases in the work area or substances on the A/C components, for example, anti-freeze, windshield washer fluid, solvents and oils, 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

NOTE:

This procedure is only necessary when recharging the A/C system or when the compressor has seized and has been replaced.

1. Check the A/C system static (at rest) pressure. Pressure must be at least 345 kPa (3.52 kg/cm², 50 psi).
2. Pour one bottle (1/4 ounce / 7.4 cc) of the A/C refrigerant dye into the injector tool (J-41459).

CAUTION:

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

3. Connect the injector tool to the A/C LOW PRESSURE side service valve.
4. Start the engine and switch the A/C ON and fan ON.
5. While the A/C is operating (compressor running), inject one bottle (1/4 ounce / 7.4 cc) of fluorescent dye through the low-pressure service valve using dye injector tool (J-41459), refer to the manufacturer's operating instructions.
6. With the engine still running, disconnect the injector tool from the low-pressure service valve.
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 a few minutes to a few days for the dye to penetrate the leak and become visible.

ELECTRICAL LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

ELECTRICAL LEAK DETECTOR

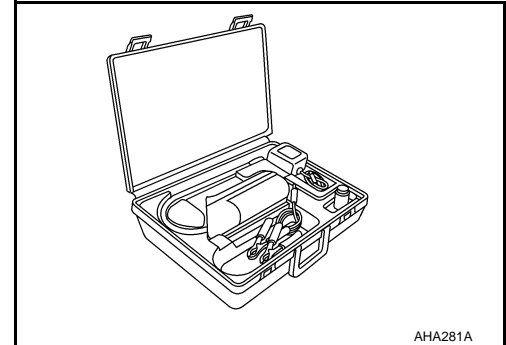
Inspection

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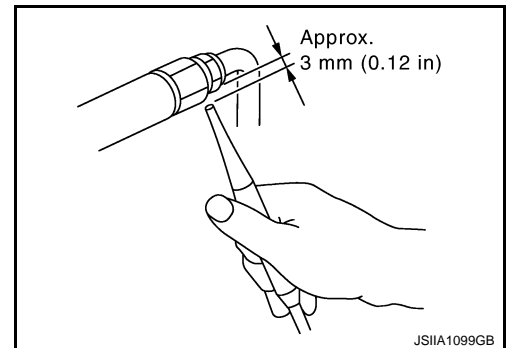
PRECAUTIONS FOR HANDLING THE LEAK DETECTOR

When performing a refrigerant leak check, use an electronic refrigerant leak detector (J-41995) or equivalent. Ensure that the instrument is calibrated and set properly per the manufacturer's operating instructions.

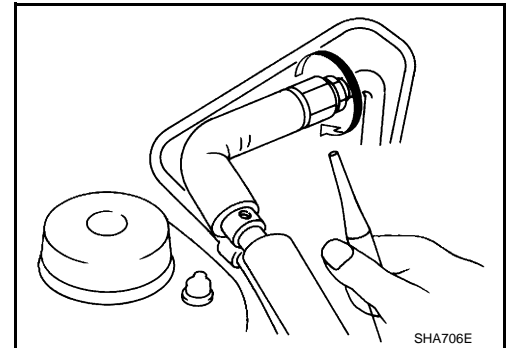
The leak detector is a delicate device. In order to use the leak detector properly, read the manufacturer's operating instructions and perform any specified maintenance.



1. Position the leak detector probe at a maximum distance of 3 mm (0.12 in) away from the point to be checked.



2. When testing, circle each fitting completely for a minimum of 3 seconds with the leak detector probe.



3. Move the leak detector probe along the component at a maximum speed of 30 mm (1.18 in)/second.

CHECKING PROCEDURE

NOTE:

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 a calm area (low air/wind movement) so that the leaking refrigerant is not dispersed.

1. Turn engine OFF.
2. Connect a suitable A/C manifold gauge set to the A/C service ports.
3. Check if the A/C refrigerant pressure is at least 345 kPa (3.52 kg/cm², 50 psi) above 16°C (61°F). If less than specification, recover/evacuate and recharge the system with the specified amount of refrigerant.

NOTE:

At temperatures below 16°C (61°F), leaks may not be detected since the system may not reach 345 kPa (3.52 kg/cm², 50 psi) pressure.

4. Conduct the leak test from the high side (compressor discharge to evaporator inlet) to the low side (evaporator drain hose to the compressor shaft seal). Refer to [HA-48, "Exploded View"](#). Clean the component to be checked and move the leak detector probe completely around the connection/component.

ELECTRICAL LEAK DETECTOR

< ON-VEHICLE MAINTENANCE >

Perform a leak check for the following areas:

- Compressor
- High and low-pressure hose fittings, relief valve and shaft seal
- Liquid tank
- Refrigerant pressure sensor
- Service valves

- Check that all the service valve caps are secure on the service valves (to prevent leaks).
- After removing A/C manifold gauge set from service valves, wipe any residue from the valves to prevent any false readings by the leak detector.

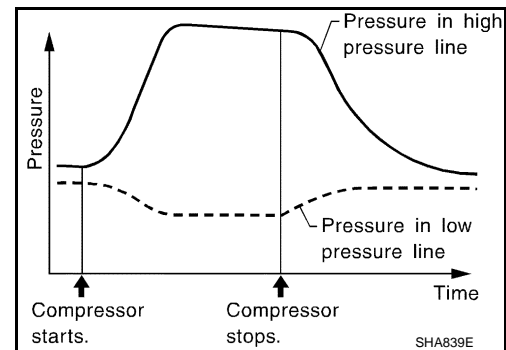
- Evaporator

- With engine OFF, turn blower fan on high speed for at least 15 seconds to dissipate any refrigerant trace around the evaporator. 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 front air control as follows;
 - a. A/C switch: ON
 - b. Mode: Vent
 - c. Intake position: Recirculation
 - d. Temperature: MAX cold
 - e. Blower 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 the recovery/recycling equipment to the A/C system, check the recovery/recycling equipment gauges. No refrigerant pressure should be displayed. If pressure is displayed, recover the refrigerant from the equipment lines and then check the refrigerant purity.
12. Confirm the refrigerant purity in the supply tank using the recovery/recycling equipment and the refrigerant identifier equipment.
13. Confirm the refrigerant purity in the A/C system using the recovery/recycling equipment and the refrigerant identifier equipment.
14. Discharge the A/C system using approved refrigerant recovery/recycling equipment. Repair the leaking fitting or component as necessary.
15. Evacuate and recharge the A/C system and perform the leak test to confirm there are no refrigerant leaks.
16. Conduct the A/C performance test to ensure that the system works properly. Refer to [HA-39, "Performance Chart"](#).

COMPRESSOR

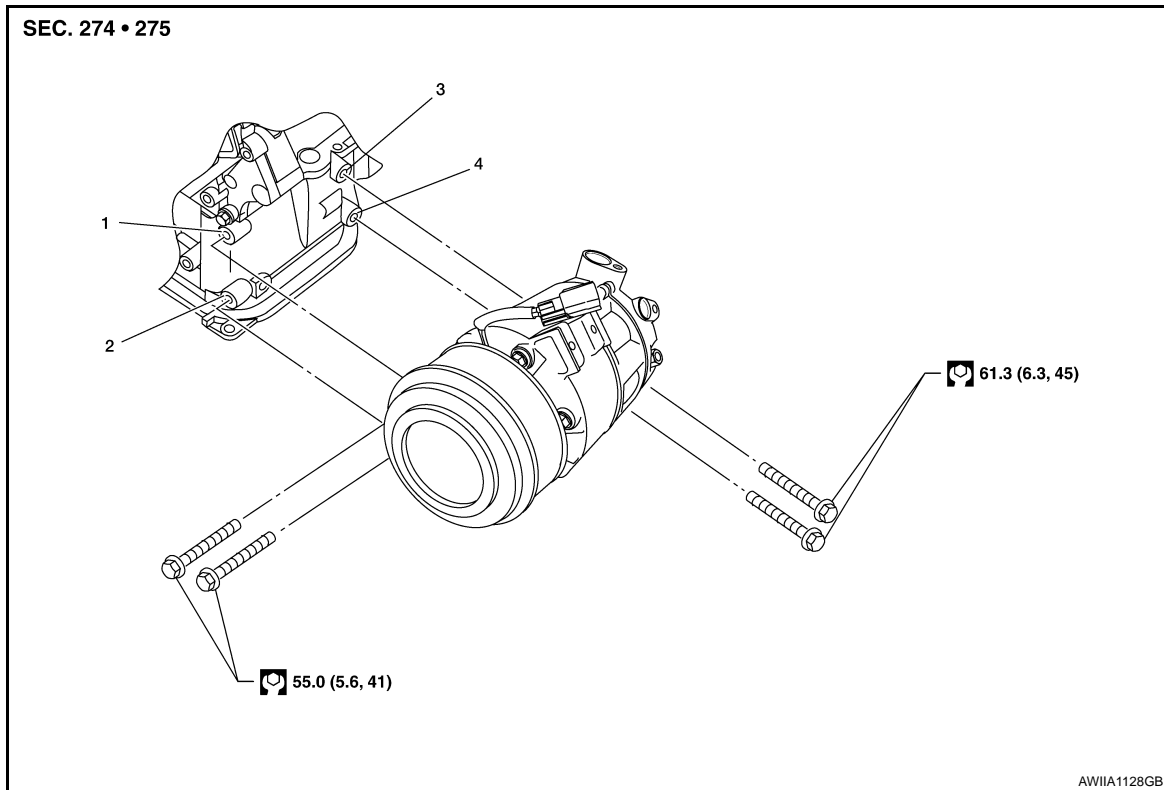
< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR

COMPRESSOR

Removal and Installation for Compressor

INFOID:000000003897375



CAUTION:

For installation, tighten the compressor bolts in the order as shown.

REMOVAL

1. Discharge the refrigerant. Refer to [HA-34, "Collection and Charge"](#).
2. Partially drain the engine cooling system. Refer to [CO-10, "Changing Engine Coolant"](#).
3. Disconnect the battery negative and positive terminals.
4. Remove the front RH wheel and tire using power tool. Refer to [WT-62, "Adjustment"](#).
5. Remove the engine undercover.
6. Remove the RH fender protector side cover and the RH fender protector. Refer to [EXT-20, "Removal and Installation"](#).
7. Remove the engine room cover.
8. Remove the air cleaner assembly and air ducts. Refer to [EM-23, "Removal and Installation"](#).
9. Remove the upper radiator hose.
10. Remove the battery and battery tray. Refer to [PG-67, "Removal and Installation \(Battery Tray\)"](#).
11. Remove the engine cooling fan and shroud assembly. Refer to [CO-15, "Removal and Installation"](#).
12. Disconnect the high-pressure flexible hose and low-pressure flexible hose from the compressor.

CAUTION:

Cap or wrap the joint of the hose with suitable material such as vinyl tape to avoid the entry of any contaminants.

13. Reposition the power steering hose out of the way.
14. Disconnect the compressor connector.
15. Remove the drive belt. Refer to [EM-14, "Removal and Installation"](#).

COMPRESSOR

< ON-VEHICLE REPAIR >

16. Remove the RH compressor bolts.
17. Remove the front compressor bolts using power tool.
18. Disconnect the compressor wire harness clip from the compressor.
19. Remove the compressor.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

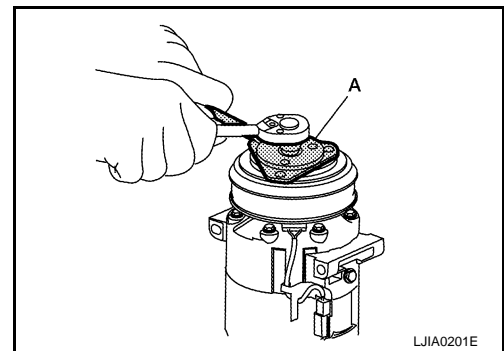
- For installation, tighten the compressor bolts in the order as shown.
- Replace the O-rings on the low-pressure flexible hose and high-pressure flexible hose with new ones, then apply A/C oil to them for installation.
- After charging the A/C refrigerant, check for leaks. Refer to [HA-40, "Checking of Refrigerant Leaks"](#).

Removal and Installation for Compressor Clutch

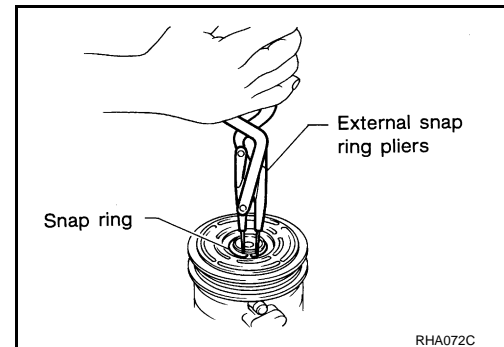
INFOID:000000004256011

REMOVAL

1. Remove the compressor. Refer to [HA-44, "Removal and Installation for Compressor"](#).
2. Remove the center bolt by holding the clutch disc steady using a suitable tool (A).
3. Remove the clutch disc.



4. Remove the snap ring using external snap ring pliers.

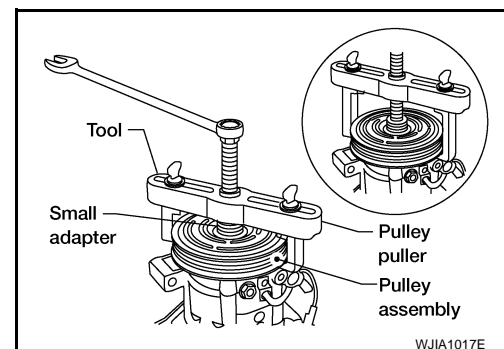


5. Remove the pulley assembly using Tool.
 - Use a pulley puller with a small adapter. Position the small adapter on the end of the compressor shaft and the center of the puller on the small adapter as shown.

Tool number : KV99233130 (J-29884)

CAUTION:

To prevent deformation of the pulley groove, the puller claws should be hooked under (not into) the pulley groove.

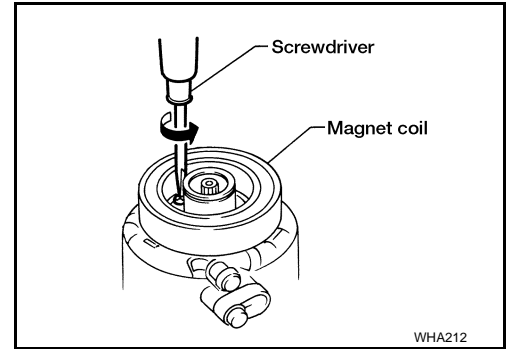


6. Remove the snap ring using external snap ring pliers.

COMPRESSOR

< ON-VEHICLE REPAIR >

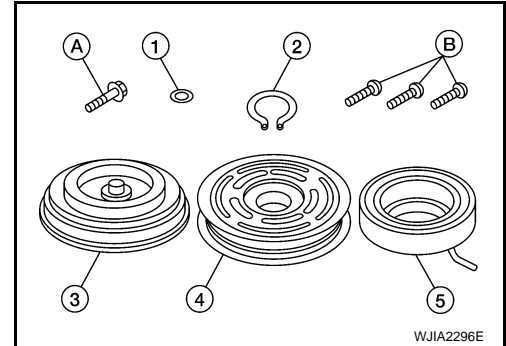
7. Remove the magnet coil harness clip using a screwdriver.



8.

- Shim (1)
- Snap ring (2)
- Clutch disc (3)
- Pulley (4)
- Center bolt (A)

Remove the three magnet coil screws (B) and remove the magnet coil (5).



INSPECTION AFTER REMOVAL

Clutch Disc

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

Pulley

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

Coil

Check the magnet coil for a loose connection or cracked insulation.

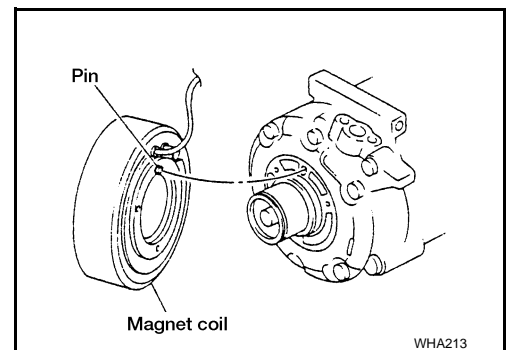
INSTALLATION

1. Install the magnet coil.

CAUTION:

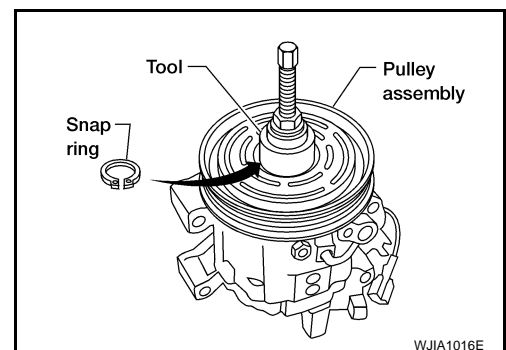
Be sure to align the magnet coil pin with the hole in the compressor front head.

2. Install the magnet coil harness clip using a screwdriver.



3. Install the pulley assembly using Tool and a wrench, and then install the snap ring using snap ring pliers.

Tool number : — (J-38873-A)

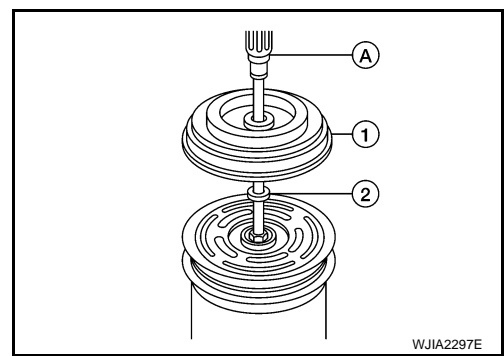


COMPRESSOR

< ON-VEHICLE REPAIR >

4. Install the clutch disc (1) on the drive shaft, together with the original shim(s) (2) using a suitable tool (A). Press the clutch disc down using Tool.

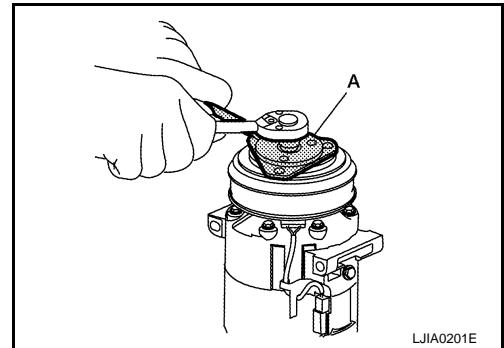
Tool number : — (J-38873-A)



5. Install the center bolt using suitable tool (A).

Center bolt : 12 N·m (1.2 kg·m, 9 ft·lb)

- After tightening the center bolt to specification, check that the pulley rotates smoothly.

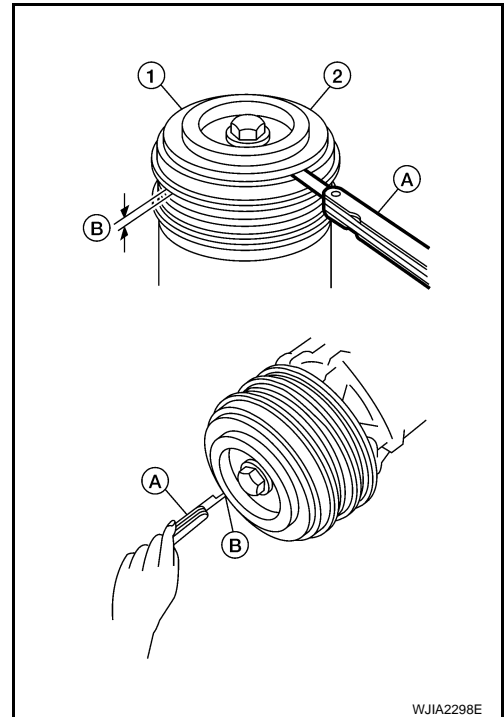


INSPECTION AFTER INSTALLATION

Check the clearance (B) all the way around between the clutch disc (1) and pulley (2) using a suitable tool (A) as shown.

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

If the specified clearance (B) is not obtained, replace the adjusting shim(s) and recheck the clearance (B) as shown.



BREAK-IN OPERATION

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

A
B
C
D
E
F
G
H
HA
J
K
L
M
N
O
P

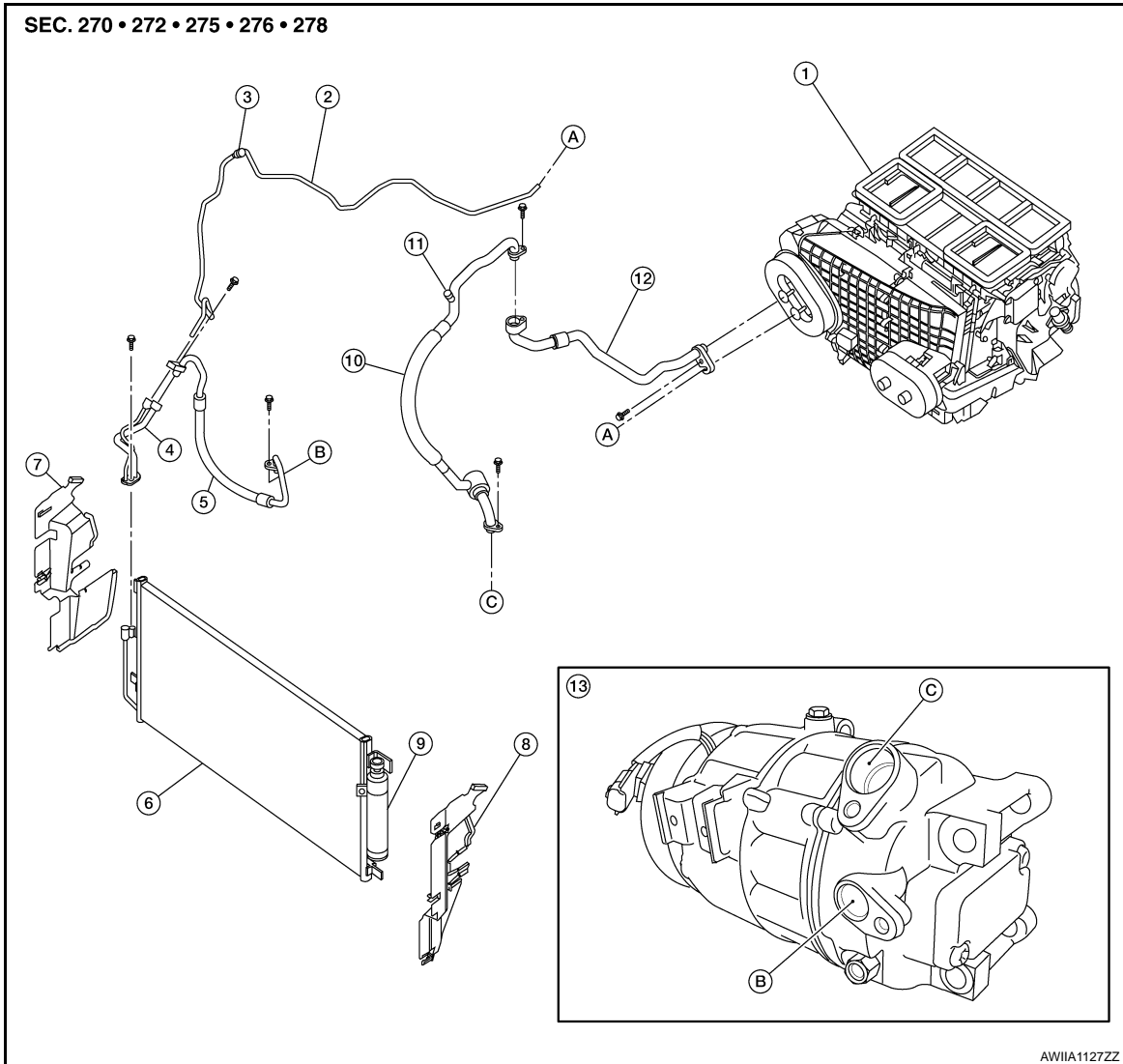
COOLER PIPE AND HOSE

< ON-VEHICLE REPAIR >

COOLER PIPE AND HOSE

Exploded View

INFOID:000000003897372



AWIIA1127ZZ

- | | | |
|---|---|--|
| 1. Heater and cooling unit assembly | 2. High-pressure pipe | 3. High-pressure A/C service valve |
| 4. Junction pipe | 5. High-pressure flexible hose | 6. Condenser and liquid tank |
| 7. Air deflector RH | 8. Air deflector LH | 9. Refrigerant pressure sensor |
| 10. Low-pressure flexible hose | 11. Low-pressure A/C service valve | 12. Low-pressure pipe |
| 13. Compressor | A. High-pressure pipe to heater and cooling unit assembly | B. High-pressure flexible hose to compressor |
| C. Low-pressure flexible hose to compressor | | |

NOTE:

Refer to [HA-23, "Refrigerant Connection"](#).

LOW-PRESSURE FLEXIBLE HOSE

LOW-PRESSURE FLEXIBLE HOSE : Removal and Installation for Low-Pressure Flexible Hose

INFOID:000000003897377

REMOVAL

COOLER PIPE AND HOSE

< ON-VEHICLE REPAIR >

1. Partially drain the engine cooling system. Refer to [CO-10, "Changing Engine Coolant"](#).
2. Disconnect the battery negative and positive terminals.
3. Remove the engine room cover.
4. Remove the air cleaner assembly and air ducts. Refer to [EM-23, "Removal and Installation"](#).
5. Remove the upper radiator hose.
6. Remove the battery and battery tray. Refer to [PG-67, "Removal and Installation \(Battery Tray\)"](#).
7. Discharge the refrigerant. Refer to [HA-34, "Collection and Charge"](#).
8. Remove the engine cooling fan and shroud assembly. Refer to [CO-15, "Removal and Installation"](#).
9. Disconnect the low-pressure flexible hose from the compressor and the low-pressure pipe.

CAUTION:

Cap or wrap the joint of the hose with suitable material such as vinyl tape to avoid the entry of any contaminants.

10. Remove the low-pressure flexible hose.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace the O-rings with new ones, then apply compressor oil to them for installation.
- After recharging the refrigerant, check for leaks. Refer to [HA-40, "Checking of Refrigerant Leaks"](#).

LOW-PRESSURE PIPE

LOW-PRESSURE PIPE : Removal and Installation for Low-Pressure Pipe INFOID:000000003897378

REMOVAL

1. Discharge the refrigerant. Refer to [HA-34, "Collection and Charge"](#).
2. Remove the RH and LH hoodledge covers.
3. Remove the strut tower bar. Refer to [FSU-13, "Exploded View"](#).
4. Remove the upper cowl. Refer to [EXT-18, "Removal and Installation"](#).
5. Remove the lower RH cowl.
6. Reposition the power steering reservoir out of the way without disconnecting the hose.
7. Disconnect the power steering hose clamp to reposition the power steering hose out of the way without disconnecting the hose.
8. Disconnect the low-pressure pipe from the expansion valve and the low-pressure hose.

CAUTION:

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

9. Remove the low-pressure pipe.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace the O-rings with new ones, then apply compressor oil to them for installation.
- After recharging the refrigerant, check for leaks. Refer to [HA-40, "Checking of Refrigerant Leaks"](#).

HIGH-PRESSURE FLEXIBLE HOSE

HIGH-PRESSURE FLEXIBLE HOSE : Removal and Installation for High-Pressure Flexible Hose INFOID:000000003897379

REMOVAL

1. Partially drain the engine cooling system. Refer to [CO-10, "Changing Engine Coolant"](#).
2. Disconnect the battery negative and positive terminals.
3. Remove the engine room cover.
4. Remove the air cleaner assembly and air ducts. Refer to [EM-23, "Removal and Installation"](#).
5. Remove the upper radiator hose.

COOLER PIPE AND HOSE

< ON-VEHICLE REPAIR >

6. Remove the battery and battery tray. Refer to [PG-67, "Removal and Installation \(Battery Tray\)"](#).
7. Discharge the refrigerant. Refer to [HA-34, "Collection and Charge"](#).
8. Remove the engine cooling fan and shroud assembly. Refer to [CO-15, "Removal and Installation"](#).
9. Disconnect the high-pressure flexible hose from the compressor and the high-pressure pipe and junction pipe.

CAUTION:

Cap or wrap the joint of the hose with suitable material such as vinyl tape to avoid the entry of any contaminants.

10. Remove the high-pressure flexible hose.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace the O-rings with new ones, then apply compressor oil to them for installation.
- After charging the refrigerant, check for leaks. Refer to [HA-40, "Checking of Refrigerant Leaks"](#).

HIGH-PRESSURE PIPE

HIGH-PRESSURE PIPE : Removal and Installation for High-Pressure Pipe

INFOID:000000003897380

REMOVAL

1. Discharge the refrigerant. Refer to [HA-34, "Collection and Charge"](#).
2. Remove the RH and LH hoodledge covers.
3. Remove the strut tower bar. Refer to [FSU-13, "Exploded View"](#).
4. Remove the upper cowl. Refer to [EXT-18, "Removal and Installation"](#).
5. Remove the lower RH cowl.
6. Reposition the engine coolant reservoir out of the way without disconnecting the hose.
7. Reposition the power steering reservoir out of the way without disconnecting the hose.
8. Disconnect the power steering hose clamp to reposition the power steering hose out of the way without disconnecting the hose.
9. Remove the torque rod. Refer to [EM-96, "Removal and Installation"](#).
10. Disconnect the harness bracket from the engine cover.
11. Disconnect the high-pressure pipe from the expansion valve and the high-pressure flexible hose and junction pipe.

CAUTION:

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

12. Remove the high-pressure pipe.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace the O-rings with new ones, then apply compressor oil to them for installation.
- After charging the refrigerant, check for leaks. Refer to [HA-40, "Checking of Refrigerant Leaks"](#).

CONDENSER

< ON-VEHICLE REPAIR >

CONDENSER

CONDENSER

CONDENSER : Removal and Installation for Condenser

INFOID:000000003897382

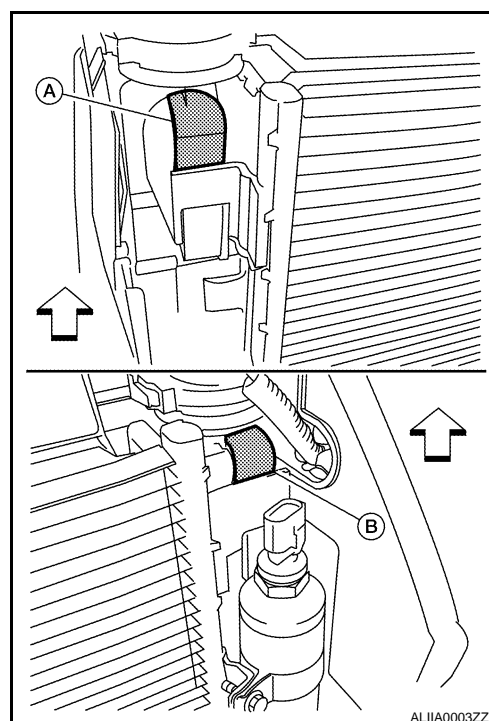
REMOVAL

1. Discharge the refrigerant. Refer to [HA-34. "Collection and Charge"](#).
2. Remove the RH hoodledge cover.
3. Remove the front bumper cover. Refer to [EXT-14. "Removal and Installation"](#).
4. Remove the junction pipe. Refer to [HA-51. "CONDENSER PIPE ASSEMBLY : Removal and Installation for Junction Pipe"](#).

CAUTION:

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

5. Disconnect the refrigerant pressure sensor connector.
6. Depress the top RH clip (A) and the top LH clip (B) to release the top condenser brackets as shown.
7. Slide the condenser up to release the condenser from the clips as shown.



8. Remove the condenser.

CAUTION:

Do not damage the condenser fins

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Do not damage the condenser fins.
- Replace the O-rings with new ones, then apply compressor oil to them for installation.
- When charging refrigerant, check for leaks. Refer to [HA-40. "Checking of Refrigerant Leaks"](#).

CONDENSER PIPE ASSEMBLY

CONDENSER PIPE ASSEMBLY : Removal and Installation for Junction Pipe

INFOID:000000003897381

REMOVAL

1. Discharge the refrigerant. Refer to [HA-34. "Collection and Charge"](#).
2. Remove the top filler panel.

CONDENSER

< ON-VEHICLE REPAIR >

3. Reposition the top of the RH air deflector out of the way.
4. Disconnect the junction pipe from the condenser and from the high-pressure pipe and high-pressure flexible hose.
CAUTION:
Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.
5. Remove the junction pipe.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- Replace the O-rings with new ones, then apply compressor oil to them for installation.
- After charging the refrigerant, check for leaks. Refer to [HA-40, "Checking of Refrigerant Leaks"](#).

REFRIGERANT PRESSURE SENSOR

REFRIGERANT PRESSURE SENSOR : Removal and Installation for Refrigerant Pressure Sensor

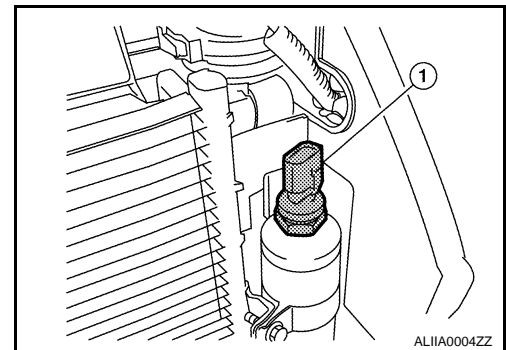
INFOID:000000003897384

REMOVAL

1. Discharge the refrigerant. Refer to [HA-34, "Collection and Charge"](#).
2. Remove the top filler panel.
3. Remove the front air duct.
4. Disconnect the refrigerant pressure sensor connector and remove the refrigerant pressure sensor (1) from the liquid tank on the condenser.

CAUTION:

Do not damage the condenser fins.



INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Replace the O-ring with a new one, then apply compressor oil to it for installation.

HEATER & COOLING UNIT ASSEMBLY

< ON-VEHICLE REPAIR >

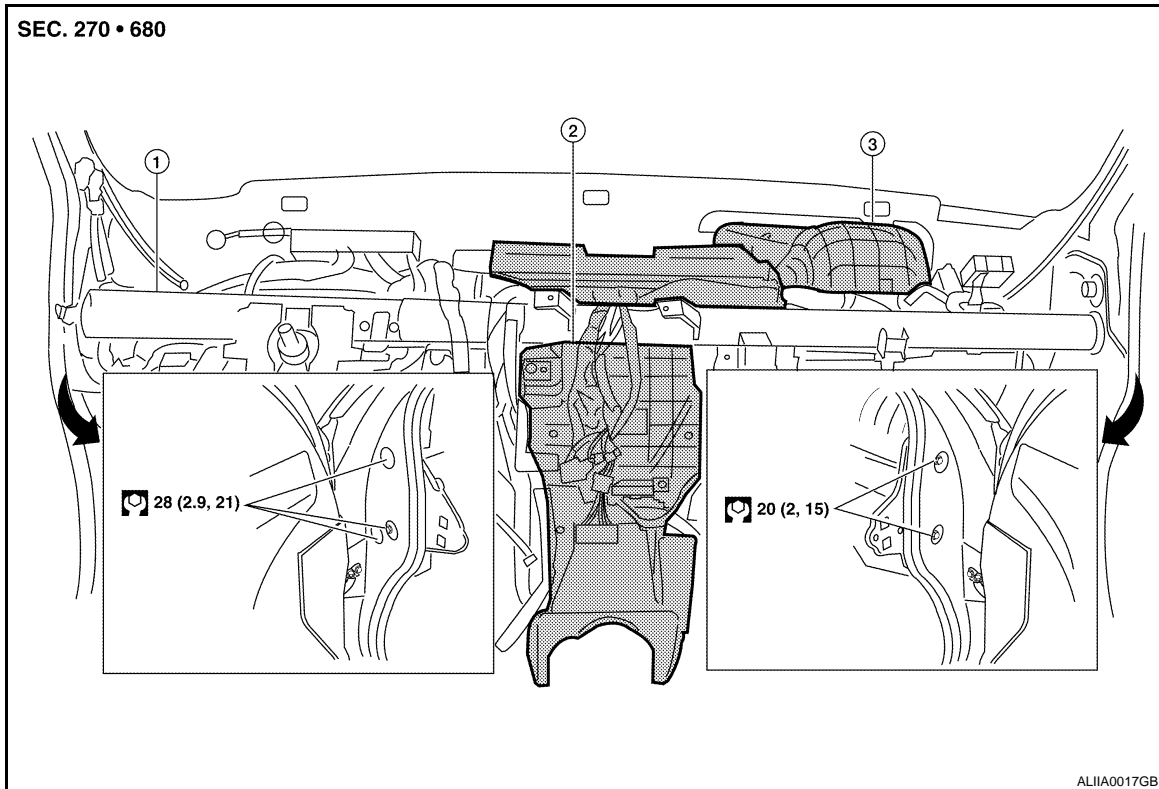
HEATER & COOLING UNIT ASSEMBLY

HEATER & COOLING UNIT ASSEMBLY

HEATER & COOLING UNIT ASSEMBLY : Removal and Installation

INFOID:000000004360381

COMPONENTS



1. Steering member
2. Heater and cooling unit
3. Blower unit

REMOVAL

1. Discharge the refrigerant from the A/C system. Refer to [HA-34, "Collection and Charge"](#).
2. Drain the engine coolant from the cooling system. Refer to [CO-10, "Changing Engine Coolant"](#).
3. Disconnect the negative and positive battery terminals.
4. Remove the wiper motor and linkage. Refer to [WW-93, "FRONT WIPER DRIVE ASSEMBLY : Removal and Installation"](#).
5. Remove the upper cowl. Refer to [EXT-18, "Removal and Installation"](#).
6. Remove the strut tower bar. Refer to [FSU-13, "Exploded View"](#).
7. Remove the lower LH cowl. Refer to [EXT-18, "Removal and Installation"](#).
8. Disconnect the heater hoses from the heater core pipes.
CAUTION:
Cap or wrap the pipe joint with a suitable material such as vinyl tape to avoid the entry of contaminants into the system.
9. Disconnect the refrigerant lines from the expansion valve. Refer to [HA-48, "Exploded View"](#).
CAUTION:
Cap or wrap the line joint with a suitable material such as vinyl tape to avoid the entry of contaminants into the system.
10. Remove the instrument panel assembly. Refer to [IP-12, "Removal and Installation"](#).
11. Remove the steering column assembly. Refer to [ST-20, "Removal and Installation"](#).
12. Disconnect the drain hose.

HEATER & COOLING UNIT ASSEMBLY

< ON-VEHICLE REPAIR >

13. Remove the LH, RH and center connector ducts. Refer to [VTL-12. "REAR FLOOR DUCTS : Removal and Installation"](#).
14. Remove the steering member center stay.
15. Remove the heater and cooling unit assembly attached to the steering member as one assembly from the vehicle.
16. Remove the blower unit from the heater and cooling unit and steering member assembly.
17. Remove the heater and cooling unit from the steering member.

INSTALLATION

Installation is in the reverse order of removal.

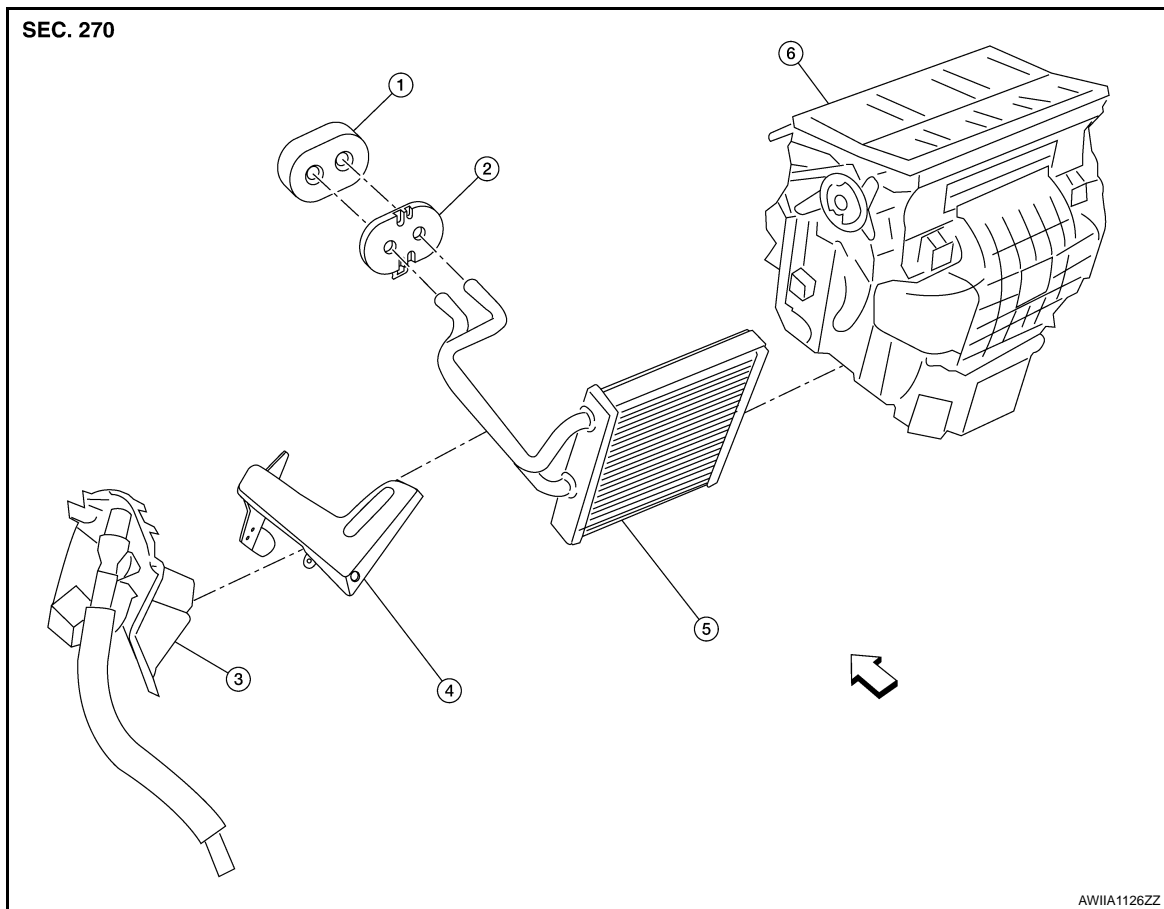
- Fill the radiator with the specified water and coolant mixture. Refer to [MA-17. "FOR NORTH AMERICA : Fluids and Lubricants"](#).
- Recharge the A/C system. Refer to [HA-34. "Collection and Charge"](#).

HEATER CORE

HEATER CORE : Removal and Installation

INFOID:000000004360382

COMPONENTS



- | | | |
|----------------------|------------------------|---|
| 1. Heater grommet | 2. Heater pipe support | 3. Heater and cooling unit foot duct LH |
| 4. Heater pipe cover | 5. Heater core | 6. Heater and cooling unit case |

↩ Front

REMOVAL

1. Remove the heater and cooling unit assembly. Refer to [HA-53. "HEATER & COOLING UNIT ASSEMBLY : Removal and Installation"](#).
2. Remove the heater grommet, heater pipe support and heater pipe cover.
3. Remove the heater and cooling unit foot duct LH.

HEATER & COOLING UNIT ASSEMBLY

< ON-VEHICLE REPAIR >

4. Remove the heater core.

INSTALLATION

Installation is in the reverse order of removal.

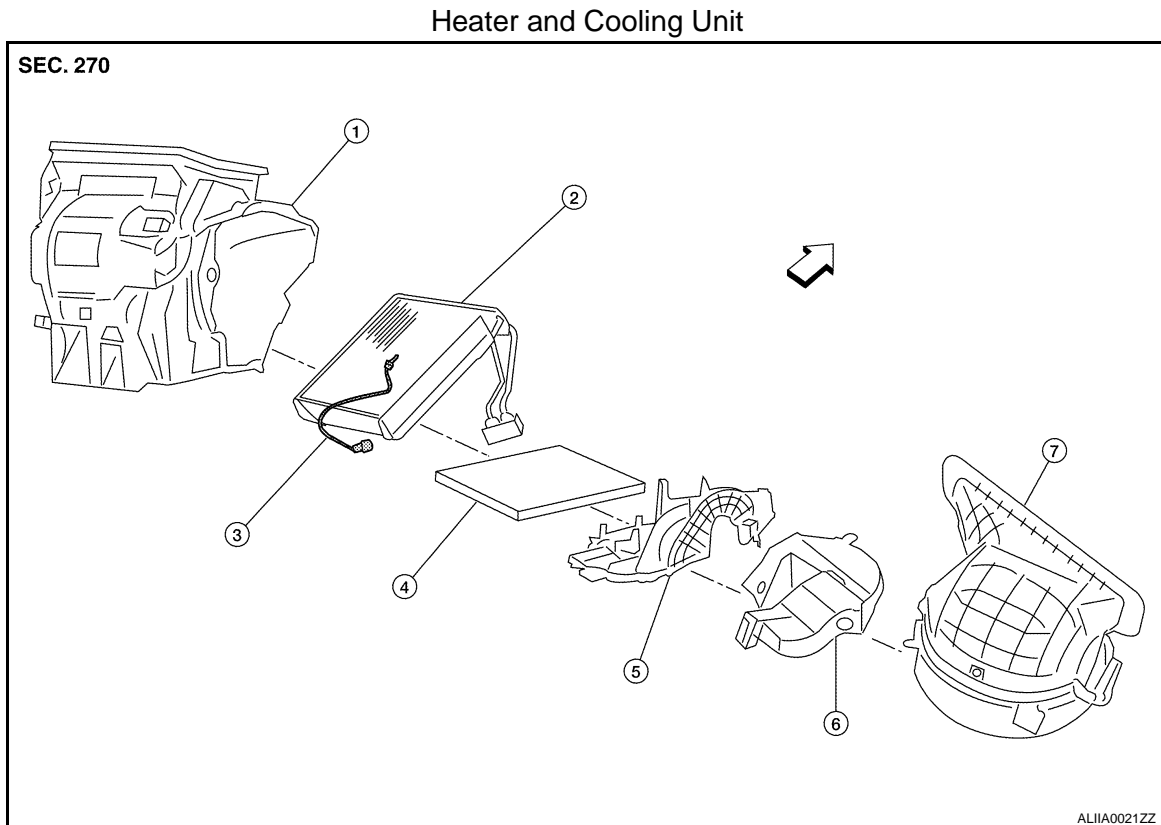
- Make sure that the aspirator hose is securely attached to the aspirator on the heater and cooling unit foot duct LH.

EVAPORATOR

EVAPORATOR : Removal and Installation

INFOID:000000004360594

EXPLODED VIEW



- | | | |
|---------------------------------|---------------------|---|
| 1. Heater and cooling unit case | 2. Evaporator | 3. Intake sensor |
| 4. In-cabin microfilter | 5. Evaporator cover | 6. Heater and cooling unit foot duct (RH) |
| 7. Blower unit | ⇐ Front | |

REMOVAL

1. Remove the heater and cooling unit assembly. Refer to [HA-34. "Collection and Charge"](#).
2. Remove the expansion valve.
CAUTION:
Cap or wrap the joint of the pipe with suitable material such as vinyl tape to avoid the entry of air.
3. Remove the heater and cooling unit foot duct RH.
4. Remove the evaporator cover.

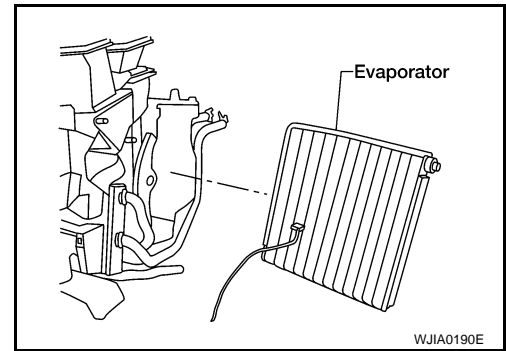
HEATER & COOLING UNIT ASSEMBLY

< ON-VEHICLE REPAIR >

5. Remove the evaporator.
 - Remove the intake sensor.

CAUTION:

Mark the mounting position of the intake sensor.



INSTALLATION

Installation is in the reverse order of removal.

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

CAUTION:

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

EXPANSION VALVE

EXPANSION VALVE : Removal and Installation for Expansion Valve

INFOID:000000003897385

REMOVAL

1. Discharge the refrigerant. Refer to [HA-34, "Collection and Charge"](#).
2. Remove the RH and LH hoodledge covers.
3. Remove the strut tower bar. Refer to [FSU-13, "Exploded View"](#).
4. Remove the upper cowl. Refer to [EXT-18, "Removal and Installation"](#).
5. Remove the lower RH cowl.
6. Disconnect the A/C pipes from the expansion valve.

CAUTION:

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

7. Remove the expansion valve.

INSTALLATION

Installation is in the reverse order of removal.

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

CAUTION:

- Replace the O-rings with new ones, then apply compressor oil to them for installation.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Compressor

INFOID:0000000003897386

Model	VALEO
Type	DKS-17D
Displacement	175 cm ³ (10.68 in ³) / revolution
Cylinder bore × stroke	30.5 mm (1.201 in) x 24 mm (0.94 in)
Direction of rotation	Clockwise (viewed from drive end)
Drive belt	Poly V 7-grooves

Oil

INFOID:0000000004362912

Name	NISSAN A/C System Oil Type S or equivalent	
Capacity	Total in system	150 m ℓ (5.03 US fl oz, 5.3 Imp fl oz)
	Compressor (service part) charging amount	Refer to HA-36, "Maintenance of Oil Quantity" .

Refrigerant

INFOID:0000000004362913

Type	HFC-134a (R-134a)
Capacity	0.55 ± 0.025 kg (1.21 ± 0.055 lb)