

HEATER, VENTILATION & AIR CONDITIONING (HVAC)

07

SECTION

SYMPTOM

 TROUBLESHOOTING07-03
REFRIGERANT SYSTEM.....07-10
BASIC SYSTEM07-11

CONTROL SYSTEM 07-40
TECHNICAL DATA 07-50
SERVICE TOOLS..... 07-60

07-03 SYMPTOM TROUBLESHOOTING

FOREWORD.....07-03-1
TROUBLESHOOTING INDEX07-03-1
NO. 1 INSUFFICIENT AIR (OR NO AIR)
 BLOWN FROM VENTS07-03-2
NO. 2 AMOUNT OF AIR BLOWN FROM
 VENTS DOES NOT CHANGE07-03-3
NO.3 AIRFLOW MODE DOES NOT
 CHANGE.....07-03-3
NO. 4 IMPROPER AIR CIRCULATION ..07-03-4

NO. 5 NO TEMPERATURE CONTROL
 WITH CLIMATE CONTROL UNIT..... 07-03-5
NO. 6 AIR FROM VENTS NOT COLD
 ENOUGH07-03-6
NO. 7 NO COOL AIR.....07-03-8
NO. 8 NOISE WHILE OPERATING
 A/C SYSTEM 07-03-11
NO.9 AIR CONDITIONER DOES NOT
 OPERATE EVEN THROUGH AIRFLOW
 IS IN DEFROSTER MODE OR
 HEAT/DEFROSTER MODE..... 07-03-13

07-03

FOREWORD

A5U070301038W01

- Refer to section 00-00 and thoroughly read and understand the basic flow of troubleshooting in order to properly perform the procedures.
- For the steps that have an asterisk(*), inspect the connector/terminal connection for continuity and damage. If the connection is poor, reconnect it, or repair or replace the appropriate parts if necessary.
- The areas for inspection (steps) are given according to various circuit malfunctions. Use the chart below to verify the symptoms of the trouble in order to diagnose the appropriate area.

TROUBLESHOOTING INDEX

A5U070301038W02

No.	TROUBLESHOOTING ITEM	DESCRIPTION	PAGE
1	Insufficient air (or no air) blown from vents.	• Problem with each vent and/or duct.	(See 07-03-2 NO. 1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS)
2	Amount of air blown from vents does not change.	• Malfunction in blower system.	(See 07-03-3 NO. 2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE)
3	Airflow mode does not change.	• Malfunction in heater unit and/or climate control unit airflow system.	(See 07-03-3 NO.3 AIRFLOW MODE DOES NOT CHANGE)
4	Improper air circulation.	• Malfunction in blower unit and/or climate control unit air intake system.	(See 07-03-4 NO. 4 IMPROPER AIR CIRCULATION)
5	No temperature control with climate control unit.	• Malfunction in heater unit and/or climate control unit air mix system.	(See 07-03-5 NO. 5 NO TEMPERATURE CONTROL WITH CLIMATE CONTROL UNIT)
6	Air from vents not cold enough.	• Magnetic clutch operates but A/C system malfunctions.	(See 07-03-6 NO. 6 AIR FROM VENTS NOT COLD ENOUGH)
7	No cool air.	• Magnetic clutch does not operate.	(See 07-03-8 NO. 7 NO COOL AIR)

SYMPTOM TROUBLESHOOTING

No.	TROUBLESHOOTING ITEM	DESCRIPTION	PAGE
8	Noise while operating A/C system.	<ul style="list-style-type: none"> Noise from magnetic clutch, A/C compressor, hose or refrigerant line. 	(See 07-03-11 NO. 8 NOISE WHILE OPERATING A/C SYSTEM)
9	Air conditioner does not operate even though airflow is in DEFROSTER mode or HEAT/DEFROSTER mode.	<ul style="list-style-type: none"> Malfunction in climate control unit A/C switch circuit (open circuit or short to power supply). 	(See 07-03-13 NO.9 AIR CONDITIONER DOES NOT OPERATE EVEN THROUGH AIRFLOW IS IN DEFROSTER MODE OR HEAT/DEFROSTER MODE)

NO. 1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS

A5U070301038W03

1	Insufficient air (or no air) blown from vents.
DESCRIPTION	<ul style="list-style-type: none"> Problem with each vent and/or duct.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in VENT mode system (Steps 1—4) Malfunction in HEAT mode system (Step 5) Malfunction in DEFROSTER mode system (Steps 6—8)

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT AIRFLOW MODE CONTROL SYSTEM, STARTING FROM CLIMATE CONTROL UNIT <ul style="list-style-type: none"> When airflow mode control dial is operated, is appropriate resistance felt and can it be moved to its full range? 	Yes Go to next step.
		No Go to Step 1 of troubleshooting index No. 3.
2	CHECK TO SEE IF MALFUNCTION IS IN VENT MODE OR OTHER MODES <ul style="list-style-type: none"> Is air discharged when in VENT mode? 	Yes Go to Step 5.
		No Go to next step.
3	INSPECT VENT <ul style="list-style-type: none"> Is vent clogged? 	Yes Remove obstruction, then go to Step 9.
		No Go to next step.
4	VERIFY THAT DUCT IN DASHBOARD IS INSTALLED <ul style="list-style-type: none"> Is duct in dashboard properly installed? 	Yes Check duct for clogging, deformity and air leakage, then go to Step 9.
		No Install duct securely in the proper position, then go to Step 9.
5	CHECK TO SEE IF MALFUNCTION IS IN HEAT MODE OR DEFROSTER MODE <ul style="list-style-type: none"> Is air discharged when in HEAT mode? 	Yes Go to next step.
		No Check vent for clogging, then go to Step 9.
6	INSPECT DEFROSTER MODE <ul style="list-style-type: none"> Is air discharged when in DEFROSTER mode? 	Yes Operation is okay. Recheck malfunction symptoms.
		No Go to next step.
7	INSPECT VENT <ul style="list-style-type: none"> Is vent clogged? 	Yes Remove obstruction, then go to Step 9.
		No Go to next step.
8	VERIFY THAT DEFROSTER DUCT IS INSTALLED <ul style="list-style-type: none"> Is defroster duct properly installed? 	Yes Check duct for clogging, deformity, and air leakage, then go to next step.
		No Install duct securely in the proper position, then go to next step.
9	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCUR AFTER REPAIR <ul style="list-style-type: none"> Is air discharged? 	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

SYMPTOM TROUBLESHOOTING

NO. 2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE

A5U070301038W04

2	Amount of air blown from vents does not change.
DESCRIPTION	<ul style="list-style-type: none"> • Malfunction in blower system.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in blower relay, blower motor, resistor, fan switch, related wiring harnesses (Step 1) • Blower unit malfunction (Steps 2—4)

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT BLOWER SYSTEM <ul style="list-style-type: none"> • Inspect the following systems and electrical parts. <ul style="list-style-type: none"> — Blower relay, blower motor, resistor, fan switch, related wiring harnesses. • Are they okay? 	Yes Go to next step.
		No Repair or replace malfunctioning part, then go to Step 5.
2	CHECK TO SEE IF MALFUNCTION IS IN BLOWER UNIT OR ELSEWHERE <ul style="list-style-type: none"> • Turn ignition switch to ON position. • Turn fan switch on. • Recirculate air inside vehicle. • Does fan in blower unit rotate smoothly? 	Yes Go to Step 4.
		No Go to next step.
3	INSPECT BLOWER UNIT <ul style="list-style-type: none"> • Inspect fan in blower unit. <ul style="list-style-type: none"> — Is fan free of interference from blower unit case? — Is fan free of foreign material and obstructions? • Is fan okay? 	Yes Go to next step.
		No Remove obstruction, repair or replace fan and blower unit case, then go to Step 5.
4	INSPECT BLOWER UNIT INTAKE VENT <ul style="list-style-type: none"> • Is blower unit intake vent clogged? 	Yes Remove obstruction, then go to next step.
		No Check if there are any obstructions in passage between blower unit and heater unit, then go to next step.
5	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCUR AFTER REPAIR <ul style="list-style-type: none"> • Is air discharged? 	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

07-03

NO.3 AIRFLOW MODE DOES NOT CHANGE

A5U070301038W05

3	Airflow mode does not change.
DESCRIPTION	<ul style="list-style-type: none"> • Malfunction in heater unit and/or climate control unit airflow system.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Heater unit airflow mode link, airflow mode crank, airflow mode rod, airflow mode wire, wire clamp malfunction (Steps 1,2) • Malfunction in climate control unit bevel gear set (2), airflow mode wire or wire clamp (Step 3) • Malfunction in one or more heater unit door(s) (Steps 4,5)

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT HEATER UNIT AIRFLOW MODE SYSTEM <ul style="list-style-type: none"> • Inspect heater unit airflow mode links, airflow mode cranks, airflow mode rods, and wire clamp. <ul style="list-style-type: none"> — Is there grease on links and cranks? — Are links, cranks and rods installed securely and in the proper position? — Is wire clamp free of deformation? • Are above items okay? 	Yes Go to next step.
		No Apply grease or install links, cranks and rods securely in their proper positions, repair or replace wire clamp, then go to Step 6.
2	VERIFY THAT AIRFLOW MODE WIRE FROM HEATER UNIT IS POSITIONED SECURELY AND CORRECTLY <ul style="list-style-type: none"> • Is airflow mode wire positioned securely and correctly in relation to the heater unit airflow mode links? 	Yes Go to next step.
		No Adjust airflow mode wire or install correctly, then go to Step 6.

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION	
3	INSPECT CLIMATE CONTROL UNIT <ul style="list-style-type: none">Inspect climate control unit.<ul style="list-style-type: none">Is bevel gear set properly engaged?Is airflow mode wire properly installed in correct direction on bevel gear?Is wire clamp free of deformation?Are above items okay?	Yes	Go to next step.
		No	Properly engage bevel gear set or install airflow mode wire in correct direction, repair or replace wire clamp, then go to Step 6.
4	INSPECT HEATER UNIT AIRFLOW MODE DOORS <ul style="list-style-type: none">Is there any foreign material or obstructions in any of heater unit doors?	Yes	Remove obstruction, then go to Step 6.
		No	Go to next step.
5	VERIFY THAT ALL AIRFLOW MODE DOORS WITHIN HEATER UNIT ARE POSITIONED SECURELY AND PROPERLY <ul style="list-style-type: none">Are all doors within heater unit securely and properly positioned?	Yes	Check each door for cracks or damage, then go to next step.
		No	Install malfunction doors securely in proper position, then go to next step.
6	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCUR AFTER REPAIR <ul style="list-style-type: none">Does airflow mode change?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO. 4 IMPROPER AIR CIRCULATION

A5U070301038W06

4	Improper air circulation.
DESCRIPTION	<ul style="list-style-type: none"> Malfunction in blower unit and/or climate control unit air intake system.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Blower unit air intake link, air intake crank, air intake wire, wire clamp malfunction (Steps 1,2) Problem with climate control unit air intake wire or wire clamp (Step 3) Blower unit air intake door malfunction (Steps 4,5)

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT BLOWER UNIT AIR INTAKE SYSTEM <ul style="list-style-type: none">Inspect blower unit air intake links, air intake cranks, and wire clamp.<ul style="list-style-type: none">Is there grease on links and cranks?Are links and cranks securely and properly positioned?Is wire clamp free of deformation?Are above items okay?	Yes	Go to next step.
		No	Apply grease or install links and cranks properly and securely, repair or replace wire clamp, then go to Step 6.
2	VERIFY THAT AIR INTAKE WIRE FROM BLOWER UNIT IS POSITIONED SECURELY AND CORRECTLY <ul style="list-style-type: none">Is air intake wire positioned securely and correctly in relation to the blower unit's air intake links?	Yes	Go to next step.
		No	Adjust air intake wire or install securely in correct position, then go to Step 6.
3	INSPECT CLIMATE CONTROL UNIT <ul style="list-style-type: none">Inspect climate control unit.<ul style="list-style-type: none">Is air intake wire positioned securely and correctly in relation to the climate control unit's link?Is wire clamp free of deformation?Are above items okay?	Yes	Go to next step.
		No	Install air intake wire securely in correct position, repair or replace wire clamp, then go to Step 6.
4	INSPECT BLOWER UNIT AIR INTAKE DOOR <ul style="list-style-type: none">Is there any foreign material or obstruction in blower unit air intake door?	Yes	Remove obstruction, then go to Step 6.
		No	Go to next step.
5	VERIFY THAT AIR INTAKE DOOR WITHIN BLOWER UNIT IS POSITIONED SECURELY AND PROPERLY <ul style="list-style-type: none">Is blower unit air intake door securely and properly positioned?	Yes	Check air intake door for cracks or damage, then go to next step.
		No	Install air intake door securely in proper position, then go to next step.

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION
6	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCUR AFTER REPAIR <ul style="list-style-type: none"> Does air circulate? 	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO. 5 NO TEMPERATURE CONTROL WITH CLIMATE CONTROL UNIT

A5U070301038W07

5	No temperature control with climate control unit.
DESCRIPTION	<ul style="list-style-type: none"> Malfunction in heater unit and/or climate control unit air mix system.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Heater unit air mix link, air mix crank, air mix rod, air mix wire, wire clamp malfunction (Steps 2,3) Climate control unit rack-and pinion, air mix wire malfunction (Step 4) Heater unit air mix door malfunction (Steps 5,6)

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT COOLANT TEMPERATURE <ul style="list-style-type: none"> Is coolant sufficiently warmed up? 	Yes Go to next step.
		No Warm engine up, then go to Step 7.
2	INSPECT HEATER UNIT AIR MIX SYSTEM <ul style="list-style-type: none"> Inspect heater unit air mix links, air mix cranks, air mix rods, and wire clamp. <ul style="list-style-type: none"> Is there grease on links and cranks? Are links, cranks, and rods securely installed in their proper positions? Is wire clamp free of deformation? Are above items okay? 	Yes Go to next step.
		No Apply grease or install links, cranks, and rods securely in their proper positions, repair or replace wire clamp, then go to Step 7.
3	VERIFY THAT AIR MIX WIRE FROM HEATER UNIT IS POSITIONED SECURELY AND CORRECTLY <ul style="list-style-type: none"> Is air mix wire securely installed in the correct position in relation to heater unit air mix links? 	Yes Go to next step.
		No Adjust air mix wire or install securely in correct position then go to Step 7.
4	INSPECT CLIMATE CONTROL UNIT <ul style="list-style-type: none"> Inspect climate control unit. <ul style="list-style-type: none"> Is bevel gear set properly engaged? Is air mix wire properly installed in correct position in relation to bevel gear? Is wire clamp free of deformation? Are above items okay? 	Yes Go to next step.
		No Properly engage bevel gear or install air mix wire in correct position, repair or replace wire clamp, then go to Step 7.
5	INSPECT HEATER UNIT AIR MIX DOOR <ul style="list-style-type: none"> Is there any foreign material or obstruction in heater unit air mix doors? 	Yes Remove obstruction, then go to Step 7.
		No Go top next step.
6	VERIFY THAT AIR MIX DOOR WITHIN HEATER UNIT IS POSITIONED SECURELY AND PROPERLY <ul style="list-style-type: none"> Is heater unit air mix door securely and properly installed? 	Yes Check air mix door for cracks or damage, then go to next step.
		No Install air mix door securely in proper position, then go to next step.
7	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCUR AFTER REPAIR <ul style="list-style-type: none"> Does unit operate in every temperature setting? 	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

07-03

SYMPTOM TROUBLESHOOTING

NO. 6 AIR FROM VENTS NOT COLD ENOUGH

A5U070301038W08

6	Air from vents not cold enough.
DESCRIPTION	<ul style="list-style-type: none"> • Magnetic clutch operates but A/C system malfunctions.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Drive belt malfunction (Step 3) • Malfunction in blower unit or condenser (Steps 5,6) • Malfunction in receiver/drier or expansion valve (valve closes too much) or expansion valve heat-sensing tube installed incorrectly (Steps 9,10) • Malfunction in refrigerant lines (Steps 11,12) • A/C compressor system malfunction, insufficient compressor oil (Steps 14,15) • Too much compressor oil, expansion valve heat-sensing tube installed incorrectly, or malfunction in expansion valve or heater unit air mix link system (Steps 16—19)

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	CHECK TO SEE WHETHER VENT AIR TEMPERATURE IS NORMAL OR NOT <ul style="list-style-type: none"> • Is vent air temperature 6°C {43°F} or less? 	Yes	Operation is normal. (To prevent evaporator within cooling unit from freezing, A/C compressor stops right away when vent air temperature is 6°C {43°F} or less.
		No	Go to next step.
2	INSPECT REFRIGERANT SYSTEM PERFORMANCE <ul style="list-style-type: none"> • Carry out refrigerant system performance test. (See 07-10-2 REFRIGERANT SYSTEM PERFORMANCE TEST) • Is operation normal? 	Yes	Operation is normal. (Reinspect malfunction symptoms.)
		No	Go to next step.
3	INSPECT DRIVE BELT <ul style="list-style-type: none"> • Inspect drive belt. (See 01-10-3 DRIVE BELT INSPECTION) • Is it okay? 	Yes	Go to next step.
		No	Adjust or replace drive belt, then go to Step 20. (See 01-10-4 DRIVE BELT ADJUSTMENT)
4	CHECK TO SEE MALFUNCTION IS IN BLOWER UNIT INTAKE AND CONDENSER OR ANOTHER <ul style="list-style-type: none"> • Inspect refrigerant pressure. (See 07-10-3 REFRIGERANT PRESSURE CHECK) Are both high-pressure and low-pressure values high? 	Yes	Go to next step.
		No	Go to Step 7.
5	INSPECT BLOWER UNIT INTAKE <ul style="list-style-type: none"> • Is blower unit intake clogged? 	Yes	Remove obstruction, then go to Step 20. (If air does not reach evaporator within cooling unit, heat exchange does not occur and refrigerant pressure becomes high. Therefore, removal of obstruction is necessary.)
		No	Go to next step.
6	INSPECT CONDENSER <ul style="list-style-type: none"> • Inspect condenser. (See 07-11-7 CONDENSER INSPECTION) • Is it okay? 	Yes	Adjust refrigerant to specified amount, then go to Step 20. (Excessive amount of refrigerant.)
		No	Replace condenser, or repair and clean condenser fins, then go to Step 20.
7	CHECK TO SEE IF MALFUNCTION IS IN EXPANSION VALVE, RECEIVER/DRIER AND REFRIGERANT LINES OR ELSEWHERE <ul style="list-style-type: none"> • Are refrigerant high-pressure and low-pressure values low? 	Yes	Go to next step.
		No	Go to Step 13.
8	CHECK TO SEE IF MALFUNCTION IS IN EXPANSION VALVE AND RECEIVER/DRIER OR ELSEWHERE <ul style="list-style-type: none"> • Immediately after A/C compressor operates, does refrigerant high-pressure value momentarily rise to correct value, then fall and stay below it? (Is there negative pressure on low-pressure side?) 	Yes	Go to next step.
		No	Go to Step 11.

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION	
9	CHECK TO SEE IF MALFUNCTION IS IN EXPANSION VALVE OR RECEIVER/DRIER <ul style="list-style-type: none"> Turn A/C switch off and let air conditioner stop for 10 minutes. Start engine. Turn both A/C switch and fan switch on. Does malfunction occur after A/C compressor turns on? 	Yes	Go to next step.
		No	Replace receiver/drier, then go to Step 20. (Since water has intermixed in receiver/drier, replacement is necessary.)
10	VERIFY THAT EXPANSION VALVE HEAT-SENSING TUBE WITHIN COOLING UNIT IS POSITIONED SECURELY AND CORRECTLY <ul style="list-style-type: none"> Is expansion valve heat-sensing tube within cooling unit securely installed proper position? 	Yes	Replace expansion valve, then go to Step 20. (Since valve closes too much, replacement is necessary.)
		No	Install heat-sensing tube securely in proper position, then go to Step 20.
11	INSPECT REFRIGERANT LINES <ul style="list-style-type: none"> Inspect refrigerant lines. <ul style="list-style-type: none"> Is piping free of damage and cracks? Are piping connections free of oil grime? (Visual inspection) Are piping connections free of gas leakage? (Inspect using gas leak tester.) Are above items okay? 	Yes	If the vane makes a noise, add 10 ml {10 cc, 0.338 fl oz} of compressor oil to the A/C compressor. Verify that the noise is no longer heard. Adjust refrigerant to specified amounts, then go to Step 20.
		No	If piping is damaged or cracked, replace it, then go to Step 20. If there is no damage, go to next step.
12	INSPECT PIPING CONNECTIONS FOR LOOSENESS <ul style="list-style-type: none"> Are piping connections loose? 	Yes	Tighten connections to specified torque. If the vane makes a noise, add 10 ml {10 cc, 0.338 fl oz} of compressor oil to the A/C compressor. Verify that the noise is no longer heard. Adjust refrigerant to specified amounts, then go to Step 20. If the vane makes a noise, add 10 ml {10cc, 0.338 fl oz} of compressor oil to A/C compressor. Verify that the noise is no longer heard.
		No	Replace O-ring on piping, adjust refrigerant to specified amounts, then go to Step 20.
13	CHECK TO SEE IF MALFUNCTION IS IN EXPANSION VALVE, AIR MIX ACTUATOR AND COMPRESSOR OIL OR ELSEWHERE <ul style="list-style-type: none"> Does refrigerant high-pressure value hardly increase? 	Yes	Go to next step. (Pressure hardly increases.)
		No	Go to Step 16.
14	CHECK TO SEE IF MALFUNCTION IS IN COMPRESSOR OIL AMOUNT AND A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> When engine is racing, does high-pressure value increase? 	Yes	Return to Step 4.
		No	Go to next step.
15	CHECK TO SEE IF MALFUNCTION IS IN COMPRESSOR OIL AMOUNT OR A/C COMPRESSOR <ul style="list-style-type: none"> After compressor oil is replenished each 10ml {10 cc, 0.338 fl oz}, does high-pressure value increase? 	Yes	Troubleshooting completed. (Explain to customer that cause was insufficient compressor oil.)
		No	Replace A/C compressor, then go to Step 20. (Cause is defective A/C compressor.)
16	CHECK TO SEE IF MALFUNCTION IS IN EXPANSION VALVE OR ELSEWHERE <ul style="list-style-type: none"> Is only refrigerant low-pressure value high? 	Yes	Go to Step 19.
		No	Go to next step.
17	VERIFY THAT AIR MIX ACTUATOR IS INSTALLED SECURELY AND PROPERLY <ul style="list-style-type: none"> Are heater unit air mix links, air mix cranks and air mix rods securely and properly installed? 	Yes	Go to next step.
		No	Repair or install links, cranks and rods securely in proper position, then go to Step 20.

07-03

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION		ACTION
18	ADJUST COMPRESSOR OIL <ul style="list-style-type: none">Set the fan switch to the 4th position.Turn the A/C switch on.Set to FRESH mode.Set the temperature control to MAX COLD.Set to VENT mode.Run engine at a constant 1,500 rpm for 10 minutes.Run engine at idle speed for 1 minute.1 engine speed cycle is defined as going from idle speed to 4,000 rpm and back to idle speed over a period of 12 seconds. Perform 5 cycles.Run engine at idle speed for 30 seconds.Remove all compressor oil from A/C compressor and verify that it is 100 ml {100 cc, 3.38 fl oz}.If it is more than 100 ml {100 cc, 3.38 fl oz}, put only 100 ml {100 cc, 3.38 fl oz} back into A/C compressor.Carry out above steps 1 to 10 again and verify that compressor oil is 100 ml {100 cc, 3.38 fl oz}.Is there 100 ml {100 cc, 3.38 fl oz} of compressor oil in A/C compressor?	Yes	Go to Step 20.
		No	Readjust until compressor oil is 100 ml {100 cc, 3.38 fl oz} .
19	VERIFY THAT EXPANSION VALVE HEAT-SENSING TUBE WITHIN COOLING UNIT IS POSITIONED SECURELY AND CORRECTLY <ul style="list-style-type: none">Is expansion valve heat-sensing tube within cooling unit securely installed in proper position?	Yes	Replace expansion valve, then go to next step. (Since valve opens too much, replacement is necessary.)
		No	Install heat-sensing tube securely in proper position, then go to next step.
20	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCUR AFTER REPAIR <ul style="list-style-type: none">Is cool air discharged? (Are results of refrigerant system performance test okay?)	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

NO. 7 NO COOL AIR

A5U070301038W09

- For the steps that have an asterisk(*), inspect the connector/terminal connection for continuity and damage. If the connection is poor, reconnect it, or repair or replace the appropriate parts if necessary.

7	No cool air.
DESCRIPTION	<ul style="list-style-type: none"> Magnetic clutch does not operate.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/C switch indicator light malfunction (Steps 5—7) A/C amplifier, A/C switch malfunction (Steps 8—14) PCM (A/C signal) system malfunction (Steps 15,16) Refrigerant pressure switch, refrigerant system malfunction (Step 17) PCM (IG1 signal) system malfunction (Steps 18,19) PCM A/C cut-off control system malfunction (Step 20) Coolant system malfunction (Step 21) A/C compressor system malfunction (Steps 22,23) A/C relay system malfunction (Steps 24—26)

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	INSPECT AIR BLOW OUT <ul style="list-style-type: none">Is air discharged?	Yes	Go to next step.
		No	Go to Step 1 of troubleshooting indexes No. 1, 2.
2	INSPECT A/C COMPRESSOR OPERATION <ul style="list-style-type: none">Start engine.Turn both A/C switch and fan switch on.Does A/C compressor operate?	Yes	Go to next step.
		No	Go to Step 4.
3	CHECK TO SEE WHETHER VENT AIR TEMPERATURE IS NORMAL OR NOT <ul style="list-style-type: none">Is vent air temperature 6°C {43°F} or less?	Yes	Operation is normal. (To prevent evaporator within cooling unit from freezing, A/C compressor stops right away when vent air temperature is 6°C {43°F} or less.
		No	Go to Step 1 of troubleshooting index No. 6.

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION
4	INSPECT REFRIGERANT AMOUNT <ul style="list-style-type: none"> Inspect refrigerant amount. (See 07-10-2 REFRIGERANT CHARGE CHECK) Is it okay? 	Yes Go to next step.
		No Adjust refrigerant to specified level, then go to Step 27.
5	INSPECT A/C SWITCH INDICATOR LIGHT <ul style="list-style-type: none"> Does A/C switch indicator light illuminate? 	Yes Go to Step 8.
		No Go to next step.
*6	INSPECT WIRING HARNESS BETWEEN A/C 10A FUSE AND A/C SWITCH FOR CONTINUITY <ul style="list-style-type: none"> Turn ignition switch to ON position. Test voltage at A/C switch terminal C (IG2 signal). Is voltage approximately 12 V? 	Yes Go to next step.
		No Repair wiring harness between A/C 7.5 A fuse and A/C switch, then go to Step 27.
*7	INSPECT A/C SWITCH <ul style="list-style-type: none"> Inspect A/C switch. (See 07-40-10 CLIMATE CONTROL UNIT INSPECTION) Is it okay. 	Yes Inspect wiring harness between A/C switch and fan switch, then go to Step 27.
		No Replace A/C switch, then go to Step 27.
*8	CHECK TO SEE IF MALFUNCTION IS IN A/C AMPLIFIER SYSTEM OR ELSEWHERE <ul style="list-style-type: none"> Turn ignition switch to LOCK position. Disconnect refrigerant pressure switch connector. Turn ignition switch to ON position. Set fan switch to first speed. Test voltage at following terminal of refrigerant pressure switch connector (on wiring harness side). — Terminal B (A/C signal) Is voltage approximately 12 V when A/C switch is off and 0 V when it is on? 	Yes Go to Step 15.
		No Go to next step.
*9	INSPECT WIRING HARNESS BETWEEN A/C 10A FUSE AND A/C AMPLIFIER FOR CONTINUITY <ul style="list-style-type: none"> Turn A/C switch off. Test voltage at A/C amplifier connector terminal A (IG2 signal). Is voltage approximately 12 V? 	Yes Go to next step.
		No Repair wiring harness between A/C 7.5 A fuse and A/C amplifier, then go to Step 27.
*10	INSPECT WIRING HARNESS BETWEEN REFRIGERANT PRESSURE SWITCH AND A/C AMPLIFIER FOR CONTINUITY <ul style="list-style-type: none"> Measure voltage at A/C amplifier connector terminal C (A/C signal). Is voltage approximately 12 V when A/C switch is off and 0 V when it is on? 	Yes Repair wiring harness between refrigerant pressure switch and A/C amplifier, then go to Step 27.
		No Go to next step.
11	INSPECT WIRING HARNESS BETWEEN REFRIGERANT PRESSURE SWITCH AND A/C AMPLIFIER FOR SHORT TO GROUND <ul style="list-style-type: none"> Turn ignition switch to LOCK position. Disconnect A/C amplifier connector. Inspect for continuity at following terminal between A/C amplifier connector (on wiring harness side) and ground. — Terminal C (A/C signal) Is there continuity? 	Yes Repair wiring harness between refrigerant pressure switch and A/C amplifier, then go to Step 27.
		No Go to next step.
*12	INSPECT A/C AMPLIFIER <ul style="list-style-type: none"> Inspect A/C amplifier. Is it okay? 	Yes Go to next step.
		No Replace A/C amplifier, then go to Step 27.

07-03

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION	
*13	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND A/C SWITCH FOR SHORT TO +B <ul style="list-style-type: none"> Turn A/C switch on. Turn fan switch off. Measure voltage at A/C switch connector terminal B (A/C signal). Is voltage approximately 12 V? 	Yes	Repair wiring harness between A/C amplifier and A/C switch, then go to Step 27.
		No	Go to next step.
14	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO GROUND) IS IN A/C SWITCH OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND A/C SWITCH) <ul style="list-style-type: none"> Turn ignition switch to LOCK position. Disconnect A/C switch connector. Check for continuity at following terminal between A/C switch connector (on wiring harness side) and ground. <ul style="list-style-type: none"> Terminal B (A/C signal) Is there continuity? 	Yes	Repair wiring harness between A/C amplifier and A/C switch, then go to Step 27.
		No	Replace A/C switch, then go to Step 27.
*15	CHECK TO SEE MALFUNCTION IS IN PCM AND WIRING HARNESS (BETWEEN PCM AND REFRIGERANT PRESSURE SWITCH FOR CONTINUITY) OR ELSEWHERE <ul style="list-style-type: none"> Test voltage at refrigerant pressure switch connector (on wiring harness side) terminal B (A/C signal). Is voltage approximately 12 V? 	Yes	Go to Step 17.
		No	Go to next step.
*16	CHECK TO SEE IF MALFUNCTION IS IN PCM OR WIRING HARNESS (CHECK BETWEEN PCM AND REFRIGERANT PRESSURE SWITCH FOR CONTINUITY) <ul style="list-style-type: none"> Test voltage at PCM connector (31-pin) terminal 4F (A/C signal). Is voltage approximately 12 V? 	Yes	Repair wiring harness between PCM and refrigerant pressure switch, then go to Step 27.
		No	Inspect PCM, then go to Step 27.
17	CHECK TO SEE IF MALFUNCTION IS IN REFRIGERANT PRESSURE SWITCH OR ELSEWHERE <ul style="list-style-type: none"> When refrigerant pressure switch connector terminals A and B (on wiring harness side) are shorted, is cool air discharged? 	Yes	Inspect refrigerant pressure switch, then go to Step 27.
		No	Undo short, reconnect refrigerant pressure switch connector, then go to next step.
*18	CHECK TO SEE WHETHER MALFUNCTION IS IN PCM SYSTEM OR ELSEWHERE <ul style="list-style-type: none"> Does magnetic clutch operate when terminal A (IG2 signal) of A/C relay connector is grounded? 	Yes	Undo short, then go to next step.
		No	Go to Step 22.
*19	INSPECT WIRING HARNESS BETWEEN A/C RELAY AND PCM FOR CONTINUITY <ul style="list-style-type: none"> Turn A/C switch off. Measure voltage at PCM connector (17-pin) terminal 2K (IG2 signal). Is voltage approximately 12 V? 	Yes	Go to next step.
		No	Repair wiring harness between A/C relay and PCM, then go to Step 27.
*20	INSPECT INPUT SIGNAL FOR PCM'S A/C CUT-OFF CONTROL <ul style="list-style-type: none"> Inspect input signal components (crankshaft position sensor, engine coolant temperature sensor, power steering pressure switch, throttle position sensor, neutral switch (MT), transaxle range switch (AT), including wiring harness of PCM (A/C cut-off control). Are they okay? 	Yes	Go to next step.
		No	Replace input signal components, then go to Step 27.
21	INSPECT COOLING FAN CONTROL SYSTEM AND CONDENSER FAN CONTROL SYSTEM <ul style="list-style-type: none"> Is coolant system operating properly? Is it okay? 	Yes	Inspect PCM, then go to Step 27.
		No	Check for cause.

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION
*22	CHECK TO SEE IF MALFUNCTION IS IN MAGNETIC CLUTCH AND THERMAL PROTECTOR OR ELSEWHERE <ul style="list-style-type: none"> Test voltage at magnetic clutch thermal protector terminal A (A/C control signal). Is voltage approximately 12 V? 	Yes Go to next step.
		No Go to Step 24.
*23	INSPECT MAGNETIC CLUTCH <ul style="list-style-type: none"> Inspect magnetic clutch. (See 07-40-3 MAGNETIC CLUTCH INSPECTION) Is it okay? 	Yes Replace thermal protector, then go to Step 27.
		No Replace magnetic clutch stator, then go to Step 27.
24	INSPECT FUSES <ul style="list-style-type: none"> Check the following fuses: <ul style="list-style-type: none"> A/C 7.5 A fuse AD FAN 20 A fuse Are they okay? 	Yes Go to next step.
		No Replace fuse, then go to Step 27. If fuse burns out right away, go to next step.
*25	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/C RELAY FOR CONTINUITY <ul style="list-style-type: none"> Test voltage at following A/C relay terminals: <ul style="list-style-type: none"> Terminal A (IG2 signal) Terminal C (A/C control signal) Is voltage approximately 12 V? 	Yes Go to next step.
		No Repair wiring harness between A/C 7.5 A fuse or AD FAN 20 A fuse and A/C relay, then go to Step 27.
*26	CHECK TO SEE IF MALFUNCTION IS IN A/C RELAY OR WIRING HARNESS (CHECK BETWEEN A/C RELAY AND THERMAL PROTECTOR FOR CONTINUITY) <ul style="list-style-type: none"> Test voltage at A/C relay terminal D (A/C control signal). Is voltage approximately 12 V? 	Yes Repair wiring harness between A/C relay and thermal protector, then go to next step.
		No Replace A/C relay, then go to next step.
*27	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCUR AFTER REPAIR <ul style="list-style-type: none"> Is cool air discharged? (Is refrigerant system performance test result correct?) 	Yes Troubleshooting completed. Explain repairs to customer.
		No Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

07-03

NO. 8 NOISE WHILE OPERATING A/C SYSTEM

A5U070301038W10

8	Noise while operating A/C system.
DESCRIPTION	<ul style="list-style-type: none"> Noise from magnetic clutch, A/C compressor, hose or refrigerant line.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Magnetic clutch operation noise (Step 4) A/C compressor vane noise (Steps 5—12) A/C compressor slippage noise (Steps 13—16) Hose or refrigerant line interference noise (Step 17)

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CHECK A/C COMPRESSOR FOR VANE NOISE <ul style="list-style-type: none"> Is there a jinging, popping, beeping, or buzzing sound (A/C compressor vane noise)? 	Yes Go to Step 5.
		No Go to next step.
2	INSPECT A/C COMPRESSOR FOR SLIPPAGE NOISE <ul style="list-style-type: none"> Is there a squeaking or whirling sound (A/C compressor slippage noise)? 	Yes Go to Step 13.
		No Go to next step.
3	INSPECT A/C COMPRESSOR FOR INTERFERENCE NOISE <ul style="list-style-type: none"> Is there a rattling or vibrating sound (interference noise)? 	Yes Go to Step 17.
		No Go to next step.

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION	
4	INSPECT MAGNETIC CLUTCH OPERATION FOR NOISE <ul style="list-style-type: none"> Is there a clicking sound (magnetic clutch operation noise)? 	Yes	Adjust clearance between pressure plate of magnetic clutch and A/C compressor pulley, then go to Step 18. (See 07-40-4 MAGNETIC CLUTCH ADJUSTMENT)
		No	Condition is normal. (Recheck malfunction symptoms.)
5	INSPECT A/C COMPRESSOR NOISE TIME <ul style="list-style-type: none"> Is noise heard continuously for more than 3 seconds after A/C compressor comes on? 	Yes	Go to next step.
		No	Condition is normal. (Noise occurs for 2—3 seconds immediately after A/C compressor turns on.)
6	INSPECT IDLE SPEED <ul style="list-style-type: none"> Inspect idle speed. (See 01-10-28 Idle Speed Adjustment) Is it okay? 	Yes	Go to next step.
		No	Adjust idle speed, then go to Step 18.
7	INSPECT REFRIGERANT AMOUNT <ul style="list-style-type: none"> Inspect refrigerant amount. (See 07-10-2 REFRIGERANT CHARGE CHECK) Is it okay? 	Yes	Go to Step 9.
		No	Go to next step.
8	INSPECT REFRIGERANT LINES <ul style="list-style-type: none"> Inspect refrigerant lines. <ul style="list-style-type: none"> Is piping free of damage and cracks? Are piping connections free of oil grime? (Visual inspection) Are piping connections free of gas leakage? (Inspect using gas leak tester.) Are above items okay? 	Yes	Adjust refrigerant amount to specified level, then go to Step 18.
		No	If piping is damaged or cracked, replace then go to Step 18. If there is gas leakage, repair or replace connection and replace receiver/drier*, then go to Step 18.
9	CHECK TO SEE IF MALFUNCTION IS IN COMPRESSOR OIL OR ELSEWHERE <ul style="list-style-type: none"> Add 20 cc {0.8 fl oz} of compressor oil. Is noise heard when racing engine? 	Yes	Go to next step.
		No	Troubleshooting completed. Explain repair to customer.
10	CHECK TO SEE IF MALFUNCTION IS IN A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> Drain compressor oil. Is it contaminated with metal particles? 	Yes	Go to next step.
		No	Replace A/C compressor, then go to Step 18.
11	CHECK TO SEE IF MALFUNCTION IS SOMEWHERE IN A/C SYSTEM OR ELSEWHERE <ul style="list-style-type: none"> Is compressor oil whitish and mixed with water? 	Yes	Replace entire A/C system (excluding heater), then go to Step 18.
		No	Go to next step.
12	INSPECT A/C COMPRESSOR OIL <ul style="list-style-type: none"> Is compressor oil darker than normal and contaminated with aluminum chips? 	Yes	Replace A/C compressor and receiver/drier, then go to Step 18. (Since A/C compressor may be worn and receiver/drier may be clogged, replacement of receiver/drier is necessary.)
		No	Condition is normal. Recheck malfunction symptoms.
13	CHECK TO SEE IF MALFUNCTION IS IN A/C COMPRESSOR OR ELSEWHERE <ul style="list-style-type: none"> Is noise heard immediately after A/C compressor is stopped? 	Yes	Replace A/C compressor, then go to Step 18. (A/C compressor discharge valve left open.)
		No	Go to next step.
14	INSPECT DRIVE BELT <ul style="list-style-type: none"> Inspect drive belt. (See 01-10-3 DRIVE BELT INSPECTION) Is it okay? 	Yes	Go to next step.
		No	Adjust or replace drive belt, then go to Step 18.
15	INSPECT DRIVE BELT CONDITION <ul style="list-style-type: none"> Is drive belt worn? Does it have foreign material imbedded in it, or is there oil on it? 	Yes	Remove obstruction, remove oil, or replace drive belt, then go to Step 18.
		No	Go to next step.
16	INSPECT MAGNETIC CLUTCH <ul style="list-style-type: none"> Inspect magnetic clutch. (See 07-40-3 MAGNETIC CLUTCH INSPECTION) Is it okay? 	Yes	Replace A/C compressor (excluding pressure plate, A/C compressor pulley, and stator), then go to Step 18.
		No	Replace magnetic clutch, then go to Step 18.
17	CHECK TO SEE MALFUNCTION IS IN A/C COMPRESSOR OR REFRIGERANT LINES <ul style="list-style-type: none"> Is noise emitted from A/C compressor? 	Yes	Visually check A/C compressor, replace appropriate parts if necessary, then go to next step.
		No	If noise is due to refrigerant lines, repair detached or missing clips, tighten loose bolts, then go to next step.

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION
18	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCUR AFTER REPAIR <ul style="list-style-type: none"> Has A/C compressor noise stopped? 	Yes
		No

* : If there is gas leakage, air enters into the A/C system and the desiccant within the receiver/drier absorbs the moisture from the air and becomes saturated. If the A/C system is used in this condition, the inside of the A/C compressor will begin to rust due to this moisture, which may cause lock up or noise to occur. Therefore, replacement of the receiver/drier is necessary.

NO.9 AIR CONDITIONER DOES NOT OPERATE EVEN THROUGH AIRFLOW IS IN DEFROSTER MODE OR HEAT/DEFROSTER MODE

A5U070301038W11

9	Air conditioner does not operate even through airflow is in DEFROSTER mode or HEAT/DEFROSTER mode.*	
DESCRIPTION	<ul style="list-style-type: none"> Malfunction in climate control unit A/C switch circuit (open circuit or short to power supply). 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Micro switch system +B short (Steps 3, 4) Micro switch installed incorrectly (Step 5) Micro switch system open (Steps 6, 7) 	

* : This air conditioner system has front windshield fog protection function, if airflow mode control dial is set to DEFROSTER mode or HEAT/DEFROSTER mode.

07-03

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	CHECK FOR COOL AIR BLOWING OUT <ul style="list-style-type: none"> When both A/C and fan switches are on, does cool air blow out? 	Yes
		No
*2	CHECK TO SEE WHETHER MALFUNCTION IN A/C SWITCH CIRCUIT IS AN OPEN CIRCUIT OR A SHORT TO +B <ul style="list-style-type: none"> Turn both A/C switch and fan switch off. Set airflow mode control dial to DEFROSTER mode or HEAT/DEFROSTER mode. Disconnect A/C amplifier connector. Turn ignition switch to ON position. Test voltage at A/C amplifier connector terminal B (A/C signal). Is voltage approximately 12 V? 	Yes
		No
*3	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND A/C SWITCH FOR SHORT TO +B <ul style="list-style-type: none"> Remove climate control unit. Disconnect A/C switch connector. Turn ignition switch to ON position. Test voltage at A/C switch connector terminal A (A/C signal). Is voltage approximately 12 V? 	Yes
		No
*4	CHECK FOR SHORT IN +B CLIMATE CONTROL UNIT (A/C SWITCH) <ul style="list-style-type: none"> Reconnect A/C switch connector. Set airflow mode control dial to something other than DEFROSTER mode and HEAT/DEFROSTER mode. Turn ignition switch to ON position. Test voltage at A/C switch connector terminal A (A/C signal). Is voltage approximately 12 V? 	Yes
		No
5	INSPECT CLIMATE CONTROL UNIT A/C SWITCH INSTALLATION <ul style="list-style-type: none"> Remove climate control unit. Is A/C switch in climate control unit installed securely? 	Yes
		No

SYMPTOM TROUBLESHOOTING

STEP	INSPECTION	ACTION	
6	CHECK FOR OPEN CIRCUIT IN CLIMATE CONTROL UNIT (A/C SWITCH) <ul style="list-style-type: none"> Set airflow mode control dial to DEFROSTER mode or HEAT/DEFROSTER mode. Is there continuity between climate control unit (2-pin) terminals A and B? 	Yes	Go to Step 8.
		No	Go to next step.
7	VISUALLY INSPECT A/C SWITCH IN CLIMATE CONTROL UNIT <ul style="list-style-type: none"> Is A/C switch free of damage? 	Yes	Recheck malfunction symptoms
		No	Replace climate control unit (open circuit in A/C switch), then go to Step 9.
*8	INSPECT WIRING HARNESS BETWEEN A/C SWITCH AND RESISTOR FOR CONTINUITY <ul style="list-style-type: none"> Verify that A/C switch and fan switch are off. Turn ignition switch to ON position. Test voltage at A/C switch connector terminal B (A/C signal). Is voltage approximately 12 V? 	Yes	Inspect wiring harness between A/C amplifier and A/C switch, then go to next step.
		No	Repair wiring harness between A/C switch and resistor, then go to next step.
9	CONFIRM THAT MALFUNCTION SYMPTOM DOES NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> Does windshield become clear in DEFROSTER mode or HEAT/DEFROSTER mode? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.