

Heating, Ventilation & Air Conditioning

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GENERAL

SPECIFICATIONS EQMB0010

A/CON

ITEM		DIESEL		GASOLINE	Remark
		2.5D	2.9D	3.5G	
COMPRESSOR	TYPE	HS-18	←	←	
	Capacity	FD46XG 180cc	←	←	
COMP.PULLEY	TYPE	1PK-TYPE	5PK-TYPE	4PK-TYPE	
	PULLEY Dia.	ø135	ø140	ø120	
CONDENSER	TYPE	P-F	←	←	
TRIPLE S/W	High (Kg/cm ² G)	32.0 ± 2.0	←	←	
	Medium (Kg/cm ² G)	18.0 ± 0.8	←	←	
	Low (Kg/cm ² G)	2.0 ± 0.2	←	←	
EXPANSION V/V	TYPE	BLOCK	←	←	
SOLENOID V/V		DUAL ONLY	←	←	
Refrigerant	Type	R-134a	←	←	
	Capacity (g)	850 ± 25	←	←	

BLOWER AND EVAPORATOR

ITEM		MANUAL	AUTO
Fresh and Recirculation	Operating method	ACTUATOR	←
BLOWER	Rotating direction	Clockwise	←
	SPEED step	1 - 4 Speed	AUTO + 7 Speed
	SPEED control	RESISTOR	POWER TR & HI-RELAY
EVAPORATOR	TYPE	DRAWN CUP	←
	Temp. control type	THERMISTER	FIN-SENSOR
	A/C ON/OFF	OFF : 0.5°C, ON : 3.0°C	←
AIR FILTER	TYPE	PARTICLE	←

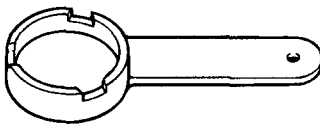
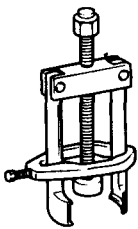
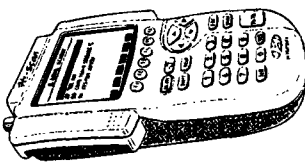
HEATER UNIT

ITEM		MANUAL	AUTO
HEATER MODE Selection	TYPE	DIMPLED	←
	HEATING efficient area	336.5cm ²	←
	Operating method	ACTUATOR	←
TEMP selection	Operating method	ACTUATOR	←

CONTROL UNIT

ITEM	MANUAL	AUTO (without AQS)	AUTO (with AQS)
AQS (AIR QUALITY SYSTEM)	X	X	O
INCAR SENSOR	X	O	↑
AMBIENT SENSOR	X	O	↑
PHOTO SENSOR	X	O	↑

SPECIAL TOOLS EQMB0020

Tool (Number and name)	Illustration	Use
09977-29000 Pressure plate bolt remover	 <p style="text-align: right;">17729000</p>	Removal and installation of pressure plate
09455-34000 Bearing and gear puller	 <p style="text-align: right;">D5534000</p>	Removal of field coil
09900-11000 Hi-scan	 <p style="text-align: right;">10011000</p>	Diagnosis of the A/con system

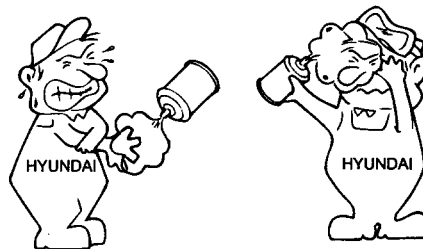
AIR CONDITIONING SYSTEM

INSTRUCTIONS EQMB0030

WHEN HANDLING REFRIGERANT

1. R-134a liquid refrigerant is highly volatile. A drop on the skin of your hand could result in localized frostbite. When handling the refrigerant, be sure to wear gloves.
2. It is standard practice to wear goggles or glasses to protect your eyes, and gloves to protect your hands. If the refrigerant splashes into your eyes, wash them with clean water immediately.
3. The R-134a container is highly pressurized. Never leave it in a hot place, and check that the storage temperature is below 52°C (126°F).
4. A electronic leak detector should be used to check the system for refrigerant leakage. Bear in mind that the R-134a, upon coming into contact with flame, produces phosgene, a highly toxic gas.
5. Use only recommended the lubricant for R-134a systems. If lubricants other than the recommended one used, system failure may occur.
6. PAG lubricant absorbs moisture from the atmosphere at a rapid rate, therefore the following precautions must be observed:
 - When removing refrigerant components from a vehicle, cap immediately the components to prevent from the entry of moisture.
 - When installing refrigerant components to a vehicle, do not remove the cap until just before connecting the components.
 - Complete the connection of all refrigerant tubes and hoses without delay to prevent the A/C system from taking on moisture.
 - Use the recommended lubricant from a sealed container only.

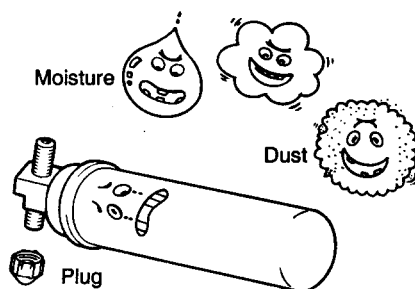
7. If an accidental discharge in the system occurs, ventilate the work area before resuming service.



EQDA010A

WHEN REPLACING PARTS ON A/C SYSTEM

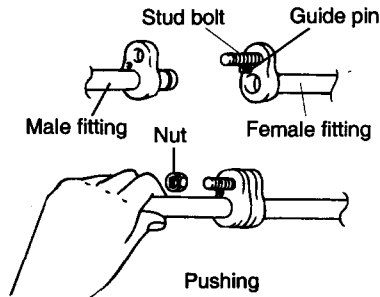
1. Never open or loosen a connection before discharging the system.
2. Seal the open fittings of components with a cap or plug immediately to prevent intrusion of moisture or dust.
3. Do not remove the sealing caps from a replacement component until it is ready to be installed.
4. Before connecting an open fitting, always install a new sealing ring. Coat the fitting and seal with refrigerant oil before making the connection.



EQDA010B

WHEN INSTALLING CONNECTING PARTS**FLANGE WITH GUIDE PIN**

Check the new O-ring for damage (use only the specified) and lubricate it using compressor oil. Tighten the nut to specified torque.



EQDA010C

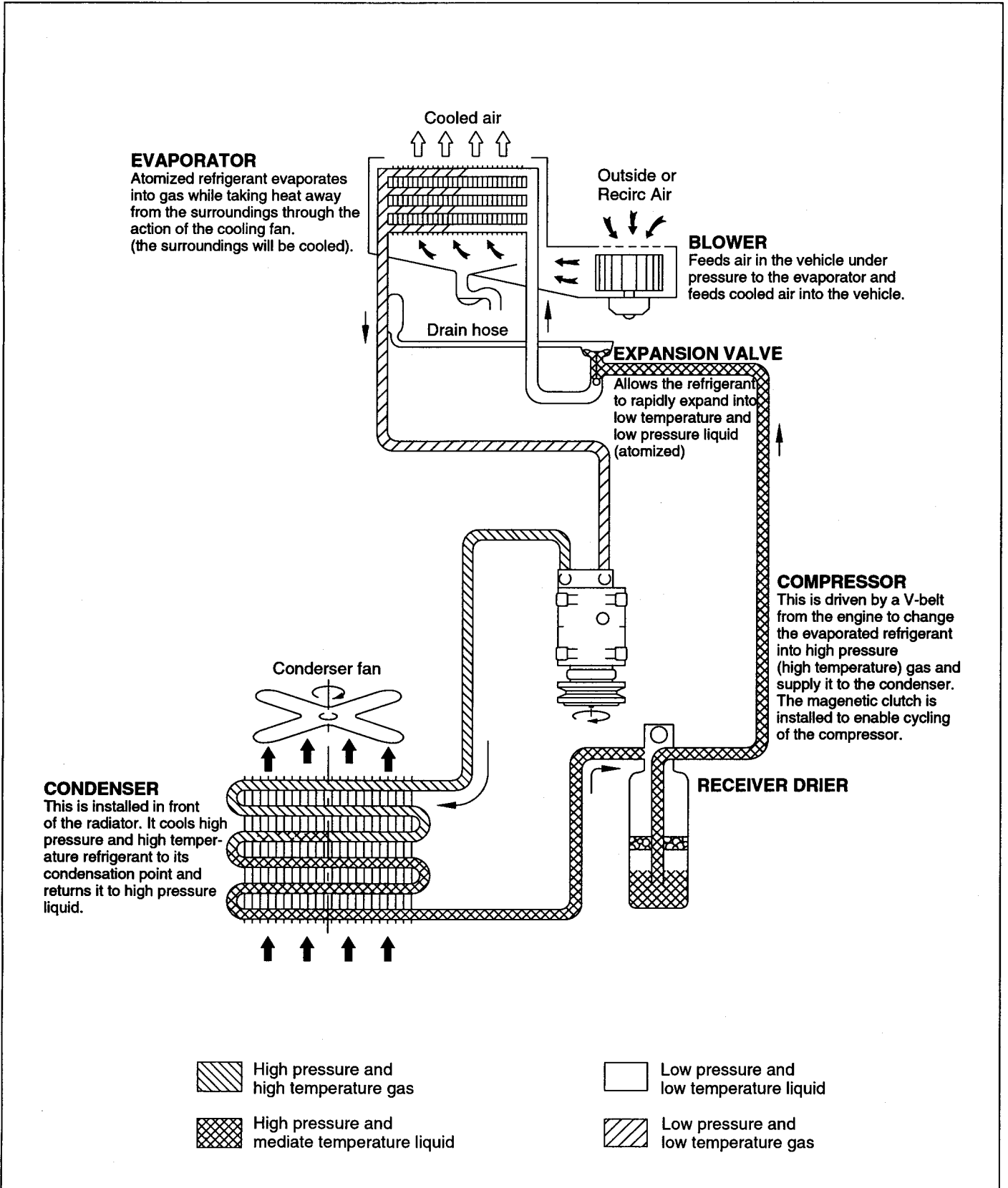
HANDLING TUBING AND FITTINGS

The internal parts of the refrigeration system will remain in a state of chemical stability as long as pure moisture-free refrigerant and refrigerant oil are used. Abnormal amounts of dirt, moisture or air can upset the chemical stability and cause problems or serious damage.

THE FOLLOWING PRECAUTIONS MUST BE OBSERVED

1. When it is necessary to open the refrigeration system, have everything you will need to service the system ready so the system will not be left open any longer than necessary.
2. Cap or plug all lines and fittings as soon as they are opened to prevent the entrance of dirt and moisture.
3. All lines and components in parts stock should be capped or sealed until they are ready to be used.
4. Never attempt to rebend formed lines to fit. Use the correct line for the installation you are servicing.
5. All tools, including the refrigerant dispensing manifold, the gauge set manifold and test hoses, should be kept clean and dry.

REFRIGERATION CYCLE EQHA0200



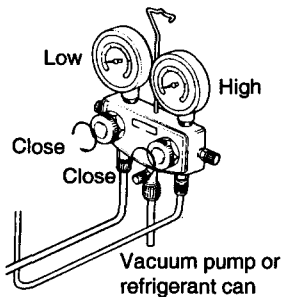
INSTALLATION OF MANIFOLD GAUGE SET

SET EQMB0090

⚠ CAUTION

When connecting the manifold gauge set test hoses, be sure to observe all safety precautions.

1. Close both valves of the manifold gauge set.
2. Install the charging hoses of the gauge set to the fittings. Connect the low-pressure hose to the low-pressure service port, and the high-pressure hose to the high-pressure service port. Tighten the hose nuts by hand.



EQHA030A

REFRIGERANT DISCHARGING PROCEDURE

EQMB0100

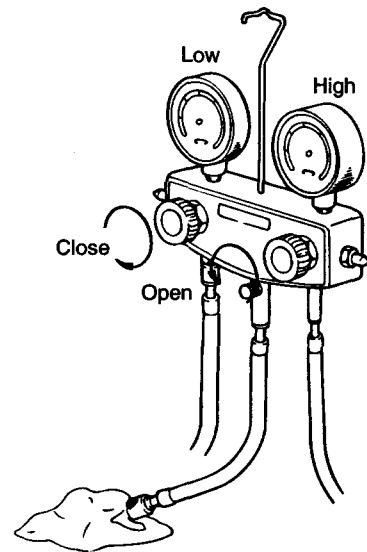
1. Connect the manifold gauge set to the system.
2. Put a towel under the open end of the center hose.
3. Open the high pressure valve slowly to discharge the refrigerant.

⚠ CAUTION

If discharging the refrigerant too fast, compressor oil may drain from the system.

4. Check if the towel is stained with oil. If so, gently close the valve.
5. If the manifold gauge reading drops below 3.5kg/cm², open the low pressure valve slowly.

6. Open the high and low pressure valves slowly in order to drop the system pressure until the gauge indicates 0kg/cm².



EQHA035A

EVACUATING REFRIGERANT SYSTEM

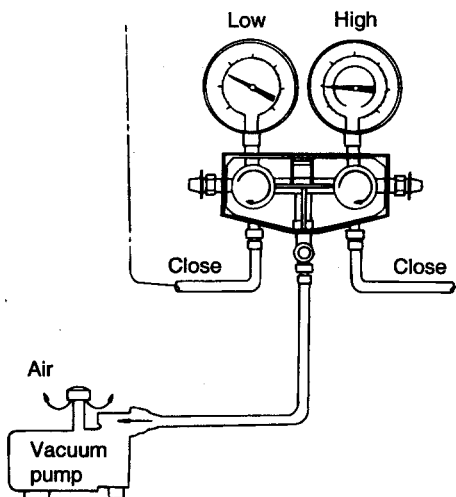
EQMB0110

📖 NOTE

It is necessary to evacuate the air conditioning system any time the system has been opened. Evacuation is necessary to rid the system of all air and moisture that may have been allowed to enter the unit. After installation of a component, the system should be evacuated for approximately 15 minutes. A component in service that has been opened for repair should be evacuated for 30 minutes.

1. Engine should be off.
2. Connect a manifold gauge set to the compressor gauge fittings. Close both high and low pressure valves.
3. Make sure the refrigerant has been discharged from the system.
4. Connect the center hose of the gauge set to the vacuum pump inlet.
5. Start the vacuum pump and then open the high and low manifold pressure valves.

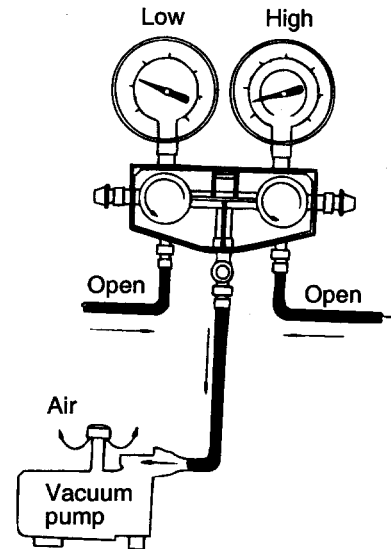
6. After about ten minutes, check that the low pressure gauge reads more than -94.39 kPa (-0.96 kg/cm^2 , -13.7 psi) vacuum. If negative pressure can not be obtained, there is a leak in the system. In this case, repair the leak as following:
 - a. Close both the manifold valves and stop the vacuum pump.
 - b. Charge system with a can or refrigerant [about 0.4 kg (0.9 lb)]. Refer to Charging Refrigerant.
 - c. Check for refrigerant leakage with a leak detector. Repair any leakage found.
 - d. Discharge refrigerant again, and then evacuate the system. If no leaks are found, continue evacuating the system.
7. Start the vacuum pump.



EQA9007A

8. Open both manifold valves to obtain -94.39 kPa (-0.96 kg/cm^2 , -13.7 psi) of vacuum.
9. After the low pressure manifold gauge indicates close to -94.39 kPa (-0.96 kg/cm^2 , -13.7 psi), continue evacuating for 15 minutes.

10. After evacuating for 15 minutes, close both manifold valves and stop the vacuum pump. Disconnect the hose from the vacuum pump. The system is now ready for charging.



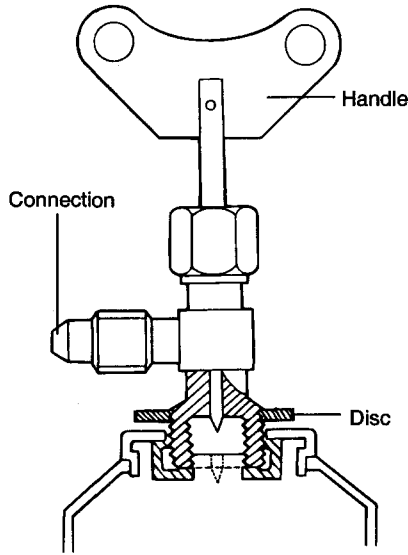
EQA9007B

HANDLING REFRIGERANT SERVICE TAP VALVE

EQMB0120

1. Before connecting the valve to the refrigerant container, turn the handle fully counterclockwise.
2. Turn the disc counterclockwise until it reaches its highest position.
3. Connect the center hose to the valve fitting. Turn the disc fully clockwise by hand.
4. Turn the handle clockwise to make a hole in the sealed top.
5. Turn the handle fully counterclockwise to fill the center hose with air. Do not open the high and low-pressure hand valves.
6. Loosen the center hose nut connected to the center fitting of the manifold gauge.

- Allow air to escape for a few seconds, and then tighten the nut.

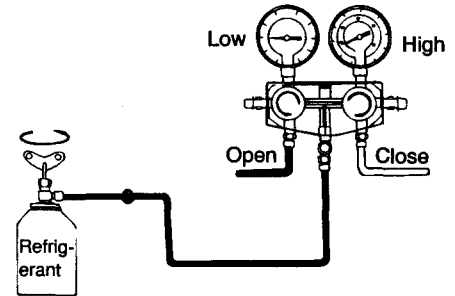


EQA9008A

- Run the engine at fast idle and operate the air conditioning.

NOTE

Be sure to keep the container upright to prevent liquid refrigerant from being charged into the system through the suction side, resulting in possible damage to the compressor.



EQA9009B

- Charge the system to the specified amount. Then close the low pressure valve.

Specified amount : $850 \pm 25g$

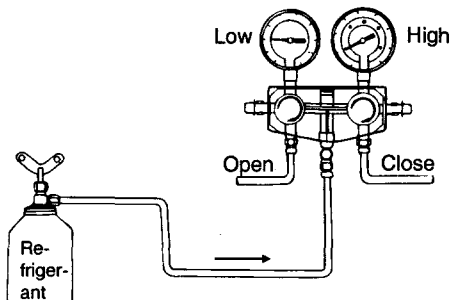
CHARGING REFRIGERANT SYSTEM (VAPOR)

EQMB0130

NOTE

This step is to charge the system through the low pressure side with refrigerant in a vapor state. When the refrigerant container is placed right side up, refrigerant will enter the system as a vapor.

- Open the low pressure valve. Adjust the valve so that the low pressure gauge does not read over 412 kPa (4.2 kg/cm², 60 psi).

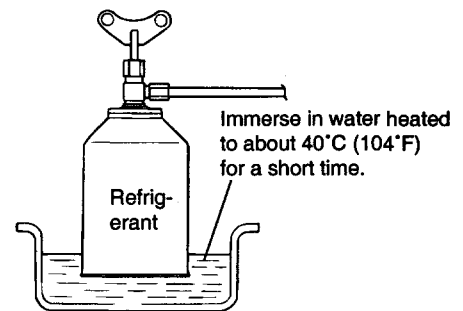


EQA9009A

When refrigerant charging speed is slow, immerse refrigerant can in water, heated to a temperature of about 40°C (104°F).

WARNING

- Under any circumstances the refrigerant must not be warmed in water heated to a temperature of over 52°C (126°F).
- A blow torch or stove must never be used to warm up the can.



EQA9009C

- Put the refrigerant in a pan of warm water (maximum temperature 40°C or 104°F) to keep vapor pressure in the container slightly higher than vapor pressure in the system.

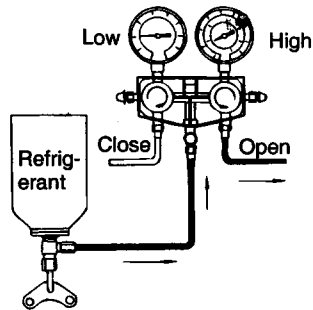
CHARGING REFRIGERANT SYSTEM (LIQUID)

NOTE

This step is to charge an empty system through the high pressure side with refrigerant in a liquid state. When the refrigerant container is held upside down, refrigerant will enter the system as a liquid.

CAUTION

Never run the engine when charging the system through the high pressure side. Do not open the low pressure valve when the system is being charged with liquid refrigerant.



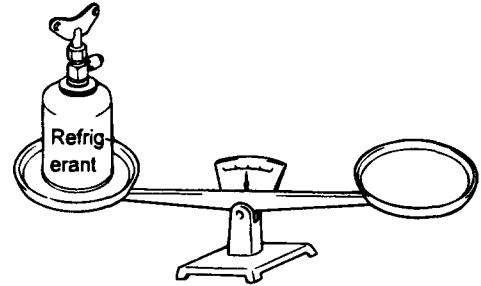
EQA9010A

1. Close both high and low pressure valves completely after the system is evacuated.
2. Install the refrigerant can tap valve as described in "Handling Refrigerant Service Tap Valve" section.
3. Open the high pressure valve fully and keep the container upside down.
4. Charge the system to the specified amount by weighing the refrigerant with a scale. Overcharging will cause the discharge pressure (high side) to rise. Then, close the high pressure valve.

Specified amount : 850 ± 25g

NOTE

If the low pressure gauge does not show a reading, the system is restricted and must be repaired.



EQA9010B

5. After the specified amount of refrigerant has been charged into system, close the manifold valve.
6. Confirm that there are no leaks in the system by checking with a leak detector. Refer to Checking Refrigerant Leak.

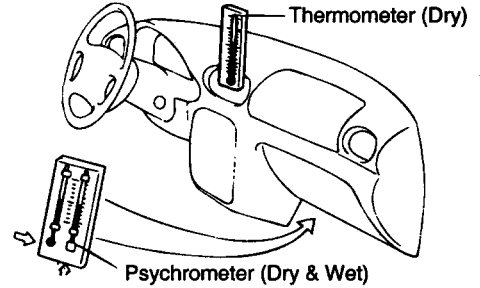
NOTE

Conducting a performance test prior to removing the manifold gauge is good service operation.

PERFORMANCE TEST EQMB0150

1. Install the manifold gauge set.
2. Run the engine at 2,000 rpm and set the controls for maximum cooling and high blower speed.
3. Keep all windows and doors open.
4. Place a dry-bulb thermometer in the cool air outlet.
5. Place a wet—dry thermometer close to the inlet of the cooling unit.
6. Check that the reading on the high pressure gauge is 1,373-1,575 kPa (14-16 kg/cm², 199-228 psi). If the reading is too high, pour water on the condenser. If the reading is too low, cover the front of the condenser.

7. Check that the reading on the dry-bulb thermometer at the air inlet at 25-35°C (77-95°F).
8. Calculate the relative humidity from the psychrometric graph by comparing the wet-and dry-bulb reading at the air inlet.



EQA9019A

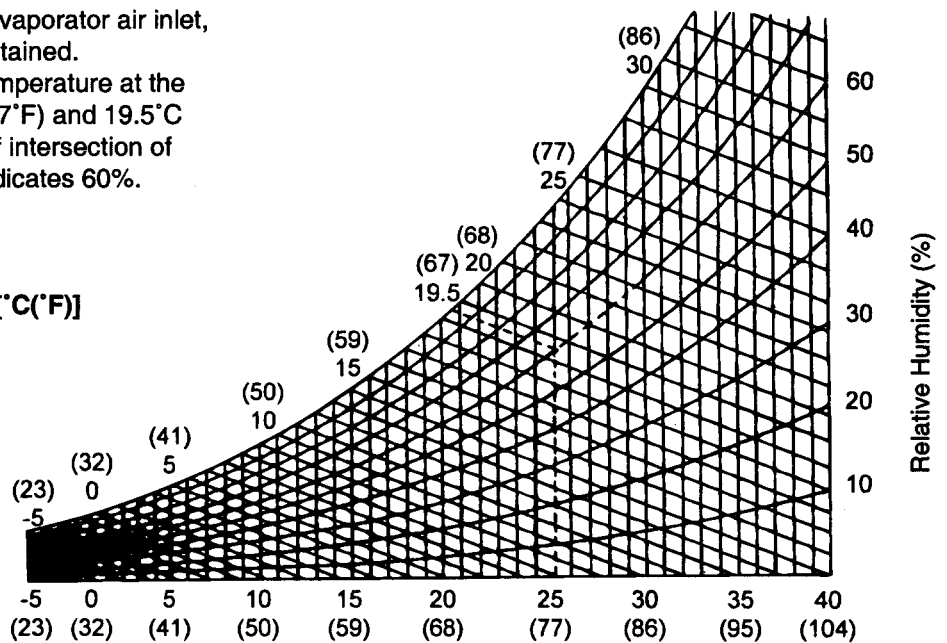
HOW TO READ THE GRAPH :

After measuring the temperatures of the wet and dry-bulb thermometers at the evaporator air inlet, relative humidity (%) can be obtained.

Example : Dry-and wet-bulb temperature at the evaporator air inlet are 25°C (77°F) and 19.5°C (67°F) respectively, the point of intersection of the dotted lines in the graph indicates 60%.

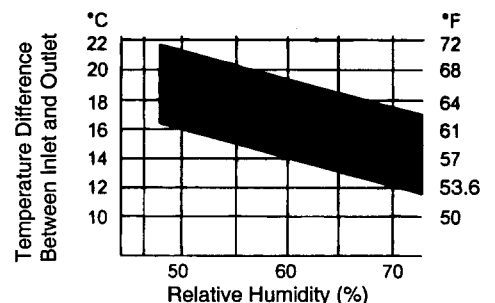
WET-BULB TEMPERATURE [°C(°F)]

100	(212)
90	(194)
80	(176)
70	(158)
60	(140)
50	(122)
40	(104)
30	(86)
20	(68)
10	(50)



EQA9019B

9. Measure the dry-bulb temperature at the cool air outlet, and calculate the difference between the inlet dry-bulb and outlet dry-bulb temperatures.
10. Check that the intersection of the relative humidity and temperature difference falls within the block below. If the intersection is within the block, cooling performance is satisfactory.



EQA9019C

COMPRESSOR OIL EQMB0160

Oil lubricates the compressor and circulates in the system while the compressor is operating. Whenever replacing any component of the system, or when a large amount of gas leakage occurs, add oil to maintain the original total amount of oil.

HANDLING OF OIL

1. The oil should be free from moisture, dust, metal filings, etc.
2. Do not mix oils.
3. The moisture content in the oil increases when exposed to the air for prolonged periods. After use, seal the container immediately.

OIL RETURN OPERATION

To check the oil level or add the oil, idle the engine for 20–30 minutes with the controls set to maximum cooling and blower level, to return the lubricant to compressor.

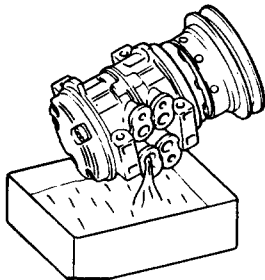
CHECKING AND ADDING OF COMPRESSOR OIL LEVEL

In order to add oil to an operating compressor, check the compressor oil using the following procedure:

1. Stop the engine, discharge the refrigerant, and dismantle the compressor from the vehicle.
2. Pour oil from the system line outlet.

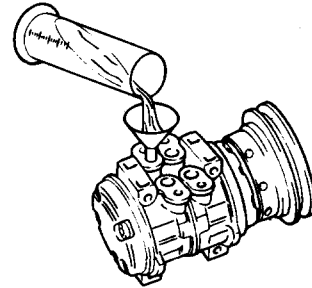
NOTE

If the compressor is cold, sometimes it can be hard to drain the oil. Warm the compressor (approx. 40–50°C) to drain the oil.



EQHA060A

3. Check the volume of the discharged oil. If it is less than 70cc, it means there is little leak. Perform the leakage test on each system connection, and repair or replace faulty parts if necessary.
4. Check the oil for contamination and replenish the oil level in the following procedure:



EQHA060B

- a. When oil is clean

Discharge	Setting
Above 70cc	Oil level is normal. Add an equal amount of discharged oil.
Below 70cc	Oil level is low. Add 70cc of oil.

- b. If the oil is contaminated with metal fragments or other material, clean the receiver drier after charging the refrigerant.

CHECKING FOR REFRIGERANT LEAKS

EQMB0170

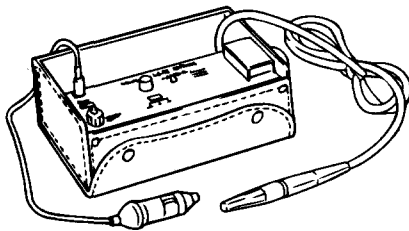
Always conduct a leak test with an electronic leak detector whenever leakage or refrigerant is suspected and when conducting service operations which are accompanied by disassembly or loosening or connection fittings.

NOTE

In order to use the leak detector properly, read the manual supplied by the manufacturer.

If a gas leak is detected, proceed as follows:

1. Check the torque on the connection fittings and, if too loose, tighten to the proper torque. Check for gas leakage with a leak detector.
2. If leakage continues even after the fitting has been tightened, discharge the refrigerant from the system, disconnect the fittings, and check their seating faces for damage. Always replace, even if the damage is slight.
3. Check the compressor oil and add oil if required.
4. Charge the system and recheck for gas leaks. If no leaks are found, evacuate and charge the system again.



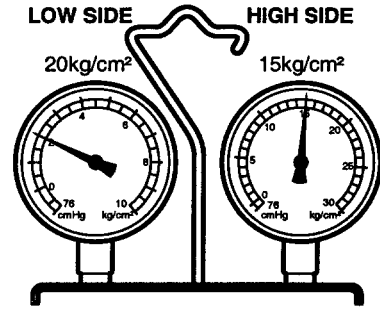
EQHA065A

PERFORMANCE TEST DIAGNOSIS USING MANIFOLD GAUGE

EQMB0180

STANDARD VALUE

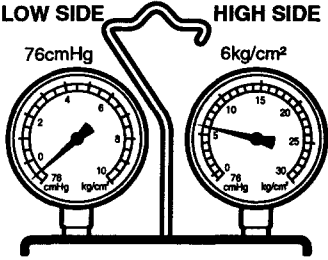
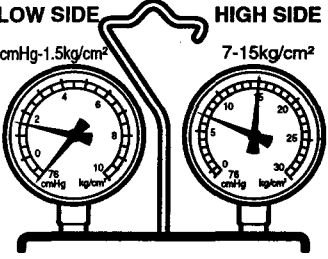
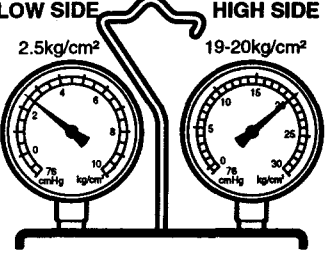
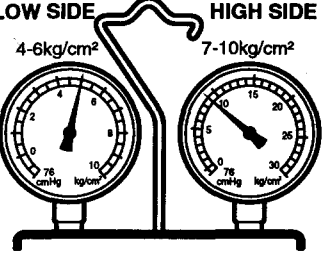
If cooling cycle is operating normally, the manifold gauge reading will be approx. 1.5–2.0kg/cm² for the low pressure side and approx. 14.5–15kg/cm² for the high pressure side. Inlet temperature should be 30–35°C, with the engine at 2,000 rpm, maximum cooling selected, and the blower on highest level.



KFWD001A

DIAGNOSIS

SYMPTOMS	PROBABLE CAUSES	REMEDY	MANIFOLD GAUGE READINGS
<ol style="list-style-type: none"> Low pressure and high pressure are low. Cooler outlet air is a little cooler. 	<ul style="list-style-type: none"> Gas leak. 	<ul style="list-style-type: none"> Check and repair. Add refrigerant. 	<p>KFWD002A</p>
<ol style="list-style-type: none"> Low pressure and high pressure are high. 	<ul style="list-style-type: none"> Faulty cooling or condenser freezing. Belt slip. 	<ul style="list-style-type: none"> Maintain the proper level of refrigerant. Clean the condenser. Adjust the belt. 	<p>KFWD003A</p>
<ol style="list-style-type: none"> Low pressure and high pressure are high. Low pressure pipe is not cold. 	<ul style="list-style-type: none"> Air in the system. 	<ul style="list-style-type: none"> Clean or repair the receiver drier. Check for oil contamination. 	<p>KFWD004A</p>

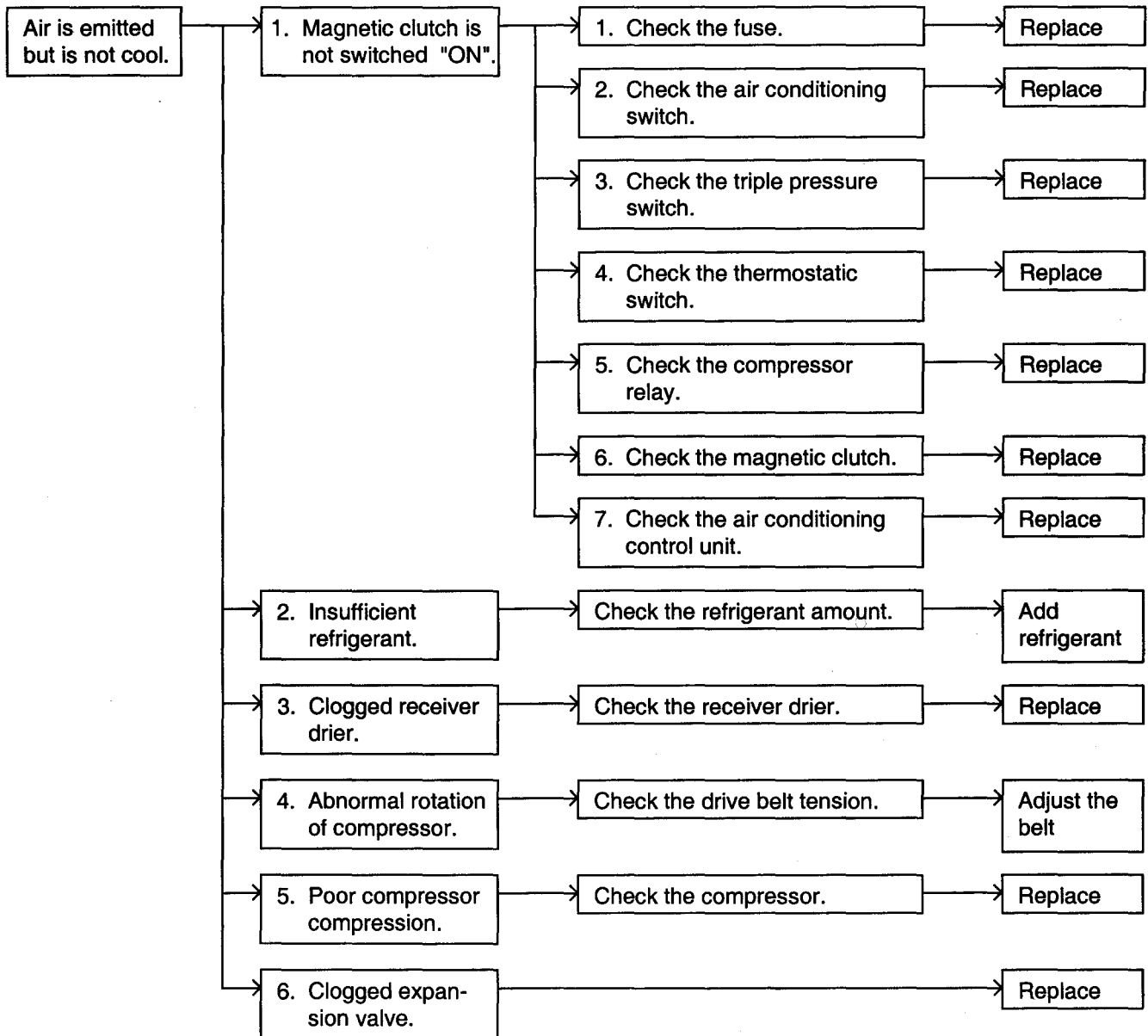
SYMPTOMS	PROBABLE CAUSES	REMEDY	MANIFOLD GAUGE READINGS
<ol style="list-style-type: none"> Low pressure side indicates negative pressure and high pressure side indicates low pressure. Front or dew on pipes connected with receiver or expansion valve. 	<ul style="list-style-type: none"> Dust or moisture frozen at expansion valve. Gas leak. 	<ul style="list-style-type: none"> Repair the receiver drier and replace the expansion valve. Replace the expansion valve if the receiver-drier is faulty. 	<p>LOW SIDE HIGH SIDE</p> <p>76cmHg 6kg/cm²</p>  <p style="text-align: right;">KFWD005A</p>
<ol style="list-style-type: none"> Low pressure side pressure sometimes goes to negative pressure or normal. 	<ul style="list-style-type: none"> Intaken moisture is frozen at expansion valve hole. 	<ul style="list-style-type: none"> Repair and bleed receiver drier 	<p>LOW SIDE HIGH SIDE</p> <p>50cmHg-1.5kg/cm² 7-15kg/cm²</p>  <p style="text-align: right;">KFWD006A</p>
<ol style="list-style-type: none"> Low pressure and high pressure are high. Much frost or dew on the low pressure side piping. 	<ul style="list-style-type: none"> Expansion valve failure. Receiver-drier faulty. Flow control faulty. 	<ul style="list-style-type: none"> Repair receiver drier. Check oil contamination. 	<p>LOW SIDE HIGH SIDE</p> <p>2.5kg/cm² 19-20kg/cm²</p>  <p style="text-align: right;">KFWD007A</p>
<ol style="list-style-type: none"> Low pressure side pressure is high and pressure side pressure is low. 	<ul style="list-style-type: none"> Leak inside compressor. 	<ul style="list-style-type: none"> Replace compressor. 	<p>LOW SIDE HIGH SIDE</p> <p>4-6kg/cm² 7-10kg/cm²</p>  <p style="text-align: right;">KFWD008A</p>

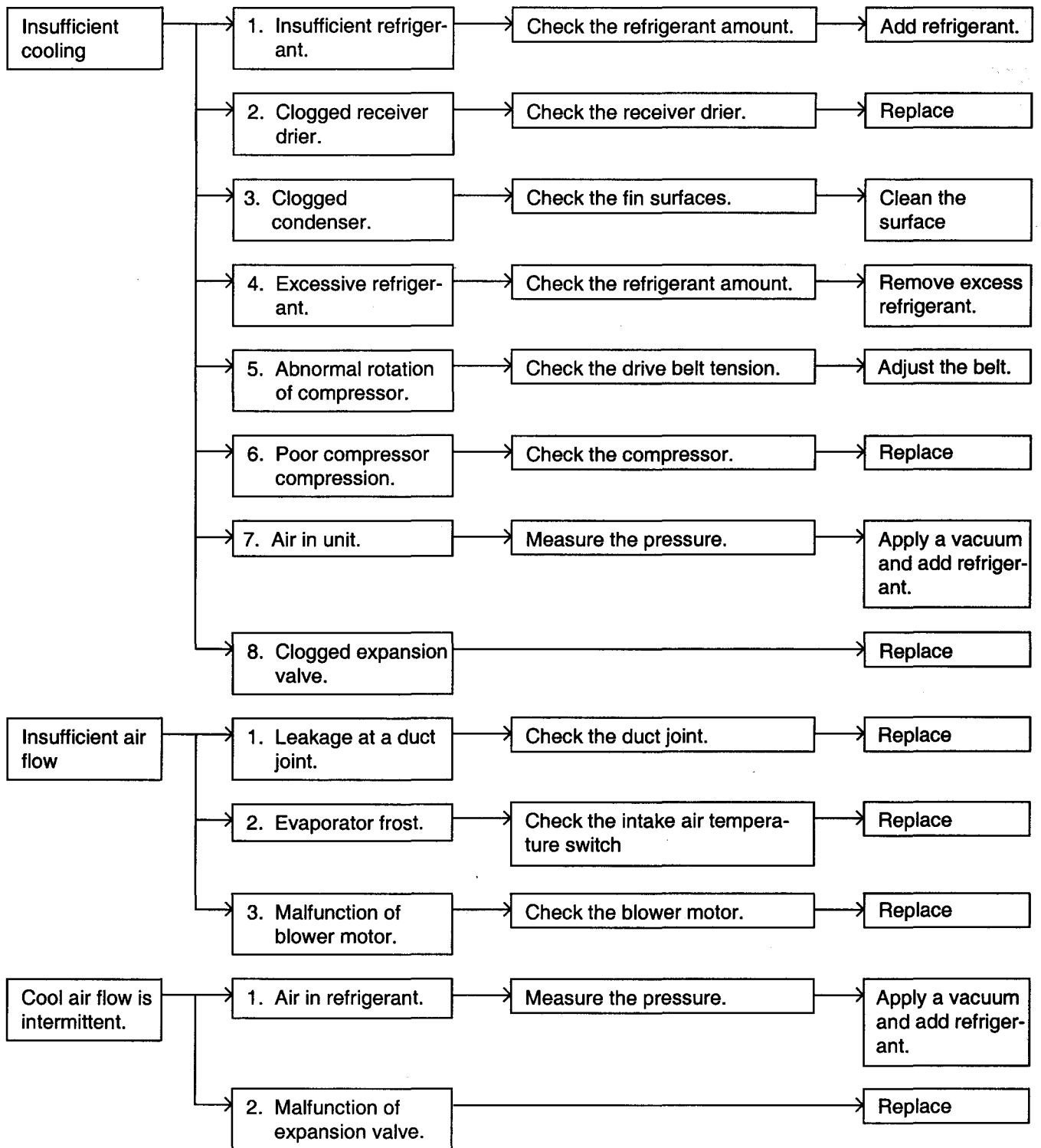
TROUBLESHOOTING EQHA0100

Before replacing or repairing air conditioning components, first determine if the malfunction is due to the refrigerant charge, air flow or compressor. The following diagnostic charts have been developed as a quick reference for determining the cause of the malfunction. If these charts do

not satisfactorily describe the problem, refer to the appropriate section for a more detailed explanation. After correcting the malfunction, check the complete system to ensure that performance is satisfactory.

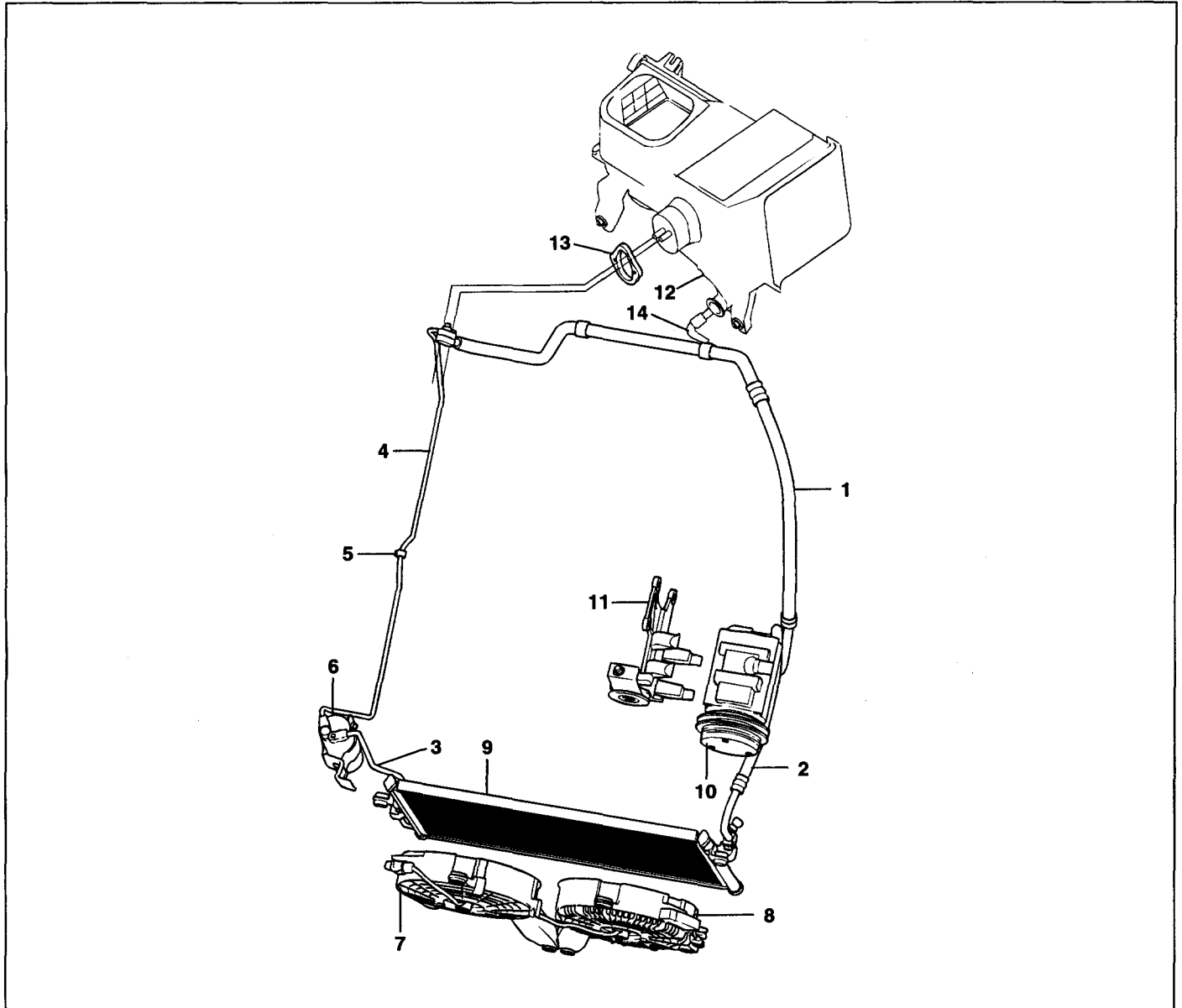
MALFUNCTION CAUSES AND REMEDIES (NUMBERS INDICATE CHECKING/INSPECTION ORDER.)





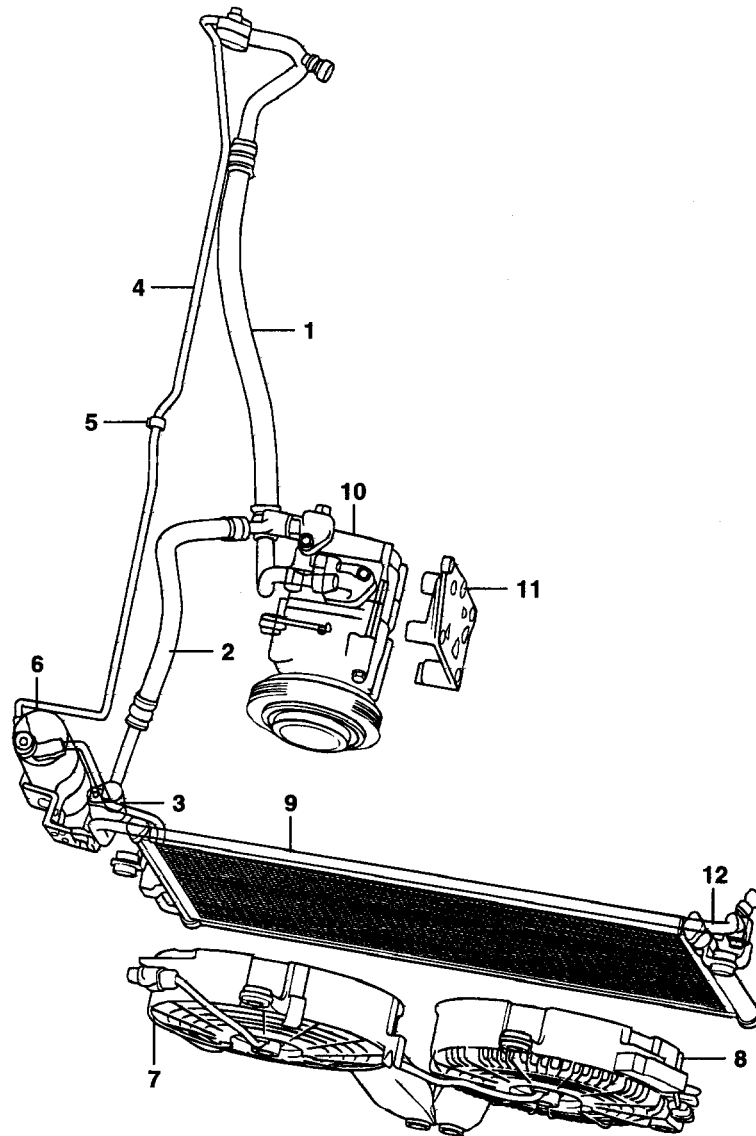
REFRIGERANT LINE

REFRIGERATION LINE (2.5 TCI) EQMB0060



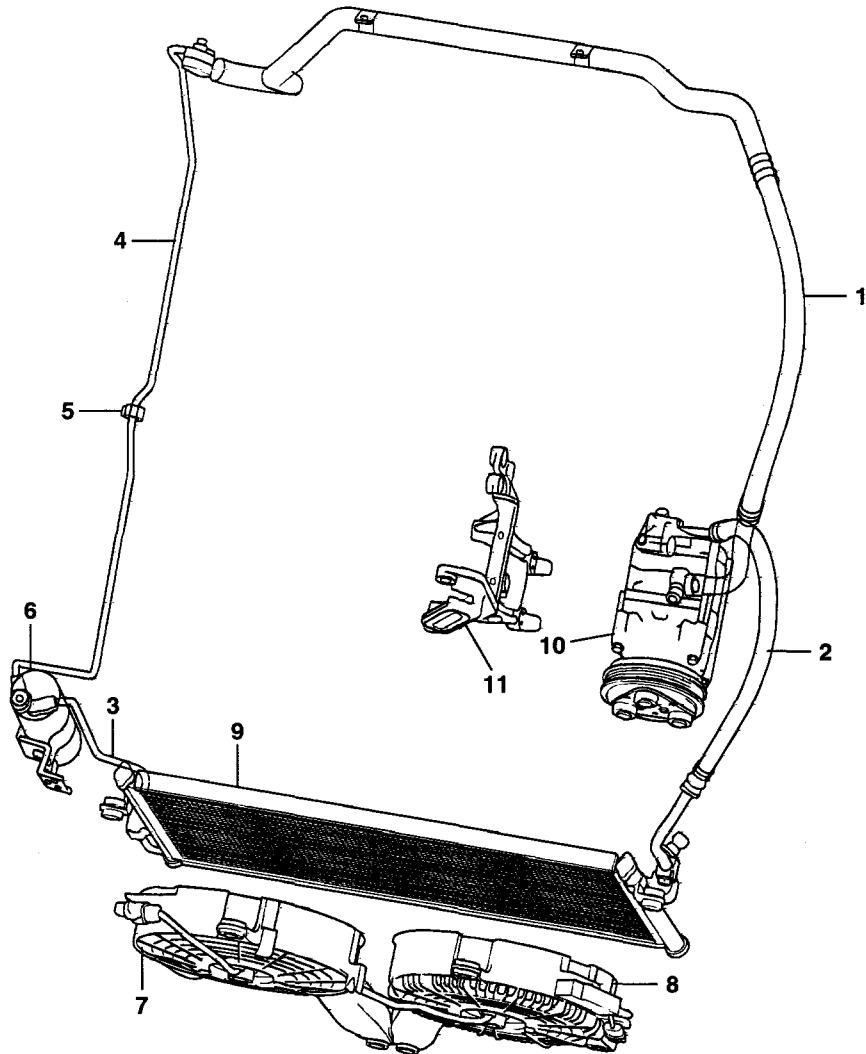
NO	NAME	NO	NAME
1	Suction hose	8	Condenser fan (left side)
2	Discharge hose	9	Condenser
3	Liquid pipe, A	10	Compressor
4	Liquid pipe, B	11	Compressor mounting bracket
5	Liquid pipe clamp	12	Blower & Evaporator
6	Receiver drier	13	Evaporator pipe seal
7	Condensen fan (right side)	14	Drain hose

REFRIGERATION LINE (2.9 TCI) EQMB0070



NO	NAME	NO	NAME
1	Suction hose	7	Condenser fan (right side)
2	Discharge hose, A	8	Condenser fan (left side)
3	Liquid pipe, A	9	Condenser
4	Liquid pipe, B	10	Compressor
5	Liquid pipe clamp	11	Compressor mounting bracket
6	Receiver drier	12	Discharge hose, B

REFRIGERATION LINE (3.5 V6) EQMB0080



NO	NAME	NO	NAME
1	Suction hose	7	Condenser fan (right side)
2	Discharge hose	8	Condenser fan (left side)
3	Liquid pipe, A	9	Condenser
4	Liquid pipe, B	10	Compressor
5	Liquid pipe clamp	11	Compressor mounting bracket
6	Receiver drier		

MANUAL A/C COMPRESSOR CONTROLS

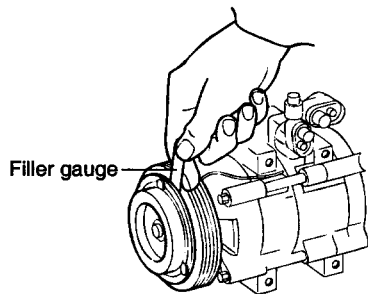
MAGNETIC CLUTCH

CHECKING THE CLUTCH AIR GAP EQMB0430

1. Check the air gap between the clutch hub and pulley contact surface using a feeler gauge.

Clutch air gap : 0.35 - 0.65mm

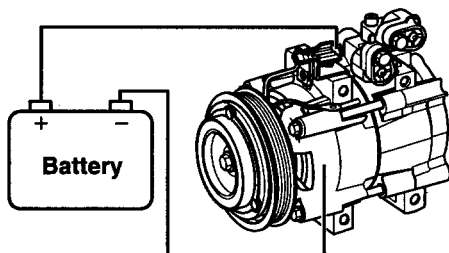
2. Check the gap around the pulley at 3 points.
3. If the clutch air gap is outside the normal range, correct it using a shim of proper size.



KFWD052A

MAGNETIC CLUTCH OPERATION EQMB0440

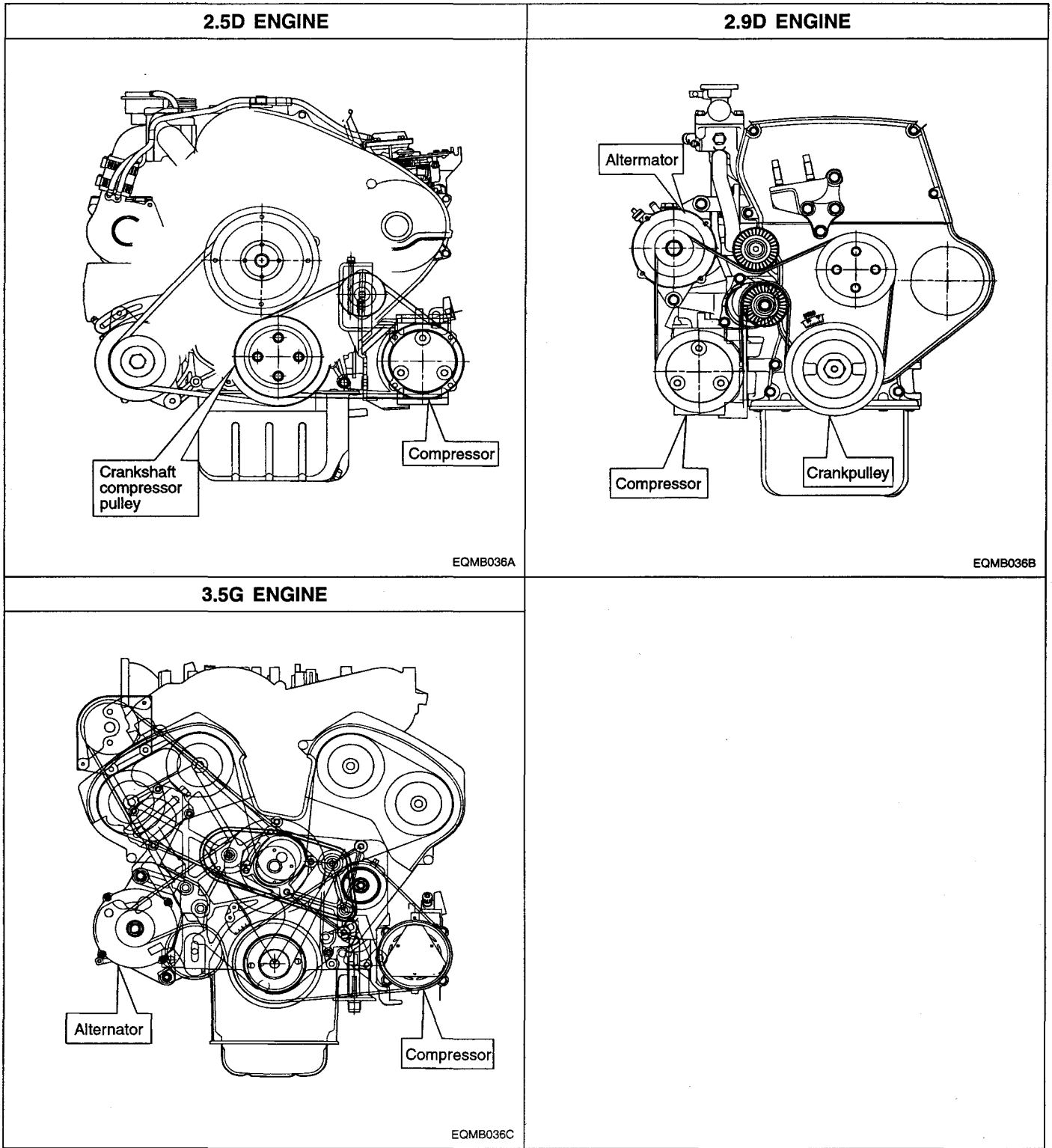
Connect the compressor terminal to battery(+) and the battery(-) terminal to the compressor body. Verify magnetic clutch operation by a clicking noise.



KFWD053A

COMPRESSOR

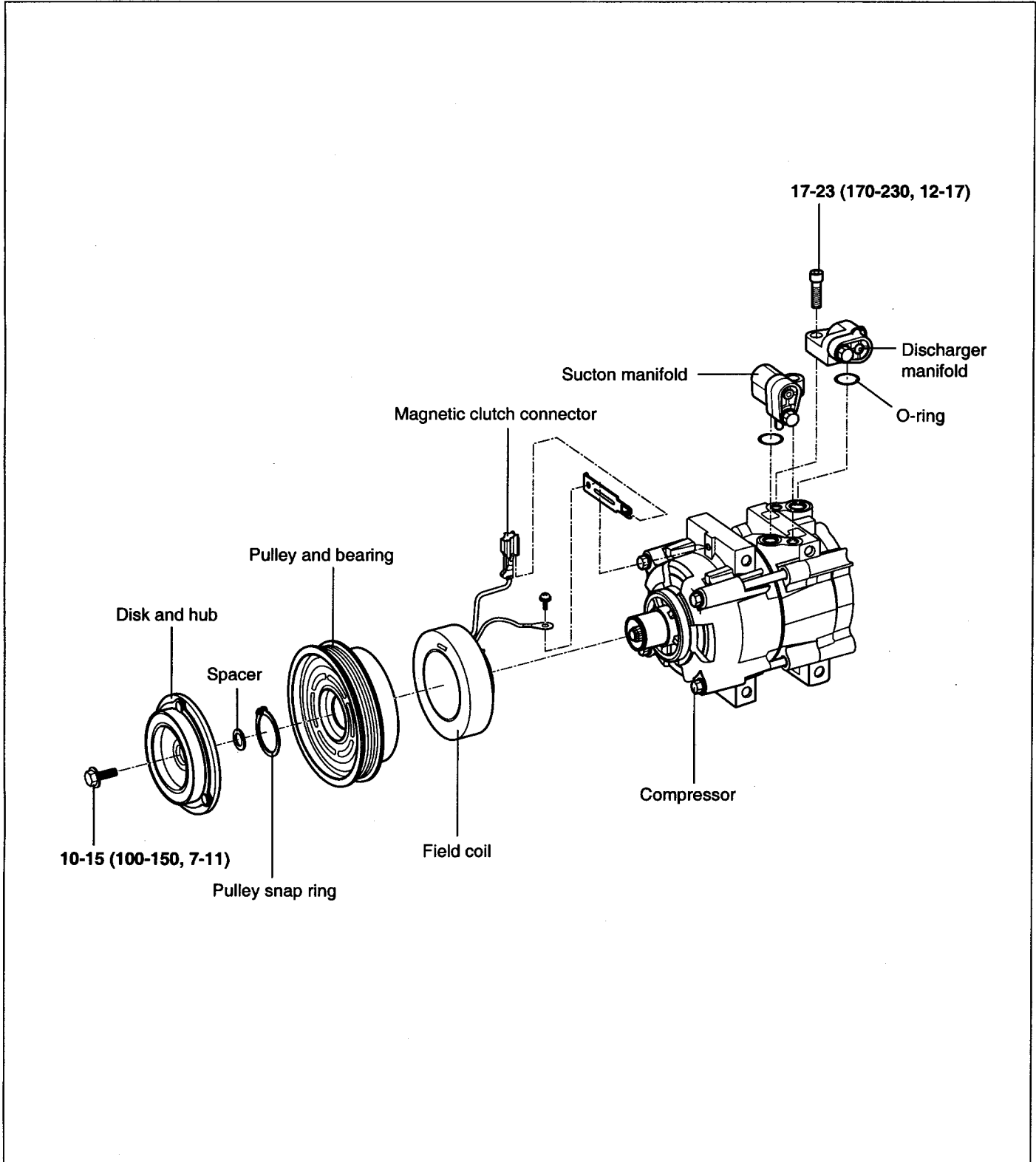
COMPONENTS EQMB0360



REMOVAL AND INSTALLATION EQHA1200

1. Remove the drive belt after loosening the tension pulley.
2. Discharge the refrigerant.
3. Remove the discharge and suction hoses.
4. Remove the compressor.
5. Installation is the reverse of removal.

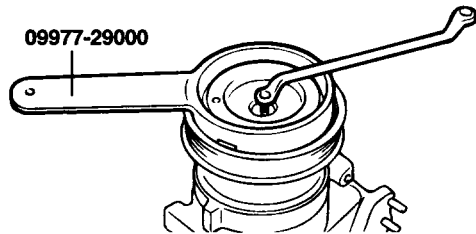
COMPONENTS EQJA1250



CLUTCH HUB AND PULLEY

DISASSEMBLY EQMB0390

1. Remove the clutch hub supporting bolt using the Special Tool.

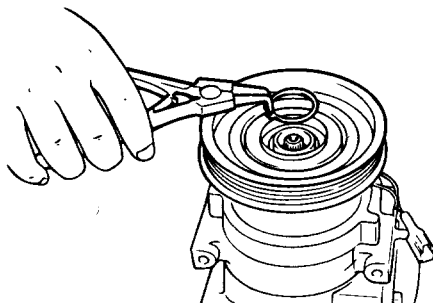


EQA9014A

2. Pull out the clutch hub and shim from the compressor shaft. If it is hard to pull out the hub from compressor, insert an 8mm bolt into the shaft hole to remove the hub from the shaft.
3. Remove the pulley supporting the snap ring.
4. Remove the pulley and bearing assembly from the compressor.

ASSEMBLY EQMB0400

1. Clean the pulley bearing surface of the compressor head and remove dirt and rust.
2. Install the pulley and bearing on the compressor.
3. Install the snap ring with its bevelled side facing out.
4. Place one space shim of specified size over the hub spline and slide the hub onto the compressor shaft end.



EQA9014B

5. Install a new hub supporting bolt at the compressor shaft end. Tighten the bolt with tightening torque.

Tightening torque : 102 - 153kg.cm

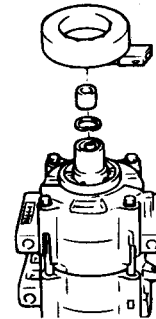


CAUTION

Do not use air tools.

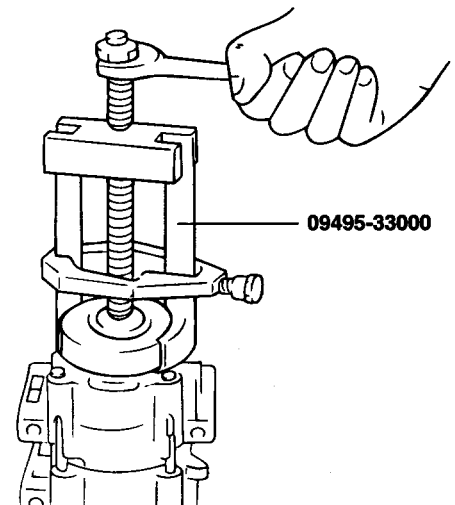
DISASSEMBLY EQMB0410

1. Remove the clutch hub and pulley.



EQHA130A

2. Install a shaft protection tool at the compressor opening.
3. Install the pulley on the compressor. Place the puller screw end on the shaft arms center concave and the puller projection around the rear side of the field coil.



EQHA130B

4. Turn the puller screw using a wrench and remove the coil.



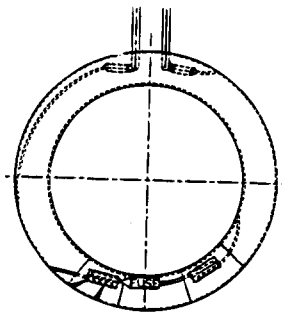
CAUTION

Do not use air tools.

CLUTCH FIELD COIL

THERMAL FUSE EQMB0420

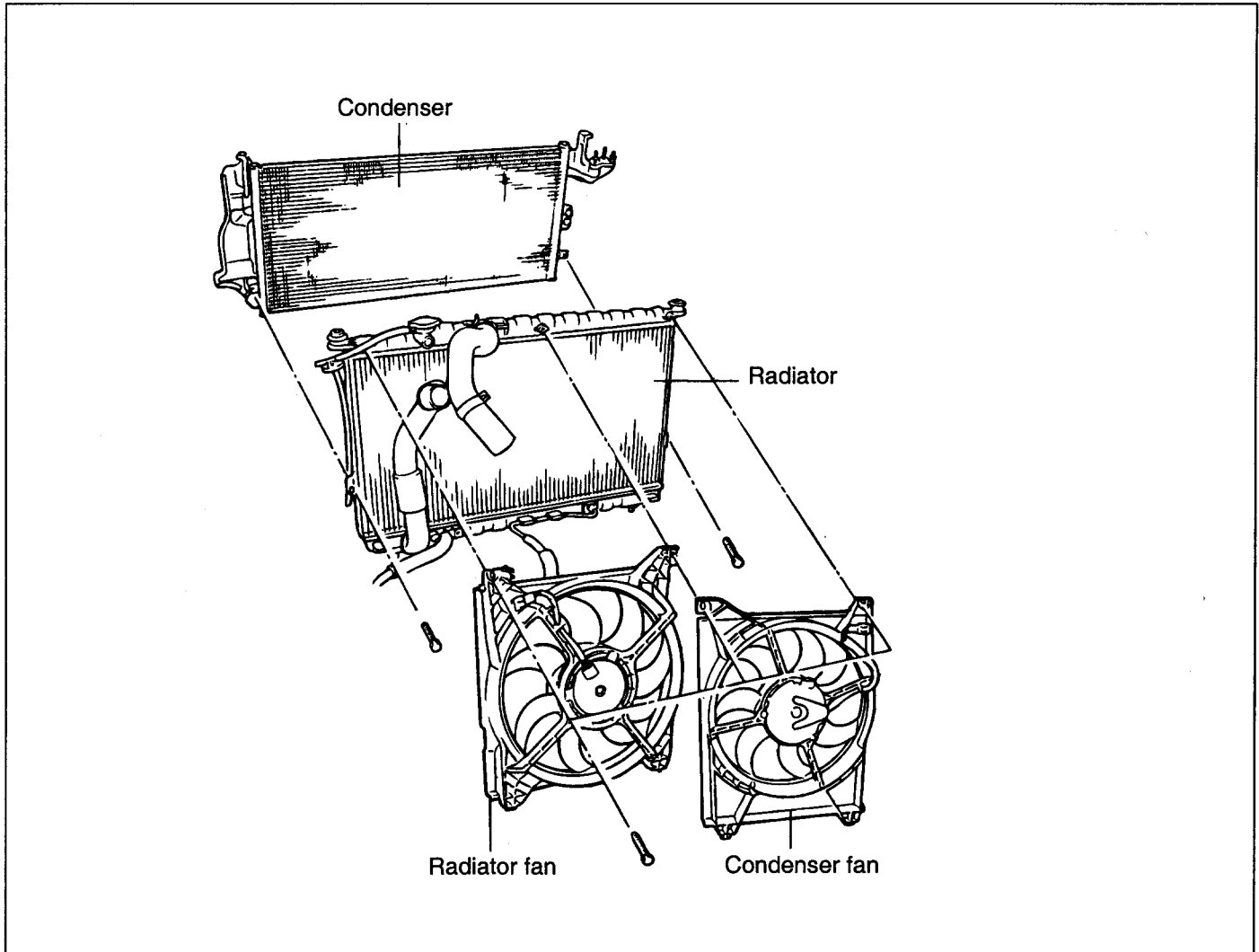
1. A thermal fuse is located on the compressor clutch coil.
2. The thermal fuse will detect clutch slip heat (184°C off) generated by faulty compressor operation, then interrupt the coil's power supply. Therefore, the clutch bearing and the pulley bearing will not be damaged, also protecting the belt and engine. Once the thermal fuse blows the compressor will not operate. Check the clutch oil resistance (3.0–3.2Ω) to determine the thermal fuse condition, and replace the clutch coil if required.



HEW97018

CONDENSER FAN AND RELAY

COMPONENTS EQMB0450



HEW97019

CHECKING EQJA1400

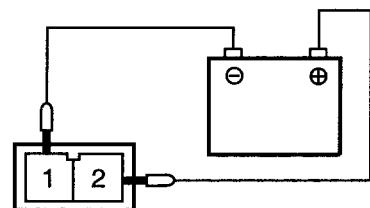
CONDENSER

1. Check the condenser fins for clogging and damage. If clogged, clean them with water, and blow them with compressed air. If bent, gently bend them using a screwdriver or a pliers.
2. Check the condenser connections for leakage, and repair or replace it, if required.

CONDENSER FAN

1. Check the condenser fan for proper operation.
2. Check the harness connector.

3. Check the condenser fan motor using battery voltage as shown below.

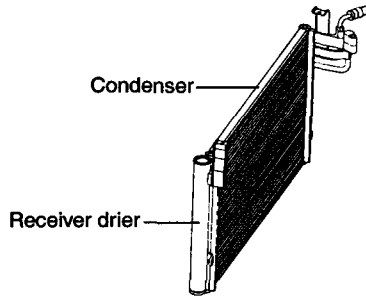


EQJA013C

RECEIVER/DRIER

RECEIVER/DRIER EQHA1450

1. Check the fusible plug and the fittings for leakage, using a leak detector.
2. Run the engine at fast idle with the air conditioning "ON", and check both the inlet and outlet temperatures. If the difference in temperatures between the inlet and outlet is large, replace the receiver-drier.



EQHA201A

NOTE

1. Plug the all open fittings immediately to keep moisture out of the system.
2. Do not remove plugs until ready for connection.
3. If the receiver-drier is replaced with a new unit, add 40cc of compressor oil to the compressor.
4. Evacuate, charge and test the refrigeration system.

TRIPLE PRESSURE SWITCH

TRIPLE SWITCH EQJA1500

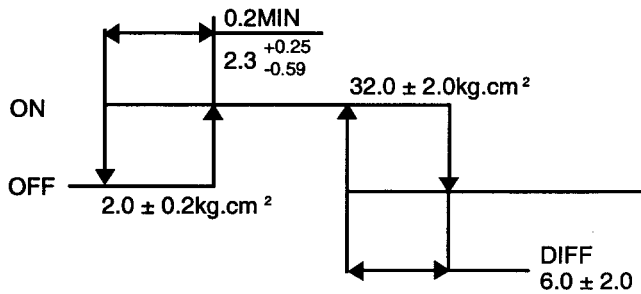
The triple switch is a combination of a medium switch as well as conventional low pressure and high pressure switches. The low pressure switch will be turned off to stop compressor operation if refrigerant pressure is low. The high pressure switch will be turned off to stop compressor operation if refrigerant pressure is too high. The medium switch will be turned on at medium level pressure to cool the A/C system operating radiator fan and condenser fan at high speed.

OPERATING CHARACTERISTIC

Pressure	kg·cm ²	
	ON	OFF
High	32.0 ± 2.0	26.0 ± 2.0
Low	2.3 ± 0.25	2.0 ± 0.2
Medium	15.5 ± 0.8	11.5 ± 1.2

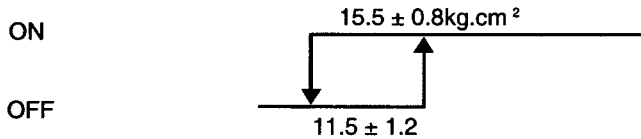
EQJA150B

LOW & HIGH



EQHA150A

MEDIUM



EQHA150C

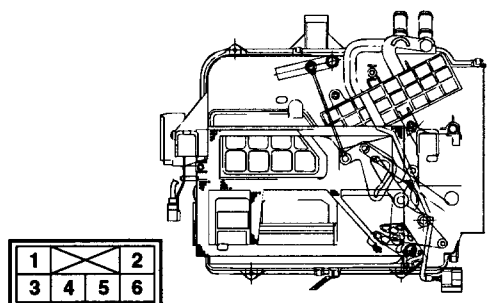
HEATER

TEMP. ACTUATOR POTENTIOMETER

TEMPERATURE CONTROL

ACTUATOR EQJA1700

1. Temperature control actuators are installed in the heater unit case. The control switches and the vent ductswitch will operate actuators to regulate the temperature and discharge air.



EQJA020C

2. Temp. switch terminal voltage check.

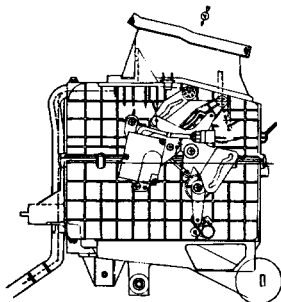
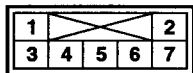
Terminal	Voltage	Remark
1	12V (+,-)	Change Polarity
3	12V (+,-)	Change Polarity
4	5V	Sensor Voltage
5	Change with resistance	Variable Resistance
6	Ground	Ground

VENTS/AIR DISTRIBUTION

MODE CONTROL ACTUATOR EQMB0520

- Pressing the mode select switch with the ignition on will shift the driver side and passenger side mode door actuators as follows :
 VENT ⇒ BI/LEVEL ⇒ FLOOR ⇒ MIX
- Mode actuator circuit diagram and voltage

Terminal	Description	Voltage
1	IG	12V
2	Ground	-
3	Vent	0V
4	Bi-level	12V
5	Floor	12V
6	Mix	12V
7	Defroster	12V



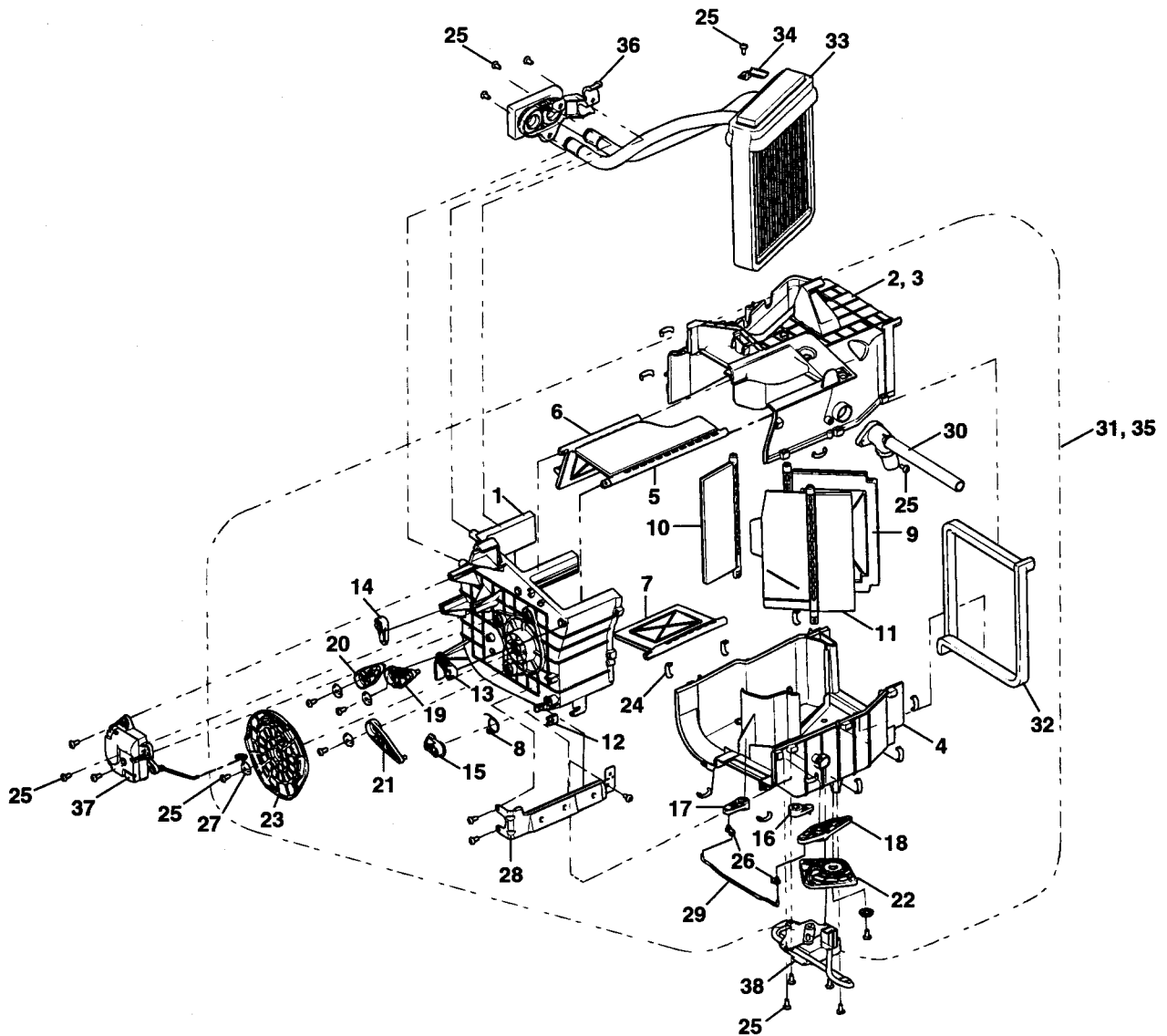
EQJA020D

HEATER

Mode Position	Recirculation	Fresh			
	COOL	1/2 COOL	WARM		
	Vent	Bi level	Floor	Mix	Defroster
Vent	100	60	-	-	-
Floor	-	40	73	55	-
Defroster	-	-	27	45	100

HEATER UNIT

COMPONENTS EQMB0490



- | | | |
|-------------------------------|-------------------------|----------------------------------|
| 1. Heater case (left) | 14. Defrost door arm | 27. Spring washer |
| 2. Upper heater case (Manual) | 15. Floor door arm | 28. Power relay mounting bracket |
| 3. Upper heater case (Auto) | 16. Temp. door arm | 29. Temp. door link |
| 4. Lower heater case | 17. Temp. (A) door arm | 30. Aspirator |
| 5. Vent door & seal | 18. Air bypass door arm | 31. Case & door (Manual) |
| 6. Defrost door & seal | 19. Vent lever | 32. Seal (Heater core and seal) |
| 7. Floor door & seal | 20. Defrost lever | 33. Heater core & seal |
| 8. Tension spring | 21. Floor lever | 34. Heater core & bracket (A) |
| 9. Temp. door & seal | 22. Temp. lever | 35. Case & door (FATC) |
| 10. Temp.(A) door & seal | 23. Mode lever | 36. Heater tube bracket |
| 11. Bypass door & seal | 24. Clip | 37. Mode actuator motor |
| 12. Spring nut | 25. Tap screw | 38. Temp. actuator motor |
| 13. Vent door arm | 26. Rod link holder | |

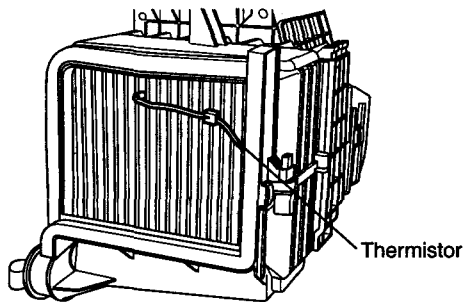
BLOWER CONTROLS

THERMOSTATIC SWITCH (THERMISTOR)

SENSOR CHECKING EQMB0610

THERMISTOR

The thermistor will detect the core temperature and interrupt compressor relay power, in order to prevent evaporator freezing by excessive cooling. The thermistor is an NTC device.

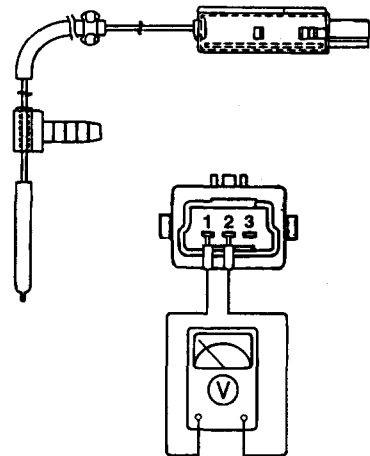


KFWD049A

THERMISTOR CHECK

1. Remove the glove box.
2. Start the engine.
3. Turn on the air conditioner.
4. Using the multi-tester, check the output voltage between terminals 2 and 3 in the thermistor.

Thermistor	Operating temperature	Output voltage
ON	3 - 6°C	12V
OFF	0.5 ± 0.5°C	0V



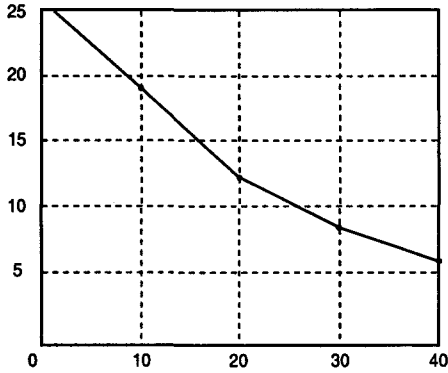
KQMB061B

IN CAR SENSOR

IN-CAR AIR TEMPERATURE SENSOR

EQHA2200

It will detect interior temperature, which will be used for discharge temperature control, sensor failsafe, temperature door control, blower motor level control, A/C auto control.

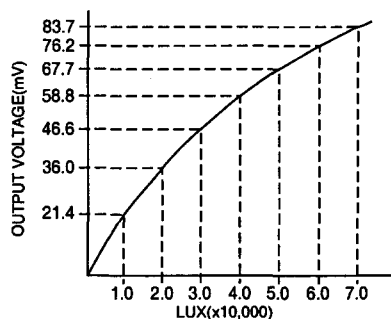


KFWD034A

PHOTO SENSOR

PHOTO SENSOR EQJA2050

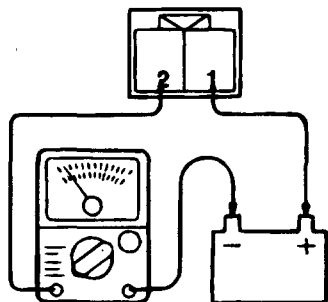
The photo sensor is located by the driver side defrost nozzle. In response to photo intensity level in vehicle, the sensor will send signal to control module to control the blower level and discharge temperature.



KFWD028A

NOTE

Emit intensive light toward driver side and passenger side using a lamp, and check the current change between terminals 1 & 2.

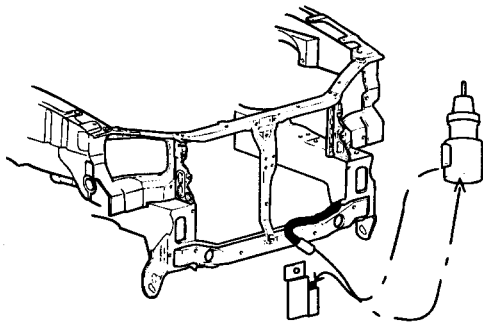


S6HA030C

AMBIENT TEMPERATURE SENSOR

AMBIENT AIR TEMPERATURE SENSOR EQJA2150

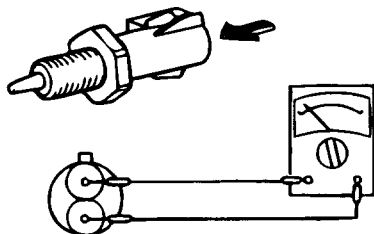
1. The air temperature sensor, located at the front of the engine radiator, and detect ambient air temperature. It is a negative type thermistor; resistance will increase with lower temperature, and decrease with higher temperatures.
2. The sensor output will be used for discharge temperature sensor, sensor fail-safe, temperature regulation door control, blower motor level control, mix mode control and in-car humidity control.



EQJA025D

CHECK

Temperature (°C)	Min. Resistance (Ω)	Max. Resistance (Ω)
-40	787.25	982.15
-20	254.8	287.5
0	89.2	109.6
20	35.0	39.5
40	15.1	17.1
60	7.1	8.0



HEW97038

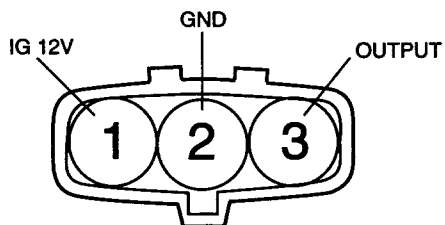
A.Q.S (AIR QUALITY SENSOR)

A.Q.S. SENSOR EQJA2100

1. The A.Q.S. sensor, located at the center support in front of the center member, detects hazardous elements in ambient air, and provides output signals to the control module.
2. It will detect sulfurous acid gas, carbon dioxide, carbon monoxide, hydrocarbon and allergen.

SENSOR OUTPUT

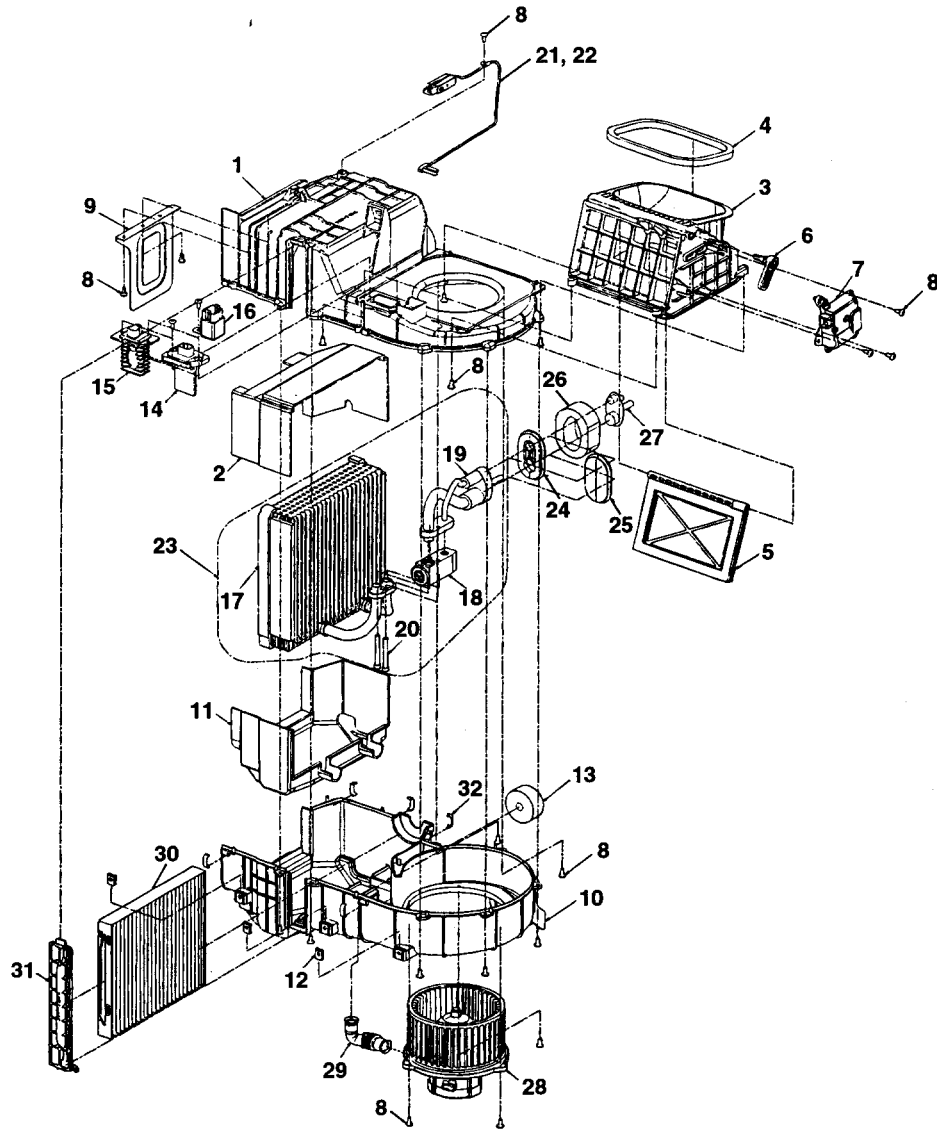
Condition	Resistance
Normal condition	5V
Hazardous gas detection	0V



KFWD030A

BLOWER UNIT

COMPONENTS EQMB0530



- | | | |
|--------------------------------------|---------------------------------------|-----------------------------------|
| 1. Evaporator upper case | 11. Evaporator blower lower insulator | 22. Evaporator core sensor (Auto) |
| 2. Evaporator blower upper insulator | 12. Spring nut | 23. Evaporator core |
| 3. Air in-let duct case | 13. Evaporator drain seal | 24. Evaporator core tube bracket |
| 4. Air in-let duct seal | 14. Blower speed register | 25. Evaporator tube grommet |
| 5. Air vent door | 15. Power TR | 26. Seal |
| 6. Air in-let door arm | 16. Power relay | 27. Joint flange cap |
| 7. Air in-let door actuator motor | 17. Evaporator core | 28. Motor & wheel |
| 8. Tap screw | 18. Block expansion valve | 29. Blower motor cooling tube |
| 9. Air screen baffle | 19. Dash panel side tube | 30. Air filter |
| 10. Evaporator lower case | 20. Expansion valve mounting bolt | 31. Air filter cover |
| | 21. Evaporator core sensor (Manual) | 32. Clip |

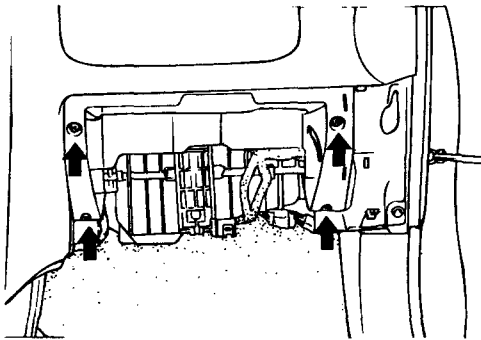
BLOWER MOTOR

AIR FILTER EQMB0550

The combination filter eliminates foreign materials and odor. The combination filter includes an odor filter as well as conventional dust filter to ensure comfortable interior environment.

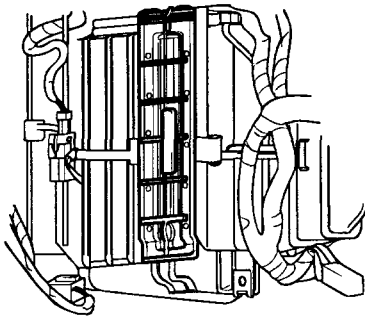
REMOVAL

1. Remove the glove under cover.
2. Remove the glove box housing.
3. Remove the upper cover of the glove box.



ESJA035L

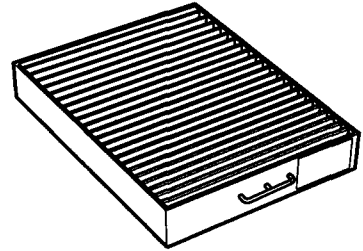
4. Remove the glove box housing bracket.
5. Remove the air filter cover and the air filter.



EQJA005A

CAUTION

When driving in an air-polluted area or rugged terrain, check and replace the air filter as frequently as possible.



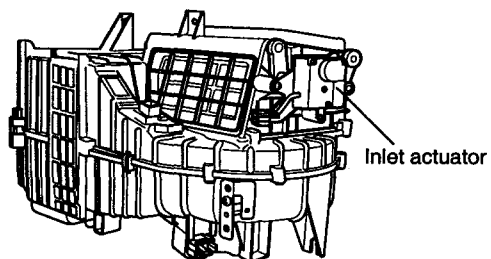
KFWD051A

POWER TRANSISTOR

FRESH AIR RECIRCULATION SWITCHING

ACTUATOR EQMB0600

The intake selection switch is located on the control panel. Pressing the switch will shift between recirculation and fresh air modes.



KFWD046A

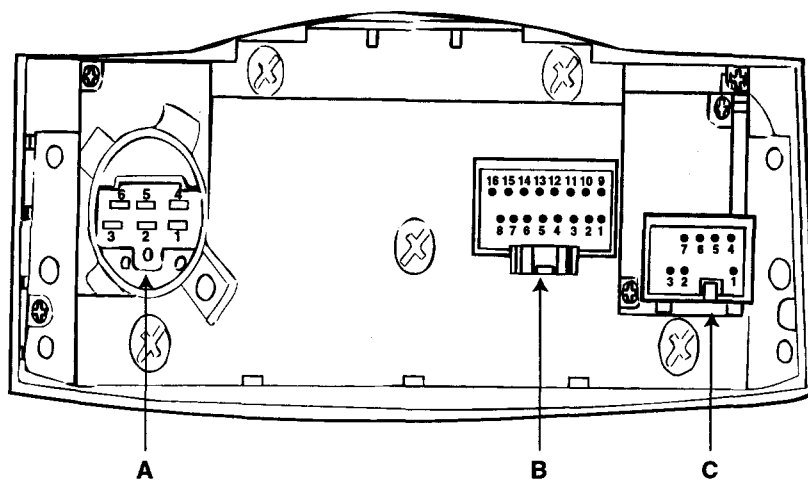
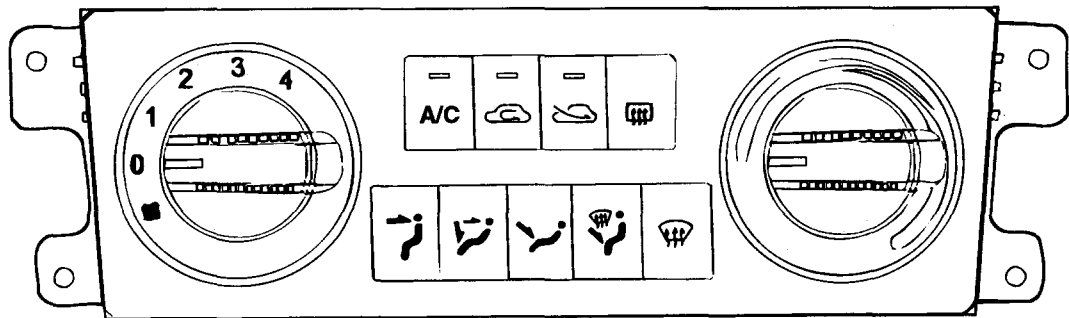
CHECK

Input		Output
1	2	Fresh/recirculation shifting
+	-	Recirculation
-	+	Fresh

BLOWER AND A/C CONTROLS (MANUAL)

AIR CONDITIONING SWITCH

CONTROL PANEL EQMB0200

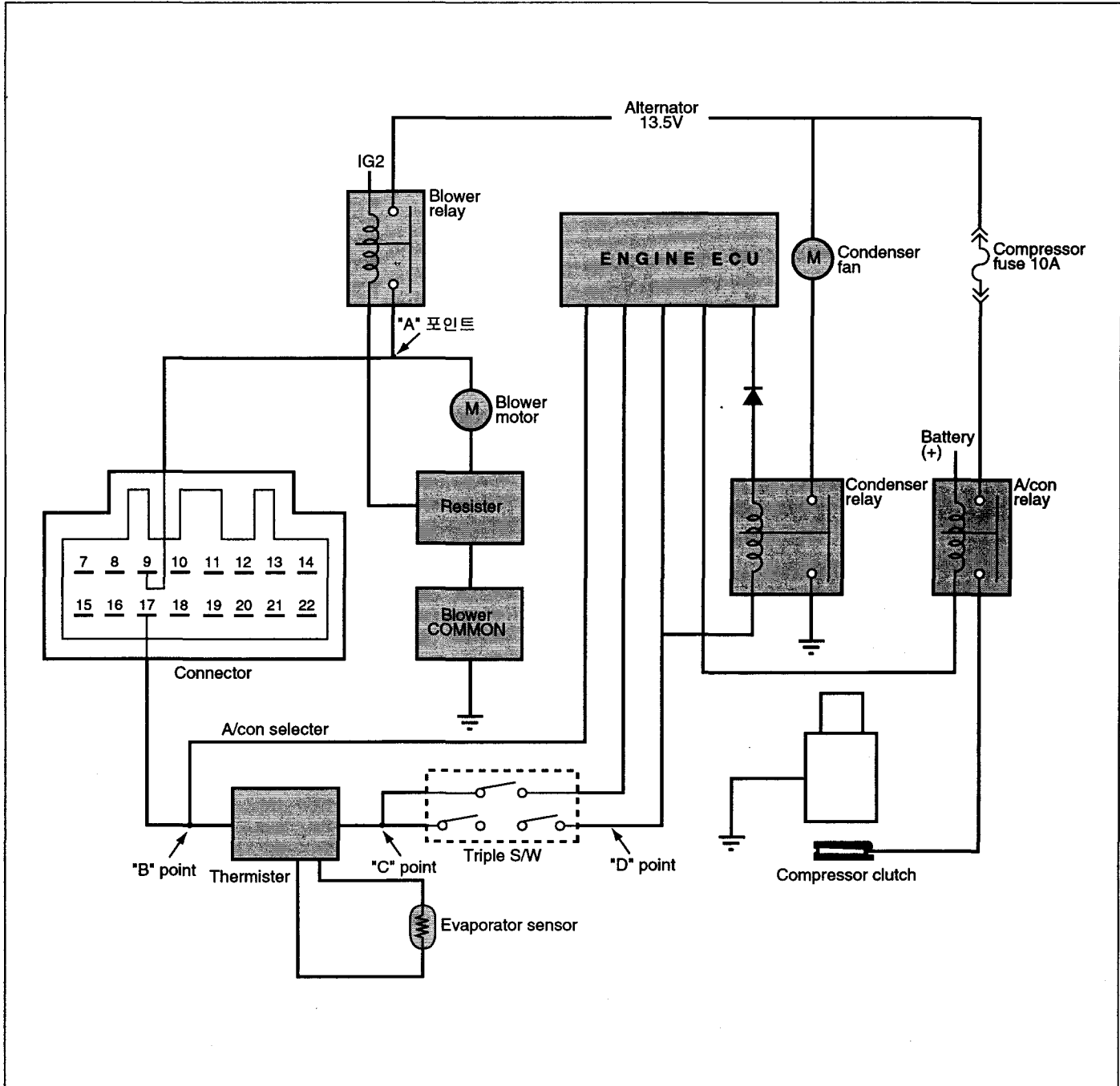


CONNECTOR PIN DESCRIPTION

Item	PIN NO.	PIN Name	Item	PIN NO.	PIN Name
MAIN CONNECTOR (B)	1	IGNITION	BLOWER S/W (A)	6	LOW
	2	ILLUMINATION(+)		5	MIDDLE LOW
	3	B+		4	HIGH
	4	REAR DEFOGER S/W		3	EARTH
	5	FRE		2	COMMON
	6	VENT		1	MIDDLE HIGH
	7	BI-LEVEL	TEMP. S/W (C)	1	IGNITION
	8	FLOOR		2	GROUND
	9	GROUND		3	WARM
	10	ILLUMINATION (-)		4	COOL
	11	THERMISTOR		5	VCC
	12	REAR DEFOG INDICATOR		6	PBR
	13	REC		7	SENSOR GROUND
	14	MIX			
	15	DEF			
	16	-			

CHECKPOINT BY TYPE EQMB0220

A/CON CHECK

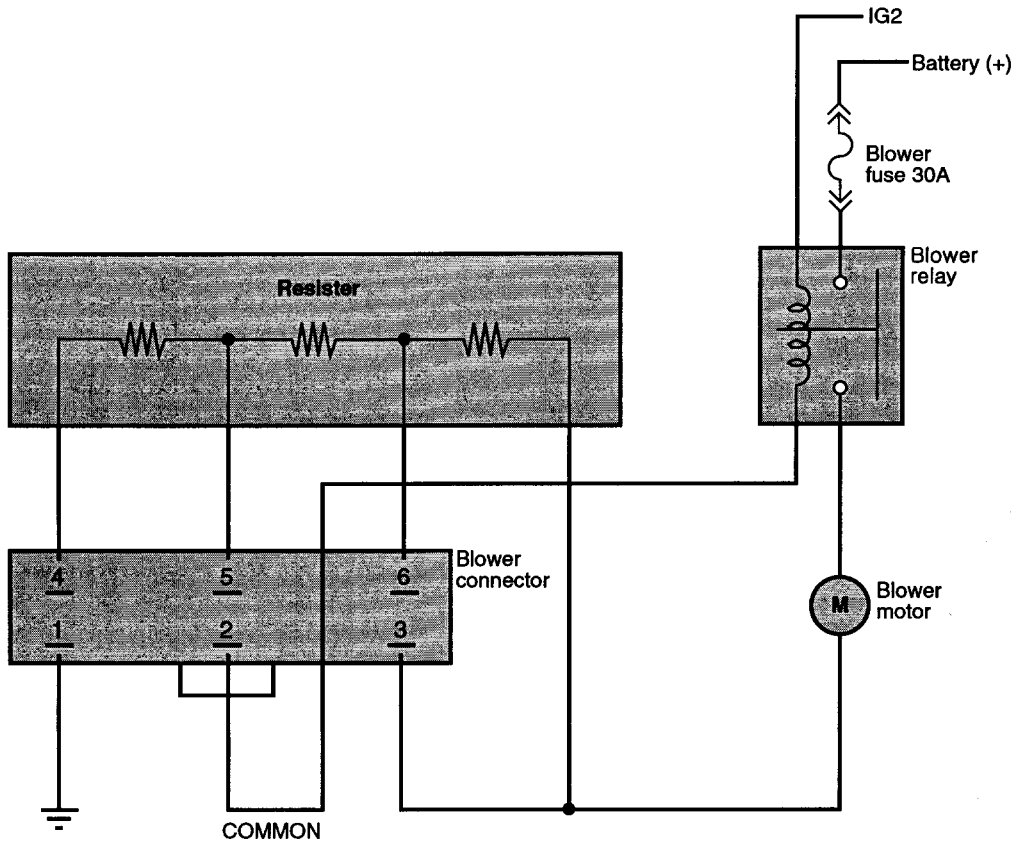


EQMB022A

1. For A/CON output, blower must be basically operated.
2. When blower 1-speed is selected, blower relay becomes turned on, and voltage is supplied to point "A".
3. When the supplied voltage at point "A" is entered into control connector 3 and at this moment when A/CON switch is turned on, voltage is supplied to connector pin 11 at 9V or more.
4. The state of ON/OFF of triple switch determines whether the input power at point "C" is supplied to point "D" or not. Finally when the voltage is supplied to point "D", Engine ECU determines whether A/CON and Condenser are turned ON/OFF.

EQMB0230

BLOWER MOTOR CHECK

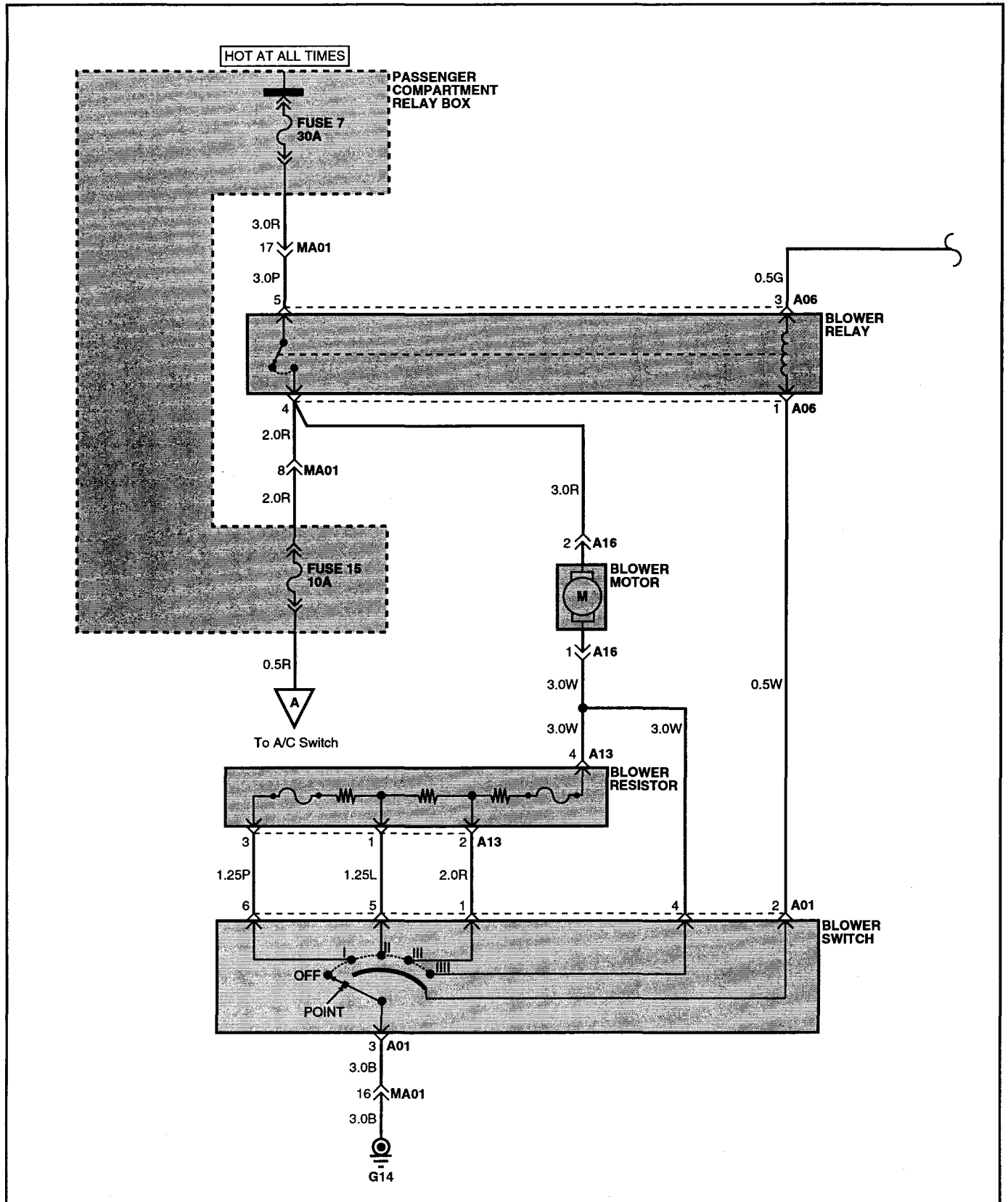


EQMB023A

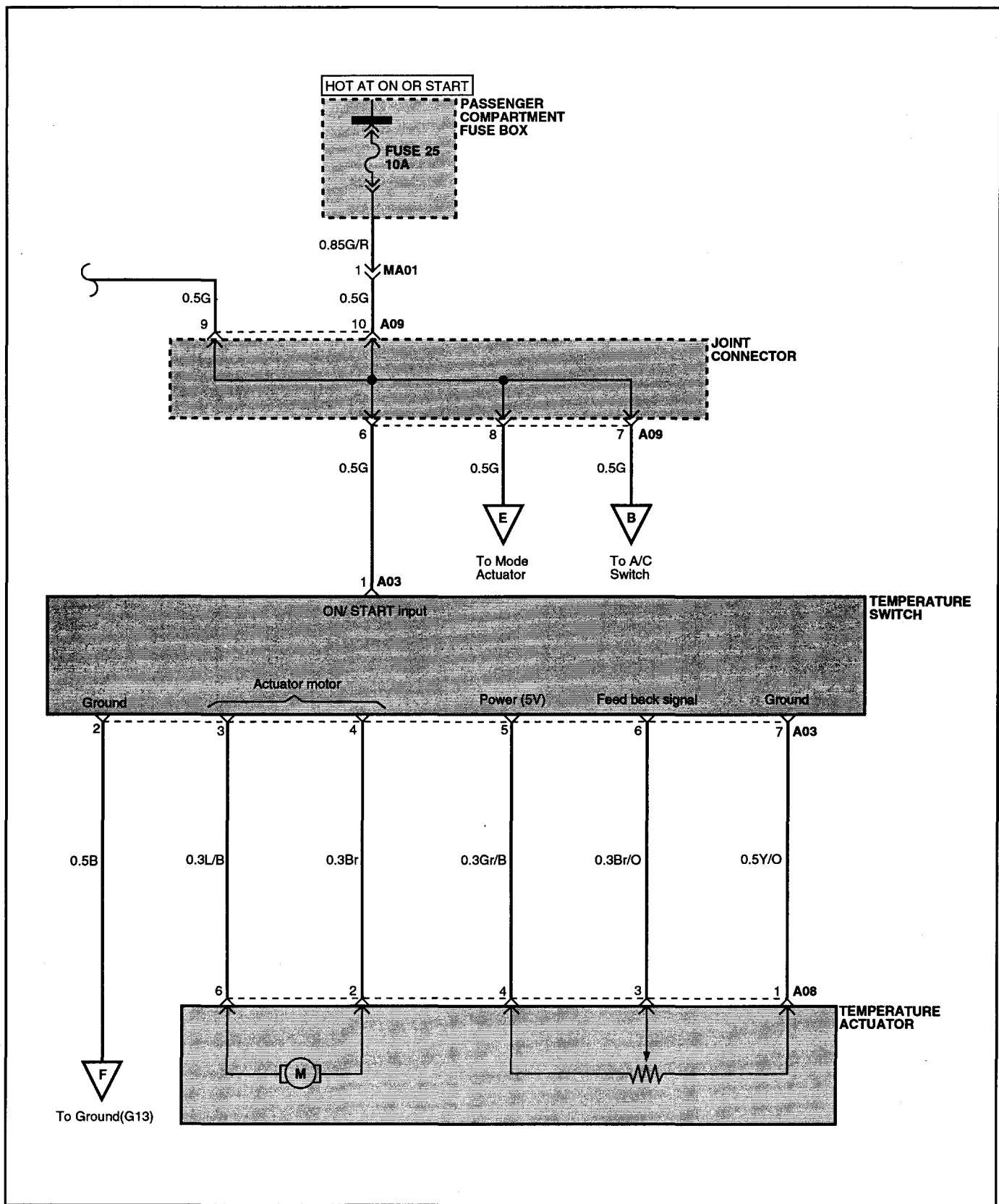
When blower is turned on, blower relay becomes turned on and voltage is supplied to blower motor. Current determined by register runs through the selected blower register and blower motor.

SCHEMATIC DIAGRAM (MANUAL) EQMB0700

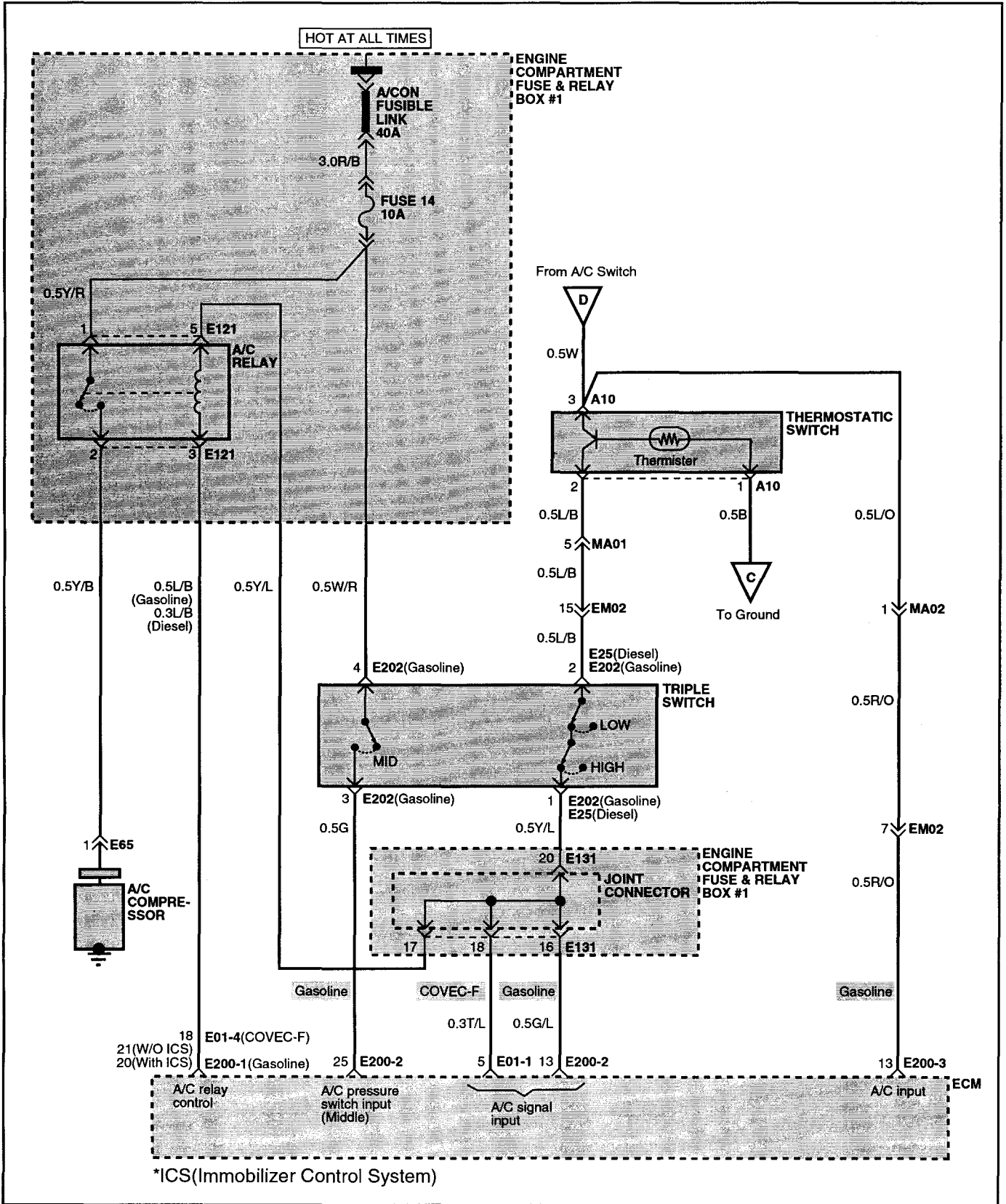
BLOWER AND A/C CONTROLS (MANUAL) (1)



BLOWER AND A/C CONTROLS (MANUAL) (2)



BLOWER AND A/C CONTROLS (MANUAL) (4)

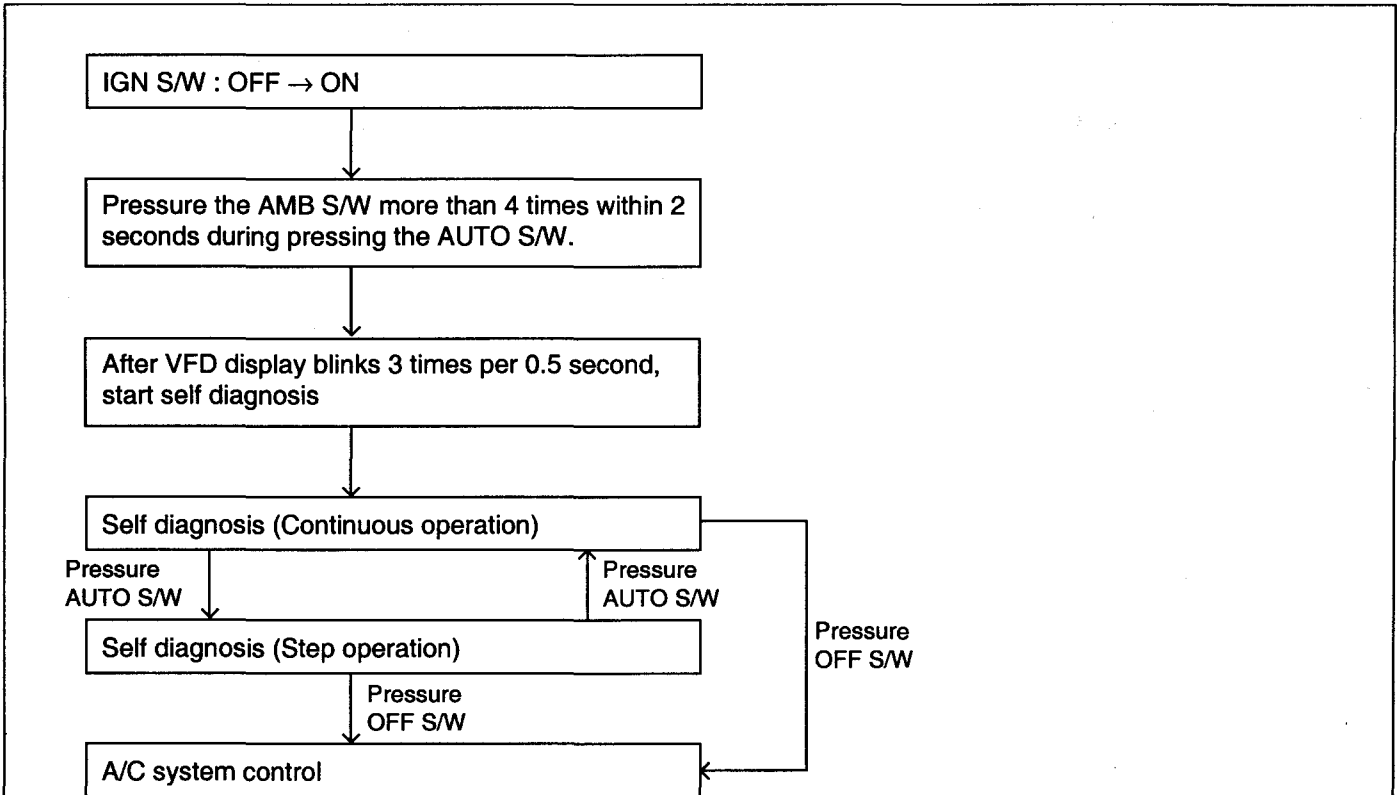


BLOWER AND A/C CONTROLS (AUTOMATIC)

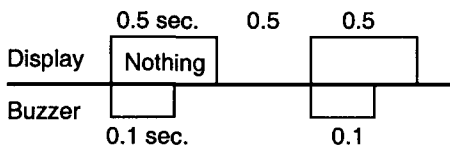
DIAGNOSIS SYSTEM EQMB0260

OPERATION METHOD (SELF-DIAGNOSIS)

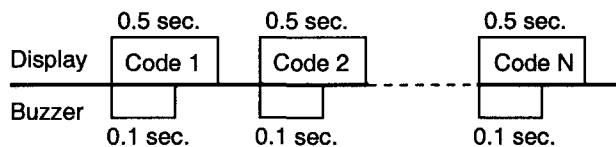
The F.A.T.C. module self test feature will detect electrical malfunction and provide error codes for system components with suspected failures.



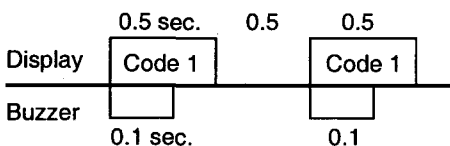
1. Normal



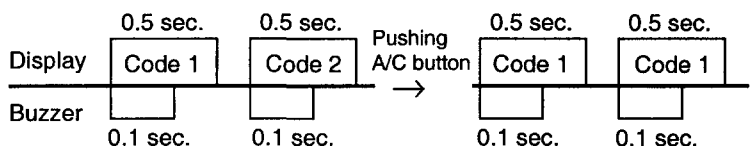
3. More error codes than two



2. One error code



4. Checking each error code



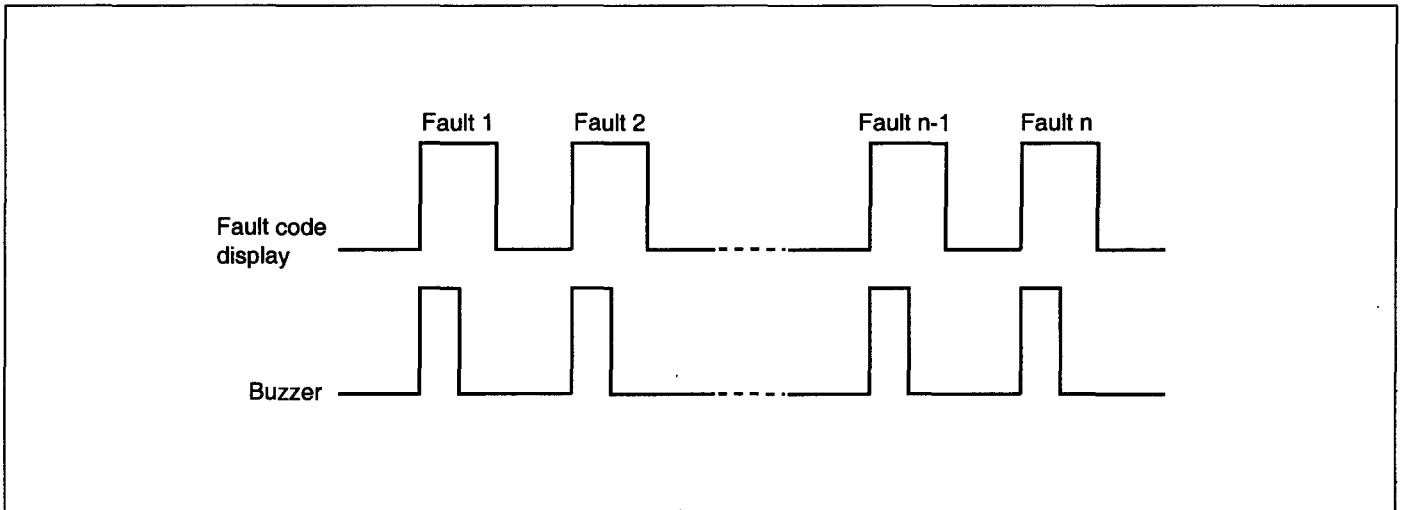
FAIL SAFE FUNCTION

No.	Item	Failure	FAIL SAFE Function
1	In-car temperature sensor	Open/Short	25°C alternate value control
2	Ambient temperature sensor	Open/Short	20°C alternate value control
3	Pin thermo sensor	Open/Short	-2°C alternate value control
4	Temperature door potentiometer	Open/Short setup temperature	For 17°C to 24.5°C, Set to maximum cooling position. For 25°C to 32°C, Set to maximum heating position.
5	AQS	Open	Does not AQS function. AQS indicator : off

HOW TO READ SELF-DIAGNOSTIC CODE

1. After the display panel flickers three times every 0.5 second, the corresponding error code flickers on the setup temperature display panel every 0.5 second and will show two figures.
2. If error code is more than two, each code flickers 2 times in sequence.

FAULT CODE DISPLAY

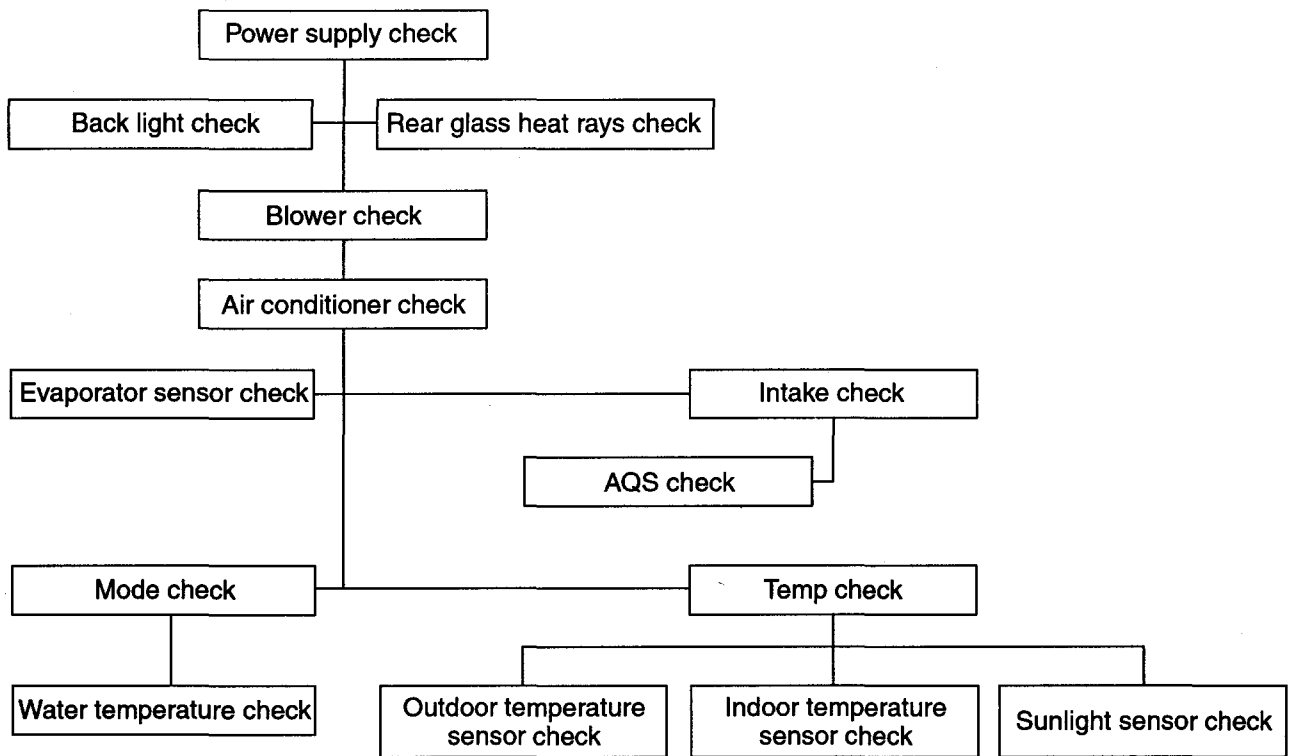


DTC CHART

If a malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below.

DTC code	Detection item	Trouble area
00	Normal	-
11	Open INCAR Sensor circuit	<ul style="list-style-type: none"> • Incar sensor • Harness or connector between incar sensor and A/C control assembly • A/C control assembly
12	Shorted INCAR Sensor circuit	
13	Open Ambient sensor circuit	<ul style="list-style-type: none"> • Ambient sensor • Harness or connector between ambient sensor and A/C control assembly. • A/C control assembly.
14	Shorted Ambient sensor circuit	
15	Open pin thermo sensor	<ul style="list-style-type: none"> • Pin thermo sensor • Harness or connector between evap. sensor and A/C control assembly • A/C control assembly
16	Shorted pin thermo sensor	
17	Open or shorted temp. door potentiometer	<ul style="list-style-type: none"> • Harness or connector between temp. door potentiometer and A/C control assembly
18	Defective temp. door potentiometer	<ul style="list-style-type: none"> • Temp. door potentiometer

CHECKPOINT BY TYPE EQMB0270



EQMB027A

Since FATC controller is complicated in functions as shown in the above chart, it is impossible to conclude its reason at the occurrence of failure. All possibilities of failure shall be considered for the purpose of efficient How to check.

1. Power supply check
2. Back light and Rear glass heat rays check
3. Blower check
4. Air conditioner check
5. Intake check and AQS check
6. Mode check
7. Temp check
8. Each sensor check

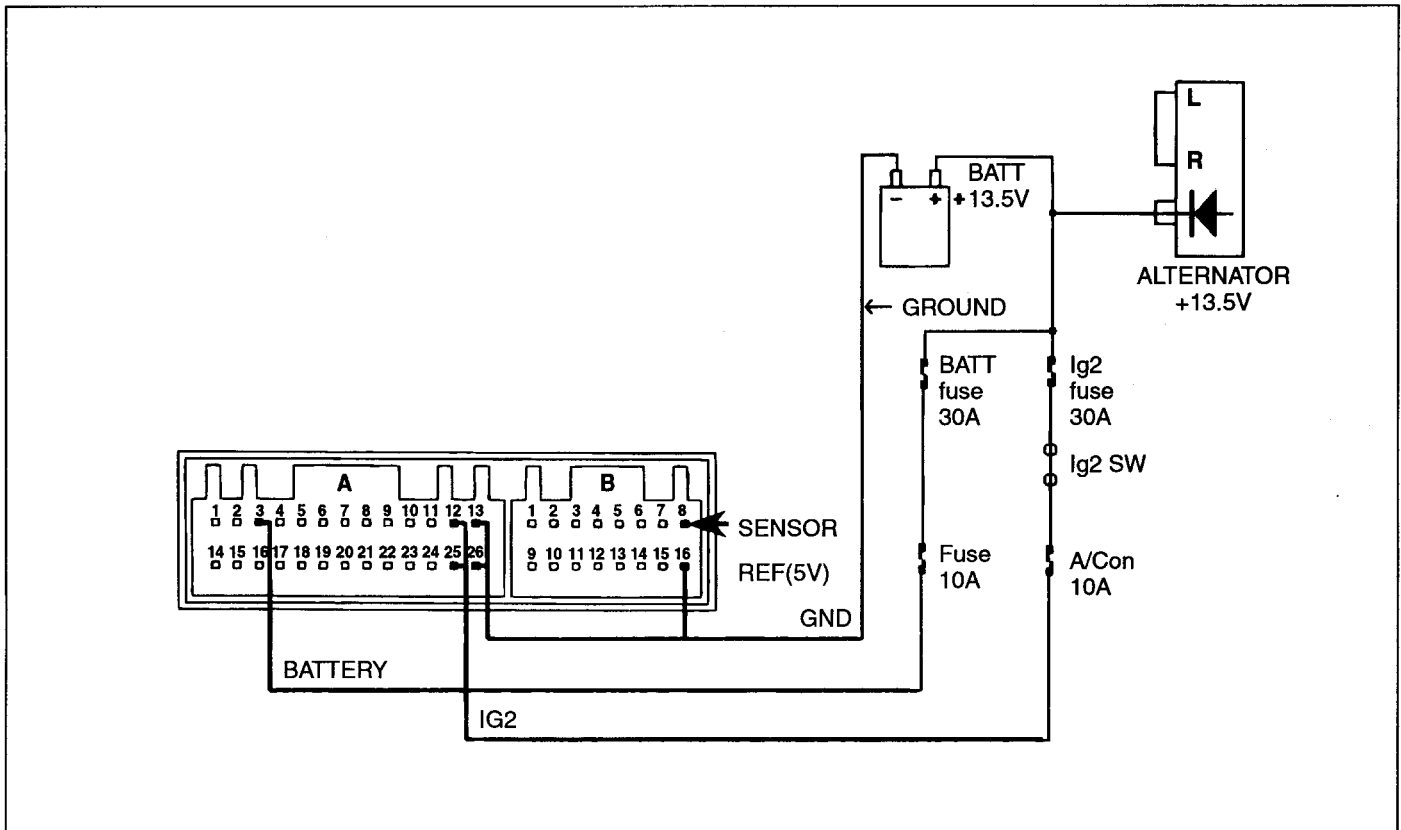
POWER SUPPLY CHECK EQMB0280

In turning off IGN, battery supplies power for ordinary power, FATC connector A-3 through battery fuse. FATC performs memory function by means of battery power supplied as described above. In turning on IGN, alternator

is driven. At this time, IG2 power generated in alternator FATC connector A-12 and A-25 terminal through IG1 fuse and air conditioner fuse (10A). FAT carried out actual system operation by means of IG2 power supplied as described above.

ERROR DIAGNOSTICS

Symptoms	Causes	How to check
When IF is ON, memory function error occurs	Battery power supply error	Check voltage of battery after turning off IG. If 10V and more, check FATC connector and if no problem, check the inside of controller. If 10V and less, check fuse or wiring state of battery power source.
When IG is ON, system running error occurs.	IG2 power supply error	Check voltage of IG2 after turning on IG. If 10V and more, check FATC connector and if no problem, check the inside of controller. If 10V and less, check fuse or wiring state of IG2 power source.



BACK LIGHT AND REAR GLASS HEAT

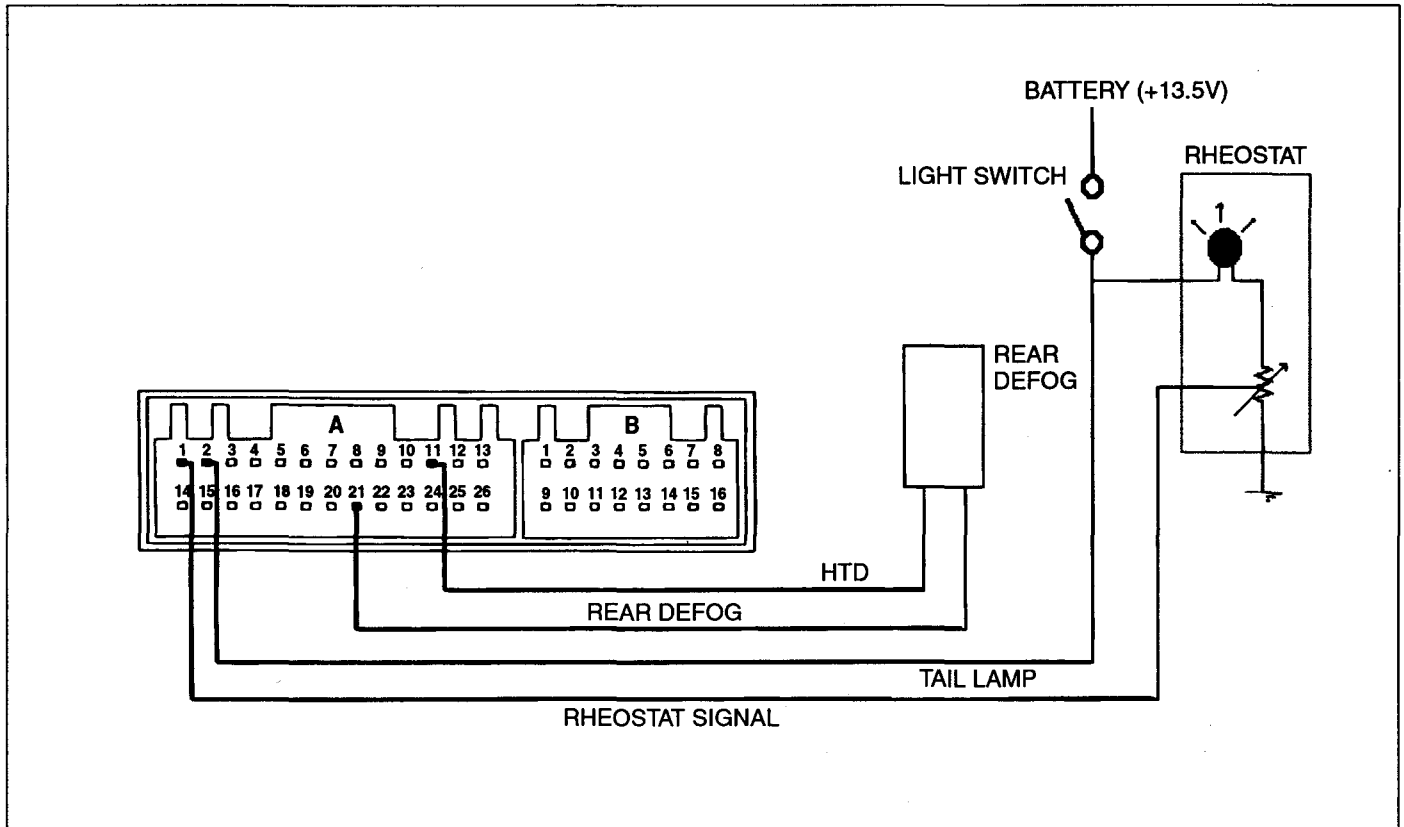
RAYS CHECK EQMB0290

In turning on IG and then light switch, battery power is supplied for FATC connector A-2 terminal through wiring. The

supplied power passes connector A-1 terminal through light bulb in FATC and flows into reostart as shown in the above figure. The brightness is adjusted according to resistance value of reostart.

ERROR DIAGNOSTICS

Symptoms	Causes	How to check
When light switch is ON, partial error occurs in back light.	Light bulb lighting error in FATC	
When light switch is ON, entire error occurs in back light.	Light power supply error	Measure voltage of tail light shown in the above figure after switching on light. If 10V and more, check FATC connector and if no problem, measure signal voltage of reostart shown in the above figure. If 8V and more, check reostart wiring and reostart. If tail light is below 1V, check tail light wiring.



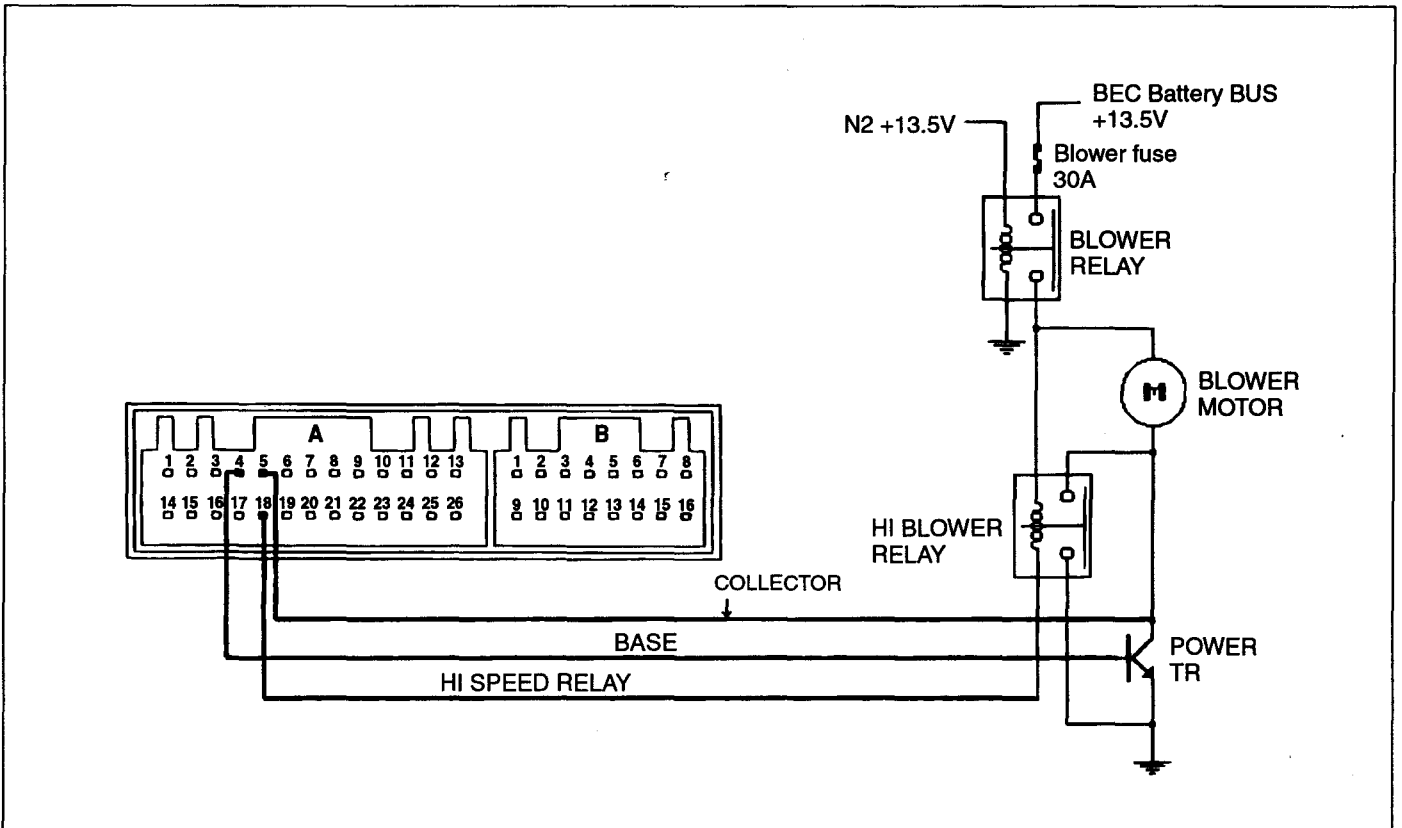
BLOWER CHECK EQMB0300

Perform the blower check in manual blower running state because it is difficult to check blower at automatic control. Blower is controlled from level 1 to level 7 equally as in button operation and running logic. In turning on IG, blower relay is ON and voltage of 0.1 to 1.4V is transferred from

FATC connector A-4 terminal to base source of power TR according to FATC control (selectable from level 1 to level 7). At this time, voltage of blower motor's both ends is determined according to collector voltage of FATC connector A-5 terminal. If FATC is controlled in level 7, GND(0V) is supplied for FATC connector A-18 terminal and high blower relay is driven.

ERROR DIAGNOSTICS

Symptoms	Causes	How to check
Amount of wind is wrong at manual selection of blower.	Power TR error	Check voltage of blower motor's both ends. (Level 1 : 3.8V, Level 2 : 5.3V, Level 3 : 6.7V, Level 4 : 8.1, Level 5 : 9.5V, Level 6 : 0.6V, Level 7 :13.5V [high-relay operation]) Measure voltage of each terminal and if there is difference more than ±0.6V, check power TR.
Blower wind is discharged despite pressing OFF switch.	Power TR error	Power TR change



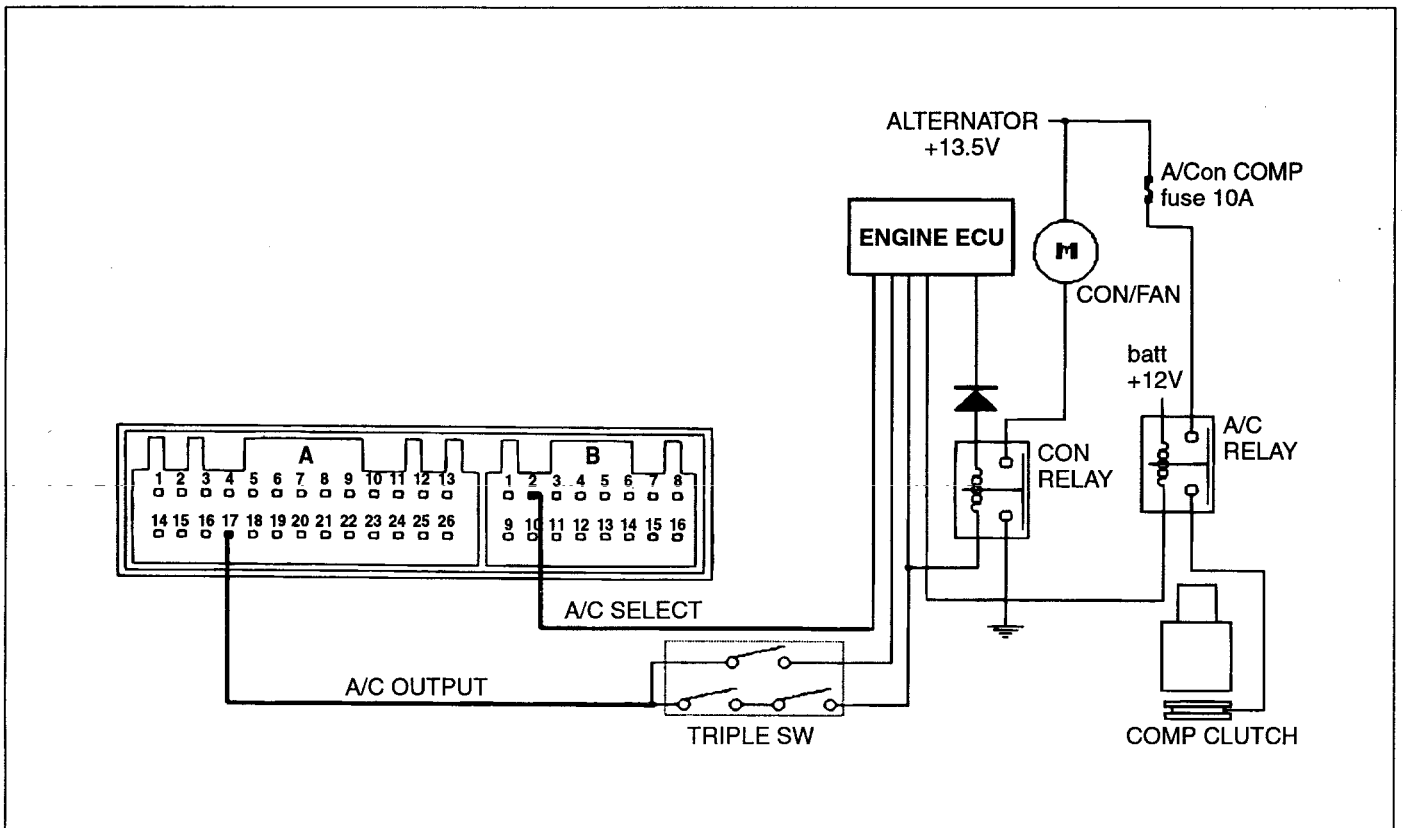
AIR CONDITIONER CHECK EQMB0310

11V is outputted from connector A-17 terminal in turning on INSULATING and pressing air conditioner switch. However, although 11V is outputted from FATC connector A-17 terminal, compressor clutch isn't driven. Wind of air conditioner is discharged if only compressor clutch works. Output signal from air conditioner is inputted in engine computer through triple switch. Then, the engine computer considers several conditions and when output of air conditioner is judged to be practical, it gives GND to signal

terminal of air conditioner relay. Accordingly, relay of air conditioner is ON and compressor clutch works. Triple switch checks pressure of refrigerant flowing through pipe and turns on/off switches in it according to standard. So, it controls that output signal of air conditioner outputted from FATC is inputted into engine computer, and also speed of condenser fan according to pressure level. (For high pressure, high-speed and for low pressure, low-speed)

ERROR DIAGNOSTICS

Symptoms	Causes	How to check
Wind of air conditioner isn't discharged into vehicle despite switching on air conditioner.	Signal output error of air conditioner	Switch on air conditioner and measure voltage of FATC connector A-17 terminal as shown in the above figure. If 9V and more, check triple switch, air conditioner relay and ECM. Switch on air conditioner and measure voltage of FATC connector A-17 terminal as shown in the above figure. If 1V and less, check input value of evaporator sensor.
	Input error of evaporator sensor	If evaporator sensor is disconnected or short or voltage of its input source is more than 3.0V (below 0.5°C), output of air conditioner isn't made.



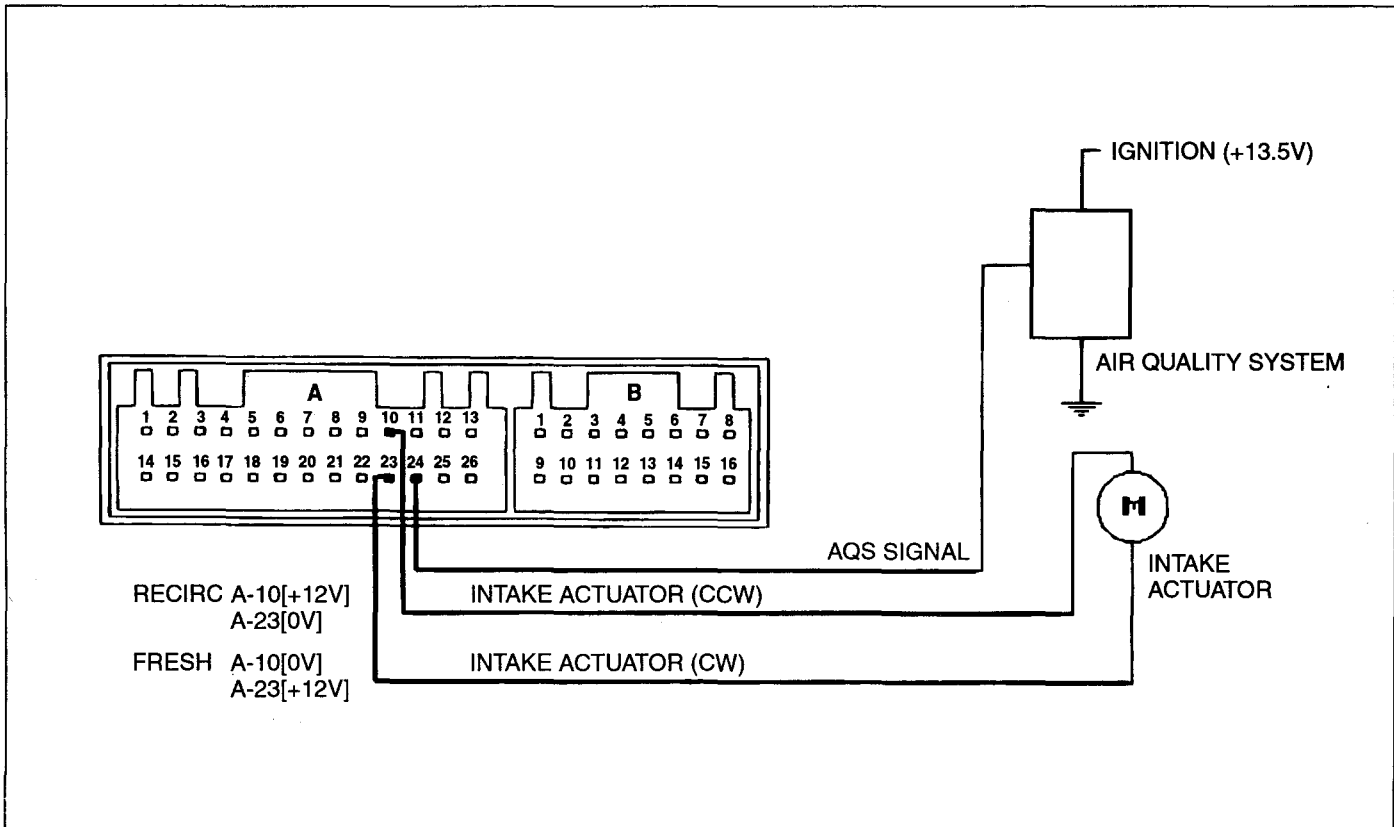
INTAKE AND AQS CHECK EQMB0320

In turning on IG and selecting outdoor mode with indoor switch, 12V is outputted from FATC connector A-23 terminal, 0V is supplied for A-10 terminal and motor works in direction of outdoor.

In selecting indoor mode with indoor switch, 12V is outputted from FATC connector A-10 terminal, 0V is supplied for A-23 terminal and motor works in direction of indoor.

ERROR DIAGNOSTICS

Symptoms	Causes	How to check
Outdoor mode running error	Power supply error in actuator	Separate connector linked with actuator, select outdoor mode with indoor switch and measure voltage of FATC connector A-23 terminal. If 8V and more, check actuator or wiring state and if 9V and less, check the inside of controller.
Indoor mode running error	Power supply error in actuator	Select indoor mode in the above method and measure voltage of FATC connector A-10 terminal. If 8V and more, check actuator or wiring state and if 9V and less, check the inside of controller.
Fixed in outdoor or indoor mode at AQS selection.	AQS signal terminal output error	Select AQS switch and measure AQS signal terminal as shown in the above figure. If there is no change of voltage over 10 min, check AQS.



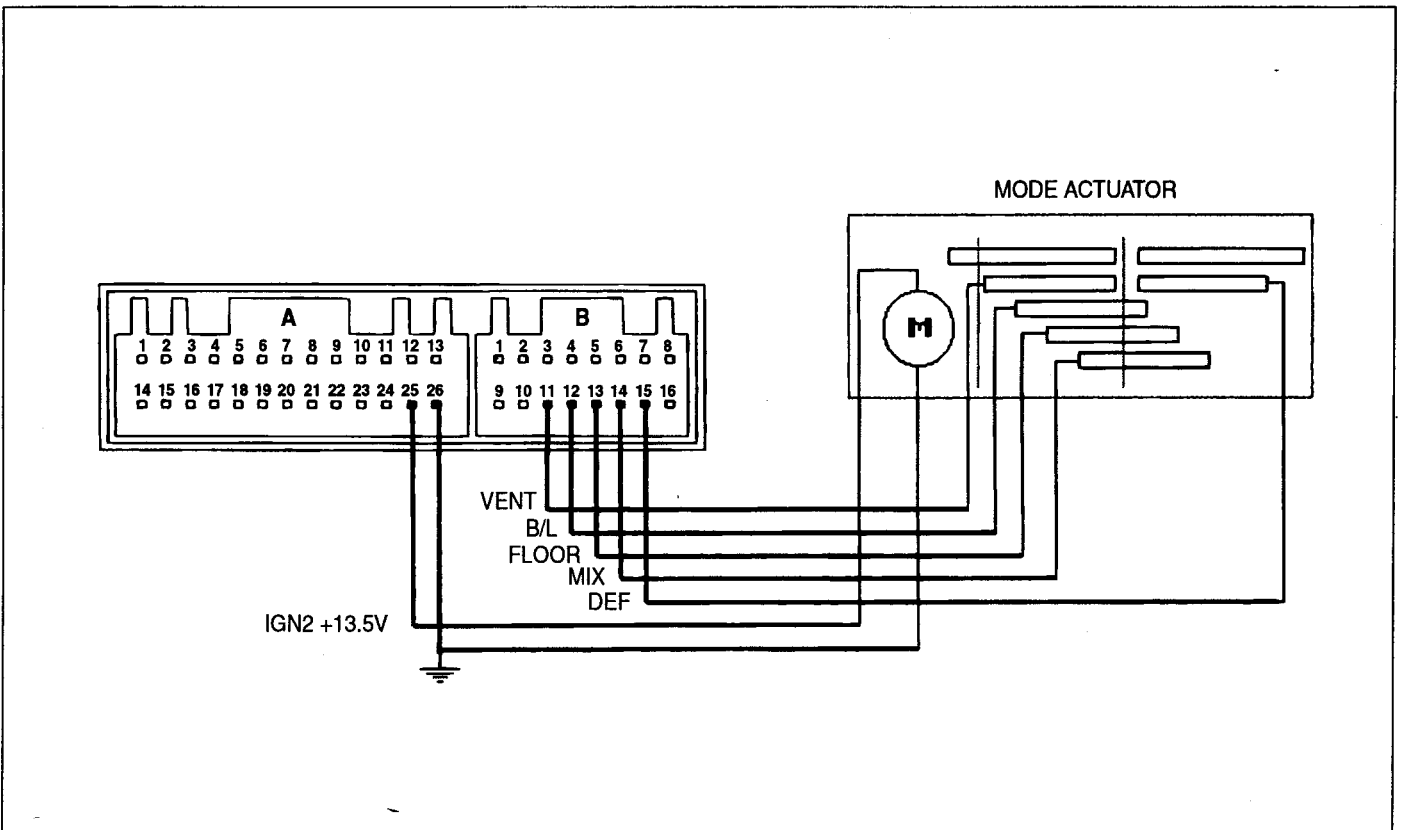
MODE CHECK EQMB0330

In turning on IG and selecting mode switch, sequential operation begins in order of Vent→Bi-level→Blower→Mix. DIP mode works regardless of order at selecting it. In selecting Vent mode as mode switch, GND(0V) is supplied

for FATC connector B-11(Vent) terminal. Voltage of 9V and more is set in the rest terminals B-12, B-13, B-14, B-15 and motor drive IC in mode actuator which receives the signal, works in direction of vent mode setup. Vent, Built-in-level, Blower, Mix and Defrost mode can be selected in the method described above.

ERROR DIAGNOSTICS

Symptoms	Causes	How to check
Specific mode isn't selected.	Signal transmission error of selected mode	Measure voltage of selected mode wiring without separating connector linked with actuator. If 8V and more, check the inside of controller.
	Mode actuator running error	If 1V and less at measuring in the above method, check mode actuator and wiring state.
Mode selection is impossible	Internal error of mode actuator	If motor driver IC built in mode actuator is bad, mode selection is impossible. When mode isn't selected though GND(0V) is supplied for selected mode wiring after selecting mode in controller, its cause is internal failure of mode actuator.



TEMP CHECK EQMB0340

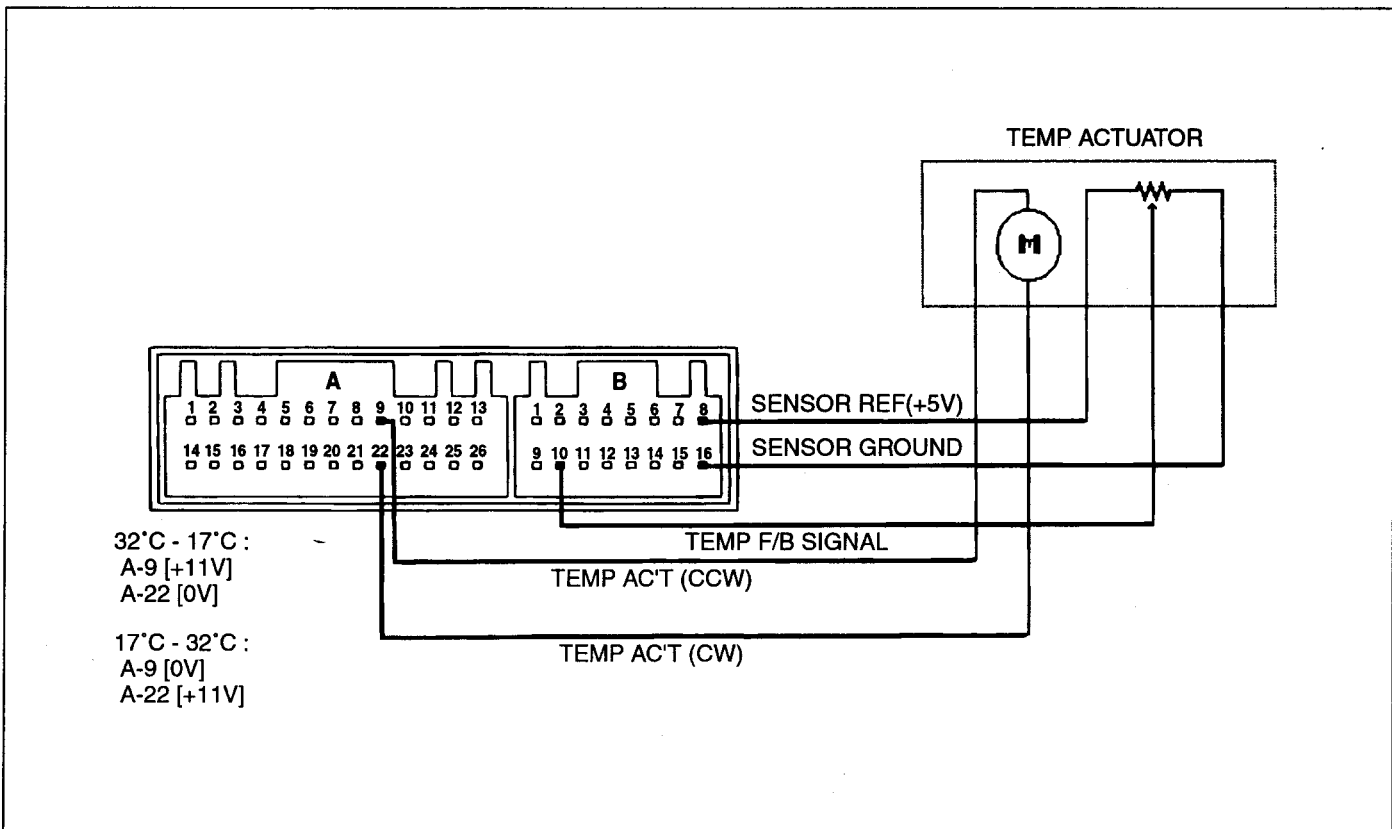
In adjusting temp switch from 32°C to 17°C, 11V is outputted from FATC connector A-9 terminal, 0V is supplied for A-22 terminal and temp motor works in direction of COOL. In adjusting temp switch from 17°C to 32°C, 11V is outputted from FATC connector A-22 terminal, 0V is supplied for A-9 terminal and temp motor works in direction of WARM. When temp actuator has to move to a certain location for its automatic control, temp feedback signal terminal moves equally in temp actuator and informs controller of location of temp actuator through FATC connector B-10 terminal. Comparing original value with inputted value, it

works until they are same. If 4.9V and more is inputted in B-10 terminal, it is regarded as disconnection. If 0.1V and less is inputted in B-10 terminal, it is regarded as short-circuit. In the case of disconnection or short-circuit as a result of self-diagnostic, substitute control is carried out as follows.

- If setup temperature is 17°C to 24.5°C, set to MAX COOL.
- If setup temperature is 25°C to 32.0°C, set to MAX WAR.

ERROR DIAGNOSTICS

Symptoms	Causes	How to check
Temp actuator running error	Power supply error in temp actuator	After altering 17°C to 32°C and adversely, measure voltage of A-22 terminal. If Both of them are 9V and more, check temp actuator and peripheral wiring state and if one or both of them are 5V and less, its cause is internal failure of FATC.
	Sensor (+5) power supply error	If automatic control isn't operated smoothly, measure voltage of FATC connector B- 8 terminal. If under 4.8V or over 5.2V, its cause is internal failure of FATC.
	Driver error of temp actuator	If No. 20 is outputted as a result of self-diagnostic, check temp actuator driver.

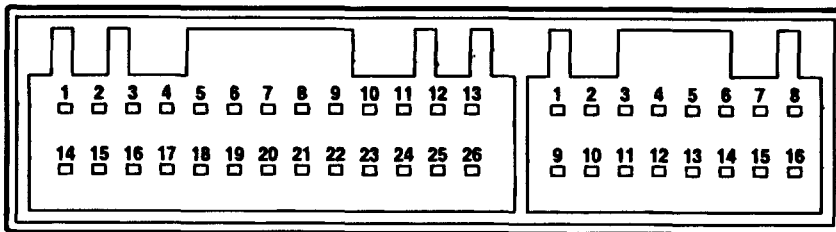
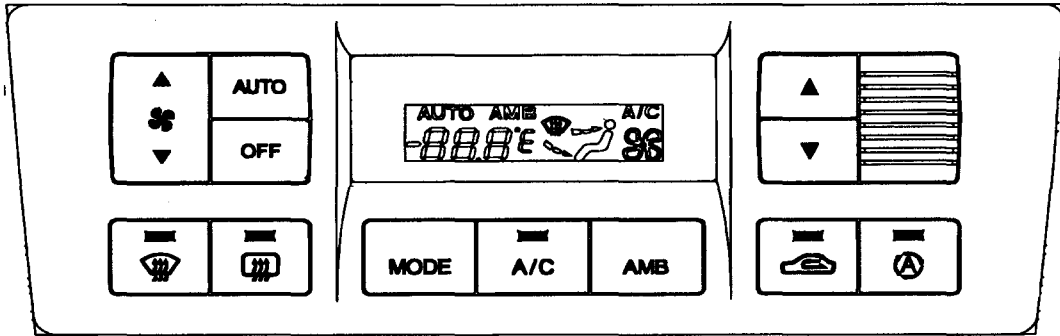


AIR CONDITIONING SWITCH

FULL AUTOMATIC AIR CONDITIONER

(FATC) EQMB0240

CONTROL PANEL



SWITCH OPERATION AND FEATURES EQMB0250

1. Full auto air conditioning system: One-touch button type.
2. Manual air conditioning system: Combination of dial switch and one-touch button.

CONTROL PANEL SWITCHES WILL GENERATE BUZZER SOUND ON OPERATION

Button	Function	Display	System operation	Replusing switch and system operation
TEMP	Setting temp.	<ul style="list-style-type: none"> • Seting temperature indication (17°C → 32°C Scale: 0.5°C) • User may chose the temperature indication between °C/°F. • 17°C=62°F • 32°C=90°F • 25°C=77°F 	<ol style="list-style-type: none"> 1. The switch will operate temperature door to regulate cool/warm air ratio and resultingly control discharge air control. 2. The switch will raise up or lower down the temperature by unit of 0.5. 3. Setting at 17°C (62°F) will provide max. cooling, and setting at 32°C (90°F) will provide max. heating. 4. Switching off→on, it will be displayed the temperature setting just before the previous switching-off. 5. In shifting 17.5°C→17°C or 31.5°C→32°C, raising temperature setting will generate buzzer sound 5 times at interval of 0.15 seconds. 6. Lowering temperature setting at 17°C or raising temperature setting at 32°C, it will generate buzzer sound 5 times at interval of 0.15 sec. 7. Pressing repeatly on: Shift one unit every 0.7 second. Holding down: First shift in 0.7 seconds and than shift every 0.3 seconds (buzzer sound for 0.1 second upon each shift) 	<ul style="list-style-type: none"> • When the switch is off, the system will be off. • When the temp. s/w is on, the setting temperature will be up/down.

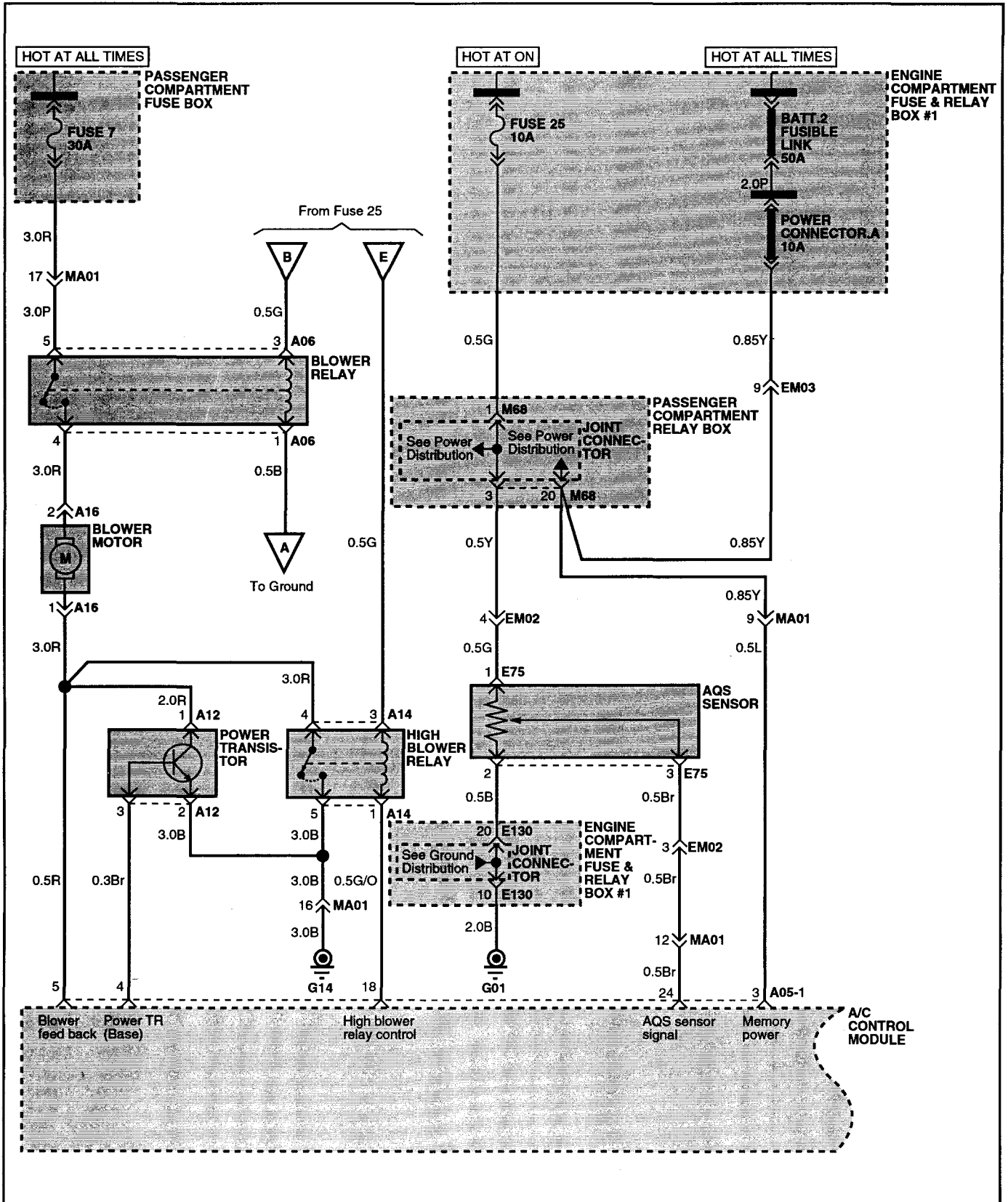
Button	Function	Display	System operation	Replusing switch and system operation
AUTO (Auto control)	Auto control of air conditioning system	"AUTO" will be displayed on control panel.	<ol style="list-style-type: none"> The system will provide auto control of the below features on the basis of temperature setting: <ul style="list-style-type: none"> Temperature door Mode door Intake door(Shift between fresh air/recirculation) Blower speed Compressor. "AUTO" will be disappeared upon releasing AUTO switch. Features except manually selected switches will be controlled automatically upon releasing auto switch. 	<ul style="list-style-type: none"> Off→System Off Blower switch : Manually control blower MODE : Manually control discharge mode A/C : Manually control compressor on/off. Fresh air : Manually control fresh air Recirculation : Manually control recirculation Defroster : Manually control defroster (when air conditioning system is on and recirculation selected)
AMB	Indicate ambient air temperature	<ul style="list-style-type: none"> 'AMB' lamp will be indicated. Ambient air temperature indication. Other lamps will go out 	<ol style="list-style-type: none"> Pressing AMB switch, any previous indication will go out and 'AMB' lamp and ambient air temperature will come on 5 seconds, and then it will return to the previous indication just before pressing AMB switch. 	<ul style="list-style-type: none"> AMB: Pressing the AMB switch when ambient air temperature is indicated, ambient air temperature indication will be extinguished. Other switches: Pressing another switch when the ambient air temperature is indicated, ambient air temperature indication will be extinguished and selected.
INTAKE	Recirculation	<ul style="list-style-type: none"> Recirculation lamp will come on. "AUTO" lamp will go out. 	Fix intake door at the circulation position.	<ul style="list-style-type: none"> INTAKE : REC. Control OFF S/W : REC. Fix AUTO : Auto Control
	Fresh air	<ul style="list-style-type: none"> Fresh air lamp will come on. "AUTO" lamp will go out. 	Fix intake door at the fresh air position.	

Button	Function	Display	System operation	Replusing switch and system operation
Blower fan speed UP/DOWN	Blower fan speed, UP/DOWN control	Fan indication : on/off	<ol style="list-style-type: none"> 1. The speed will shift up/down based on the current fan level. 2. Switching on a switch except fan switch at 'off' condition, the speed will rise steadily from LOW to the target speed. (Require 6 seconds from LOW to HI). 3. Shifting a step will take 0.7 seconds when pressing the switch once. Holding on the switch, a shift will occur every 0.3 seconds and buzzer sounds for 0.1 second. 4. Pressing UP switch at HI position or DOWN switch at LOW position, buzzer sound will occur 5 times at 0.15 second interval. 	<ul style="list-style-type: none"> • AUTO: Auto control • OFF : System off • Fan speed control: Manually control blower fan speed.
	Output increment step by step			
	Fan speed levels and voltages <ul style="list-style-type: none"> - Auto cooling : No level(4.5V~B+) - Auto heating: No level(4.5V~B+) - Manual control: 7 levels (3.8V~B+) 			
A/C Air conditioning switch	Compressor on/off control	<ul style="list-style-type: none"> • A/C lamp (on/off) • AUTO lamp off 	Airconditioning on/off	<ul style="list-style-type: none"> • A/C: A/C on/off, manual control. • OFF: System off. • AUTO: Auto control. • DEF: Defroster, manual control.
MODE (Discharge mode)	Mode door control VENT, FLOOR, B/L, MIX	MODE indication (on/off) AUTO lamp off	<ol style="list-style-type: none"> 1. Fix mode door at B/L or MIX 2. Manual operating mode switch, the switch will shift in the order of VENT-B/L-FLOOR-MIX 	<ul style="list-style-type: none"> • MODE: Shift control in order of Vent-B/L-Floor-Mix-Vent. • DEF: Defroster, manual control. • AUTO: Auto control
DEF (Defroster) <ul style="list-style-type: none"> • Remove moisture/frost on windshield. 	DEF control	<ul style="list-style-type: none"> • DEF indicator lamp on • DEF indication on • A/C lamp on • INTAKE indicator lamp off • AUTO indicator lamp off 	<ol style="list-style-type: none"> 1. Mode door: Fixed at defroster. 2. Intake door: Fresh air control (Selecting recirculation is enabled). 3. A/C: on (Compressor will be controlled on/off based on detected temperature by fin sensor). 4. Prevails over max. cooling and max. heating. 5. Prevails over mix mode control 	<ul style="list-style-type: none"> • AUTO: System auto control. • MODE: Discharge mode, manual control (release the defroster control). • A/C: A/C on/off, manual control • DEF: Return to the previous condition before selecting DEF switch.

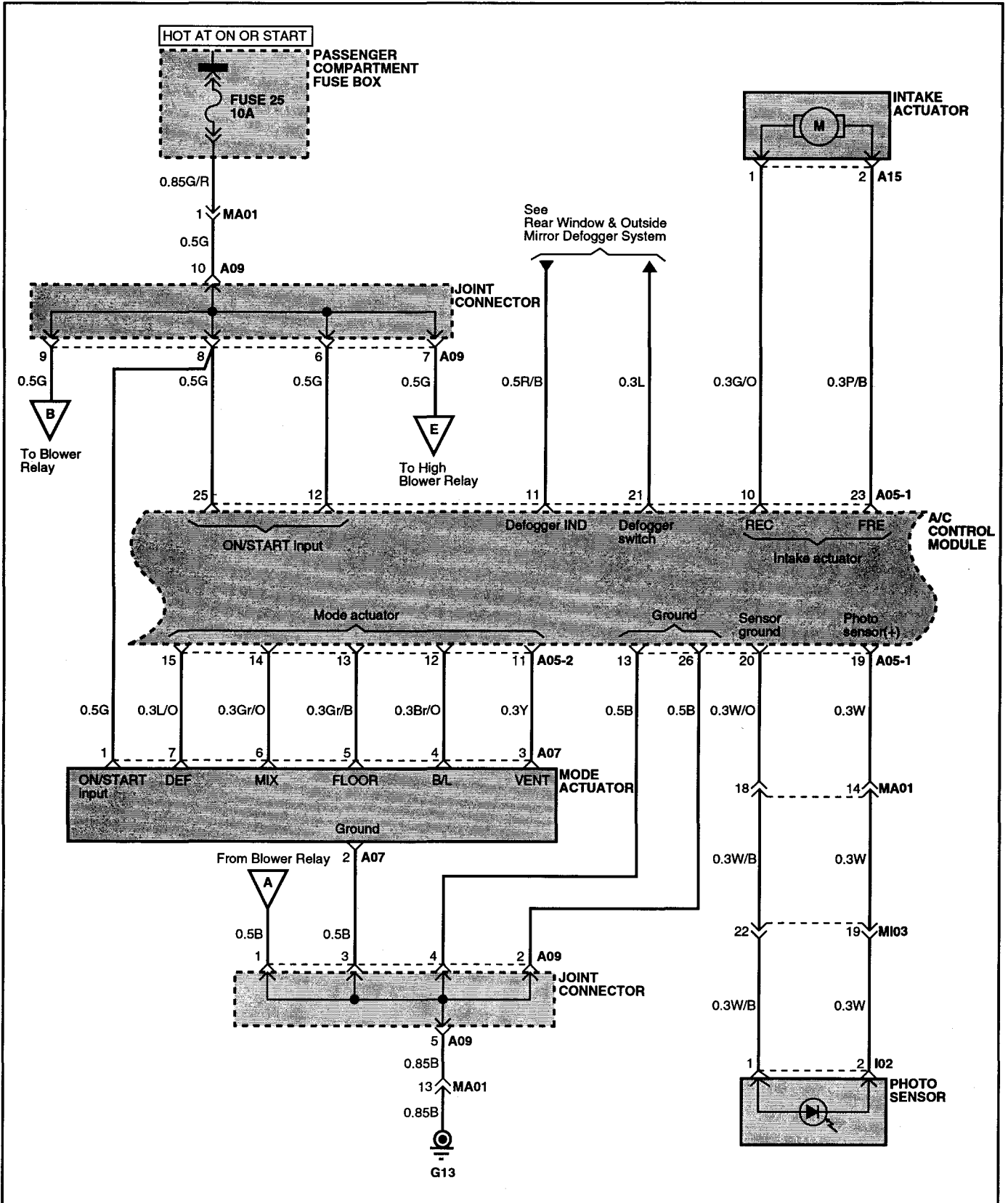
Button	Function	Display	System operation	Replensing switch and system operation
OFF	System off	<ul style="list-style-type: none"> • LCD off • Indicator lamps on 	<ol style="list-style-type: none"> 1. Blower fan speed off. 2. Compressor off. 3. Intake door: Fixed at the location prior to system off. 4. Temperature door: Auto control. 5. Mode door: Fixed at the condition prior to system off. 6. AMB : Pressing AMB switch after system off, 'AMB' lamp/ambient air temperature will come on for 5 seconds and then go out. 	<ul style="list-style-type: none"> • AUTO: Auto control. • Blower speed: Return to MANUAL LOW. • Others: Return to the previous condition before system off
		<ul style="list-style-type: none"> • INTAKE(recirc/fresh air) control at the system off condition <ol style="list-style-type: none"> 1) Selecting the fresh air switch at the recirculation position after system off: It will shift to the fresh air position and extinguish the recirculation indicator lamp. The LCD will be held off. 2) Selecting the recirculation switch at the fresh air position after system off: It will shift to the recirculation position and extinguish the recirculation indicator lamp. The LCD will be held off. 3) Other switches will be held off at the above condition. 	<ul style="list-style-type: none"> • A/C: Airconditioning on. • Others: Return to the previous condition before system off (Blower speed: Return to MANUAL LOW) • MODE: Hold at the previous condition before system off. (Auto control is released). • Others: Return to the previous condition before system off (Blower speed: Return to MANUAL LOW) • DEF: Shift to defroster mode • A/C : Air conditioning on • Intake : fresh air • Others: Return to the previous condition before system off • TEMP: Auto control. • Others: Return to the previous condition before system off. 	

SCHEMATIC DIAGRAM (FULL AUTO)
EQMB0620

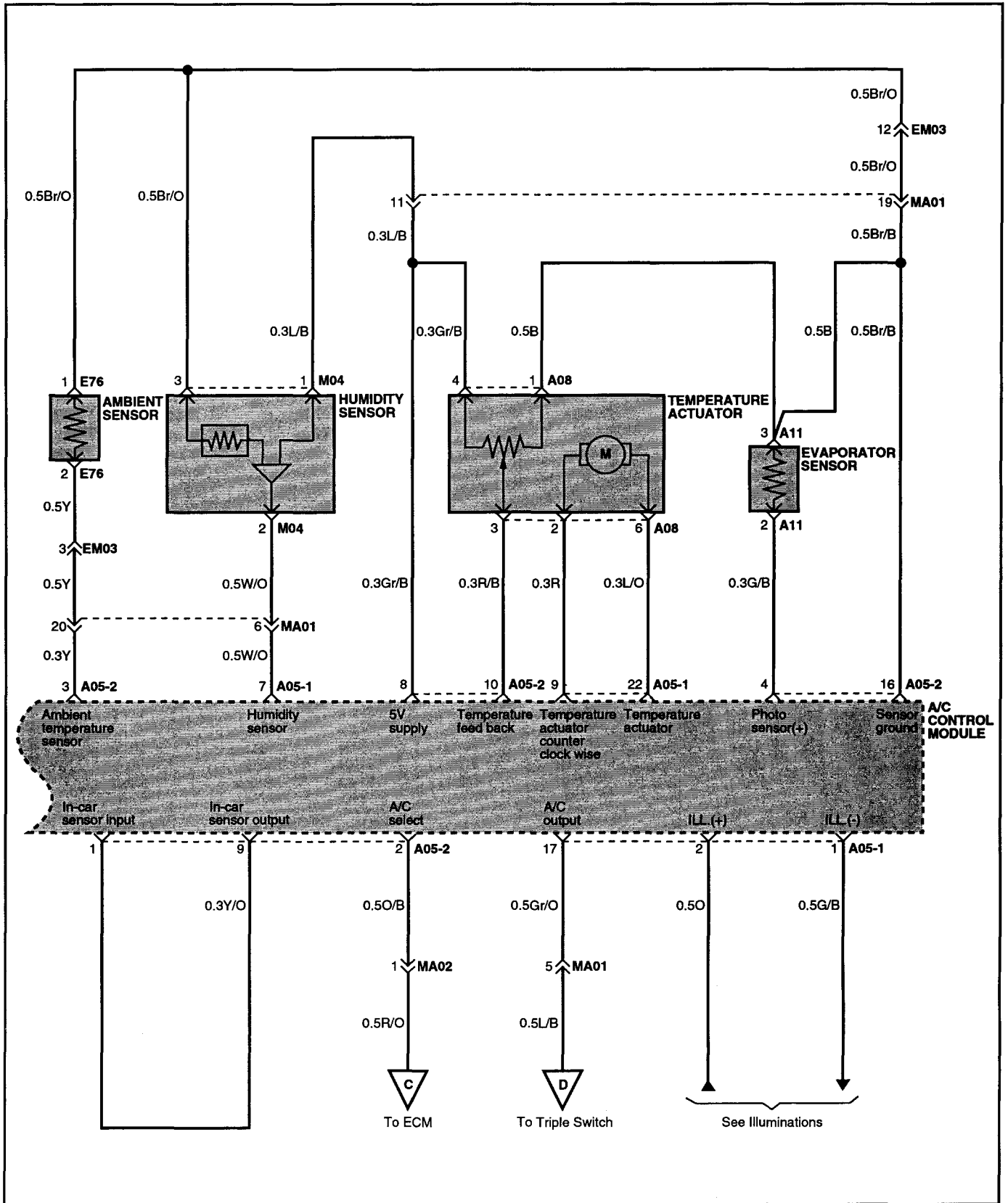
BLOWER AND A/C CONTROLS (FULL AUTO) (1)



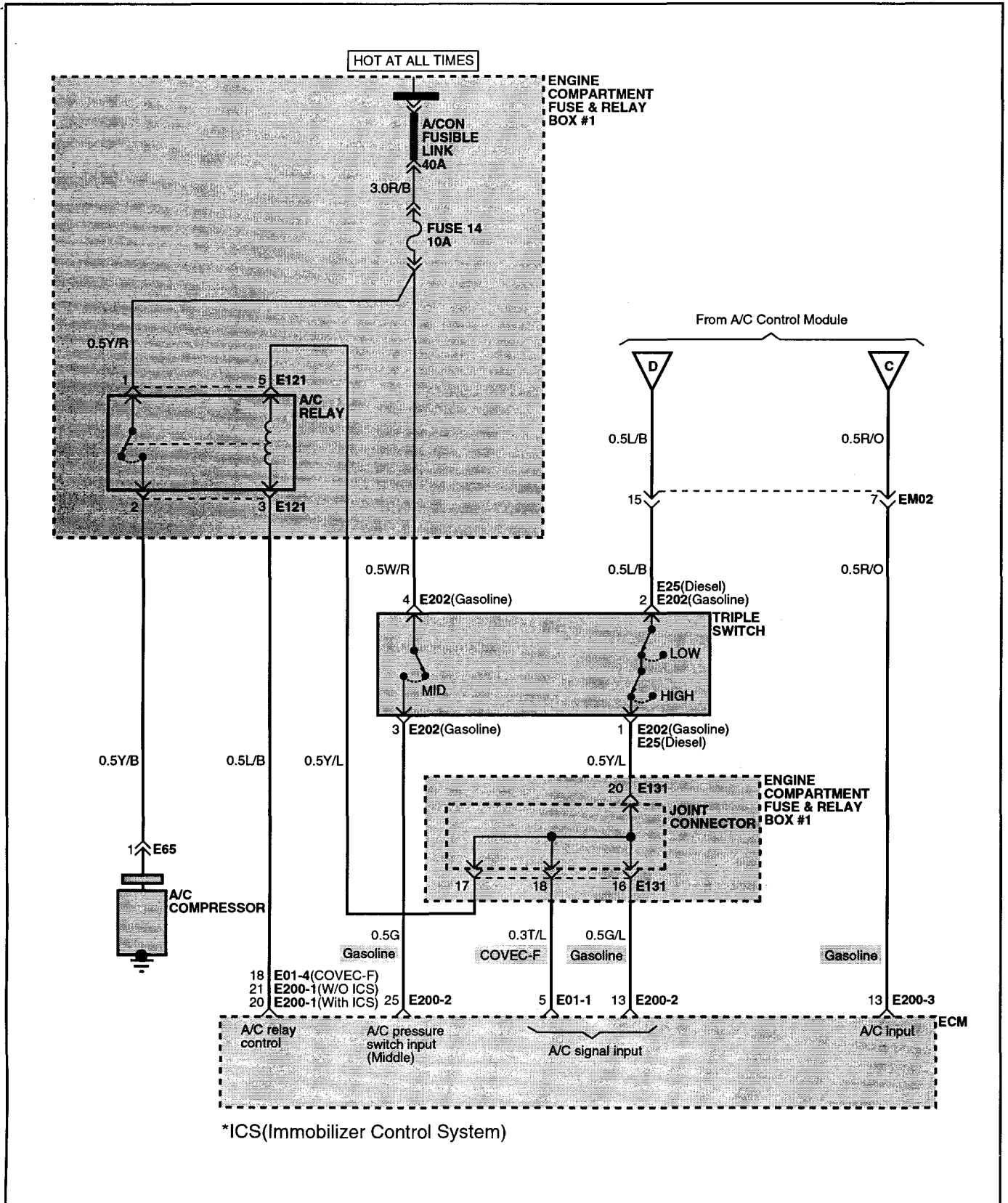
BLOWER AND A/C CONTROLS (FULL AUTO) (2)



BLOWER AND A/C CONTROLS (FULL AUTO) (3)



BLOWER AND A/C CONTROLS (FULL AUTO) (4)



*ICS(Immobilizer Control System)