

EMISSION CONTROL

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M17AA- -

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SPECIFICATIONS

GENERAL SPECIFICATIONS

M17CA- -

Items	Specifications
Crankcase emission control system	Closed type with positive crankcase ventilation valve
Evaporative emission control system Canister Purge control solenoid valve	Canister storage type Charcoal type ON/OFF solenoid valve
Exhaust emission control system Exhaust gas recirculation system EGR valve EGR temperature sensor <California> EGR control solenoid valve <California – Non Turbo, Turbo> Catalytic converter Location <Non-Turbo> <Turbo>	Vacuum-activated diaphragm type Thermistor type Duty cycle solenoid valve Monolith type Under floor Turbocharger outlet (front bank and rear bank,) and under floor

SERVICE SPECIFICATIONS

M17CB- -

Items	Specifications
Purge control solenoid valve coil resistance Ω	36 – 44 [at 20°C (68°F)]
EGR temperature sensor resistance $k\Omega$	60 – 83 [at 50°C (122°F)] 11 – 14 [at 100°C (212°F)]
EGR control solenoid valve coil resistance Ω	36 – 44 [at 20°C (68°F)]

TROUBLESHOOTING

M17EA- -

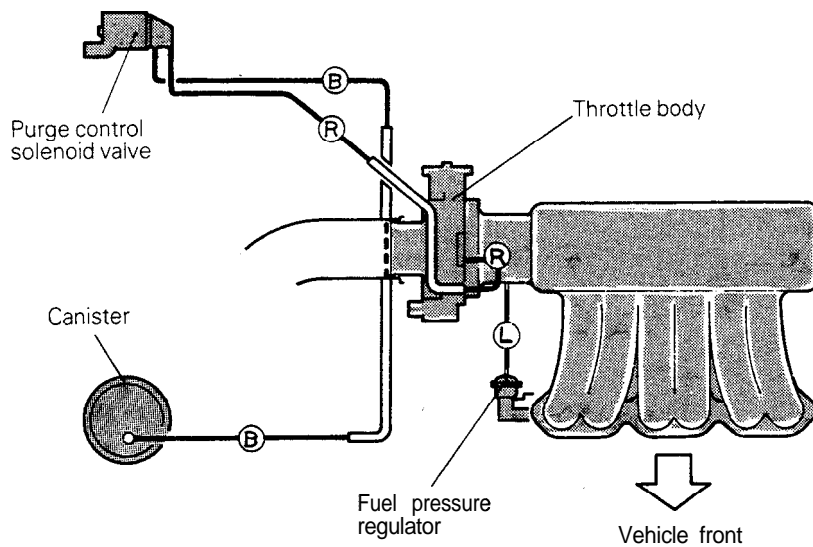
Symptom	Probable cause	Remedy
Engine will not start or hard to start	Vacuum hose disconnected or damaged	Repair or replace
	The EGR valve is not closed	Repair or replace
	Malfunction of the purge control solenoid valve	Repair or replace
Rough idle or engine stalls	The EGR valve is not closed	Repair or replace
	Vacuum hose disconnected or damaged	Repair or replace
	Malfunction of the positive crankcase ventilation valve	Replace
	Malfunction of the purge control system	Check the system; if there is a problem, check its component parts
Engine hesitates or poor acceleration	Malfunction of the exhaust gas recirculation system	Check the system; if there is a problem, check its component parts
Excessive oil consumption	Positive crankcase ventilation line clogged	Check positive crankcase ventilation system
Poor fuel mileage	Malfunction of the exhaust gas recirculation system	Check the system; if there is a problem, check its component parts

VACUUM HOSES

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VACUUM HOSES ROUTING

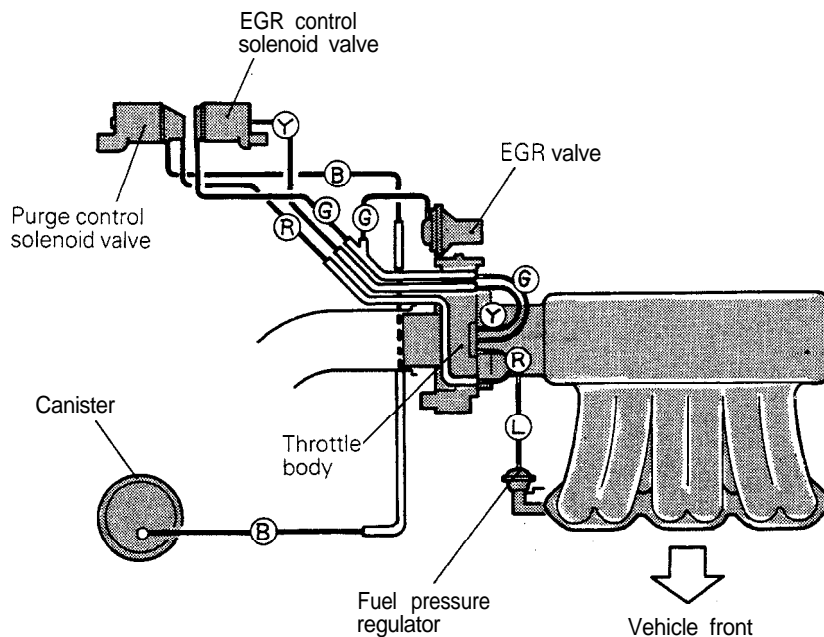
<Federal – Non Turbo>



L: Light blue
R: Red
B: Black

7EM0131

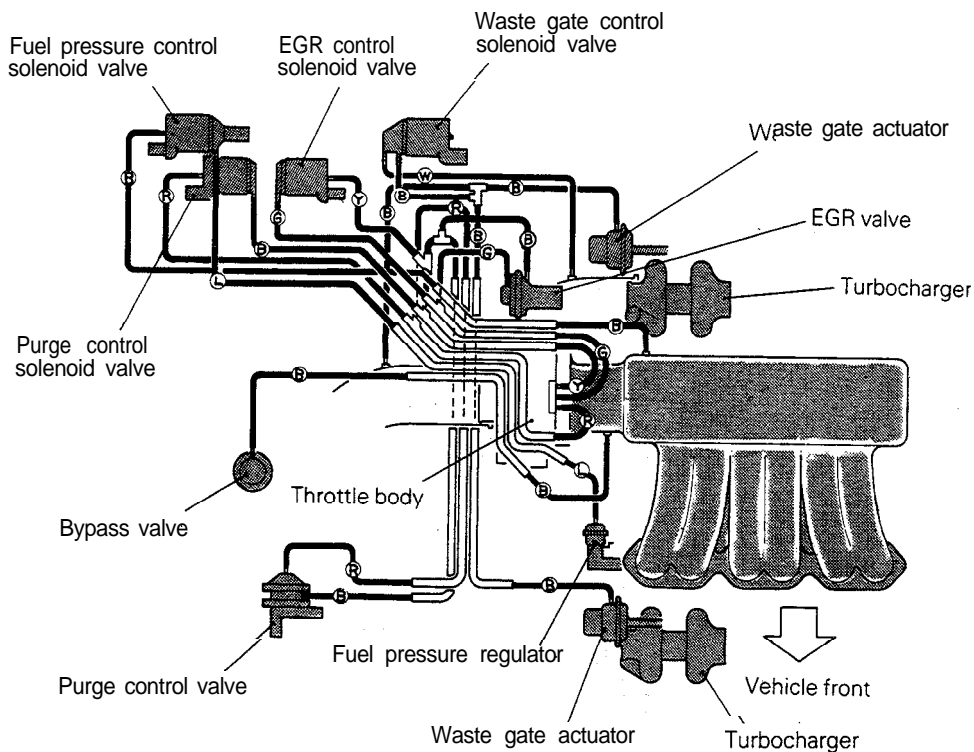
<California – Non Turbo>



G: Green
Y: Yellow
L: Light blue
R: Red
B: Black

7EM0132

<Turbo>



7EM0133

INSPECTION

M17JCAF

- (1) Referring to the VACUUM HOSES ROUTING, confirm that the vacuum hoses are properly connected.
- (2) Check the hoses for irregularities (disconnection, looseness, etc.) and confirm that there is no breakage or damage.

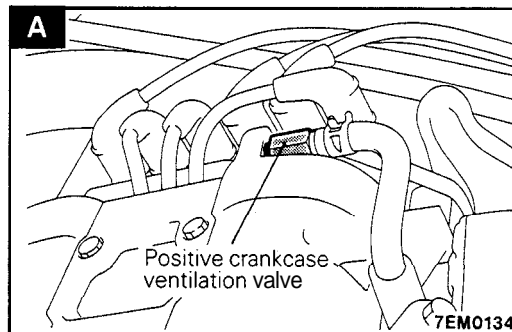
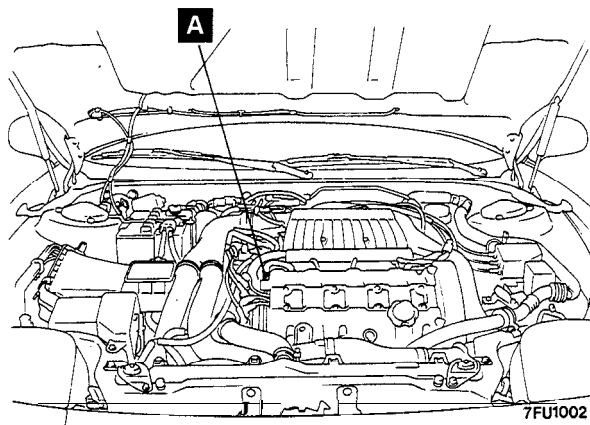
INSTALLATION

M17JDAF

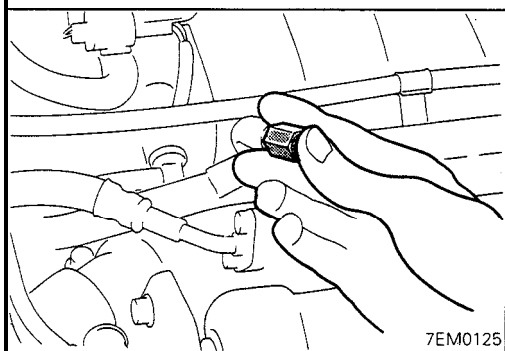
- (1) When connecting a hose, firmly press it onto the nipple.
- (2) Referring to the VACUUM HOSES ROUTING, connect the hoses correctly.

CRANKCASE EMISSION CONTROL SYSTEM

M17KA--

COMPONENTS LOCATION

Name	Symbol
Positive crankcase ventilation valve	A

**CRANKCASE VENTILATION SYSTEM INSPECTION**

M17IABG

- (1) After disconnecting the ventilation hose from the positive crankcase ventilation valve, disconnect the positive crankcase ventilation valve from the rocker cover, and reconnect the positive crankcase ventilation valve to the ventilation hose.
- (2) Idle engine, put finger on the opening end of the positive crankcase ventilation valve, and check that the negative pressure of the intake manifold is felt with finger.

NOTE

At this time, the plunger in the positive crankcase ventilation valve moves back and forth.

- (3) If negative pressure is not felt, clean or replace the positive crankcase ventilation valve.

POSITIVE CRANKCASE VENTILATION VALVE

M17IACC

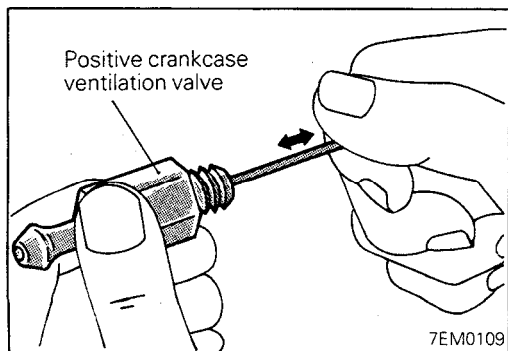
INSPECTION

- (1) Remove the positive crankcase ventilation valve.
- (2) Insert a thin stick into the positive crankcase ventilation valve from the threaded side to check that the plunger moves.
- (3) If the plunger does not move, the positive crankcase ventilation valve is clogged. Clean it or replace.

INSTALLATION

Install the positive crankcase ventilation valve and tighten to specified torque.

Specified tightening torque: 10 Nm (7.2 ft.lbs.)

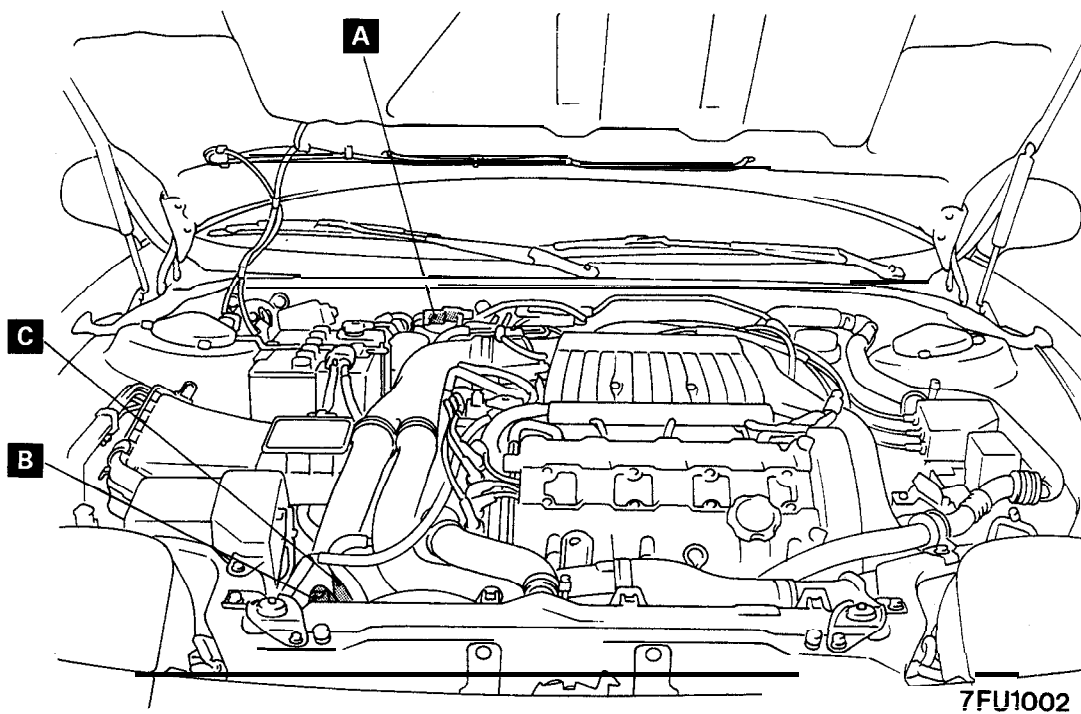


TSB Revision

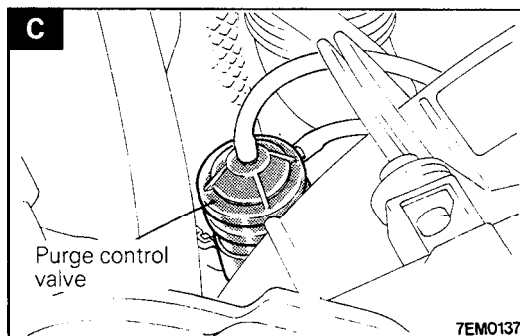
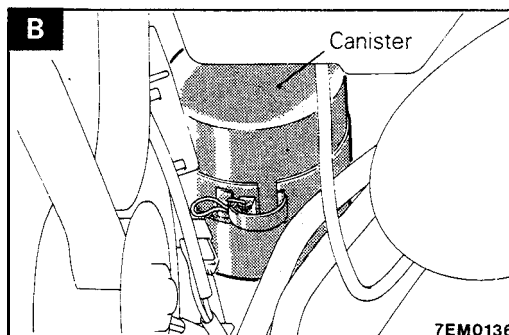
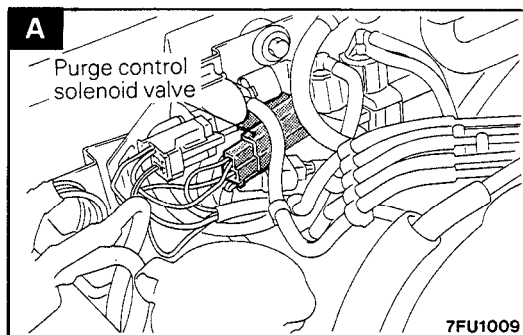
EVAPORATIVE EMISSION CONTROL SYSTEM

M17LA--

COMPONENTS LOCATION

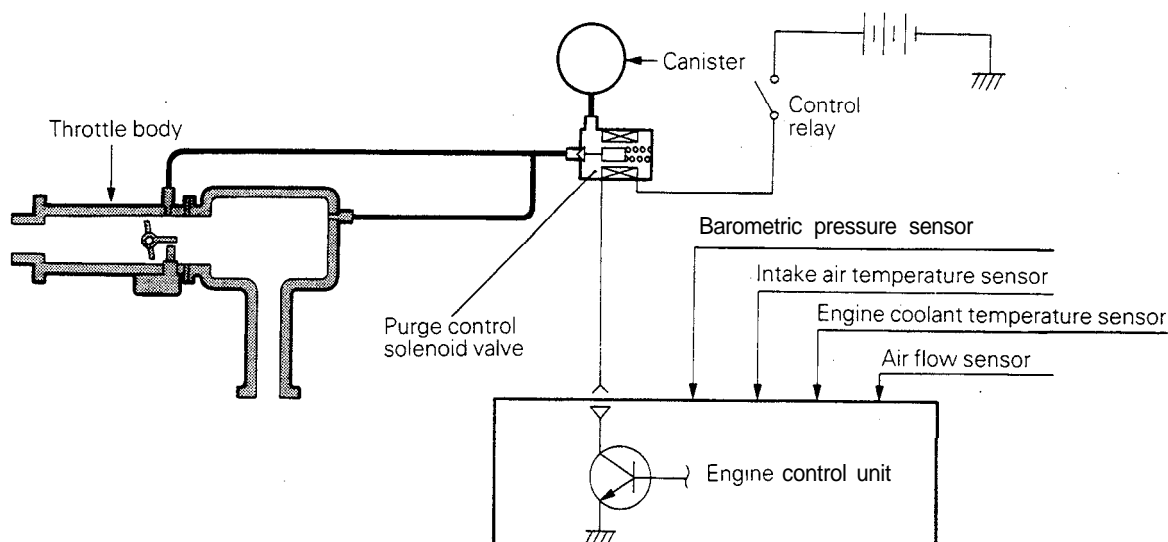


Name	Symbol
Canister	B
Purge control solenoid valve	A
Purge control valve <Turbo>	C

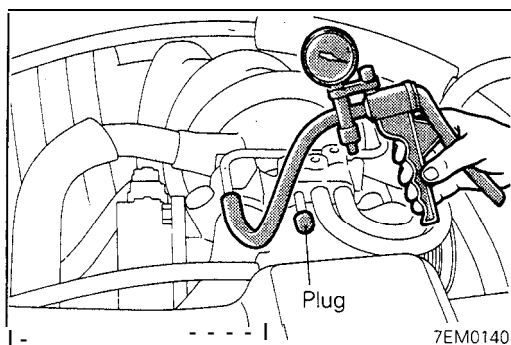


PURGE CONTROL SYSTEM INSPECTION <Non Turbo>

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7EM0161



- (1) Disconnect the vacuum hose (red stripes) from the throttle body and connect it to a hand vacuum pump.
- (2) Plug the nipple from which the vacuum hose is disconnected.
- (3) Under the engine conditions shown below, check by applying vacuum from a hand vacuum pump.

**When engine is cold – engine coolant temperature:
60°C (140°F) or less**

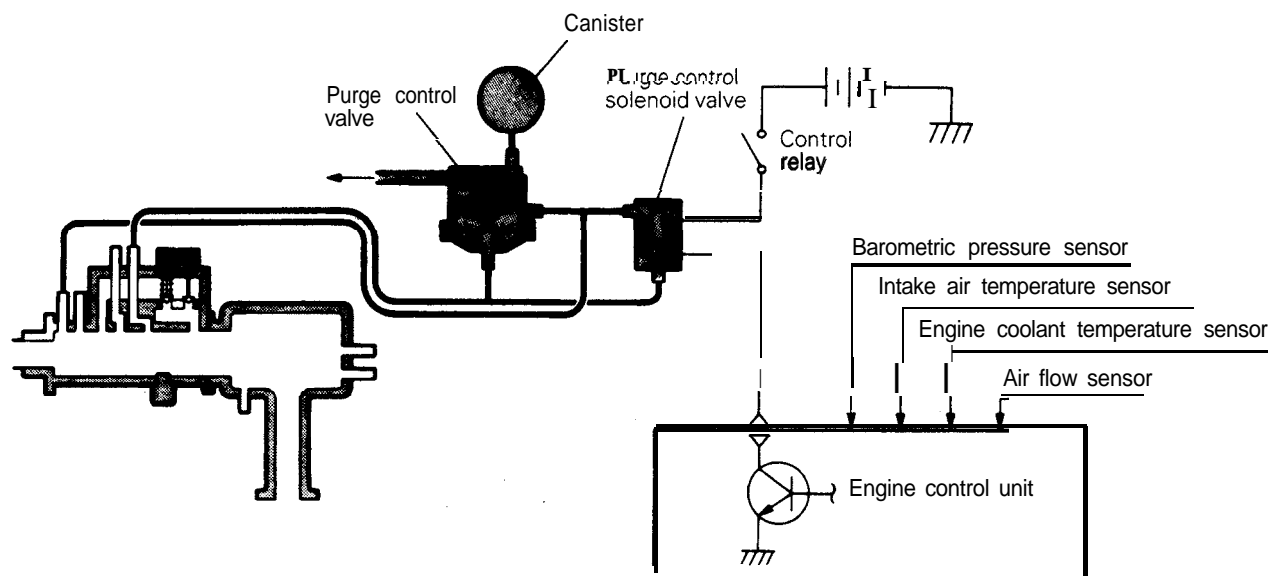
Engine operating condition	Applying vacuum	Result
Idling	375 mmHg (14.8 in.Hg)	Vacuum is maintained
3,000 rpm		

**When engine is hot – engine coolant temperature:
70°C (158°F) or higher**

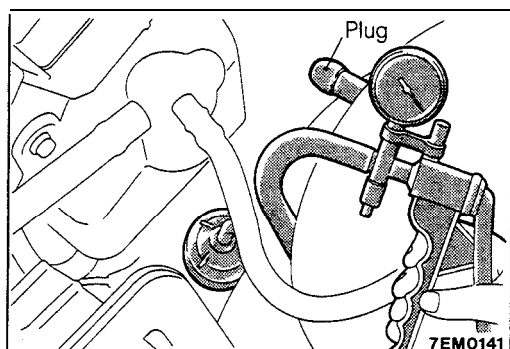
Engine operating condition	Applying vacuum	Result
Idling	375 mmHg (14.8 in.Hg)	Vacuum is maintained
3,000 rpm within three minutes after starting engine	Try applying vacuum	Vacuum leaks
3,000 rpm after three minutes have elapsed after starting engine	375 mmHg (14.8 in.Hg)	Vacuum will be maintained momentarily, after which it will leak. NOTE The vacuum will leak continuously if the altitude is 2,200 m (7,200 ft.) or higher, or the intake air temperature is 50°C (122°F) or higher.

PURGE CONTROL SYSTEM INSPECTION <Turbo>

M171B8Q



6EM0215



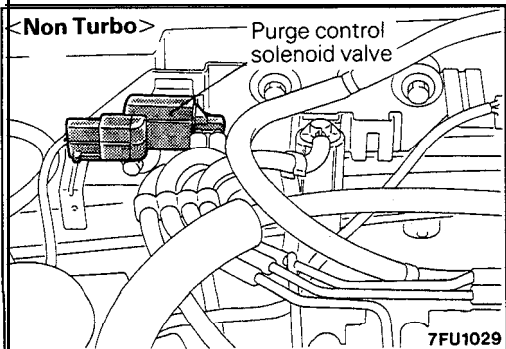
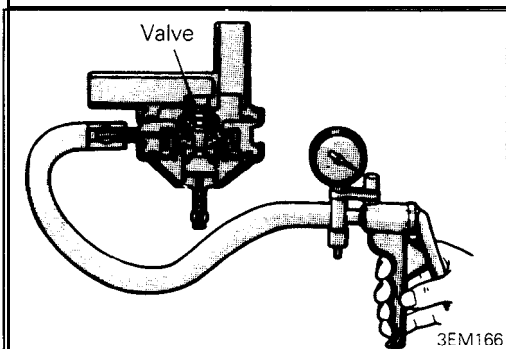
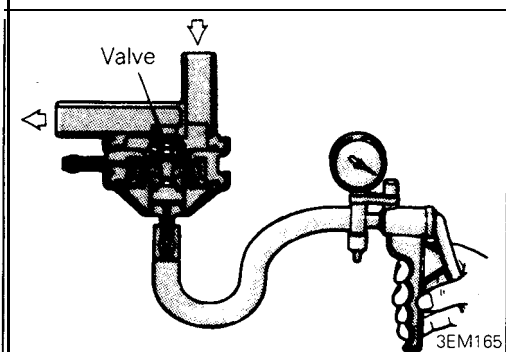
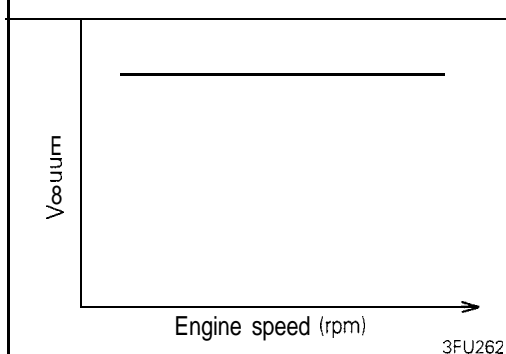
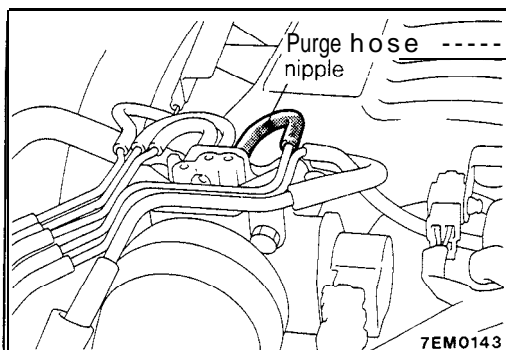
- (1) Disconnect the purge air hose from the air intake hose, and plug the air intake hose. Then, connect the hand vacuum pump to the purge air hose.
- (2) Under the engine conditions shown below, check by applying vacuum from a hand vacuum pump.

**When engine is cold – engine coolant temperature:
60°C (140°F) or less**

Engine operating condition	Applying vacuum	Result
Idling	375 mmHg (14.8 in.Hg)	Vacuum is maintained
3,000 rpm		

**When engine is hot – engine coolant temperature:
70°C (158°F) or higher**

Engine operating condition	Applying vacuum	Result
Idling	375 mmHg (14.8 in.Hg)	Vacuum is maintained
3,000 rpm within three minutes after starting engine	Try applying vacuum	Vacuum leaks
3,000 rpm after three minutes have elapsed after starting engine	375 mmHg (14.8 in.Hg)	Vacuum will be maintained momentarily, after which it will leak. NOTE The vacuum will leak continuously if the altitude is 2,200 m (7,200 ft.) or higher, or the intake air temperature is 50°C (122°F) or higher.



PURGE PORT VACUUM CHECK

M17IBKD

Check Condition

Engine coolant temperature: 80 – 95°C (176 – 205°F)

- (1) Disconnect the vacuum hose from the throttle body purge hose nipple and connect a hand vacuum pump to the nipple.

- (2) Start the engine and check to see that, after raising the engine speed by racing the engine, vacuum remains fairly constant.

NOTE

If there is no vacuum created, it is possible that the throttle body port may be clogged and require cleaning.

PURGE CONTROL VALVE <Turbo>

M17IBCE

INSPECTION

- (1) Remove the purge control valve.
- (2) Connect a hand vacuum pump to the vacuum nipple of the purge control valve.
- (3) Apply a vacuum of 400 mmHg (15.7 in.Hg.) and check airtightness.
- (4) Blow in air lightly from the canister side nipple and check conditions as follows.

Hand vacuum pump vacuum	Normal condition
0 mmHg (0 in.Hg.) (No vacuum is applied)	Air does not blow through
200 mmHg (8.0 in.Hg.) or more	Air blow through

- (5) Connect a hand vacuum pump to the positive pressure nipple of the purge control valve.
- (6) Apply a vacuum of 400 mmHg (15.7 in.Hg.) and check airtightness.

PURGE CONTROL SOLENOID VALVE

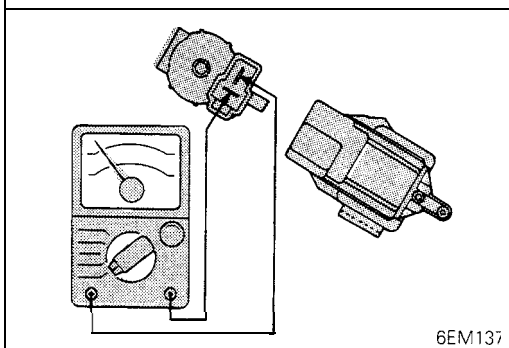
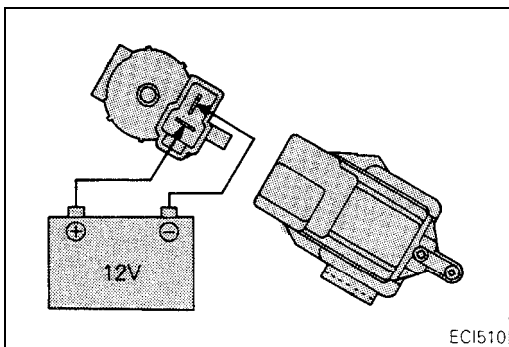
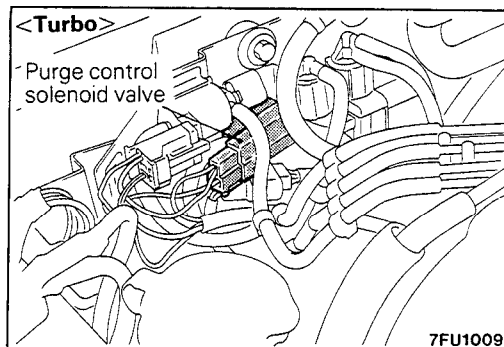
M17IBFI

INSPECTION

NOTE

When disconnecting the vacuum hose, make an identification mark on it so that it can be reconnected to the original position.

- (1) Disconnect the vacuum hoses (non stripe and red stripe hose) from the solenoid valve.
- (2) Disconnect the harness connector from solenoid valve.
- (3) Connect a hand vacuum pump to the nipple to which the red-striped vacuum hose was connected.



- (4) Apply a vacuum and check for airtightness when voltage applied directly to the purge control solenoid valve and when the voltage is discontinued.

Battery voltage		Result
Non-Turbo	When applied	Vacuum leaks
	When discontinued	Vacuum is maintained
Turbo	When applied	Vacuum is maintained
	When discontinued	Vacuum leaks

- (5) Measure the resistance between the terminals of the solenoid valve.

Standard value: 36 – 44 Ω [at 20°C (68°F)]

AIR FLOW SENSOR, ENGINE COOLANT TEMPERATURE SENSOR AND INTAKE AIR TEMPERATURE SENSOR

M17IBGF

To inspect these parts, refer to GROUP 13 – MPI System Components.

AIR CONDITIONER SWITCH

M17IBHF

To inspect the air conditioner switch, refer to GROUP 55 – Air Conditioner Switch.

OVERFILL LIMITER (TWO-WAY VALVE)

M17IBEF

To inspect the overfill limiter (two-way valve), refer to GROUP 13 – Fuel Tank.

CANISTER

M17IBIF

To inspect the canister, refer to GROUP 13 – Fuel Line and Vapor Line.

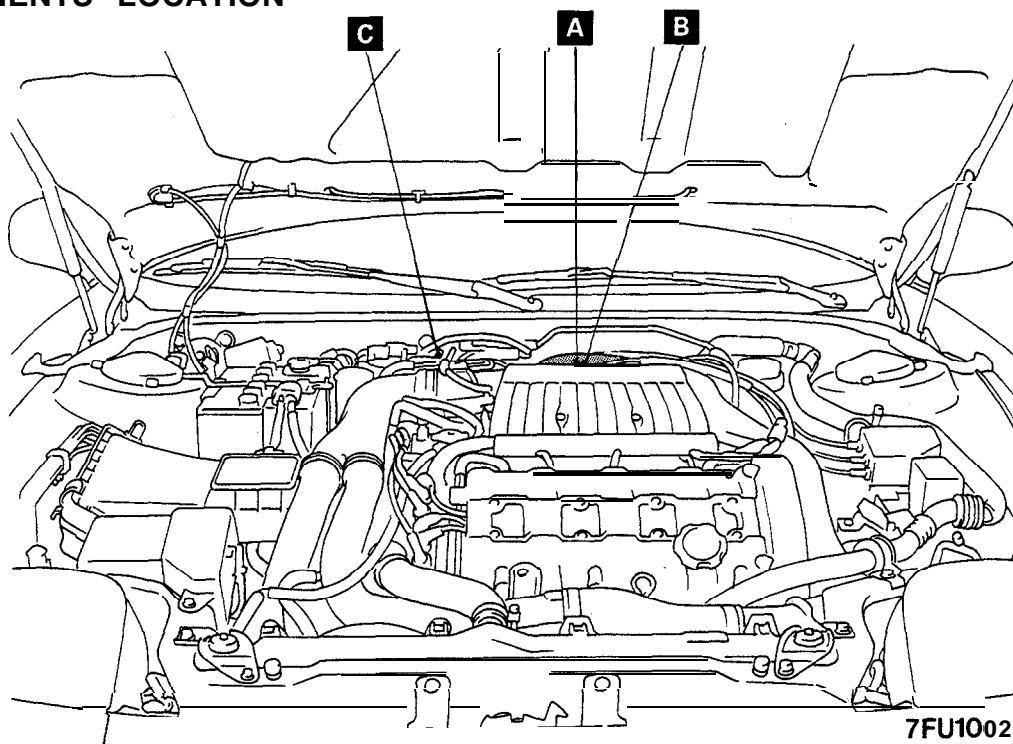
FUEL FILLER CAP INSPECTION

M17IBJB

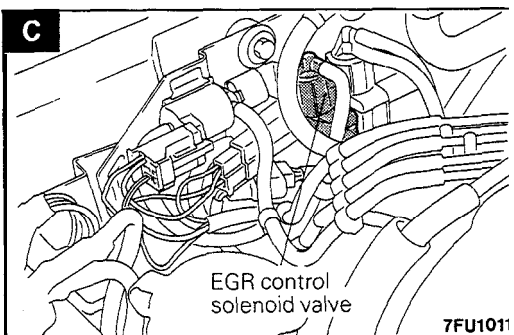
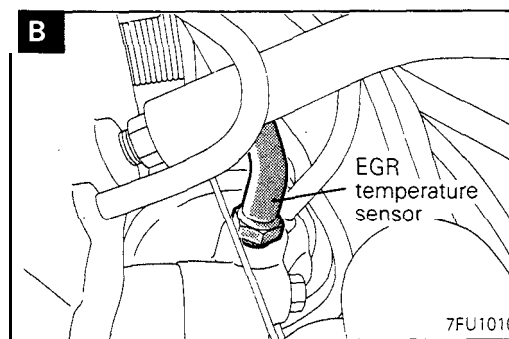
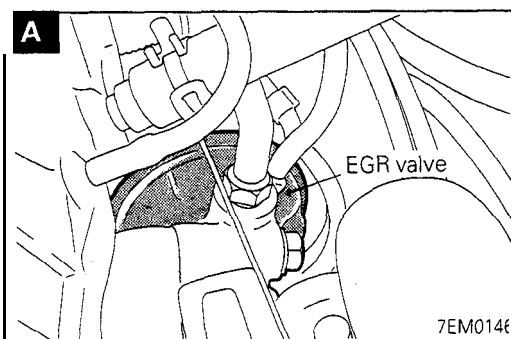
Check the gasket of the fuel filler cap, and the filler cap itself, for damage or deformation; replace the cap if necessary.

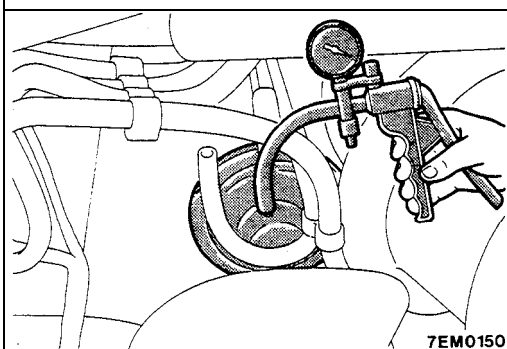
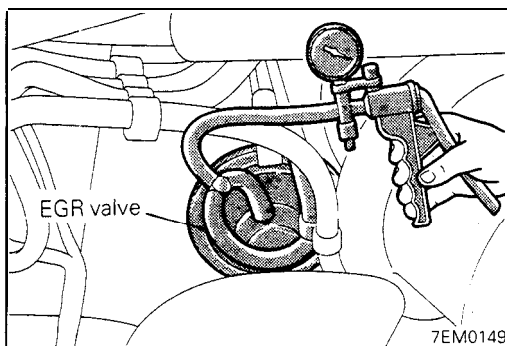
EXHAUST GAS RECIRCULATION (EGR) SYSTEM

M17MA -

COMPONENTS LOCATION

Name	Symbol
EGR control solenoid valve <California – Non Turbo, Turbo>	C
EGR temperature sensor <California>	B
EGR valve <California – Non Turbo, Turbo>	A





EGR SYSTEM INSPECTION <California – Non Turbo, Turbo>

M171CJQ

- (1) Disconnect the vacuum hose (green stripe) from the EGR valve, and connect a hand vacuum pump through the three-way terminal.
- (2) Regarding cold condition [coolant temperature: 20°C (68°F) or less] and warm condition [coolant temperature: 70°C (158°F) or more] of the engine, check the following two points:

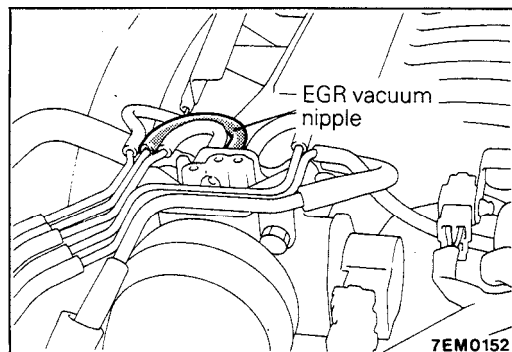
<Cold condition of engine>

Engine operation	Normal state
Race the engine by rapidly press in the accelerator pedal.	The negative pressure does not vary. (Atmospheric pressure)

<Warm condition of engine>

Engine operation	Normal state
Race the engine by rapidly press in the accelerator pedal.	The negative pressure rises to 100 mmHg (3.9 in.Hg) or more.

- (3) Disconnect the three-way terminal, and connect the hand vacuum pump to the EGR valve.
- (4) When a negative pressure of 230 mmHg (9.1 in.Hg.) is applied during idling, check that the engine stops or idles unstably.



EGR VALVE CONTROL VACUUM CHECK <California – Non Turbo, Turbo>

M171CMF

Check Condition

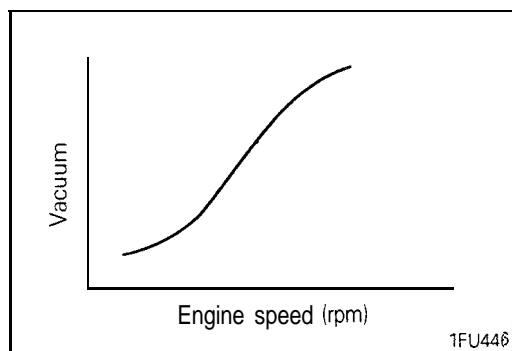
Engine coolant temperature: 80 – 95°C (176 – 205°F)

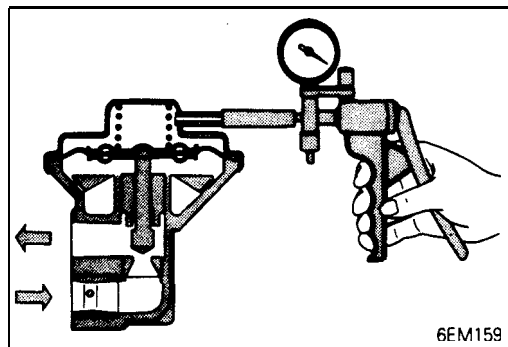
- (1) Disconnect the vacuum hose from the throttle body EGR vacuum nipple and connect a hand vacuum pump to the nipple.

- (2) Start the engine and check to see that, after raising the engine speed by racing the engine, vacuum raises proportionately with the rise in engine speed.

NOTE

If there is a problem with the change in vacuum, it is possible that the throttle body port may be clogged and require cleaning.



**EGR VALVE <California – Non Turbo, Turbo>**

M17ICKJ

INSPECTION

- (1) Remove the EGR valve and check it for sticking, deposit of carbon, etc.
If such condition exists, clean with adequate solvent to ensure tight valve seat contact.
- (2) Connect a hand vacuum pump to the EGR valve.
- (3) Apply a vacuum of 500 mmHg (19.8 in.Hg.) and check airtightness.
- (4) Blow in air from one passage of the EGR to check condition as follows.

Applying vacuum	Result
45 mmHg (1.8 in.Hg.) or less	Air does not blow through
230 mmHg (9.1 in.Hg.) or more	Air blows through

INSTALLATION

Install a new gasket and EGR valve, tighten bolts to specified torque.

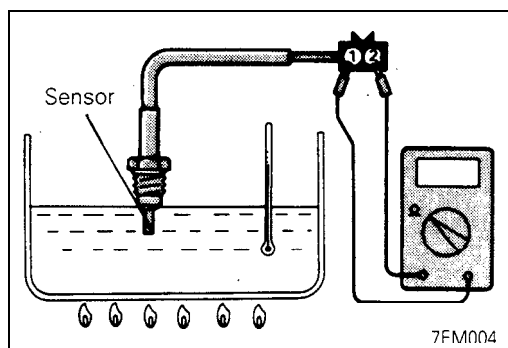
Specified tightening torque: 19 Nm (13 ft.lbs.)

EGR TEMPERATURE SENSOR <California>

M17ICYC

INSPECTION

- (1) Remove the EGR temperature sensor.
- (2) Place the EGR temperature sensor in water, and then measure the resistance value between terminals 1 and 2 while increasing the water's temperature.
Replace the EGR temperature sensor if there is a significant deviation from the standard value.

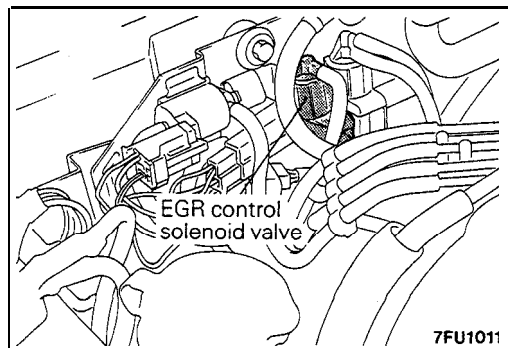


Temperature °C (°F)	Resistance kΩ
50 (122)	60 – 83
100 (212)	11 – 14

INSTALLATION

Install the EGR temperature sensor tighten to specified torque.

Specified tightening torque: 11 Nm (8 ft.lbs.)

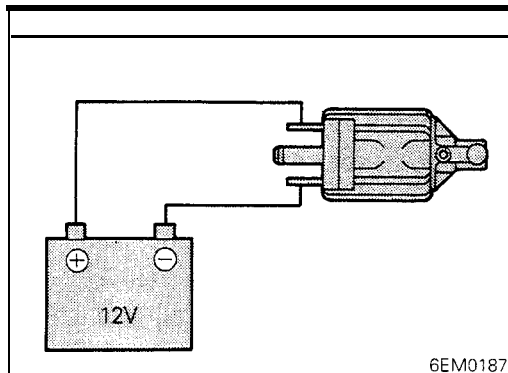
**EGR CONTROL SOLENOID VALVE <California – Non Turbo, Turbo>**

M17ICRE

INSPECTION**NOTE**

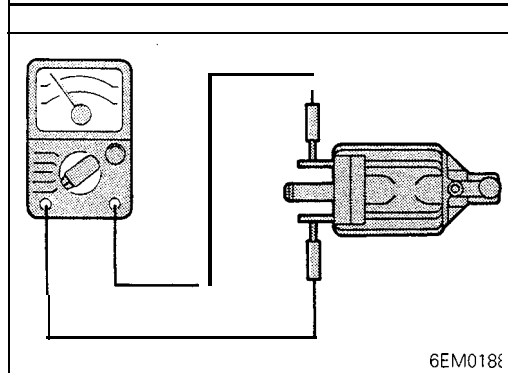
When disconnecting the vacuum hose, make an identification mark on it so that it can be reconnected to the original position.

- (1) Disconnect the vacuum hose (yellow and green stripe) from the solenoid valve.
- (2) Disconnect the harness connector.
- (3) Connect a hand vacuum pump to the nipple to which the green-striped vacuum hose was connected.



- (4) Apply a vacuum and check for air-tightness when voltage applied directly to the EGR control solenoid valve and when the voltage is discontinued.

Battery voltage	Result
When applied	Vacuum is maintained
When discontinued	Vacuum leaks



- (5) Measure the resistance between the terminals of the solenoid valve.

Standard value: 36 – 44 Ω [at 20°C (68°F)]

AIR-FUEL RATIO CONTROL (MPI) SYSTEM

M17ICAJ

- To inspect the air-fuel ratio control (MPI) system, refer to GROUP13 – Service Adjustment Procedures.
- For detailed information concerning the illumination pattern of the malfunction-indicator light and other aspects of the self-diagnosis function, refer to GROUP 13 -Self-diagnosis.

CATALYTIC CONVERTER

M17NA--

REMOVAL AND INSTALLATION

Refer to GROUP 15 – Exhaust Pipe, Main Muffler and Catalytic Converter.

INSPECTION

M17NCAA

Inspect for damage, cracking or deterioration. Replace if faulty.

Caution

1. Operation of any type, including idling, should be avoided if engine misfiring occurs. Under this condition the exhaust system will operate at abnormally high temperature, which may cause damage to the catalyst or underbody parts of the vehicle.
2. Alteration or deterioration of ignition or fuel system, or any type of operating condition which results in engine misfiring must be corrected to avoid overheating the catalytic converters.
3. Proper maintenance and tune up according to manufacturer's specifications should be made to correct the conditions as soon as possible.