

EMISSION CONTROL

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E17AA--

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SPECIFICATIONS

E17CA--

GENERAL SPECIFICATIONS

Items	Name	Specifications
Crankcase emission control system	Positive crankcase ventilation (PCV) valve	Variable flow type (Purpose: HC reduction)
Evaporative emission control system	Canister 2-way valve Purge control solenoid valve	Equipped Equipped ON-OFF solenoid valve (Purpose: HC reduction)
Exhaust emission control system	Air-fuel ratio control device-MPI system	Oxygen sensor feedback type (Purpose: CO, HC, NOx reduction)
	EGR valve EGR control solenoid valve	Vacuum-activated diaphragm type Duty cycle type solenoid valve (Purpose: NOx reduction)
	Catalytic converter	Monolith type (Purpose: CO, HC, NOx reduction)

SERVICE SPECIFICATIONS

E17CB--

Items	Specifications
Purge control solenoid valve coil resistance [at 20°C (68°F)]	Ω 36 – 44
EGR control solenoid valve coil resistance [at 20°C (68°F)]	Ω 36 – 44

SEALANTS AND ADHESIVE

E17CE--

Items	Specified sealant and adhesive	Remarks
Engine coolant temperature sensor	3M Nut Locking Part No. 4171 or equivalent	Drying sealant

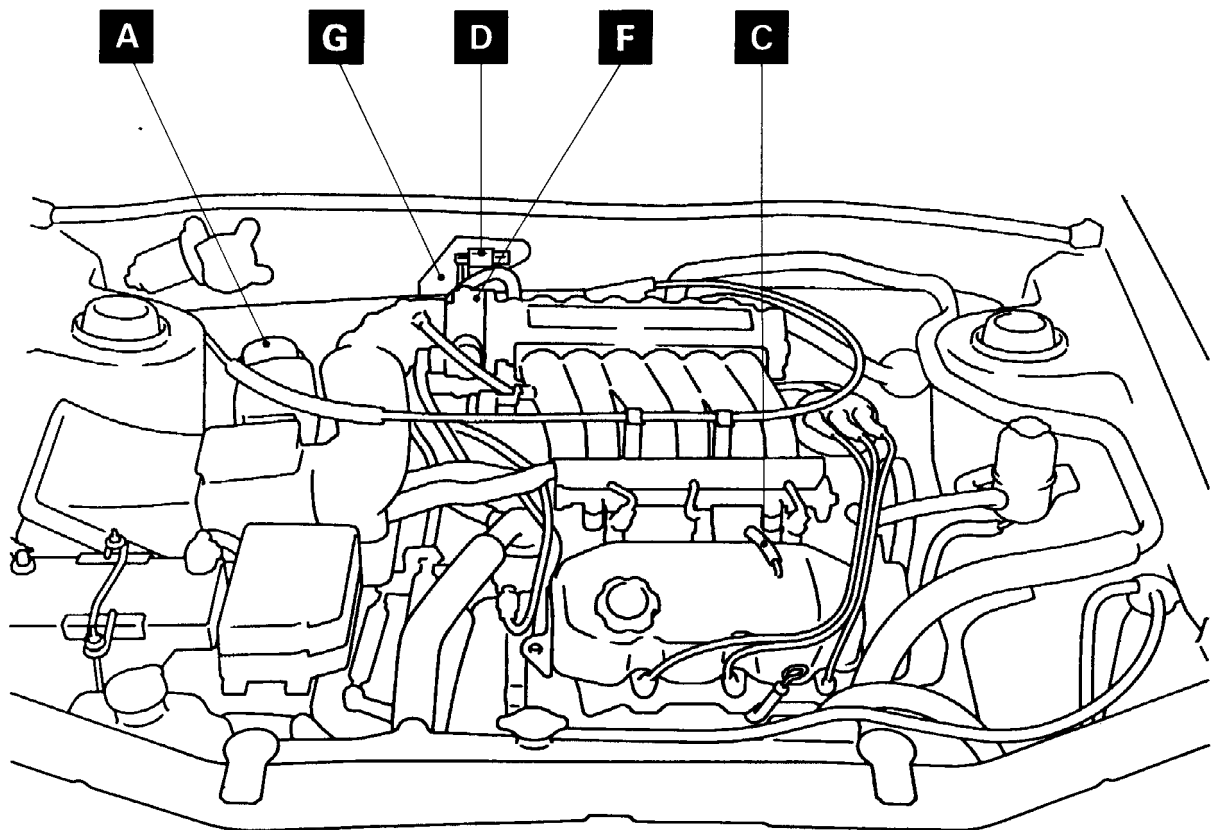
SERVICE ADJUSTMENT PROCEDURES

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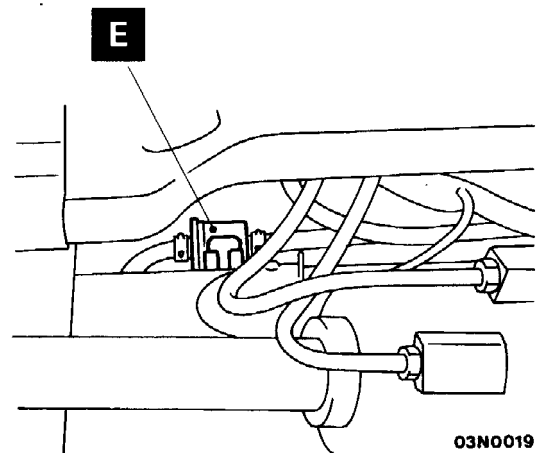
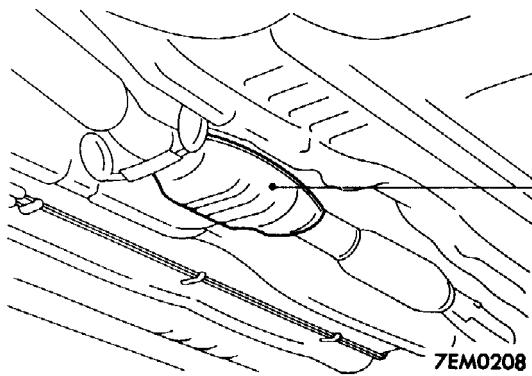
EMISSION CONTROL DEVICE REFERENCE TABLE

Related parts	Emission control system	Crankcase emission control system	Evaporative emission control system	Air fuel ratio control system	Catalytic converter	Reference page for each part inspection
PCV valve		X				17-12-2
Purge control solenoid valve			X			17-16
2-way valve			X			Fuel (Group 13)
MPI system component			X	X		Fuel (Group 13)
Catalytic converter					X	17-20
EGR valve					X	17-18
EGR control solenoid valve					X	17-19

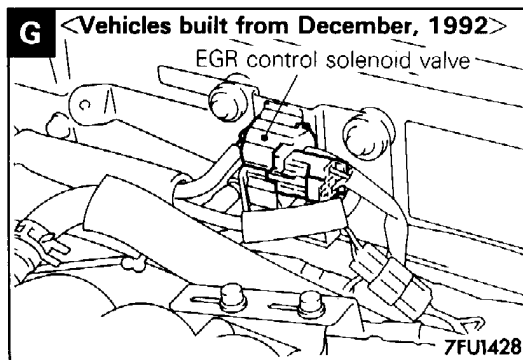
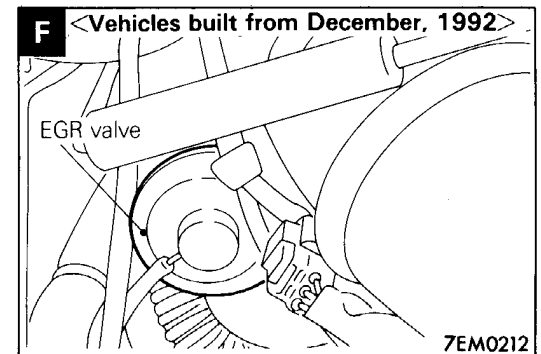
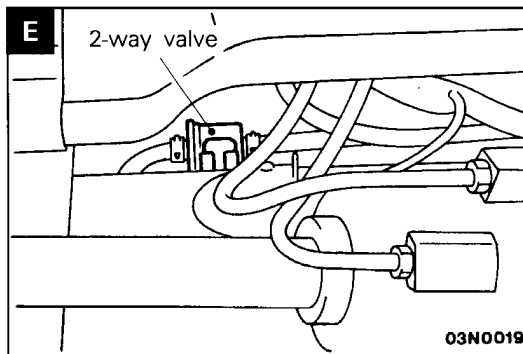
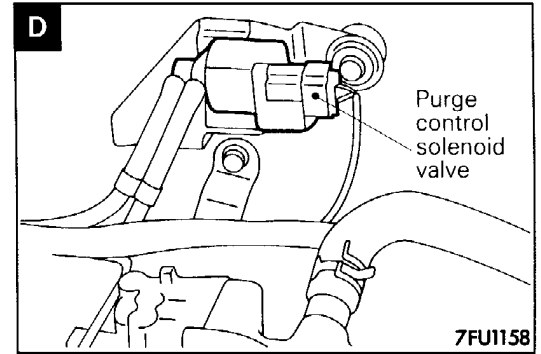
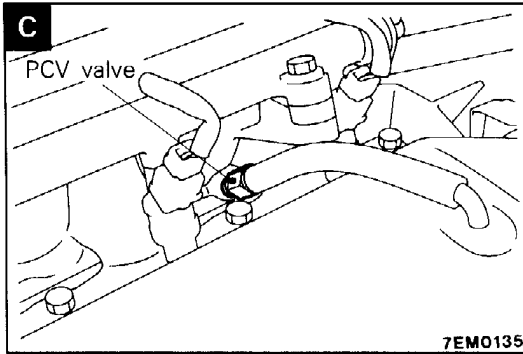
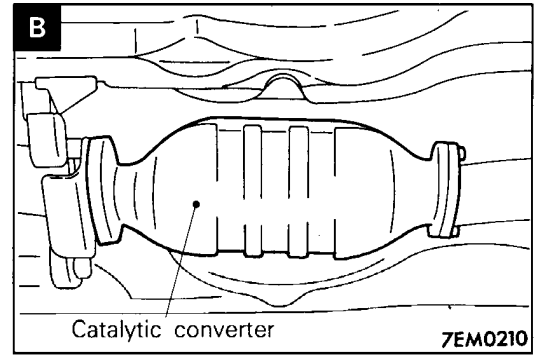
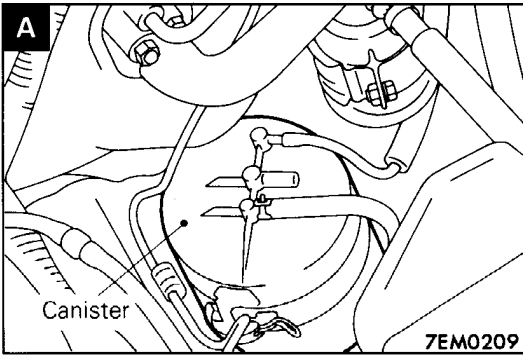
COMPONENT LAYOUT <SOHC>



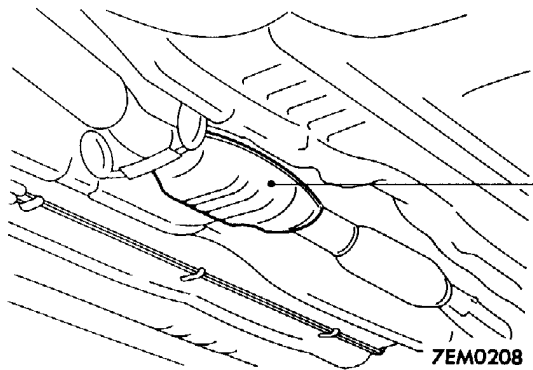
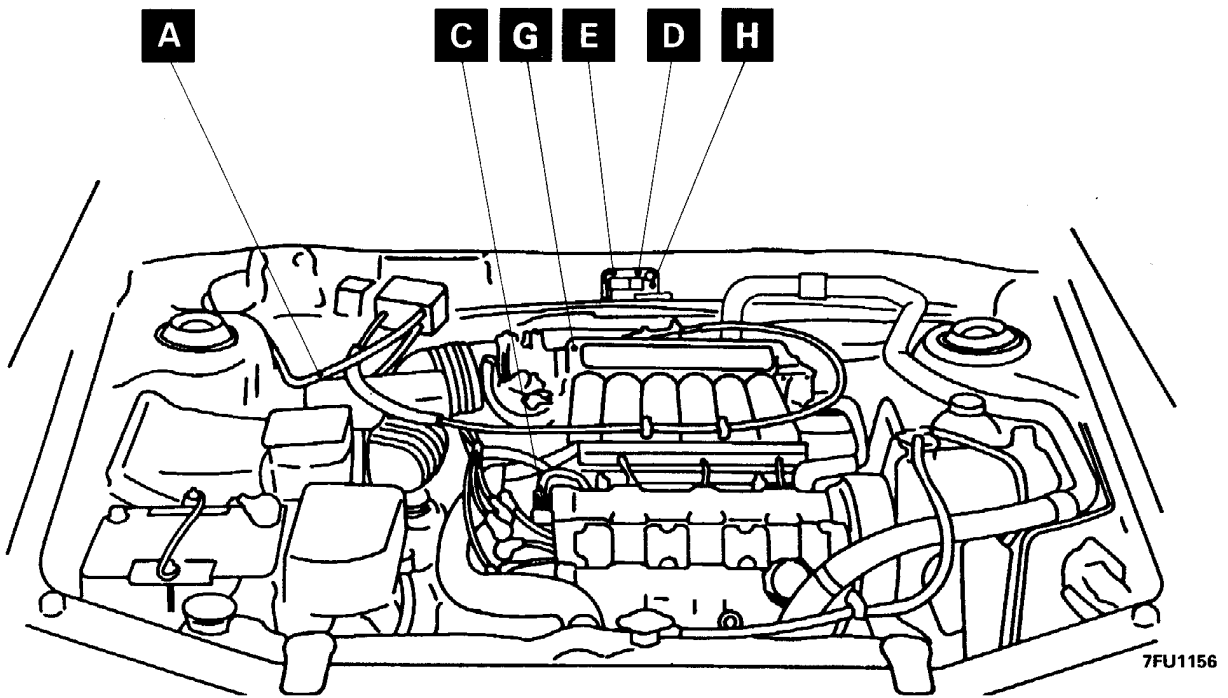
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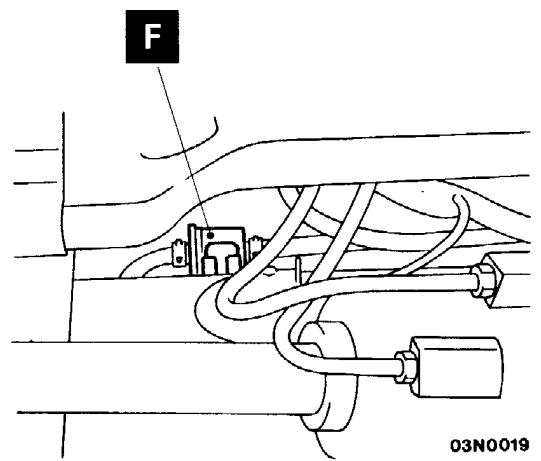
Parts name	Symbol
Canister	A
Catalytic converter	B
PCV valve	C
Purge control solenoid valve	D
2-way valve	E
EGR valve	F
EGR control solenoid valve	G



COMPONENT LAYOUT <DOHC>

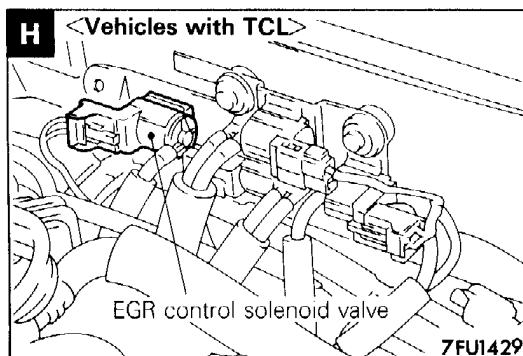
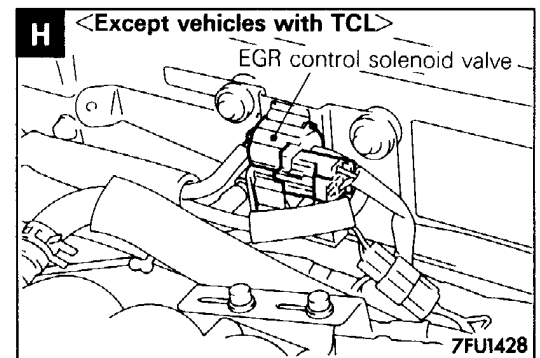
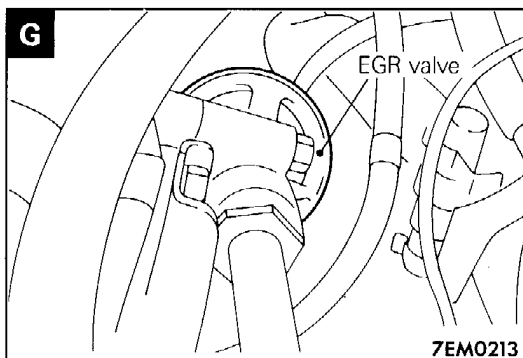
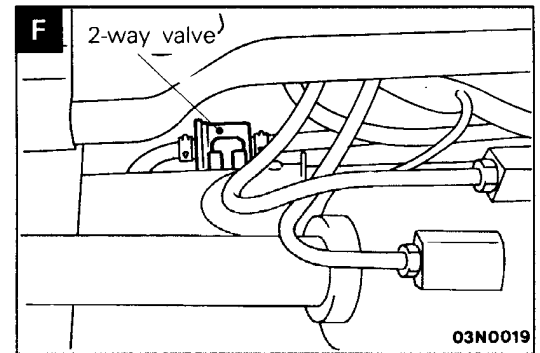
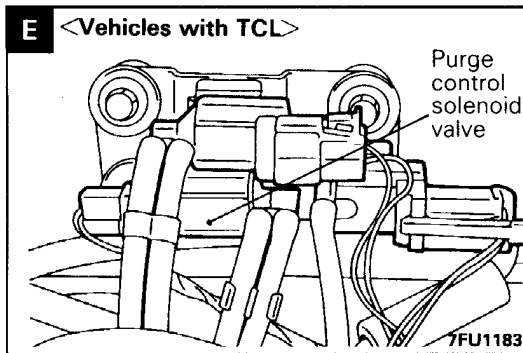
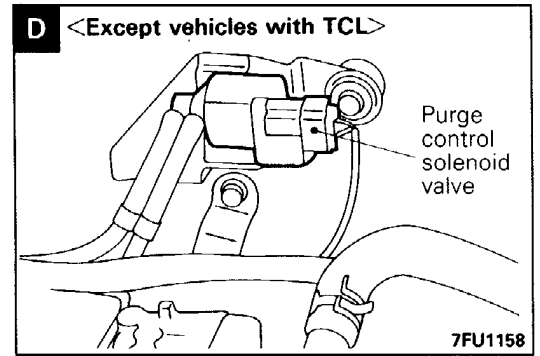
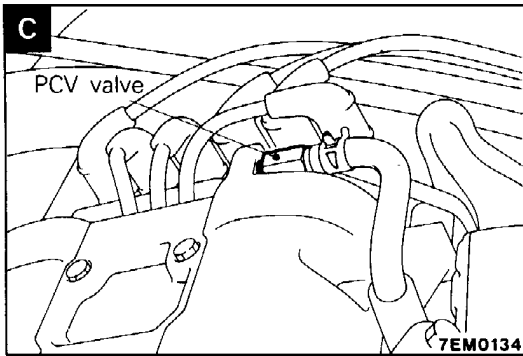
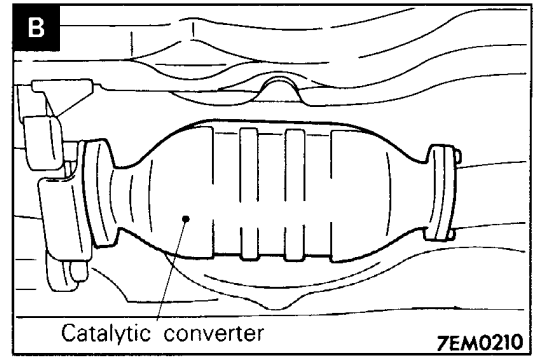
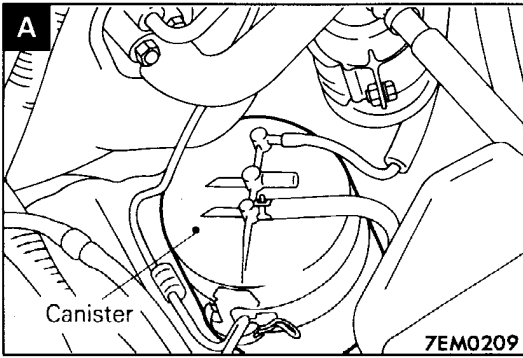


B

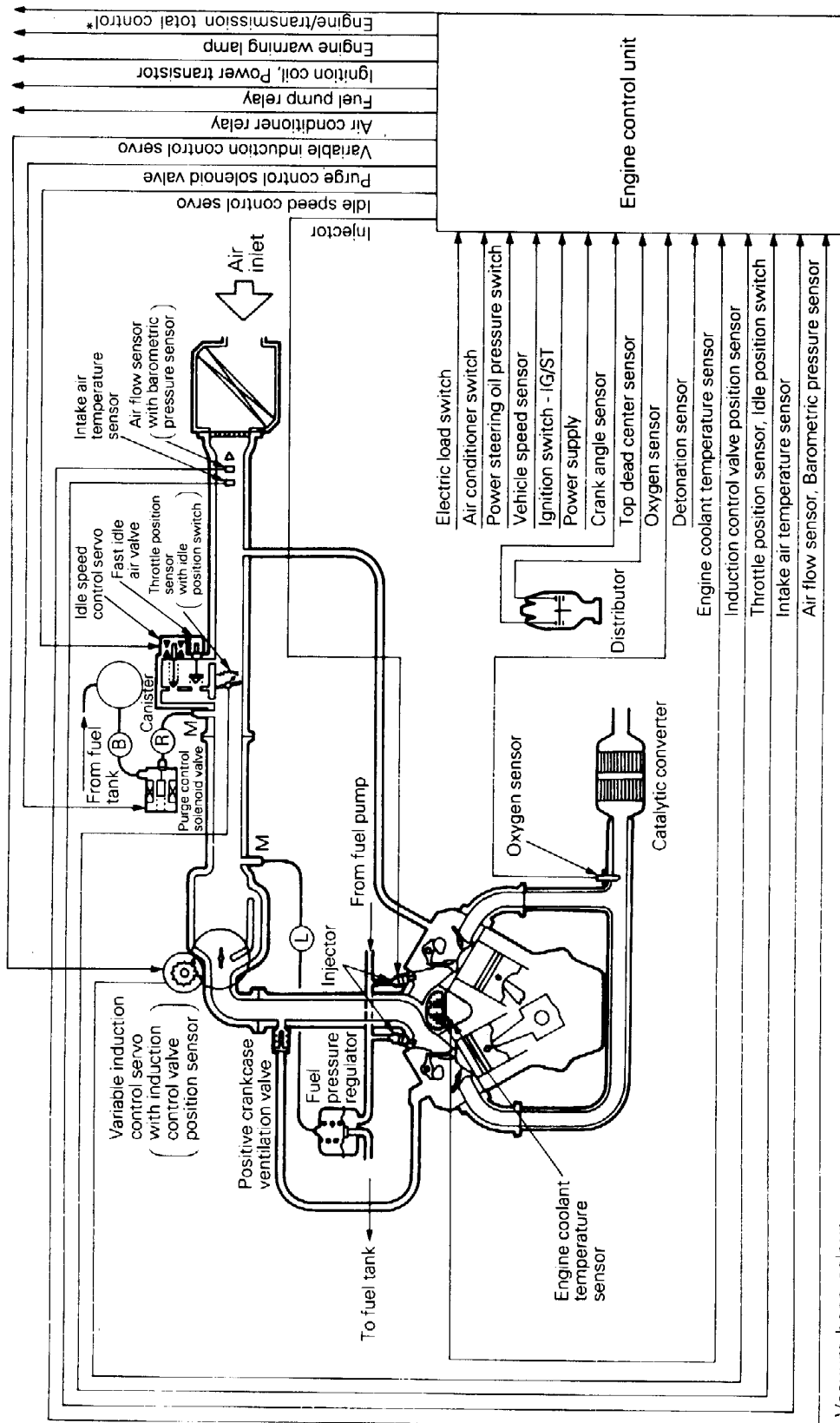


F

Parts name	Symbol
Canister	A
Catalytic converter	B
PCV valve	C
Purge control solenoid valve	D, E
2-way valve	F
EGR valve	G
EGR control solenoid valve	H



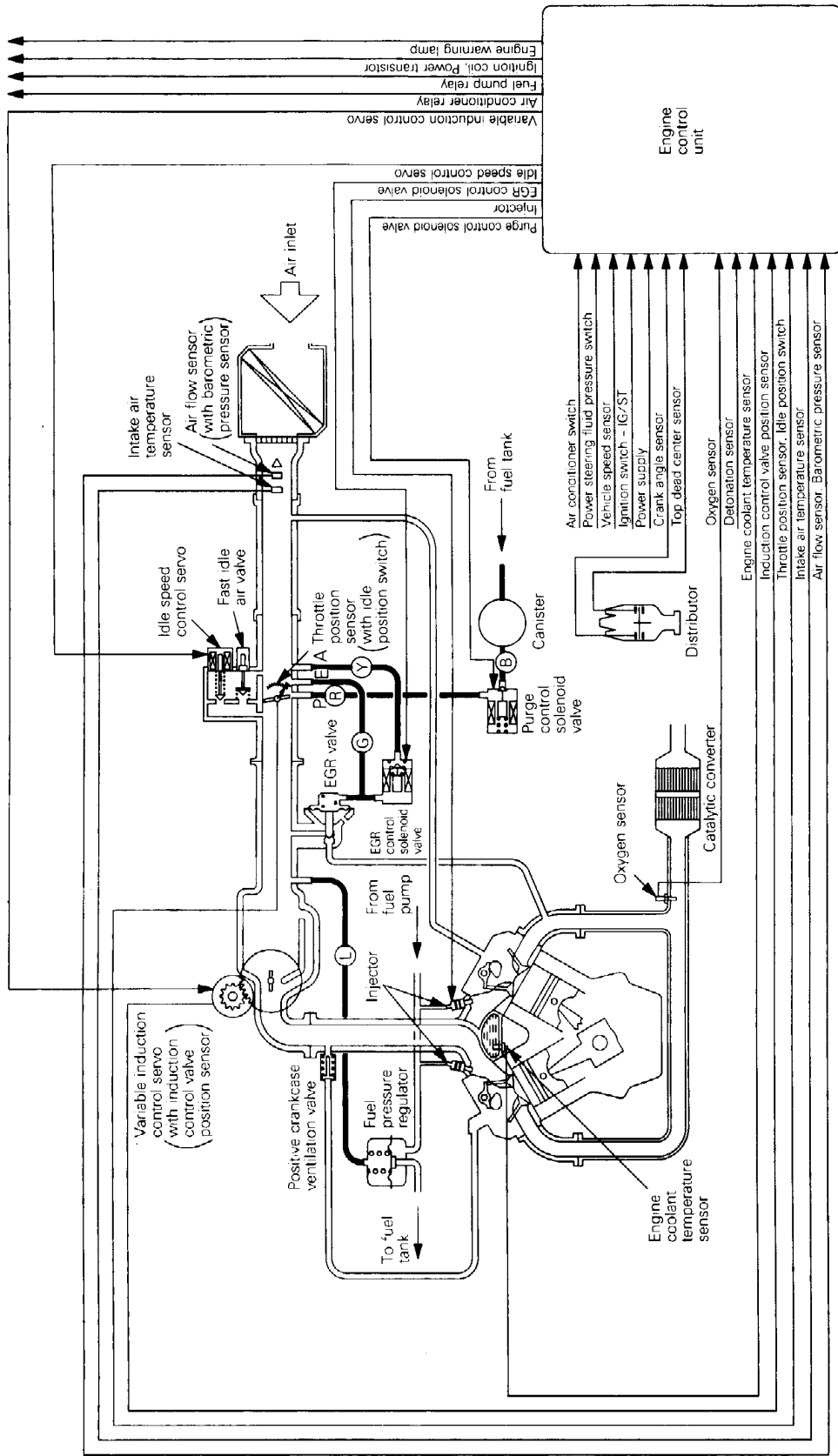
VACUUM HOSE PIPING DIAGRAM
 <SOHC - Vehicles built up to November, 1992>



Vacuum hose colour
 B: Black
 L: Light blue
 R: Red

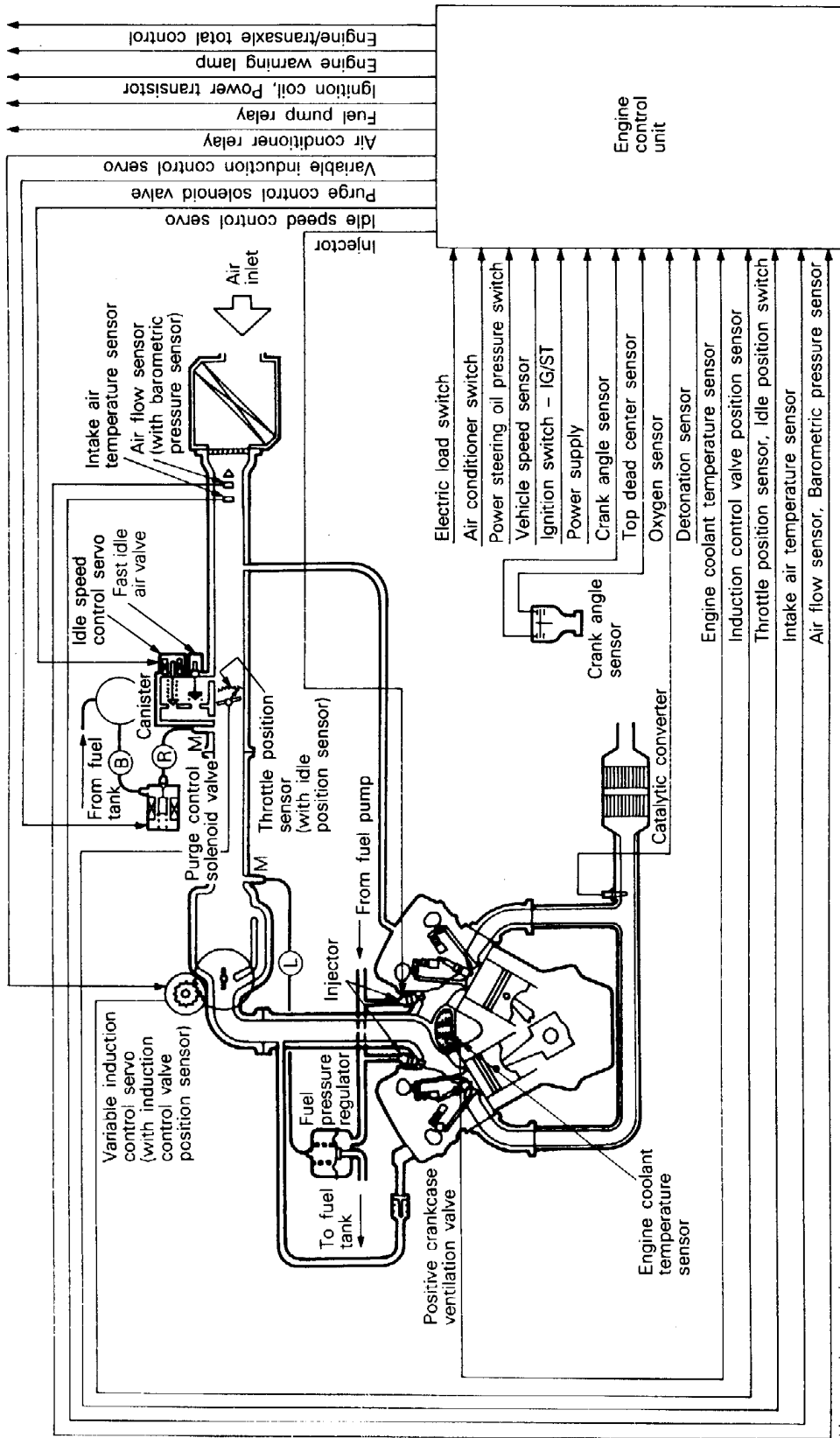
NOTE
 *: Vehicles built from December, 1991

<SOHC – Vehicles built from December, 1992>



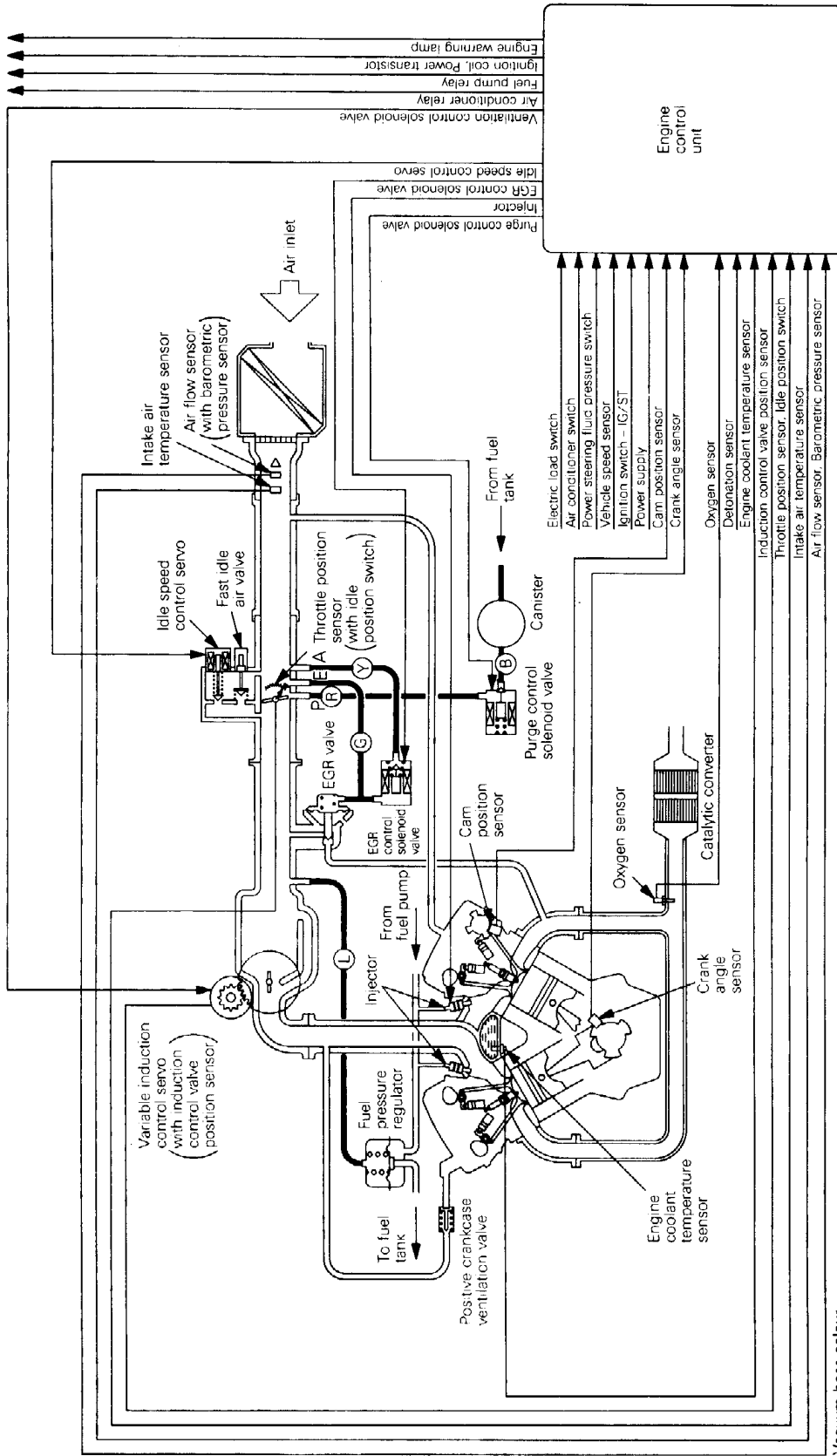
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<DOHC – except vehicles with TCL – Vehicles built up to November, 1992>



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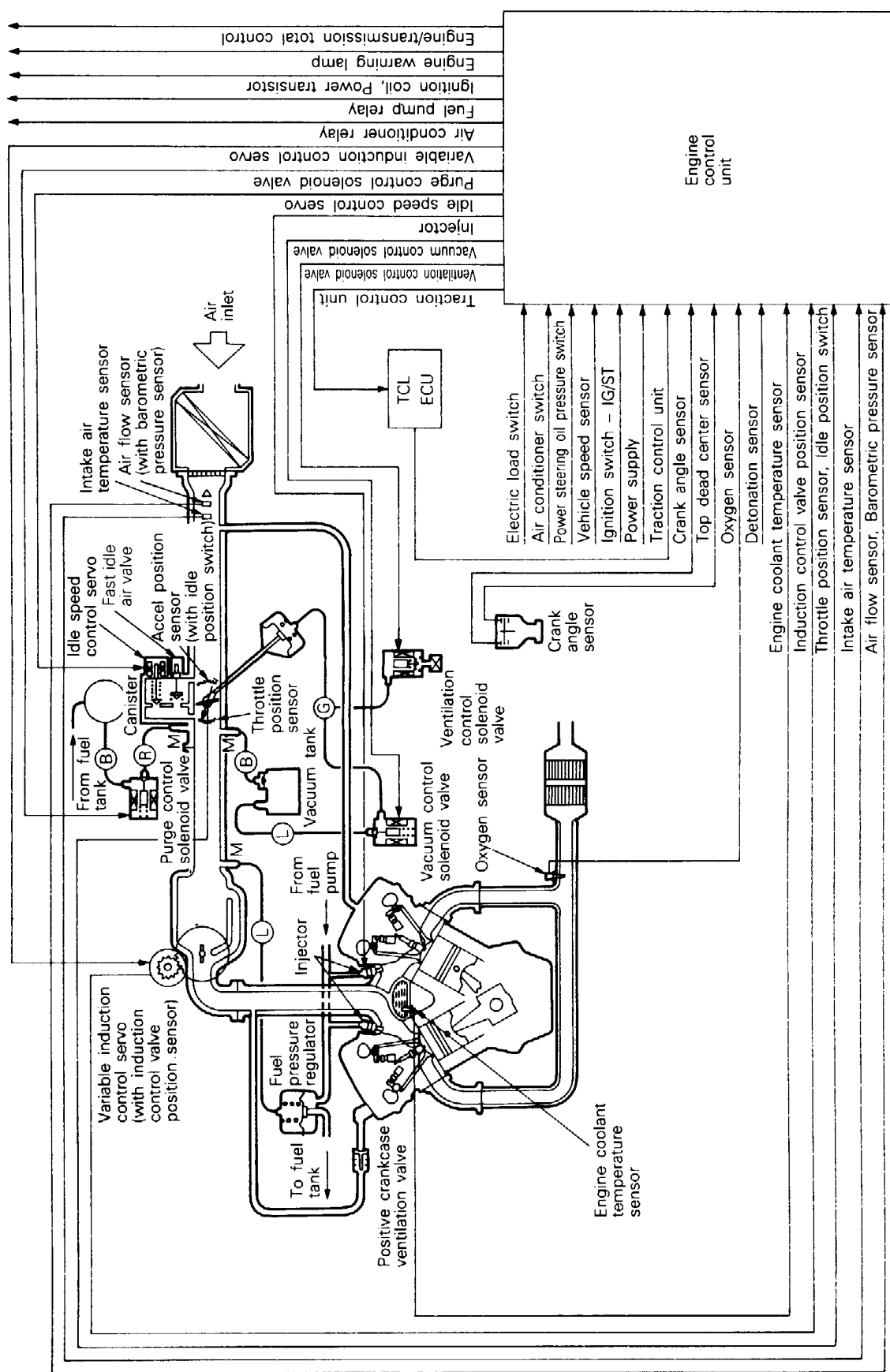
<DOHC – except vehicles with TCL – Vehicles built from December, 1992>



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

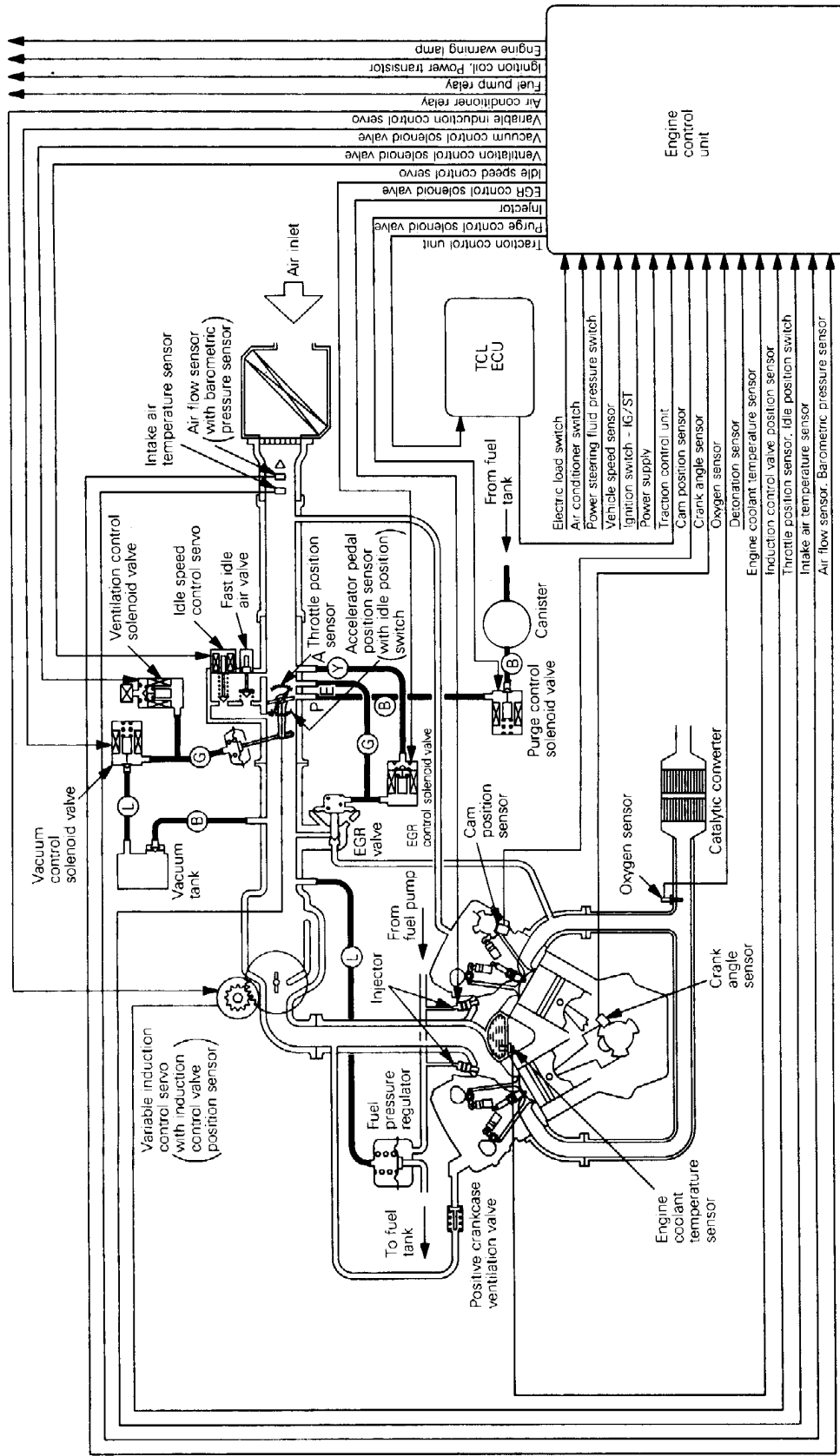
◁ Vehicles with TCL – Vehicles built from December, 1991 up to November, 1992 ▷



- Vacuum hose colour
- B: Black
- G: Green
- L: Light blue
- R: Red
- Y: Yellow

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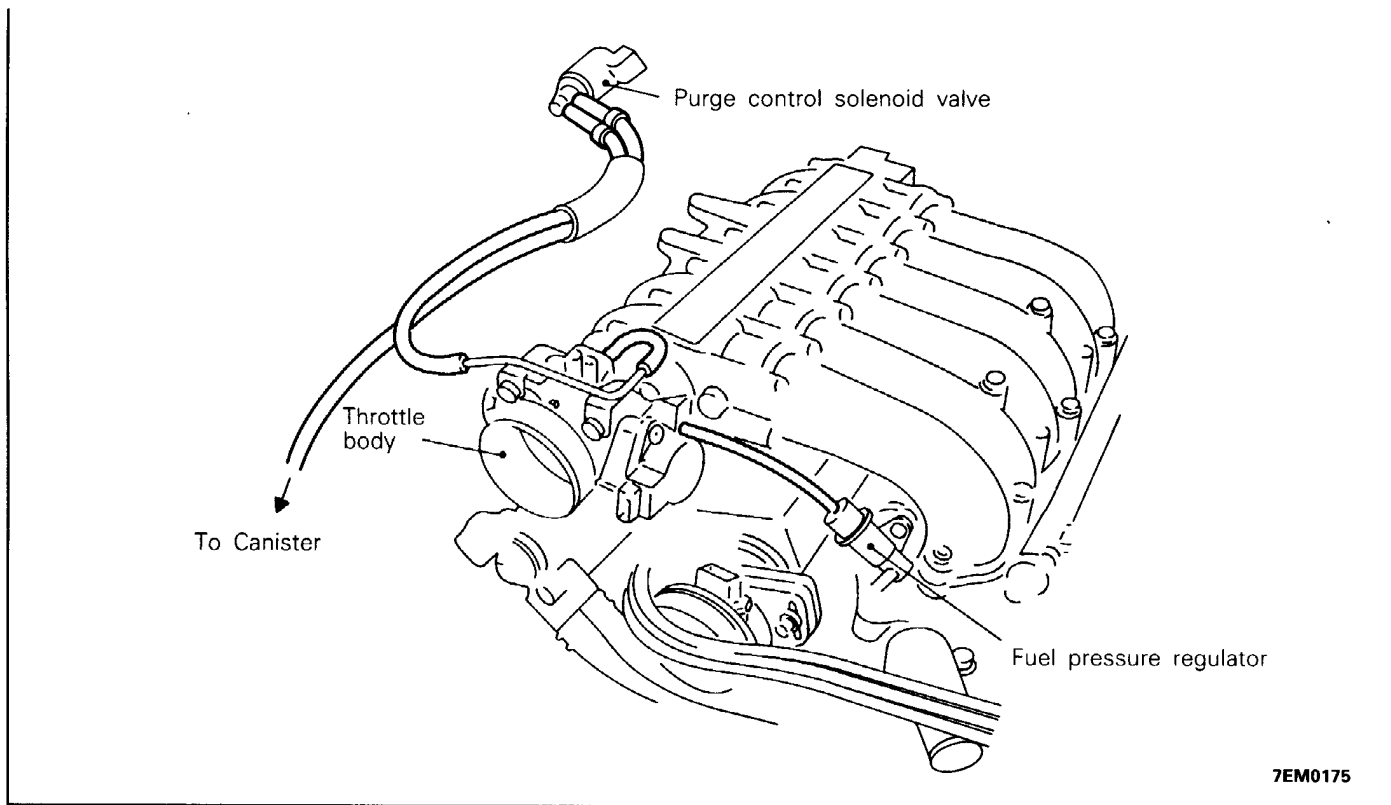
◁ Vehicles with TCL – Vehicles built from December, 1992 ▷



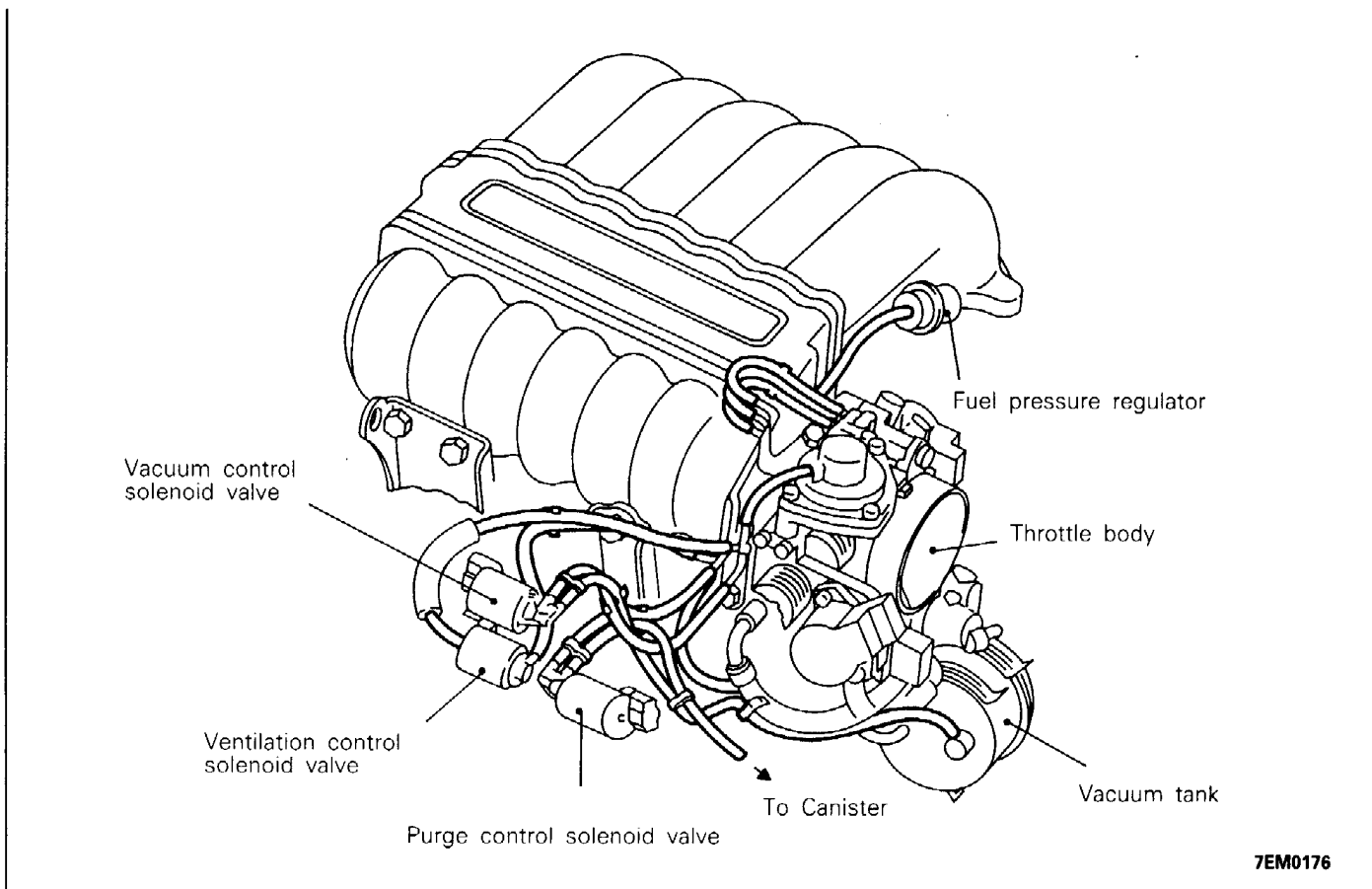
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VACUUM HOSE LAYOUT

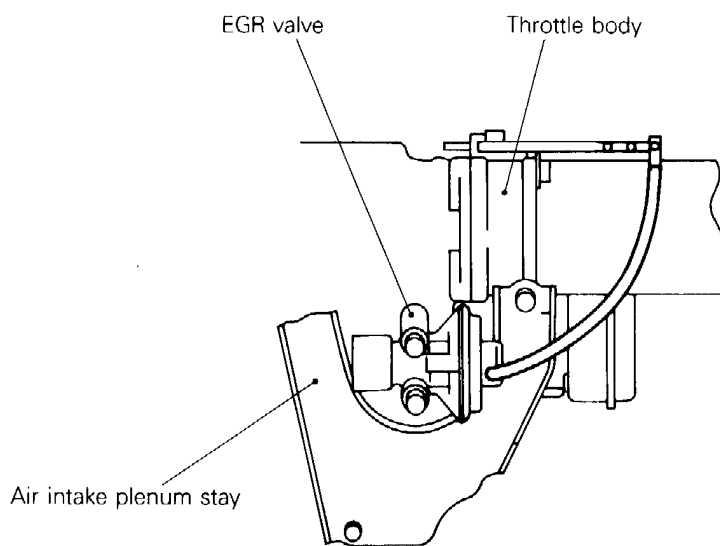
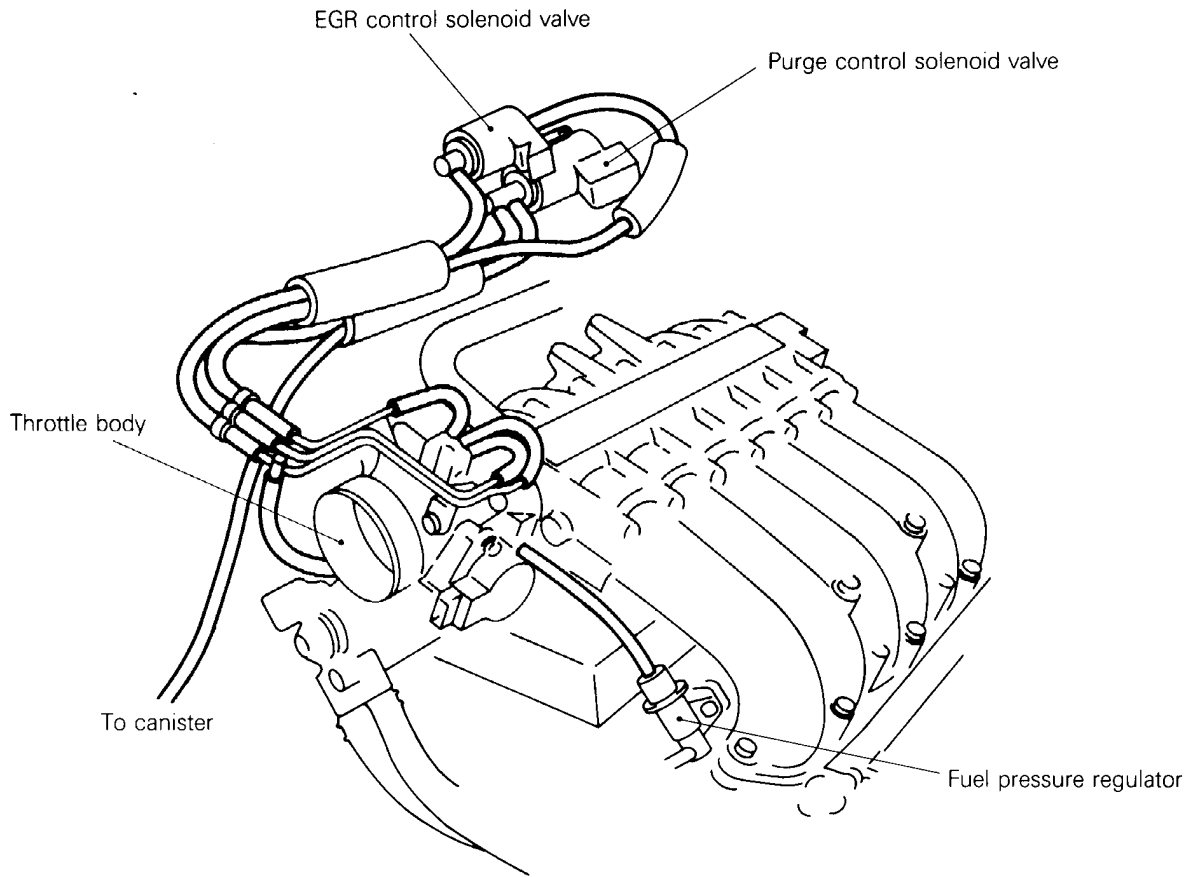
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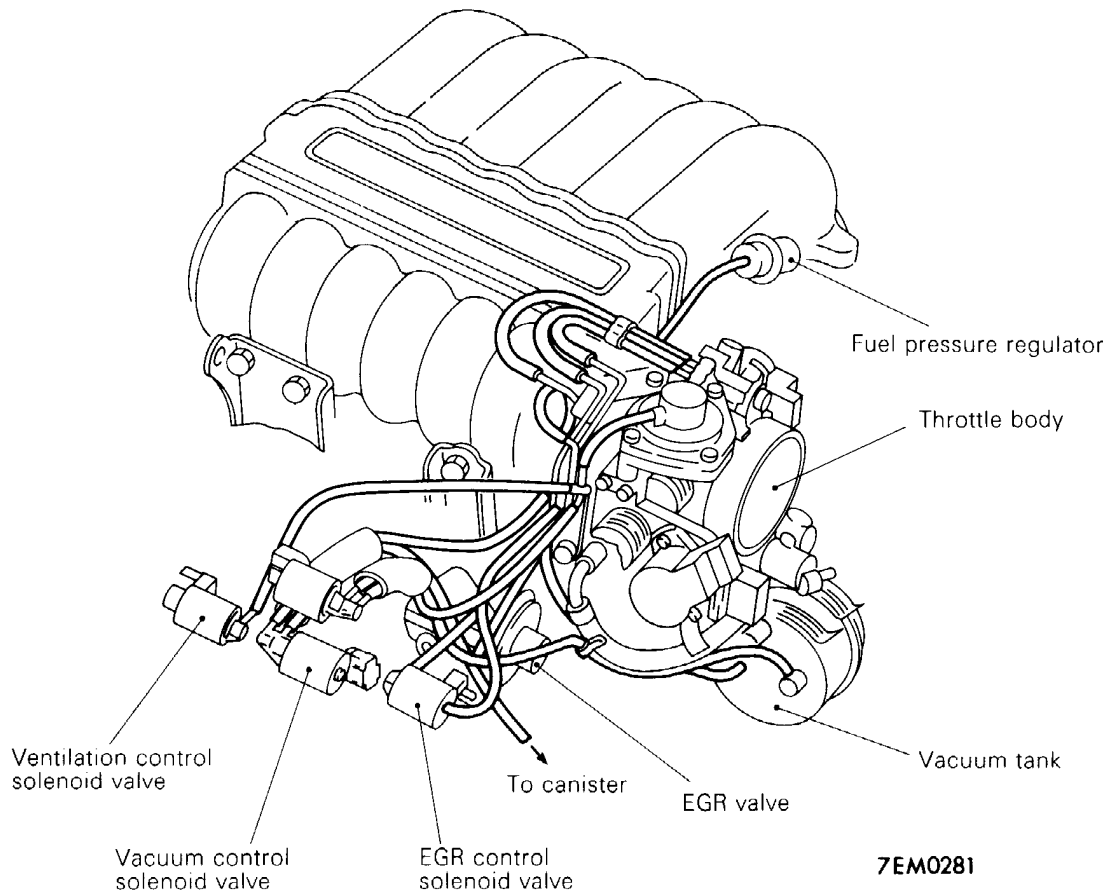
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<Vehicles with TCL – Vehicles built from December, 1992>



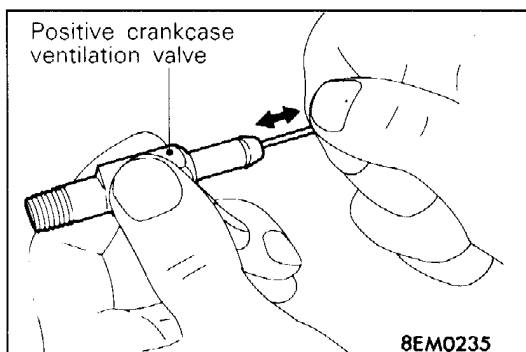
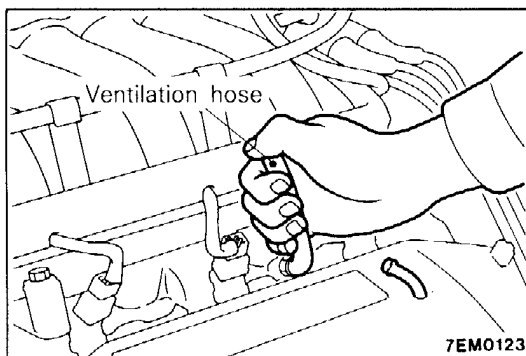
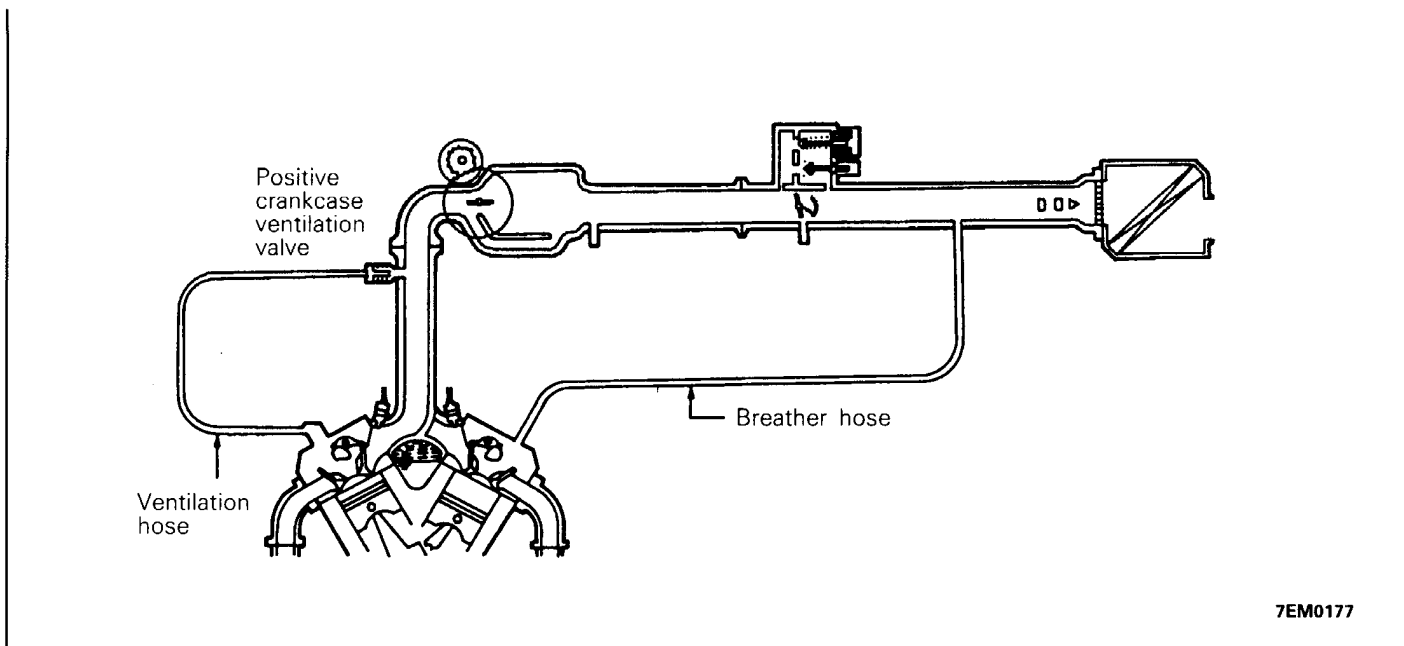
CAUTIONS ON INSPECTION

E17FFAE

1. Inspect the various devices only after completing engine adjustment.
2. Inspect the hoses to make sure there are no disconnections, connection errors or damage.
3. Make sure there is no hose, pipe or port clogging, or cracks or damage in the hoses and pipes.
4. When replacing device hoses, always mount the replacement hose in the same position (direction) as the original.
5. When finished, check the connections as described in the service manual or service label.

CRANKCASE EMISSION CONTROL SYSTEM
<SOHC>

E17FAAL

**POSITIVE CRANKCASE VENTILATION SYSTEM System Inspection**

- (1) Remove the ventilation hose from the rocker cover.
- (2) Start the engine and run at idle.
- (3) Place a finger on the ventilation hose and confirm that negative pressure of the intake manifold is felt.

NOTE

At this moment, the plunger in the positive crankcase ventilation valve moves forward and backward.

- (4) If negative pressure is not felt, clean the positive crankcase ventilation valve or replace it.
- (5) Tighten the positive crankcase ventilation valve with the specified torque.

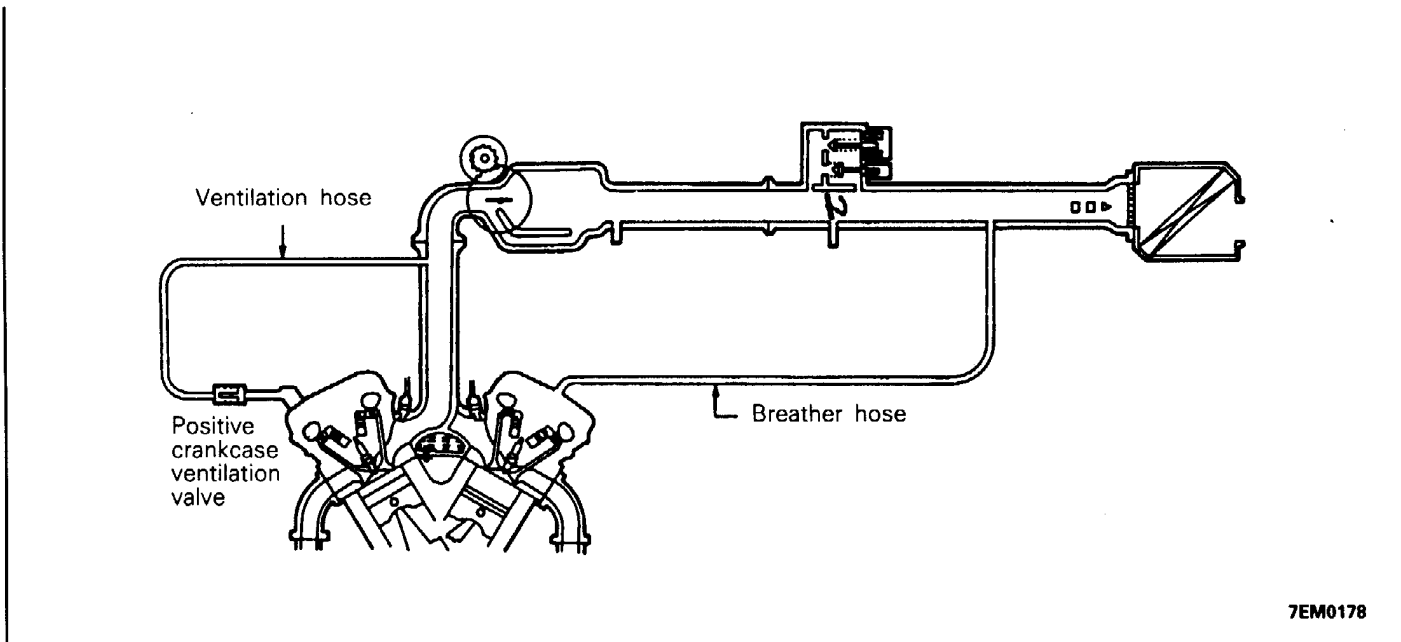
Tightening torque: 10 Nm (1.0 kgm, 7.2 ft.lbs.)

Positive Crankcase Ventilation (PCV) Valve Inspection

- (1) Slide in a narrow stick from the nipple side of the positive crankcase ventilation valve and move it forward and backward to check the plunger movement.
- (2) If the plunger does not move, there is a clogging in the positive crankcase ventilation valve. In this case, clean or replace the valve.

CRANKCASE EMISSION CONTROL SYSTEM <DOHC>

E17FAAM



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POSITIVE CRANKCASE VENTILATION SYSTEM System Inspection

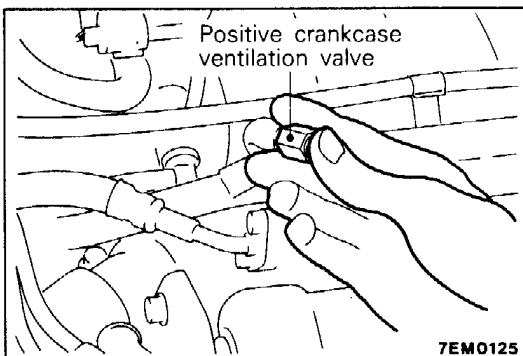
- (1) Remove the ventilation hose from the positive crankcase ventilation valve.
- (2) Remove the positive crankcase ventilation valve from the rocker cover.
- (3) Reinstall the positive crankcase ventilation valve at the ventilation hose.
- (4) Start the engine and run at idle.
- (5) Place a finger at the opening of the positive crankcase ventilation valve and confirm that negative pressure of the intake manifold is felt.

NOTE

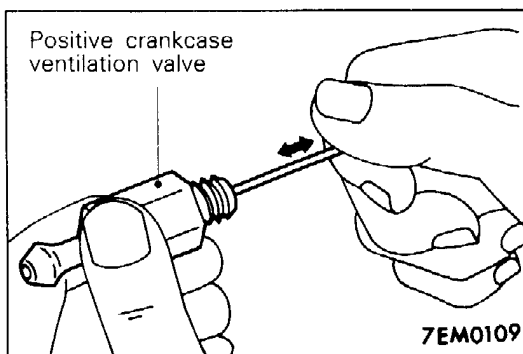
At this moment, the plunger in the positive crankcase ventilation valve moves forward and backward.

- (6) If negative pressure is not felt, clean the positive crankcase ventilation valve or replace it.
- (7) Tighten the positive crankcase ventilation valve with the specified torque.

Tightening torque: 10 Nm (1.0 kgm, 7.2 ft.lbs.)



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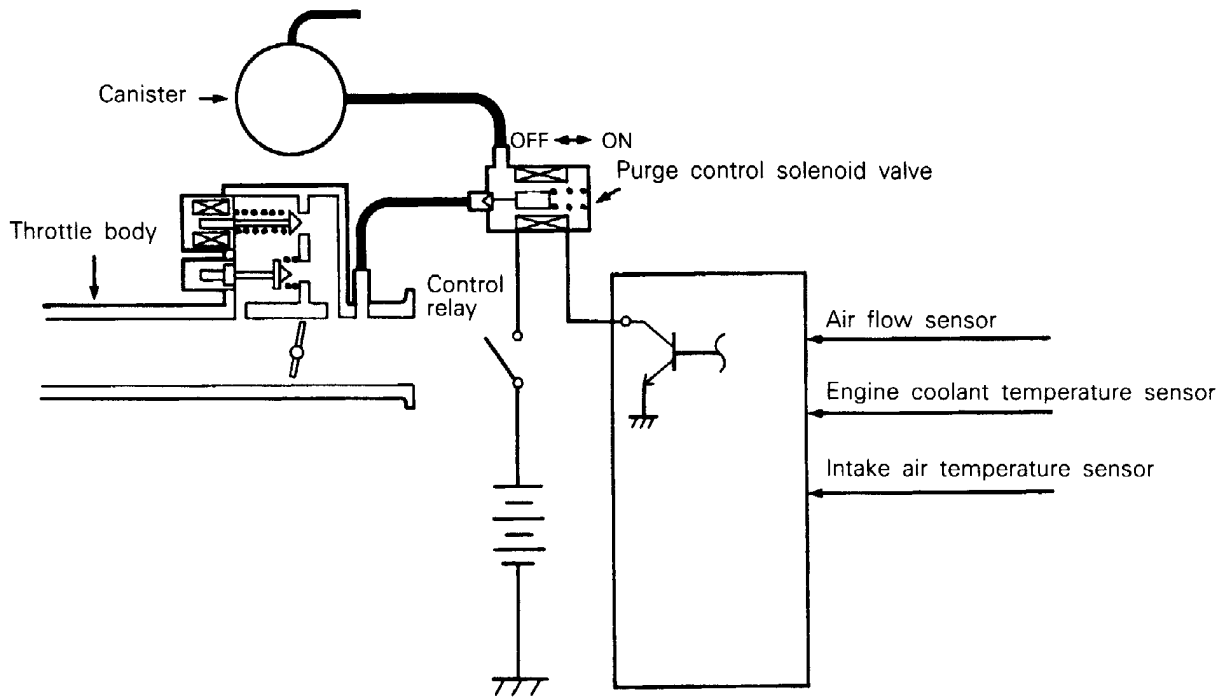
Positive Crankcase Ventilation (PCV) Valve Inspection

- (1) Slide in a narrow stick at the threaded side of the positive crankcase ventilation valve and make sure that the plunger moves.
- (2) If the plunger does not move, there is a clogging in the positive crankcase ventilation valve. In this case, clean or replace the valve.

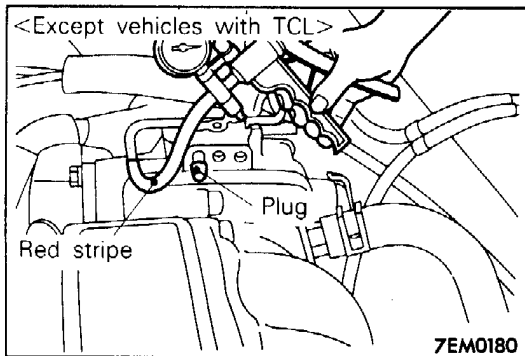
EVAPORATIVE EMISSION CONTROL SYSTEM
PURGE CONTROL SYSTEM

E17FBAZ

System Inspection



7EM0179

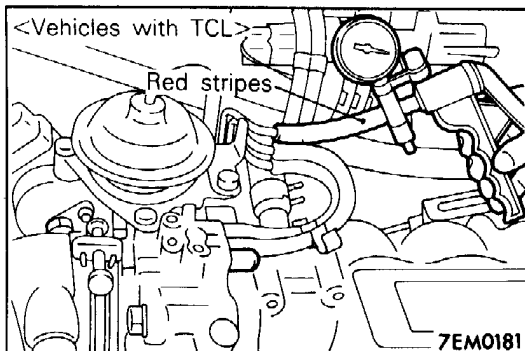


7EM0180

- (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 was removed.
- (3) Inspect the following items with the engine cold [Engine coolant temperature: 40°C (104°F) or less] and hot [Engine coolant temperature: 80°C (176°F) or higher].

When engine is cold

Vacuum	Engine status	Normal condition
400 mm Hg (15.7 in.Hg.)	3,000 r/min.	Vacuum is maintained



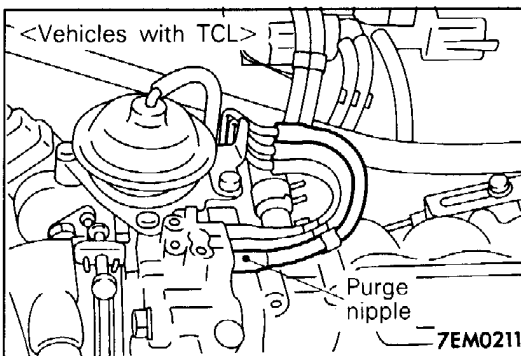
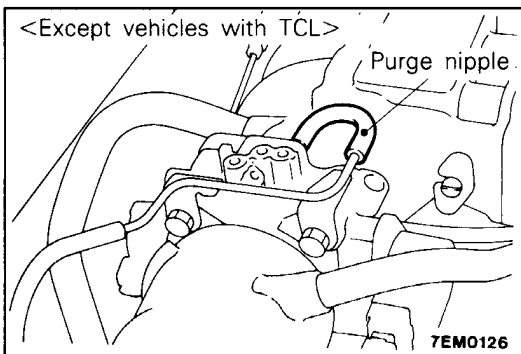
7EM0181

When engine is hot

Vacuum	Engine status	Normal condition
400 mm Hg (15.7 in.Hg.)	Idling	Vacuum is maintained
	3,000 r/min.	Vacuum will leak for approximately 3 minutes after the engine is started. After 3 minutes have elapsed, the vacuum will be maintained momentarily, after which it will again leak.*

NOTE

* The vacuum will leak continuously if the barometric pressure is approximately 580 mmHg (22.8 in.Hg.) or less, or the temperature of the intake air is approximately 50°C (122°F) or higher.



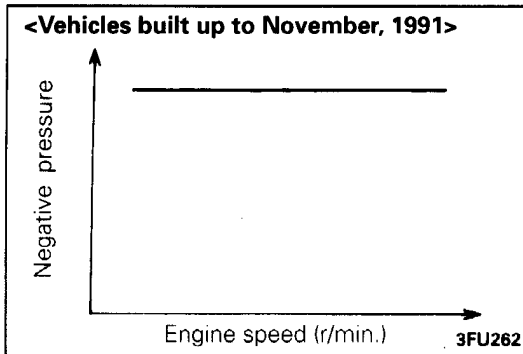
Purge Port Vacuum Inspection

Check Condition

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

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

17-15-1 EMISSION CONTROL – Service Adjustment Procedures

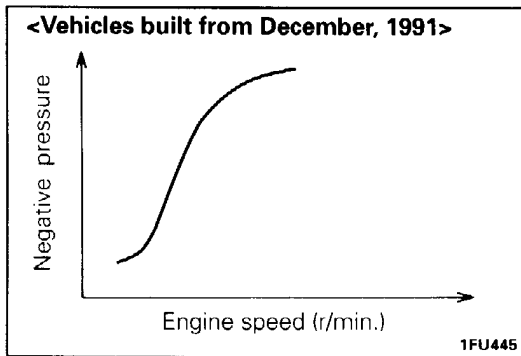


(2) **<Vehicles built up to November, 1991>**

Start the engine and check to see that, after raising the engine speed by racing the engine, purge vacuum is kept constant regardless of the increased engine speed.

NOTE

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



<Vehicles built from December, 1991>

Start the engine and check to see that, after raising the engine speed by racing the engine, purge 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 purge port may be clogged and require cleaning.

Purge Control Solenoid Valve

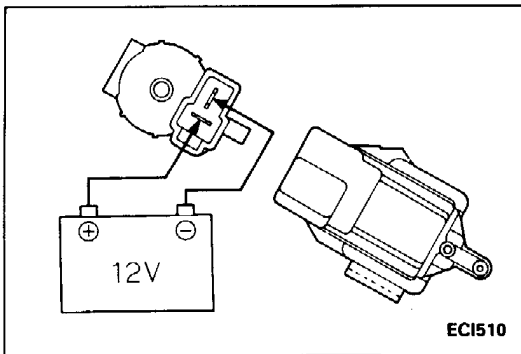
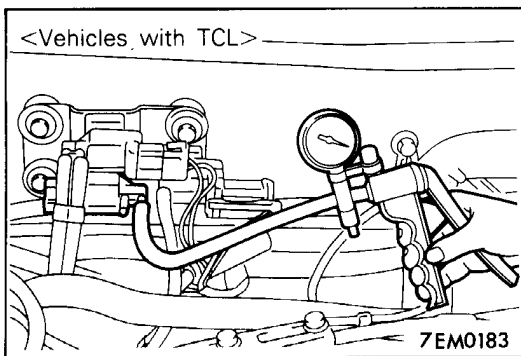
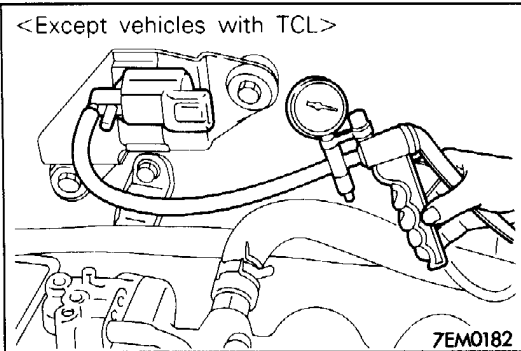
Inspection

NOTE

When disconnecting the vacuum hose, always make a mark so that the hose can be reconnected at original position.

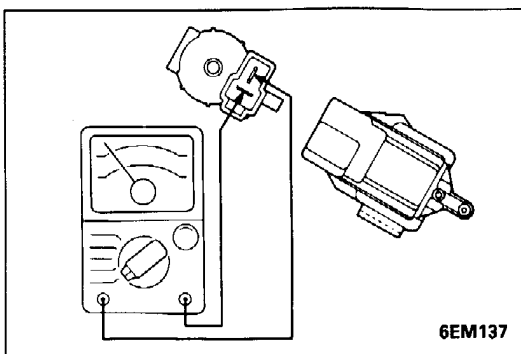
- (1) Disconnect the vacuum hose (black, red stripes) from the solenoid valve.
- (2) Disconnect the harness.

- (3) Connect a hand vacuum pump to the nipple to which the vacuum hose with red stripes was connected.



- (4) Check air tightness by applying a vacuum with voltage applied directly from the battery to the purge control solenoid valve and without applying voltage.

Battery voltage	Normal condition
Applied	Vacuum leaks
Not applied	Vacuum maintained

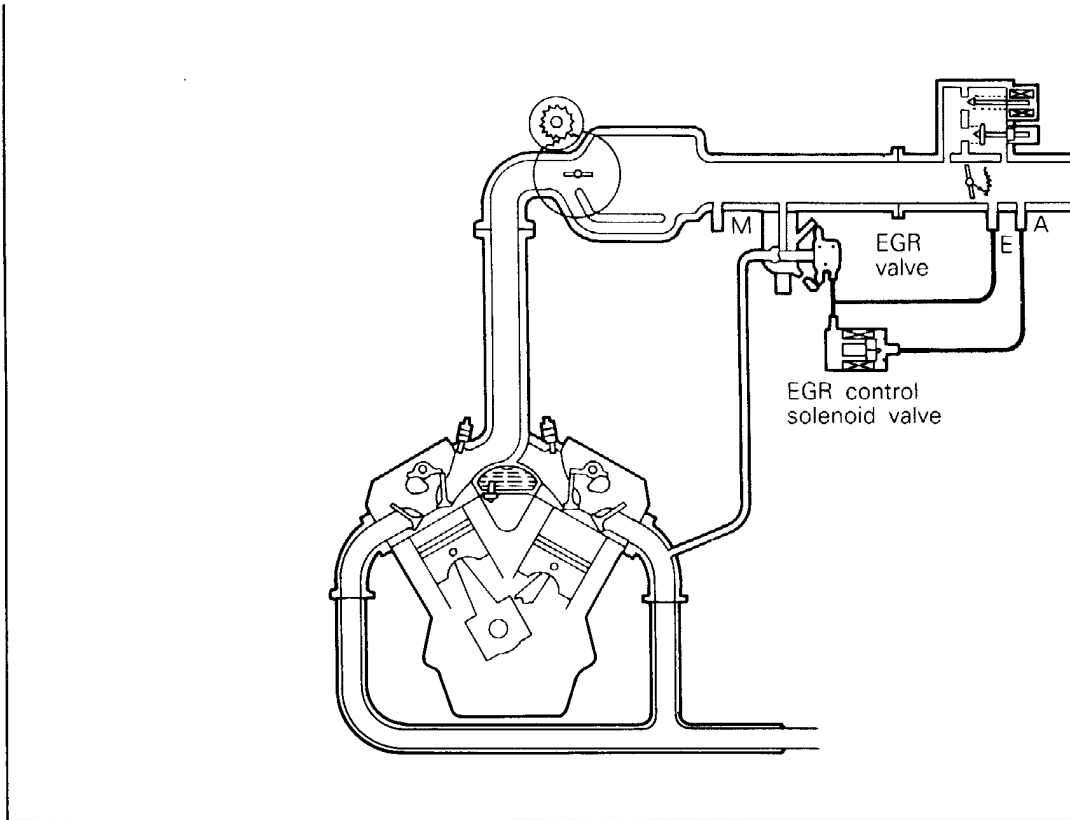


- (5) Measure the resistance between the terminals of the solenoid valve.

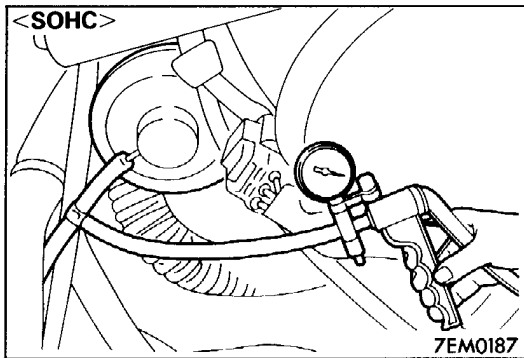
Standard value: 36–44 Ω [at 20°C (68°F)]

EXHAUST EMISSION CONTROL SYSTEM <Vehicles built from December, 1992>
EXHAUST GAS RECIRCULATION (EGR) SYSTEM

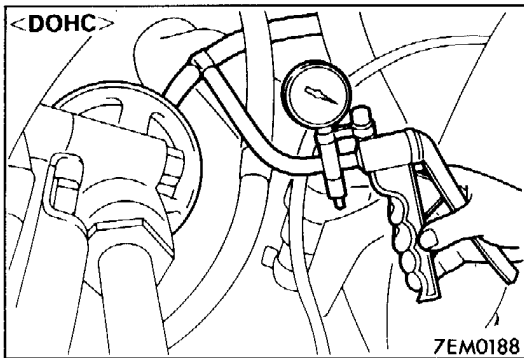
EGR System Inspection



7EM0186



7EM0187



7EM0188

- (1) Disconnect the green striped vacuum hose from the EGR valve, and using a three-way terminal, connect a hand vacuum pump as shown.
- (2) Perform checks as follows both for when the engine is not hot [engine coolant temperature 20°C (68°F) or lower] and when the engine is hot [engine coolant temperature 80°C (176°F) or higher].

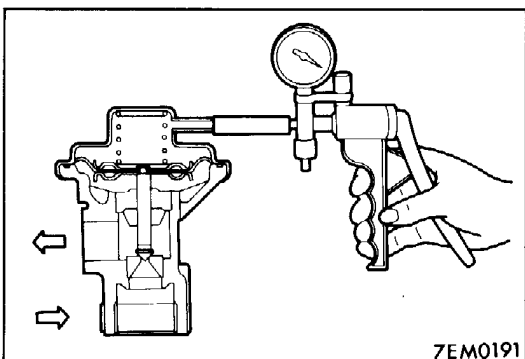
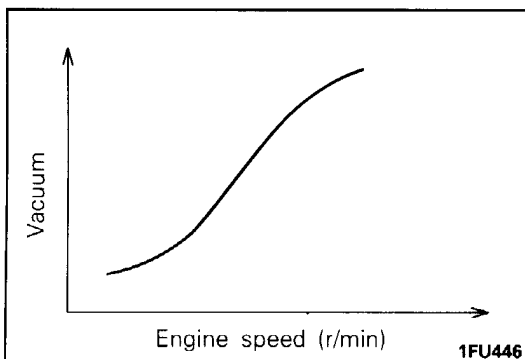
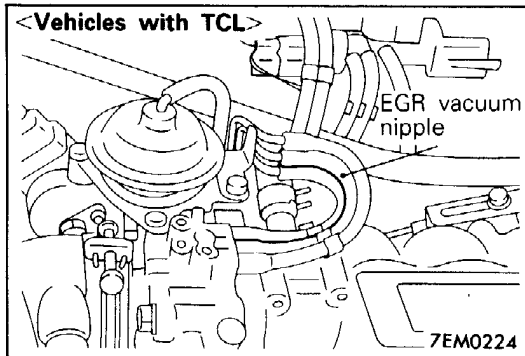
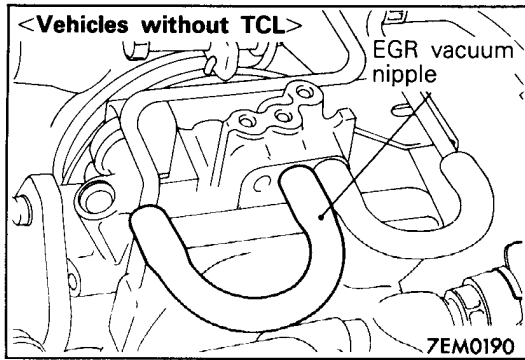
When engine is not hot

Engine operating condition	Normal result
Quickly depress the accelerator pedal to race the engine.	No change in vacuum is detected (atmospheric pressure).

When engine is hot

Engine operating condition	Normal result
Quickly depress the accelerator pedal to race the engine.	Vacuum increases to 98 mmHg (3.9 in.Hg) or higher level.

- (3) Remove the three-way terminal and connect the hand vacuum pump directly to the EGR valve.
- (4) Apply a vacuum of 230 mmHg (9.1 in.Hg) to the EGR valve while running the engine at idle, and make sure that the engine stalls or the idle speed becomes unstable.



EGR Valve Control Vacuum Inspection

Check Condition

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

- (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, the 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 vacuum port may be clogged and require cleaning.

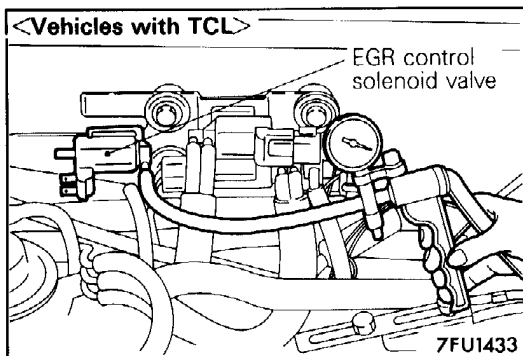
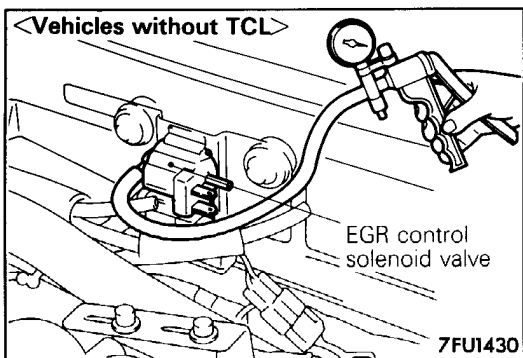
EGR Valve Inspection

- (1) Remove the EGR valve and inspect for sticking, carbon deposits, etc. If found, clean with a suitable solvent so that the valve seats correctly.
- (2) Connect a hand vacuum pump to the EGR valve.
- (3) Apply a vacuum of 300 mmHg (12 in.Hg) and make sure that airtightness is maintained.
- (4) Check whether or not air is blown out of the EGR air passage.

Vacuum	Normal condition
40 mmHg (1.6 in.Hg)	Air is not blown out.
240 mmHg (9.4 in.Hg)	Air is blown out.

Caution

When mounting the EGR valve, use a new gasket and tighten to a torque of 18 Nm (1.8 kgm, 13 ft.lbs.).



EGR CONTROL SOLENOID VALVE

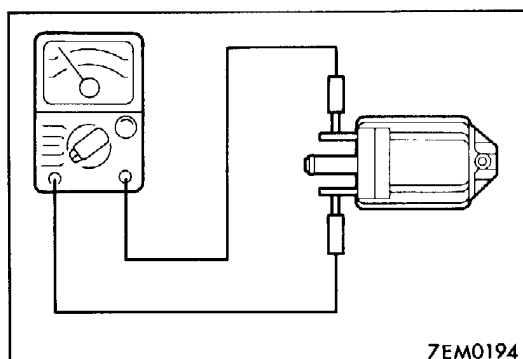
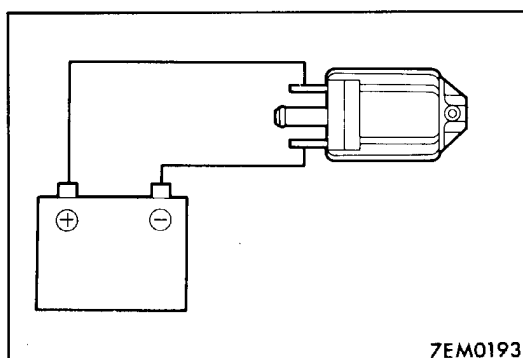
Inspection

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 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)]

CATALYTIC CONVERTER

REMOVAL AND INSTALLATION

E17YA--

For removal and installation procedures, refer to GROUP 15 – Exhaust Pipes and Main Muffler.

INSPECTION

E17YCAAa

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.