

# ENGINE AND EMISSION CONTROL

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# ENGINE CONTROL SYSTEM

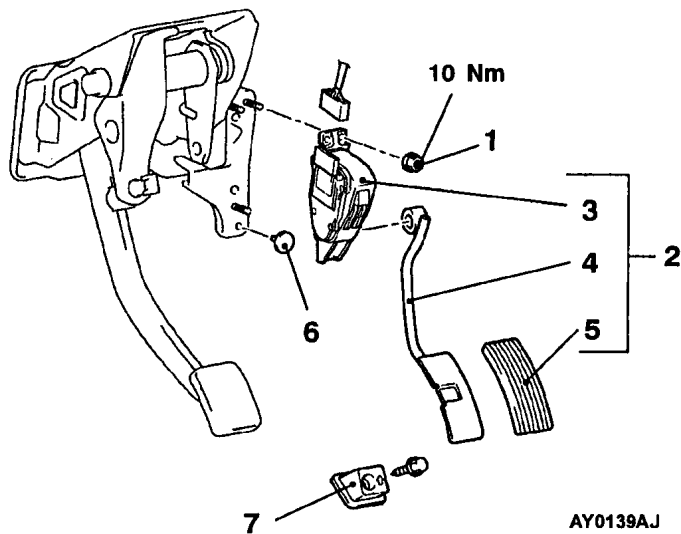
## GENERAL

### OUTLINE OF CHANGE

The following service procedures have been established to correspond to the addition of the F9Q diesel engine. Other service procedures are the same as before.

## ACCELERATOR PEDAL < F9Q >

### REMOVAL AND INSTALLATION



AY0139AJ

#### Removal steps

1. Accelerator pedal assembly mounting bolts or nuts
2. Accelerator pedal assembly
3. Accelerator pedal position sensor
4. Accelerator pedal
5. Pedal pad
6. Stopper
7. Accelerator pedal stopper

# EMISSION CONTROL SYSTEM

## GENERAL

### OUTLINE OF CHANGE

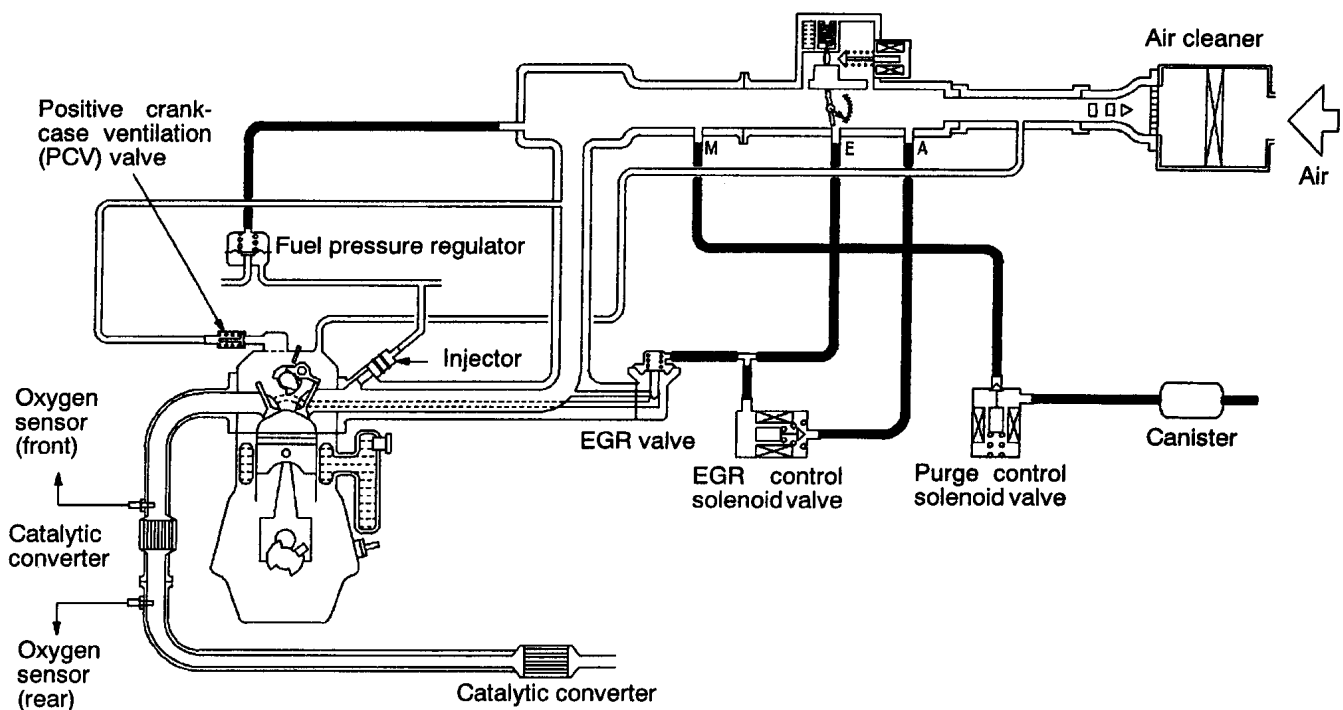
The following service procedures have been established to correspond to the following changes.

- The colours of the purge control vacuum hoses have been changed.
- EGR control vacuum hose piping has been changed. <MPI>
- The purge control ports have been relocated. <MPI>

## VACUUM HOSE

### VACUUM HOSE PIPING DIAGRAM

<MPI>



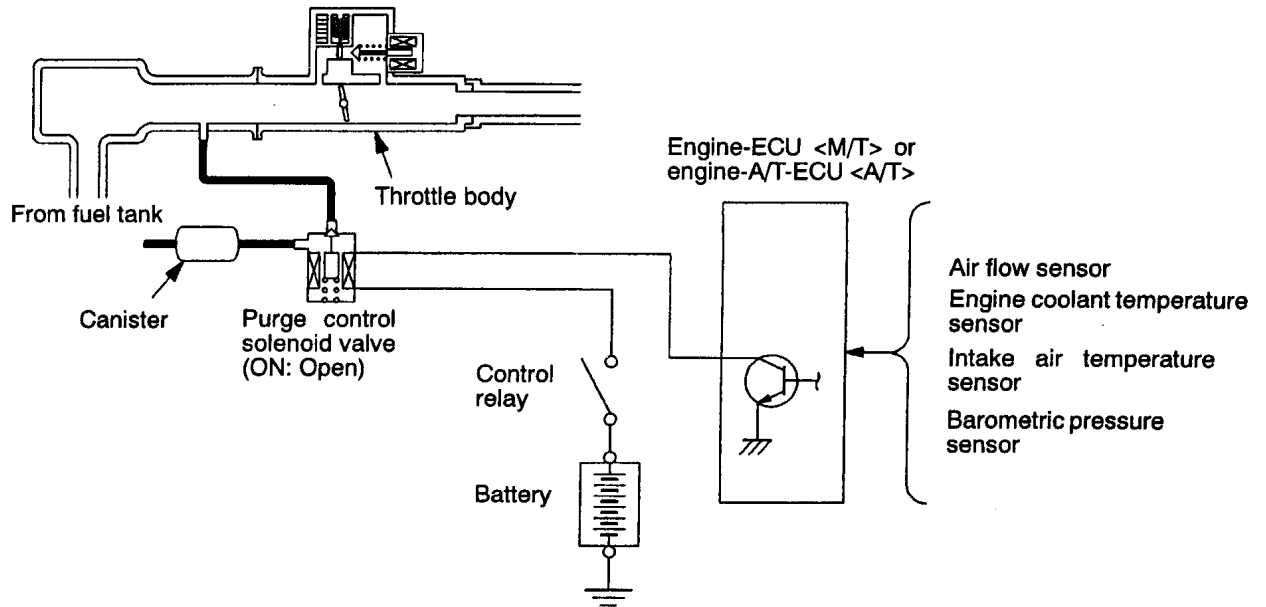
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# EVAPORATIVE EMISSION CONTROL SYSTEM

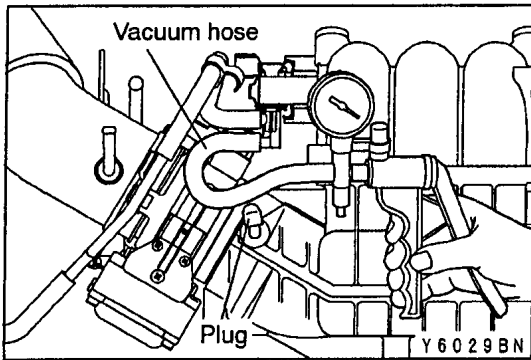
## SYSTEM DIAGRAM

The purge control port has been relocated.

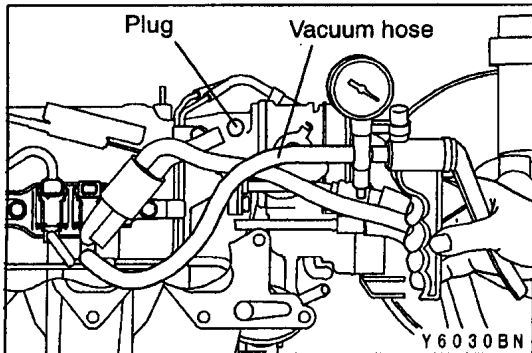
<MPI>



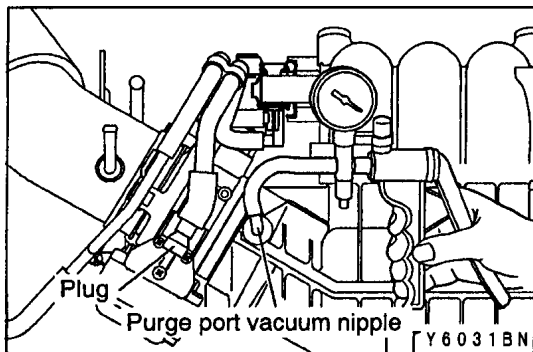
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**PURGE CONTROL SYSTEM CHECK <GDI>**

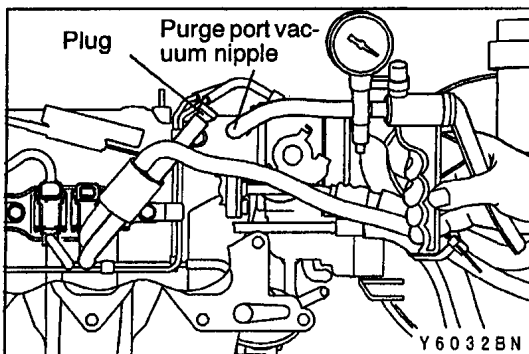
1. The red stripe on the vacuum hose has been discontinued. However, the inspection procedure is the same as before.

**PURGE CONTROL SYSTEM CHECK <MPI>**

1. The red stripe on the vacuum hose has been discontinued, and the vacuum port has been relocated. However, the inspection procedure is the same as before.

**PURGE PORT VACUUM CHECK <GDI>**

1. The red stripe on the vacuum hose has been discontinued. However, the inspection procedure is the same as before.

**PURGE PORT VACUUM CHECK <MPI>**

1. The red stripe on the vacuum hose has been discontinued, and the vacuum port has been relocated. However, the inspection procedure is the same as before.

## EMISSION CONTROL SYSTEM <F9Q>

### GENERAL

#### OUTLINE OF CHANGE

The following service procedures have been established to correspond to the adoption of the F9Q engine.

#### GENERAL INFORMATION

The electronically-controlled EGR system consists of an EGR valve, the engine-ECU and various sensors. The EGR valve is optimally controlled by the engine-ECU in response to the engine operation

conditions, based on data input from each of the sensors. In this way, the EGR valve is controlled to reduce NOx emissions while maintaining good engine performance.

Items	Name	Specification
Exhaust emission control system	Exhaust gas recirculation system <ul style="list-style-type: none"> <li>• EGR valve</li> <li>• EGR valve position sensor</li> </ul>	Electronically-controlled EGR system Electric motor type Potentiometer type

### SERVICE SPECIFICATIONS

Items	Standard value
EGR valve resistance $\Omega$ (at 20°C)	7.5 - 8.5
EGR valve position sensor resistance $\Omega$ (at 20°C)	2.4 - 5.6

## EXHAUST GAS RECIRCULATION (EGR) SYSTEM

### GENERAL INFORMATION

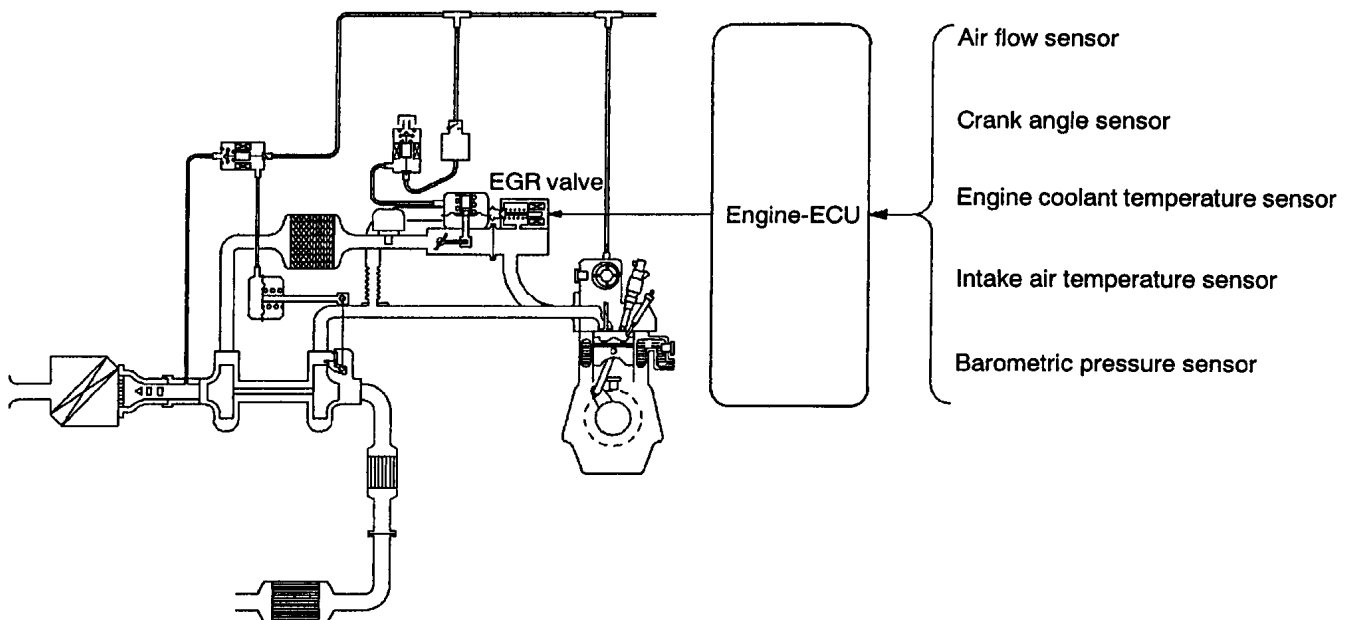
The electronically-controlled EGR system consists of an EGR valve, engine-ECU and various sensors. The EGR valve is optimally controlled by the engine-ECU in response to the engine operation conditions, based on data input from each of the sensors. In this way, the EGR valve is controlled to reduce NOx emissions while maintaining good engine performance.

### OPERATION

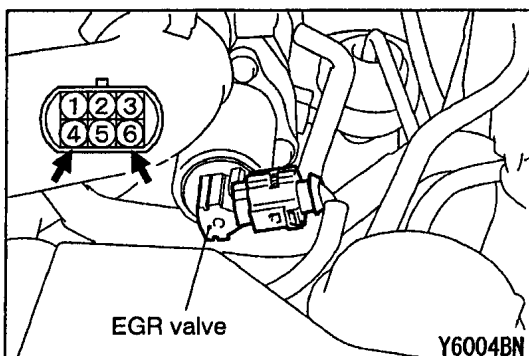
The EGR valve is being closed and does not recirculate exhaust gases under one of the following conditions. Otherwise, the EGR valve is opened and recirculates exhaust gases.

- The engine coolant temperature is low.
- The throttle valve is widely opened.

### SYSTEM DIAGRAM



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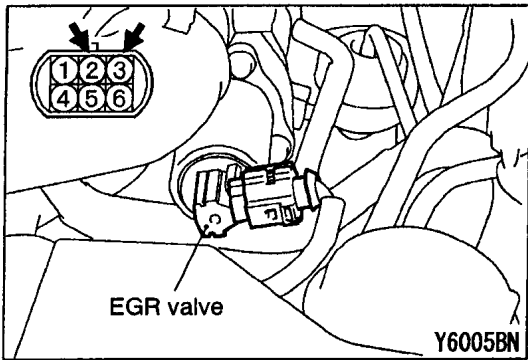


### EGR VALVE CHECK

1. Disconnect the EGR valve connector.
2. Measure the resistance between the EGR valve side connector terminal 4 and terminal 6.

**Standard value: 7.5 – 8.5  $\Omega$  (at 20°C)**

3. If the resistance is outside the standard value, replace the EGR valve.



### EGR VALVE POSITION SENSOR CHECK

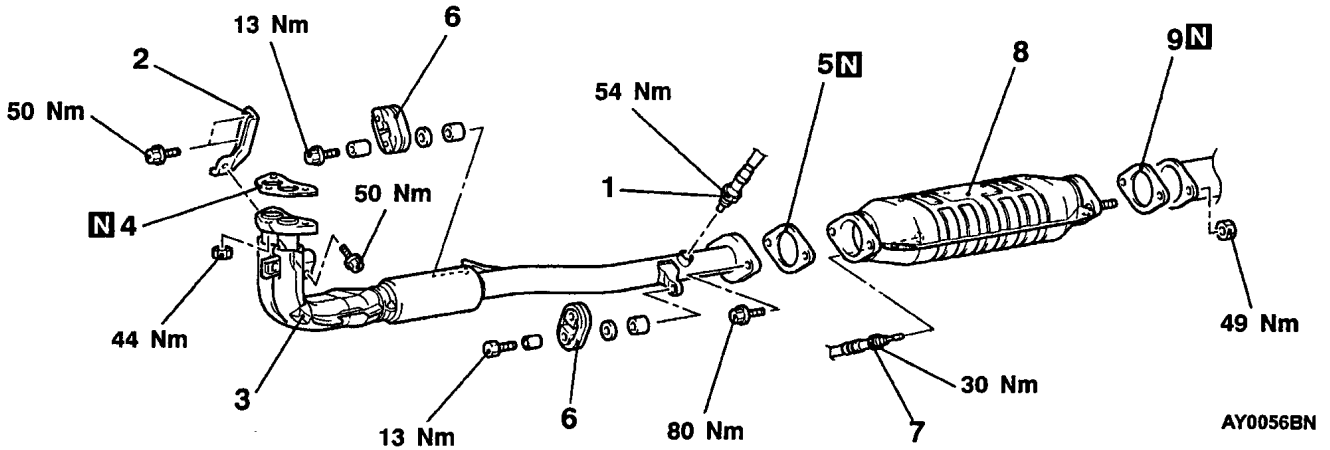
1. Disconnect the EGR valve connector.
2. Measure the resistance between the EGR valve side connector terminal 2 and terminal 3.

**Standard value: 2.4 – 5.6  $\Omega$  (at 20°C)**

3. If the resistance is outside the standard value, replace the EGR valve.



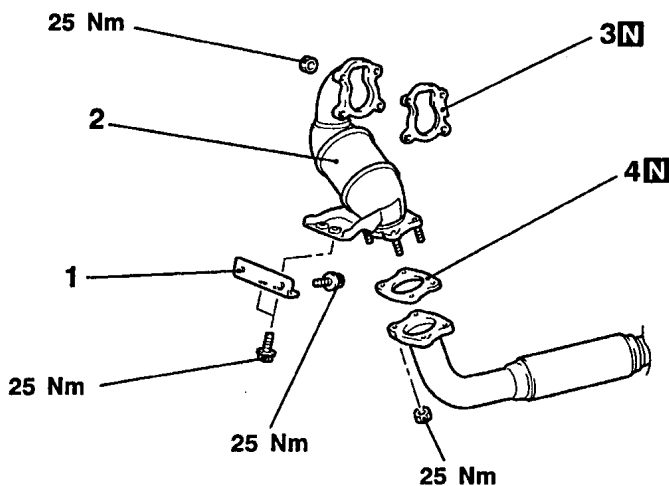
## CATALYTIC CONVERTER REMOVAL AND INSTALLATION <4G93-GDI>



### Removal steps

- |                               |                                      |
|-------------------------------|--------------------------------------|
| 1. Oxygen sensor              | 6. Hunger                            |
| 2. Front exhaust pipe bracket | 7. Catalyst temperature sensor <M/T> |
| 3. Front exhaust pipe         | 8. Catalytic converter               |
| 4. Gasket                     | 9. Gasket                            |
| 5. Gasket                     |                                      |

<F9Q>



### Removal steps

- |                        |           |
|------------------------|-----------|
| 1. Bracket             | 3. Gasket |
| 2. Catalytic converter | 4. Gasket |