
01-16 EMISSION SYSTEM**EVAPORATIVE EMISSION (EVAP) CONTROL**

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PURGE SOLENOID VALVE REMOVAL/

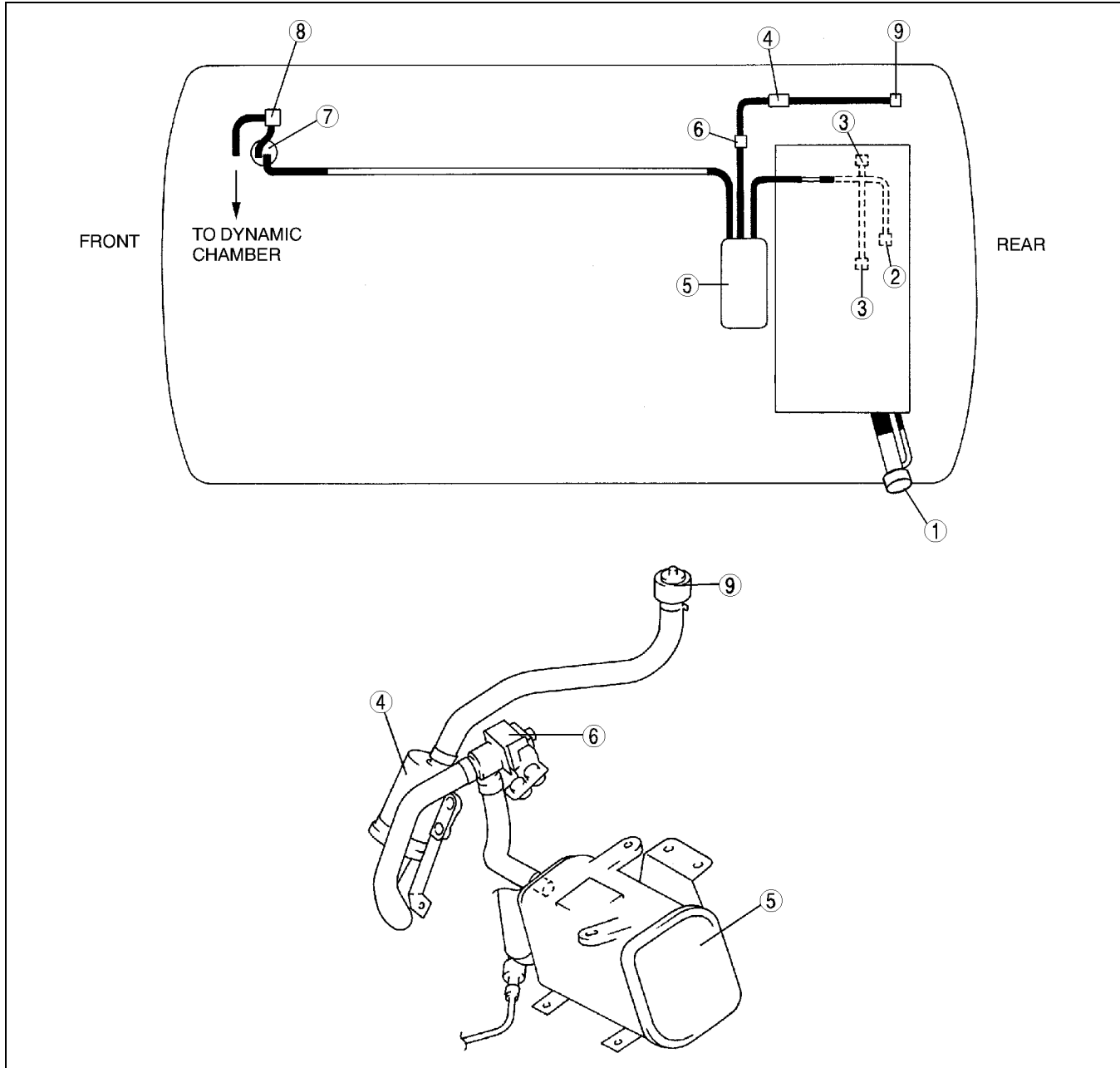
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EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM LOCATION INDEX

A5U011601007W01



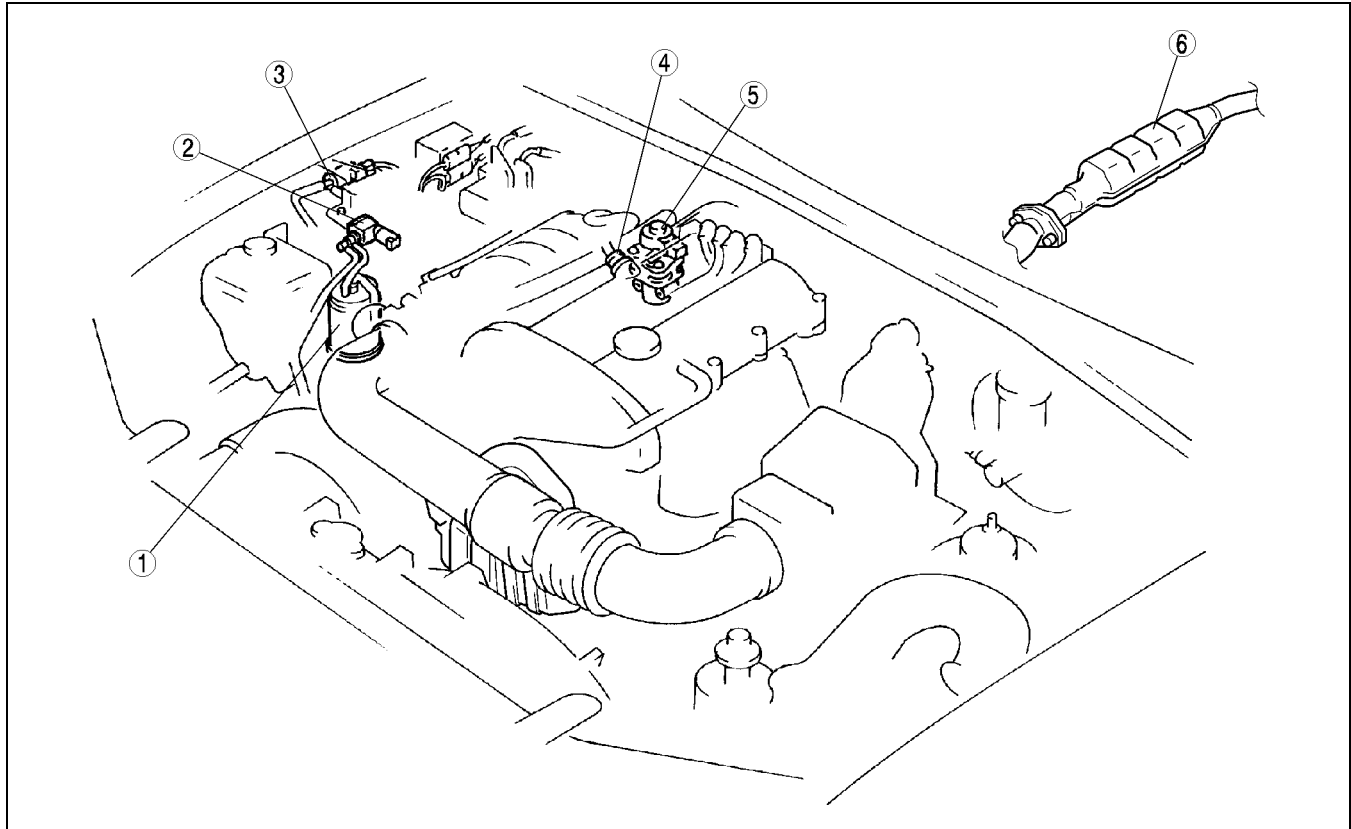
A5U0116W001

1	Fuel-filler cap (See 01-16-3 FUEL-FILLER CAP INSPECTION)
2	Fuel shut-off valve (See 01-16-4 FUEL SHUT-OFF VALVE/ ROLLOVER VALVE INSPECTION)
3	Rollover valve (See 01-16-4 FUEL SHUT-OFF VALVE/ ROLLOVER VALVE INSPECTION)
4	Air filter (See 01-16-5 AIR FILTER INSPECTION)
5	Charcoal canister (See 01-16-6 CHARCOAL CANISTER INSPECTION)

6	CDCV (See 01-16-6 CANISTER DRAIN CUT VALVE (CDCV) REMOVAL/INSTALLATION) (See 01-16-6 CANISTER DRAIN CUT VALVE (CDCV) INSPECTION)
7	Catch tank (See 01-16-7 CATCH TANK INSPECTION)
8	Purge solenoid valve (See 01-16-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION) (See 01-16-8 PURGE SOLENOID VALVE INSPECTION)
9	Evaporative chamber (See 01-16-8 EVAPORATIVE CHAMBER INSPECTION)

EMISSION SYSTEM LOCATION INDEX

A5U011601007W02



01-16

Z5U0116W101

1	Catch tank (See 01-16-7 CATCH TANK INSPECTION)
2	Purge solenoid valve (See 01-16-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION) (See 01-16-8 PURGE SOLENOID VALVE INSPECTION)
3	EGR boost sensor solenoid valve (See 01-16-10 EGR BOOST SENSOR SOLENOID VALVE INSPECTION)

4	PCV valve (See 01-16-10 PCV VALVE INSPECTION)
5	EGR valve (See 01-16-9 EGR VALVE REMOVAL/INSTALLATION) (See 01-16-9 EGR VALVE INSPECTION)
6	TWC (See 01-16-11 THREWAY CATALYTIC CONVERTER (TWC) INSPECTION)

FUEL-FILLER CAP INSPECTION

A5U011642250W01

Leakage Inspection

1. Perform the following **SST** (Evaporative Emission System Tester MZ254AT3641) self-test:

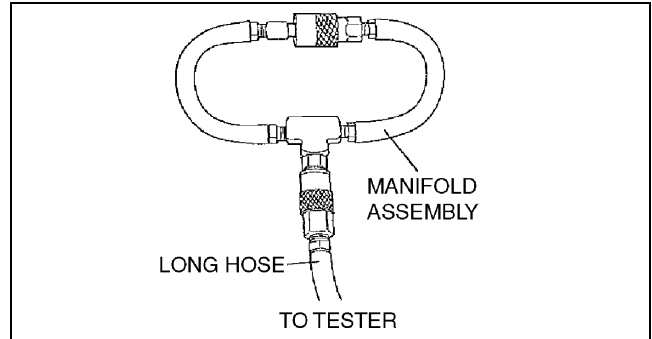
Note

- If the tester does not work correctly during self-test, refer to the tester operators manual for more detailed procedures.

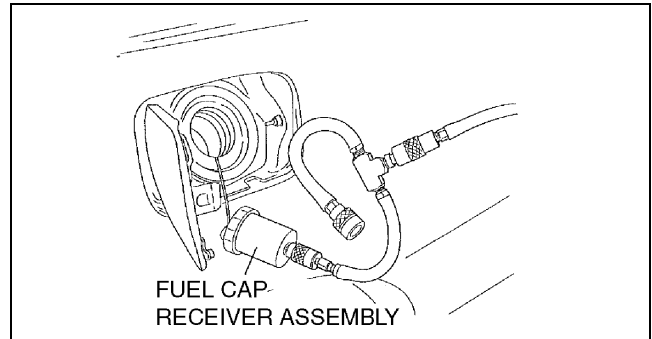
- (1) Verify the gas cylinder valve is closed and the control valve located on the tester is in the TEST position.
- (2) All tester display should be off at this time.
- (3) Connect the long hose (part of **SST**) to the tester.

EMISSION SYSTEM

- (4) Connect the manifold assembly (part of **SST**) to the long hose as shown.
- (5) Open the gas cylinder valve and verify the gas cylinder regulator left gauge reads **10 to 12 psi** (preset at factory).
 - If not, refer to the tester operators manual to contact tester manufacturer.
- (6) Press the ON/OFF switch to turn on the **SST** and make sure the left display reads 0.0.
- (7) Turn the control valve on the tester to the FILL position.
- (8) Verify the left display reading is within **13.9 to 14.0 in** of water.
 - If not, adjust the pressure using the regulator knob located on the right side of the tester.
- (9) Turn the control valve to TEST position and press the START switch.
- (10) After the **2-min** countdown (left display) is completed, the right display shows the total pressure loss for that period. A **0.5 in** of water loss is acceptable on the self-test.
 - If the loss is more than **0.5 in** of water, perform one or more self-test.
 - If the failed test repeats, check for leakage using the ultrasonic leak detector (part of **SST**).
2. Press the RESET switch to set the left display reading to 0.0.
3. Connect the fuel cap receiver assembly (part of **SST**) to the manifold assembly and fuel-filler cap from the vehicle.
 - If the fuel-filler cap is not a genuine part, replace it.



Y5U116WA3



Y5U116WA4

4. Turn the control valve to the FILL position.
5. Wait (**maximum 20 s**) until the left display reads **13.9 to 14 in** of water.
 - If the reading is slightly below, adjust it using the regulator knob.
 - If the reading is far below, the fuel-filler cap has leakage. Replace it.
6. Turn the control valve to the TEST position and press the START switch.
7. After the **2-min** countdown (left display) is completed, check the test result (the failed/passed light on the tester).
 - If the green light turns on, the fuel-filler cap is okay.
 - If the red light turns on, the fuel-filler cap has leakage. Replace it.
8. Close the gas cylinder valve.
9. Turn the control valve to the FILL position.
10. Press the ON/OFF switch to turn off the tester.

FUEL SHUT-OFF VALVE/ROLLOVER VALVE INSPECTION

A5U011642720W01

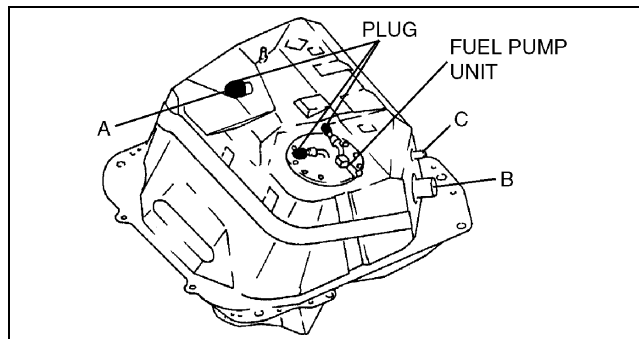
Caution

- **Disconnecting/connecting the quick release connector without cleaning it may possibly cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using a cloth or soft brush, and make sure that it is free of foreign material.**

1. Disconnect the plastic fuel hose and the FP unit connector. (See 01–14–10 FUEL PUMP (FP) REMOVAL/INSTALLATION.)
2. Remove the fuel tank with the FP unit. (See 01–14–6 FUEL TANK REMOVAL/INSTALLATION.)
3. Plug the fuel main pipe and fuel return pipe of the FP unit.

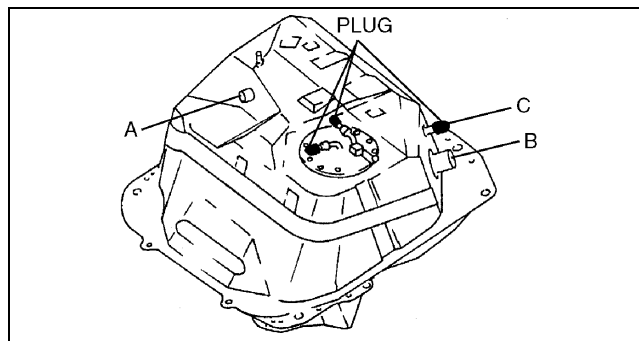
EMISSION SYSTEM

4. Plug port A.
5. Level the fuel tank.



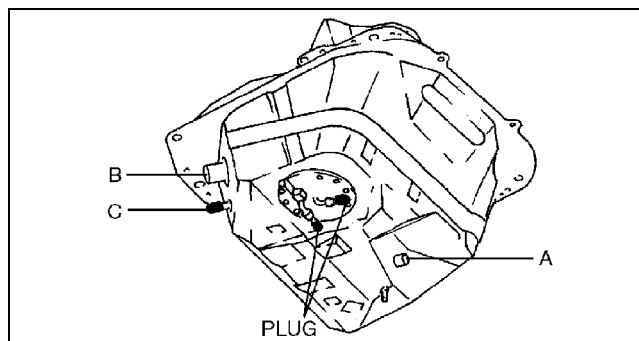
Y5U116WA5

6. Blow through port B and verify that there is airflow from port C.
 - If there is no airflow, replace the fuel tank.
 - If there is airflow, plug port C and proceed to Step 7.



Y5U116WA6

7. Blow through port B and verify that there is airflow from port A.
 - If there is no airflow, replace the fuel tank.
 - If there is airflow, turn the fuel tank upside-down, and proceed to Step 8.
8. Blow through port B and verify that there is no airflow from port A.
 - If there is airflow, replace the fuel tank.

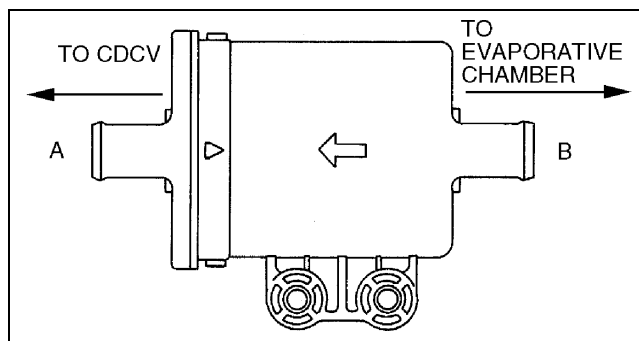


A5U0116W003

AIR FILTER INSPECTION

1. Remove the air filter.
2. Blow from port A and verify that there is airflow from port B.
3. If not as specified, replace the air filter.
4. Blow from port B and verify that there is airflow from port A.
 - If not as specified, replace the air filter.

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Y5U116WA8

EMISSION SYSTEM

CHARCOAL CANISTER INSPECTION

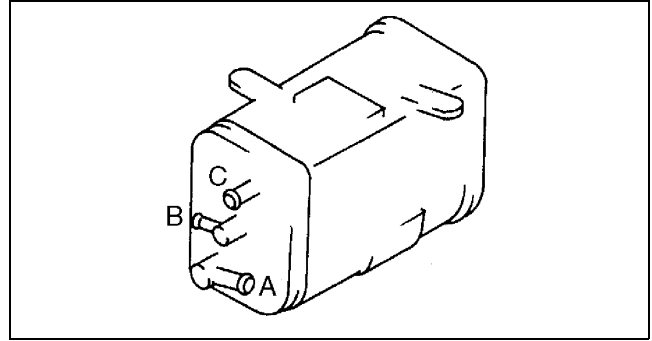
A5U011613970W01

1. Remove the charcoal canister. (See 01–14–6 FUEL TANK REMOVAL/INSTALLATION.)
2. Plug ports A and B, then blow air into port C.

Caution

- Do not apply more than 20 kPa {150 mmHg, 16 inHg} of pressure to the charcoal canister. Doing so may break the charcoal canister.

3. Verify that there is no air leakage when pressure of 20 kPa {150 mmHg, 16 inHg} is applied to port C.
 - If not as specified, replace the charcoal canister.



Y5U116WA9

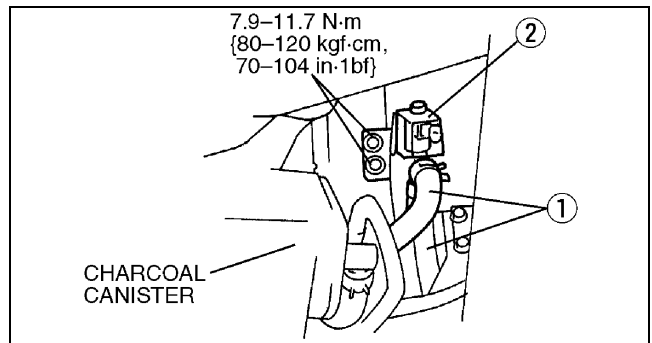
CANISTER DRAIN CUT VALVE (CDCV) REMOVAL/INSTALLATION

A5U011618743W01

1. Disconnect the negative battery cable.
2. Raise the rear of the vehicle and support it with safety stands.
3. Remove in the order indicated in the table.

1	Evaporative hose (See 01–16–6 Evaporative Hose Installation Note)
2	CDCV

4. Install in the reverse order of removal.



Y5U116WAA

Evaporative Hose Installation Note

1. Install the evaporative hose until it contacts the stopper.

CANISTER DRAIN CUT VALVE (CDCV) INSPECTION

A5U011618743W02

Simulation Test

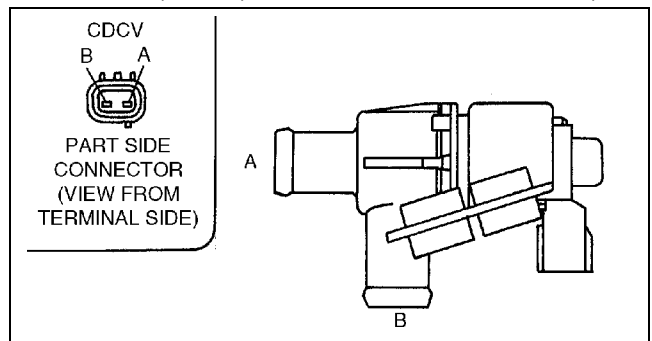
1. Carry out the “Evaporative Emission (EVAP) Control System Inspection”. (See 01–03–59 Evaporative Emission (EVAP) System Leak Inspection Using Vacuum Pump.)
 - If not as specified, perform the further inspection for the CDCV.

Airflow Inspection

Note

- Perform the following test only when directed.

1. Remove the CDCV. (See 01–16–6 CANISTER DRAIN CUT VALVE (CDCV) REMOVAL/INSTALLATION.)
2. Inspect airflow between the ports under the following conditions.
 - If as specified but the “Evaporative Emission (EVAP) Control System Inspection” fails, inspect evaporative hoses for improper routing, kinks or leakage, and carry out “Circuit Open/Short Inspection”.
 - If not as specified, replace the CDCV.



A5U0116W002

○—○ : Continuity ○—○ : Airflow

Step	Terminal		Port	
	A	B	A	B
1	○—○	○—○	○—○	○—○
2	B+	GND		

W6U116WAA

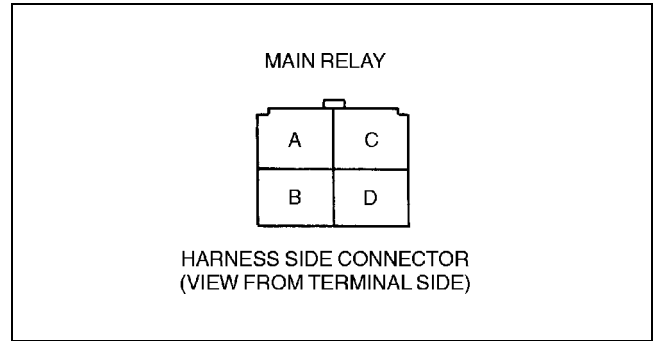
Circuit Open/Short Inspection

Open circuit

- GND circuit (CDCV connector terminal B and PCM connector terminal 3E through common connector)
- Power circuit (CDCV connector terminal A and main relay connector terminal D)

Short circuit

- CDCV connector terminal B and PCM connector terminal 3E to GND

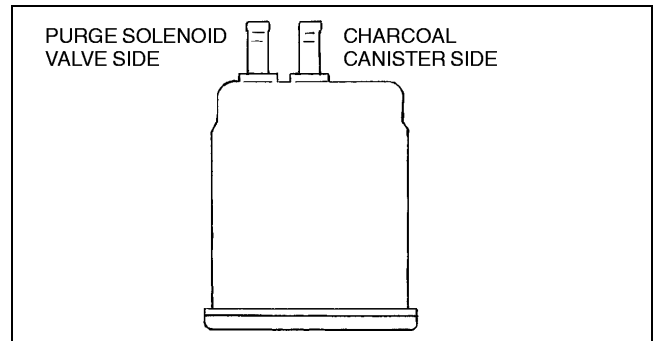


Z5U0113W111

A5U011613978W01

CATCH TANK INSPECTION

1. Remove the catch tank.
2. Plug the purge solenoid valve side port of the catch tank.
3. Blow from the charcoal canister side port and verify that there is no air leakage.
 - If not as specified, replace the catch tank.



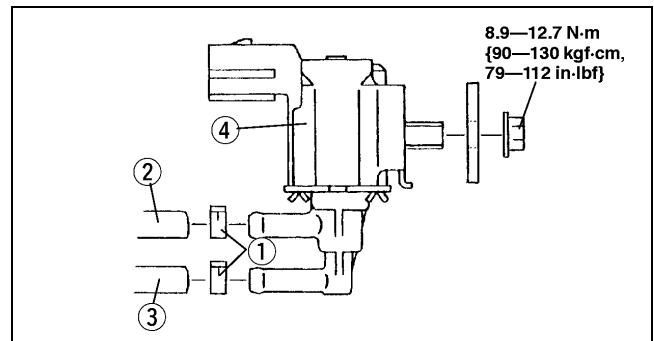
X5U116WAD

PURGE SOLENOID VALVE REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.

1	Clamp
2	Evaporative hose (See 01-16-7 Vacuum Hose, Evaporative Hose Installation Note)
3	Vacuum hose (See 01-16-7 Vacuum Hose, Evaporative Hose Installation Note)
4	Purge solenoid valve

3. Install in the reverse order of removal.



X5U116WAM

Vacuum Hose, Evaporative Hose Installation Note

1. Install the vacuum hose and evaporative hose until it contacts the stopper.

EMISSION SYSTEM

PURGE SOLENOID VALVE INSPECTION

A5U011618740W02

Airflow Inspection

Note

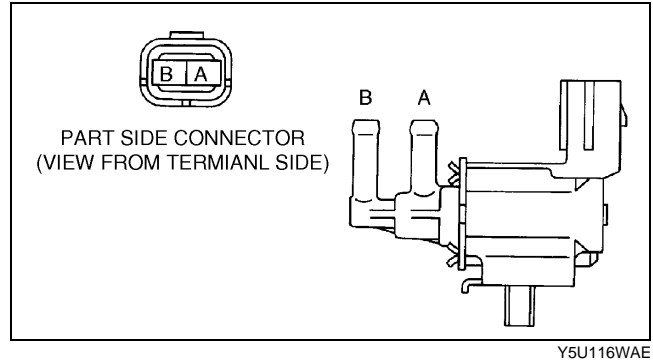
- Perform the following test only when directed.

- Remove the purge solenoid valve. (See 01-16-7 PURGE SOLENOID VALVE REMOVAL/INSTALLATION.)
- Inspect airflow between the ports under the following conditions.
 - If as specified, inspect the vacuum hoses for improper routing, kinks or leakage, and carry out "Circuit Open/Short Inspection".
 - If not as specified, replace the purge solenoid valve.

○—○ : Continuity ○=○ : Airflow

Step	Terminal		Port	
	A	B	A	B
1	○—○	○—○		
2	B+	GND	○=○	○=○

X5U116WAK



Y5U116WAE

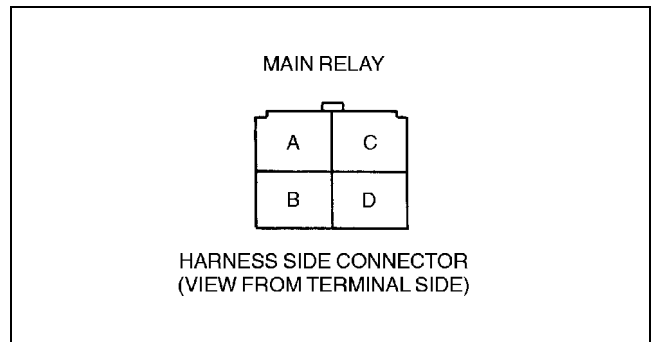
Circuit Open/Short Inspection

Open circuit

- GND circuit (Purge solenoid valve connector terminal B and PCM connector terminal 3C through common connector)
- Power circuit (Purge solenoid valve connector terminal A and main relay connector terminal D through common connector)

Short circuit

- Purge solenoid valve connector terminal B and PCM connector terminal 3C to GND

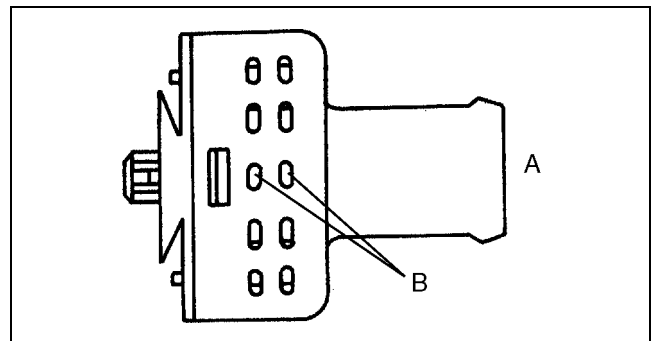


Z5U0113W111

EVAPORATIVE CHAMBER INSPECTION

A5U011642590W01

- Remove the evaporative chamber.
- Blow from port A and verify that there is airflow from port B.
 - If not as specified, replace the evaporative chamber.



Y5U116WAC

EMISSION SYSTEM

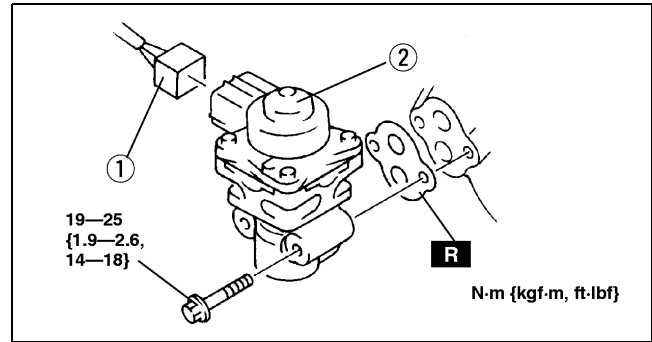
EGR VALVE REMOVAL/INSTALLATION

A5U011620300W01

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.

1	EGR valve connector
2	EGR valve

3. Install in the reverse order of removal.
4. Connect the negative battery cable.



X5U116WAF

EGR VALVE INSPECTION

Resistance Inspection

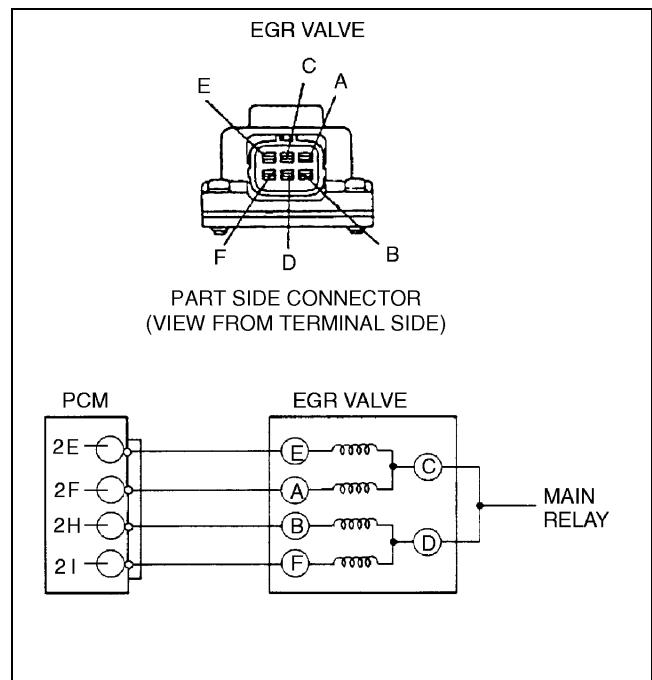
A5U011620300W02

Note

- Perform the following test only when directed.

1. Disconnect the negative battery cable.
2. Inspect resistance of the EGR valve coils.
 - If as specified, inspect the vacuum hoses for improper routing, kinks or leakage, and carry out "Circuit Open/Short Inspection".
 - If not as specified, replace the EGR valve.
3. Remove the EGR valve, and inspect for any damage or clogging. If not as specified, replace the EGR valve
4. Connect the negative battery cable.

Terminals	Resistance (ohm)
C—E	Approx. 20—24
C—A	
D—B	
D—F	

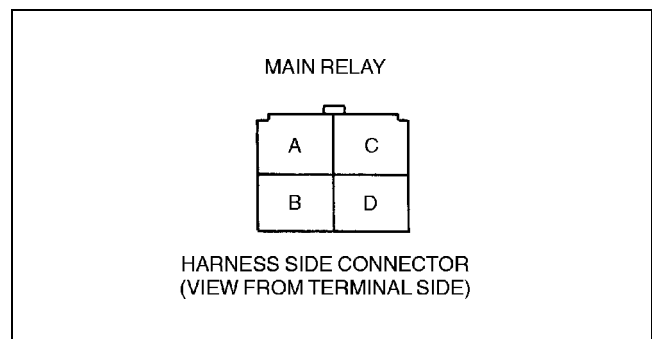


Y5U116WAF

Circuit Open/Short Inspection

Open circuit

- GND circuit (EGR valve connector terminal E and PCM connector terminal 2E)
- GND circuit (EGR valve connector terminal A and PCM connector terminal 2F)
- GND circuit (EGR valve connector terminal B and PCM connector terminal 2H)
- GND circuit (EGR valve connector terminal F and PCM connector terminal 2I)
- Power circuit (EGR valve connector terminal C or D and main relay connector terminal D through common connector)



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EMISSION SYSTEM

Short circuit

- EGR valve connector terminal E and PCM connector terminal 2E to GND
- EGR valve connector terminal A and PCM connector terminal 2F to GND
- EGR valve connector terminal B and PCM connector terminal 2H to GND
- EGR valve connector terminal F and PCM connector terminal 2I to GND

EGR BOOST SENSOR SOLENOID VALVE INSPECTION

Airflow Inspection

A5U011618744W01

Note

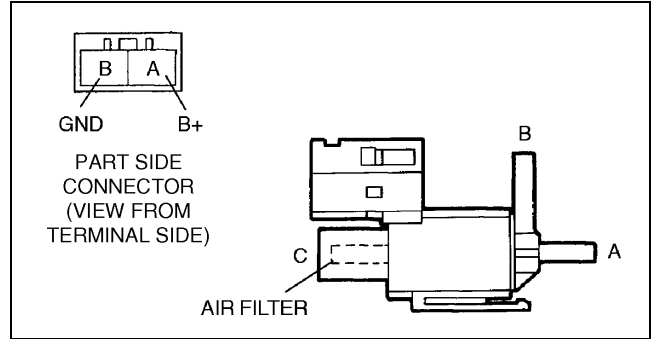
- Perform the following test only when directed.

1. Disconnect the negative battery cable.
2. Remove the EGR boost sensor solenoid valve.
3. Inspect airflow between each port under the following conditions.
 - If as specified, inspect the vacuum hoses for improper routing, kinks or leakage, and carry out "Circuit Open/Short Inspection".
 - If not as specified, replace the EGR boost sensor solenoid valve.

○—○ : Continuity ○=○ : Airflow

Step	Terminal		Port		
	A	B	A	B	C
1	○—○	○—○		○=○	○=○
2	B+	GND	○=○	○=○	

W6U116WAK



Y5U116WAG

4. Connect the negative battery cable.

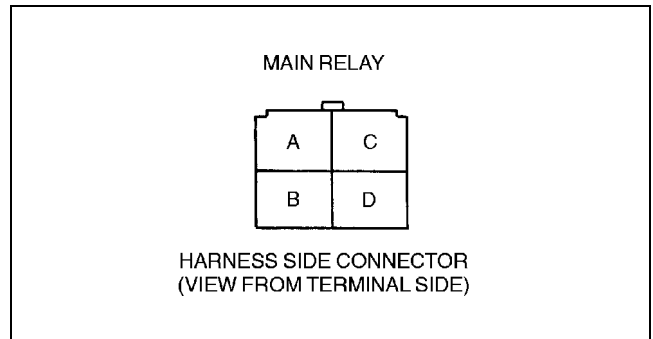
Circuit Open/Short Inspection

Open circuit

- GND circuit (EGR boost sensor solenoid valve connector terminal B and PCM connector terminal 3D)
- Power circuit (EGR boost sensor solenoid valve connector terminal A and main relay connector terminal D through common connector)

Short circuit

- EGR boost sensor solenoid valve connector terminal B and PCM connector terminal 3D to GND



Z5U0113W111

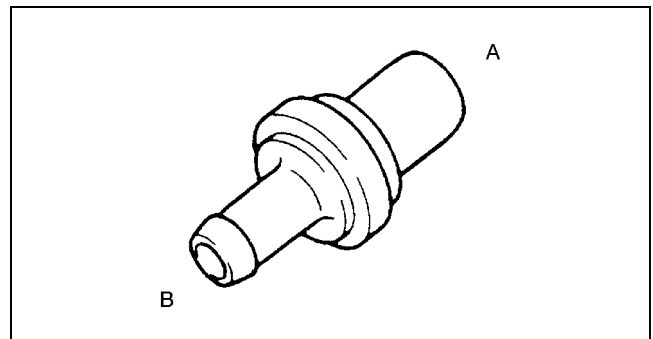
PCV VALVE INSPECTION

A5U011613890W01

1. Remove the PCV valve.
2. Blow through the valve and verify that air flows as specified.
 - If not as specified, replace the PCV valve.

Specification

Condition	Airflow
Air applied from port A	Yes
Air applied from port B	No



Z5U0116W103

EMISSION SYSTEM

THREEWAY CATALYTIC CONVERTER (TWC) INSPECTION

A5U011620500W01

Note

- Make sure that no HO2S DTC has been detected. If detected, this inspection cannot be used for TWC inspection.

1. Connect the WDS or equivalent and monitor PIDs as follows.
 - Monitor TWC using O2S11 PID for upstream HO2S and O2S12 PID for downstream HO2S.
2. Begin monitoring the appropriate PIDs.
3. Drive the vehicle for **10 min** at **65—96 km/h {40—60 mph}** to ensure the front catalytic converter reaches operating temperature.
4. Stop the vehicle and leave in a safe place.
5. Idle the engine.
6. Record PIDs for **1 min**.
7. Select the appropriate PIDs and read the graph.
8. Count the number of times (inversions) that the upstream HO2S graph line actually crosses the 0.5 V line.
9. Count the number of times (inversion) that the downstream HO2S graph line actually crosses the **0.5 V** line.

Note

- Do not count the number of peaks. Refer to the illustration.

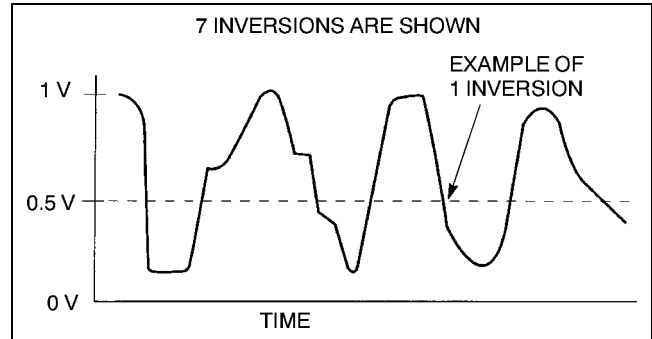
10. Using the following equation, calculate the value of ratio.

Equation

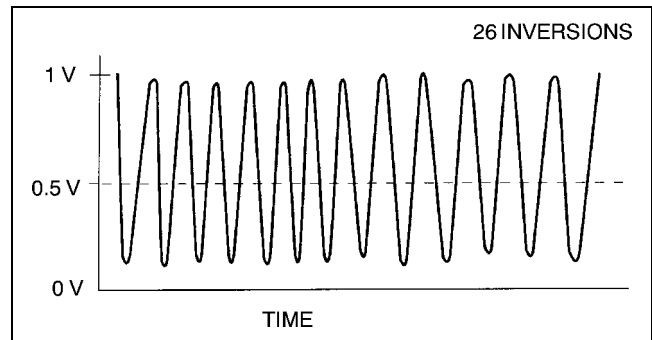
$$\text{RATIO} = \text{Upstream HO2S inversion} + \text{downstream HO2S inversion}$$

- If the ratio is **2 or more** or no downstream HO2S inversion, the TWC is functioning properly.
- If the ratio is **less than 2**, the TWC is not functioning properly. Replace the TWC .

Upstream HO2S graph line example



Z5U0116W108

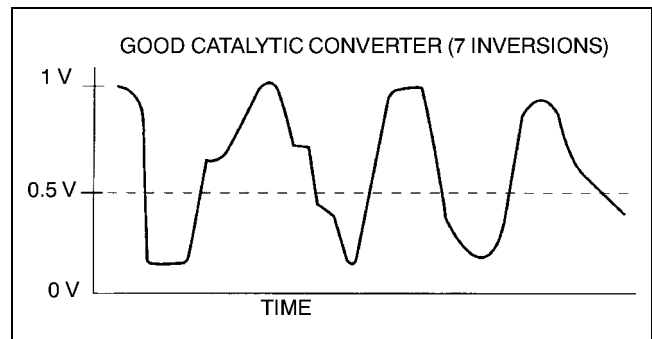


YMU116WAE

Downstream HO2S graph line example 1

Equation

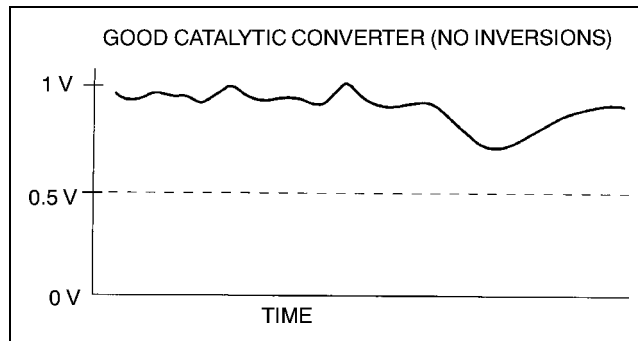
$$\text{RATIO} = 26 \text{ inversions (upstream HO2S inversions)} + 7 \text{ inversions (downstream HO2S inversions)} = 3.7 \text{ (good converter)}$$



YMU116WAK

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Downstream HO2S graph line example 2

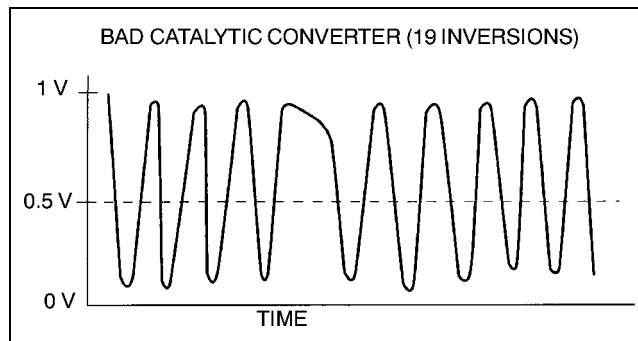


YMU116WAG

Downstream HO2S graph line example 3

Equation

$$\text{RATIO} = \frac{26 \text{ inversions (upstream HO2S inversions)}}{19 \text{ inversions (downstream HO2S inversions)}} = 1.4 \text{ (bad converter)}$$



YMU116WAH