

# 2007 Mazda MX-5 Miata Sport

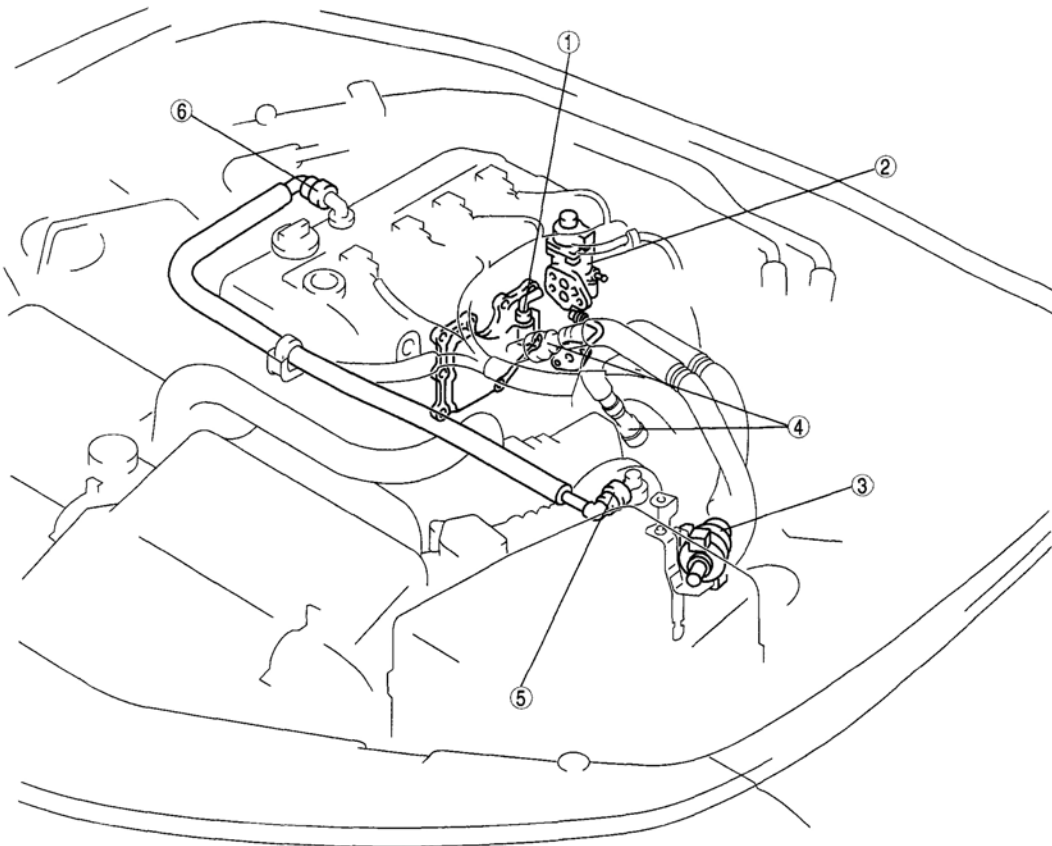
2007 ENGINE PERFORMANCE Emission System - MX-5 Miata

## 2007 ENGINE PERFORMANCE

### Emission System - MX-5 Miata

## EMISSION SYSTEM LOCATION INDEX [LF]

### ENGINE COMPARTMENT SIDE



E5U116ZS5001

1	PCV valve
2	EGR valve
3	Purge solenoid valve
4	Quick release connector (Type A)
5	Quick release connector (Type B)
6	Quick release connector (Type D)

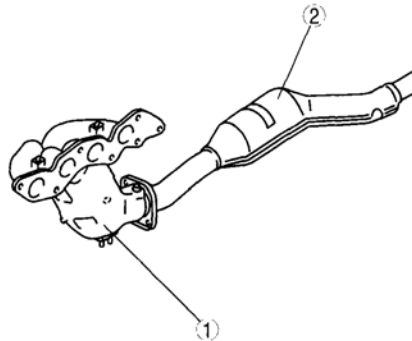
**Fig. 1: Identifying Location Of Emission System Engine Compartment Side Components**  
Courtesy of MAZDA MOTORS CORP.

### EXHAUST SYSTEM

## 2007 Mazda MX-5 Miata Sport

2007 ENGINE PERFORMANCE Emission System - MX-5 Miata

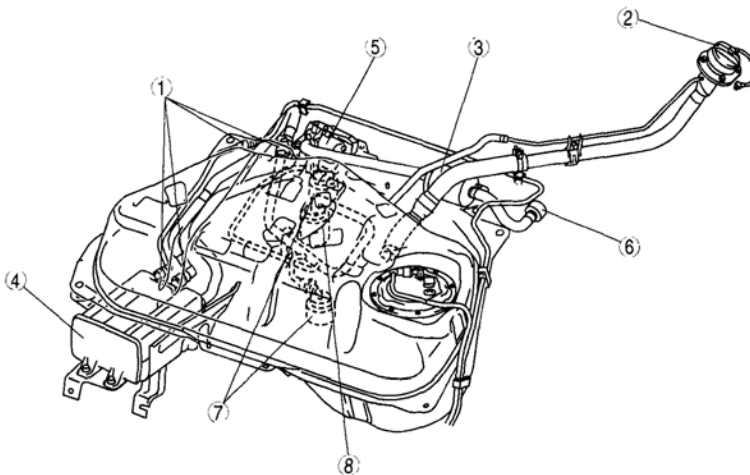
1	WU-TWC
2	TWC



E5U116ZWS030

**Fig. 2: Identifying Location Of Exhaust System Components**  
Courtesy of MAZDA MOTORS CORP.

### FUEL TANK SIDE



E5U116ZWS027

1	Quick release connector (Type C)
2	Fuel-filler cap
3	Air filter
4	Charcoal canister
5	EVAP system leak detection pump
6	Evaporative chamber
7	Rollover valve
8	Fuel shut-off valve

**Fig. 3: Identifying Location Of Fuel Tank Side Components**  
Courtesy of MAZDA MOTORS CORP.

### FUEL-FILLER CAP INSPECTION [LF]

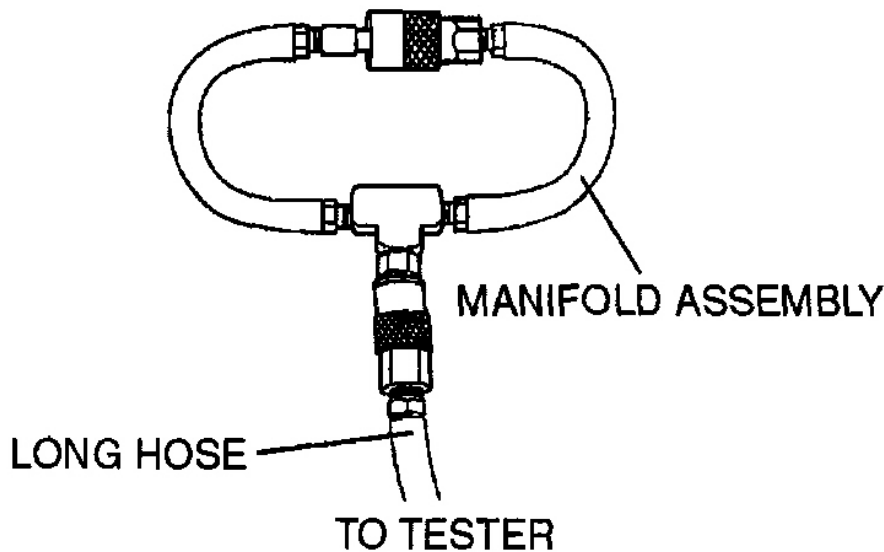
### LEAKAGE INSPECTION

1. Perform the following SST (Evaporative Emission System Tester 134-01049) 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. All tester display should be off at this time.
2. Connect the long hose (part of SST ) to the tester.
3. Connect the manifold assembly (part of SST ) to the long hose as shown in **Fig. 4**.

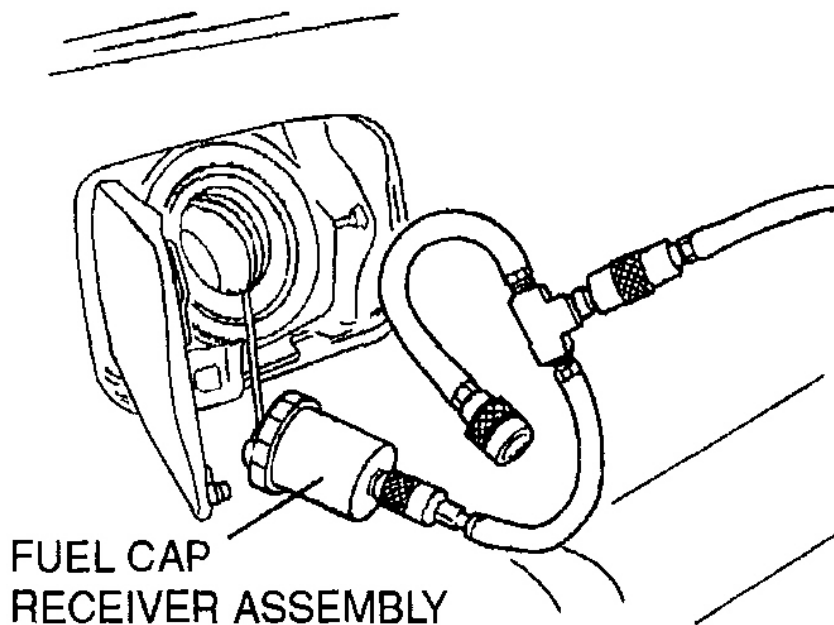


ZMU116WA6

**Fig. 4: Connecting Manifold Assembly To Long Hose**  
Courtesy of MAZDA MOTORS CORP.

4. 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.
5. Press the ON/OFF switch to turn on the SST and make sure the left display reads **0.0** .
6. Turn the control valve on the tester to the FILL position.
7. 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.
8. Turn the control valve to TEST position and press the START switch.

9. 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** , do one or more self-test. If the failed test repeats, check for leak 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.



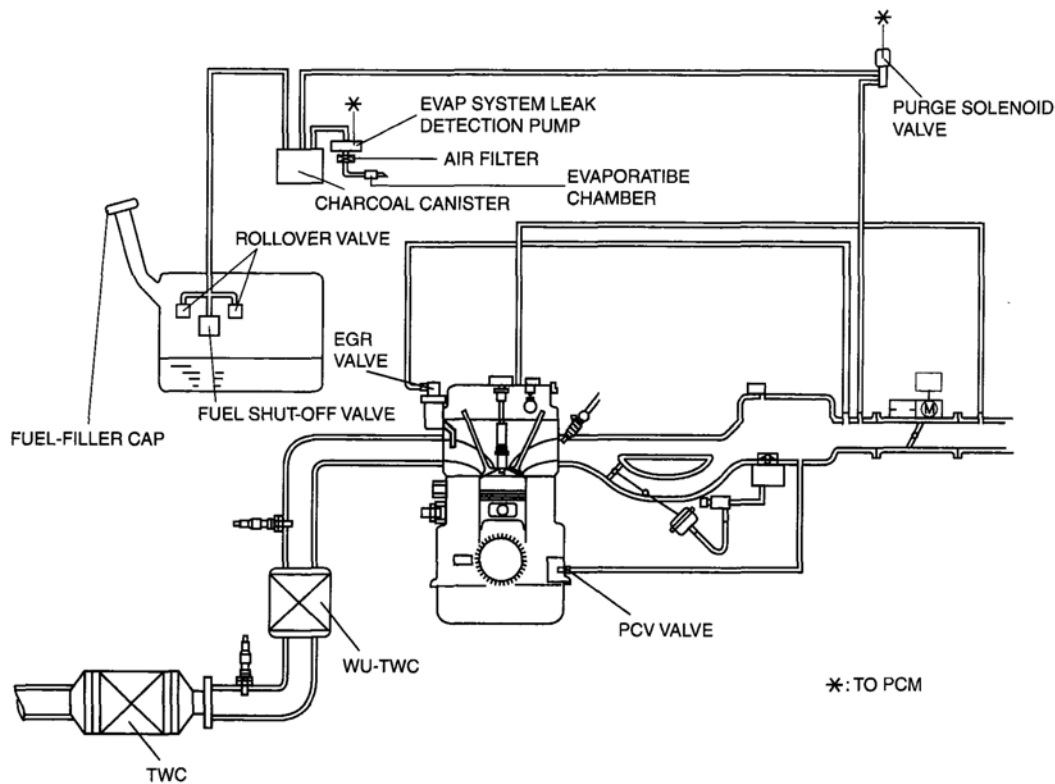
ZMU116WA7

**Fig. 5: Connecting Fuel Cap Receiver Assembly**  
Courtesy of MAZDA MOTORS CORP.

4. Turn the control valve to the **FILL** position.
5. Wait (**maximum 20s** ) 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 leak. 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 OK.

- 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.

## EMISSION SYSTEM DIAGRAM [LF]

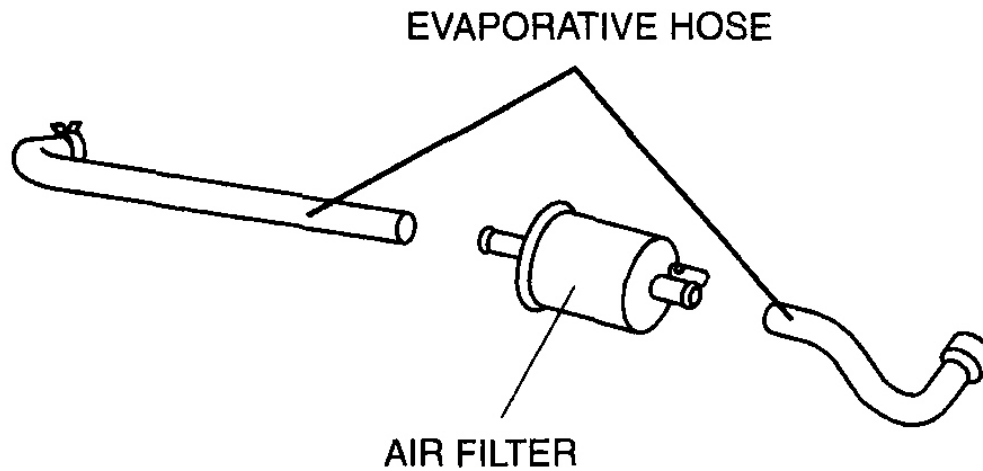


E5U116ZS5003

**Fig. 6: Identifying Emission System Diagram [LF]**  
 Courtesy of MAZDA MOTORS CORP.

## AIR FILTER REMOVAL/INSTALLATION [LF]

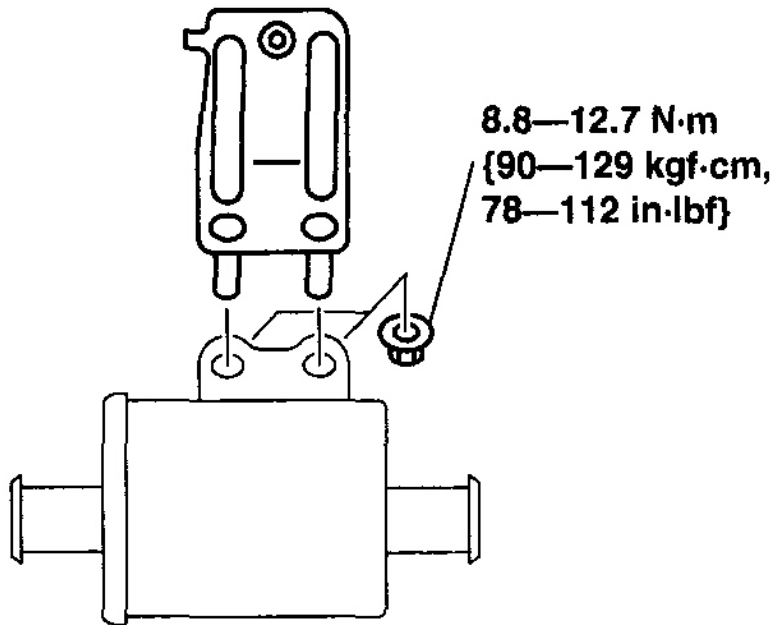
1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Disconnect the evaporative hose from the air filter.
4. Cover the evaporative hose with vinyl sheets or the like to prevent them from being scratched or contaminated with foreign material.



E5U116ZW5102

**Fig. 7: Identifying Evaporative Hose And Air Filter**  
Courtesy of MAZDA MOTORS CORP.

5. Remove the air filter.
6. Install in the reverse order of removal.

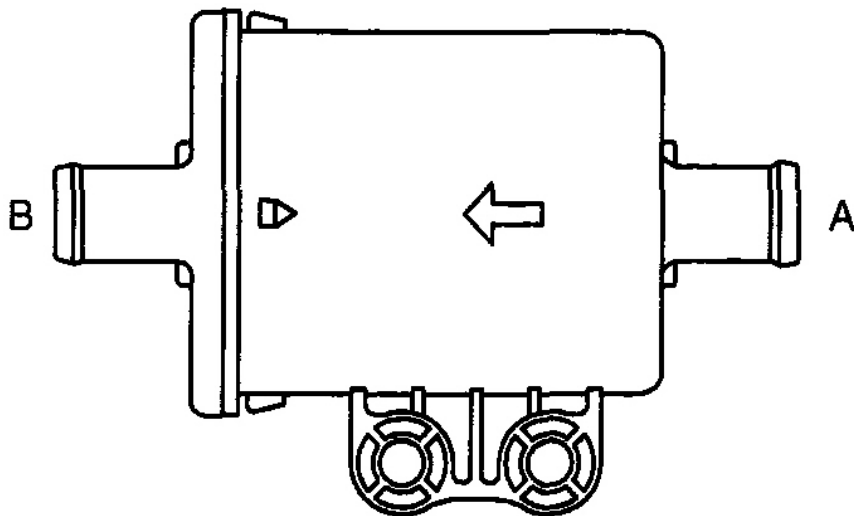


E5U116ZW5022

**Fig. 8: Removing Air Filter (With Torque Specifications)**  
Courtesy of MAZDA MOTORS CORP.

## AIR FILTER INSPECTION [LF]

1. Remove the air filter. (See AIR FILTER REMOVAL/INSTALLATION [LF] ).
2. Blow from port A and verify that there is airflow from port B.
  - If not as specified, replace the air filter.
3. Blow from port B and verify that there is airflow from port A.
  - If not as specified, replace the air filter. (See AIR FILTER REMOVAL/INSTALLATION [LF] ).



E5U116ZW5024

**Fig. 9: Identifying Air Filter**

Courtesy of MAZDA MOTORS CORP.

## CHARCOAL CANISTER REMOVAL/INSTALLATION [LF]

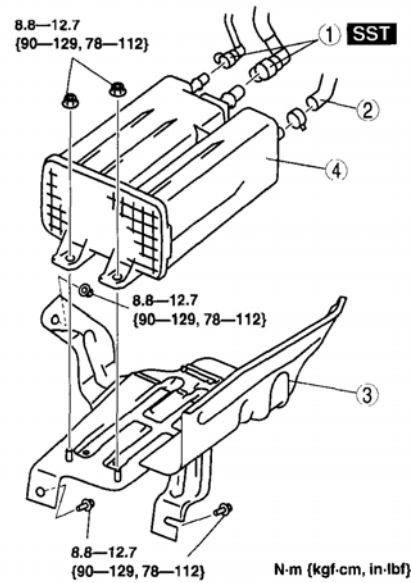
1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Remove in the order indicated in **Fig. 10** .
4. Install in the reverse order of removal.



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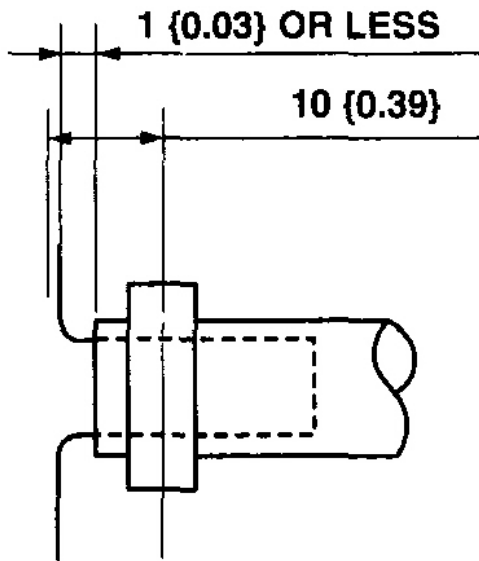
1	Quick connector (Type C)
2	Evaporative hose
3	Charcoal canister bracket
4	Charcoal canister



**Fig. 10: Identifying Charcoal Canister Components (With Torque Specifications)**  
Courtesy of MAZDA MOTORS CORP.

#### EVAPORATIVE HOSE INSTALLATION NOTE

1. Fit the evaporative hose onto the respective fittings, and install clamps as shown in **Fig. 11**.
  1. Insert the evaporative hose securely to the nipple.
  2. Inspect the evaporative hose for damage and deformation.



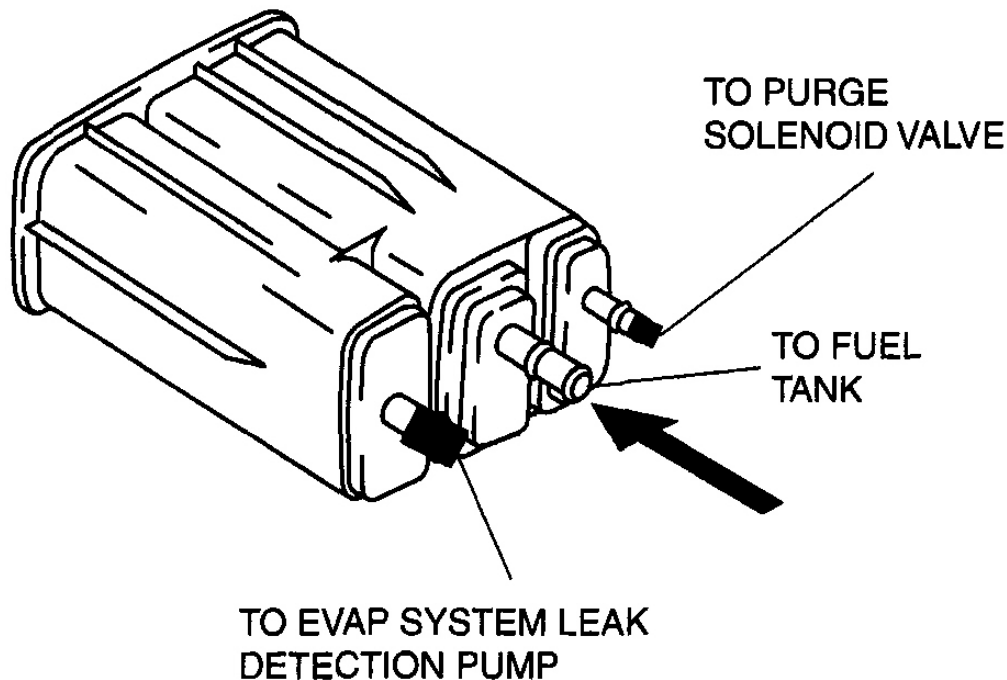
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**Fig. 11: Inserting Evaporative Hose Securely To Nipple**  
Courtesy of MAZDA MOTORS CORP.

## CHARCOAL CANISTER INSPECTION [LF]

1. Remove the charcoal canister. (See **CHARCOAL CANISTER REMOVAL/INSTALLATION [LF]** ).
2. Plug the EVAP leak detection pump side and purge solenoid valve side of the charcoal canister.
3. Inspect for air leakage when blowing air by mouth from the fuel tank side.
  - If air leaks, replace the charcoal canister. (See **CHARCOAL CANISTER REMOVAL/INSTALLATION [LF]** ).

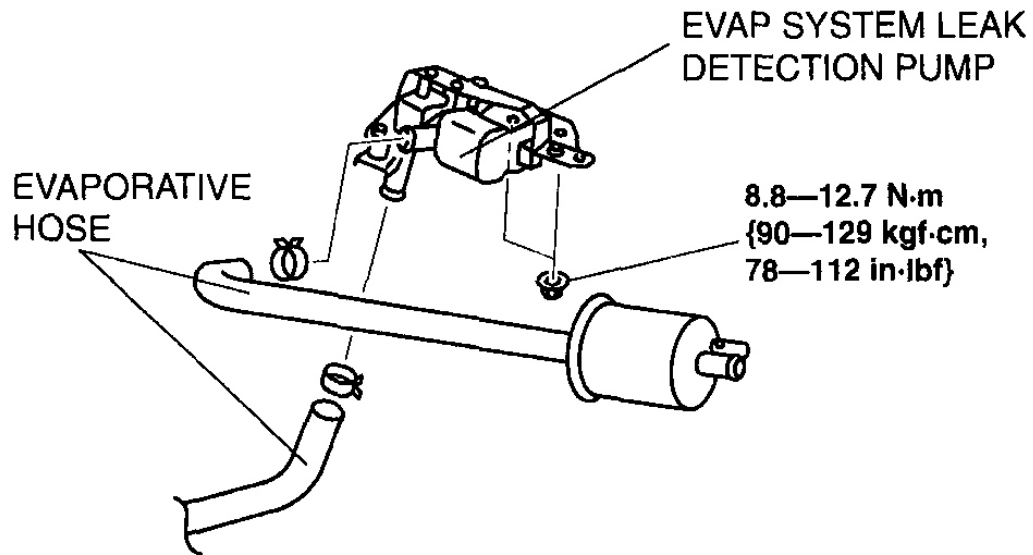


EPU116ZW4601

**Fig. 12: Identifying Charcoal Canister**  
Courtesy of MAZDA MOTORS CORP.

## EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP REMOVAL/INSTALLATION [LF]

1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Disconnect the EVAP system leak detection pump connector.
4. Disconnect the evaporative hose from the EVAP system leak detection pump.
5. Cover the evaporative hose with vinyl sheets or the like to prevent them from being scratched or contaminated with foreign material.
6. Remove the EVAP system leak detection pump with the bracket.

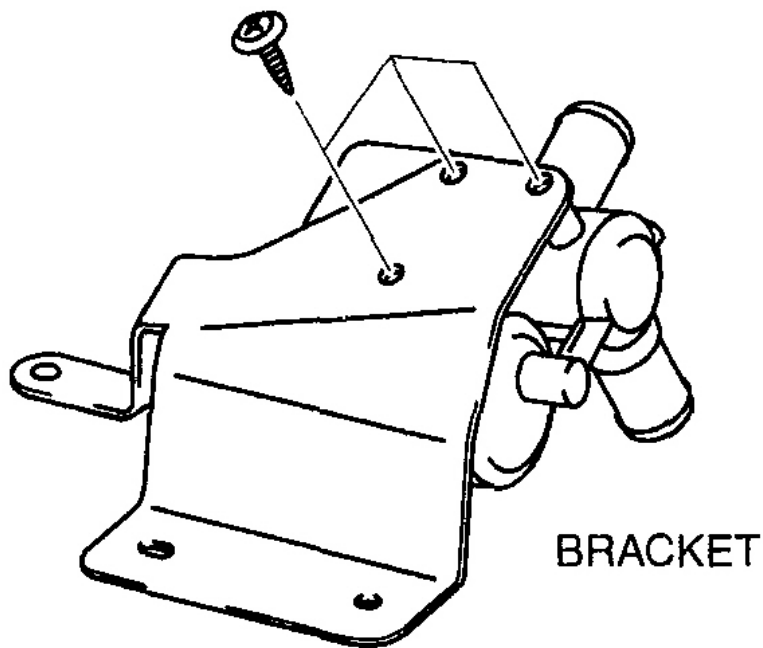


E5U116ZW5101

**Fig. 13: Identifying Evaporative Emission System Leak Detection Pump And Evaporative Hose (With Torque Specifications)**

Courtesy of MAZDA MOTORS CORP.

7. Remove the bracket from the EVAP system leak detection pump.



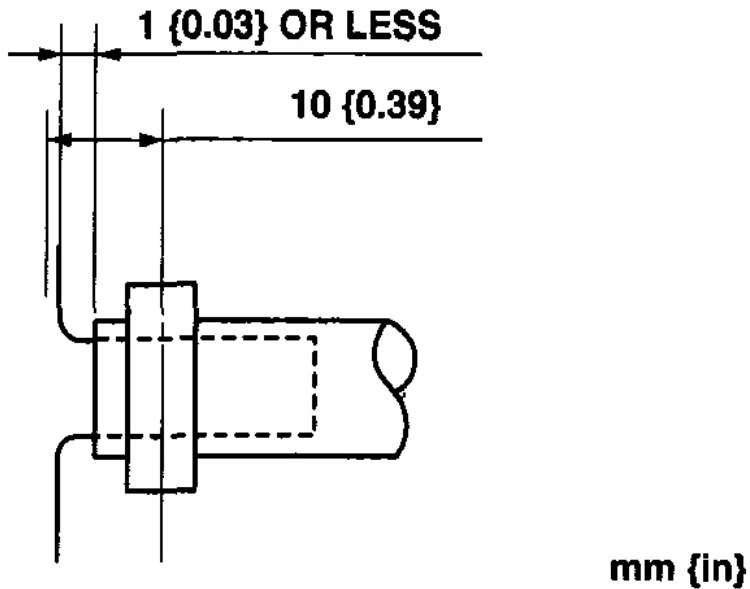
E5U116ZW5021

**Fig. 14: Removing Bracket From EVAP System Leak Detection Pump**  
Courtesy of MAZDA MOTORS CORP.

8. Install in the reverse order of removal.

#### **EVAPORATIVE HOSE INSTALLATION NOTE**

1. Fit the evaporative hose onto the respective fittings, and install clamps as shown in **Fig. 15**.
  1. Insert the evaporative hose securely to the nipple.
  2. Inspect the evaporative hose for damage and deformation.



E5U116ZW5023

**Fig. 15: Inserting Evaporative Hose Securely To Nipple**  
 Courtesy of MAZDA MOTORS CORP.

## EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP INSPECTION [LF]

**NOTE:**

- Perform the following procedure only when directed.

### AIRFLOW INSPECTION

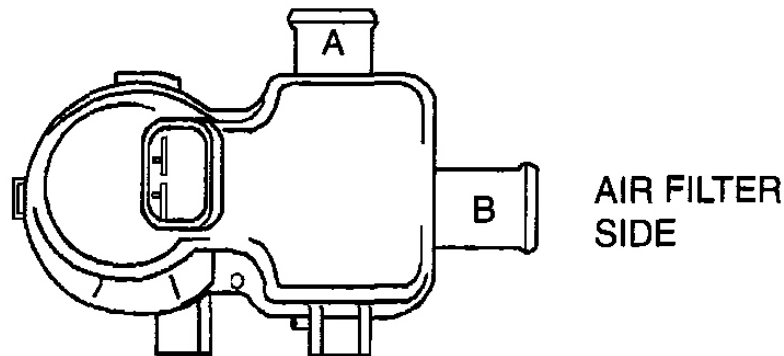
1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Remove the EVAP system leak detection pump. (See **EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP REMOVAL/INSTALLATION [LF]** .).
4. Blow air into port A and verify that there is airflow from port B.
  - If not as specified, replace the EVAP system leak detection pump. (See **EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP REMOVAL/INSTALLATION [LF]** ).
5. Blow air into port B and verify that there is airflow from port A.
  - If not as specified, replace the EVAP system leak detection pump. (See **EVAPORATIVE**

**EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP REMOVAL/INSTALLATION [LF] ).**

- If as specified, perform the following "**RESISTANCE INSPECTION**".

EVAP SYSTEM LEAK  
DETECTION PUMP

CHARCOAL  
CANISTER SIDE



AIR FILTER  
SIDE

B6U0116W006

**Fig. 16: Identifying Evaporative Emission System Leak Detection Pump Ports**  
Courtesy of MAZDA MOTORS CORP.

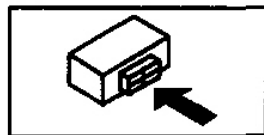
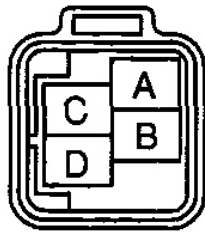
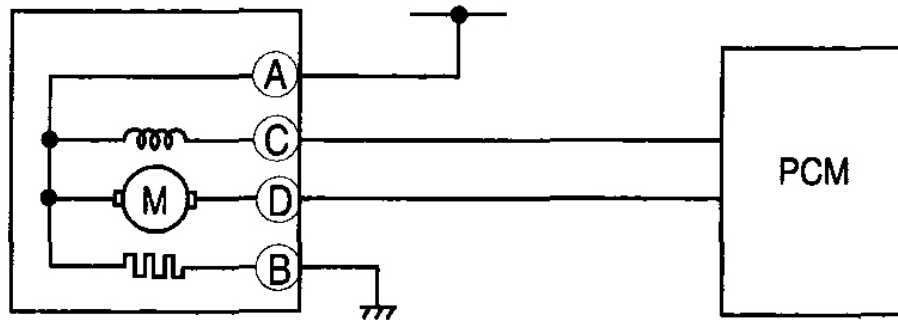
**RESISTANCE INSPECTION**

1. Inspect resistance of the EVAP system leak detection pump.
  - If not as specified, replace the EVAP system leak detection pump. (See **EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP REMOVAL/INSTALLATION [LF] ).**)
  - If as specified, carry out the **CIRCUIT OPEN/SHORT INSPECTION** .

**EVAP SYSTEM LEAK DETECTION PUMP TERMINALS RESISTANCE SPECIFICATIONS**

Terminals	Resistance (ohm)
A-B	20-50
A-C	26.6-32.4
A-D	MAX. 118

EVAP SYSTEM  
LEAK DETECTION PUMP



E5U116ZW5003

**Fig. 17: Identifying EVAP System Leak Detection Pump Connector Terminal**  
Courtesy of MAZDA MOTORS CORP.

**CIRCUIT OPEN/SHORT INSPECTION**

1. Disconnect the PCM connector. (See **PCM REMOVAL/INSTALLATION [LF]** .)
2. Inspect the following wiring harness for open or short circuit (continuity check).

**Open Circuit**

- If there is no continuity, there is an open circuit. Repair or replace the wiring harness.
  - EVAP system leak detection pump terminal C and PCM terminal 1V
  - EVAP system leak detection pump terminal D and PCM terminal 1U



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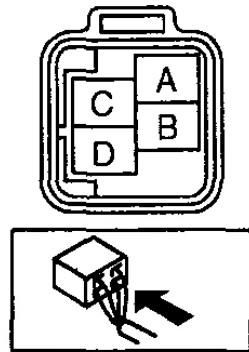
### 2007 ENGINE PERFORMANCE Emission System - MX-5 Miata

- EVAP system leak detection pump terminal A and main relay
- EVAP system leak detection pump terminal B and body ground

#### Short Circuit

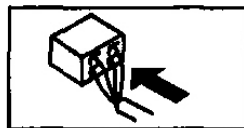
- If there is continuity, there is a short circuit. Repair or replace the wiring harness.
  - EVAP system leak detection pump terminal C and body ground
  - EVAP system leak detection pump terminal D and body ground
  - EVAP system leak detection pump terminal C and power supply
  - EVAP system leak detection pump terminal D and power supply
  - EVAP system leak detection pump terminal A and body ground
  - EVAP system leak detection pump terminal B and power supply

EVAP SYSTEM LEAK DETECTION PUMP  
WIRING HARNESS-SIDE CONNECTOR



PCM  
WIRING HARNESS-SIDE CONNECTOR

1BE	1BA	1AW	1AS	1AO	1AK	1AG	1AC	1Y	1U	1Q	1M	1I	1E	1A
1BF	1BB	1AX	1AT	1AP	1AL	1AH	1AD	1Z	1V	1R	1N	1J	1F	1B
1BG	1BC	1AY	1AU	1AQ	1AM	1AI	1AE	1AA	1W	1S	1O	1K	1G	1C
1BH	1BD	1AZ	1AV	1AR	1AN	1AJ	1AF	1AB	1X	1T	1P	1L	1H	1D

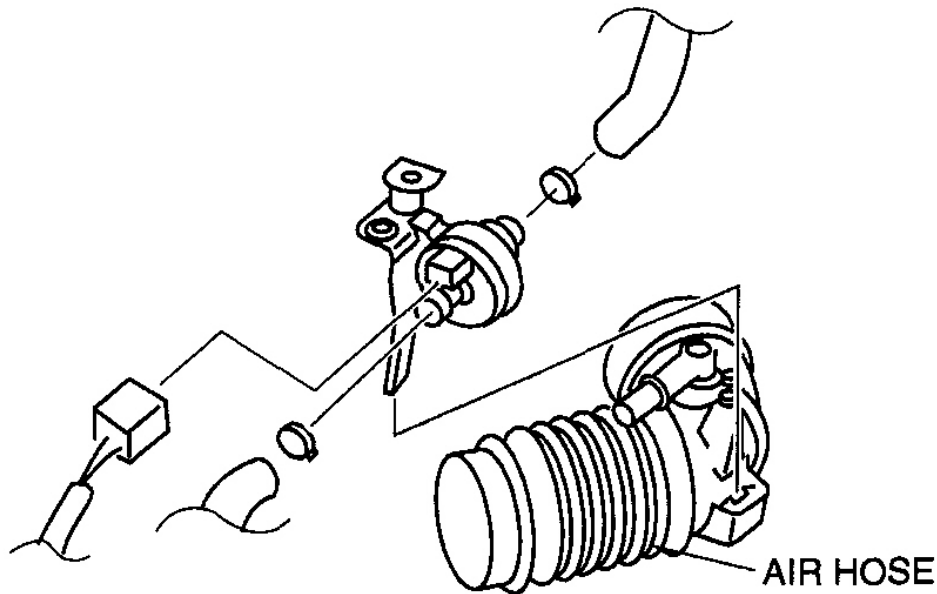


E5U116ZW5004

**Fig. 18: Identifying PCM Wiring Harness-Side Connector**  
Courtesy of MAZDA MOTORS CORP.

**PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF]**

1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Disconnect the purge solenoid valve connector.
4. Disconnect the vacuum hose from the purge solenoid valve.
5. Remove the purge solenoid valve from the air hose.



E5U116ZW5025

**Fig. 19: Removing Purge Solenoid Valve From Air Hose**  
 Courtesy of MAZDA MOTORS CORP.

6. Install in the reverse order of removal.

## PURGE SOLENOID VALVE INSPECTION [LF]

**NOTE:** • Perform the following procedure only when directed.

### AIRFLOW INSPECTION

1. Remove the purge solenoid valve without disconnecting the evaporative hose. (See **PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF]** ).
2. Verify that the airflow is as indicated in **PURGE SOLENOID VALVE AIRFLOW REFERENCE TABLE** .
  - If as specified in **PURGE SOLENOID VALVE AIRFLOW REFERENCE TABLE** , perform the **CIRCUIT OPEN/SHORT INSPECTION** .
  - If not as specified in **PURGE SOLENOID VALVE AIRFLOW REFERENCE TABLE** , inspect the purge solenoid valve. (See **PURGE SOLENOID VALVE REMOVAL/INSTALLATION [LF]** .)

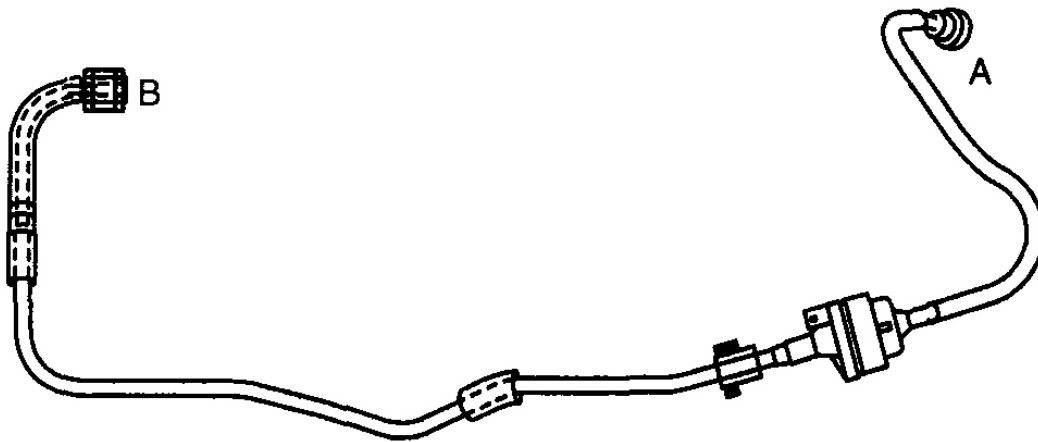
### PURGE SOLENOID VALVE AIRFLOW REFERENCE TABLE

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## 2007 Mazda MX-5 Miata Sport

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Measured condition	Continuity between A-B
When voltage is not applied between terminals A and B	No airflow
When voltage is applied between terminals A and B	Airflow detected



C3U0116W081

**Fig. 20: Inspecting Airflow**  
Courtesy of MAZDA MOTORS CORP.

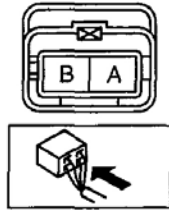
### CIRCUIT OPEN/SHORT INSPECTION

1. Disconnect the PCM connector. (See **PCM REMOVAL/INSTALLATION [LF]** .)
2. Inspect the following wiring harnesses for open or short circuit (continuity check).

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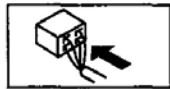
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### PURGE SOLENOID VALVE WIRING HARNESS-SIDE CONNECTOR



### PCM WIRING HARNESS-SIDE CONNECTOR

2BE	2BA	2AW	2AS	2AO	2AK	2AG	2AC	2Y	2U	2Q	2M	2I	2E	2A
2BF	2BB	2AX	2AT	2AP	2AL	2AH	2AD	2Z	2V	2R	2N	2J	2F	2B
—————														
2BG	2BC	2AY	2AU	2AQ	2AM	2AI	2AE	2AA	2W	2S	2O	2K	2G	2C
2BH	2BD	2AZ	2AV	2AR	2AN	2AJ	2AF	2AB	2X	2T	2P	2L	2H	2D



E5U116ZW5005

**Fig. 21: Purge Solenoid Valve & PCM Connector**  
Courtesy of MAZDA MOTORS CORP.

#### Open Circuit

- If there is no continuity, there is an open circuit. Repair or replace the wiring harness.
  - Purge solenoid valve terminal A and PCM terminal 2C
  - Purge solenoid valve terminal B and main relay

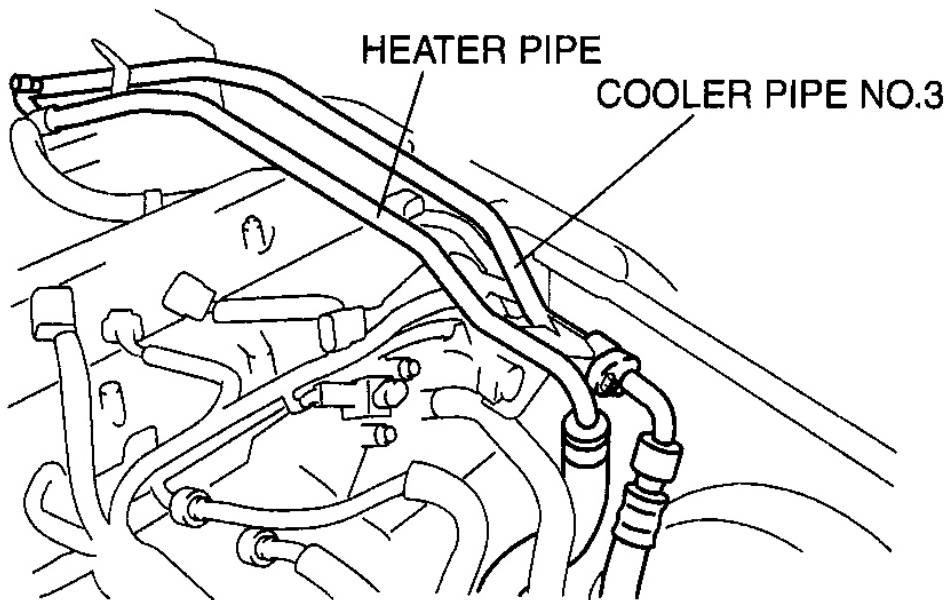
#### Short Circuit

- If there is continuity, there is a short circuit. Repair or replace the wiring harness.
  - Purge solenoid valve terminal A and power supply
  - Purge solenoid valve terminal A and body ground
  - Purge solenoid valve terminal B and body ground

## EGR VALVE REMOVAL/INSTALLATION [LF]

1. Remove the plug hole plate. (See **PLUG HOLE PLATE REMOVAL/INSTALLATION [LF]** .)
2. Remove the battery cover.
3. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)

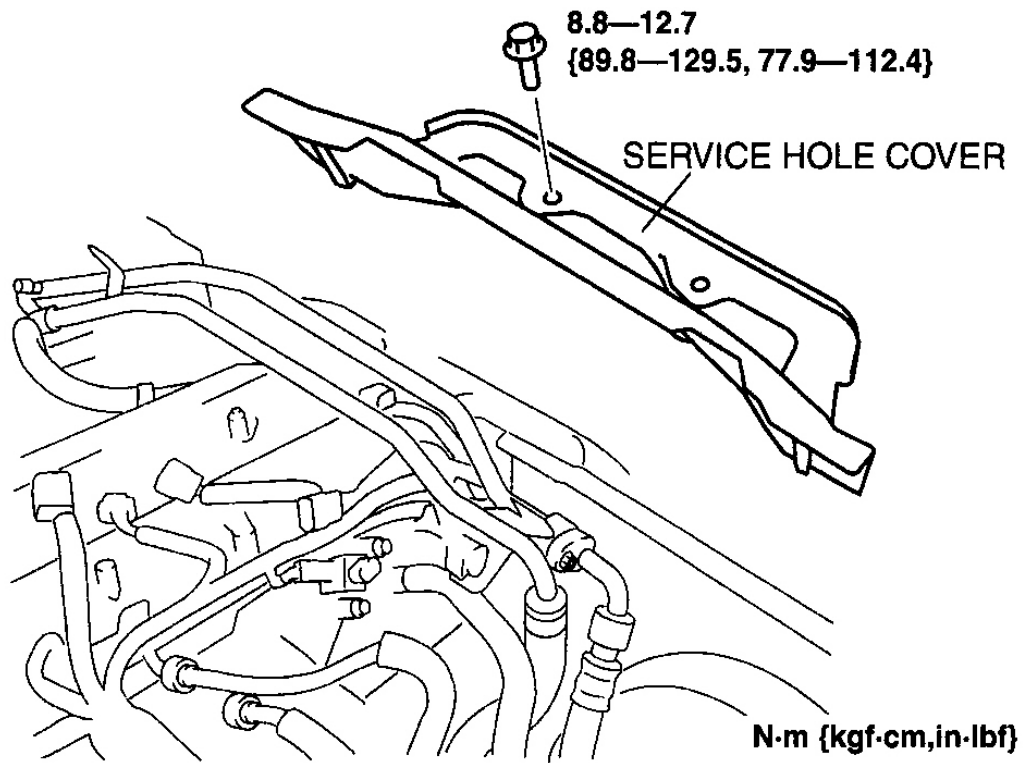
4. Drain the engine coolant from the radiator. (See **ENGINE COOLANT REPLACEMENT [LF]** .)
5. Remove the service hole cover.
  1. Remove the suspension tower bar (joint), (right side) and (left side). (See **FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION** .)
  2. Remove the wiper arm: (See **WIPER ARM AND BLADE REMOVAL/INSTALLATION** .)
  3. Remove the cowl grille. (See **COWL GRILLE REMOVAL/INSTALLATION** .)
  4. Remove the side cowl grille. (See **SIDE COWL GRILLE REMOVAL/INSTALLATION** .)
  5. Move the cooler pipe No.3 and heater pipe slightly out of the way.



E5U113ZW5016

**Fig. 22: Identifying Heater Pipe & Cooler Pipe No. 3**  
Courtesy of MAZDA MOTORS CORP.

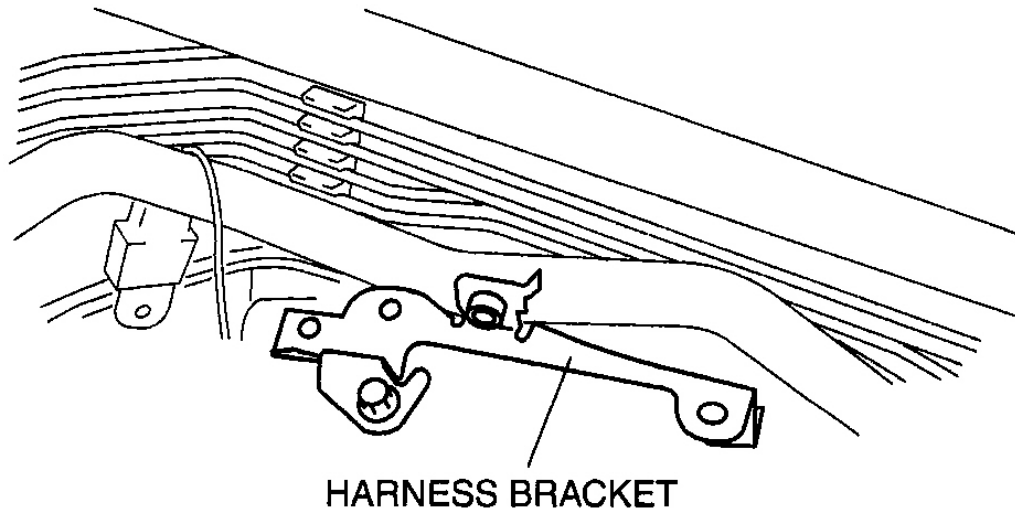
6. Remove the service hole cover.



E5U116ZW5S01

**Fig. 23: Removing Service Hole Cover (With Torque Specifications)**  
Courtesy of MAZDA MOTORS CORP.

6. Remove the harness bracket.

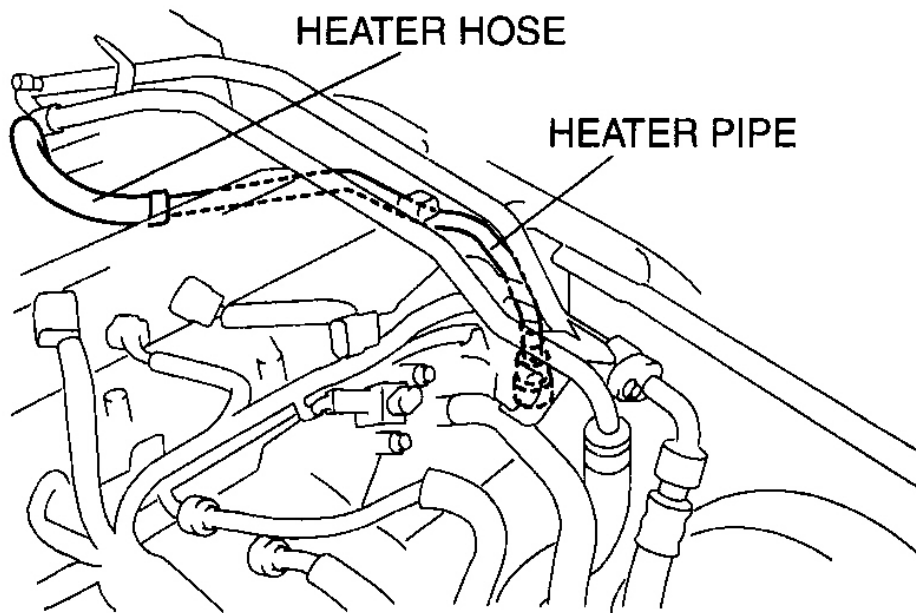


E5U116ZW5026

**Fig. 24: Removing Harness Bracket**  
Courtesy of MAZDA MOTORS CORP.

7. Disconnect the heater hose and move the heater pipe slightly out of the way.

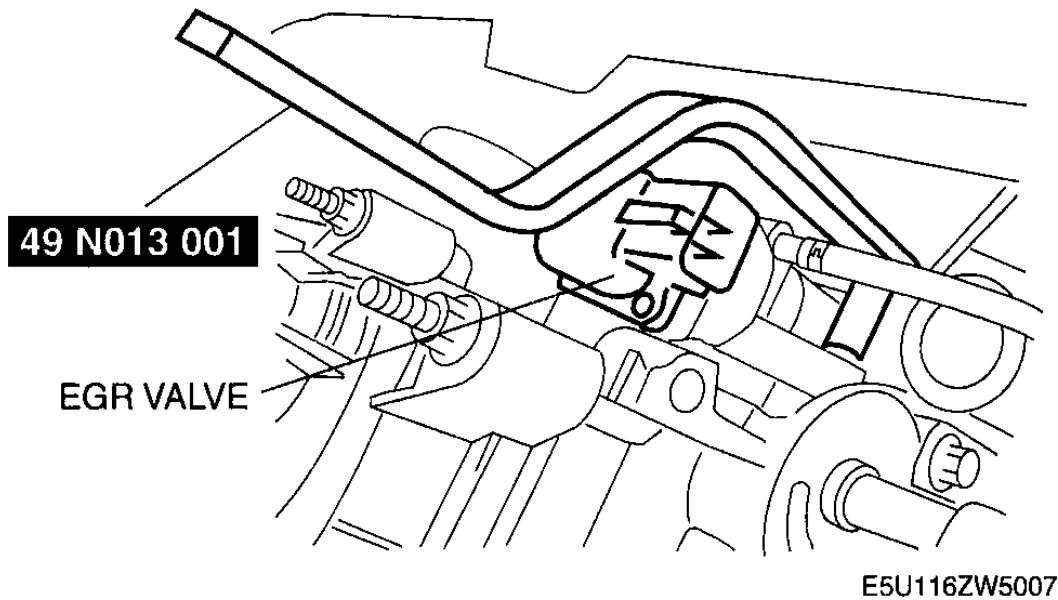




E5U113ZW5018

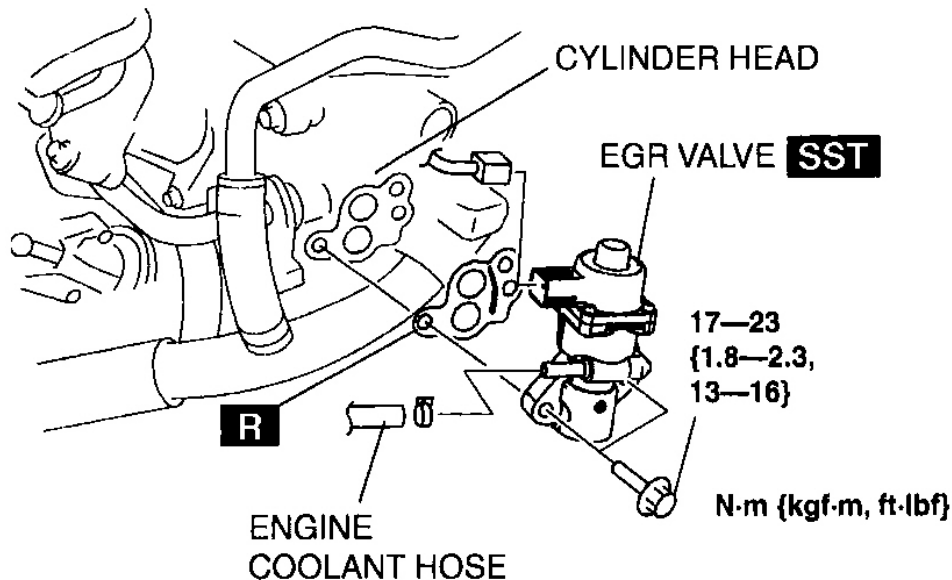
**Fig. 25: Identifying Heater Hose & Heater Pipe**  
Courtesy of MAZDA MOTORS CORP.

8. Disconnect the EGR valve connector.
9. Set the **SST** to the EGR valve installation bolt.



**Fig. 26: Setting SST (49 N013 001) To EGR Valve Installation Bolt**  
Courtesy of MAZDA MOTORS CORP.

10. Remove both EGR valve installation bolts.
11. Remove the EGR valve with the engine coolant hose.



E5U116ZW5006

**Fig. 27: Removing EGR Valve With Engine Coolant Hose (With Torque Specifications)**  
 Courtesy of MAZDA MOTORS CORP.

12. Disconnect the engine coolant hose from the EGR valve.
13. Replace the EGR valve gasket.
14. Install in the reverse order of removal.

## EGR VALVE INSPECTION [LF]

**NOTE:**

- Perform the following procedure only when directed.

### ON-VEHICLE INSPECTION

1. Verify that the buzzing sound (valve operation sound) is heard from the EGR valve when engine cranking.
  - If the buzzing sound is not heard, perform the resistance inspection.

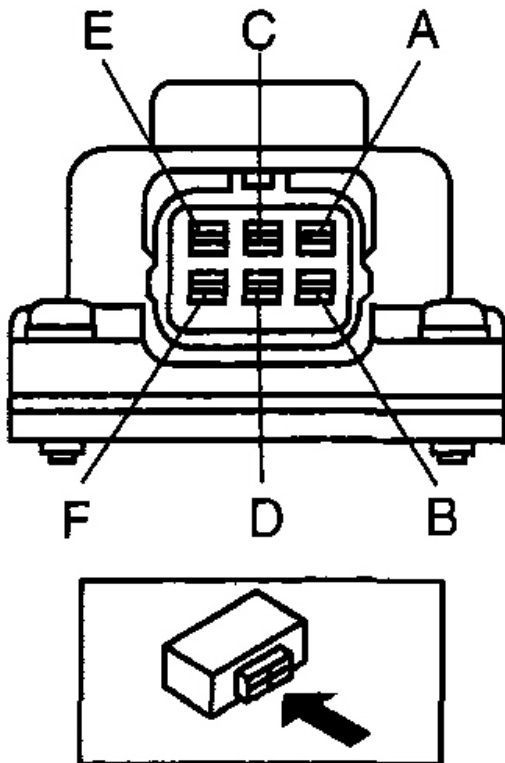
### RESISTANCE INSPECTION

1. Remove the plug hole plate. (See **PLUG HOLE PLATE REMOVAL/INSTALLATION [LF]** .)
2. Disconnect the battery cover.
3. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)

4. Disconnect the EGR valve connector. (See **EGR VALVE REMOVAL/INSTALLATION [LF]** ).
5. Measure the resistance between the EGR valve terminals.
  - If within the specification, perform out the **CIRCUIT OPEN/SHORT INSPECTION** .
  - If not within the specification, replace the EGR valve. (See **EGR VALVE REMOVAL/INSTALLATION [LF]** ).

**STANDARD RESISTANCE SPECIFICATIONS**

Terminal	Resistance (ohm)
C-E	12-16
C-A	
D-B	
D-F	



E5U116ZW5850

**Fig. 28: Identifying EGR Valve Connector Terminals**  
 Courtesy of MAZDA MOTORS CORP.

## **CIRCUIT OPEN/SHORT INSPECTION**

1. Disconnect the PCM connector. (See **PCM REMOVAL/INSTALLATION [LF]** .)
2. Inspect the following wiring harnesses for open or short circuit (continuity check).

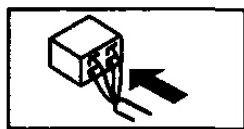
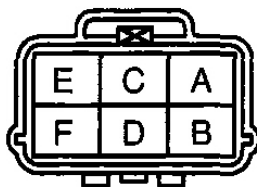
### **Open Circuit**

- If there is no continuity, there is an open circuit. Repair or replace the wiring harness.
  - EGR valve terminal A and PCM terminal 2G
  - EGR valve terminal B and PCM terminal 2L
  - EGR valve terminal E and PCM terminal 2K
  - EGR valve terminal F and PCM terminal 2H
  - EGR valve terminal C and main relay
  - EGR valve terminal D and main relay

### **Short Circuit**

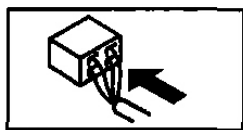
- If there is continuity, there is a short circuit. Repair or replace the wiring harness.
  - EGR valve terminal A and body ground
  - EGR valve terminal A and power supply
  - EGR valve terminal B and body ground
  - EGR valve terminal B and power supply
  - EGR valve terminal C and body ground
  - EGR valve terminal D and body ground
  - EGR valve terminal E and body ground
  - EGR valve terminal E and power supply
  - EGR valve terminal F and body ground
  - EGR valve terminal F and power supply

EGR VALVE  
WIRING HARNESS-SIDE CONNECTOR



PCM  
WIRING HARNESS-SIDE CONNECTOR

2BE	2BA	2AW	2AS	2AO	2AK	2AG	2AC	2Y	2U	2Q	2M	2I	2E	2A
2BF	2BB	2AX	2AT	2AP	2AL	2AH	2AD	2Z	2V	2R	2N	2J	2F	2B
2BG	2BC	2AY	2AU	2AQ	2AM	2AI	2AE	2AA	2W	2S	2O	2K	2G	2C
2BH	2BD	2AZ	2AV	2AR	2AN	2AJ	2AF	2AB	2X	2T	2P	2L	2H	2D



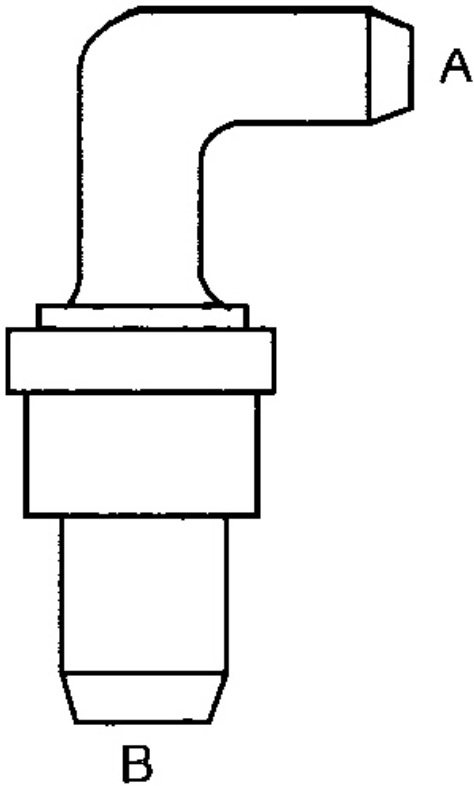
E5U116ZW5009

**Fig. 29: Identifying EGR Valve & PCM Wiring Harness-Side Connector**  
Courtesy of MAZDA MOTORS CORP.

## POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [LF]

1. Remove the intake manifold. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF] .)
2. Remove the PCV valve.
3. Verify that there is no airflow when pressure is applied to port A.
  - If there is airflow, replace the PCV valve.
4. Verify that there is airflow when vacuum is applied to port A.

- If there is no airflow, replace the PCV valve.



A6J3916W002

**Fig. 30: Identifying PCV Valve**  
Courtesy of MAZDA MOTORS CORP.

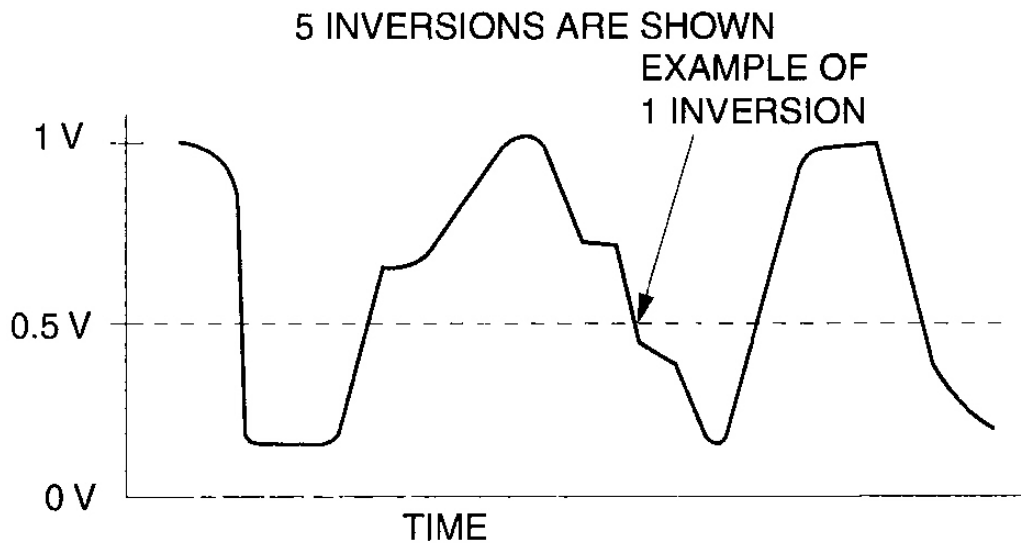
## WARM-UP THREE-WAY CATALYTIC CONVERTER (WU-TWC) INSPECTION [LF]

**NOTE:**

- **Make sure that no HO2S DTCs have been detected. If detected, this inspection is not applicable for WU-TWC inspection.**

1. Connect the M-MDS or equivalent and monitor PIDs as following.
  - Monitor the WU-TWC using O2S11 PID for upstream HO2S and O2S12 PID for downstream HO2S.

2. Monitor the appropriate PIDs.
3. Drive the vehicle for **10 min** at **65-96 km/h {40-60 mph}** to allow the front catalytic converter to reach operating temperature.
4. Stop the vehicle and leave it 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.



A6E3916W013

**Fig. 31: Identifying HO2S Graph Line (5 Inversions)**  
Courtesy of MAZDA MOTORS CORP.

9. Count the number of times (inversions) that the downstream HO2S graph line actually crosses the **0.5 V** line.

**NOTE:**

- Do not count the number of peaks. Refer to Fig. 31 .

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

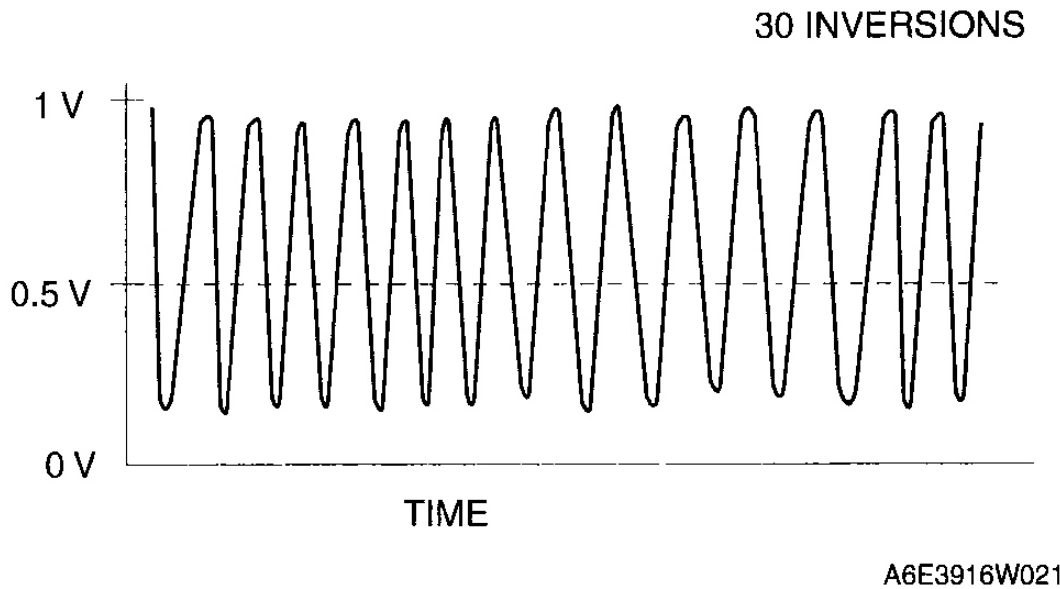
**Equation**

**RATIO = Upstream HO2S inversion divided by downstream HO2S inversion**



- If the ratio is **1.5 or more** or there is no downstream HO2S inversion, the WU-TWC is functioning properly.
- If the ratio is **less than 1.5**, the WU-TWC is not functioning properly. Replace the WU-TWC.

### Upstream HO2S Graph Line Example

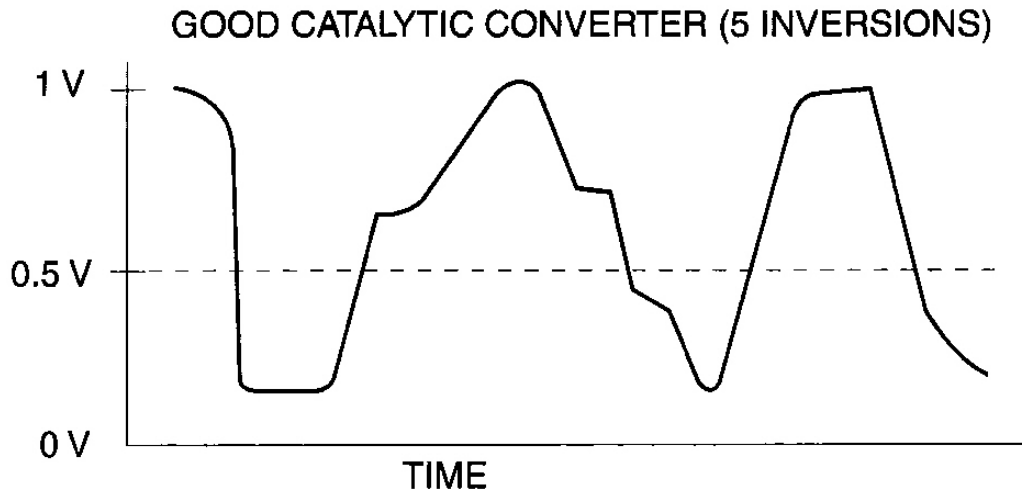


**Fig. 32: Upstream HO2S Graph Line Example**  
Courtesy of MAZDA MOTORS CORP.

### Downstream HO2S Graph Line Example 1

#### Equation

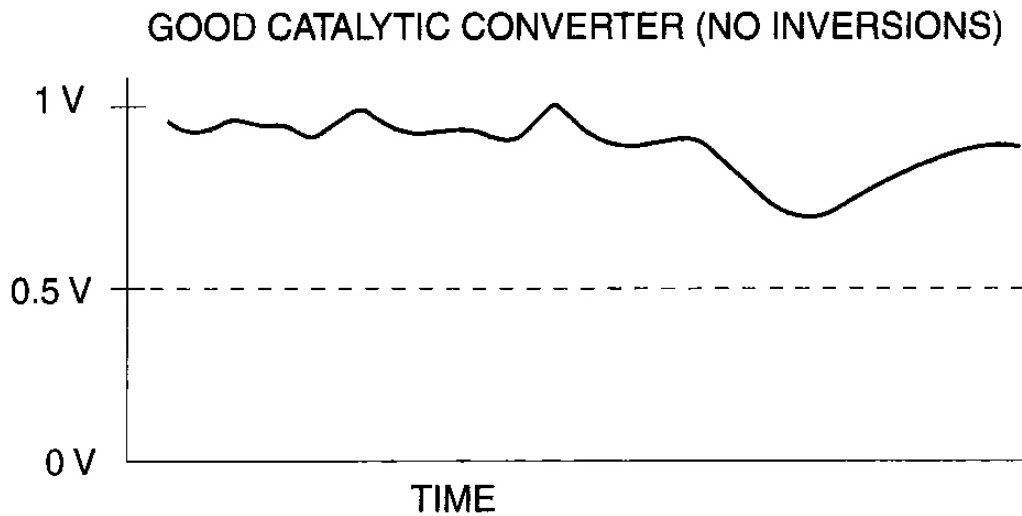
**RATIO = 30 inversions (upstream HO2S inversions) divided by 5 inversions (downstream HO2S inversions) = 6.0 (good WU-TWC)**



A6E3916W012

**Fig. 33: Downstream HO2S Graph Line Example 1**  
Courtesy of MAZDA MOTORS CORP.

**Downstream HO2S Graph Line Example 2**



A6E3916W014

**Fig. 34: Downstream HO2S Graph Line Example 2**

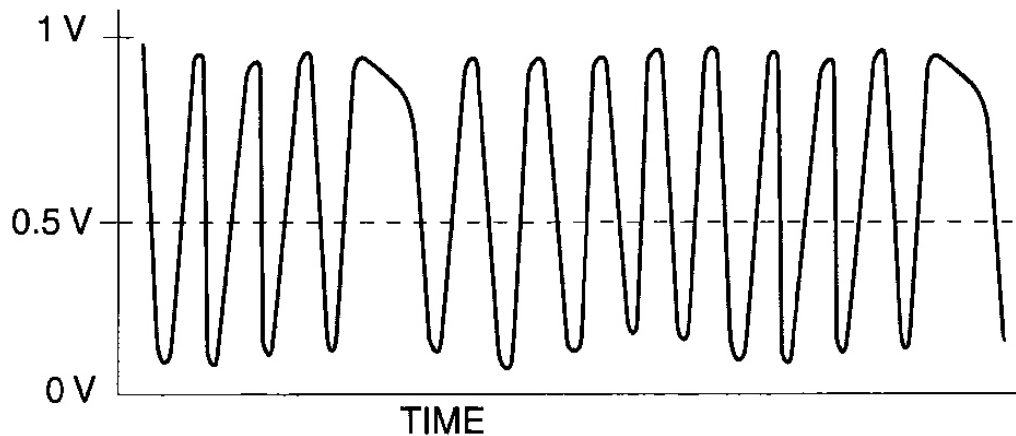
Courtesy of MAZDA MOTORS CORP.

### Downstream HO2S Graph Line Example 3

#### Equation

**RATIO = 30 inversions (upstream HO2S inversions) divided by 27 inversions (downstream HO2S inversions) = 1.1 (bad WU-TWC)**

### DETERIORATED CATALYTIC CONVERTER (27 INVERSIONS)



A6E3916W015

**Fig. 35: Downstream HO2S Graph Line Example 3**

Courtesy of MAZDA MOTORS CORP.

## ROLLOVER VALVE REMOVAL/INSTALLATION [LF]

**NOTE:**

- The rollover valve cannot be removed as it is built into the fuel tank.

## ROLLOVER VALVE INSPECTION [LF]

**NOTE:**

- The rollover valve cannot be removed and inspected as it is built into the fuel tank.

1. Perform the fuel tank inspection. (See **FUEL TANK INSPECTION [LF]** .)

## FUEL SHUT-OFF VALVE REMOVAL/INSTALLATION [LF]

**NOTE:**

- The fuel shut-off valve cannot be removed as it is built into the fuel tank.

## FUEL SHUT-OFF VALVE INSPECTION [LF]

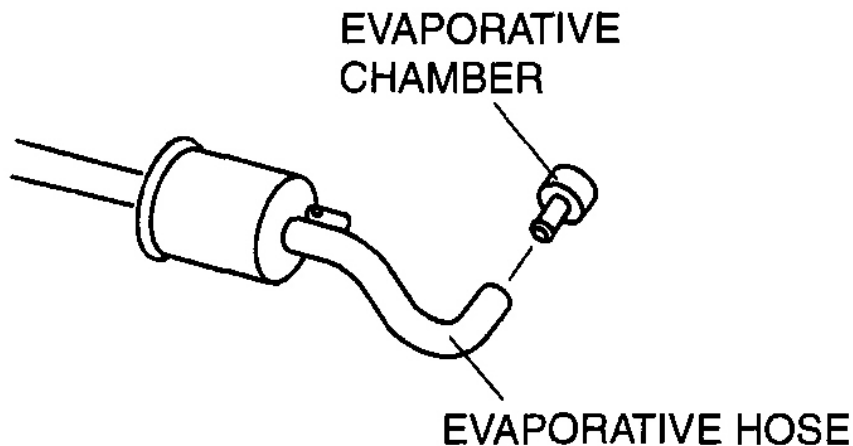
**NOTE:**

- The fuel shut-off valve cannot be removed and inspected as it is built into the fuel tank.

1. Perform the fuel tank inspection. (See **FUEL TANK INSPECTION [LF]** .)

## EVAPORATIVE CHAMBER REMOVAL/INSTALLATION [LF]

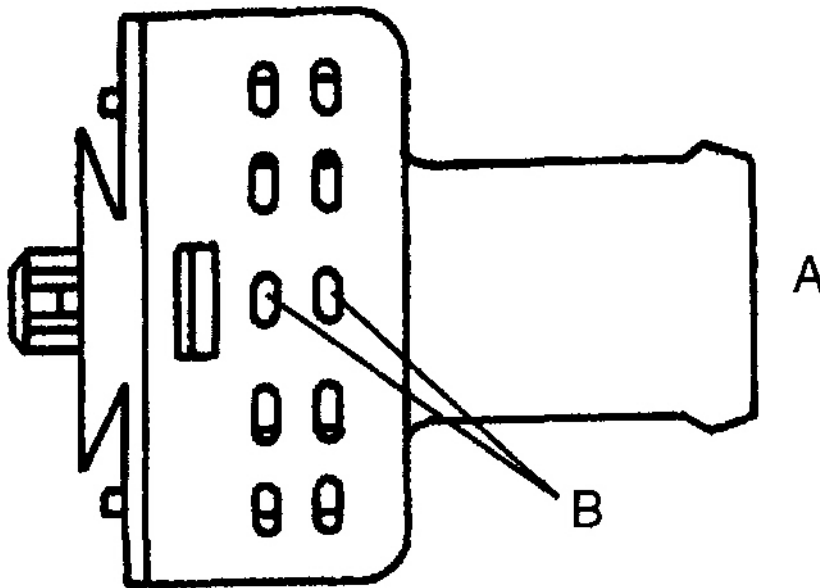
1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Disconnect the evaporative hose.
4. Remove the evaporative chamber.
5. Cover the evaporative hose with vinyl sheets or the like to prevent them from being scratched or contaminated with foreign material.
6. Install in the reverse order of removal.



E5U116ZW5103

## EVAPORATIVE CHAMBER INSPECTION [LF]

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



Y5U116WAC

**Fig. 37: Inspecting Evaporative Chamber Ports**  
Courtesy of MAZDA MOTORS CORP.

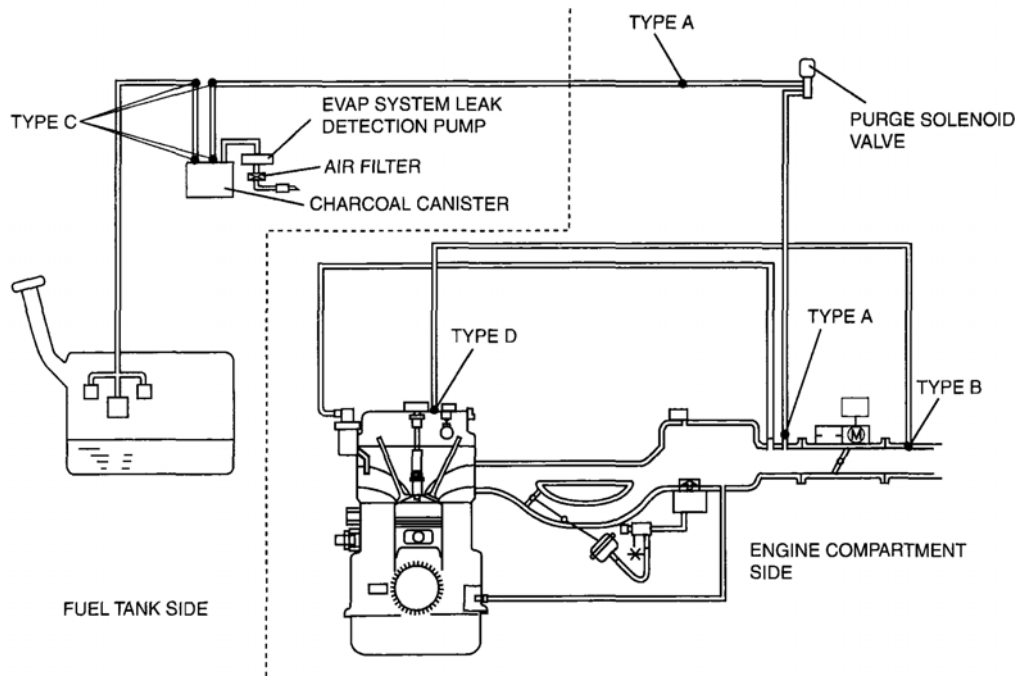
## QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [LF]

### QUICK RELEASE CONNECTOR TYPE

- CAUTION:**
- There are four types of quick release connectors. Verify the type and location, and install/remove properly.

## 2007 Mazda MX-5 Miata Sport

2007 ENGINE PERFORMANCE Emission System - MX-5 Miata



E5U116ZS5004

**Fig. 38: Identifying Location Of Different Types Of Quick Release Connectors**  
Courtesy of MAZDA MOTORS CORP.

### TYPE A REMOVAL

**CAUTION:**

- The quick release connector may be damaged if the release tab is bent excessively. Do not expand the release tab over the stopper.

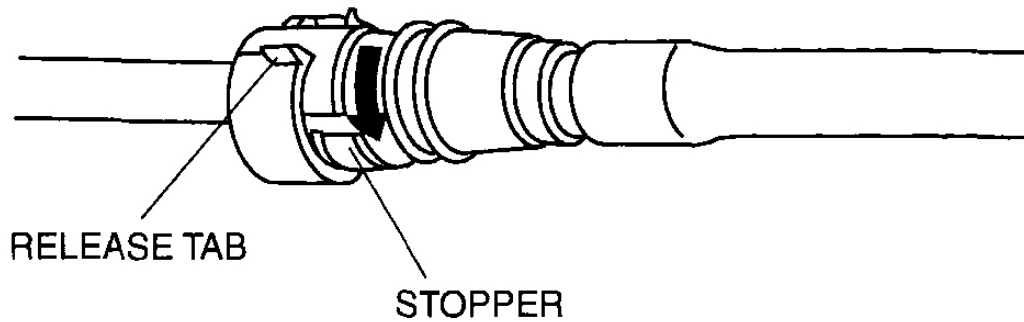
**NOTE:**

- The evaporative hose can be removed by pushing it to the joint port side to release the lock.

1. Rotate the release tab on the quick release connector to the stopper position.

**NOTE:**

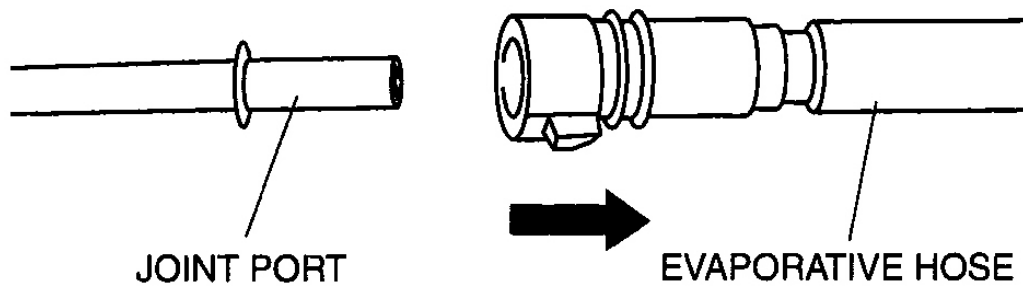
- The retainer is attached to the pipe even after the connector is disconnected.



B3E0114W039

**Fig. 39: Rotating Release Tab On Quick Release Connector To Stopper Position**  
Courtesy of MAZDA MOTORS CORP.

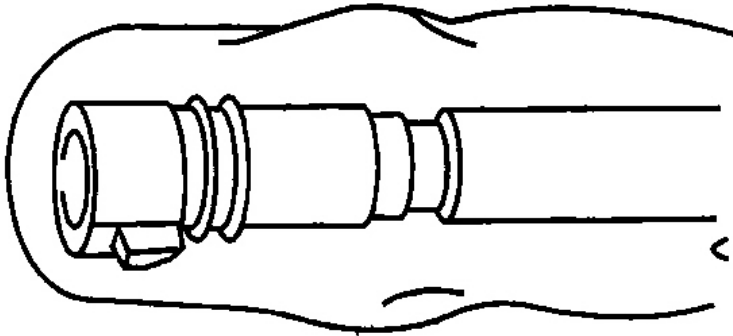
2. Pull out the evaporative hose straight from the joint port and disconnect it.



C3U0116W154

**Fig. 40: Disconnecting Evaporative Hose Straight From Joint Port**  
Courtesy of MAZDA MOTORS CORP.

3. Cover the disconnected quick release connector and joint port with vinyl sheeting or a similar material to prevent it from scratches or dirt.



ADJ3912W019

**Fig. 41: Covering Disconnected Quick Release Connector**  
Courtesy of MAZDA MOTORS CORP.

#### **TYPE B REMOVAL**

1. Squeeze the release tab until the locks are released.

**NOTE:**

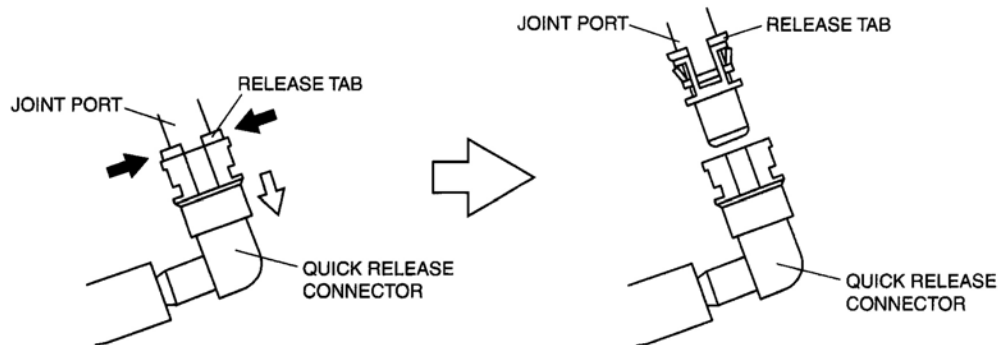
- The retainer has two internal locking tabs which retain the joint port. Be sure that the squeezing place on the retainer is squeezed until it can be released from the joint port.

2. Pull the quick release connector straight outward.

**NOTE:**

- The retainer is attached to the pipe even after the connector is disconnected.





E5U116ZW5041

**Fig. 42: Removing Type B Components**  
Courtesy of MAZDA MOTORS CORP.

3. Cover the disconnected quick release connector and joint port with vinyl sheeting or a similar material to prevent it from becoming scratched or dirty.

#### TYPE C REMOVAL

**CAUTION:**

- Be careful not to damage the pipe when unlocking the retainer.

**NOTE:**

- If the quick release connector is removed, replace the retainer with a new one.

1. Follow "BEFORE SERVICE PRECAUTION" and remove dirt from the connecting surfaces before performing any work operations.

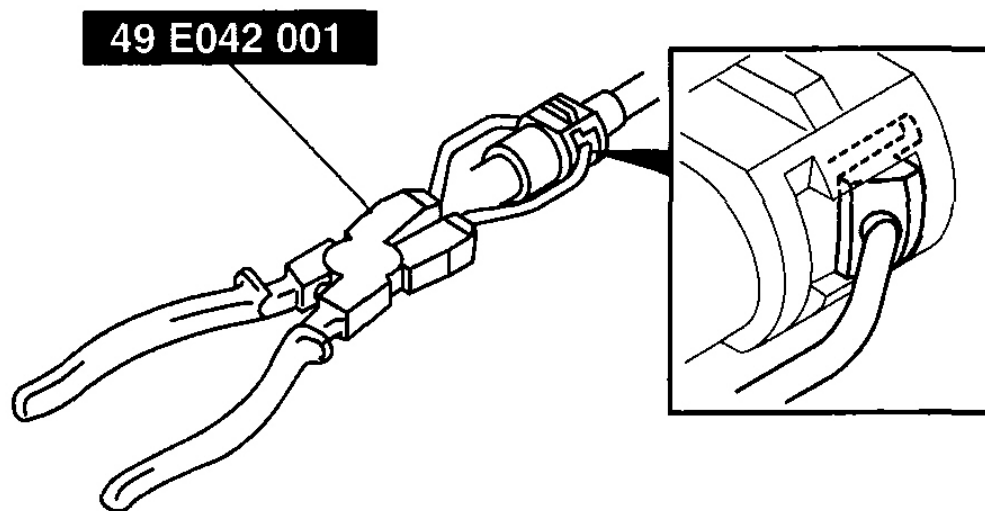
**NOTE:**

- The retainer is attached to the pipe even after the connector is disconnected.

2. Set the SST parallel to the quick release connector.

**NOTE:**

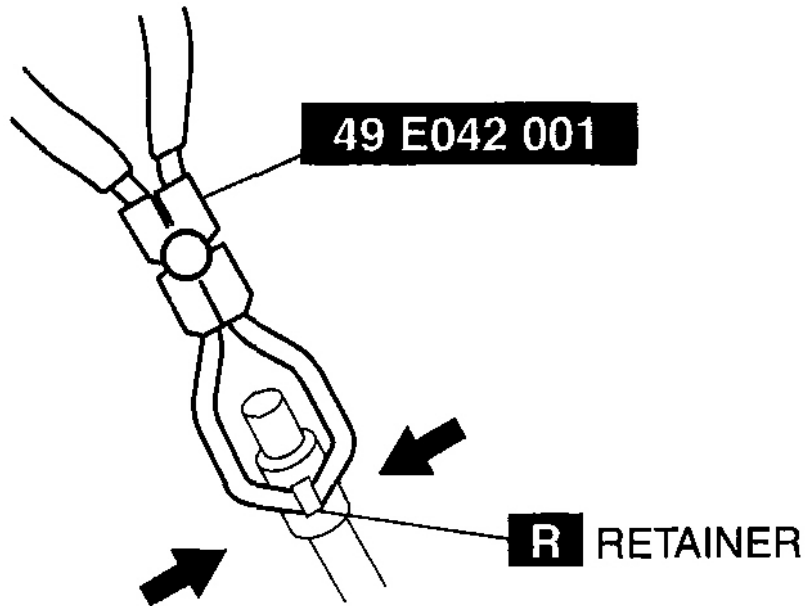
- The quick release connector can be removed by pushing the center of the retainer tabs.



E5U114ZW5850

**Fig. 43: Disconnecting Quick Release Connector**  
Courtesy of MAZDA MOTORS CORP.

3. Hold the center of the retainer tabs with the **SST** ends and press the retainer.
4. Pull the connector side and disconnect the quick release connector.
5. Raise a retainer tab using the **SST** and remove the retainer.



E5U114ZW5012

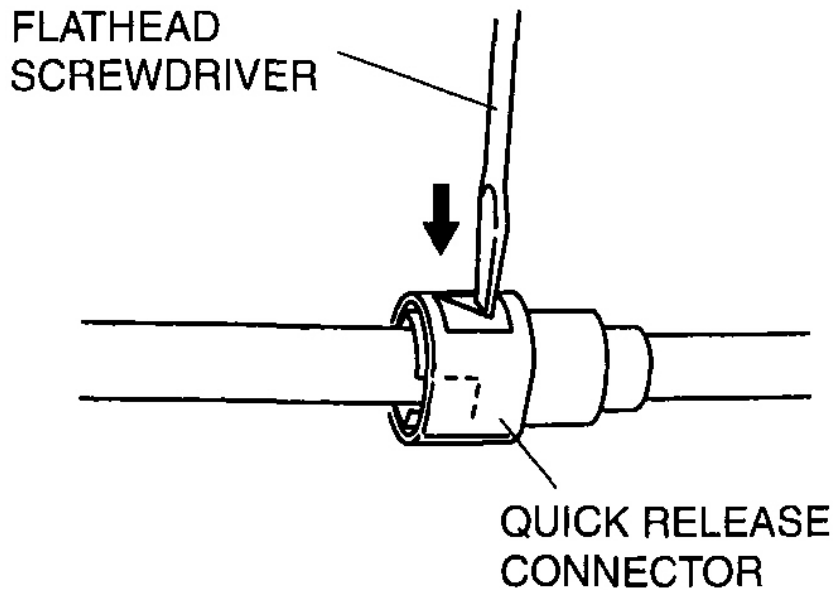
**Fig. 44: Raising Retainer Tab Using SST**  
Courtesy of MAZDA MOTORS CORP.

6. Cover the disconnected quick release connector and joint port with vinyl sheeting or a similar material to prevent it from becoming scratched or dirty.

#### **TYPE D REMOVAL**

**CAUTION:** • When releasing the retainer locks, take extreme care not to damage the evaporative hose.

1. Release the locks between the retainer and joint port by pressing each retainer lock one by one using a flathead screwdriver or a similar tool.



C3U0116W153

**Fig. 45: Releasing Locks Between Retainer And Joint Port**  
Courtesy of MAZDA MOTORS CORP.

2. Pull out the hose straight from the joint port and disconnect it.

**NOTE:**

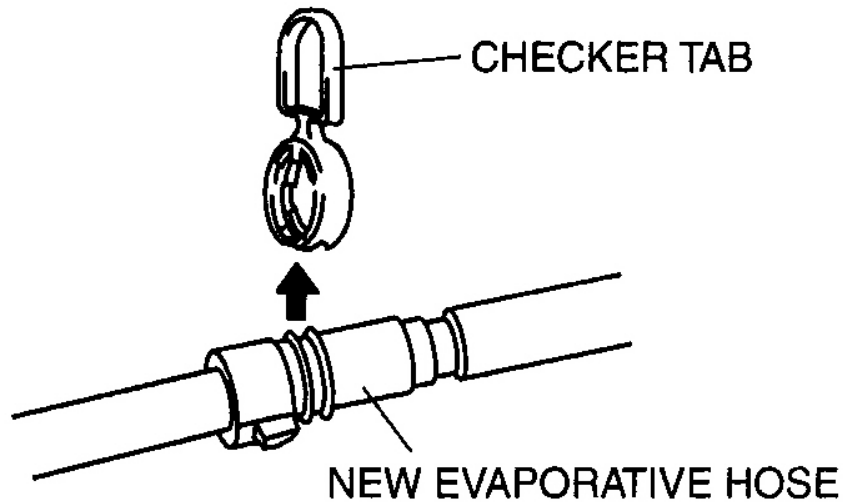
- The retainer is attached to the pipe even after the connector is disconnected.

3. Cover the disconnected quick release connector and joint port with vinyl sheeting or a similar material to prevent it from becoming scratched or dirty.

**TYPE A INSTALLATION**

**NOTE:**

- If the quick release connector O-ring is damaged or has slipped, replace the evaporative hose.
- A checker tab is integrated with the quick release connector for new evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the joint port.



C3U0116W155

**Fig. 46: Removing Checker Tab From Quick Release Connector Completely Engaged With Joint Port**  
Courtesy of MAZDA MOTORS CORP.

1. Inspect the evaporative hose and joint port sealing surface for damage and deformation.
  - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the joint port.
3. Reconnect the evaporative hose straight to the joint port until a click is heard.

**NOTE:**

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.

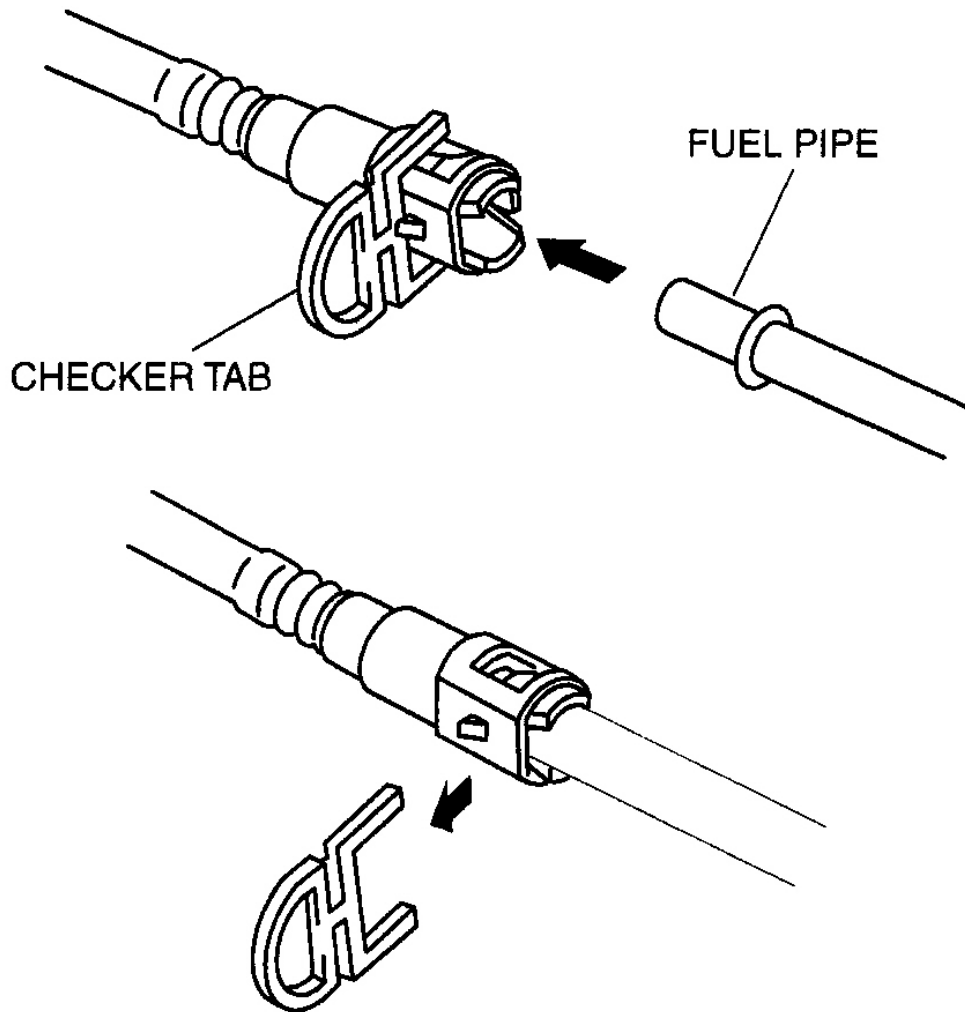
4. Lightly pull and push the quick release connector a few times by hand, and then verify that it can move 2.0-3.0 mm {0.08-0.12 in} and is connected securely.

**TYPE B INSTALLATION**

**NOTE:**

- If the quick release connector O-ring is damaged or has slipped, replace the evaporative hose.
- When replacing with a new evaporative hose, disengage the release tabs from the join port.

- A checker tab is integrated with the quick release connector for new evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the joint port.



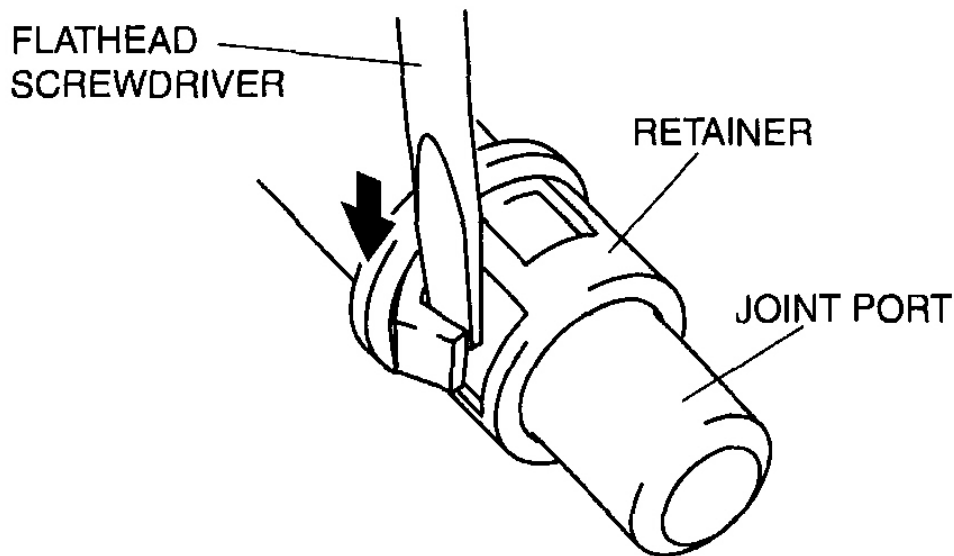
C3U0114S095

**Fig. 47: Removing Checker Tab From Quick Release Connector Completely Engaged With Joint Port**  
Courtesy of MAZDA MOTORS CORP.

1. When newly replacing the quick release connector, remove the release tab using the following procedure.
  1. Widen the retainer lock using a flathead screwdriver, then pull out the release tab from the joint

port and remove it.

2. Inspect the quick release connector and joint port sealing surface for damage and deformation.
  - If there is any malfunction, replace it with a new one.
3. Apply a small amount of clean engine oil to the sealing surface of the joint port.
4. Reconnect the quick release connector straight to the joint port until a click is heard.



E5U116ZW5040

**Fig. 48: Removing Tab From Joint Port**  
Courtesy of MAZDA MOTORS CORP.

**NOTE:**

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.

5. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.

**TYPE C INSTALLATION**

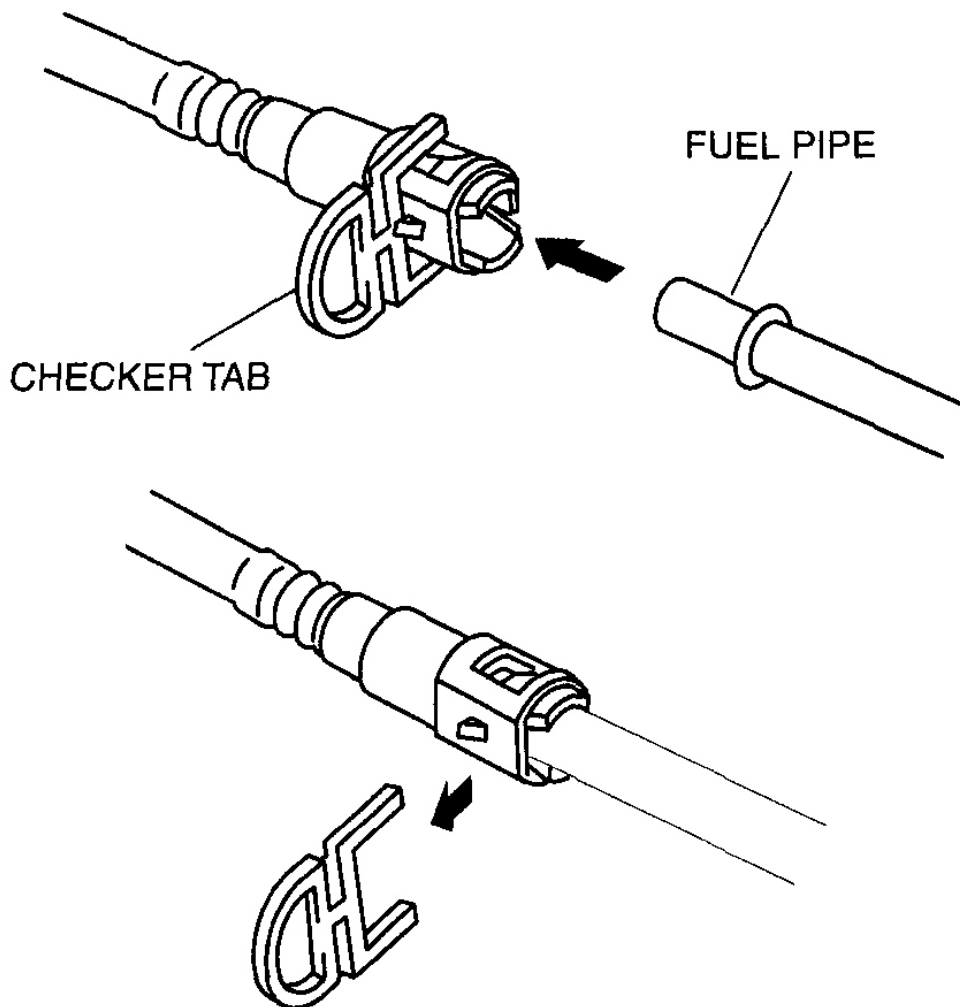
**NOTE:**

- If the quick release connector O-ring is damaged or has slipped, replace the piping component.
- A checker tab is integrated with the quick release connector for new fuel hoses and evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the fuel

pipe.

- CAUTION:**
- Be sure to replace the retainer with a new one to prevent gas leakage.

1. Install a new retainer to the quick release connector.



C3U0114S095

**Fig. 49: Installing New Retainer To Quick Release Connector**  
Courtesy of MAZDA MOTORS CORP.



## 2007 Mazda MX-5 Miata Sport

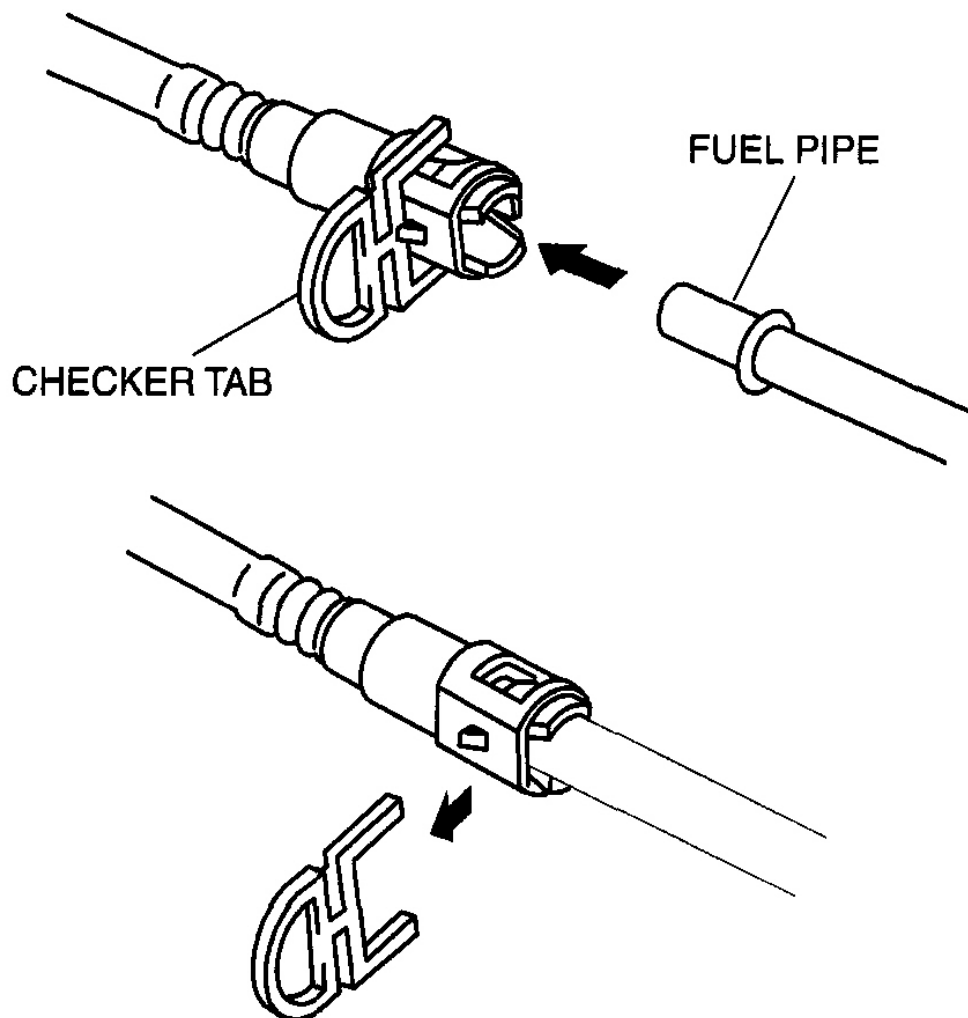
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2. Reconnect the hose straight to the pipe until a click is heard.
3. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.

### TYPE D INSTALLATION

**NOTE:**

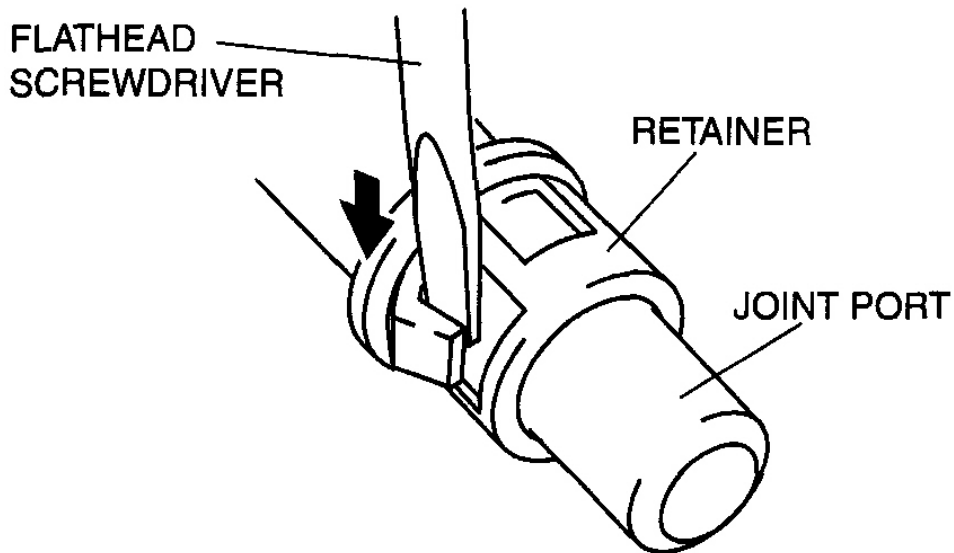
- If the quick release connector O-ring is damaged or has slipped, replace the evaporative hose.
- When replacing with a new evaporative hose, disengage the release tabs from the join port.
- A checker tab is integrated with the quick release connector for new evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the joint port.



C3U0114S095

**Fig. 50: Removing Checker Tab From Quick Release Connector After Connector Completely Engaged With Joint Port**  
Courtesy of MAZDA MOTORS CORP.

1. When newly replacing the quick release connector, remove the release tab using the following procedure.
  1. Widen the retainer lock using a flathead screwdriver, then pull out the release tab from the joint port and remove it.



E5U116ZW5040

**Fig. 51: Removing Tab From Joint Port**  
Courtesy of MAZDA MOTORS CORP.

2. Inspect the quick release connector and joint port sealing surface for damage and deformation.
  - If there is any malfunction, replace it with a new one.
3. Apply a small amount of clean engine oil to the sealing surface of the joint port.
4. Reconnect the quick release connector straight to the joint port until a click is heard.

**NOTE:**

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.
5. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.