

## 2008 Ford Mustang

### 2008 ENGINE PERFORMANCE Evaporative Emissions - Mustang

## 2008 ENGINE PERFORMANCE

### Evaporative Emissions - Mustang

## SPECIFICATIONS

### TORQUE SPECIFICATIONS

| Description                                | Nm | lb-in |
|--------------------------------------------|----|-------|
| Evaporative Emission (EVAP) canister bolts | 12 | 106   |
| EVAP canister nuts                         | 10 | 89    |
| Fuel vapor tube assembly bolt              | 5  | 44    |

## DESCRIPTION AND OPERATION

### EVAPORATIVE EMISSIONS

**NOTE:** The vehicle emission vacuum routing diagrams are contained in the Description and Operation subsection of the Engine Emissions Control part. Refer to **ENGINE EMISSION CONTROL** article.

The Evaporative Emission (EVAP) system consists of the:

- EVAP canister purge valve.
- EVAP canister assembly (includes the EVAP canister vent solenoid and the dust separator).
- fuel tank filler cap.
- fuel vapor tube assembly (includes the Fuel Tank Pressure (FTP) sensor).

The EVAP system:

- utilizes an On-Board Refueling Vapor Recovery (ORVR) system that captures the fuel vapors from the vehicle's fuel tank during refueling.
- prevents hydrocarbon emissions from reaching the atmosphere.
- stores fuel vapors in the EVAP canister that are generated during vehicle operation or hot soak, until they can be consumed by the engine during normal engine operation.
- routes the stored fuel vapors to the engine during engine operation.
- is controlled by the PCM which, using various sensor inputs, calculates the desired amount of purge flow. The PCM regulates the purge flow, induced by the application of intake manifold vacuum, by varying the duty cycle applied to the EVAP canister purge valve.

The fuel vapors are routed:

- from the fuel tank to the EVAP canister through the fuel vapor tube assembly.
- to the engine when the EVAP canister purge valve is opened by the PCM.

## 2008 Ford Mustang

### 2008 ENGINE PERFORMANCE Evaporative Emissions - Mustang

The EVAP canister assembly:

- is located under the rear of the vehicle, just behind the fuel tank.
- includes the EVAP canister vent solenoid and the dust separator.
- contains activated carbon.
- stores fuel vapors.

The EVAP canister purge valve:

- is normally closed.
- regulates purging of the EVAP canister.
- is controlled by the PCM.
- is located on the left front inner fender well.

The dust separator:

- prevents suspended dust and dirt particles from entering the EVAP system.
- is serviced as part of the EVAP canister assembly.

The EVAP canister vent solenoid:

- is normally open.
- seals the EVAP system for the inspection and maintenance (I/M 240) test and OBD II leak and pressure tests.
- is serviced as part of the EVAP canister assembly.

The fuel tank filler cap:

- relieves system vacuum below 3.8 kPa (15.26 in H<sub>2</sub> O).

The FTP sensor:

- is serviced as part of the fuel vapor tube assembly.
- monitors the pressure levels in the fuel tank.
- communicates the pressure reading to the PCM during the OBD II leak test.

The fuel vapor tube assembly:

- includes the FTP sensor.
- prevents suspended liquid fuel from being drawn into the EVAP canister along with the fuel vapors.
- returns the liquid to the fuel tank.
- routes vapors between the canister vent solenoid and the fuel tank filler pipe assembly.

## 2008 Ford Mustang

### 2008 ENGINE PERFORMANCE Evaporative Emissions - Mustang

The EVAP system monitor:

- is a self-test strategy within the PCM, which tests the integrity of the EVAP system.
- monitors the EVAP system for leaks.
- monitors electronic EVAP components for irrationally high or low voltages.
- monitors for correct EVAP system operation.

The engine ON EVAP leak-check monitor:

- is executed by the individual components of the enhanced EVAP system. Intake manifold vacuum is utilized to reach a target vacuum on the fuel tank. The FTP sensor is used by the engine ON EVAP leak-check monitor to determine if the target vacuum necessary to carry out the leak-check on the fuel tank has been reached. Once target vacuum on the fuel tank is achieved, the change in fuel tank vacuum over a calibrated period of time determines if a leak exists.

The Engine Off Natural Vacuum (EONV) EVAP leak-check monitor is executed:

- once the engine ON EVAP leak-check monitor is completed and the key is turned OFF. The EONV EVAP leak-check monitor determines if a leak is present when the naturally occurring change in the fuel tank pressure or vacuum does not exceed a calibrated limit during a calibrated amount of time. A separate, low-power consuming microprocessor in the PCM manages the EONV leak-check. The engine OFF EVAP leak-check monitor is executed by the individual components of the enhanced EVAP system.

## DIAGNOSTIC TESTS

### EVAPORATIVE EMISSIONS

Refer to the [Introduction - Gasoline Engines](#) article.

## GENERAL PROCEDURES

### EVAPORATIVE EMISSION SYSTEM LEAK TEST

#### Special Tools

| Illustration                                                                                    | Tool Name                                                                 | Tool Number                                                 |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------|
| <br>ST2817-A | VACUTEC Smoke Machine Fuel Evaporative Emission System Tester             | 218-0002 or equivalent                                      |
|                                                                                                 | Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) | software with appropriate hardware, or equivalent scan tool |

## 2008 Ford Mustang

### 2008 ENGINE PERFORMANCE Evaporative Emissions - Mustang



ST1137-A

#### Phase 1 - Leak Verification

1. Run the EVAP Test with the scan tool.

**NOTE:** Some small leaks may not be detected using the EVAP Test. If the system has passed the test but a leak is still suspected, then proceed to Phase 2.

2. If the Evaporative Emission (EVAP) system failed the EVAP Test, then proceed to Phase 2.

#### Phase 2 - System Leak Check

1. Disconnect the upper vapor tube-to-EVAP canister purge valve quick connect coupling. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** article.
2. Connect the VACUTEC Smoke Machine Fuel Evaporative Emission System Tester to the upper EVAP canister purge valve fitting. For additional information, refer to the manufacturer's instructions.

**NOTE:** The battery ground cable was previously disconnected in the vapor tube quick connect coupling procedure.

3. Connect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** article.

**NOTE:** In the scan tool, the EVAP canister purge valve is referred to as the EVAP vapor management valve.

4. Open the EVAP canister purge valve with the scan tool.
5. Close the canister vent solenoid with the scan tool.
6. Carefully turn the fuel tank filler cap counterclockwise until the thread disengages and position aside.

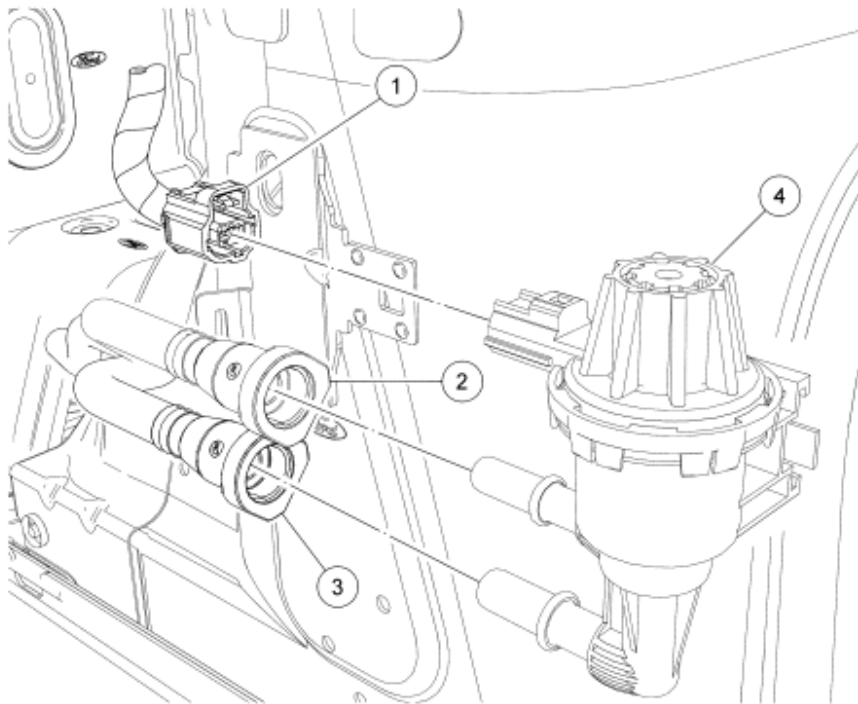
**NOTE:** If smoke does not exit the fuel tank filler pipe neck area after the system is pressurized, open the canister vent solenoid with the scan tool to allow the air to purge. Once smoke is seen at the canister vent solenoid, close the canister vent solenoid with the scan tool.

7. Introduce smoke from the VACUTEC Smoke Machine Fuel Evaporative Emission System Tester into the EVAP system and verify that smoke is exiting the fuel tank filler pipe neck area. For additional information, refer to the manufacturer's instructions.
8. Install the fuel tank filler cap once smoke is observed exiting the fuel tank filler pipe neck area.

9. Continue to enter smoke into the system for 60 seconds to obtain pressure.
10. Press and release the remote start button in intervals of 15 seconds ON and 15 seconds OFF while checking for exiting smoke.
11. Use the halogen light provided with the VACUTEC Smoke Machine Fuel Evaporative Emission System Tester to follow the EVAP system path and look for smoke exiting at the source of the leak(s).
12. Repair any leaks as necessary.
13. Repeat the leak test until the system passes.

## REMOVAL AND INSTALLATION

### EVAPORATIVE EMISSION CANISTER PURGE VALVE



N0086071

**Fig. 1: Exploded View Of Evaporative Emission Canister Purge Valve**  
Courtesy of FORD MOTOR CO.

| Item | Part Number | Description                                                                    |
|------|-------------|--------------------------------------------------------------------------------|
| 1    | 14A464      | Evaporative Emission (EVAP) canister purge valve electrical connector          |
| 2    | -           | Vapor tube-to-EVAP canister purge valve quick connect coupling (part of 9G271) |
| 3    | -           | Vapor tube-to-EVAP canister purge valve quick connect coupling (part of 9J280) |
| 4    | 9G683       | EVAP canister purge valve                                                      |

**REMOVAL AND INSTALLATION**

**WARNING:** Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

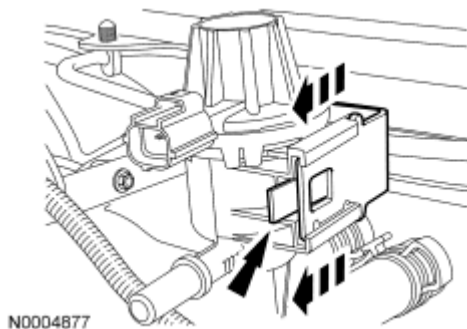
**WARNING:** Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

**WARNING:** Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

1. Disconnect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** article.
2. Disconnect the Evaporative Emission (EVAP) canister purge valve electrical connector.

**NOTE:** The upper vapor tube has an identification tag attached on the end of tube near the quick connect coupling. If this vapor tube is removed or replaced make sure that the end with the identification tag is reconnected to the upper EVAP canister purge valve port.

3. Disconnect the 2 vapor tube-to-EVAP canister purge valve quick connect couplings. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** article.
4. Depress the release tab and remove the EVAP canister purge valve from the mounting bracket.



**Fig. 2: Removing EVAP Canister Purge Valve From Mounting Bracket**  
Courtesy of FORD MOTOR CO.

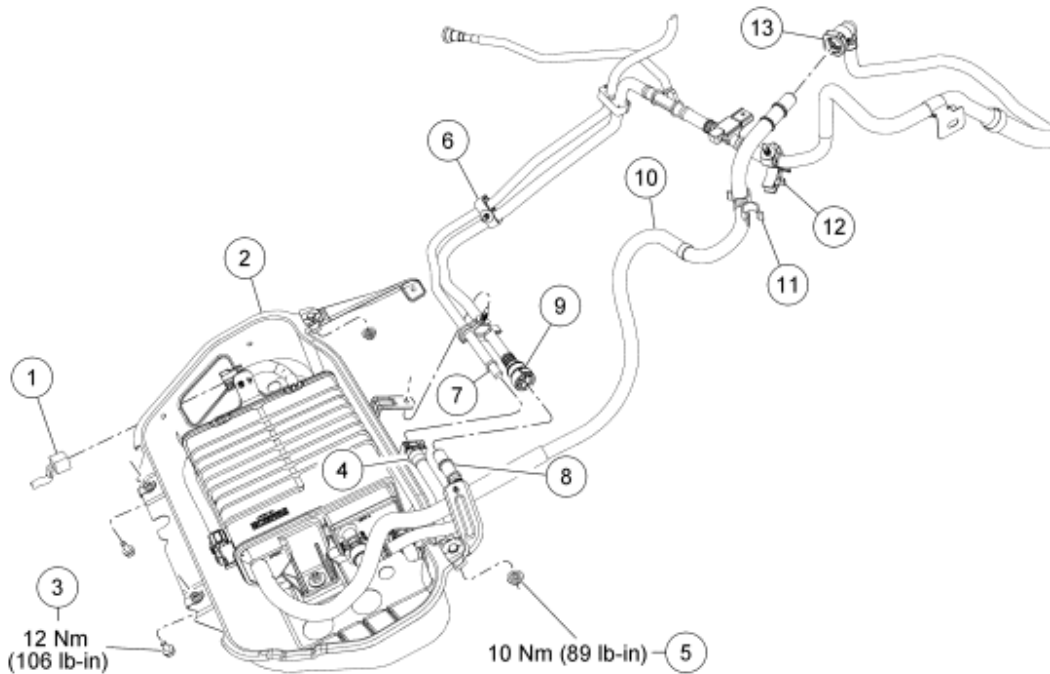
5. To install, reverse the removal procedure.

## 2008 Ford Mustang

### 2008 ENGINE PERFORMANCE Evaporative Emissions - Mustang

- Carry out the Evaporative Emission System Leak Test. For additional information, refer to **Evaporative Emission System Leak Test**.

#### EVAPORATIVE EMISSION CANISTER



N0086068

**Fig. 3: Exploded View Of Evaporative Emission Canister With Torque Specifications**  
Courtesy of FORD MOTOR CO.

| Item | Part Number | Description                                                                                |
|------|-------------|--------------------------------------------------------------------------------------------|
| 1    | 14A464      | Evaporative Emission (EVAP) canister electrical connector                                  |
| 2    | 9E857       | EVAP canister assembly                                                                     |
| 3    | N811181     | EVAP canister assembly bolt (2 required)                                                   |
| 4    | -           | EVAP canister assembly purge tube-to-vapor tube quick connect coupling (part of 9E857)     |
| 5    | N621906     | EVAP canister assembly nut (2 required)                                                    |
| 6    | -           | Fuel tube bundle assembly retainer clip (2 required) (part of 9J279)                       |
| 7    | 9J279       | Fuel vapor tube                                                                            |
| 8    | -           | EVAP canister assembly tank tube (part of 9E857)                                           |
| 9    | -           | Fuel vapor tube assembly-to-EVAP canister tank tube quick connect coupling (part of 9E325) |
| 10   | -           | EVAP canister assembly vapor tube (part of 9E857)                                          |
| 11   | -           | EVAP canister assembly vapor tube retainer clip (part of 9E857)                            |
| 12   | -           | Fuel vapor tube assembly retainer clip (part of 9E325)                                     |
| 13   | -           | Fuel vapor tube-to-EVAP canister assembly vapor tube quick connect                         |

## 2008 Ford Mustang

### 2008 ENGINE PERFORMANCE Evaporative Emissions - Mustang

coupling (part of 9S327)

#### REMOVAL AND INSTALLATION

**WARNING:** Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

**WARNING:** Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

**WARNING:** Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING AND LIFTING** article.
2. Disconnect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** article.

**NOTE:** Clean the Evaporative Emission (EVAP) canister electrical connector and the immediate surrounding area of any dirt or foreign material.

3. Disconnect the EVAP canister electrical connector.
4. Release the 2 fuel tube bundle assembly retainer clips from the EVAP canister assembly.
5. Disconnect the fuel vapor tube assembly-to-EVAP canister tank tube quick connect coupling. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** article.
6. Disconnect the EVAP canister assembly purge tube-to-vapor tube quick connect coupling. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** article.
7. Release the EVAP canister assembly vapor tube retainer clip.
8. Release the fuel vapor tube assembly retainer clip.
9. Disconnect the fuel vapor tube-to-EVAP canister assembly vapor tube quick connect coupling
10. Remove the 2 EVAP canister assembly nuts.
  - To install, tighten to 10 N.m (89 lb-in).
11. Remove the 2 EVAP canister assembly bolts.
  - To install, tighten to 12 N.m (106 lb-in).
12. Remove the EVAP canister assembly.

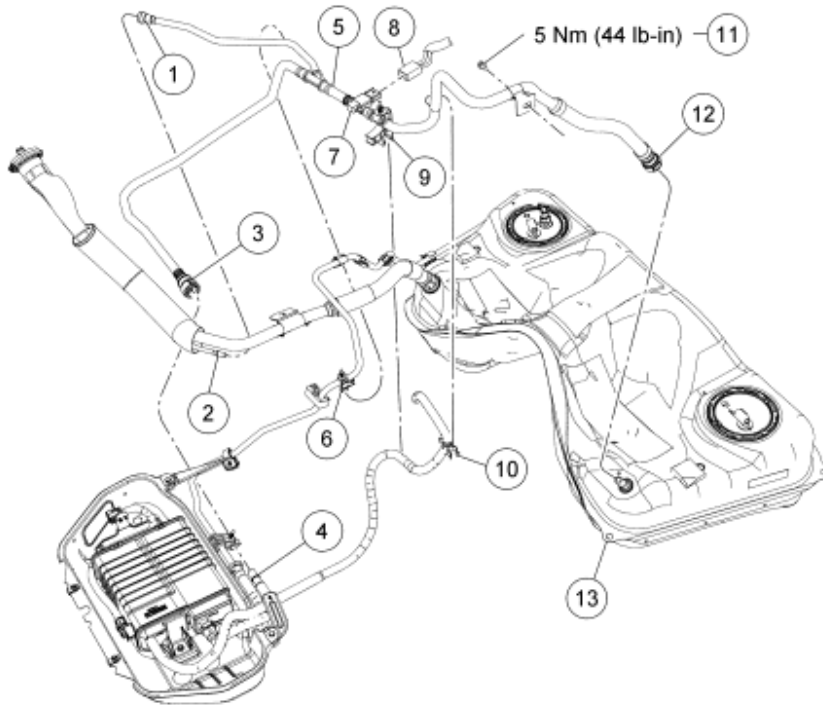
## 2008 Ford Mustang

### 2008 ENGINE PERFORMANCE Evaporative Emissions - Mustang

13. To install, reverse the removal procedure.

- Carry out the Evaporative Emission System Leak Test. For additional information, refer to **Evaporative Emission System Leak Test**.

#### FUEL VAPOR TUBE ASSEMBLY



N0071515

**Fig. 4: Exploded View Of Fuel Vapor Tube Assembly With Torque Specification**  
Courtesy of FORD MOTOR CO.

| Item | Part Number | Description                                                                                                       |
|------|-------------|-------------------------------------------------------------------------------------------------------------------|
| 1    | -           | Fuel vapor tube assembly-to-fuel tank filler pipe recirculation tube spring lock coupling (part of 9E325)         |
| 2    | -           | Fuel tank filler pipe recirculation tube (part of 9034)                                                           |
| 3    | -           | Fuel vapor tube assembly-to-Evaporative Emission (EVAP) canister tank tube quick connect coupling (part of 9E325) |
| 4    | -           | EVAP canister assembly tank tube (part of 9E857)                                                                  |
| 5    | 9E325       | Fuel vapor tube assembly                                                                                          |
| 6    | -           | Fuel tube bundle assembly retainer clip (4 required) (part of 9J279)                                              |
| 7    | 9C052       | Fuel Tank Pressure (FTP) sensor (part of 9E325)                                                                   |
| 8    | 14A464      | FTP sensor electrical connector                                                                                   |
| 9    | -           | Fuel vapor tube assembly retainer clip (part of 9E325)                                                            |
| 10   | -           | EVAP canister assembly vapor tube retainer clip (part of 9E857)                                                   |
| 11   | W504081S    | Fuel vapor tube assembly bracket bolt                                                                             |
| 12   | -           | Fuel vapor tube assembly-to-fuel tank quick connect coupling (part of 9E325)                                      |

|    |      |           |
|----|------|-----------|
| 13 | 9002 | Fuel tank |
|----|------|-----------|

**REMOVAL AND INSTALLATION**

**WARNING:** Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

**WARNING:** Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

**WARNING:** Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING AND LIFTING** article.
2. Disconnect the battery ground cable. For additional information, refer to **BATTERY, MOUNTING AND CABLES** article.
3. Disconnect the Fuel Tank Pressure (FTP) sensor electrical connector.
4. Disconnect the fuel vapor tube assembly-to-fuel tank quick connect coupling. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** article.
5. Disconnect the fuel vapor tube assembly-to-Evaporative Emission (EVAP) canister tank tube quick connect coupling. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** article.
6. Disconnect the fuel vapor tube assembly-to-fuel tank filler pipe recirculation tube quick connect coupling. For additional information, refer to **FUEL SYSTEM - GENERAL INFORMATION** article.
7. Remove the fuel vapor tube assembly bracket bolt.
  - To install, tighten to 5 N.m (44 lb-in).
8. Release the fuel vapor tube assembly retainer clip.
9. Release the EVAP canister assembly vapor tube retainer clip.
10. Release the 4 fuel tube bundle assembly retainer clips.
11. Remove the fuel vapor tube assembly.
12. To install, reverse the removal procedure.
  - Carry out the Evaporative Emission System Leak Test. For additional information, refer to **Evaporative Emission System Leak Test**.