

On Board Diagnostic (OBD) Drive Cycle

Description of On Board Diagnostic (OBD) Drive Cycle

The following procedure is designed to execute and complete the OBD monitors. To complete a specific monitor for repair verification, follow steps 1 through 4, then continue with the step described by the appropriate monitor found under the OBD Monitor Exercised column.

Federal OBD requires that all vehicles comply with 0.5 mm (0.020 inch) evaporative emissions (EVAP) system requirements in addition to meeting the 1.0 mm (0.040 inch) EVAP system monitoring requirements. Some vehicles will use the engine off 0.5 mm (0.020 inch) EVAP monitor rather than the 1.0 mm (0.040 inch) EVAP monitor to set I/M Readiness.

For the EVAP system monitor to run, the ambient air temperature must be between 4.4 to 37.8°C (40 to 100°F), and the altitude below 2,438 meters (8,000 feet). If the OBD monitors must be completed in these conditions, the PCM must detect them once (twice on some applications) before the EVAP system monitor can be bypassed and OBD monitors readied. The EVAP Monitor Bypass procedure is described in the following drive cycle.

Use a scan tool to carry out the OBD drive cycle. Refer to the scan tool manufacturer's instruction manual for each described function.

A detailed description for clearing the continuous diagnostic trouble codes (DTCs) is found in this section. Refer to [Clear The Continuous Diagnostic Trouble Codes \(DTCs\) And Reset The Emission Monitors Information In The Powertrain Control Module \(PCM\)](#).

Drive Cycle Recommendations

⚠ WARNING: Strict observance of posted speed limits and attention to driving conditions are mandatory when proceeding through the following drive cycles. Failure to follow these instructions may result in personal injury.

1. Most OBD monitors complete more readily using a steady foot driving style during cruise or acceleration modes. Operating the throttle in a smooth fashion minimizes the time required for monitor completion.
2. The fuel tank level should be between 1/2 and 3/4 full with 3/4 full being the most desirable.
3. The EVAP purge flow monitor can operate only during the first 30 minutes of engine operation. When executing the procedure for this monitor, stay in part throttle mode and drive in a smooth fashion to minimize fuel slosh.
4. The EVAP 0.508 mm (0.020 inch) leak check monitor runs after the ignition is turned OFF. The vehicle must be driven to complete the EVAP purge flow monitor to increase the temperature of the fuel in the fuel tank.
5. When bypassing the EVAP engine soak times, the PCM must remain powered (ignition ON) after clearing the continuous DTCs and relearning emission diagnostic information.

For best results, follow each of the following steps as accurately as possible:

OBD Monitor Exercised	Drive Cycle Procedure	Purpose of Drive Cycle Procedure
Drive Cycle Preparation	Note: To bypass the EVAP soak timer (normally 6 hours), the PCM must remain powered after clearing the continuous DTCs and resetting the emission monitors information in the PCM. 1. Install the scan tool. Turn the ignition ON with the engine OFF. Cycle the ignition OFF, then ON. If needed, select the appropriate vehicle and engine qualifier. Clear the continuous DTCs and reset the emission monitors information in the PCM.	Bypasses the engine soak timer. Resets the OBD monitor status.

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	2. Begin to monitor the following PIDs (if available): AAT, ECT, EVAPDC, FLI, IAT and TP MODE. Start the vehicle without returning the ignition to the OFF position.	
	3. Idle the vehicle for 15 seconds. Drive at 77 to 104 km/h (48 to 65 mph) until the engine coolant temperature is at least 76.7°C (170°F).	
Prep for Monitor Entry	4. Is the ambient air temperature between 4.4 and 37.8°C (40 and 100°F)? If AAT is not available, IAT is used. If not, complete the following steps, but note that step 16 is required to bypass the EVAP monitor and complete the OBD drive cycle.	Engine warm-up and provides ambient air temperature input to the PCM. If AAT is not available, IAT is used.
HO2S	5. Cruise at 77 to 104 km/h (48 to 65 mph) for greater than 5 minutes.	Executes the HO2S monitor.
EVAP	6. Cruise at 77 to 104 km/h (48 to 65 mph) for 10 minutes (avoid sharp turns and hills). NOTE: To initiate the monitor, the throttle should be at part throttle, EVAPDC must be greater than 75%, and FLI must be between 15 and 85%, and for fuel tanks over 25 gallons FLI must be between 30 and 85%.	Executes the EVAP purge flow monitor if the ambient air temperature is between 4.4 to 37.8°C (40 to 100°F).
Catalyst	7. Drive in stop and go traffic conditions. Decelerate at closed throttle and then moderately accelerate from each stop. Include 5 different constant cruise speeds, ranging from 40 to 72 km/h (25 to 45 mph) over a 10 minute period.	Executes the catalyst monitor.
EGR	8. From a stop, idle for 30 seconds, accelerate to 72 km/h (45 mph) at 1/2 to 3/4 throttle, cruise at steady throttle for 1 minute. Repeat idle, acceleration and cruise 3 times.	Executes the exhaust gas recirculation (EGR) monitor.
CCM (Engine)	9. Bring the vehicle to a stop. Idle with the transmission in drive (neutral for M/T) for 2 minutes.	Executes the idle air control portion of the comprehensive component monitor (CCM).
CCM (Transmission)	10. For M/T, accelerate from 0 to 80 km/h (0 to 50 mph), and continue to step 11. For A/T, from a stop and in overdrive, moderately accelerate to 80 km/h (50 mph) and cruise for greater than 15 seconds. Stop the vehicle and repeat without overdrive to 64 km/h (40 mph) cruising for greater than 30 seconds. While at 64 km/h (40 mph), activate the overdrive, accelerate to 80 km/h (50 mph) and cruise for greater than 15 seconds. Stop for at least 20 seconds and repeat step 10 five times.	Executes the transmission portion of the CCM.
Misfire, Fuel And Deceleration Fuel Shut Off Rear HO2S Monitors	11. From a stop, accelerate to 104 km/h (65 mph), hold steady throttle for 5 seconds, then decelerate at closed throttle to 64 km/h (40 mph) (no brakes), accelerate from 64 km/h (40 mph) to 104 km/h (65 mph), hold steady throttle for 5 seconds, repeat deceleration 5 times.	Allows learning for the misfire monitor, and completion of the deceleration fuel shut off rear HO2S monitor.
Readiness Check	12. Access the On Board System Readiness (OBD monitor status) function on the scan tool. Determine whether all non-continuous monitors except the evap monitor have completed. If not, go to step 15.	Determines if any monitor has not completed.
EVAP	13. Turn the ignition OFF for 1 hour to allow the engine off 0.508 mm (0.020 inch) leak check to run.	Executes the 0.508 mm (0.020 inch) EVAP monitor.

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Readiness Check	14. Turn the ignition ON. Access the On-Board System Readiness (OBDII monitor status) function on the scan tool. Determine whether all non-continuous monitors including the evap monitor have completed. If not, go to step 15	Determine if any monitor has not completed.
Pending Code Check And EVAP Monitor Bypass Check	15. With the scan tool, check for pending codes. Conduct the normal repair procedures for any pending code concern. Otherwise, repeat any incomplete monitor. If the EVAP monitor is not complete and the ambient air temperature was out of the 4.4 to 37.8°C (40 to 100°F) temperature range in step 4, or the altitude is over 2438 m (8000 ft.), the EVAP bypass procedure must be followed. Go to Step 16.	Determines if a pending code is preventing the completion of the OBD drive cycle.
EVAP Monitor Bypass	16. Park the vehicle for a minimum of 8 hours. Repeat steps 2 through 14. Do not repeat step 1.	Allows the bypass counter to increment to 2.

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