Computers and Control Systems: Monitors, Trips, Drive Cycles and Readiness Codes
On-Board Diagnostic (OBD) Drive Cycle
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 and to clear the Ford P1000, I/M readiness code. 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. For the EVAP/secondary AIR 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 P1000 code must be cleared in these conditions, the powertrain control module (PCM) must detect them once (twice on some applications) before the EVAP/secondary AIR monitor can be bypassed and DTC the P1000 cleared. The EVAP/secondary AIR bypassing procedure is described in the following drive cycle.

The OBD drive cycle is carried out using a diagnostic tool. Consult the instruction manual for each described function.

A detailed description for clearing the diagnostic trouble codes (DTCs) is found. Refer to Clear The Continuous Diagnostic Trouble Codes (DTCs) And Reset The Emission Monitors Information in The Powertrain Control Module (PCM). See: Reading and Clearing Diagnostic Trouble Codes/Clearing Diagnostic Trouble Codes/With Manufacturer's Scan Tool/Clear the Continuous DTCs and Reset the Emissions Monitors Information In the 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 evaporative 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. When bypassing the EVAP/secondary AIR engine soak times, the PCM must remain powered (key ON) after clearing the continuous DTCs and relearning emission diagnostic information.

On Board Diagnostic (OBD) Drive Cycle

OBD Monitor Exercised	Drive Cycle Procedure	Purpose of Drive Cycle Procedure
Drive Cycle Preparation	Note: To bypass the EVAP/ secondary AIR 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 diagnostic tool. Turn the key ON with the engine off. Cycle the key 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. 2. Begin to monitor the following PIDs (if available): ECT, EVAPDC, FLI and TP MODE. Start the vehicle without returning to the key in OFF position. 3. Idle the vehicle for 15 seconds. Drive at 64 km/h (40 mph) until the engine coolant temperature (ECT) is at least 76.7°C (170°F).	Bypasses the engine soak timer. Resets the OBD monitor status.
Prep for Monitor Entry	4. Is the intake air temperature (IAT) between 4.4 to 37.8°C (40 to 100°F)? If not, complete the following steps, but note that step 14 is required to bypass the EVAP/secondary AIR monitor and clear the P1000.	Engine warm-up and provides IAT input to the PCM.
HEGO	5. Cruise at 64 km/h (40 mph) for at least 5 minutes.	Executes the HO2S monitor.
EVAP	6. Cruise at 64 to 89 km/h (40 to 55 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 then 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 monitor if the IAT is between 4.4 to 37.8°C (40 to 100°F).
Catalyst	7. Drive in stop and go traffic conditions. Include 5 different constant cruise speeds, ranging from 32 to 89 km/h (20 to 55 mph) over a 10 minute period.	Executes the catalyst monitor.
EGR	8. From a stop, accelerate to 72 km/h (45 mph) at 1/2 to 3/4 throttle. Repeat 3 times.	Executes the EGR monitor.
SEC AIR/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 (IAC) portion of the CCM.

(Continued)

On Board Diagnostic (OBD) Drive Cycle Chart (Part 1)

On Board Diagnostic (OBD) Drive Cycle

OBD Monitor Exercised	Drive Cycle Procedure	Purpose of Drive Cycle Procedure
CCM (Trans)	10. For M/T, accelerate from 0 to 81 km/h (0 to 50 mph), and continue to step 11. For A/T, from a stop and in overdrive, moderately accelerate to 81 km/h (50 mph) and cruise for at least 15 seconds. Stop the vehicle and repeat without overdrive to 64 km/h (40 mph) cruising for at least 30 seconds. While at 64 km/h (40 mph), activate the overdrive, accelerate to 81 km/h (50 mph) and cruise for at least 15 seconds. Stop for at least 20 seconds and repeat step 10 five times.	Executes the transmission portion of the CCM.
Misfire and Fuel Monitors	11. From a stop, accelerate to 97 km/h (60 mph). Decelerate at closed throttle to 64 km/h (40 mph) (no brakes). Repeat this 3 times.	Allows learning for the misfire monitor.
Readiness Check	12. Access the On-Board System Readiness (OBD monitor status) function on the diagnostic tool. Determine whether all non-continuous monitors have completed. If not, go to step 13.	Determines if any monitor has not completed.
Pending Code Check and EVAP/ secondary AIR Monitor Bypass Check	13. With the diagnostic tool, check for pending codes. Conduct the normal repair procedures for any pending code concern. Otherwise, repeat any incomplete monitor. If the EVAP/secondary AIR monitor is not complete and the IAT 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/secondary AIR bypass procedure must be followed. Go to Step 14.	Determines if a pending code is preventing the clearing of P1000.
EVAP/ secondary AIR Monitor Bypass	14. Park the vehicle for a minimum of 8 hours. Repeat steps 2 through 12. Do not repeat step 1.	Allows the bypass counter to increment to 2.

On Board Diagnostic (OBD) Drive Cycle Chart (Part 2)

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