READINESS MONITOR DRIVE PATTERN

1. PURPOSE OF READINESS TESTS

- The On-Board Diagnostic (OBD II) system is designed to monitor the performance of emission related components, and indicate any detected abnormalities with DTC (Diagnostic Trouble Codes). Since various components need to be monitored during different driving conditions, the OBD II system is designed to run separate monitoring programs called Readiness Monitors.
- The intelligent tester's software must be version 9.0 or newer to view the Readiness Monitor Status. To view the status, enter the following menus: DIAGNOSIS / ENHANCED OBD II / MONITOR INFO / MONITOR STATUS.
- When the Readiness Monitor status reads COMPL (complete), the necessary conditions have been met for running the performance tests for that Readiness Monitor.
- A generic OBD ll scan tool can also be used to view the Readiness Monitor status.

  HINT:

  Many state Inspection and Maintenance (I/M) programs require a vehicle's Readiness Monitor status to show COMPL before beginning emissions tests.

  The Readiness Monitor will be reset to INCMPL (incomplete) if:
  - The ECM has lost battery power or blown a fuse.
  - DTCs have been cleared.
  - The conditions for running the Readiness Monitor have not been met.

  If the Readiness Monitor Status shows INCMPL, follow the appropriate Readiness Monitor Drive Pattern to change the status to COMPL.

  CAUTION:

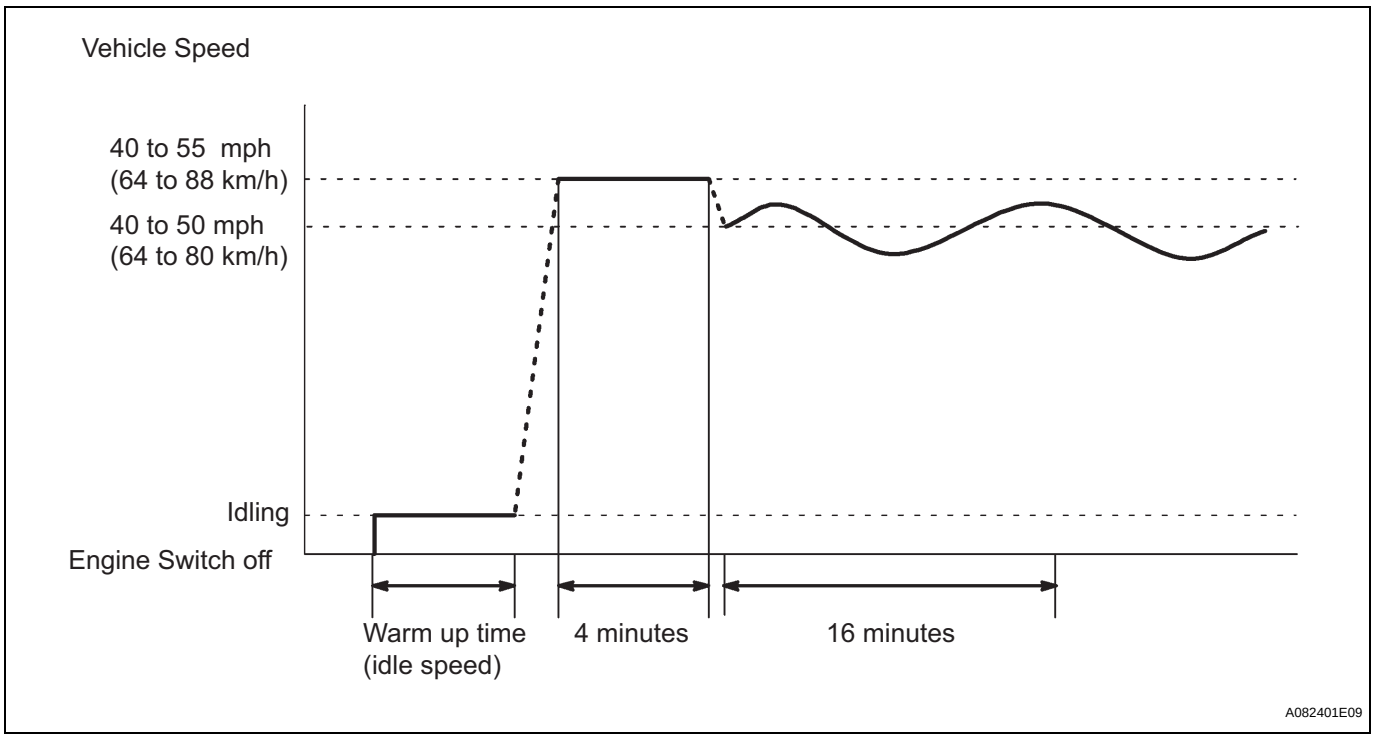
  Strictly observe posted speed limits, traffic laws, and road conditions when performing these drive patterns.

  NOTICE:

  The drive patterns represent the fastest method of satisfying all conditions necessary to achieve complete status for each specific Readiness Monitor. If a drive pattern is interrupted (possibly due to factors such as traffic conditions), the drive pattern can be resumed. In most cases, the Readiness Monitor will still achieve complete status upon completion of the drive pattern.

  To ensure completion of the Readiness Monitors, avoid sudden changes in vehicle load and speed (driving up and down hills and/or sudden acceleration).

2. CATALYST MONITOR (A/F SENSOR TYPE)



(a) Preconditions
The monitor will not run unless:
Step A
- The MIL is OFF.
- Engine Coolant Temperature (ECT) is 80°C (176°F) or higher.
- Intake Air Temperature (IAT) is -10°C (14°F) or higher.

NOTICE:
To complete the readiness test in cold ambient conditions (less than -10°C / 14°F), turn the ignition switch OFF and then back to ON. Perform the drive pattern a second time.

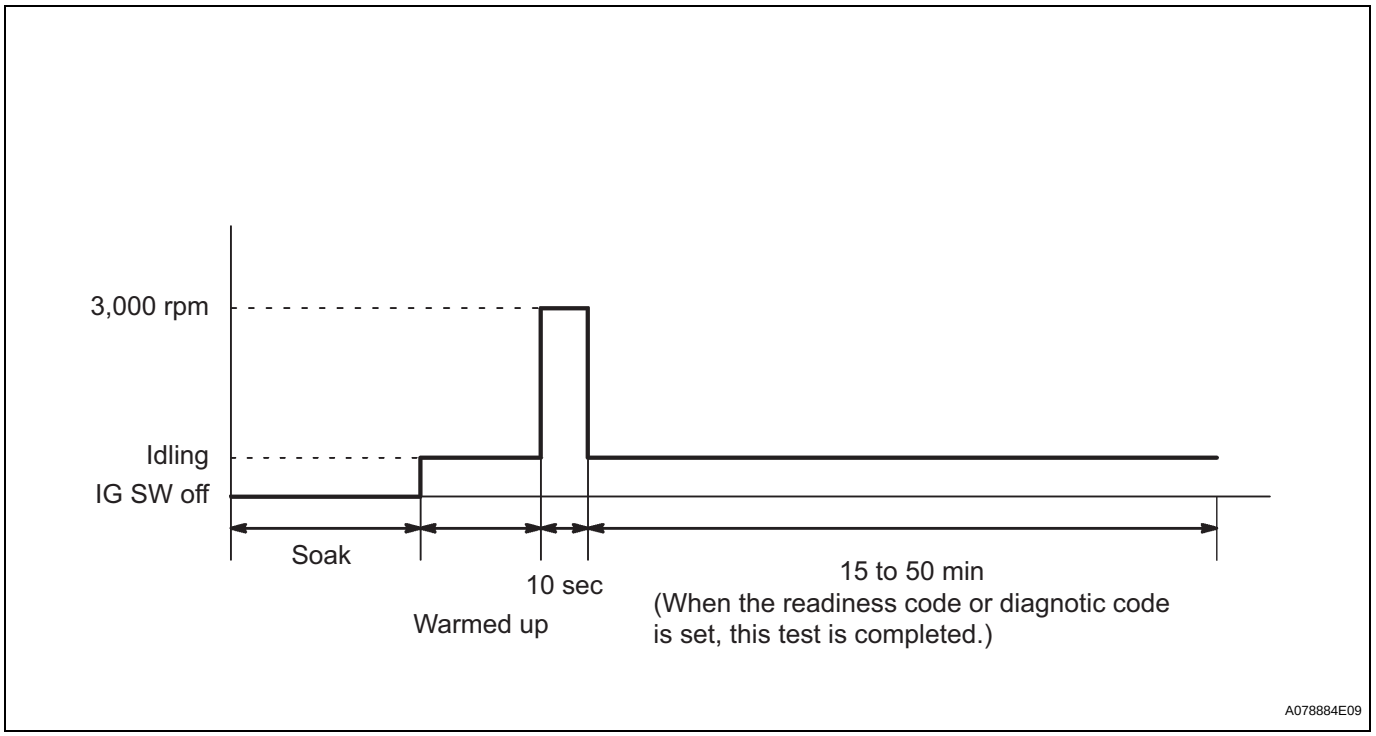
(b) Drive Pattern
Step 1
Connect the intelligent tester to the DLC3 to check Readiness Monitor status and preconditions (refer to step (A)).
Step 2
Drive the vehicle at 40 to 55 mph (64 to 88 km/h) for approximately 4 minutes.
NOTICE:
Drive with smooth throttle operation and avoid sudden acceleration. If IAT was less than 10°C (50°F) when the engine was started, drive the vehicle at 40 to 55 mph (64 to 88 km/h) for an additional 4 minutes.

Step 3
Drive the vehicle allowing speed to fluctuate between 40 to 50 mph (64 to 80 km/h) for approximately 16 minutes.
NOTICE:
Drive with smooth throttle operation and avoid sudden closure of the throttle.
Step 4
Check the status of the readiness monitor on the scan tool display. If the readiness monitor status did not switch to complete, ensure preconditions are met, turn the engine switch off, and then repeat steps 2 and 3.

ES

3. EVAP MONITOR (VACUUM PRESSURE MONITOR)
NOTICE:
A cold soak must be performed prior to conducting the drive pattern to complete the internal pressure readiness monitor.
(a) Cold Soak Preconditions
Step B
The monitor will not run unless:
- The MIL is OFF.
- Fuel level is approximately 1/2 to 3/4 full.
- Altitude is 7,800 feet (2,400 m) or less.

(b) Cold Soak Procedure



Let vehicle cold soak for 8 hours or until "IAT - ECT" must be less than 7°C (13°F).
- Example 1 ECT = 24°C (75°F) IAT = 16°C (60°F) Difference between ECT and IAT is 8°C (15°F).
  → The monitor will not run because difference between ECT and IAT is greater than 7°C (13°F).

- Example 2 ECT = 21°C (70°F) IAT = 20°C (68°F) Difference between ECT and IAT is 1°C (2°F). → The monitor will run because difference between ECT and IAT is less than 7°C (13°F).

(c) Preconditions

The monitor will not run unless:

- The MIL is OFF.
- Fuel level is approximately 1/2 to 3/4 full.
- The altitude is 7800 feet (2400 m) or less.
- ECT is between 4.4°C and 35°C (40°F and 95°F).
- IAT is between 4.4°C and 35°C (40°F and 95°F).
- The cold soak procedure has been completed.
- Before starting the engine, the difference between ECT and IAT must be less than 7°C (13°F).

HINT:

- Example 1 ECT = 24°C (75°F) IAT = 16°C (60°F) Difference between ECT and IAT is 8°C (15°F). → The monitor will not run because difference between ECT and IAT is greater than 7°C (13°F).
- Example 2 ECT = 21°C (70°F) IAT = 20°C (68°F) Difference between ECT and IAT is 1°C (2°F). → The monitor will run because difference between ECT and IAT is less than 7°C (13°F).

NOTICE:

The readiness test can be completed in cold ambient conditions (less than 4.4°C / 40°F) and / or high altitudes (more than 7,800 ft / 2,400 m). Finish the drive pattern, turn the ignition switch OFF and then ON again, and repeat the drive pattern a second time.

(d) Drive Pattern

(1) Connect the OBD II scan tool to DLC3 to check monitor status and preconditions (refer to Step B).

(2) Release pressure in fuel tank by removing the fuel tank cap and then reinstalling it.

(3) Start the engine and allow it to idle until ECT is 75°C (167°F) or more.

(4) Run the engine at 3,000 rpm for about 10 seconds.

(5) With the engine idling, turn the A/C ON to create a slight electrical load. Wait 15 to 50 minutes.

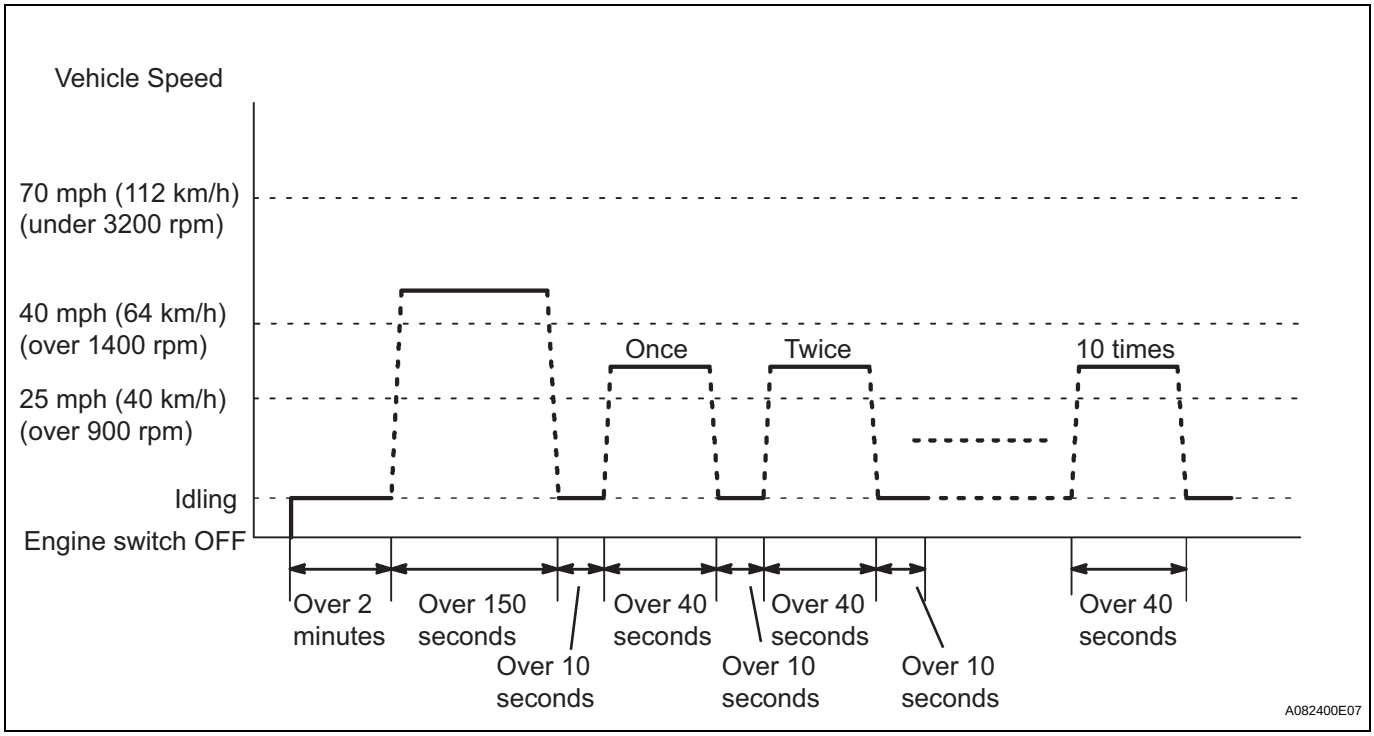
NOTICE:

If the vehicle does not have A/C, put a slight electrical load on the engine by following the steps below:

- **Set the parking brake securely.**
- **Use wheel chocks to secure the tires.**
- **Move the shift lever to drive (position D) and allow engine to idle for 15 to 50 minutes. Check the readiness monitor status.**

4. OXYGEN / A/F SENSOR MONITOR (FRONT A/F SENSOR AND REAR O2S SYSTEM)

(a) Preconditions
Step C

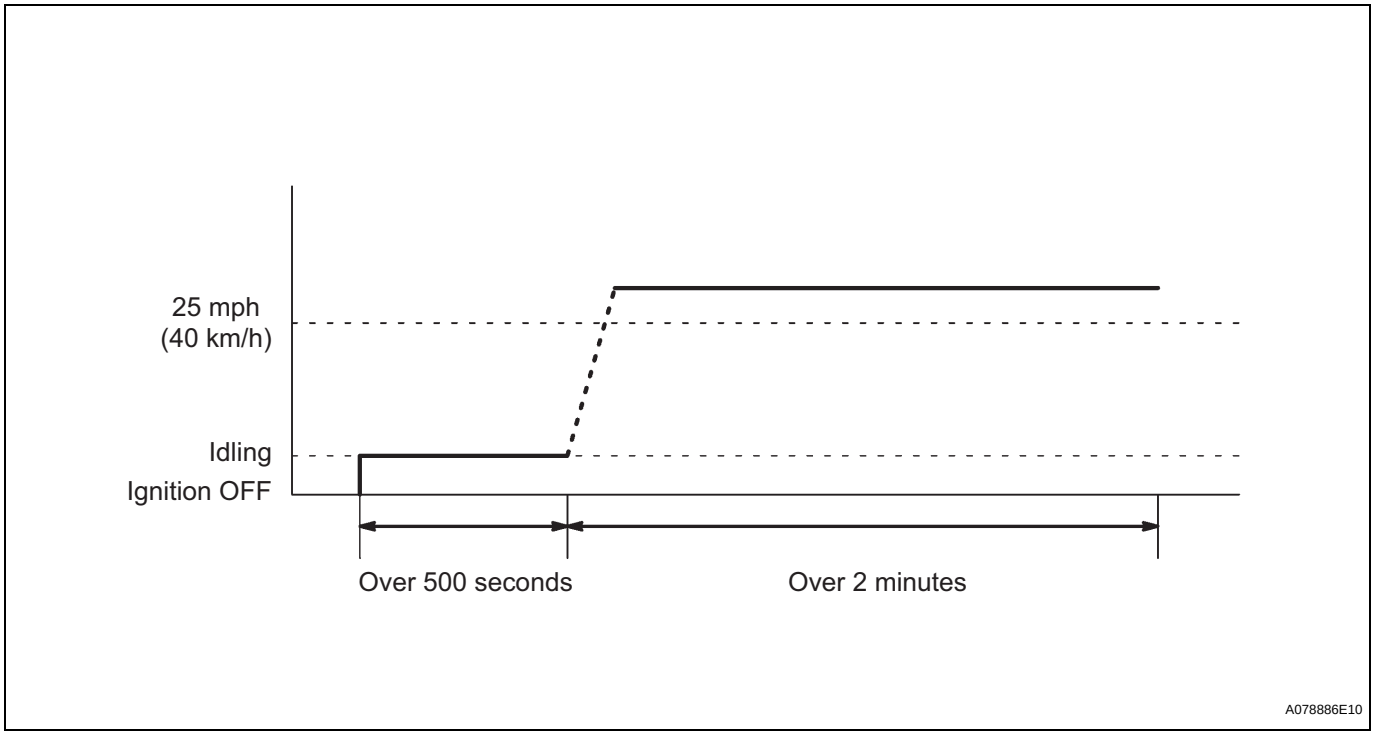


The monitor will not run unless:
(1) The MIL is OFF.

(b) Drive Pattern
(1) Connect the OBD II scan tool to the DLC3 to check monitor status and preconditions (refer to step C).
Step (1)
(2) Start the engine and allow it to idle for 2 minutes or more.
Step (2)
(3) Drive the vehicle at 40 to 70 mph (64 to 112 km/h) for at least 150 seconds.
Step (3)
(4) Stop the vehicle and allow the engine to idle for 10 seconds or more.
Step (4)
(5) Drive the vehicle at 25 mph (40 km/h) or more for at least 40 seconds.
Step (5)
(6) Stop the vehicle and allow the engine to idle for 10 seconds or more.
Step (6)
(7) Perform steps (5) and (6) 10 times.
(8) Check the readiness monitor status. If the readiness monitor status did not change to "complete", check the preconditions, turn the ignition switch OFF, and repeat steps (1) to (6).

5. OXYGEN / A/F SENSOR HEATER MONITOR

(a) Preconditions
Step D



The monitor will not run unless:
(1) The MIL is OFF.

(b) Drive Pattern
(1) Connect the OBD II scan tool to the DLC3 to check monitor status and preconditions (refer to step "D").
Step (1)
(2) Start the engine and allow it to idle for 500 seconds or more.
Step (2)
(3) Drive the vehicle at 25 mph (40 km/h) or more for at least 2 minutes.
Step (3)
(4) Check the readiness monitor status. If the readiness monitor status did not change to "complete", check the preconditions, turn the ignition switch OFF, and repeat steps (2) to (3).

ES