

Drive Cycles

Overview

NOTICE: Strict observance of posted speed limits and attention to driving conditions are mandatory when proceeding through the drive cycle.

Note: Not all PIDs are available on all vehicles. Use the module selection in datalogger to access all available PIDs for the module.

Note: Vehicles equipped with power take off (PTO) or auxiliary idle control must have that system disengaged before the drive cycle is initiated.

The Drive Cycle Procedure is carried out to satisfy the specifications for the Society of Automotive Engineers (SAE) specification J1979. Each on board diagnostic (OBD) monitor must run during the drive cycle.

Drive Cycle Procedure

Drive Cycle Procedure — Transit

Note: The drive cycle requires that the vehicle has been driven for 12,070 km (7,500 mi) or that the EGT12 temperature has been greater than 550°C (1,022°F) for a minimum of 120 minutes for some monitors to run and complete at hot idle.

Note: If a diesel particulate filter (DPF) regeneration event occurs before or during the drive cycle, multiple drive cycles may be required.

If a particular step is interrupted, simply repeat the drive mode. If the drive cycle is interrupted with a ignition OFF, only drive modes that were incomplete must be run.

Rough road conditions may prevent certain steady state conditions and steady accelerations from validating the transmission and load related monitors.

Some monitors may require extended driving.

1. Most OBD monitors complete more readily using a steady foot driving style during cruise or acceleration modes. Operating the throttle in a smooth transition 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.

OBD Monitor Exercised	Drive Cycle Procedure	Purpose Of Drive Cycle Procedure
Drive Cycle Preparation	1. Ignition ON. Do not crank until the WAIT TO START light cycles, or at least 10 seconds, whichever occurs first.	Bypasses the engine soak timer. Resets the OBD monitor status.
	2. Install the scan tool. Clear the continuous DTCs in the PCM.	
	3. Start the engine. Idle in PARK or NEUTRAL for 40 seconds.	
Prep For Monitor Entry	Note: Make sure the ambient air temperature is greater than 0°C (32°F) or the monitor may not complete. 4. Drive between 72 to 104 km/h (45 to 65 mph) until the engine oil temperature exceeds 70°C (158°F) and the exhaust gas temperature exceeds 160°C (320°F).	Engine warm-up and provides intake air temperature input to the PCM.

OBD Monitor Exercised	Drive Cycle Procedure	Purpose Of Drive Cycle Procedure
	5. Monitor the following PIDs: AAT, ECT, EGT11, EGT12, EGT13, EOT, FLI, IAT and RPM.	
EGR	Note: Make sure the ambient air temperature is greater than 0°C (32°F) and engine coolant temperature is greater than 90°C (194°F) or the monitor may not complete. 6. From a stop, carry out 5 from 0 to 97 km/h (0 to 60 mph) acceleration events that are a minimum of 30 seconds in duration.	Executes the exhaust gas recirculation (EGR) monitor.
Fuel System Monitor	7. Carry out a 48 to 97 km/h (30 to 60 mph) acceleration event that is a minimum of 20 seconds in duration. Carry out a closed pedal decel event without applying the brake until the vehicle speed drops to 48 km/h (30 mph). Repeat this step 5 times.	Executes the fuel system monitor.
	8. Drive the vehicle with a steady pedal between 89 to 97 km/h (55 to 60 mph) for a minimum of 30 minutes.	
Exhaust Gas Sensor	Note: If the vehicle has been driven less than 12,070 km (7,500 mi), this monitor will not complete until the EGT12 temperature has exceeded 550°C (1,022°F) for a minimum of 120 minutes. Make sure there is no accelerator pedal position (APP) or break pedal input during the decel event. 9. Accelerate steadily to greater than 80 km/h (50 mph). Carry out a closed pedal decel event without applying the brake for 10 seconds. Repeat the accelerate and closed pedal decel event 10 times.	Executes the exhaust gas sensor monitor.
	10. Drive the vehicle with a steady pedal between 89 to 97 km/h (55 to 60 mph) for a minimum of 10 seconds.	
	11. Bring the vehicle to a stop. Idle with the transmission in drive for a minimum of 1 minute.	
NOx Catalyst	Note: Make sure the ambient air temperature is greater than -7°C (19.4°F) or the monitor may not complete. 12. Monitor the EGT12 and EGT13 PIDs. Bring the exhaust gas temperature between 200 to 350°C (392 to 662°F). Drive the vehicle with a steady pedal between 72 to 113 km/h (45 to 70 mph) for a minimum of 30 minutes.	Executes the NOx catalyst monitor.
HC Catalyst	Note: Make sure the ambient air temperature is greater than -7°C (19.4°F) or the monitor may not complete. 13. Drive between 72 to 113 km/h (45 to 70 mph) until the engine coolant temperature exceeds 70°C (158°F) and the exhaust gas temperature exceeds 200°C (392°F). Drive the vehicle with a steady pedal between 72 to 113 km/h (45 to 70 mph) and carry out a manual regeneration event. Repeat the regeneration event if it does not complete normally.	Executes the HC catalyst monitor.
Particulate Matter (PM) Filter	14. Drive between 72 to 113 km/h (45 to 70 mph) until the engine coolant temperature exceeds 70°C (158°F) and the exhaust gas temperature exceeds 200°C (392°F).	Executes the PM filter monitor.
	15. Drive the vehicle with a steady pedal between 72 to 113 km/h (45 to 70 mph) and carry out a manual regeneration event. Repeat the regeneration event if it does not complete normally.	

Drive Cycle Procedure — All Others

Note: The drive cycle requires that the vehicle has been driven for 12,070 km (7,500 mi) or that the EGT12 temperature has been greater than 550°C (1,022°F) for a minimum of 120 minutes for some monitors to run and complete at hot idle.

Note: If a diesel particulate filter (DPF) regeneration event occurs before or during the drive cycle, multiple drive cycles may be required.

Note: If a particular step is interrupted, simply repeat the drive mode. If the drive cycle is interrupted with an ignition OFF, only drive modes that were incomplete must be run.

Note: Rough road conditions may prevent certain steady state conditions and steady accelerations from validating the transmission and load related monitors.

Some monitors may require extended driving.

1. Most OBD monitors complete more readily using a steady foot driving style during cruise or acceleration modes. Operating the throttle in a smooth transition 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.

OBD Monitor Exercised	Drive Cycle Procedure	Purpose Of Drive Cycle Procedure
Drive Cycle Preparation	1. Ignition ON. Do not crank until the WAIT TO START indicator cycles, or at least 10 seconds, whichever occurs first.	Bypasses the engine soak timer. Resets the OBD monitor status.
	2. Install the scan tool. Clear the continuous DTCs in the PCM.	
	3. Start the engine. Idle in PARK or NEUTRAL for 40 seconds.	
Prep For Monitor Entry	Note: Make sure the ambient air temperature is greater than 0°C (32°F) or the monitor may not complete. 4. Drive the vehicle between 72 to 104 km/h (45 to 65 mph) until the engine oil temperature exceeds 70°C (158°F) and the exhaust gas temperature exceeds 160°C (320°F).	Engine warm-up and provides intake air temperature input to the PCM.
	5. Monitor the following PIDs: AAT, ECT1, EGT11, EGT12, EGT13, EGT14, EOT, FLI, IAT11 and RPM.	
EGR	Note: Make sure the ambient air temperature is greater than 0°C (32°F) and engine coolant temperature is equal to or greater than 90°C (194°F) or the monitor may not complete. 6. From a stop, accelerate from 0 to 97 km/h (0 to 60 mph) for a minimum of 30 seconds in duration. Repeat this step 5 times.	Executes the exhaust gas recirculation (EGR) monitor.
Fuel System Monitor	7. Accelerate from 48 to 97 km/h (30 to 60 mph) for a minimum of 20 seconds in duration. Carry out a closed pedal deceleration without applying the brake until the vehicle speed drops to 48 km/h (30 mph). Repeat this step 5 times.	Executes the fuel system monitor.
	8. Drive the vehicle with a steady pedal between 89 to 97 km/h (55 to 60 mph) for a minimum of 30 minutes.	

OBD Monitor Exercised	Drive Cycle Procedure	Purpose Of Drive Cycle Procedure
Exhaust Gas Sensor	Note: If the vehicle has been driven less than 12,070 km (7,500 mi), this monitor will not complete until the EGT12 temperature has exceeded 550°C (1,022°F) for a minimum of 120 minutes. Make sure there is no accelerator pedal position (APP) or break pedal input during deceleration. 9. Accelerate steadily to greater than 80 km/h (50 mph). Carry out a closed pedal deceleration without applying the brake for 10 seconds. Repeat the accelerate and closed pedal deceleration 10 times.	Executes the exhaust gas sensor monitor.
	10. Drive the vehicle with a steady pedal between 89 to 97 km/h (55 to 60 mph) for a minimum of 10 seconds.	
	11. Bring the vehicle to a stop. Idle with the transmission in drive (neutral for M/T) for a minimum of 1 minute.	
NOx Catalyst	Note: Make sure the ambient air temperature is greater than 4°C (40°F) or the monitor may not complete. 12. Monitor the EGT11, EGT12, EGT13 and EGT14 PIDs. Make sure the exhaust gas temperature is between 200 to 300°C (392 to 572°F). Drive the vehicle with a steady pedal between 89 to 97 km/h (55 to 60 mph) for a minimum of 30 minutes.	Executes the NOx catalyst monitor.
HC Catalyst	Note: Make sure the ambient air temperature is greater than -7°C (19.4°F) or the monitor may not complete. For Vehicles With a GVW Under 10K, 13. Drive the vehicle between 72 to 113 km/h (45 to 70 mph) until the engine coolant temperature exceeds 70°C (158°F) and the exhaust gas temperature exceeds 200°C (392°F). Drive the vehicle with a steady pedal between 72 to 113 km/h (45 to 70 mph) until the monitor completes or for 402.34 km (250 miles). For Vehicles With a GVW Over 10K, 13. Drive the vehicle between 72 to 113 km/h (45 to 70 mph) until the engine coolant temperature exceeds 70°C (158°F) and the exhaust gas temperature exceeds 200°C (392°F). Drive the vehicle with a steady pedal between 72 to 113 km/h (45 to 70 mph) and carry out a manual regeneration event. Repeat the regeneration event if it does not complete normally.	Executes the HC catalyst monitor.
Particulate Matter (PM) Filter	14. Drive the vehicle between 72 to 113 km/h (45 to 70 mph) until the engine coolant temperature exceeds 70°C (158°F) and the exhaust gas temperature exceeds 200°C (392°F).	Executes the PM filter monitor.
	15. Drive the vehicle with a steady pedal between 72 to 113 km/h (45 to 70 mph) and carry out a manual regeneration event. Repeat the regeneration event if it does not complete normally.	
	16. Drive the vehicle until the monitor completes or for 3 hours after the regeneration event completes normally.	

Selective Catalytic Reduction (SCR) System Procedure

Selective Catalytic Reduction (SCR) System Procedure — Transit

Note: If refilling the tank with diesel exhaust fluid does not clear the EXHAUST FLUID RANGE or EXHAUST FLUID EMPTY messages, the SCR System Refill Activation Reset can be carried out using the scan tool.

Note: Make sure there is no accelerator pedal position (APP) input during the deceleration event.

The Selective Catalytic Reduction (SCR) System Procedure is carried out to clear the SCR system messages and to allow the vehicle to exit the speed limited mode for the following messages:

- Speed Limited To XX MPH In XXX MI Exhaust Fluid System Fault
- XX MPH Max Upon Restart Exhaust Fluid System Fault
- Speed Limited To XX MPH Exhaust Fluid System Fault

1. While monitoring the REDUCT_TNK_LV PID, add up to 9.46 L (2.5 gallons) diesel exhaust fluid until the PID reads 100%.
2. With the vehicle in PARK or NEUTRAL increase the engine speed to 1000 RPM while monitoring the EGT11, EGT12 and EGT13 PIDs. Run the engine until the exhaust gas temperature is greater than 130°C (266°F) for a minimum of 2 minutes.
3. Accelerate steadily to 80 km/h (50 mph). Carry out a closed pedal deceleration event without applying the brake for 6 seconds. Repeat the closed pedal deceleration event 3 times.
4. Verify that the EGT13 PID temperature is greater than 220°C (428°F) and carry out 5 medium to hard acceleration events that are a minimum of 3 seconds in duration.

Selective Catalytic Reduction (SCR) System Procedure — All Others

Note: *If refilling the tank with diesel exhaust fluid does not clear the EXHAUST FLUID RANGE or EXHAUST FLUID EMPTY messages, the SCR System Refill Activation Reset can be carried out using the scan tool.*

Note: *Make sure there is no accelerator pedal position (APP) input during the deceleration event.*

The Selective Catalytic Reduction (SCR) System Procedure is carried out to clear the SCR system messages and to allow the vehicle to exit the speed limited mode for the following messages:

- Speed Limited To XX MPH In XXX MI Exhaust Fluid System Fault
- XX MPH Max Upon Restart Exhaust Fluid System Fault
- Speed Limited To XX MPH Exhaust Fluid System Fault

1. While monitoring the REDUCT_TNK_LV PID, add up to 9.46 L (2.5 gallons) diesel exhaust fluid until the PID reads 100%.
2. With the vehicle in PARK or NEUTRAL increase the engine speed to 1000 RPM while monitoring the EGT11, EGT12, EGT13 and EGT14 PIDs. Run the engine until the exhaust gas temperature is greater than 130°C (266°F) for a minimum of 2 minutes.
3. Accelerate steadily to 80 km/h (50 mph). Carry out a closed pedal deceleration event without applying the brake for 6 seconds. Repeat the closed pedal deceleration event 3 times.
4. Verify that the EGT13 PID temperature is greater than 220°C (428°F) and carry out 5 medium to hard acceleration events that are a minimum of 3 seconds in duration.

Exhaust Fluid System Fault Procedure

Exhaust Fluid System Fault Procedure — Transit

Note: *Verify that no DTCs are present and one of the Exhaust Fluid System Fault messages or the DEF System Fault message is present in the instrument cluster message center before carrying out the procedure.*

The Exhaust Fluid System Procedure is carried out to clear the SCR system messages and allow the vehicle to exit the forced idle mode for the following messages:

- Engine Idled Soon Exhaust Fault See Manual
- Engine Idled See Manual Exhaust Fluid System Fault

1. Access the PCM and monitor the AAT, EGT13, REDUCT_TNK_T and RPM PIDs.
2. Verify the AAT PID and the REDUCT_TNK_T PID value is greater than -5°C (23°F). Start the engine. Increase the engine RPM to 2000 to 2500 RPM using the accelerator pedal. With the engine RPM elevated, monitor the EGT13 PID until the value is greater than 155 °C (311 °F) and the message in the message center has cleared.

Exhaust Fluid System Fault Procedure — All Others

DEF Fault Speed Limited Procedure

Note: If the DEF Fault messages do not clear when the diesel exhaust fluid tank is refilled, carry out the following procedure using the scan tool.

Carry out the DEF Fault inducement clearing procedure to allow the vehicle to exit the speed limited mode when any of the following messages are present:

- DEF Fault Speed Limited to XX MPH in XX MI
- DEF Fault Speed Limited to XX MPH Upon Restart
- DEF Fault Speed Limited to XX MPH
- DEF Fault Engine Idled Soon

1. Monitor the EGT12, EGT13, EGT14, REDUCT_INJ_DC and REDUCT_TNK_LV PIDs. Add up to 9.46L (2.5 Gal) of diesel exhaust fluid until the REDUCT_TNK_LV PID reads 100%.
2. Run the vehicle until the EGT12 and EGT13 PIDs read greater than 200°C (392°F) and EGT14 PID reads greater than 225°C (437°F).
3. Shut off the engine for a minimum of 2 minutes, then restart the engine.
4. Dosing injection will begin and may continue for up to 5 minutes. Monitor the REDUCT_INJ_DC PID until it reads 0 for greater than 30 seconds.
5. Carry out 5 acceleration events from 0 to 24.14 km/h (0 to 15 mph). Bring the vehicle to a stop. Idle with the transmission in PARK (neutral for M/T) for a minimum of 30 minutes.
6. The DEF Fault Speed Limited message should clear.

DEF Fault Engine Idled Procedure

Note: Verify the PCM is at the latest calibration level. Using a scan tool, program the PCM to the latest calibration. For additional information refer to Flash Electrically Erasable Programmable Read Only Memory (EEPROM) in this section.

Note: Verify that no DTCs are present and the DEF Fault Engine Idled message is present before carrying out this procedure.

Carry out the DEF Fault Engine Idled System Procedure to allow the vehicle to exit the forced engine idled mode when the following message is present:

- DEF Fault Engine Idled

1. Monitor the EGT12, EGT13, EGT14, REDUCT_INJ_DC and REDUCT_TNK_LV PIDs. Add up to 9.46L (2.5 Gal) of diesel exhaust fluid until the REDUCT_TNK_LV PID reads 100%.
 2. Run the vehicle until the EGT12 and EGT13 PIDs read greater than 200°C (392°F) and EGT14 PID reads greater than 225°C (437°F).
 3. Shut off the engine for a minimum of 2 minutes, then restart the engine.
 4. Dosing injection will begin and may continue for up to 5 minutes. Monitor the REDUCT_INJ_DC PID until it reads 0 for greater than 30 seconds.
 5. Carry out 5 acceleration events from 0 to 8.05 km/h (0 to 5 mph). Bring the vehicle to a stop. Idle with the transmission in PARK (neutral for M/T) for a minimum of 30 minutes.
 6. The DEF Fault Engine Idled message should clear.
-

mcx30.com