

Manufacturer Specific Freeze Frame

The manufacturer specific freeze frame data is DTC snapshot data that allows a manufacturer to store vehicle condition information when a DTC sets. This is similar to the OBDII freeze frame functionality that already exists in the PCM. The manufacturer defines the snapshot data to provide the conditions at the time when a fault occurred. Each snapshot is about 40 - 50 PIDs with up to 5 snapshots available for up to 5 different DTCs. The PCM reports the most recent fault conditions for the DTC, and refreshes a maximum of once per operation cycle.

MANUFACTURER SPECIFIC FREEZE FRAME PIDS

PID Name	Description	Measurement Units
APP1	Accelerator Pedal Position Sensor 1	Volts
APP2	Accelerator Pedal Position Sensor 2	Volts
APP_FLT	Accelerator Pedal Position Status	Fault, No Fault
BARO	Barometric Pressure	Pressure, in H2O
CHT_F	Cylinder Head Temperature Status	Fault, No Fault
CHTIL	Cylinder Head Temperature Indicator Lamp	On, Off
ECT	Engine Coolant Temperature	Degrees
ECT_F	Engine Coolant Temperature Status	Fault, No Fault
EGR_F	Exhaust Gas Recirculation Status	Fault, No Fault
EGRPCT	Commanded EGR	Percent
ETC [TAC_PCT]	Commanded Throttle Actuator Control	Percent
ETC_TRIM_LRN	Throttle Angle Trim Value Has Learned	Yes, No
FF_LRND	Flex Fuel Learned	Yes, No
FLI	Fuel Level	Percent
FTP_H2O	Fuel Tank Pressure Input	Pressure
FUELSYS	Fuel System Status	Open Loop, Closed Loop
GEAR	Transmission Gear Status	Gear
IAT	Intake Air Temperature	Degrees
IAT_F	Inlet Air Temperature Status	Fault, No Fault
LOAD	Calculated Engine Load	Percent
LONGFT1	Long Term Fuel Trim Bank 1	Percent
LONGFT2	Long Term Fuel Trim Bank 2	Percent
MAF	Mass Airflow Rate	g/s
MAF_F	Mass Airflow Status	Fault, No Fault
MAP	Manifold Absolute Pressure	kPa, PSI, in-Hg
MAP_F	Manifold Absolute Pressure Sensor Status	Fault, No Fault
MISFIRE	Misfire Malfunction Detection	Yes, No
MP_LRN	Learned Misfire Correction Profile	Yes, No
O2S11	Bank 1 Upstream Oxygen Sensor (11)	Volts
O2S12	Bank 1 Downstream Oxygen Sensor (12)	Volts
O2S21	Bank 2 Upstream Oxygen Sensor (21)	Volts
O2S22	Bank 2 Downstream Oxygen Sensor (22)	Volts
OSS_SRC	Output Shaft Speed	RPM

PID Name	Description	Measurement Units
RPM	Engine RPM	RPM
RPMDSD	RPM Desired	RPM
RUNTM	Run Time	Seconds
SHRTFT1	Short Term Fuel Trim Bank 1	Percent
SPARKADV	Spark Advance	Degrees
TCC	Torque Converter Clutch	Percent
TP1	Throttle Position 1 Voltage	Volts
TP2	Throttle Position 2 Voltage	Volts
TP_F	Throttle Position Sensor Status	Fault, No Fault
TP_REL	Relative Throttle Position	%
TQ_CNTRL	Torque Fuel Spark Limiting Status	Status
VPWR	Vehicle Power Voltage	Volts

Hybrid Diagnostic Modes

Engine Running Diagnostic Mode

For Aviator and Explorer,

The green READY indicator flashing once every 3 seconds indicates the vehicle is in the engine running

- apply the parking brake
- place the gear selector in the PARK position
- ignition in the OFF position
- **NOTICE: Do not start the engine.**
- ignition in the ON position with the engine OFF
- within 5 seconds of the ignition in the ON position, fully apply the accelerator and brake pedals, hold the accelerator and brake pedals fully applied for 10 seconds
- within 5 seconds, release the accelerator pedal, cycle the ignition to the ON/RUN position, fully apply the accelerator pedal and hold the engine RPM at the REV limiter, approximately 4,000 RPM, for 10 seconds until the green READY indicator turns OFF, then release the accelerator pedal

If the green READY indicator does not turn off after 10 seconds, cycle the ignition to the off position. Allow the vehicle enough time for all the modules to power down then procedure can be repeated.

For all others,

The engine running diagnostic mode is a powertrain control module (PCM) strategy which is separate from the normal operating strategy. When in this mode, the engine is running and does not turn off, as it does during normal operation. The engine RPM may be increased to the desired speed as the vehicle is in the pedal follower mode. To activate the engine running diagnostic mode the gear selector must be in the PARK position, and the ignition cycled to the START position. The engine is allowed to idle as long as the powertrain and hybrid electric systems operate within the calibrated limits. This mode is helpful whenever the engine must stay running for diagnostics and repairs that require the engine to be idling for extended time. Carry out the following sequence to activate this mode:

- apply the parking brake
- place the gear selector in the PARK position
- ignition in the OFF position
- **NOTICE: Do not start the engine.**
- ignition in the ON position with the engine OFF
- within 5 seconds of the ignition in the ON position, fully apply the accelerator pedal and hold for 10 seconds
- within 5 seconds release the accelerator pedal, shift the gear selector to the DRIVE position and fully apply the accelerator pedal
- hold the accelerator pedal fully applied for 10 seconds
- release the accelerator pedal and shift the gear selector to the PARK position

If the sequence is correctly executed the powertrain malfunction indicator (wrench) flashes once per second when the gear selector is shifted to the PARK position. The engine may be started by cycling the ignition to the START position. The PCM exits the engine running mode when the gear selector is shifted to any gear other than PARK, when the ignition is turned to the OFF or ACC position, or the powertrain or hybrid electric system exceeds calibrated limits.

Engine Cranking Diagnostic Mode

For Aviator and Explorer,

Note: The engine will crank 5 revolutions, approximately 3 seconds, and then start. An extended engine cranking diagnostic mode is not available for these vehicles.

- apply the parking brake
- place the gear selector in the PARK position
- ignition in the OFF position

- fully apply the brake and accelerator pedals
- hold the brake and accelerator pedals
- ignition in the ON position to crank the engine
- release the accelerator pedal when the engine starts requires the engine to crank, but not start.

This procedure can be completed multiple times for a compression test, or any test that

For all others,

Note: Access the battery energy control module (BECM) and monitor the high voltage traction battery state of charge parameter identification (PID). If the monitored PID displays the state of charge below 45%, run the vehicle in the Engine Running Diagnostic Mode to raise the BECM state of charge. When the high voltage traction battery state of charge exceeds 45%, the engine cranking diagnostic mode can be activated.

The engine cranking diagnostic mode is a PCM strategy which is separate from the normal operating strategy. It allows the engine to crank in a similar fashion as a conventional vehicle with the fuel disabled. When in this mode, the PCM commands the TCM to spin the generator which cranks the engine with the speed between 900 and 1,200 RPM. To activate the engine cranking diagnostic mode the gear selector must be in the PARK position, the high voltage traction battery state of charge must be greater than 45%, and the ignition must be cycled to the START position. The engine cranks as long as the high voltage traction battery state of charge stays greater than 35%. The hazard indicator (red triangle) flashing once per second indicates the vehicle is in the engine cranking diagnostic mode. In this mode the throttle plates can be moved from closed to open by applying and holding the brake pedal before applying the accelerator pedal. After moving the throttle plate position twice, function may be disabled and diagnostic trouble code (DTC) P2111 may set. To carry out this function again, clear the DTCs and enter this mode again. This mode is helpful whenever the engine must be cranked but not started. Carry out the following sequence to activate this mode:

- apply the parking brake
- place the gear selector in the PARK position
- ignition in the OFF position
- **NOTICE: Do not start the engine.**
- ignition in the ON position with the engine OFF
- within 5 seconds of the ignition in the ON position, fully apply the accelerator pedal and hold for 10 seconds
- within 5 seconds release the accelerator pedal, shift the gear selector to the NEUTRAL position and fully apply the accelerator pedal
- hold the accelerator pedal fully applied for 10 seconds
- release the accelerator pedal and shift the gear selector to the PARK position

If the sequence is correctly executed the hazard indicator (red triangle) flashes once per second when the gear selector is shifted to the PARK position. The engine may be cranked by cycling the ignition to the START position. If the ignition stays in the START position for 15 seconds or longer, the PCM may set the DTC P2535. The PCM exits the engine cranking diagnostic mode when the high voltage traction battery state of charge drops below 35%, the gear selector is shifted to any gear other than PARK, or when the ignition is turned to the OFF or ACC position.
