

Default mode Definitions

MECHANICAL LIMP-HOME MODE:

- No electronic throttle operation (mechanical operation for last quarter of pedal travel)
- Maximum 25° throttle opening, depending on adjustment of throttle mechanical linkage
- Engine speed restricted to 3000 rpm maximum, by fuel cut-off
- High idle speed (1200 rpm approx.)
- Misfire at idle, due to cylinder cut as a means of controlling idle speed (the misfire will switch cylinders, as the strategy varies the cylinder cut)
- Cruise (speed) control inhibited

REVERSE THROTTLE PROGRESSION ENABLED:

- Electronic throttle operation, limited to maximum 25°
- Cruise (speed) control inhibited

• NOTE: The throttle operation uses the same map as for reverse gear.

ENGINE SPEED LIMIT:

- Engine runs normally, up to 3000 rpm
- Engine speed restricted to 3000 rpm maximum, by fuel cut-off
- Cruise (speed) control inhibited

LIMP-HOME UNAVAILABLE:

- Cruise (speed) control inhibited
- Reverse throttle progression engaged at second occurrence of DTC flagging

Diagnostic Trouble Code (DTC) index

DTC	Condition	Possible Causes	Action
P0171	Right-hand cylinders combustion too lean	<ul style="list-style-type: none"> • Air intake leak between MAF sensor and throttle • Fuel filter system blockage • Fuel injector blockage • Fuel pressure regulator failure (low fuel pressure) <ul style="list-style-type: none"> • Low fuel pump output • HO2S harness wiring fault • Exhaust leak (before catalyst) • ECM receiving incorrect signal from one or more of the following sensors - ECT, MAF, IAT, TP. 	<p>For intake system, REFER to Section 303-12 Intake Air Distribution and Filtering.</p> <p>For fuel filter, REFER to Section 310-01 Fuel Tank and Lines.</p> <p>Check the fuel injectors. Check the fuel pressure regulator. Check the fuel pressure. For HO2S circuit tests, REFER to Section 303-14 Electronic Engine Controls.</p> <p>For exhaust information, REFER to Section 309-00 Exhaust System.</p> <p>For sensor circuit tests, REFER to Section 303-14 Electronic Engine Controls.</p>
P0172	Right-hand cylinders combustion too rich	<ul style="list-style-type: none"> • Engine misfire • Blocked air filter • Fuel system return blockage • Leaking fuel injector(s) • Fuel pressure regulator failure (high fuel pressure) • ECM receiving incorrect signal from one or more of the following sensors - ECT, MAF, IAT, TP 	<p>Check for 'engine misfire detected' DTCs. Check the air filter element, REFER to Section 303-12 Intake Air Distribution and Filtering.</p> <p>Check the fuel lines, REFER to Section 310-01 Fuel Tank and Lines.</p> <p>Check the fuel injectors, REFER to Fuel Injectors - in this section.</p> <p>For fuel pressure regulator check, GO to Pinpoint Test D... Check the fuel pressure,</p>

			<p>REFER to Section 310-00 Fuel System - General Information. Check for DTCs indicating a sensor fault, REFER to Section 303-14 Electronic Engine Controls.</p>
P0174	Left-hand cylinders combustion too lean	<ul style="list-style-type: none"> • Air intake leak between MAF sensor and throttle • Fuel filter system blockage • Fuel injector blockage • Fuel pressure regulator failure (low fuel pressure) <ul style="list-style-type: none"> • Low fuel pump output • H02S harness wiring fault • Exhaust leak (before catalyst) • ECM receiving incorrect signal from one or more of the following sensors - ECT, MAF, IAT, TP 	<p>For air intake system information, REFER to Section 303-12 Intake Air Distribution and Filtering. Check the fuel filter, REFER to Section 310-01 Fuel Tank and Lines. Check the fuel injectors, REFER to Fuel Injectors - in this section. For fuel pressure regulator check,GO to Pinpoint Test D... Check the fuel pressure, REFER to Section 310-00 Fuel System - General Information. Check for DTCs indicating which HO2 sensor is faulty, REFER to Section 303-14 Electronic Engine Controls. Check for DTCs indicating a sensor fault, REFER to Section 303-14 Electronic Engine Controls.</p>
P0175	Left-hand cylinders combustion too rich	<ul style="list-style-type: none"> • Engine misfire <ul style="list-style-type: none"> • Blocked air filter • Fuel system return blockage • Leaking fuel injector(s) • Fuel pressure regulator failure (high fuel pressure) • ECM receiving incorrect signal from one or more of the following sensors - ECT, MAF, IAT, TP 	<p>Check for 'engine misfire detected' DTCs. Check the air filter element, REFER to Section 303-12 Intake Air Distribution and Filtering. Check the fuel lines, REFER to Section 310-01 Fuel Tank and Lines. Check the fuel injectors, REFER to Fuel Injector - Vehicles Without: Supercharger / Fuel Injector - Vehicles With: Supercharger in this section. For fuel pressure regulator check,GO to Pinpoint Test D... Check for DTCs indicating a sensor fault, REFER to Section 303-14 Electronic Engine Controls.</p>
P0201	Fuel injector circuit malfunction, Cyl 1	<ul style="list-style-type: none"> • Injector disconnected • Injector wiring open or short circuit • Injector failure 	<p>For fuel injector circuit tests,GO to Pinpoint Test A...</p>
P0202	Fuel injector circuit malfunction, Cyl 3		
P0203	Fuel injector circuit malfunction, Cyl 5		
P0204	Fuel injector circuit malfunction, Cyl 7		
P0205	Fuel injector circuit malfunction, Cyl 2		
P0206	Fuel injector circuit malfunction, Cyl 4		
P0207	Fuel injector circuit malfunction, Cyl 6		
P0208	Fuel injector circuit malfunction, Cyl 8		
P0300	Random misfire detected	<ul style="list-style-type: none"> • ECM to ignition coil primary circuit faults (cylinder misfire detected DTCs also logged) • Ignition coil ground circuit; open circuit, high resistance • Fuel injector circuit fault(s) (injector DTCs also logged) 	<p>For ignition circuit tests, REFER to Section 303-07 Engine Ignition. For engine information, REFER to Section 303-00 Engine System - General Information. For fuel injector circuit tests,GO to</p>

		<ul style="list-style-type: none"> • Ignition coil failure(s) • HT short to ground (tracking) check rubber boots for cracks/damage • Spark plug failure/fouled/incorrect gap <ul style="list-style-type: none"> • Cylinder compression low • Fuel delivery pressure (low/high) • Fuel injectors restricted/leaking <ul style="list-style-type: none"> • Fuel contamination • PAS pulley bolts loose (see Service Action S462) • Worn camshaft/broken valve springs 	<p>Pinpoint Test A.. Check fuel pressure, REFER to Section 310-00 Fuel System - General Information. Check fuel injectors, REFER to Fuel Injectors - in this section. Check service actions.</p>
P0301	Misfire detected, Cyl 1	REFER to possible sources for P0300	REFER to actions for P0300.
P0302	Misfire detected, Cyl 3		
P0303	Misfire detected, Cyl 5		
P0304	Misfire detected, Cyl 7		
P0305	Misfire detected, Cyl 2		
P0306	Misfire detected, Cyl 4		
P0307	Misfire detected, Cyl 6		
P0308	Misfire detected, Cyl 8		
P0460	Fuel level sense signal performance	<ul style="list-style-type: none"> • Fuel level sensor to instrument cluster circuits intermittent short or open circuit <ul style="list-style-type: none"> • Fuel level sensor failure • Instrument cluster fault (incorrect fuel level data) 	For fuel level sensor tests,GO to Pinpoint Test B.
P1224	Throttle control position error	<ul style="list-style-type: none"> • Throttle adaptations not performed after battery disconnect <ul style="list-style-type: none"> • TP sensor disconnected • TP sensor to ECM sense circuits; open circuit, high resistance <ul style="list-style-type: none"> • Throttle motor relay failure • Throttle motor relay to ECM circuit fault • Throttle motor relay power supply open circuit • ECM ground circuit fault (relay coil drive) <ul style="list-style-type: none"> • Throttle motor to ECM drive circuits; open circuit, short circuit, high resistance <ul style="list-style-type: none"> • Throttle motor failure • Throttle body failure 	Carry out the throttle adaptation procedure, REFER to Section 303-14 Electronic Engine Controls . ECM adaptations. For throttle motor relay tests, throttle position sensor tests, ECM ground tests, REFER to Section 303-14 Electronic Engine Controls .
P1229	Throttle motor control circuit malfunction	<ul style="list-style-type: none"> • Throttle motor disconnected • Throttle motor to ECM drive circuits; short circuit or open circuit <ul style="list-style-type: none"> • Throttle motor failure 	For throttle motor relay tests, REFER to Section 303-14 Electronic Engine Controls .
P1250	Engine load malfunction	<ul style="list-style-type: none"> • Air intake leak • Engine breather leak • TP sensor circuit fault (DTC P0121) • Throttle valve spring failure 	For air intake system, REFER to Section 303-12 Intake Air Distribution and Filtering . Check engine breather system for leaks. For TP sensor tests, REFER to Section 303-14 Electronic Engine Controls .
P1313	Right-hand cylinders misfire rate catalyst damage (this DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300-P0308)	Refer to possible causes for P0300-P0308	Refer to actions for P0300-P0308.
P1314	Left-hand cylinders misfire rate catalyst damage (this DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300-P0308)	Refer to possible causes for P0300-P0308	Refer to actions for P0300-P0308.

P1316	Misfire excess emission (this DTC will flag only when accompanied by an individual cylinder misfire DTC: P0300-P0308)	Refer to possible causes for P0300-P0308	Refer to actions for P0300-P0308.
P1611	Throttle angle malfunction	<ul style="list-style-type: none"> • TP sensor circuit fault • APP sensor circuit fault • Throttle assembly failure <ul style="list-style-type: none"> • ECM failure 	For TP and APP sensor circuit tests, REFER to Section 303-14 Electronic Engine Controls . For throttle assembly information, refer to throttle body in this section. Contact dealer technical support for advice on possible ECM failure.
P1612	Throttle offset malfunction	<ul style="list-style-type: none"> • TP sensor circuit fault • APP sensor circuit fault • Throttle assembly failure <ul style="list-style-type: none"> • ECM failure 	For TP and APP sensor circuit tests, REFER to Section 303-14 Electronic Engine Controls . For throttle assembly information, refer to throttle body in this section. Contact dealer technical support for advice on possible ECM failure.
P1646	Fuel pump 2 relay malfunction (this DTC applies only to the supercharger secondary fuel pump)	<ul style="list-style-type: none"> • Fuel pump 2 relay failure • Fuel pump 2 relay to ECM circuit fault • Fuel pump 2 relay coil power supply open circuit • ECM ground circuit fault (relay coil drive) 	For fuel pump 2 relay circuit tests, GO to Pinpoint Test C. .

Pinpoint Tests

PINPOINT TEST A : DTC P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208; FUEL INJECTOR CIRCUIT MALFUNCTION	
<p>• NOTE: The DTC set will indicate which cylinder injector or circuit is faulty. Only in the event of multiple cylinder misfires will it be necessary to check more than one injector or circuit, in which case, multiple DTCs will be set.</p>	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK THE INJECTOR COIL RESISTANCE	
	<ol style="list-style-type: none"> 1 Turn the ignition switch to the OFF position. 2 Disconnect the relevant injector electrical connector, (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine). 3 Measure the resistance between the injector pins.
	Is the resistance between 12 and 16 ohms?
	<p>Yes GO to A2.</p> <p>No INSTALL a new injector. REFER to Fuel Injector - Vehicles Without: Supercharger in this section. CLEAR the DTC. TEST the system for normal operation.</p>
A2: CHECK THE INJECTOR COIL INSULATION	
	<ol style="list-style-type: none"> 1 Measure the resistance between the injector pin 01 and the injector body. 2 Measure the resistance between the injector pin 02 and the injector body.
	Are both resistances greater than 10 Mohms?
	<p>Yes GO to A3.</p> <p>No INSTALL a new injector. CLEAR the DTC. TEST the system for normal operation.</p>
A3: CHECK THE INJECTOR SUPPLY VOLTAGE	
	<ol style="list-style-type: none"> 1 Turn the ignition switch to the ON position. 2 Disconnect the relevant injector electrical connector, (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine). 3 Measure the voltage between the relevant injector harness electrical connector (IJ03 to IJ10, vehicles with AJ26 engine, PI07 to PI14, vehicles with AJ27 engine), pin 02 (BR) and GROUND.
	Is the voltage greater than 12 volts?
	<p>Yes GO to A4.</p> <p>No REPAIR the circuit between the relevant injector harness electrical connector, pin 02 and battery. This</p>