

Section 04 ENGINE MANAGEMENT (2-TEC)

Subsection 03 (COMPONENT INSPECTION AND ADJUSTMENT)

TDC SETTING (Top Dead Center)

Refer to IGNITION TIMING section.

ENGINE START/RER BUTTON VERIFICATION

A quick operation test can be done using the vehicle communication kit (VCK) with the B.U.D.S. software, using the **Monitoring** section. Press the START/RER button and look at the START/RER button LED. It should turn on, indicating the starting system is working on the input side of the starting system (START/RER button, ECM and wiring). You know now the problem is on the output side of the starting system (ECM output signal to starting solenoid, wiring harness going to the solenoid and starter motor. Refer to STARTING SYSTEM for testing procedures). Otherwise, check the input side as follows.

This is piezo electric-type switch.

NOTE: You will not feel any movement when you press this kind of button.

Disconnect the START/RER button connector. Using an ohmmeter, connect test probes to RED/BROWN and BEIGE wires.

Measure resistance, it must be at least 5 M Ω an open circuit (switch is normally open). Depress and hold button, the ohmmeter should read lower than 300 ohms during 2 seconds. Otherwise, replace switch. Reconnect connector.

Test continuity of circuit B-19. If it is good, try a new ECM. Otherwise, repair harness/connectors.

DESS SWITCH VERIFICATION

If 2 short beeps are not heard when starting the engine, refer to DIAGNOSTIC PROCEDURES.

The following continuity tests can also be performed using an ohmmeter.

Disconnect switch wires.

Tether Cord Cap Removed

Connect test probes to switch BLACK/GREEN and BLACK/WHITE wires. Measure resistance, there should be NO continuity (open circuit).

Connect one test probe to the WHITE/GREY wire and the other test probe to the switch top terminal. Measure resistance, it must be close to 0 ohm.

Connect one test probe to the BLACK/GREEN wire and the other test probe to the switch ring. Measure resistance, it must be close to 0 ohm.

Tether Cord Cap on Switch

Connect test probes to switch BLACK/GREEN and BLACK/WHITE wires. Measure resistance, it must be close to 0 ohm.

SPARK PLUGS

Disassembly

WARNING

Never remove ignition coil from the spark plug without disconnecting it from the wiring harness. Flammable vapors may be present in the engine compartment and ignited by a spark which could cause an explosion.

Disconnect the spark plug cable from the spark plug.

First unscrew the spark plug one turn.

Clean the spark plug and cylinder head with pressurize air then completely unscrew.

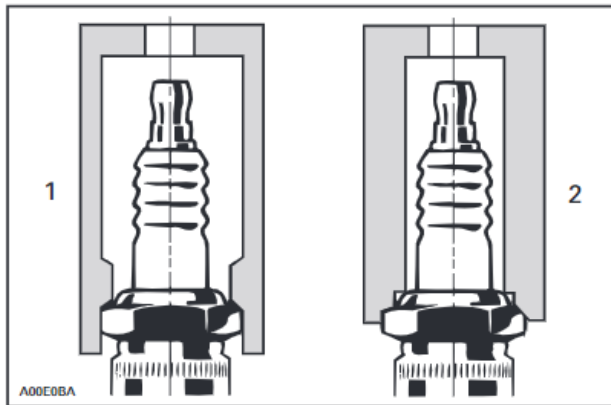
Spark Plug Installation

Prior to installation make sure that contact surfaces of the cylinder head and spark plug are free of grime.

1. Using a wire feeler gauge, set electrode gap according to the following chart.
2. Apply anti-seize lubricant over the spark plug threads to prevent possible seizure.

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3. Hand screw spark plug into cylinder head. Then, tighten the spark plug clockwise an additional 1/4 turn with a proper socket.



1. *Proper socket*
2. *Improper socket*

ENGINE	SPARK PLUG	TORQUE	GAP mm (in)
793 SDI 2-TEC	NGK DCPR8-ES	Hand tighten + 1/4 turn with a socket	0.6 (.24)

CRANKING SYSTEM

See above for START/STOP switch and the DESS post testing. Refer to STARTING SYSTEM section for other tests.

DIAGNOSTIC PROCEDURES

GENERAL

Here is the basic order suggested to diagnose a suspected engine management or fuel injection related problem:

- Check the chart in TROUBLESHOOTING section to have an overview of problems and suggested solutions.
- Check if the engine management system (EMS) pilot lamp lights up. If so, use the VCK (Vehicle Communication Kit) and look for fault codes to diagnose the trouble.
- Check all fuses.
- Check fuel pressure.
- Check spark plugs condition.
- Check all connections of the wiring harness.

Refer to COMPONENT INSPECTION AND ADJUSTMENT section for procedures.

TROUBLESHOOTING

The following chart is provided to help in diagnosing the probable source of simple troubles.

Monitoring Beeper Coded Signals

CODED SIGNALS	POSSIBLE CAUSE	REMEDY
2 short beeps (when engine is started). DESS/RER pilot lamp also blinks.	<ul style="list-style-type: none">• Confirms that proper tether cord cap is installed.	<ul style="list-style-type: none">• Engine can rev above clutch engagement.
1 short beep every 1.5 seconds (when engine is started). DESS/RER pilot lamp also blinks. Engine cannot reach pulley engagement speed. Vehicle cannot be driven.	<ul style="list-style-type: none">• Bad DESS system connection.• Defective tether cord cap.• Dirt or snow in tether cord cap.• Defective DESS post.	<ul style="list-style-type: none">• Reinstall tether cord cap correctly over post.• Use another programmed tether cord cap.• Clean tether cord cap.• Replace DESS post.
1 long beep per second.	<ul style="list-style-type: none">• Reverse is selected.	<ul style="list-style-type: none">• Vehicle can be driven in reverse.
3 short beeps per second. DESS/RER pilot lamp also blinks. Engine cannot reach pulley engagement speed. Vehicle cannot be driven.	<ul style="list-style-type: none">• Wrong tether cord cap is installed.	<ul style="list-style-type: none">• Install proper tether cord cap.• Program key into ECM.
3 short beeps per second. Engine overheating pilot lamp also blinks.	<ul style="list-style-type: none">• Engine is overheating.	<ul style="list-style-type: none">• Stop engine immediately and allow to cool. Check cooling system.
3 short beeps per second.	<ul style="list-style-type: none">• Low battery voltage.	<ul style="list-style-type: none">• Check battery and charging system.
4 short beeps every 2 minutes. Oil pilot lamp also lights up.	<ul style="list-style-type: none">• Low oil level on 2-TEC models.	<ul style="list-style-type: none">• Check oil level and replenish as soon as possible.
Battery pilot lamp lights up.	<ul style="list-style-type: none">• No charging.	<ul style="list-style-type: none">• Check battery and charging system.
4 short beeps every 2 minutes.	<ul style="list-style-type: none">• Too high battery voltage.• DESS system has detected a shorted key installed on DESS post.	<ul style="list-style-type: none">• Check battery and charging system.• Use another programmed tether cord cap.

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P CODE	ENGINE PILOT LAMP	BUZZER	DESCRIPTION	CAUSES AND ACTIONS
P0337	OFF	OFF	No crankshaft signal detected.	Damaged wires, damaged CPS or damaged tooth wheel. <ul style="list-style-type: none">• Check resistance (190 to 290 Ω) between terminals A-5 and A-19 of ECM connector.• Check for 2 Vac while cranking the engine.
P0339	OFF	OFF	Crankshaft signal fault.	CPS signal not plausible, damaged wires, damaged connector or damaged tooth wheel. <ul style="list-style-type: none">• Check resistance (190 to 290 Ω) between terminals A-5 and A-19 of ECM connector.• Check for 2 Vac while cranking the engine.
P0513	OFF	OFF	Incorrect DESS key.	DESS key not programmed, wrong DESS key used, bad contact on the DESS key. DESS key failure. <ul style="list-style-type: none">• Clean DESS key and post contacts.• Program DESS key.
P0616	OFF	OFF	Starter relay open circuit or shorted to ground.	Damaged or disconnected starter relay, damaged ECM output pin or blown fuse (F4). <ul style="list-style-type: none">• Check for 12 V on terminal 2 of the starter relay.
P0617	OFF	OFF	Starter relay shorted to battery.	Damaged solenoid, damaged circuit wires, damaged connector or damaged ECM output pins. <ul style="list-style-type: none">• Verify if circuit B-31 is shorted to 12 V.
P0650	OFF	OFF	Warning lamp shorted to battery.	Damaged wires, damaged speedometer. <ul style="list-style-type: none">• Verify if circuit B-33 is shorted to 12 V.
P0650	OFF	OFF	Warning lamp open circuit or shorted to ground.	Damaged wires, disconnected wires or connector on speedometer or cab, damaged ECM output pins. <ul style="list-style-type: none">• Check system circuit B-33.
P0654	OFF	OFF	Tachometer RPM signal shorted to battery.	Damaged wires, damaged speedometer. <ul style="list-style-type: none">• Check system circuit B-4.
P0654	OFF	OFF	Tachometer RPM signal open circuit or shorted to ground.	Damaged wires, disconnected wires or connector on speedometer or cab, damaged ECM output pins. <ul style="list-style-type: none">• Check system circuit B-4.
P1611	OFF	OFF	P+ Test of ISC output signal failed.	Intake pressure sensor or TPS failure, sensors power line shorted to ground or to 12 V, damaged ECM. <ul style="list-style-type: none">• Key on and off.• Reset closed TPS.• Check battery voltage.• Replace TPS.
P1655	OFF	OFF	DESS shorted to battery.	Damaged wires or mixed up connections. <ul style="list-style-type: none">• Check system circuit B-26, B-38 and B-39.
P1656	OFF	OFF	DESS line shorted to ground.	Damaged wires or mixed up connections. <ul style="list-style-type: none">• Check system circuit B-26, B-38 and B-39.
P1104	OFF	2 s/15 mn ③	Throttle position sensor adaptation cancelled.	No initialisation after throttle body or ECM change or throttle idle stop drifted. <ul style="list-style-type: none">• Check cable adjustment.• Check idle stop for wear.• Make sure that the throttle plate is against the throttle stop.• Check throttle angle at idle.• Reset closed TPS.

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P CODE	ENGINE PILOT LAMP	BUZZER	DESCRIPTION	CAUSES AND ACTIONS
P0232	BLINKS ①	2 s/mn ②	Fuel pump shorted to battery.	<p>Damaged fuel pump, wires, connectors or terminals.</p> <ul style="list-style-type: none"> • Check for approximately 1 ohm between pins PE-3 and PE-4 of the fuel pump connector. • Check for damaged circuit wires. Check for approximately 1 ohm between pins F3-A and B-29. • Check for damaged connector, damaged ECM output pins or ECM failure.
P0261	BLINKS ①	2 s/mn ②	Outer MAG injector open circuit or shorted to ground.	<p>Damaged wires, damaged injector or blown fuse (F1).</p> <ul style="list-style-type: none"> • Check fuse F1. • Check connections on injector. • Check system circuit A-15.
P0262	BLINKS ①	2 s/mn ②	Outer MAG injector shorted to battery.	<p>Damaged wires, shorted injector.</p> <ul style="list-style-type: none"> • Verify if circuit A-15 is shorted to 12 V.
P0264	BLINKS ①	2 s/mn ②	Outer PTO injector open circuit or shorted to ground.	<p>Damaged outer PTO injector or blown fuse (F2).</p> <ul style="list-style-type: none"> • Check fuse F2. • Check connections on injector. • Check system circuit A-33.
P0265	BLINKS ①	2 s/mn ②	Outer PTO injector shorted to battery.	<p>Damaged wires, shorted injector.</p> <ul style="list-style-type: none"> • Verify if circuit A-33 is shorted to 12 V.
P0267	BLINKS ①	2 s/mn ②	Inner MAG injector open circuit or shorted to ground.	<p>Damaged inner MAG injector or blown fuse (F1).</p> <ul style="list-style-type: none"> • Check fuse F1. • Check connections on injector. • Check system circuit A-14.
P0268	BLINKS ①	2 s/mn ②	Inner MAG injector shorted to battery.	<p>Damaged wires, shorted injector.</p> <ul style="list-style-type: none"> • Verify if circuit A-14 is shorted to 12 V.
P0270	BLINKS ①	2 s/mn ②	Inner PTO injector open circuit or shorted to ground.	<p>Damaged inner PTO injector or blown fuse (F2).</p> <ul style="list-style-type: none"> • Check fuse F2. • Check connections on injector. • Check system circuit A-30.
P0271	BLINKS ①	2 s/mn ②	Inner PTO injector shorted to battery.	<p>Damaged wires, shorted injector.</p> <ul style="list-style-type: none"> • Verify if circuit A-30 is shorted to 12 V.
P0351	BLINKS ①	2 s/mn ②	No MAG ignition output stage.	<p>Blown fuse, damaged wires, damaged ignition coil or damaged connector.</p> <ul style="list-style-type: none"> • Check F1 and/or F2. • Check system circuit A-41.
P0352	BLINKS ①	2 s/mn ②	No PTO ignition output stage.	<p>Blown fuse, damaged wires, damaged ignition coil or damaged connector.</p> <ul style="list-style-type: none"> • Check F1 and/or F2. • Check system circuit A-1.
P0562	BLINKS ①	2 s/mn ②	Battery voltage too low.	<p>Battery failure, rectifier failure, damaged circuit wires or connection, damaged magneto or damaged connectors.</p> <ul style="list-style-type: none"> • Check battery voltage for 11 to 13 volts with engine not running. • Check battery voltage for 14.1 to 14.7 volts with engine idling. • Check both connectors on regulator, check ground and positive connections near the starter relay.

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P CODE	ENGINE PILOT LAMP	BUZZER	DESCRIPTION	CAUSES AND ACTIONS
P1502	BLINKS ①	2 s/mn ②	T.O.P.S. functional problem.	Damage circuit wire, damaged connector or damaged ECM output pin. <ul style="list-style-type: none">• Check for continuity between pin B-9 and ground.
P0106	BLINKS ①	2 s/15 mn ③	Air pressure sensor voltage out of range.	Sensing port dirty or blocked, sensor failure or unexpected reading at idle, sensor fallen out of airbox. <ul style="list-style-type: none">• Make sure the connector on the sensor is fully inserted.• Check the voltage on the sensor's connector for 5 volts between pins 1 and 2.• Check system circuit A-3, A-4 and A-18.
P0112	BLINKS ①	2 s/15 mn ③	Air temperature sensor voltage too low.	Air temperature sensor or wires shorted to ground. <ul style="list-style-type: none">• Disconnect the sensor, if the error code stay the same, look for short circuit on the harness.• Disconnect the sensor, if the error code is different, change the sensor.• Check system circuit A-7 and A-21.
P0113	BLINKS ①	2 s/15 mn ③	Air temperature sensor voltage too high.	Disconnected sensor or sensor's resistance too high. <ul style="list-style-type: none">• Check for disconnected air temperature sensor on the airbox.• Measure the air temperature sensor's resistance (2280 to 2736 Ω) at 20°C (68°F). Replace if necessary.• Check system circuit A-7 and A-21.
P0326	BLINKS ①	2 s/15 mn ③	Knock sensor below minimum noise.	Damaged wires, damaged knock sensor. <ul style="list-style-type: none">• Check system circuit A-8 and A-22.
P0336	BLINKS ①	2 s/15 mn ③	High engine RPM detected.	CPS signal not plausible, damaged wires, damaged connector or damaged tooth wheel. <ul style="list-style-type: none">• Measure resistance (190 to 290 Ω) between terminals A-5 and A-19 of ECM connector.• Check for 2 volts AC while cranking the engine.
P0426	BLINKS ①	2 s/15 mn ③	Exhaust temperature sensor functional problem.	Damaged wires, damaged sensor. <ul style="list-style-type: none">• Measure the exhaust temperature sensor's resistance (215 to 225 Ω) at 20°C (68°F).• Check system circuit A-10 and A-27.
P0427	BLINKS ①	2 s/15 mn ③	Exhaust temperature sensor voltage too low.	Sensor shorted to ground, damaged wires, damaged sensor or damaged connector. <ul style="list-style-type: none">• Measure the exhaust temperature sensor's resistance (215 to 225 Ω) at 20°C (68°F).• Check for leakage between sensor's connection and ground.• Check system circuit A-10 and A-26.
P0428	BLINKS ①	2 s/15 mn ③	Exhaust temperature sensor voltage too high.	Disconnected or damaged sensor. <ul style="list-style-type: none">• Measure the exhaust temperature sensor's resistance (215 to 225 Ω) at 20°C (68°F).• Check system circuit A-10 and A-26.

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P CODE	ENGINE PILOT LAMP	BUZZER	DESCRIPTION	CAUSES AND ACTIONS
P0563	BLINKS ①	2 s/15 mn ③	Battery voltage too high.	Damaged regulator. External battery charger may have been used. <ul style="list-style-type: none">• Check battery voltage for 14.1 to 14.7 volts with engine idling.• Check both connectors on regulator, check ground and positive connections near the starter relay.
P0601	BLINKS ①	2 s/15 mn ③	TPS learns unlikely or checksum fault.	ECM not coded, damaged ECM or TPS not initialized. <ul style="list-style-type: none">• Check cable adjustment.• Check idle stop for wear.• Check throttle angles at idle.• Reset closed TPS.
P0601	BLINKS ①	2 s/15 mn ③	Module call monitoring.	Damaged ECM or faulty programming.
P0602	BLINKS ①	2 s/15 mn ③	ECM not coded.	Damaged ECM or faulty programming.
P0604	BLINKS ①	2 s/15 mn ③	RAM fault.	Damaged ECM or faulty programming. <ul style="list-style-type: none">• Try reflashing the ECM, if problem persist, replace the ECM.
P0605	BLINKS ①	2 s/15 mn ③	EEPROM fault.	Damaged ECM or faulty programming.
P0605	BLINKS ①	2 s/15 mn ③	EEPROM checksum fault.	Damaged ECM or faulty programming.
P0605	BLINKS ①	2 s/15 mn ③	Coding ID checksum fault.	Damaged ECM or faulty programming.
P0605	BLINKS ①	2 s/15 mn ③	Coding checksum fault.	Damaged ECM or faulty programming.
P0605	BLINKS ①	2 s/15 mn ③	Programming checksum fault.	Damaged ECM or faulty programming.
P0608	BLINKS ①	2 s/15 mn ③	Sensor's power supply voltage too low.	Damaged wires, shorted air pressure sensor or TPS. <ul style="list-style-type: none">• Check system circuit A-3, A-4, A-18, A-24, A-25 and A-39.
P0608	BLINKS ①	2 s/15 mn ③	Sensor's power supply voltage too high.	Damaged wires, open air pressure sensor or TPS. <ul style="list-style-type: none">• Check system circuit A-3, A-4, A-18, A-24, A-25 and A-39.
P1102	BLINKS ①	2 s/15 mn ③	Throttle position sensor adaptation failure.	No initialisation after throttle body or ECN change or throttle idle stop drifted. <ul style="list-style-type: none">• Check cable adjustment.• Check idle stop for wear.• Make sure that the throttle plate is against the throttle stop.• Check throttle angles at idle.• Reset closed TPS.
P1654	BLINKS ①	2 s/15 mn ③	Oil lamp shorted to battery.	Damaged wires, damaged speedometer. <ul style="list-style-type: none">• Verify if circuit A-17 is shorted to 12 V.
P1658	BLINKS ①	2 s/15 mn ③	Oil lamp open circuit or shorted to ground.	Damaged wires, disconnected wires or connector on speedometer or cab, damaged ECM output pin. <ul style="list-style-type: none">• Check system circuit A-17.

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P CODE	ENGINE PILOT LAMP	BUZZER	DESCRIPTION	CAUSES AND ACTIONS
P1675	BLINKS ①	2 s/15mn ③	Relay 2 shorted to battery.	Damaged circuit wires, shorted relay. • Verify if circuit B-16 is shorted to 12 V.
P1676	BLINKS ①	2 s/15mn ③	Relay 2 open circuit or shorted to ground.	Damaged circuit wires, damaged or disconnected relay. Blown fuse (F4). • Check fuse F4. • Check system circuit A-17.
P1677	BLINKS ①	2 s/15mn ③	Relay 3 shorted to battery.	Damaged circuit wires, shorted relay. • Verify if circuit B-14 is shorted to 12 V.
P1678	BLINKS ①	2 s/15mn ③	Relay 3 open circuit or shorted to ground.	Damaged or disconnected relay. Blown fuse (F4). • Check fuse F4. • Check system circuit B14.

① Engine pilot lamp is on for half a second and off for half a second

② Buzzer sounds for 2 seconds every minute

③ Buzzer sounds for 2 seconds every 15 minutes

VCK (vehicle communication kit)

The VCK (Vehicle Communication Kit) (P/N 529 035 844) is the primary tool to diagnose engine management and fuel injection related problems.

NOTE: The MPEM programmer does not work on SDI models.

The SDI models requires B.U.D.S. version G2.0 or P2.0 or above.

B.U.D.S. (Bombardier utility and diagnostic software) is designed to allow actuators, sensors and electronic equipments inspection, diagnostic options and reset such as the closed throttle and idle actuator.

For more information pertaining to the use of the software B.U.D.S., use its help which contains detailed information on its functions.

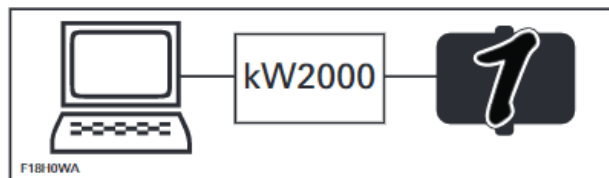
⚠ WARNING

If the computer you are using is connected to the power outlet, there is a potential risk of electrocution when working in contact with water. Be careful not to touch water while working with the VCK.

IMPORTANT: When using the software B.U.D.S., with the SDI engine, ensure that the protocol "kW2000" is properly selected in "MPI" under "Choose protocol".

When B.U.D.S. is connected to the vehicle, the status bar shows the protocol (kW2000) and the number 1 to the right. To communicate with the ECM, number 1 must be displayed.

Number 1 means that one ECM is connected.



ONE ECM IS CONNECTED

If an "X" is shown, this means that no communication between the MPI and the ECM is possible. In this case possible causes are:

- ECM is not powered-up
- wrong protocol is used
- bad connection between MPI and module.

ECM Supply

To power-up the ECM, push the START button shortly while the engine cut-out switch is OFF and the tether cord cap installed on DESS post.

The supply cable (P/N 529 035 869) may also be used. Just the fact to connect it between MPI and vehicle will power-up the ECM.

VCK Supply

The VCK (MPI box) can use the vehicle power for its supply. Four AA batteries or an AC/DC power supply can also be used. Make sure to respect MPI specification if a power supply is used.

Writing in ECM

When writing in ECM through B.U.D.S., there will be an "EMS Tracking" message that will say "Remove key from vehicle". When this occurs, remove the tether cord cap from its post and wait until the message disappears (it lasts approximately 15 seconds after tether cord cap removal).

2-TEC SYSTEM FAULT CODES

General

The faults registered in the ECM (engine control module) are kept when the battery is disconnected.

IMPORTANT: After a problem has been solved, ensure to clear the fault(s) in the ECM using the VCK. This will properly reset the appropriate counter(s). This will also records that the problem has been fixed in the ECM memory.

Many fault codes at the same time is likely to be burnt fuse(s).

For more information pertaining to the code faults (state, count, first, etc.) and report, refer to B.U.D.S. online help.

Supplemental Information for Some Specific Faults

- Electrical noise is picked up by the ECM. Ensure that all connections are in good condition, also grounds (battery, ECM, engine and ignition system), they are clean and well tightened and that all electronic components are genuine — particularly in the ignition system. Installing non-resistive spark plugs may lead to generate this fault code.
- Electrical noise might also lead engine to occasional cutout without generating a fault code when engine is restarted. When looking at the fault code, pay attention to the "count" value in the software B.U.D.S. A value between 1 and 9 confirms an electrical noise problem. A value of 10 and above will generate a fault code.
- If everything is in good condition, try a new ECM.

When using the service action suggested in the Fault section of B.U.D.S., the system circuits are referred as A-41, which means connector "A" on the ECM and the circuit 41.

TPS (Throttle Position Sensor) Faults

Faults which are reported in B.U.D.S. fall into two groups TPS faults and adaption faults. These are displayed on the B.U.D.S. system as TPS OUT OF RANGE and TPS ADAPTION FAILURE.

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TPS "OUT OF RANGE" Fault

It is caused by the sensor reading going out of its allowable range. This fault can occur during the whole range of movement of the throttle.

To diagnose this fully, it is recommended to operate the throttle through its full range. It is also recommended to release the throttle quickly as this may also show up a fault that is intermittent.

POSSIBLE CAUSES	RESULT	ACTION
Check if connector is disconnected from TPS	Yes	• Fix.
Check if sensor is loose	Yes	• Fix and reset Closed Throttle and Idle Actuator.
Inspect sensor for damage or corrosion	Yes	• Replace and reset Closed Throttle and Idle Actuator.
Inspect wiring (voltage test)	Failed	• Repair.
Inspect wiring and sensor (resistance test)	Failed	• If bad wiring, repair. • If bad TPS, replace and reset Closed Throttle and Idle Actuator.
Test sensor operation (wear test)		• Replace and reset Closed Throttle and Idle Actuator.

TPS "ADAPTATION FAILURE" Fault

It is caused by the idle position moving out of an acceptable range.

Following failures can be effected by a TPS "Adaption Failure":

- Idle speed is out of range.
- Engine stops, when throttle is released quickly.
- Engine runs inconsistent in low partload or low RPM.

POSSIBLE CAUSES	RESULT	ACTION
Sensor has been replaced and TPS closed position not reset	Yes	• Reset Closed Throttle and Idle Actuator.
Throttle body has been replaced and TPS closed position not reset	Yes	• Reset Closed Throttle and Idle Actuator.
ECM has been replaced and TPS closed position not reset	Yes	• Reset Closed Throttle and Idle Actuator.
Throttle cable too tight	Yes	• Fix and reset Closed Throttle and Idle Actuator.
Sensor is loose	Yes	• Fix and reset Closed Throttle and Idle Actuator.
Throttle bracket is loose	Yes	• Fix and reset Closed Throttle and Idle Actuator.
Adjustment screw worn or loose	Yes	• Change throttle body.