



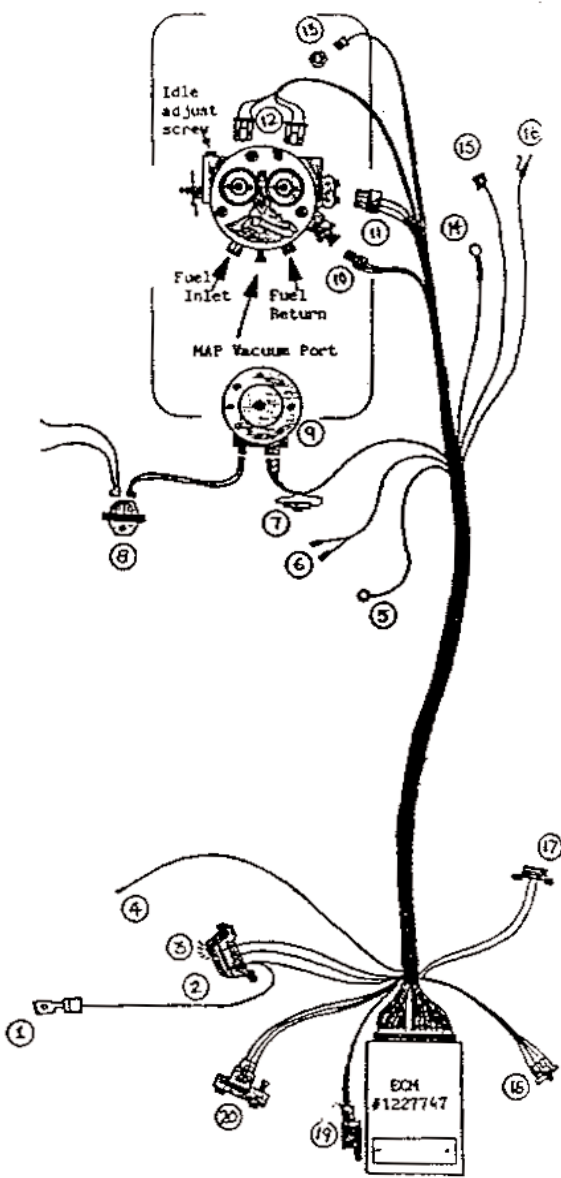
STREET & PERFORMANCE

04-25-2011

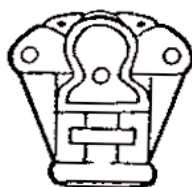
**#1 HOT ROD LANE
MENA, AR. 71953 U.S.A.
PH. 479-394-5711
FAX: 479-394-7113
www.hotrodlane.cc**

**INSTRUCTION & SUPPLEMENTAL INFORMATION
T.B.I. WIRING HARNESS**

**ILLUSTRATED BELOW
COMPLETE T.B.I. HARNESS**



**BEFORE MOUNTING THE HARNESS
ENSURE CORRECT SENSORS ARE IN PLACE.**



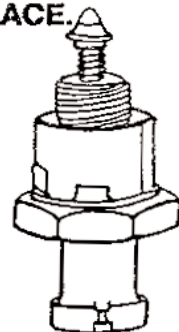
**THROTTLE
POSITION
SENSOR
G.M.**

**PT.SB#17111471
PT.BB#17111787**



**COOLANT TEMP
SENSOR**

G.M. PT.#25036979

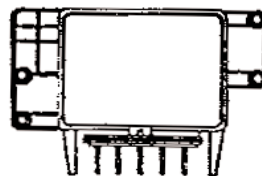


**IDLE AIR CONTROL
MOTOR**

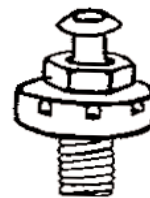
P.T. # 25527077



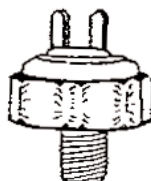
**OXYGEN SENSOR
G.M. PT. #25105107**



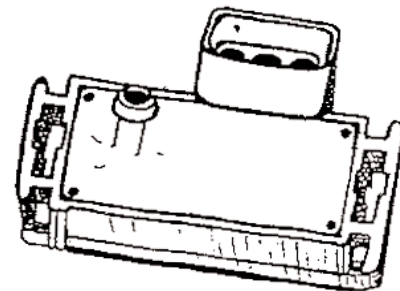
**ESC MODULE
PT.SB#16052401
PT.BB#16131171**



**KNOCK SENSOR
G.M. PT. #10456018**



**OIL PRESSURE SENDING UNIT
G.M. PT. #25036553**



**MAP SENSOR
G.M. PT. #16137039**

Thank you and congratulations on your selection of our Throttle body Wiring harness. By observing the enclosed illustration and instructions you should have no difficulty installing and setting up the system.

INSTALLATION: Gain access to the throttle body assembly by removing the air cleaner. Route the harness through the fire wall and make the appropriate connections. All connections have been tagged on the harness, and when used in combination with the enclosed illustration, the harness installation should be relatively simple. The EGR valve is not utilized in this particular application and it can be removed, and a block off plate installed, or simply leave it in place and cap any vacuum ports. If doing Emission Legal E.G.R. must be used.

1) IGNITION: Ignition "wire on harness must be connected to provide 12V with key ON and in START (crank) position. 55-61 GM ignition switches will not work properly, the switch will need to be replaced or use a jumper wire from ignition 1 to ignition 2. See diagram at www.hotrodlane.cc under TPI tech.

2) FUSE BLOCK: Three 10 AMP fuses are utilized. One for injectors, and one for the ECM (computer), ESC module and "Check Engine Light"

3) CHECK ENGINE LIGHT: This light has been mounted on the fuse block. Its use will be explained later under diagnostic aids.

4) FUEL PUMP HOT FEED: A 14 gauge wire is provided from the harness to provide power to the fuel pump.

5) ENGINE GROUND: A good engine ground is critical for proper operation of the system. Ground Engine to Battery, Engine to Frame, and Engine to Body.

6) OPSU: Oil Pressure Sending Unit. This is provided as a back-up system in the event the fuel pump relay were to fail. With oil pressure above 5 lbs battery voltage is provided to the fuel pump.

7) EST BYPASS: Electronic Spark Timing. Used when setting base timing. Disconnect bypass, start engine, set base timing at 4 to 6 degrees BTDC, shut engine off and reconnect bypass, restart engine. Timing should now be approximately 14 to 16 degrees.

8) DISTRIBUTOR COIL: 12V with key ON and in START (crank) position must be supplied to the coil. The interface wiring for the coil is not supplied with harness and must be obtained separately. The inside terminals on both coil receptacles are the 12V terminals. The outside terminals are for the tachometer. The large GM HEI distributor can be used if desired, but the distributor plug will require modification.

9) DISTRIBUTOR: Spark to the plugs is a function of the distributor only and is independent of the harness or computer. The computer must receive a reference signal from the distributor or the injectors will not be pulsed. Advance and retard is computer controlled.

10) IDLE AIR CONTROL VALVE: Computer controlled stepper motor is mounted on the throttle body and regulates incoming air for different load conditions at engine idle.

11) THROTTLE POSITION SENSOR (TPS): Mounted on the throttle body. Returns a proportional voltage to the computer that relates to the angular position of the throttle plates. Relaxed throttle-low voltage (approx .6V) Wide open throttle-high voltage (approx 4.5V) .

12) INJECTOR PLUGS: Attached to throttle body injectors. One terminal of each injector is HOT with the key on or engine running. The other terminal of each injector interfaces with the computer which controls the on/off time (pulse) of the injectors.

13) COOLANT TEMP SENSOR: Returns a proportional voltage to the computer that relates to the coolant temp. Cold-High voltage. Hot-Low voltage.

14) BATTERY STARTER TERMINAL: Provides 12V to two computer terminals, the fuel pump relay, and one side of the oil pressure sending unit.

15) KNOCK SENSOR: Used in conjunction with the Electronic Spark Control Module (18). Feeds the computer a signal whenever engine knock (ping) is detected, which automatically retards the timing. The knock sensor is normally located on the passenger side of the engine block just forward of the starter. It screws into the water jacket so be prepared if it needs replacing.

16) OXYGEN SENSOR: When exhaust temperature has reached 600 degrees F the oxygen sensor places the system in close loop and maintains an air fuel ratio of 14.7 to 1. This input is ignored during wide open throttle. The sender can be located on either side of the engine in the exhaust pipe (usually within a few inches of the collector).

17) AUTOMATIC LINE DIAGNOSTIC LINK (ALDL): Used in conjunction with the Check Engine Light. See Diagnostic Aids.

18) ELECTRONIC SPARK CONTROL MODULE (ESC): See Knock Sensor (15).

19) FUEL PUMP RELAY: Supplies 12V to the fuel pump for two seconds when the key is turned on and continuously when the engine is running.

20) MANIFOLD ABSOLUTE PRESSURE SENSOR (MAP): Critical fuel delivery sensor used by the computer. Run a vacuum line from the rear center of the throttle body to the vacuum port on the MAP sensor.

SUPPLEMENTAL INFORMATION

ENGINE SENSORS: If obtaining an engine from a salvage yard or other used source, attempt to secure all sensors that normally accompany it.

COMPUTER (ECM): The ECM operates on a negative (-) ground system. Inadvertent connection of the battery leads in reverse.

FUEL PRESSURE: Throttle Body Injection systems have a built in regulator at the throttle body and maintain fuel pressure at a constant 12 to 13 lbs. The pump should be rated at approx 15 lbs and mounted in the tank if possible.

FUEL INJECTORS: Seldom fail totally but do become clogged or dirty. This is especially true of injection units obtained from salvage yards that have been laying idle for several months. If in doubt as to the condition of the injectors, you can clean them installed on the motor by using several brands of injection cleaner on the market, or Street & Performance can clean them professionally.

IDLE ADJUST SCREW: Set and capped at the factory. Normally should not need adjustment for stock systems. If adjustment is desired, the cap can be easily removed for access.

SYSTEM POWER: Full battery voltage is utilized by the injection system. Do not incorporate any ballast resistance in ignition coil circuit or ECM (computer) ignition feed. Full battery voltage is essential in both run and start positions of the ignition switch.

DIAGNOSTIC AIDS

Additional troubleshooting capabilities are incorporated in this TBI harness and can easily be read out if a trouble in the system is suspected. This can be performed by the owner, if so inclined, or any GM service department can do it for you.

To read out any trouble codes that may have been stored in the computer, perform the following:

- 1) Short out pins A and B at the ALDL connector.
- 2) Turn ignition key to "on" position.
- 3) Observe 12V light mounted on fuse block.

The first code observed should always be CODE 12. The-Might7 will indicate the number 12 by blinking once, pausing, and blinking twice. It will perform this sequence three times and informs the observer that the system is ready to provide stored trouble codes if any have occurred. If no trouble codes have been stored the light will continue to indicate a CODE 12. Before placing the system back into service remove the jumper wire from the ALDL connector.

The following is a list of trouble codes which the system is capable of calling out. They will occur in numerical order and will be displayed three times each. For example, a faulty knock sensor wire will set a CODE 43. If this were the only trouble in the system the light would indicate a CODE 12 three times, and the next code would be 43 (4 blinks-pause-3 blinks). Each code will repeat itself three times. The codes will continue through their series indefinitely as long as the key is ON and the jumper wire is inserted in the ALDL connector.

CODE

12 Explained above.

13 OXYGEN SENSOR (open circuit)

14 COOLANT TEMP SENSOR (high temperature indicated)

15 COOLANT TEMP SENSOR (low temperature indicated)

21 THROTTLE POSITION SENSOR (signal voltage high)

22 THROTTLE POSITION SENSOR (signal voltage low)

33 MANIFOLD ABSOLUTE PRESSURE (signal V high-low vacuum)

34 MANIFOLD ABSOLUTE PRESSURE (signal V low-high vacuum)

42 ELECTRONIC SPARK TIMING (distributor)

43 ELECTRONIC SPARK CONTROL (knock sensor)

44 OXYGEN SENSOR (lean exhaust indicated)

45 OXYGEN SENSOR (rich exhaust indicated)

51 MEM-CAL ERROR (PROM)

52 CALPAK ERROR (PROM)

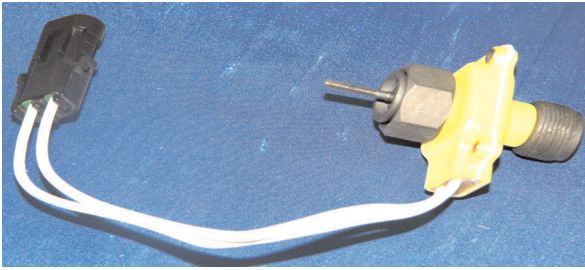
53 SYSTEM OVERVOLTAGE (charging system)

54 FUEL PUMP CIRCUIT (low voltage)

55 FAULTY ECM

These codes are provided as an aid to generally localize the problem if any exist. If a particular trouble code is called out do not immediately assume the sensor or end piece is bad. For example, a CODE 44 (oxygen sensor-lean) could be caused by a faulty MAP sensor, lean or dirty injectors, fuel contamination, low fuel pressure, or exhaust leaks near the oxygen sensor. A faulty computer (ECM) would also cause most codes to set. Extensive and in depth troubleshooting requires equipment not normally in the possession of average mechanics, but most GM service centers and auto repair shops are set up to maintain and repair today's computer controlled, fuel injected automobiles.

This system is designed to operate in two major modes: Closed Loop, and Open Loop. Upon starting the engine and until the exhaust temp reaches 600 degrees F, the system is in open loop. The oxygen sensor places the system in closed loop operation and will maintain a 14.7 to 1 air fuel ratio except during periods of wide open throttle, at which time the computer ignores the oxygen sensor input and pulses the injectors for maximum fuel delivery. To verify closed loop operation install the ALDL jumper, start the engine and observe the check engine light. If the exhaust temperature is below 600 degrees F the light will blink continuously at the rate of once per second. When the exhaust reaches the correct temperature (less than 2 minutes on cold engine) the light will immediately begin to blink at twice the open loop rate. When this occurs the system is in closed loop. To clear any stored codes in the ECM, momentarily disconnect the negative battery lead.



2000 Pulse Manual Speed Sensor

S&P Can Supply You With a 2,000 Pulse Vehicle Speed Sensor, If Doing a Manual Speedometer. Vehicle Speed is Needed For Better Drive Ability. Vehicle Speed is Also Needed to Supply Information to The Computer for Torque Converter Lock-up on the 200R4 or 700R4 when used.

SEE US ON THE WEB OR CALL FOR S&P TECH HELP

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