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Part #35420 & #35430

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INTRODUCTION

Thank you for selecting the Edelbrock Pro-Flo Fuel Injection System. This Multi-Point Fuel Injection System has been designed for Ford FE engines, and is designed to provide excellent performance, fuel economy, and maintenance-free operation. Installation of the Edelbrock/ Pro-Flo Fuel Injection System involves modifications to the fuel system, ignition system, induction system, and possibly the valve train. Although there are steps that must take place before others, the modifications do not necessarily have to be performed in a particular order. Each modification is described in a separate section in this manual. Please study these instructions carefully before beginning installation of any part of the Pro-Flo system.

**If you have any questions, do not hesitate to call our
EFI Technical Hotline at (800) 416-8628, 7am-5pm PST, Monday-Friday**

(In order to properly relay your call, please press 1 at the prompt to select Automotive Products, followed by 3 to select EFI-Electronics then 1 again for Multi-Point EFI.)

Our EFI Technical Support staff can also be reached via email at: EFItch@Edelbrock.com



PRIMARY KIT COMPONENTS

- | | |
|---|--|
| <input type="checkbox"/> Electronic Control Unit/System ECU | <input type="checkbox"/> Calibration Module |
| <input type="checkbox"/> Fuel rail assembly | <input type="checkbox"/> Distributor |
| <input type="checkbox"/> Fuel pressure regulator | <input type="checkbox"/> Fuel injectors |
| <input type="checkbox"/> Main system harness | <input type="checkbox"/> Ignition Harness |
| <input type="checkbox"/> Intake manifold | <input type="checkbox"/> Manifold Absolute Pressure (MAP) Sensor |
| <input type="checkbox"/> Four barrel air valve | <input type="checkbox"/> Manifold Air Temperature (MAT) Sensor |
| <input type="checkbox"/> Idle Air Control (IAC) solenoid, integrated with air valve | <input type="checkbox"/> Coolant Temperature Sensor (CTS) |
| <input type="checkbox"/> Throttle Position Sensor (TPS), integrated with air valve | <input type="checkbox"/> Oxygen (O ₂) sensor |
| <input type="checkbox"/> Installation package | <input type="checkbox"/> USB/Serial Converter |
| <input type="checkbox"/> Software CD | |

Many Pro-Flo components, including the Manifold Absolute Pressure sensor, fuel pressure regulator, Coolant Temperature sensor, and the fuel filter are standard OEM pieces. In the event that one of these parts needs to be replaced, you are likely to find a replacement at your local parts supplier, in addition to your local Edelbrock dealer or directly from Edelbrock. For a list of part numbers, refer to the **PART NUMBERS** section at the back of this manual.

TOOLS AND EQUIPMENT

Use the following checklist for items needed.

- Box and open end wrenches
- Socket set
- Distributor wrench
- Pliers (channel locks and hose clamp)
- Screwdrivers (regular and Phillips)
- Torque wrench
- Hammer
- Gasket scraper or putty knife
- Timing light
- Vacuum gauge
- Rags
- Water bucket
- Drill and bits
- Hole saw (1 1/4-inch or 1 3/4-inch)
- Tubing wrenches
- Tubing cutter

HARDWARE AND PARTS CHECKLIST

Use the following checklist for items needed.

- Intake gasket - Edelbrock #7224
- Pipe plugs, if needed
- Edelbrock Gasgacinch #9300
- Loctite 598 OEM High Temperature Silicone Gasket (O₂ Sensor Compatible)
- Radiator coolant
- Wiring diagram for your vehicle
- Teflon tape or liquid Teflon thread sealer
- Manifold bolt kit #8536
- 195° Thermostat
- Resistor type spark plugs (Use correct heat range for your particular application)
- Set of low-resistance spark plug wires with high EMI suppression (DO NOT use solid core spark plug wires)
- Dynojet wideband commander (Optional, not included)
- DB9 Serial cable (Optional, not included)
- Fuel Pump (See Pump Recommendations)
- Fuel Filter
- Fuel Line
- Fuel Return Line

PRELIMINARY CHECKLIST

1. CAREFULLY STUDY AND UNDERSTAND ALL INSTRUCTIONS, BEFORE BEGINNING THIS INSTALLATION.

NOTE: This installation can be accomplished using common tools and procedures. You should have a basic knowledge of automotive repair and modification as well as familiarity and comfort with working on your vehicle. If you do not feel comfortable working on your vehicle, it is recommended to have the installation completed by a professional mechanic.

2. Examine the Pro-Flo system for possible shipping damage. If damaged, contact your dealer immediately.

3. These kits are designed for use with a standard Ford FE firing order.

4. Check all threaded manifold holes.

5. Check all internal manifold passages with a light and wire, making sure they are clean and unobstructed.

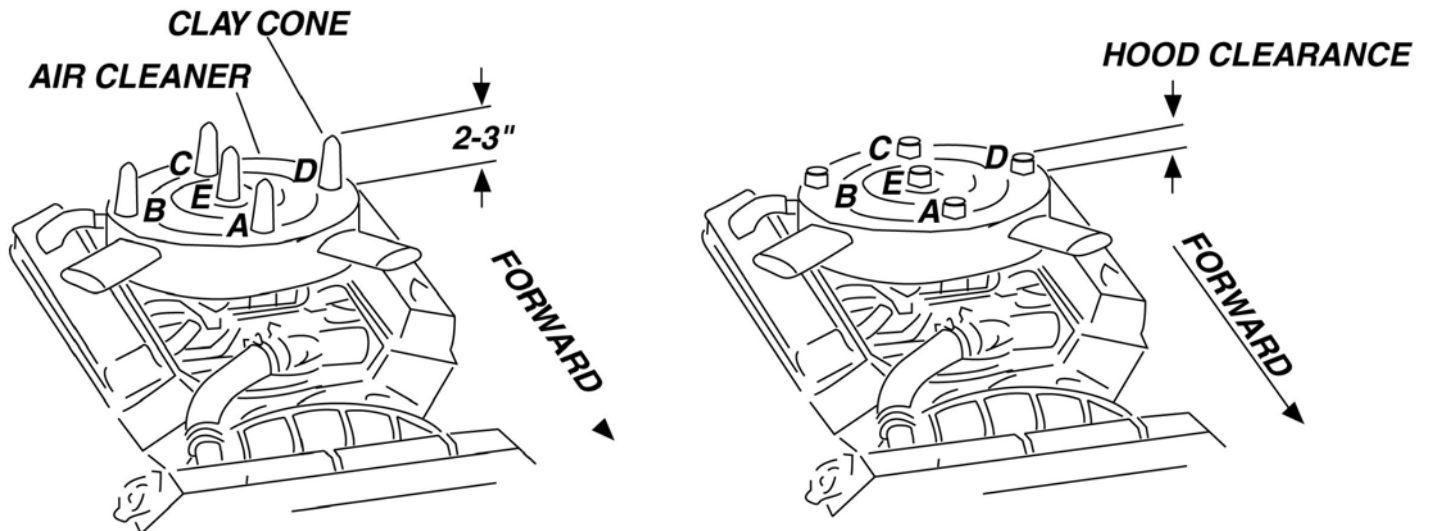
6. Check automatic transmission shift points before removal of your stock manifold and adjust linkage after Edelbrock manifold installation for same shift points (if needed).

NOTE: We recommend that you refer to this checklist again after installation to be sure that you have completed all steps.

DETERMINING HOOD CLEARANCE

NOTE: Check hood clearance before removing stock manifold.

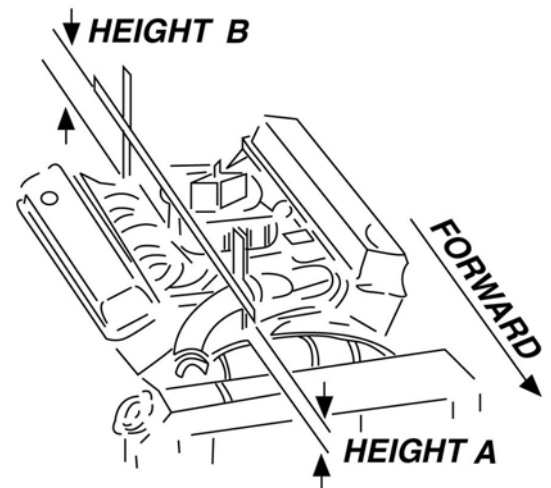
1. Use modeling clay or putty to make five small cones, two or three inches high.
2. Position cones on air cleaner at front, rear, each side, and on center stud.
3. Close hood to locked position and re-open.
4. The height of the cones indicate the amount of clearance between the hood and the air cleaner. Record these measurements.



MANIFOLD & CARBURETOR HEIGHT VS. PRO-FLO HEIGHT

1. Remove air cleaner.
2. Lay a straightedge (such as a yardstick) across the top of the carburetor from front to back.
3. Measure from block and manifold end seal surfaces to straightedge.
4. Record these measurements (height A and height B).
5. Add height A and height B and divide by two to get the average height.
6. Assemble the manifold, air valve, and air cleaner you will be using to obtain the A & B heights you will need to accommodate.
9. Compare the two measurements. If the Pro-Flo unit is taller, subtract this amount from the hood clearance figure to determine new hood clearance.

CAUTION: You must maintain at least 1/2-inch clearance between the hood and air cleaner because of engine torque. If you have insufficient clearance, a low profile air cleaner may solve the problem.



EMISSION CONTROLS

The Edelbrock Pro-Flo system will not accept stock emissions control systems. Check local laws for requirements before installing the Pro-Flo system. Not legal on pollution-controlled motor vehicles.

FUEL REQUIREMENTS

Because the Pro-Flo system uses an Oxygen sensor, it is recommended that you use unleaded fuel only. Leaded fuels will shorten the life of the O₂ sensor.

AUTOMATIC TRANSMISSION CHECK

NOTE: The Pro-Flo XT fuel injection system is not designed to manage electronic transmissions. These automatic transmissions will require a stand alone transmission controller.

For best performance, economy, and emissions, the shift point must be checked before and after the manifold change.

NOTE: This check should be performed **ONLY** at a sanctioned drag strip or test track.

With the shifter in Drive, accelerate to wide open throttle from a standing start. Hold in this position, noting speedometer MPH when the transmission makes the first 1-2 shift. After the Pro-Flo system has been installed, make the same test, again noting MPH of this first shift.

Use of an aftermarket throttle and kickdown cable bracket may be required, if shift point adjustment is necessary.

The transmissions in certain vehicles require precise adjustments. We recommend that you consult a reputable transmission shop for final adjustments once the Pro-Flo system has been installed. Incorrect shift points can result in transmission damage.

ENGINE CLEANING

Edelbrock recommends that the Pro-Flo system be installed on a clean engine in order to prevent dirt from falling into the engine lifter valley or intake ports.

1. Cover ignition. Use engine degreaser and a brush to thoroughly clean the manifold and the area between the manifold and valve covers.
2. Rinse with water and blow dry.

EXHAUST MANIFOLD HEAT RISER VALVE

If your vehicle is equipped with an exhaust manifold heat riser valve (typically located on the passenger side of the vehicle below the exhaust manifold), remove the valve for proper operation. If applicable, any air injection tubes must be removed and holes in the exhaust manifold plugged for proper operation.

HEADERS

For best performance, headers are recommended. For this application, header primary tube diameter should be 1-3/4 inch, approximately 31 inches long and terminating into a 3 inch collector. The remainder of the exhaust system should consist of dual exhaust and tail pipes, at least 2-1/4 inches in diameter with low back pressure mufflers.

COOLING SYSTEM

The minimum requirements for the thermostat are 180° but the ideal thermostat is 195°. When the vehicle is at 175 or below, system will stay in warm-up enrichment mode and may cause performance issues.

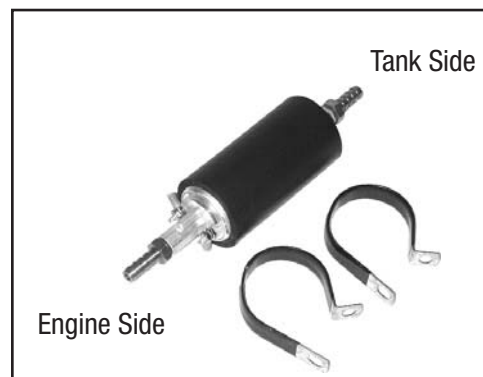
FUEL SYSTEM

Because your Edelbrock Pro-Flo system controls fuel delivery very differently than a carburetor, some conversions to your fuel system are necessary. Pro-Flo electronic fuel injection requires high and constant fuel volume and fuel pressure. For this reason, a good primary fuel line is critical. The Pro-Flo system includes a 3/8-inch high pressure fuel line which must be used as the primary fuel line. The fuel that bypasses the injectors must be returned to the fuel tank via a return fuel line. If your vehicle is already equipped with a fuel pump bypass line, this line can be used as the return fuel line. If not, the original primary line may be used as the return line. If desired, an 8 foot length of 5/16 ID rubber hose is supplied for use as the return line.

Many late-model cars are equipped with an additional fuel line which runs to a charcoal canister mounted on the driver side of the vehicle. This line **MUST** be re-installed after the fuel system conversion and **MUST NOT** be used as the return fuel line.

FUEL PUMP AND FILTER

The Pro-Flo system uses a single Edelbrock high-pressure electric fuel pump which is capable of pumping 50 psi. The pump relay will shut down the pump if it does not receive an engine-run signal from the ECU, as in the case of a stall. This safety precaution is necessary when using a high-pressure fuel line. The provided fuel filter should be mounted between the engine compartment and the fuel pump to allow fuel to be pushed through the filter rather than drawn through. Make sure the fuel pump is mounted at or below the bottom of your fuel tank. If the pump is mounted above this point, fuel pump failure will occur. Electrical connectors should face the front of vehicle.



FUEL PRESSURE REGULATOR

Fuel pressure is as important as fuel volume, particularly in fuel injection. The Pro-Flo fuel pressure regulator maintains a constant pressure at the injectors with a spring loaded by-pass to the return fuel line. Manifold Absolute Pressure (MAP) references the regulator diaphragm to maintain constant pressure across all 8 injectors, regardless of fluctuating manifold pressure (vacuum) level. The fuel that is not injected is returned to the fuel tank via the return fuel line.



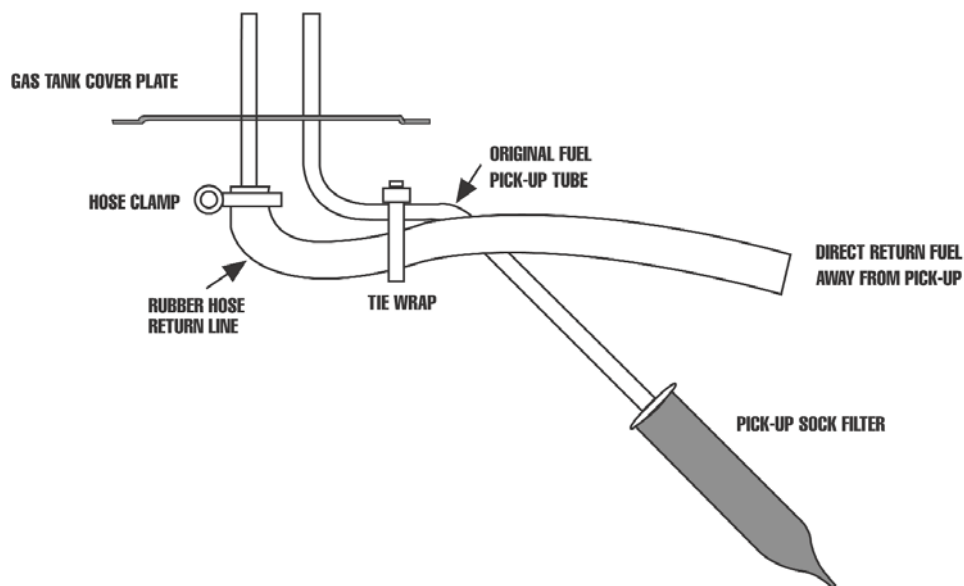
RETURN FUEL LINE

Due to the high fuel pressure used by the Pro-Flo system, **the supplied 3/8-inch high pressure fuel line MUST be used as the primary fuel line**, and a bypass fuel return line must be installed. There are three options for installing a bypass return line.

1. Use the 5/16 rubber fuel line provided with the system as the fuel return line.
2. Use the vehicle's existing primary line as the fuel return line with modification to the pick up as described below.
3. Use the vehicle's existing return line (if so equipped) as the fuel return line. This option applies only to vehicles previously equipped with fuel injection. If the vehicle is not already equipped with a return line, some fuel tank modifications are required for routing the return line through the sending unit plate back into the tank. The first two methods listed below require some welding and should be done by a professional radiator or fuel system repair shop.

RUBBER RETURN LINE METHOD

Drill a 5/16-inch hole in the sending unit plate adjacent to where the main line enters the tank. This will be the hole for your return line. Insert a short length of 5/16-inch hard line (available at most radiator shops) into the hole and weld it to the sending unit plate. The hard line should extend through the hole 1 to 2 inches on each side of the plate. Connect a length (at least 4 inches) of 5/16-inch rubber return line hose to the hard line that will extend into the tank. Connect the rubber line to the fuel pickup line using tie wraps.



RUBBER HOSE METHOD

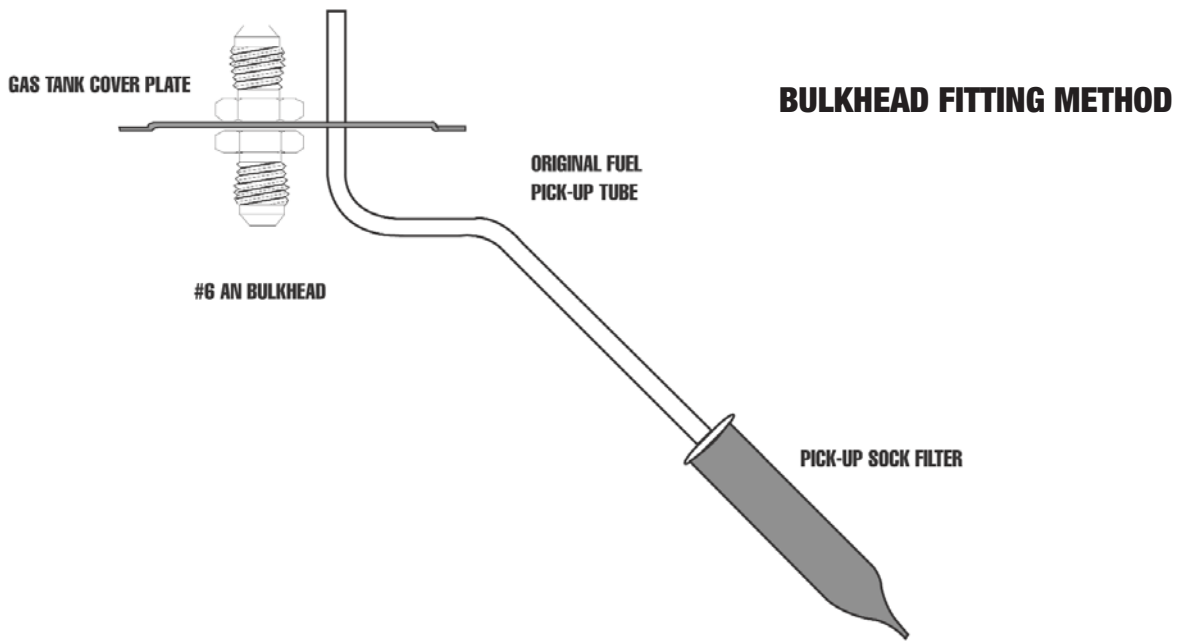
BULKHEAD FITTING METHOD

Drill a 9/16-inch hole in the sending unit plate adjacent to where the main line enters the tank. This will be the hole for your return line. Insert a #6 AN bulkhead fitting (available at most radiator shops) into the hole, the narrow end of the fitting on the inside of the plate. Apply a rubber washer or RTV sealant and fasten the fitting to the plate with the nut. Connect a length (at least 4 inches) of flexible return line (rubber or braided hose) to the fitting end. Connect the return line to the fuel pickup line using tie wraps.

NOTE: THIS METHOD REQUIRES NO WELDING OF THE FUEL SYSTEM.

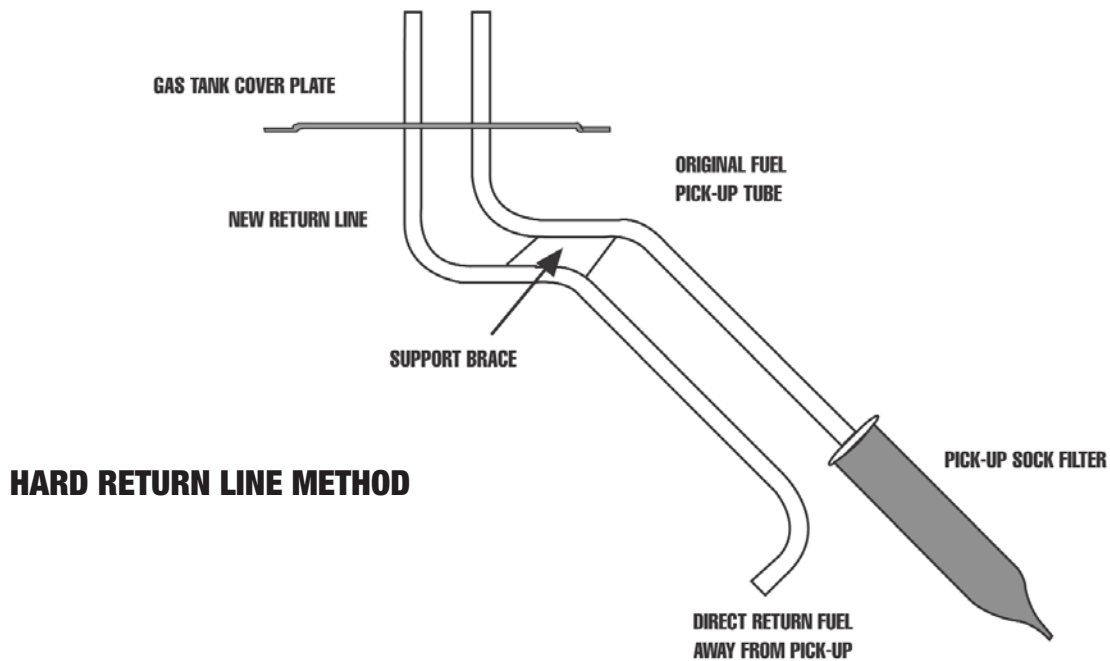


NOTE: Whichever method you use to install the return fuel line, be careful to keep the end of the line away from the fuel pickup, as shown. Otherwise, aerated return fuel can be drawn into the pickup.



HARD RETURN LINE METHOD

Drill a 5/16-inch hole in the sending unit plate adjacent to where the main line enters the tank. This will be the hole for your return line. Insert a length of 5/16-inch hard line (available at most radiator shops) into the hole and weld it to the sending unit plate. The hard line should extend through the hole 1 to 2 inches on the outside of the plate. On the inside of the plate, the hard line should follow the contours of the fuel pickup line. Bend the end of the return line away from the sock on the end of the fuel pickup line. Solder or weld the return hard line to the fuel pickup line.



NOTE: ALL WELDING AND SOLDERING OF THE FUEL SYSTEM MUST BE PERFORMED BY A PROFESSIONAL RADIATOR AND/OR FUEL SYSTEM REPAIR SHOP.

FUEL SYSTEM INSTALLATION

1. Drain the fuel tank.
2. Remove all fuel lines from the tank and from the carburetor.
3. Remove the fuel tank.

NOTE: While the fuel tank is removed from the car, it is recommended that it be professionally cleaned in order to remove any rust or dirt that may have accumulated inside and which could damage the injectors.

4. Remove the sending unit from the fuel tank. Refer to the RETURN FUEL LINE methods above for installing the bypass fuel return line.



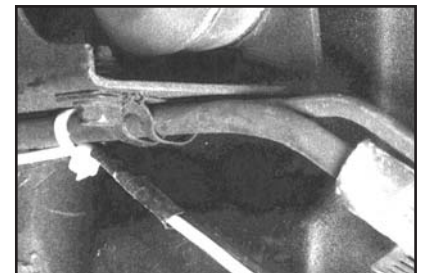
5. Install the provided 3/8-inch primary fuel line directly above the original line, which may now serve as a return line. Use large radius bends. Avoid the exhaust pipe and any sharp edges.

NOTE: The 3/8-inch high pressure fuel line supplied with the Pro-Flo system must be used as the primary fuel line.

6. If you do not use the original fuel as the return line, route the return line directly alongside the provided 3/8-inch primary fuel line.
7. Mount the fuel pump between the tank and the fuel filter as low and as close to the fuel tank as possible. The pump is directional. Electrical connectors should face the front of vehicle. The fuel pump needs to be at or **below** the bottom of the fuel tank.



8. Mount the fuel filter between the fuel pump and the engine.
9. Re-install the modified sending unit plate to the clean fuel tank.
10. Reinstall the fuel tank.



11. Attach the primary line and return line to the sending unit plate on the tank.
12. Re-attach all other fuel lines at the tank (vapor purge lines, etc., if so equipped).
13. Secure the primary and return fuel lines with the provided tie-wraps, or with Adel clamps if available.
14. Re-attach all fuel lines to the induction system once it has been installed.



15. Use the 10-foot wiring harness to connect the fuel pump to the Main System Harness. Route the harness away from the exhaust pipe and any sharp edges. This harness may be cut to length. Replacement terminals are provided with the Pro-Flo system. Cover the connection to the positive terminal with the sleeve and tie wrap provided. Refer to the MAIN SYSTEM HARNESS section of this manual for details.

16. Before starting the engine, turn the ignition key to the ON position 4 or 5 times to prime the electric fuel pump, fuel lines, and fuel rails. You should hear the pump run for approximately 5 seconds each time. Check the entire fuel system for leaks. Refer to the SYSTEM START-UP section of this manual for details.

INDUCTION SYSTEM

The Edelbrock Pro-Flo system delivers fuel and air to the engine via the induction system consisting primarily of a manifold, 4-barrel air valve, fuel rails, and fuel injectors. The induction system is fully assembled, tested, seal checked, and flowed at the factory and is as easy to install as a manifold. Use care when disassembling any of these components during installation.

FUEL RAILS

The extruded aluminum rail assembly routes the high pressure fuel to the injectors. Aluminum rails have an advantage over soft rails both in terms of style and safety.



INTAKE MANIFOLD

The new Edelbrock manifold used with the Pro-Flo system is very similar to the successful Victor Jr. high-performance single-plane manifold, but has been designed specifically for electronic fuel injection applications.



4-BARREL AIR VALVE

The Pro-Flo system uses a progressive linkage valve body with four throttle blades arranged in a conventional 4-barrel pattern, with staged secondaries. The air valve can flow up to 1000 cfm at 1.5" of mercury when wide open.



FUEL INJECTORS

The Pro-Flo 2 systems use high impedance pintle-type fuel injectors. The injectors are capable of flowing 29 lbs./hr. at 43 psi. The injectors mount directly onto the manifold, one at each port, for fuel delivery that is precisely controlled and instantaneously injected.



SENSORS

The Edelbrock Pro-Flo system interprets overall engine operating conditions and fuel/spark requirements based on readings from sensors that measure specific engine conditions.

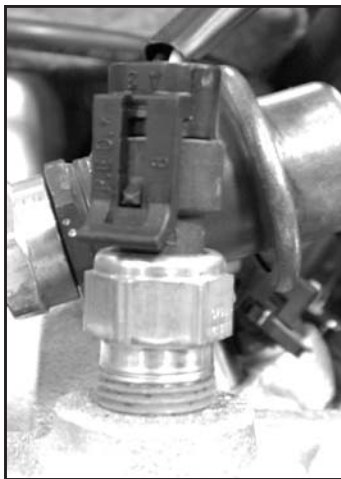
The Pro-Flo system includes five sensors:

- 1) Manifold Absolute Pressure (MAP)
- 2) Manifold Air Temperature (MAT)
- 3) Coolant Temperature (ECT)
- 4) Throttle Position (TPS)
- 5) Exhaust Oxygen (O₂)



MANIFOLD ABSOLUTE PRESSURE SENSOR

The Manifold Absolute Pressure sensor, mounted on the air valve with a bracket, converts air pressure (load) in the manifold, to an analog signal sent to the ECU. For more information on Manifold Absolute Pressure, refer to the section on Speed Density Electronic Engine Management.



COOLANT TEMPERATURE SENSOR

The Coolant Temperature Sensor is a thermistor device like the Manifold Air Temperature sensor. Resistance varies as coolant temperature rises and lowers. The Coolant Temperature Sensor is located at the front of the manifold on the driver's side.



MANIFOLD AIR TEMPERATURE SENSOR

The Manifold Air Temperature sensor, is a thermistor device which measures air temperature. This sensor must be installed into the air cleaner base. Drill the air cleaner base with a 3/4" drill, deburr any sharp edges, install MAT sensor grommet, then slide sensor into grommet.



THROTTLE POSITION SENSOR

The Throttle Position Sensor is an integral part of the Pro-Flo throttle body and measures throttle angle.

ELECTRONIC CONTROL UNIT / SYSTEM ECU

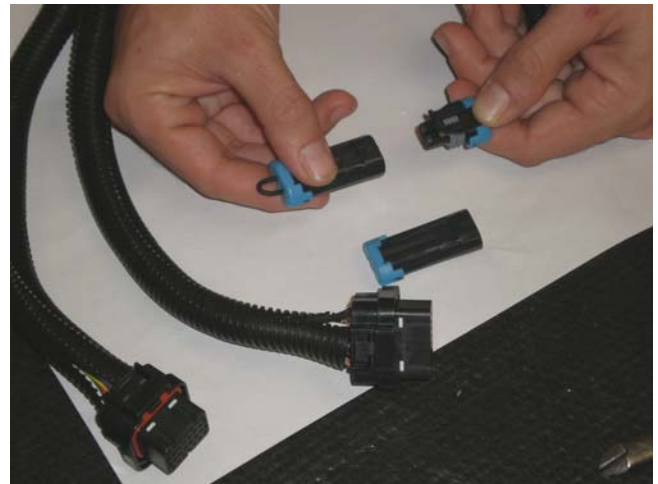
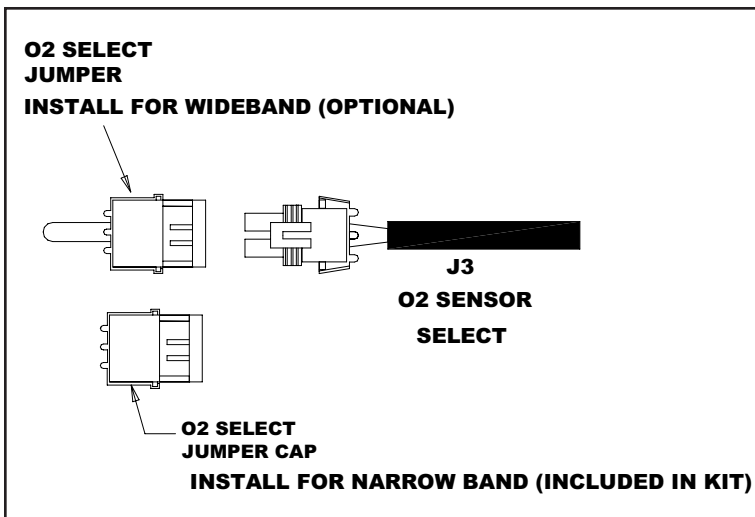
The Electronic Control Unit (ECU) must be mounted away from moisture, excessive heat, or vibration. Underneath the dashboard on the passenger side, or behind the glove box are recommended locations.



OXYGEN (O₂) SENSOR

An oxygen sensor, installed on the header collector pipe, measures exhaust gas oxygen content and is used by the ECU to manage fuel delivery under closed loop control. Installing the sensor requires drilling a 1/2-inch hole in the passenger-side header collector. The sensor is held in place with the provided fitting which must be professionally welded into place. The red-lean/green-rich light on the Calibration Module is also controlled by the O₂ sensor. The O₂ sensor is connected to the Main System Harness by Connector J18. For installation details, refer to the FUEL SYSTEM section of this manual.

NOTE: The Pro Flo system is now capable of using either a narrow band sensor or wide band O₂ controller. The difference between a narrow band and wide band O₂ sensor is the range over which the sensor is accurate. A narrow band sensor is basically a switch that only tells the ECU if the air fuel ratio (AFR) is richer or leaner than 14.7 to 1. A wide band sensor/controller typically has a linear voltage output that is accurate over a range of 10 to 20:1 AFR. The included wideband sensor calibration is for use with the Dynojet Wide Band Commander Air Fuel Ratio Monitor. See <http://www.widebandcommander.com> for more information. To select the wideband option, install the included O₂ select jumper as shown in the next section. To use the default narrow band option, leave the jumper off. A dust cap is provided for protection when the connector is not in use. The wideband sensor input is located on pin 31 of the larger 34 pin main ECU connector. Using the supplied ECU terminal pigtail, insert the pigtail by depressing the white terminal lock on the connector. Insert the terminal into pin 31, then close the terminal lock by pushing it in the other direction. Connect the wideband controller output to the pigtail. See wideband sensor manufacturer's instructions for wiring details.



O₂ SENSOR INSTALLATION

The exhaust gas oxygen content is determined by the oxygen sensor. The sensor signals the ECU, which compensates when the air/fuel mixture is either rich or lean.

NOTE: It is recommended that the O₂ sensor installation be performed by a professional muffler shop.

1. Double check header gaskets, replacing if necessary.
2. Drill a 1/2-inch to 9/16-inch hole in the passenger-side header collector reducer, as close to the header flange as possible. (1" to 3" away)
NOTE: Before drilling, make sure the O₂ sensor will be mounted horizontally (as shown in diagram) and within reach of the harness connector. Check to ensure adequate clearance for the sensor, taking into consideration engine movement.
3. Fit the provided fitting into the hole in the exhaust pipe and weld into place.
4. Once it has been welded into place, clean the threads in the center of the fitting.
5. Thread the O₂ sensor into the fitting. A high-heat anti-seize compound is included and needs to be applied to the sensor threads.
NOTE: The O₂ sensor has 18mm x 1.25 spark plug threads.
6. Attach the O₂ sensor to the main system harness. Refer to the MAIN SYSTEM HARNESS section of this manual.
NOTE: THE USE OF UNLEADED FUEL IS STRONGLY RECOMMENDED ONCE THE O₂ SENSOR HAS BEEN INSTALLED.

HARNESS INSTALLATION

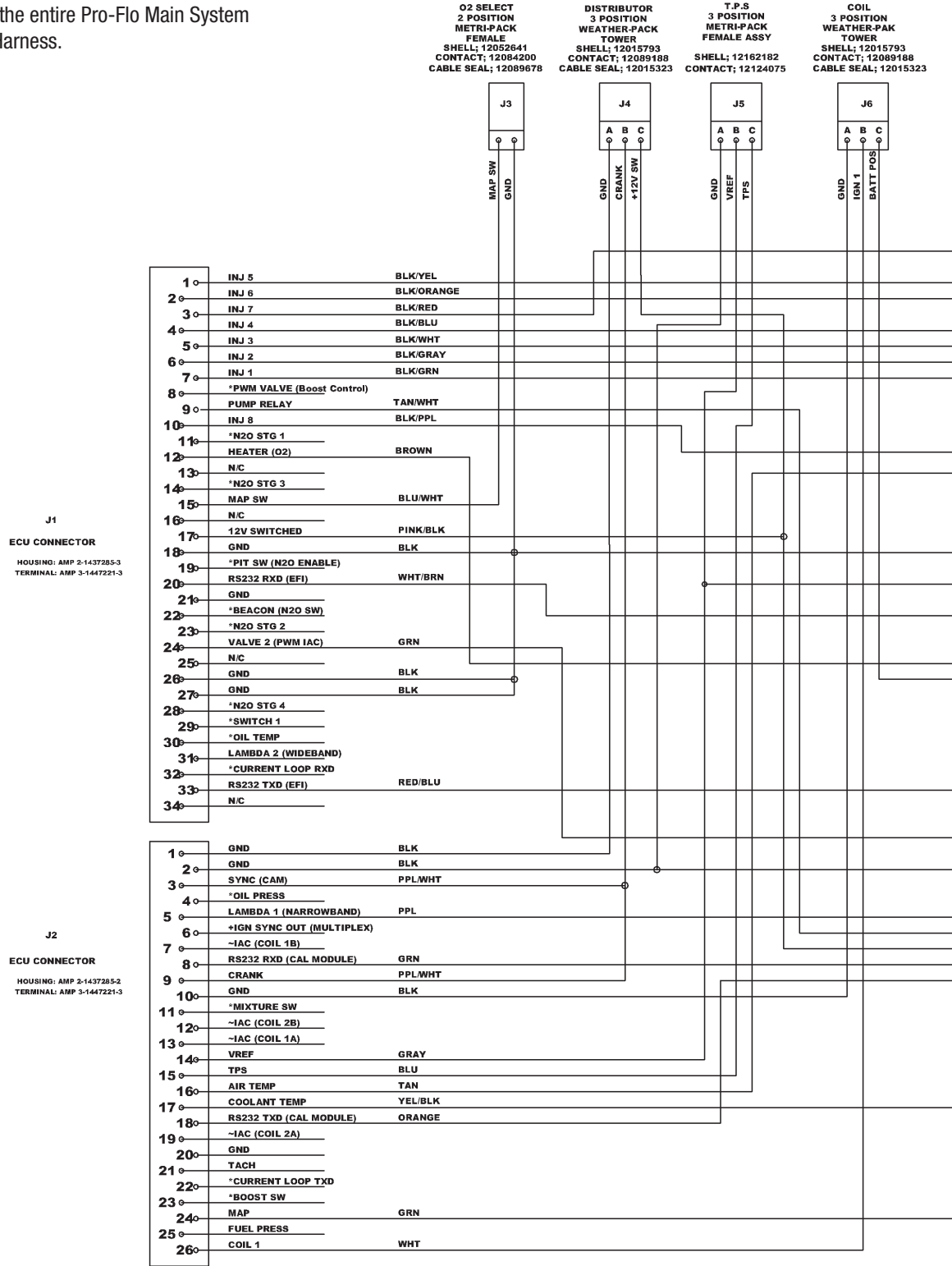
1. Inspect the Main System Harness, making sure that all connectors and grounds are properly in place.
2. Because the harness extends from the engine compartment into the passenger compartment, a hole must be drilled in the firewall on the passenger side. Cut two overlapping 1 1/4-inch holes on a 1-inch center in the firewall. Saw the pointed edges to create an oval-shaped hole.
NOTE: An alternative to this method is to cut a single 1 3/4 inch hole.
3. Extend the fuel pump relay, ECU connector, and Calibration Module relay through the firewall hole into the passenger compartment.
NOTE: The T-connectors at the joints of the Main System Harness are closed by snap fasteners which can be opened by hand or with a flathead screwdriver. Once open, the T-connectors can be rotated for ease of installation, if necessary.
4. The supplied aluminum plate mounts over the firewall hole using four hex head sheet metal screws.
NOTE: Start the screw holes with a pointed punch or small drill.
5. The wire harness can be assembled with the aluminum plate flush against a T-connector. The black plastic casing on the wire harness can be cut to allow the plate to slide up the harness to the correct location. Once the harness is in place, the casing should be reattached on both sides of the firewall.
CAUTION: When feeding the wire harness through the firewall, be careful to not damage the wires against the cut sheet metal.
6. A rubber grommet is provided to protect the wires in the aluminum plate. Use RTV to seal the plate to the firewall.
7. Install all connectors according to the schematic and harness layout on the following pages



The fuel injector connectors are identical, but they are placed in logical sequence. Refer to the diagram when installing the harness connectors to the fuel injectors.

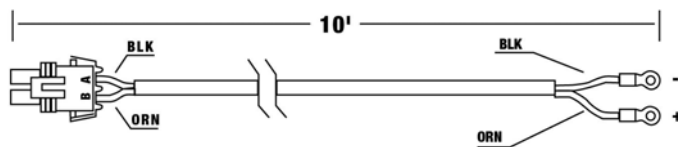
MAIN SYSTEM HARNESS

This diagram illustrates the entire Pro-Flo Main System Harness.



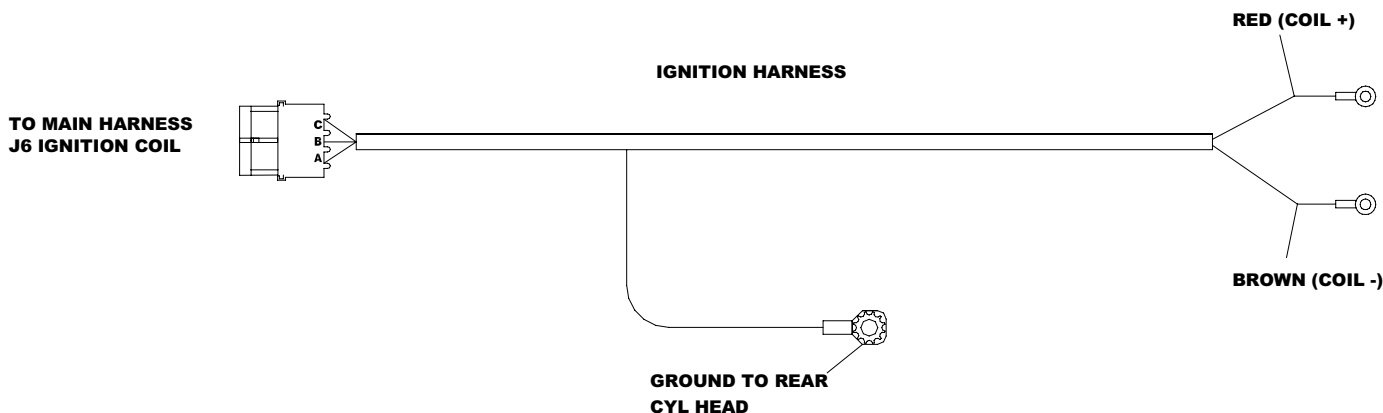
* PRO FLO XTR SYSTEMS ONLY
 ~ PRO FLO XT/XTR SYSTEMS ONLY
 + FOR USE WITH MULTIPLEX COIL DRIVER ONLY

The connector on left end (as drawn) of this 10-foot fuel pump wiring harness attaches to the Main System Harness. The two connectors on the right connect to the positive (+) and negative (-) terminals on the fuel pump. A sleeve and tie-wrap are provided to fit over the positive terminal once the connector is installed. This sleeve prevents the clamp from shorting the fuel pump terminals.



IGNITION SYSTEM

The ignition harness is attached to the main harness with the connector, as shown at left below, and at the coil with the ring terminals on the right below. The ground goes to the rear of the cylinder head. Connect the red and brown wires to the positive and negative terminals of the coil as shown below.

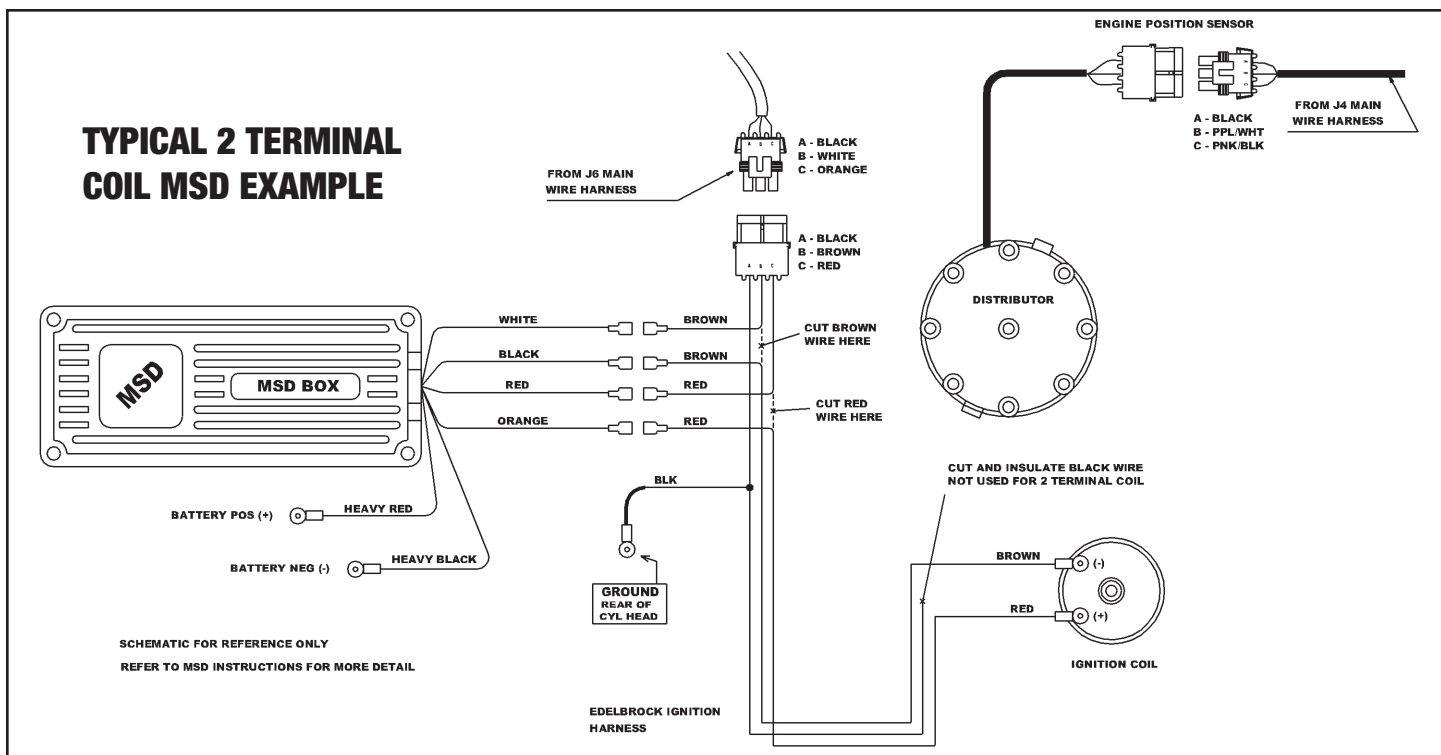


COIL SELECTION

Only use an ignition coil with a primary resistance of .30 Ohms or higher.

ADDING AFTERMARKET IGNITION

If you are wishing to use a MSD 6AL or MSD 6-Digital ignition with your Pro-Flo fuel injection, follow the wiring diagram below.



IGNITION SYSTEM

DISTRIBUTOR TESTING

1. Install the ECU and wiring harness and make all connections except the distributor and ignition coil.
2. Disconnect electrical connections at the fuel pump by unplugging the 10-foot fuel pump harness from the Main System Harness. Refer to the MAIN SYSTEM HARNESS section of this manual for details.
3. The Pro-Flo Calibration Module will receive power and display an RPM: 220 reading, among other parameters.
4. Connect the distributor to the wiring harness and spin the distributor gear by hand. If the distributor sensor is operating properly, the main fuel pump relay will click on. When the distributor stops spinning, the Calibration Module may display NO COMMUNICATION for approximately 2 seconds. This is normal and indicates that the ECU is waiting for the next distributor signal before the allowed time expires.
5. If the relay clicks on as indicated in step 5, install the distributor.



INSTALLING THE DISTRIBUTOR

1. Rotate the crankshaft until cylinder #1 is coming up on the compression stroke. Stop turning when the crankshaft is 10° BTDC.
2. Rotate the distributor shaft until the rotor points to the #1 on the distributor housing. The #1 plug wire will attach to the tower on the cap directly above the #1 on the distributor housing.
3. Install the distributor so that #1 on the cap is positioned where #1 was on your previous distributor. You may need to remove and reinsert the distributor a few times to align the distributor. Make sure that the distributor seats down completely and has fully engaged the oil pump drive.
4. Lift the rotor by hand to make sure that there is adequate endplay. Lack of endplay indicates that the rotor shaft is bottomed out on the oil pump shaft.
5. Lightly tighten the hold down clamp so that the distributor can still be turned to determine final setting when checking the timing.
6. Re-attach the distributor cap. Make sure the rotor is still pointing to #1.
7. Install your spark plug and coil wires and connect the distributor to the MAIN SYSTEM HARNESS.

NOTE: DO NOT use a Solid-Core type spark plug wire set, such as copper core, etc. You must use a suppression type spark plug wire. Failure to use the correct wires may cause electrical interference with the engine control unit.



INSTALLING THE SOFTWARE

The software package included with the Pro Flo kit is required to load the appropriate calibration file into your ECU. An optional software package called *bEditor* is also included on the supplied disk and can be downloaded at www.Edelbrock.com.

NOTE: All ECUs are shipped pre-programmed with the 3514 calibration file. If your application uses the 3514 calibration according to the calibration selection guide on the supplied CD, you do not need to load a new calibration.

To install the software, load the supplied CD into your PC's CD drive. The installation routine should auto run. Follow the onscreen prompts to install the software.

eFlash is a stand alone system that can be used to load calibration files or different firmware versions onto an ECU using any Windows compatible PC. A laptop is not required. The system includes a DC power source that can be plugged into any standard wall socket. It will provide power to the ECU and allow two way communication without having to install the ECU in the vehicle. Tuning can then be done using the handheld module. In addition to allowing flash programming, eFlash has several additional features that can be useful.

- It displays all ECU data real time in one consolidated view.
- It displays all calibration module trims and modifications in one view so you can see them at a glance.
- It allows Edelbrock tech support personnel to view your ECU data real time using the iLink feature (internet connection required)
- It allows you to send your existing calibration file to Edelbrock tech support personnel using the iLink feature (internet connection required).
- It allows the user to perform software updates if necessary.



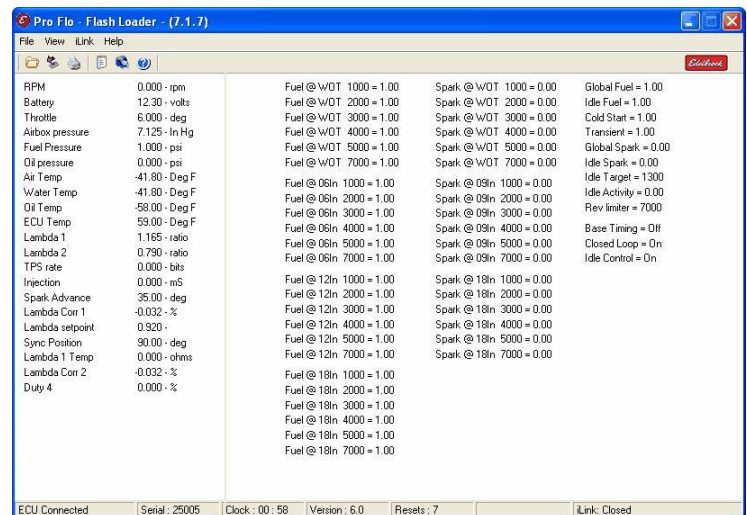
Shortcut to
eFlash

To open the eFlash utility double
click on the eFlash desktop icon.

To connect the ECU to your PC, plug the 34 pin ECU connector into the ECU. The connector will only plug in one way. Connect the DB9 serial connector to your PC either directly or through an extension cable (not included). Plug the AC Power Adapter into a standard wall socket.

NOTE: A USB to Serial converter is included with the kit to be used if your PC does not have a 9 pin serial port. Connect the USB end of the adapter to your PC and the serial port (9 pin) end to the power adapter harness. Follow the instructions included with the USB adapter to install the appropriate drivers. Go to File - Port Settings in eFlash and select the com port that matches the location of the adapter.

Confirm that the ECU is connected and communicating with eFlash. "ECU Connected" should be displayed in the lower left hand corner as shown to the right.



SELECTING THE PROPER CALIBRATION

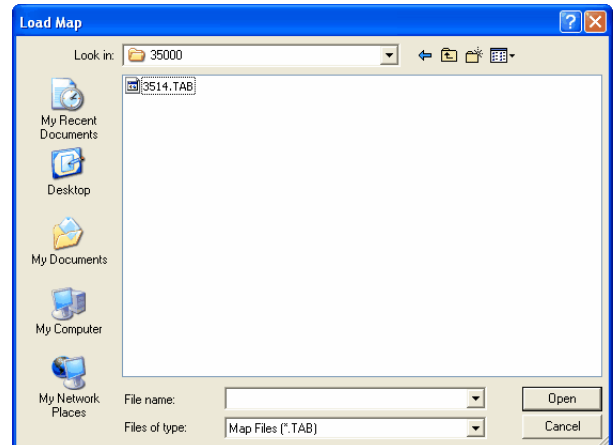
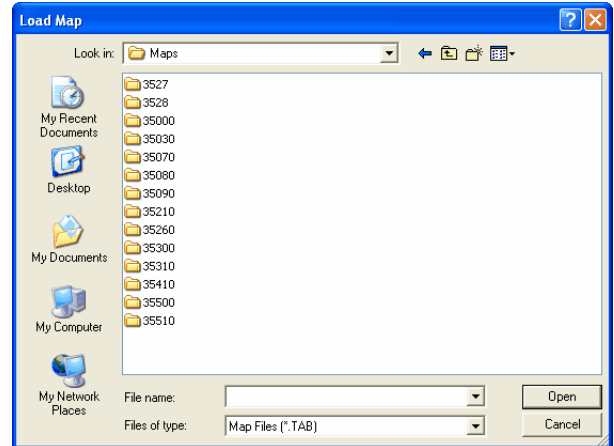
Please refer to the calibration selection guide on the CD to determine the appropriate calibration for your application to load into the ECU. Use caution if using the calibration included in the ECU from the factory as it may need extensive changes to achieve a proper tune and could cause engine damage if not corrected.

To load a new calibration file into the ECU, go to File - Load New Map



NOTE: Edelbrock recommends a minimum of 112° for intake lobe separation angle on all Pro-Flo EFI applications. A value less than this may make tuning more difficult depending on the intake duration.

The calibration files are saved in folders identified by kit part number. Double click on the folder with your kit part number, then select the calibration that corresponds to your camshaft duration. The eFlash utility will load the calibration into your ECU. Follow the on screen prompts to complete the process. When the software prompts you to cycle power, simply remove the connector from the ECU, wait 5-10 seconds, then plug it back in and hit OK. When finished, close the eFlash program and disconnect the power adapter connector from the ECU. You are now ready to connect the ECU to the vehicle harness. Additional information can be found in the help file included in the software.



SYSTEM START-UP

Once the engine has been installed, there are a few procedures you must follow to break-in the system. Carefully performing these break-in procedures will ensure best results and optimal performance.

Use this checklist to double-check the following areas **BEFORE** starting the car:

- Has the battery been reconnected?
- Has the radiator been refilled with coolant?
- Has the gas tank been refilled?
- Has the oil been filled?
- Have all linkages been reconnected?
- Have all wiring harness connectors been connected?
- Have all fuel lines been reconnected?
- Has the exhaust system been completely re-installed?
- Has the O₂ sensor been installed and connected?
- Have resistor type spark plugs been installed (Champion RC-12YC or equivalent)?
- Has the calibration module been connected to the main harness?

Priming The Fuel Pump

Before the engine is started, the fuel pump must be primed to pressurize the system and purge the fuel line of all air.

1. Turn ignition key to the ON position. You should hear the fuel pump go on. It will pump for 2 or 3 seconds and disengage.
2. Turn the key to the OFF position for 1 second.
3. Turn the key to the ON position again. The pump will go on for another 2 or 3 seconds.
4. Repeat this procedure until the pump has been cycled three or four times, and is primed. The tone of the fuel pump will change when all air is out of the fuel system.
5. If there is no tone, or no change in tone, the system is not priming. **Check the entire fuel system for leaks**, from the fuel tank to the injectors.

Testing The Sensors

Before starting the engine, test all sensors.

1. Turn the key to the ON position with the Calibration Module connected. The display will read:

RPM: 220	FUEL: 0.0 mS
VAC: 0.0" Hg	SPK: 10°

NOTE: A vacuum reading of other than 0.0" Hg may be displayed depending upon barometric pressure and air temperature. At extreme altitude, the vacuum reading may be as high as 5.0" Hg.

2. Push the UP ARROW key once to display.

TH20: 76°F	TPS: 13°
TAIR: 77°F	Volt: 12.0

NOTE: The water and air temperatures displayed will vary depending on ambient conditions. The system voltage will vary depending on the condition of the battery.

3. Move the throttle to test the Throttle Position Sensor (TPS). The TPS reading should vary depending on throttle angle.
4. If the calibration module goes blank while cranking, the system is losing power. Check the Pink/Black wire attached to the 3 Amp fuse for +12V power with the ignition in the crank position and the run position for proper operation.

Timing Adjustment

Use a timing light to re-time your engine. The following steps must be performed after the induction system has been installed and the distributor has been converted and re-installed. Refer to the INDUCTION SYSTEM and IGNITION SYSTEM sections of this manual.

1. Remove spark plug from Number One cylinder.
2. Remove coil wire from distributor and ground it.
3. THIS STEP REQUIRES TWO PEOPLE OR USE OF A REMOTE STARTER SWITCH. While one person rotates the engine by slowly bumping the starter, the other holds his finger over the Number One plug hole until compression is felt.
4. Continue to bump starter until timing mark on the crankshaft pulley shows approximately 10 degrees Before Top Dead Center.
5. Position rotor to approximately align with the Number One cylinder plug wire terminal in distributor cap. Check that the leading edge of the narrow tooth on the shutter wheel (as the shutter wheel rotates clockwise) is centered in the sensor. Refer to the IGNITION SYSTEM section in this manual for details.



Setting Base Spark Advance

Use a timing light and the Pro-Flo Calibration Module to accurately set timing.

1. Start the engine

2. The Calibration Module screen will be similar to this screen:

RPM: 0 FUEL: 0.0 ms
VAC: 0.0"Hg SPK: 10°

3. Press the DOWN ARROW key once to reach this screen:

<MISC.MODIFIERS>
ENTER to select

4. Press the ENTER key to display this screen:

Target Idle RPM:xxxx
MODE ↓↑ = SCROLL ENTER

5. Press the UP ARROW key six (6) times until the module displays this screen:

Base Tim'g set: OFF
MODE ↓↑ = SCROLL ENTER

6. Press the ENTER key. Press either ARROW key and the screen will display Base Tim'g set: ON.
7. Set the base timing using a timing light and engine running at 1500rpm. Turn the distributor until 10° advance is set.
8. Press the UP ARROW or DOWN ARROW key to turn Base Tim'g set to OFF.

WARNING: DO NOT DRIVE THE VEHICLE WITH THE BASE TIM'G SET ON. SERIOUS ENGINE DAMAGE MAY RESULT

NOTE: If you use an advance-type timing light, the degrees advance shown on the Calibration Module (SPRK:) should always agree with the actual reading at the crank with the timing light.

9. Press the MODE key. You can now leave this screen using the UP ARROW or DOWN ARROW keys.

Idle Adjustment

This procedure is a general recommendation, intended to help you tune up your Pro-Flo® system.

NOTE: In manual transmission cars, this procedure must be followed with the car in Neutral and with the clutch pedal pressed. In automatic transmission cars, this procedure must be followed with the car in Drive and with the brake pedal pressed.

Idle Adjustment

This procedure is a general recommendation, intended to help you fine tune your Pro-Flo® system.

NOTE: This procedure should be followed with the car in Neutral and the brake pedal pressed.

Idle Calibration Procedure

- Prior to idle calibration, you need to have completed the "System Start-Up" procedure
- Warm up the engine to at least 175°F.
- Using the calibration module, Select MISC. MODIFIERS and Set Idle Control OFF.
- Check the idle speed, and adjust your throttle blades to achieve the desired speed, if necessary.
- Note the VAC value on the calibration module.
- Go to Fuel Modifiers and find the RPM and VAC setting closest to your current Idle RPM and VAC readings.
- Slowly add or subtract fuel until you get the best idle quality.
- Readjust the idle speed with the blade adjustment screw until the desired idle RPM is achieved.
- Note the VAC value on the calibration module once again.
- Go to Spark Modifiers and find the RPM and VAC settings closest to your current Idle RPM and VAC readings.
- Slowly add or subtract spark until you get the best idle quality.
- Readjust the idle speed with the blade adjustment screw to desired idle speed, if necessary.
- Turn Idle Control back on. There should be very little, if any, change to the idle speed with Idle Control ON or OFF at idle, in neutral.
- Save changes to Position A in the calibration module.

NOTE: You must save your changes before turning the ignition ON/OFF. If they are not saved, they will be erased when you restart.

Idle Troubleshooting

Vehicles equipped with an automatic transmission should now be able to shift into Drive, with the brake still depressed, and see a slight dip in engine rpm followed by a resumption of the idle speed set in the procedure above. If any surging or an erratic idle occurs, follow the steps below:

- Note the lowest RPM during the surging and the average VAC readings.
- Shift the transmission into neutral.
- Use the Calibration Module to turn off Closed Loop Control.
- Go into the Fuel Modifiers and find the RPM and VAC settings closest to the values noted above.
- Add 5% fuel.
- Put the transmission back into Drive and see if the surging has gotten better or worse.
- Go back and add or subtract fuel until you get the highest VAC and a stable idle.
- When you are satisfied with the results, turn closed loop back ON and save changes to position A again.

Idle Tuning Tips

- The ECU always starts in position A. you must save the changes to position A for them to do anything. You can save your current tune into B or C and restore them if you want. They will restore to A.
- You should never have big jumps in the Fuel or Spark modifiers from one location to the next. If you have 10% in one location the surrounding locations should not vary more than an additional 10%.
- Only use the Idle fuel and spark settings once you have the regular Fuel and Spark Modifiers where the engine runs the best.
- Closed loop control does not work at Idle.

Save Calibration

- Using the calibration module, Select MISC. MODIFIERS
- Set IDLE CONTROL ON. Set TARGET IDLE to the same RPM established by the idle stop screw.
- Save calibration settings to "A"

ELECTRONIC ENGINE MANAGEMENT

The Edelbrock Pro-Flo system uses the Speed-Density method of electronic engine management, in which fuel and spark requirements are based on engine speed (RPM) and engine load (manifold pressure and temperature). The tables that control the fuel and spark distribution can be tuned with either the supplied calibration module, or on any PC running the supplied bEditor software. The following information pertains to using the calibration module, refer to the Help file included in the bEditor software for more information regarding its use.

The Electronic Control Unit (ECU) receives signals regarding engine speed (from the distributor), and the three load factors consisting of coolant temperature (ECT), Manifold Absolute Pressure (MAP) and air temperature (MAT). Once the ECU has determined the engine operating point (RPM and Load factor), it uses tables programmed into it to instantly calculate correct spark advance and injector pulse width.

The Pro-Flo system displays vacuum rather than the less-familiar manifold pressure. This vacuum reading is based on the following SAE standard atmosphere:

Barometer 29.5 in Hg
 Temperature 77°F

Because of this, the vacuum figures displayed on the Calibration Module may differ from the vacuum indicated by a true vacuum gauge, particularly at extreme high or low altitude.

FUEL MODIFIER TABLE

FUEL MODIFIER TABLE

RPM

	1000	2000	3000	4000	5000	7000
LOAD						
WOT						
6"						
12"						
18"						

SPARK MODIFIER TABLE

SPARK MODIFIER TABLE

RPM

	1000	1750	2500	3500	4500	6000
LOAD						
WOT						
9"						
18"						

The Calibration Module allows you to modify the fuel and spark tables at various engine speeds and levels of vacuum. These tables may be used for recording your modifications to the base table with your own fuel pulse width and spark advance figures.

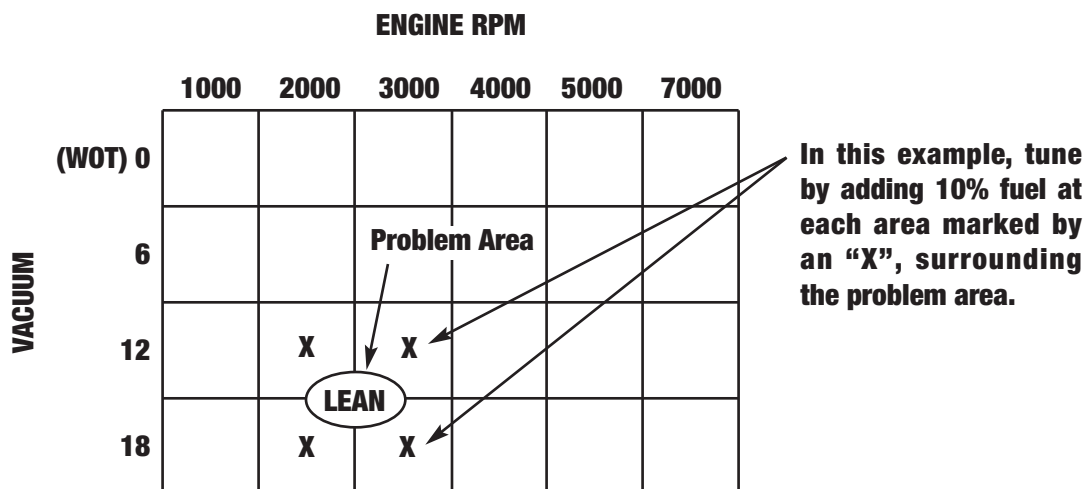
PRO-FLO QUICK TUNING GUIDE

This guide is based on our simple graph that shows the 24 fuel cells that you can tune in to result in a clean and powerful engine. We recommend when you have your Pro-Flo installed, you have the idle tune up completed and then drive the vehicle to determine what amount of fuel is needed for general driving. If the unit is driveable, this is the method to use for ease of tuning. On page 21 of this installation manual, there is a fuel grid that can be used as the map on which to locate and then tune any drivability problems. Simply drive the vehicle and note any areas that have problems. Circle those areas as a baseline.

When circling the area where a problem exists, you are circling the RPM and Vacuum reading that is present when the problem occurs. Note whether it is running rich (green light) or lean (red light) at each problem area. Once any problem areas have been located and noted rich or lean, go into the Miscellaneous Modifiers menu and turn off the Closed Loop Fuel, exit, go to Fuel Modifiers, and then into Global Fuel. Now drive the vehicle and drive back to each problem area. When driving in a problem area, add or subtract fuel to obtain the smoothest operation at that driving point. Write down the quantity (plus or minus) of fuel required to achieve a smooth operation. When all the problem areas have been noted, and the amount of fuel required to achieve smooth operation has been noted at each problem area, you may now do each adjustment one at a time to achieve a complete tune up.

To input this information, you will need to make sure the Closed Loop Fuel is in the OFF position. Go to each area and enter the information. If you have found a problem that is not exactly in the center of one of the fuel cells, you will still be able to tune the area by using the Surround and Conquer method for properly managing the fuel curve. Listed below is an example of this method:

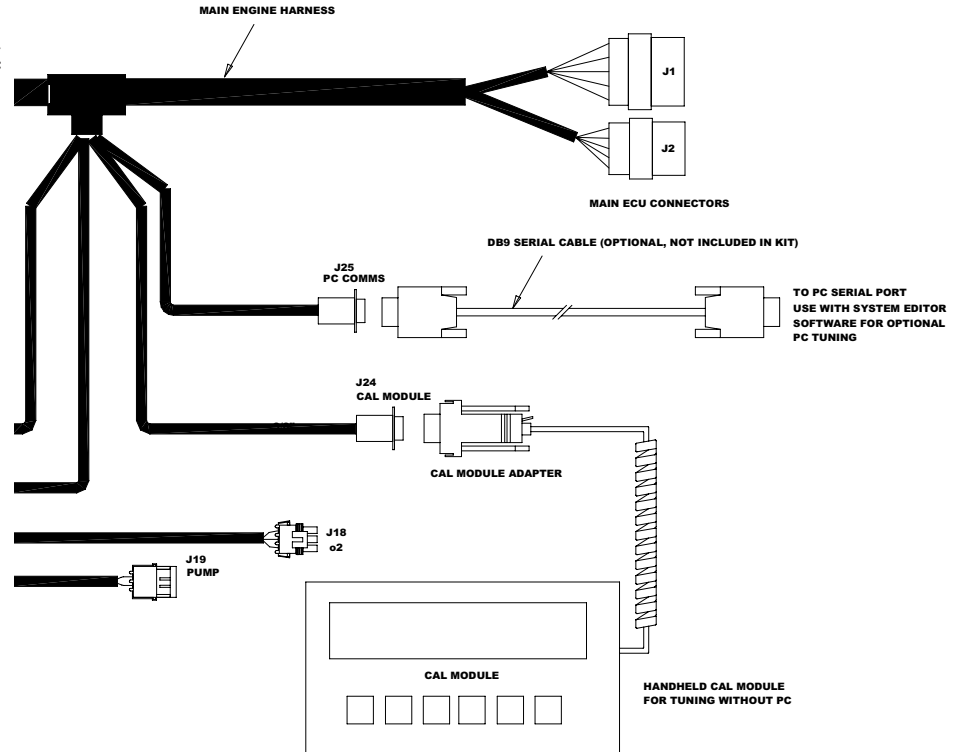
Assume that you have found a problem area at 2500 RPM and 15 inches of Vacuum. This is not an area where you can address the problem directly. In this scenario, we will say the unit is showing a lean condition (red light). In which case, fuel will need to be added. We will also say that when driving and using the Global Modifier to find the exact amount of fuel required, it was determined that the amount needed was plus ten percent (+10%). In the Surround and Conquer method, you will add fuel at the four locations surrounding the problem area. This is shown in the figure below:



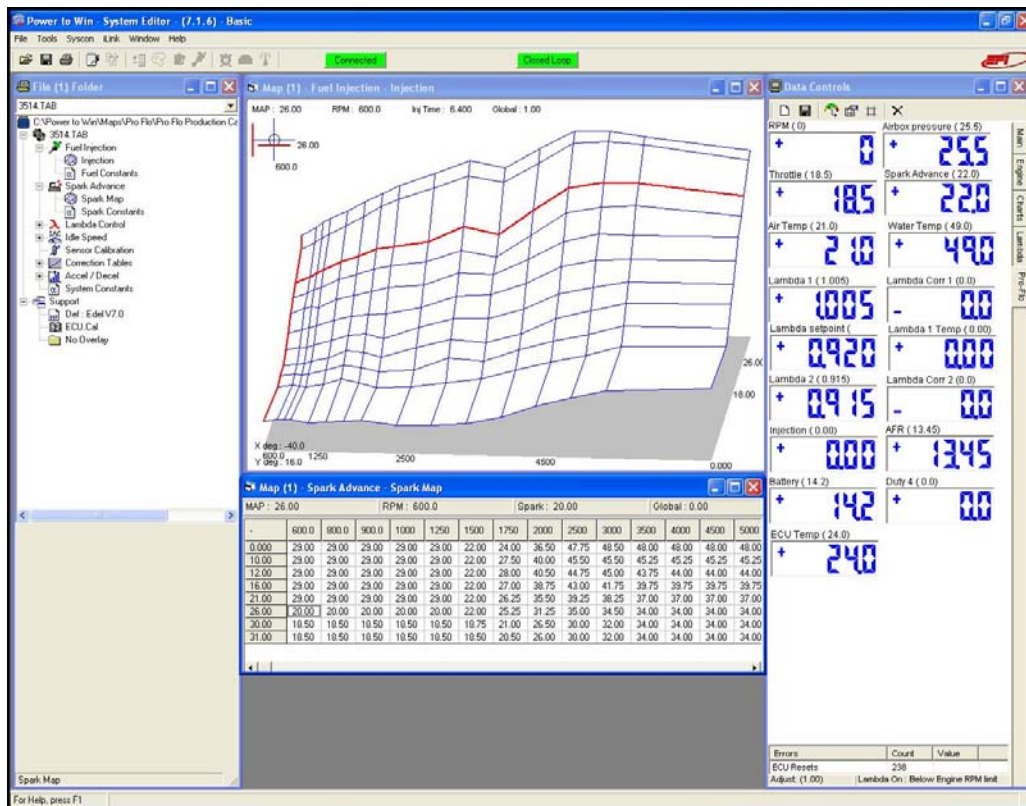
When the required amount of fuel has been added at each surrounding fuel cell, complete the operation by returning to the Miscellaneous Modifiers menus, and turning the Closed Loop Fuel ON. Press the SAVE key, then the ENTER key. The hand-held unit will show SAVING IN PROGRESS. Repeat this procedure at each problem area to complete the tune up.

OPTIONAL PC TUNING FEATURE

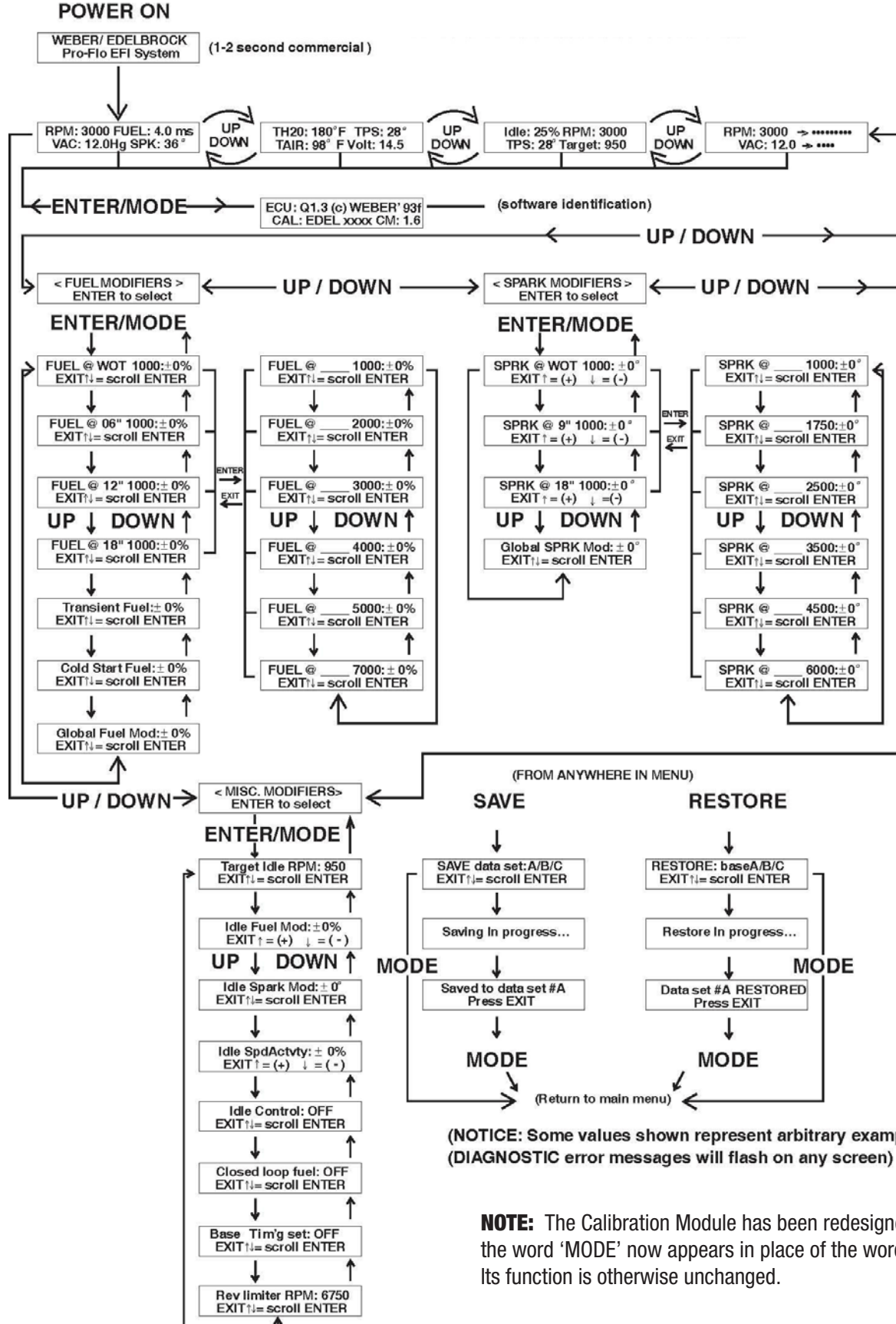
To use the optional PC tuning feature, connect a DB9 serial extension cable to connector J25 of the main harness. Connect the other end to your PC's serial port as shown. Double click on the bEditor icon shown below.



The engine controllers included in the Edelbrock Pro Flo system CANNOT be edited live using the bEditor software. In other words, bEditor can only be used to edit the calibration file loaded in the software. You cannot directly edit the calibration file loaded into the ECU. When you make changes to a calibration file, it must be saved and flashed into your ECU's memory before those changes take effect. For additional information on using bEditor to edit your calibration files, refer to the online help by selecting the Help menu at the top of the screen.



CALIBRATION MODULE FLOWCHART



PART NUMBERS

Many of the components of the Pro-Flo system are available separately. Many are standard OEM parts. In the event that one of these parts need to be replaced, you are likely to find a replacement at your local parts supplier, in addition to your local Edelbrock dealer or directly from Edelbrock.

Edelbrock Pro-Flo

Manifold Absolute Pressure sensor	Edelbrock #36019
Manifold Air Temperature sensor (Push-In)	Edelbrock #3578
Coolant Temperature sensor	Edelbrock #3589
Throttle Body	Edelbrock #39783
IAC Motor.....	Edelbrock #36017
Throttle Position sensor	Edelbrock #36018
Oxygen (O ₂) sensor	Edelbrock #36013
Fuel pressure regulator	Edelbrock #3584
Mallory Distributor	Edelbrock #37-3569
Calibration Module.....	Edelbrock #35360
Calibration Module Cord/Plug.....	Edelbrock #35370

SERVICE

In the event that your Edelbrock Pro-Flo System should need servicing, return the unit pre-paid to the Edelbrock Service and Repair facility at 2700 California Street, Torrance, CA 90503. Do not attempt to disassemble or service the components of the Pro-Flo system yourself. Doing so may void the warranty.

WARRANTY

It is the constant endeavor of the Edelbrock Corp. to provide our customers with the highest quality performance products. Edelbrock warrants the Edelbrock Pro-Flo System to be free from defects in both workmanship and materials for a period of one year from date of purchase, provided that the product is properly installed and subjected to normal use and service, is not used for racing or competition purposes and that the product is not modified or altered in any way unless specified by our instructions. Our warranty service and repair facility is located at 2700 California Street, Torrance, CA 90503. Customers requiring warranty assistance should contact the dealer from whom they purchased the product. In turn, the dealer will contact Edelbrock, and we will determine the method of satisfying the warranty. Should Edelbrock determine that the product be returned to the factory, it should be accompanied by proof of purchase and a clear description of the exact problem. The product must be returned freight pre-paid. If a thorough inspection of the product by the factory indicates defects in workmanship or material, our sole obligation shall be to repair or replace the product. This warranty covers only the product itself and not the cost of installation or removal.

EDELBROCK CORP. SHALL NOT BE LIABLE FOR ANY AND ALL CONSEQUENTIAL DAMAGES OCCASIONED BY THE BREACH OF ANY WRITTEN OR IMPLIED WARRANTY PERTAINING TO THIS SALE, IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT SOLD.

If you have any questions regarding this product or installation, please contact our Technical Department from 7:00am - 5:00pm, Pacific Standard Time, Monday through Friday at:

Tech Telephone: (800) 416-8628
Sales Telephone: (310) 781-2222
Fax: (310) 972-2730

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