
Pantera Electronics Ignition System Installation Manual

EIS02 (Rev2)

READ THIS ENTIRE INSTALLATION MANUAL

It is critical for operation that this installation manual is understood and followed properly. The proper power connections and interlocks will not allow a spark to be produced if not wired properly. If you cannot interpret this installation manual seek assistance in the installation.

See page the last page for *Warnings and Cautions.*
RPM Limiter - factory setting is 5,700 RPM

1. Adjustable RPM limiter in 100 increments to a maximum of 8,500 RPM. Soft RPM limit and recovery insures smooth transition from setting.
2. (5 degree) ignition timing retard for engine start.
3. Automatic control electric fuel pump, operates only if engine is running. 6 second full speed operation when the ignition switch is turned "ON".
4. Carburetor choke electric heater control to enable choke heater after engine start. Adjustable choke heater slope to match engine warm-up rate.
5. A/C Compressor control, automatically disables A/C compressor during performance driving, and returns to normal operation during typical driving.
6. Dedicated tachometer output compatible with Pantera tachometer. (no tach adapter needed)
7. Loss of oil pressure detection and ignition shut-off.
8. Integrated trickle/pulse battery charger with indicator. Ignition lock-out during battery charging. (P/N: EIS-02/02)
9. Idle RPM compensation for the A/C compressor load adjust A/F ratio when engine RPM is less than idle setting. (P/N: EIS-02/03)
10. Internal security system to protect from theft.

IMPORTANT TO NOTE

1. The distributor setting = Magnetic Sensor
2. The ignition system will not operate without connecting to the factory de Tomaso oil pressure sender or grounding the oil pressure wire. If the red oil pressure light is illuminated the ignition system will not operate.
3. The security system = Not enabled.

Electronic Ignition System (EIS) part number identification.

EIS-02/02 - Standard Electronic Ignition System.
(Optional - Synchronized Signal Output for fuel injection ECU)

EIS-02/02 - Electronic Ignition System with integrated trickle/pulse battery charger with indicator. Ignition lock-out during battery charging.
(Optional - Synchronized Signal Output for fuel injection ECU)

EIS-02/03 - Electronic Ignition System with idle RPM compensation for the A/C compressor load adjust A/F ratio when engine RPM is less than idle setting.
(Optional - Synchronized Signal Output for fuel injection ECU)

EIS-02/04 - Electronic Ignition System with integrated battery charger and dynamic idle compensation.
(Optional - Synchronized Signal Output for fuel injection ECU)

Items needed in addition to the Electronic Ignition System (EIS)

Quick disconnect terminals:

Yellow Quick disconnect female terminal, 10 to 12 gauge wire.
Molex part # 19002-0044. (not needed, reference only)

Blue Quick disconnect female terminal, 14 to 16 gauge wire.
Molex part # 19002-0024.

Red Quick disconnect male terminal, 18 to 22 gauge wire.
Molex part # 19002-0001

Hardware:

Qty 1 - 1/4 NPT x 1/8" Hose Fitting

Qty 6 - Feet 1/8" Vacuum Hose. Summit Racing, P/N: SUM-230161

Qty 2 - 10-32 x 1" long, Philips head screws.

Qty 2 - # 10 Lock washers.

Qty 2 - # 10 nuts.

Optional Items:

RPM Limit Light

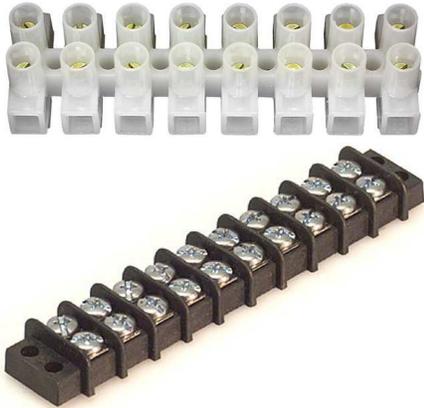
A/C refrigerant low pressure switch

Aluminum Plate - 10" x 8 3/4" x 3/16" thick, (254mm x 222mm x 4.75mm)

NOTE: It's important to keep this installation manual for future reference since revisions to this product change the contents of the installation manual.

Items that may be needed in addition to the Electronic Ignition System.

Barrier Terminal Blocks, Double Row ,
0.375" (9.53 mm) Centers, 10
Positions.
Cinch P/N 10-140 or TE Connectivity
P/N 1-1546306-0
Molex P/N - 39100-1010 - 10
positions.



Idle Compensation carburetor spacer
plate with vacuum fitting from:
Summitracing.com: SUM-G1400.
This is only required if a vacuum port
is not available in the intake manifold.



Mating extension cable for
distributor cable. MSD P/N: 8860



Auxiliary air cleaner for idle
compensation. (see page 17)



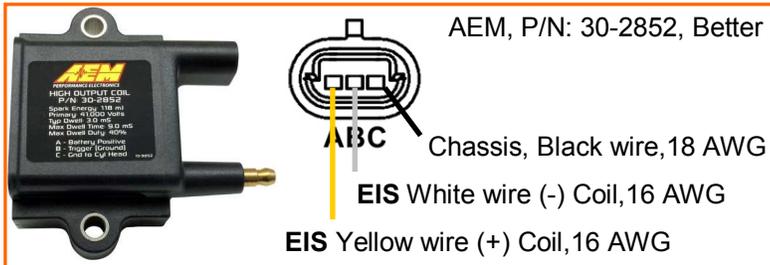
These are the recommended ignition coils for use with the EIS.



MSD, P/N: 8207
Good, low cost



MSD P/N: 8253
Best, higher cost



AEM, P/N: 30-2852, Better



Chassis, Black wire, 18 AWG

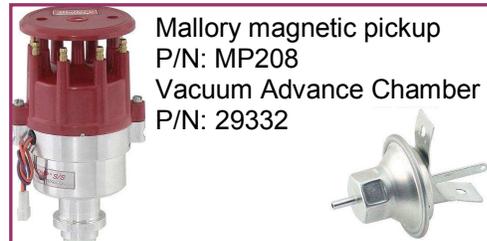
EIS White wire (-) Coil, 16 AWG

EIS Yellow wire (+) Coil, 16 AWG



Do not use **any** type of "can" coils.

These distributors were tested with the EIS installed in Ford Cleveland engines. Note, other distributors can be used with the EIS, magnetic reluctance and hall sensors. See page 30.



Mallory magnetic pickup
P/N: MP208
Vacuum Advance Chamber
P/N: 29332



Ford distributor
1974 to 1976,
magnetic pickup.

Duraspark (460 CI)

NAPA
P/N: NRD 482893



MSD, Ford 351C-460
Street Pro-Billet
Distributor. P/N: 8477.

OR

MSD, Ford 351C-460
Ready-To-Run Pro-Billet
Distributor. P/N: 8350

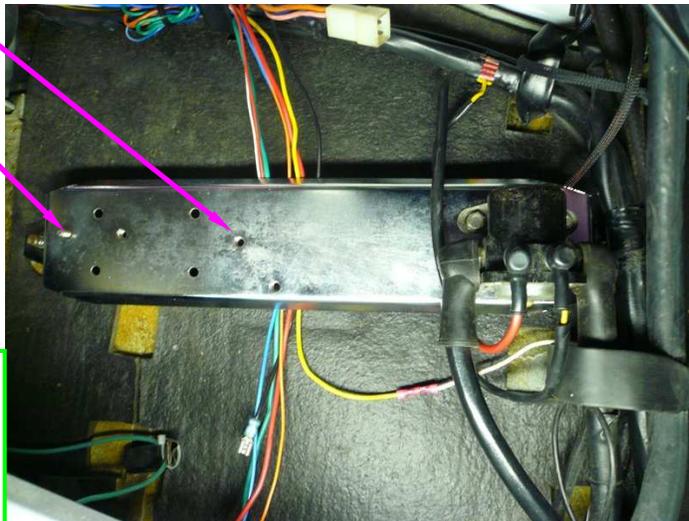
EIS Mounting **Disconnect the Battery by removing the negative or ground cable from the battery terminal.**

Remove the factory ignition coil and ballast resistor. **The ballast resistor (1971 and 1972) or the blue resistor wire (1973 and 1974) is NOT used with the EIS.**

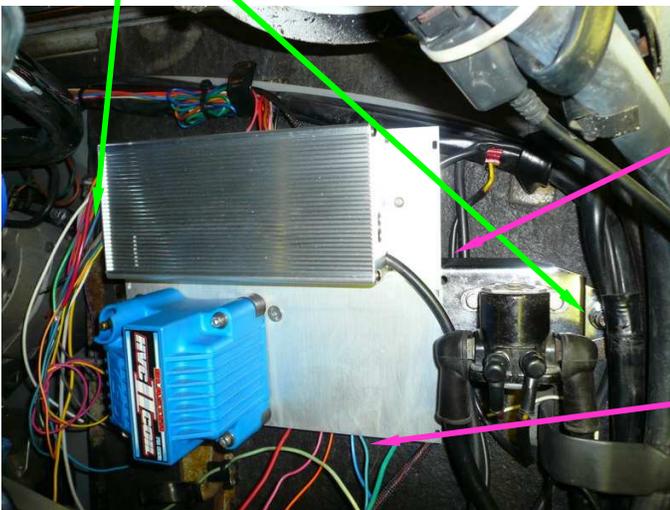
Hopefully the voltage regulator has been removed and an internally regulated alternator is in service. If you want to keep the voltage regulator on the plate, offset the EIS mounting.

Label the wires that were removed to identify the factory connections, this will help in connecting to the EIS. The mounting rail should look like this when finished removing the items.

This 6mm stud and 6mm threaded hole in the factory electrical mounting rail can be used for a mounting plate for the EIS and terminal strips.



Install the mounting plate to the rail. Replace (2) 8MM locknuts and washers from the studs in the firewall.



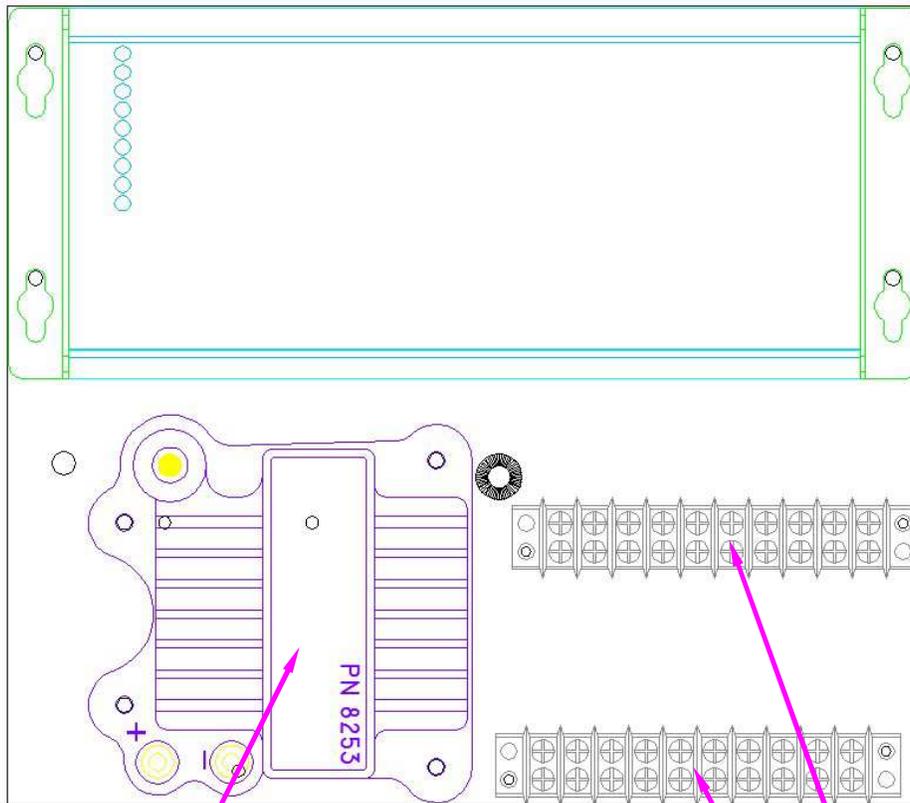
Allow the wires to fall behind the factory mounting plate, this provides a direct path. Use wire ties to bundle the wires together **but do not** include the 2 wires from the distributor in the bundle.

Mounting Continued

Mount the EIS box to the mounting plate using (4) 10-32 x 1/2" long screws with lock washers.

This plate is not a necessity, it's an installation that makes connections and mounting easier and has a professional appearance.

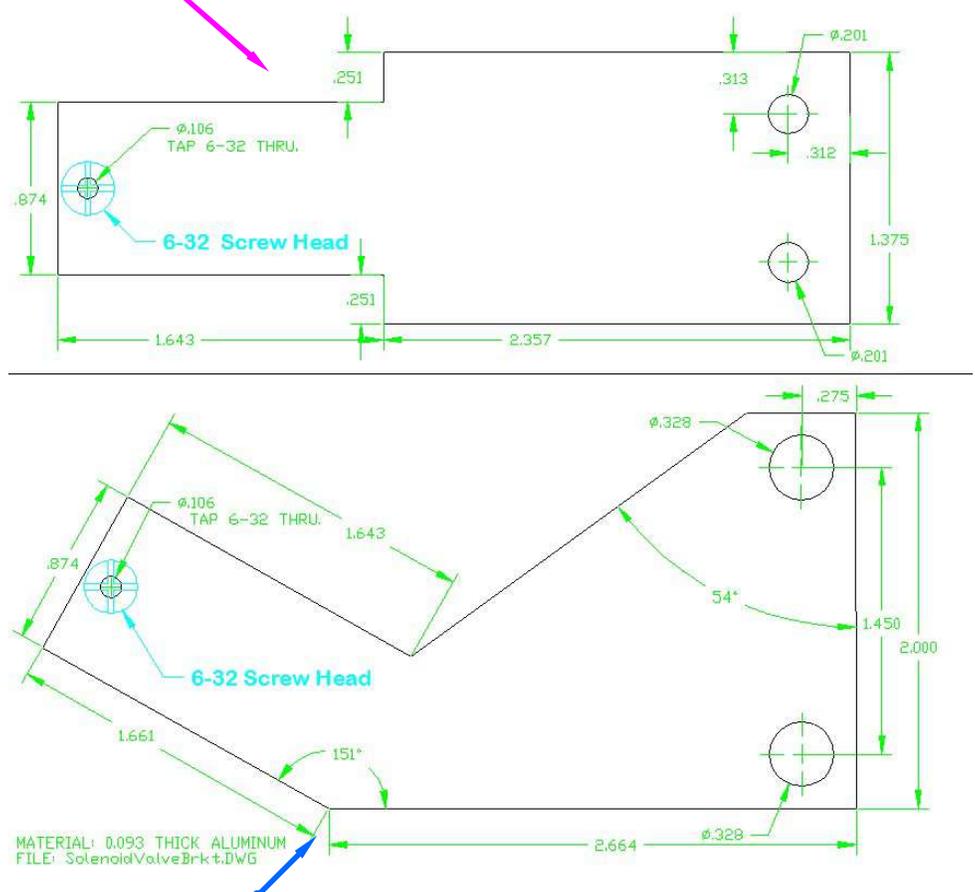
This is a drawing of a mounting plate for the EIS, coil and terminals strips. It mounts to the 6mm stud and 6mm threaded hole to the factory electrical mounting rail.



Note: if large ignition coils interfere with the heater core hoses then exchange the coil and terminal strip locations. (smaller ignition coils will not interfere)

Idle Compensation Valve mounting bracket suggestions.

This is an universal mounting or remote idle compensation valve mounting bracket.

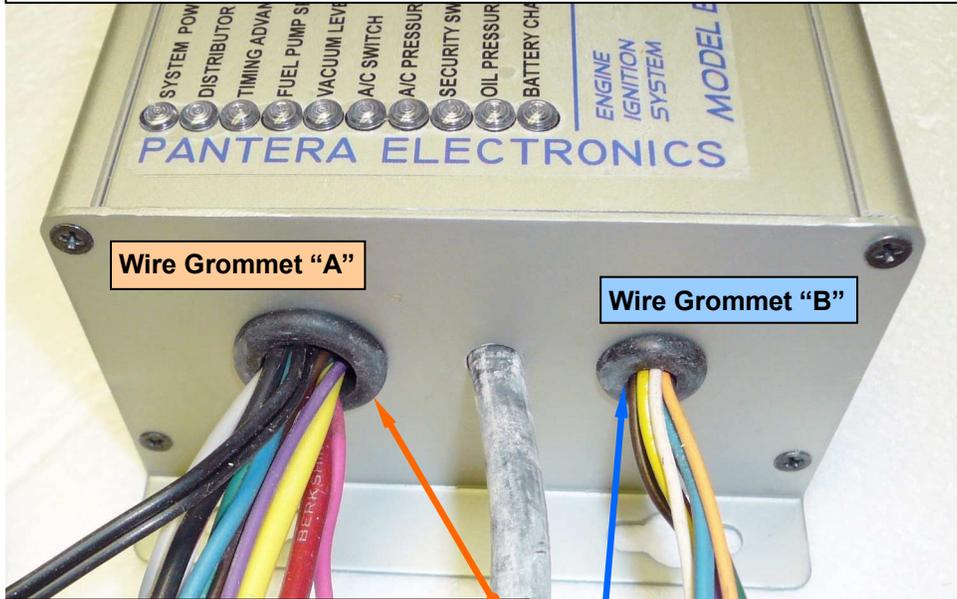


This bracket locates on 2 bosses of the Edlebrock intake manifold P/N - 2665. [Page 18]

Idle Compensation Valve with red connector. (PE supplied with EIS-02/03)

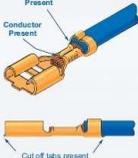


The EIS has two wire exits, Wire Grommet "A" and Wire Grommet "B"
 Note that wire colors within each grommet has a different function.



Main Power, RED, 14 AWG
 Ground, BLACK, 18 AWG
 Ignition Switch, PINK, 20 AWG
 (+) Coil, YELLOW, 16 AWG
 (-) Coil, WHITE, 16 AWG
 Tach Wire, BLUE, 20 AWG
 Fuel Pump, GREY, 16 AWG
 Carburetor Choke, ORANGE, 18 AWG
 A/C Compressor Clutch, GREEN, 18 AWG
 Idle Comp Valve, TAN, AWG 20
 Rev Limit, BROWN, 20 AWG
 Synchronized Signal, VIOLET, 18 AWG.
 Battery Trickle Charger, BLACK PAIR with female connector.

Distributor, ORANGE, 20 AWG
 Distributor, VIOLET, 20 AWG
 A/C "ON" switch (factory wire), GREEN, 20 AWG
 A/C Refrigerant Pressure Sensor, BLUE, 20 AWG
 Simulation, YELLOW, 20 AWG
 Security, WHITE, 20 AWG
 Oil Pressure Sender, PINK, 20 AWG
 Starter Solenoid "S" stud connection, RED, 20 AWG

Correct		<p>Workmanship is critical for a successful installation. Use this guide for proper crimping terminals onto wires. Use only proper crimp tools designed for making an automotive F-crimp connections.</p> 	
 <p>WIRE CRIMP Correct selection of wire, terminal and applicator</p>  <p>Crimp barrel is closed, Crimp legs support each other</p> <p>Sufficient gap between legs and bottom of crimp</p> <p>All strands are equally distributed and deformed</p>	<p>INSULATION CRIMP Correct Insulation Diameter, Applicator and Terminal.</p> <p>F-CRIMP</p>  <p>Insulation is securely held Crimp barrel closed</p>		
<p>For double wire applications with different size wires always place wire with smallest outer diameter in the bottom.</p> <p>OVERLAP CRIMP</p>  <p>Insulation is securely held Legs overlap</p>	<p>OVERLAP CRIMP</p>  <p>Insulation material is pierced</p> <p>Insulation is not securely held Legs do not overlap</p>	<p>WIRE CRIMP</p> <p>Incorrect applicator adjustment</p>  <p>Asymmetric crimp</p> <p>Unacceptable formation excessive flash and/or cracks</p> <p>Terminal feed incorrectly adjusted</p>  <p>Anvil and crimper not aligned or worn</p>	<p>Incorrect terminal / wire selection</p> <p>Wire size to large</p>  <p>Crimp barrel does not close</p> <p>Wire size to small</p>  <p>Legs too close to bottom of crimp. Insufficient deformation of strands, showing voids.</p>
<p>WRAP OVER CRIMP</p>  <p>Insulation securely held Legs must pass each other</p>	<p>WRAP OVER CRIMP</p>  <p>Insulation is not securely held</p> <p>Insulation is over crimped</p>	<p>Incorrect crimp height adjustment</p> <p>Crimp height too loose</p>  <p>Insufficient deformation, showing voids</p> <p>Crimp height too tight</p>  <p>Flash at under side of crimp, due to over crimping</p>	<p>The stripped conductor is compressed as a conductor crimp whilst the insulated conductor is compressed as an insulation crimp. The outlet of the conductor crimp is funnel-shaped to counter the possibility of fracturing.</p>

WARNING

When making connections to the EIS it is important to make sure that no other wires in the harness are randomly connected to the devices. The EIS will not function if unknown connections exist and possible permanent damage to the EIS. If there are other wires connected to the devices remove them.

Wire Grommet "A" Wire identification and function
(diagram page 15)

[1] Power - RED 14 AWG wire - Connect to a +12 volt power source, such as the battery terminal on the starter solenoid.

Note: Do not use a relay for this wire, the EIS has a relay internally.

[2] Ground - BLACK 18 AWG wire - Connect to chassis ground.

[3] EIS "ON" - PINK 20 AWG wire - Connect to the that was factory connected to the ignition ballast resistor or the (+) terminal on the coil.

Note: 1971 / 72 Panteras have a PINK wire.

1973 / 74 Panteras have a LIGHT BLUE wire.

Mounting the ignition coil in close proximity to the EIS is preferred to keep the wires from being excessively long. An example excessively long wires would be to mount the EIS on one side of the car and the coil on the other side of the car. This would create excessively long wires which would create a loss of electrical power to the coil.

Wire identification and function (Continued)

Wire Grommet "A" (diagram page 15)

[4] Ignition Coil (+) - YELLOW 16 AWG wire - Connect to the (+) terminal on the ignition coil.

[5] Ignition Coil (-) - WHITE 16 AWG wire - Connect to the (-) terminal on the ignition coil.

[6] Tachometer - BLUE 20 AWG wire - Connect to the (dark) BLUE/BLACK wire that was factory connected to the ignition ballast resistor.

[7] Carburetor Electric Choke - ORANGE 18 AWG wire - Connect to the RED or positive wire of the electric choke terminal.

[8] Electric Fuel Pump - GREY 16 AWG wire - Connect to the RED or positive wire of an electric fuel pump.

[9] A/C Compressor - GREEN 18 AWG wire - Remove the factory green wire that is connected to the A/C compressor clutch. Then connect to the GREEN wire of the EIS to the A/C compressor clutch.

[10] RPM Limiter Light- BROWN 20 AWG wire - Connect to the (+) terminal of any light to be used as a RPM limiter warning light. This is to indicate the RPM limiter has been reached, it is not a shift light.

[11] Synchronized Signal - VIOLET 18 AWG wire - This wire connects to a fuel injection ECU for an accurate timing reference. Connect this wire only if fuel injection is used.

[12] Idle Valve - TAN 18 AWG wire - This wire is connected to the solenoid valve that increases air to increase the RPM at idle.

(Idle compensation is an option)

[13] Battery Trickle Charge - BLACK PAIR with female connector - Mates to plug from wall adapter. Extension cables are available from Pantera Electronics or local electronics stores. **(Battery trickle charger is an option)**

EIS wire identification and function

Wire Grommet "B" (diagram page 16)

[For magnetic sensor distributor]

[1] Distributor - ORANGE 20 AWG wire - Connect to the (+) ORANGE wire of the distributor.

[2] Distributor - VIOLET 20 AWG wire - Connect to the (-) VIOLET wire of the distributor.

Wire identification and function (Continued)

Wire Grommet “B” (diagram page 16)

[3] Air conditioner compressor clutch - GREEN 20 AWG wire - Connect EIS GREEN wire to the green wire that was connected to the factory air conditioner compressor wire.

[4] Air conditioner refrigerant pressure sensor - BLUE 20 AWG wire - Connect to a refrigerant pressure sensor. This sensor is easily sourced and can be added to the A/C pressure line.

Note: If a pressure sensor is not used connect the wire to the chassis or ground.

[5] Oil pressure sender - PINK 20 AWG wire - Connect to a oil pressure sender.

If the oil pressure sender is not the factory sender that was originally installed it must be verified that it functions and has the same resistance the factory oil pressure sender.

If it isn't the proper sender, the signal to the EIS will not function properly. If this cannot be verified then connect the PINK wire to chassis ground. (See step [1] wire grommet “A”)

Connecting the PINK wire to chassis ground will disable the low oil pressure ignition shut off.

[6] Engine start detection - RED 20 AWG wire - Connect to starter solenoid labeled “S” stud. There should be a factory red wire presently on that stud.

[7] Simulation Mode -YELLOW 20 AWG wire - Connect this wire to (+) 12 volts simulate the engine operation at 8000 RPM. This is a temporary connection or add a switch since it is used to determine proper operation after installation testing or later as a diagnostic tool to determine if the peripheral devices are operational. It should remain disconnected when diagnostic is complete and standard engine operation is used.

Note the simulation mode RPM is displayed on the tach and can be used as a reference for tach accuracy.

The factory de Tomaso tach is not linear and may not perfectly agree with the EIS simulation mode RPM.

Note, the ignition, or firing of the ignition coil is disabled during the simulation mode. Do not disconnect the ignition coil.

[8] Security - WHITE 20 AWG wire - Connect to switch to operate the ignition interlock. If the security option is enabled then this wire must be connected to a source of switched +12 volts or battery voltage. See page 20 and 22.

Battery Trickle Charger (EIS-02/02)

The battery trickle charger is composed of 2 sections the wall plug adapter and the internal electronics in the EIS. The wall plug adapter is a specific voltage and current for the EIS and **NO SUBSTITUTE** should be attempted. If the incorrect wall plug adapter is used then possible damage to the EIS and car battery can result. The car battery can be over-charged and heat will cause damage to the car if the incorrect wall plug adapter is used.

The wall adapter plug should be used in a standard 120 VAC outlet only, a ground connection is not necessary. (Do not ground the Pantera chassis)

The connector for the wall adapter plug has a connector that mates the connector that from the EIS. This can be identified as the black dual wire cable on both the EIS and wall adapter plug

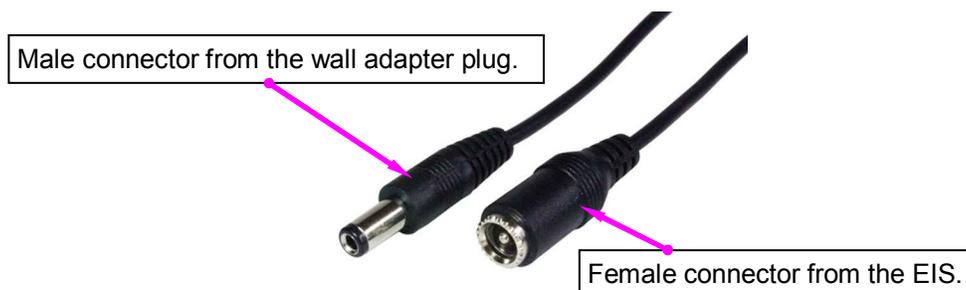
During battery trickle charging the internal electronics will charge the battery at the proper current rate and pulse rate to maximize the life of the battery. It is designed to only be used as a trickle charger to maintain the battery voltage and support electronics in a sleep mode. This is when the Pantera is not in use and when accessories of low power are still using battery power after the engine is "OFF".

The battery trickle charger IS NOT designed to charge a battery that is completely drained or drained by excessive engine cranking. Unplug the EIS battery charger and use a high current charger to restore excessively discharged battery.

After the wall plug adapter is plugged into an outlet the EIS will start the battery trickle charger and this will be indicated by flashing the orange "Battery Charging" light on the EIS. The EIS will also disable the ignition section of the EIS so that the engine cannot be started as long as the wall adapter plug is in the outlet.

Unplug the wall adapter plug to stop the battery trickle charger, the flashing orange light will stop and the EIS will allow the engine to be started.

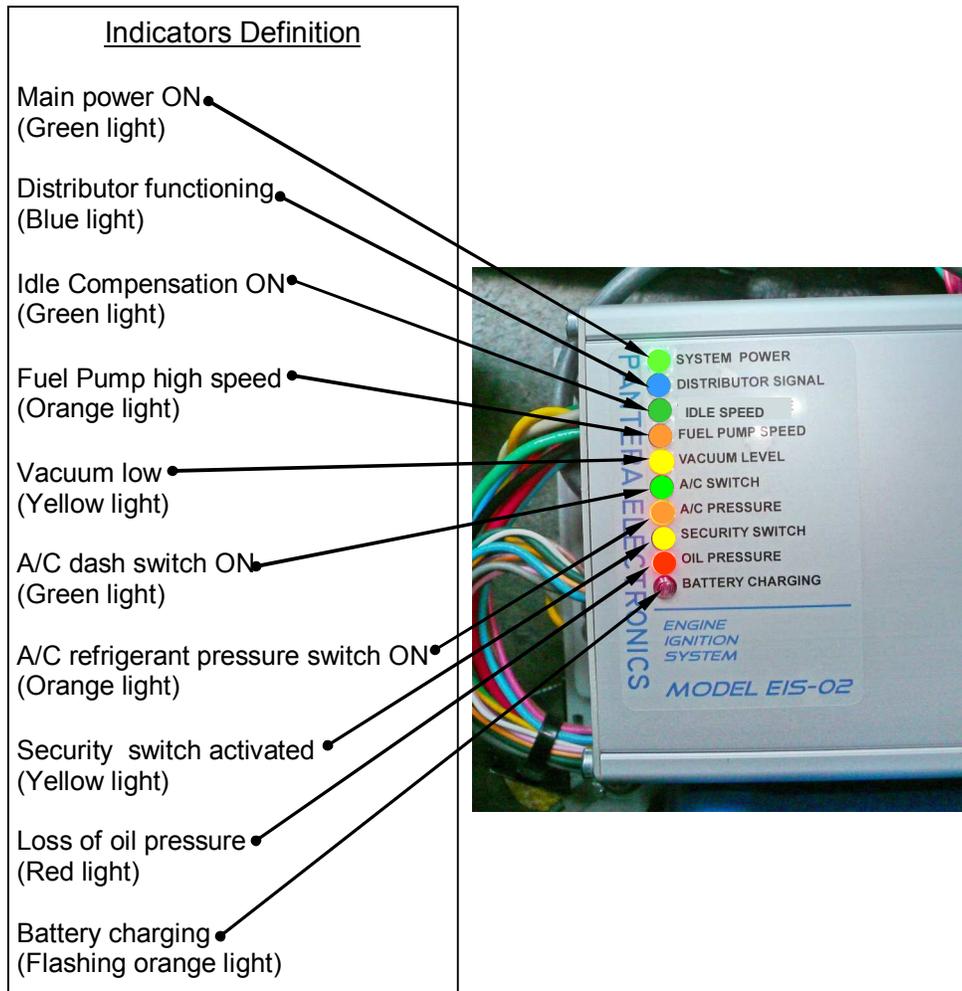
Do not use the battery charging feature without having the battery connected. This can cause erratic behavior of electronic devices in the car.

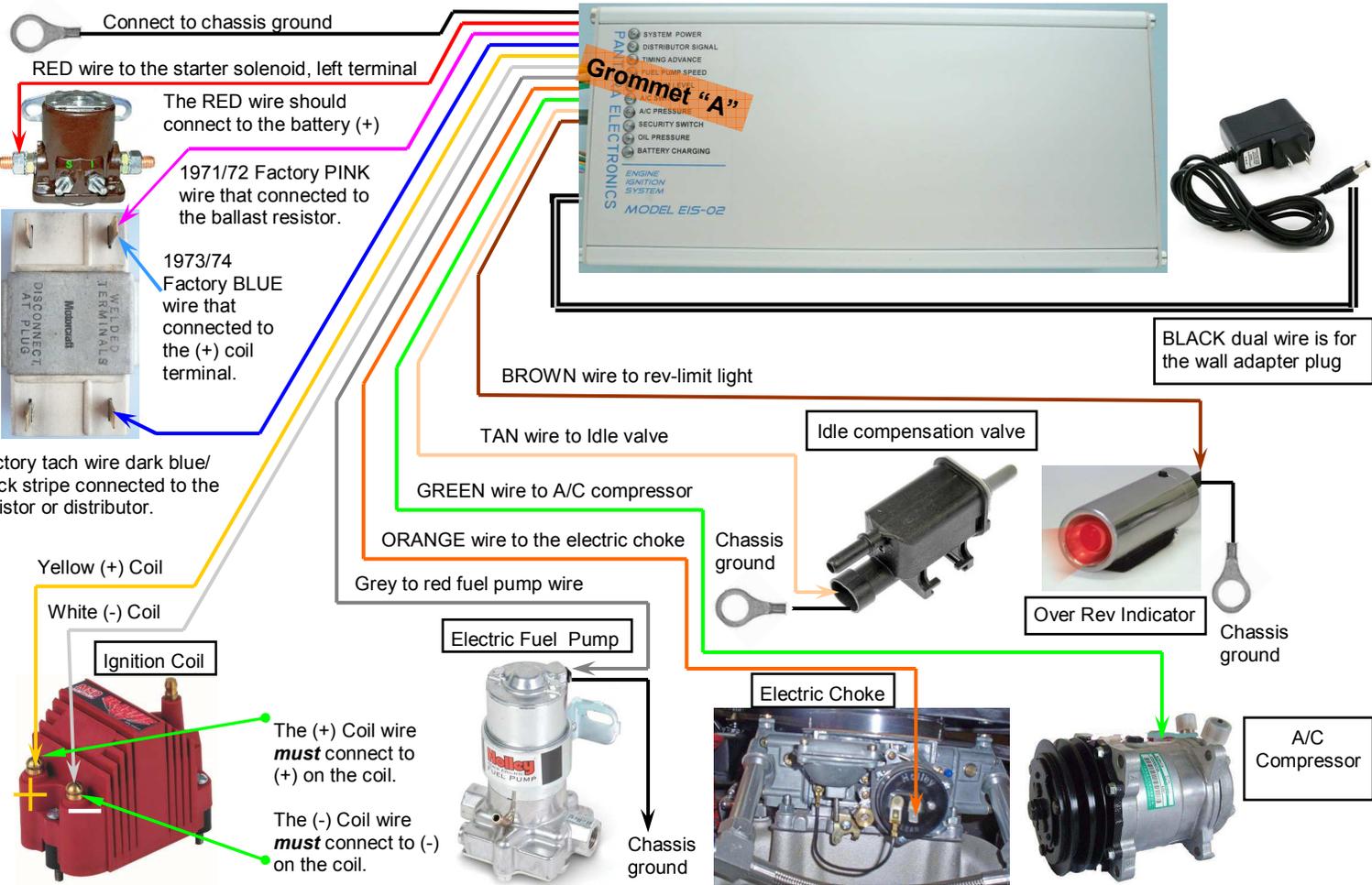


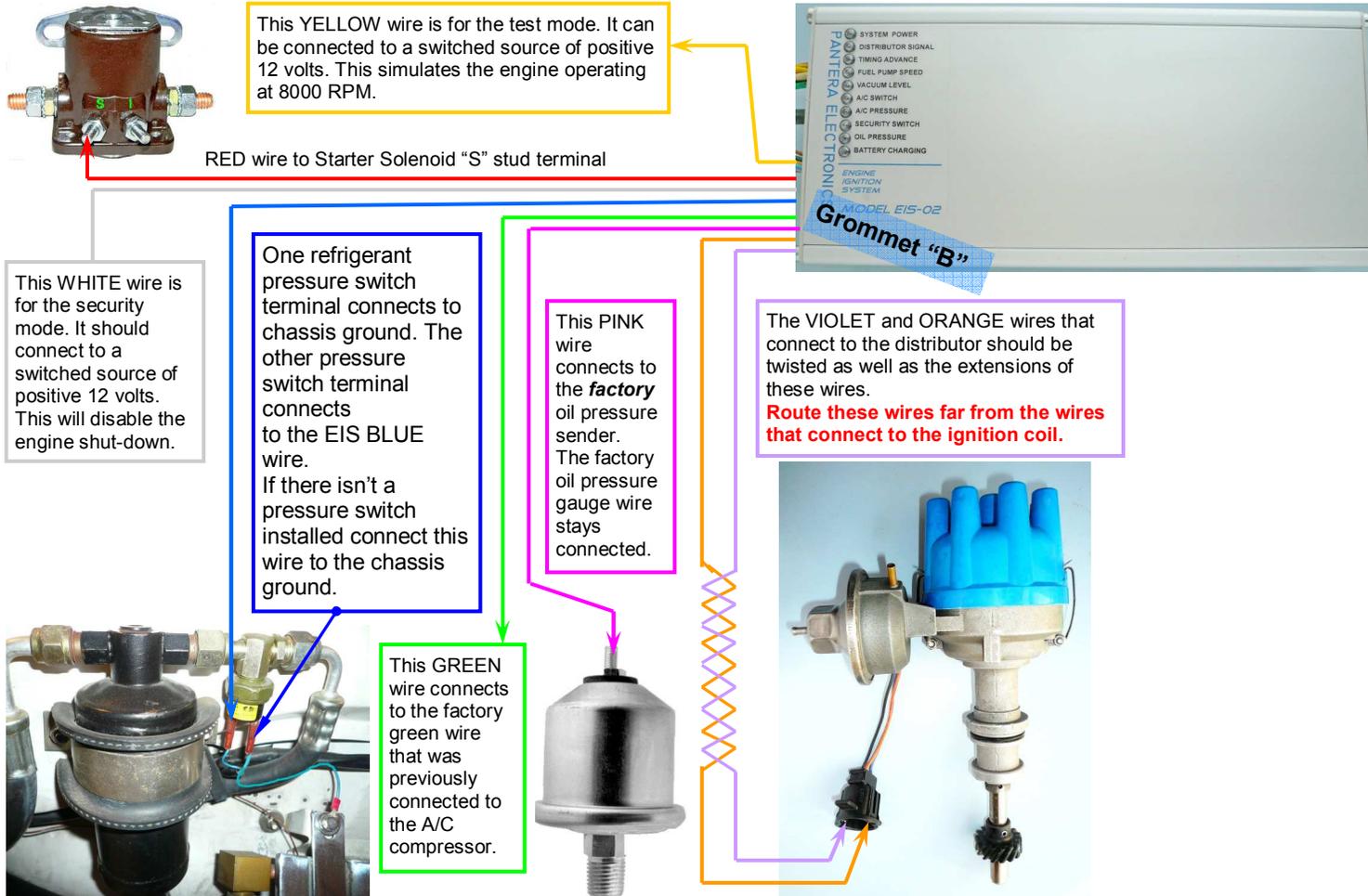
Vacuum hose - Use rubber 1/8" ID tubing from the vacuum hose to the intake manifold vacuum fitting. This is required for the A/C compressor control electronics. The vacuum hose can also be connected to 1 of the 2 carburetor vacuum ports but **must be connected to the port that is below the throttle plates.**

Workmanship

Do not twist bare wires together and tape as a connection, use only crimp terminals and the proper crimp tool. Wire should be the proper size for the current handling in the application. Soldering the wires by an experienced person and using shrink tube insulation is an excellent way to make connections. Use tie wraps to keep wiring organized and retained in position.





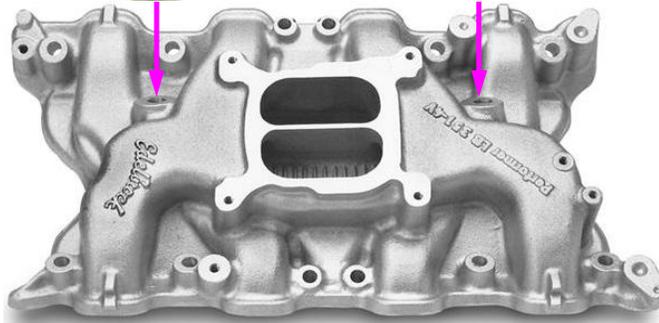
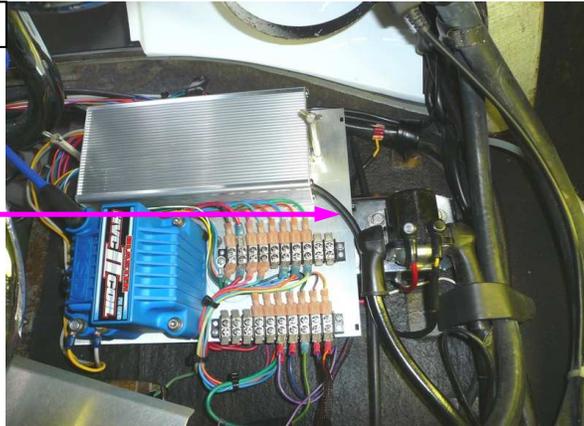


Installing the vacuum lines

1/8" Vacuum Hose



Straight 1/4 NPT x 1/4" tube fitting.



or here

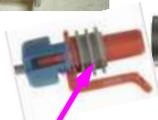
Typical after-market 351 Cleveland intake manifold. Pictured is a common Edelbrock intake manifold #2665.

Vacuum plumbing for the idle compensation valve with auxiliary air cleaner

Auxiliary air cleaner. Option available from PE.



Vacuum tubing



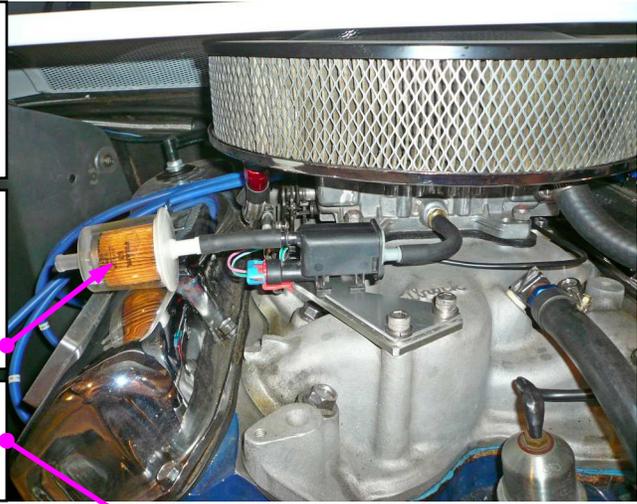
Electrical Connector

Idle Compensation Valve
The **GREY** end of valve must connect to vacuum source.

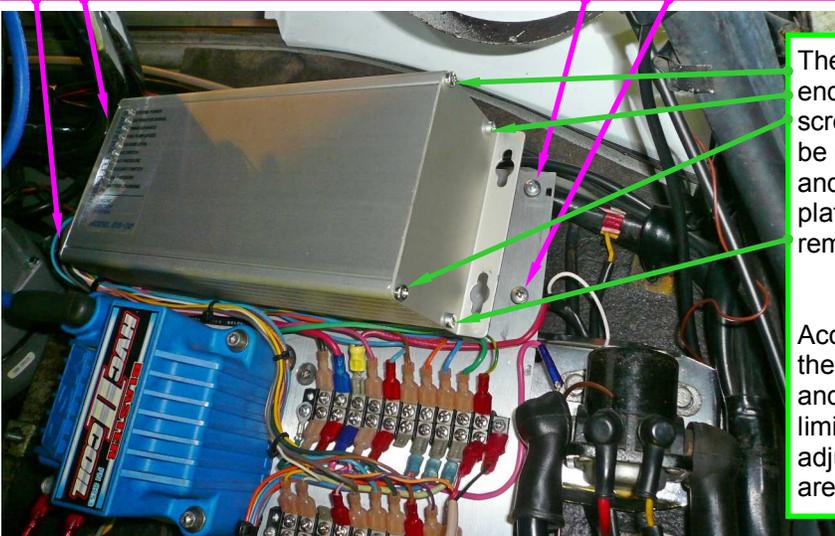
Mount the idle compensation valve in place that is convenient to connect to the intake manifold and air cleaner.

This is an auxiliary air cleaner if adding a connection to the carburetor air cleaner is impractical.

This is a connection to the carburetor air cleaner base.



By loosening the 4 mounting screws the EIS can be swiveled from the mounting plate. (2 are not visible in this picture)



Then the 4 end cover screws can be removed and the end plate removed.
Access to the jumpers and RPM limit adjustments are possible.

EIS Set-up - RPM Limit

RPM set points and other adjustments set at factory for initial set-up and run.

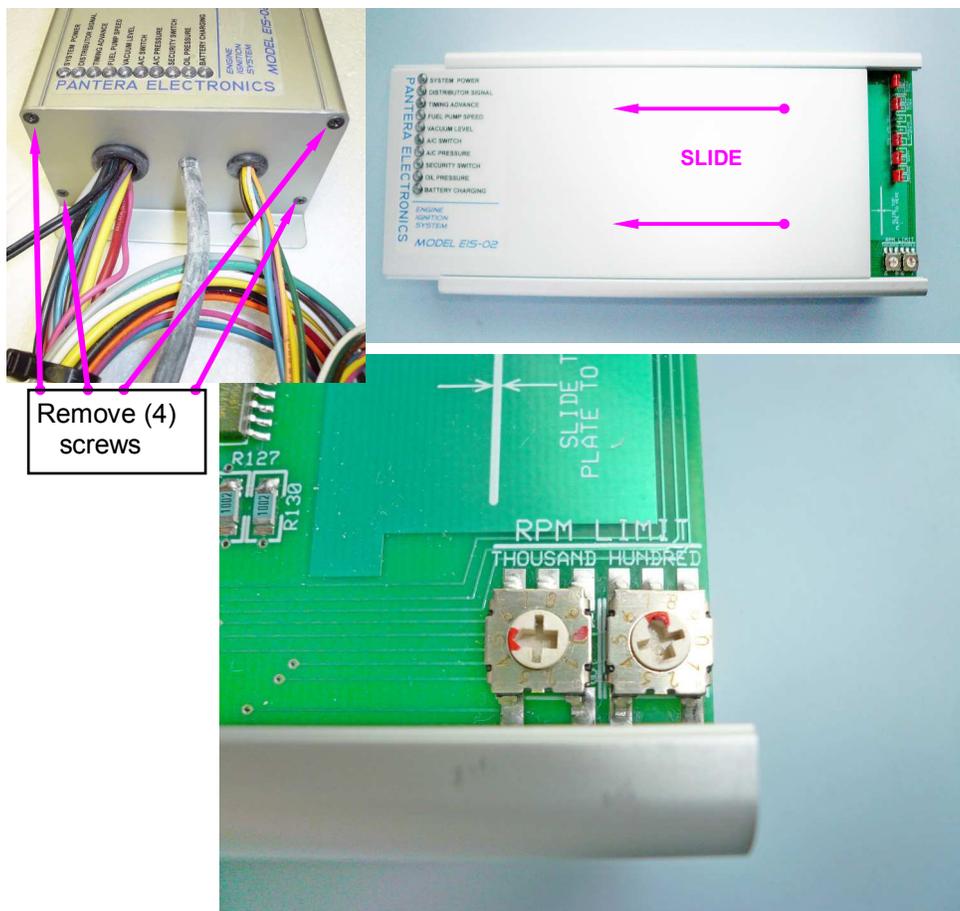
[1] Remove (4) screws from the end of the case that has the wires.

[2] Slide the end plate off. Slide top controller plate out of the case about 1 or 2” which will reveal the RPM limit settings and jumper plugs.

[3] To set the RPM limit use a small screw driver to set the pointer on the number of “THOUSANDS” of RPM desired.

[4] To set the RPM limit Use a small screw driver to set the pointer on the number of “HUNDREDS” of RPM desired

[5] Push the board back into the case, pull the wires from the “B” grommet to help position the board in the case.



EIS Set-up - Internal Settings

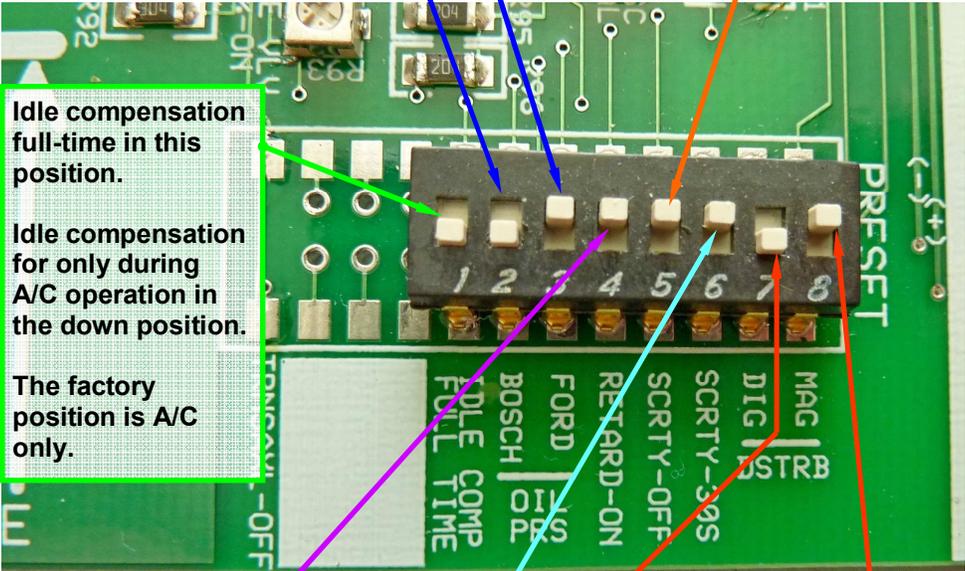
“FORD” is the factory de Tomaso sender. This switch in the up position. This is the factory position.

“BOSCH” is an aftermarket sender for other types of gauges. This switch in this position.

ONLY ONE SWITCH CAN BE IN THE “UP”

Security is “OFF” in this position.

This is the factory position.



Idle compensation full-time in this position.

Idle compensation for only during A/C operation in the down position.

The factory position is A/C only.

The ignition timing is retarded 5 degrees to allow easier starting.

“Starting” is defined as the starter motor is engaged and turning the engine.

The 5 degrees of ignition timing retard can be disabled with the switch in the down position.

The factory setting is in this position.

The Security Timeout “FAST” (5 sec) and “SLOW” (30 sec)

This is the amount of time from when the engine is started to when the ignition is disabled.

The factory position is “SLOW”.

This position is for a magnetic distributor “MAG”.

This is the factory position.

Other distributors with points, Hall sensors and digital distributors, the “DIG” set the switch to the up position.

ONLY ONE SWITCH CAN BE IN THE “UP” POSITION.

Security Function - Set-up

The EIS has a built-in security function that disables the ignition a preset time after the engine is started. 2 adjustments for the security function can be set internally on the top controller board.

The security function is disabled from the factory and will not function without changing the enable jumper.

[1] To enable the security feature set the switch down position. See page 20.

[2] Set timer for ignition disable by setting the switch to the time desired. There are 2 settings for the security timer, FAST (5 seconds) and SLOW (30 seconds) This is the amount of time from when the engine is started to when it is disabled. See page 20.

Security Function - Wiring

After the security jumper is set to enable the function there needs to be a means to allow the EIS to continue when the owner uses the Pantera.

There is a WHITE wire in Grommet "B" that should be connected to a source of +12V or battery voltage through a dedicated switch or a factory switch that can be used as a hidden function. See pages 9 and 14.

When the starter motor is engaged the EIS monitors the status of the white wire, if there isn't voltage present then the disable timer begins. If when the starter motor is engaged and there is voltage present on the white wire then the ignition is not disabled and the engine continues to operate.

Since the EIS only monitors the white wire during starter motor operation the switch should be a momentary switch and if a factory switch is used it should not be left in a position to supply +12V at all times.

There is a red indicator on the face of the EIS that indicates when +12V is applied to the security WHITE wire. See page 12

Idle Compensation Valve Plumbing

Use only the PE supplied vacuum tubing to connect the Idle Compensation valve to the air cleaner and carburetor base. All of the plumbing must be at least 0.2" internal diameter. If a vacuum connection is not on the carburetor then connect to the intake manifold or a carburetor spacer plate with a fitting. A typical carburetor spacer plate part from Sumittracing is: SUM-G1400. The fitting must have at least a 0.2" internal diameter.

Wiring

Routing the magnetic pickup wires can be important to the engine's performance. Since the magnetic pickup is delivering a voltage signal to trigger the ignition, it is important that the wires are routed away from other wiring, such as, spark plug wires, tachometer output wire and electric fuel pump wires.

The pickup wires should be **twisted around each other**, this provides some electrical durability. Try to route the pickup wiring close to the frame or chassis of the car. These parts serve as large ground planes so there is less electrical activity near their surface.

A MSD Shielded Harness, P/N 8862 is available that features a ground shield that protects the trigger wires from external interference if long length is needed, it is 72 in. long.

Do not connect anything else to the coil connections in addition to the EIS designated wires. **Connected tachometers will not operate properly.**

To insure that the engine is grounded to the chassis a ground strap from the chassis to the engine or a mechanical connection from the chassis to the engine. (Panteras had a factory ground strap from the transaxle to the chassis which is suitable)

Distributor Timing

When installing the EIS with points contacts it is necessary to replace the points so that the advantage of using the EIS can be realized. The points will not have to be replaced during the use with the EIS since very low current will pass through the contacts. This maintains the points critical adjustment once set since no electrical wear takes place. Make sure there is light lubricate on the distributor cam or the felt wiper on the points contact arm this will help keep the points setting over time.

When changing from a points type distributor to a magnetic reluctor type distributor spark plug timing will have to be reset. Consult the Ford engine manual for the procedure.

When changing from other ignition systems to the Pantera Electronics EIS it may be necessary to adjust the spark timing. This adjustment is minor but needed due to the internal circuit differences in ignition system design from one manufacturer to another.

If the timing seems to be advanced or causes the starter motor to labor, decrease the amount of advance or firing Before Top Dead Center (BTDC). If some loss in acceleration then increase the advance or BTDC.

Testing for spark

[1] Make sure the ignition switch is in the "OFF" position.

[2] Remove the coil wire from the distributor cap and set the terminal approximately 1/4" from ground.

[3] Crank the engine.

[4] A spark should jump from the coil wire to ground. If spark is present, the ignition is working properly.

Spark Plug Considerations

Use the engine manual to determine the proper spark plug then modify the gap.

These are general guide lines:

Up to 10.5:1 compression ratio use 0.040" - 0.045" spark plug gap

10.5:1 - 12.0:1 compression ratio use 0.035" - 0.040" spark plug gap

Insufficient spark plug gap can cause pre-ignition, detonation and possible engine damage. Too much gap can result in a higher rate of misfires, loss of power, plug fouling and poor fuel economy.

When setting spark plug gap use a wire type feeler gauge to measure the gap, do not use flat or tapered feeler gauges. If adjustment is needed, use a gapping tool to bend the ground electrode, never pry against the center insulator to open the gap.

Avoid using spark plugs have additional ground electrodes, these disturb the flow of gases around the spark plug tip and performance may be reduced. The additional low mass metal within the combustion chamber will retain higher temperatures and may contribute to detonation/pre-ignition.

Ignition Wire Resistance

Do not use ignition wires that are less than 300 ohms per foot as this can cause erratic operation of the EIS. Ignition wires with a resistance between 300 and 1000 ohms is preferred.

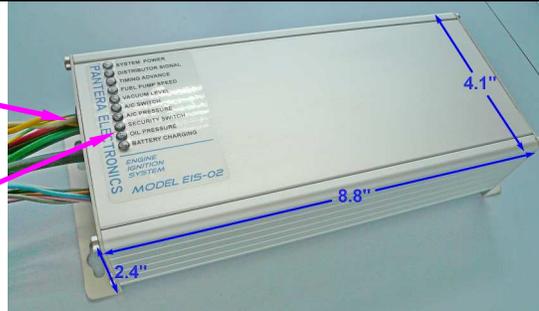
Testing the Distributer Magnetic Reluctor

To verify magnetic retractor and continuity in the distributor use a voltmeter and measure the resistance of the wires **at the location of the EIS**. The distributor wires cannot be connected to the EIS when measuring the resistance. The resistance should be in a range of 500 to 1000 Ohms.

Advanced user adjustments, do not change unless a voltmeter and miniature screw driver is available. Factory settings have been verified after many years of operation in the field.

This is the left side, wire grommets are on this side.

Indicators are here

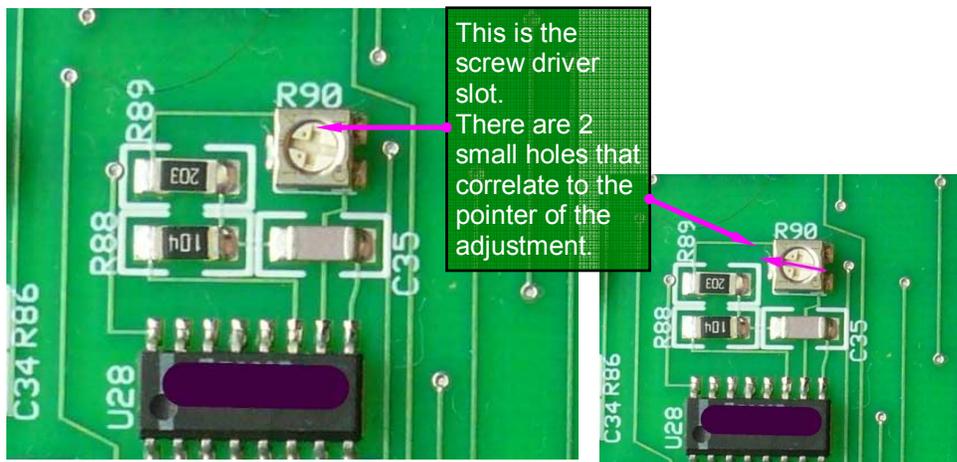


[1] Remove 4 screws from the right side of the enclosure remove end plate.

[2] Grasp the top green board with your fingers and slide outward toward the right.

Wires in the "B" grommet from the left side will have to be pushed inward as the board is slid out to the right.

[3] Stop sliding the board when the adjustments (red arrows) are revealed as in image on page 27.



[5] Each function is labeled in white lettering with the factory value.

[6] Use a digital voltmeter to measure the voltage at the test point labeled with the factory value. See page 19 for making settings.

[7] When using a voltmeter the red probe is inserted in the hole where the blue arrows are directing. The voltmeter black probe is connected to chassis. The EIS must be powered when measuring voltages, this can be done in or out of the car.

You will need a very small screw driver to fit the slot in the adjustment and digital voltmeter.

Note: Each volt on the voltmeter equals 1,000 RPM. If the factory setting is 0.5 volts it would equal 500 RPM.

[1] **Idle Compensation RPM** - This is the engine RPM that enables the Idle Compensation valve by increasing the RPM. The range of adjustment is 0.5 to 1.30volts. (500 to 1,300 RPM) Factory setting 0.95V (950 RPM)

[2] **Fuel pump high speed transition** - This is the engine RPM that transitions the fuel pump speed from low speed to maximum speed. The range of adjustment is 3.0 to 5.0 volts. (3,000 to 5,000 RPM) Factory setting 3.2V. (3,200 RPM)

[3] **Oil Pressure Level** - The adjustment for the Oil Pressure Level is not RPM related as the other functions. This adjustment is the level of oil pressure that the ignition will shut-off. Measure the voltage at the oil pressure sender while the engine is idling, typically it's about 2 to 3 volts. The setting must be greater plus a safety margin. The factory setting 4.0V. The red indicator will illuminate when the oil pressure level is lower than the set point.

The factory oil pressure sender is the only sender that the EIS will operate the loss of oil pressure detection. VDO or Bosch oil pressure senders will not operate properly.

(Voltage level settings for aftermarket oil pressure senders such as VDO and Bosch has not been established yet)

[4] **Factory setting** - Do not change

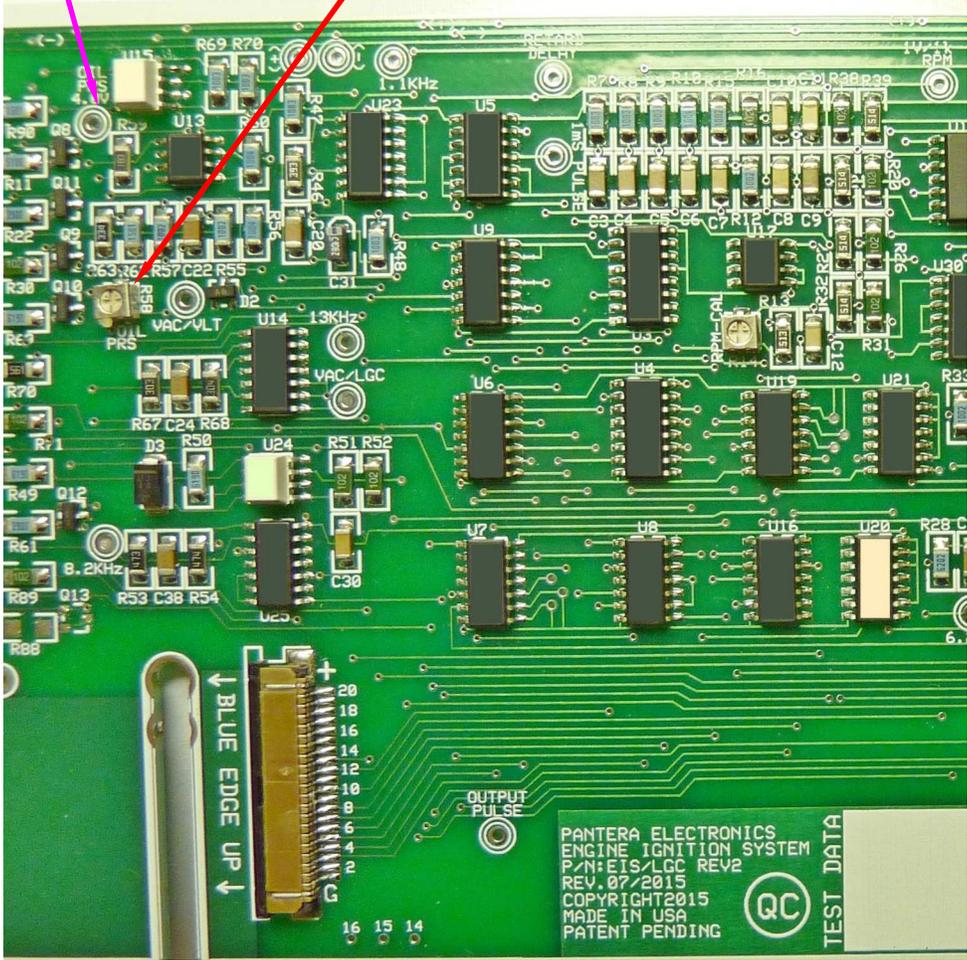
[5] **A/C Compressor sensitivity** - The adjustment for the A/C is not RPM related as the other functions. This adjustment is the sensitivity for performance driving. The lower the voltage the greater the sensitivity. At a lower voltage setting the A/C compressor will be disabled with less throttle. At a higher voltage setting it will require more throttle to disable the A/C compressor. The range of adjustment is 2.0 to 4.0 volts. (this is not a RPM setting) Factory setting 3.5V. (10" Hg vacuum)

An internal vacuum sensor monitors the vacuum level in the intake manifold and the sensitivity adjustment sets the threshold that turns off the A/C compressor. There is a delay to ignore short vacuum changes so that the A/C compressor clutch is not over-worked by turning on and off excessively. Since the vacuum level is monitored and the set point is adjustable that's why the adjustment is called "sensitivity" or sensitivity to the accelerator movement.

Advanced user adjustments right hand side of board, do not change unless a voltmeter and miniature screw driver is available.

Factory set point 4.0 Volts.

Oil Pressure level adjustment



Advanced user adjustments

Factory set point
0.95 Volts.

Factory set point
3.2 Volts.

Factory set point
2.0 Volts.

Factory set point
3.5 Volts.

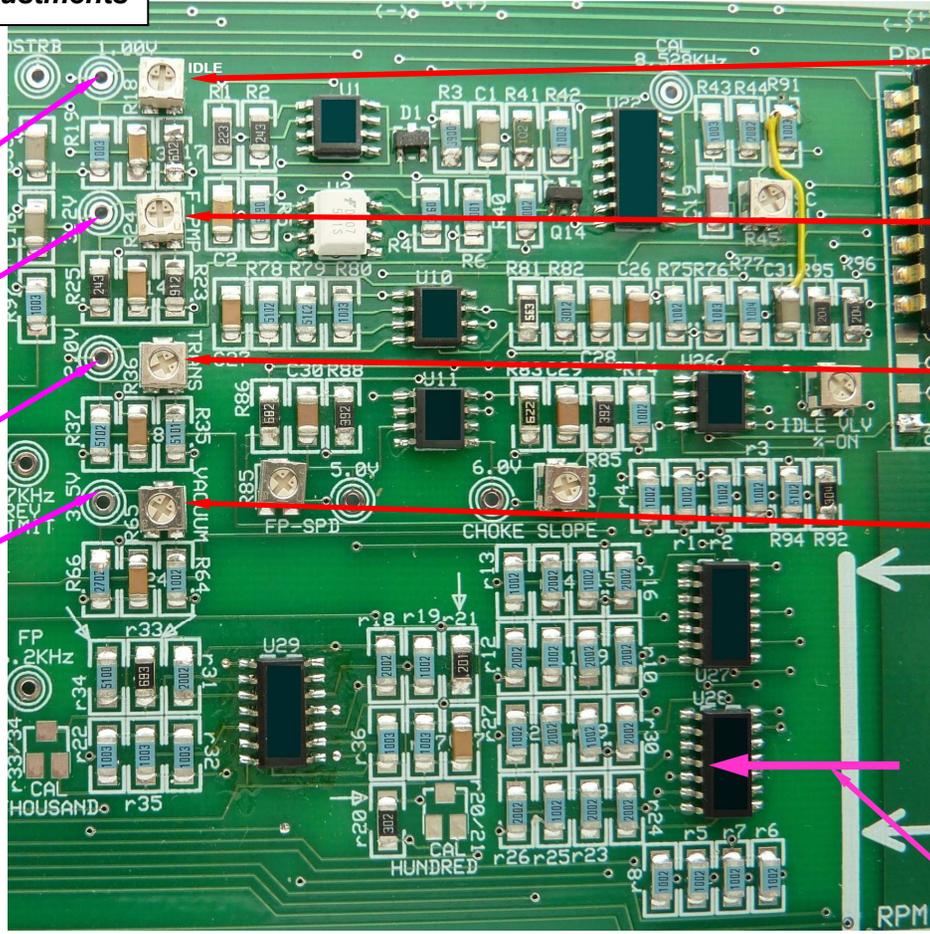
Idle Compensation
RPM adjustment.

Fuel pump high
speed transition
adjustment.

Do not change.

A/C Compressor
sensitivity
adjustment.

Move the top slide
in this direction
to access advanced
adjustments.



Advanced user adjustments left hand side of board, do not change unless a voltmeter and miniature screw driver is available.

[1] Remove 4 screws from the left side of the enclosure. Slide end plate feeding wires through the grommet.

[2] Grasp the top green board with your fingers and slide outward toward the left.

[3] Stop sliding the board when the adjustments (red arrows) are revealed as in image on page 18.

[4] Each function is labeled in white lettering with the factory value.

[5] Use a digital voltmeter to measure the voltage at the test point labeled with the factory value. See page 21 for making settings.

[6] When using a voltmeter the red probe is inserted in the hole where the blue arrows are directing. The voltmeter black probe is connected to chassis. The EIS must be powered when measuring voltages, this can be done in or out of the car.

[7] **Fuel pump low speed** - This is the fuel pump low speed setting, the speed of the fuel pump at low engine RPM prior to the transition to maximum speed. This may have to be adjusted if the electric fuel pump does not run at the factory setting.

The range of adjustment is 2.7 to 8.7 volts. (27% to 87% of full speed)
Factory setting 5.0V.

[8] **Choke slope (opening rate)** - This is the slope or the rate that the choke opens.

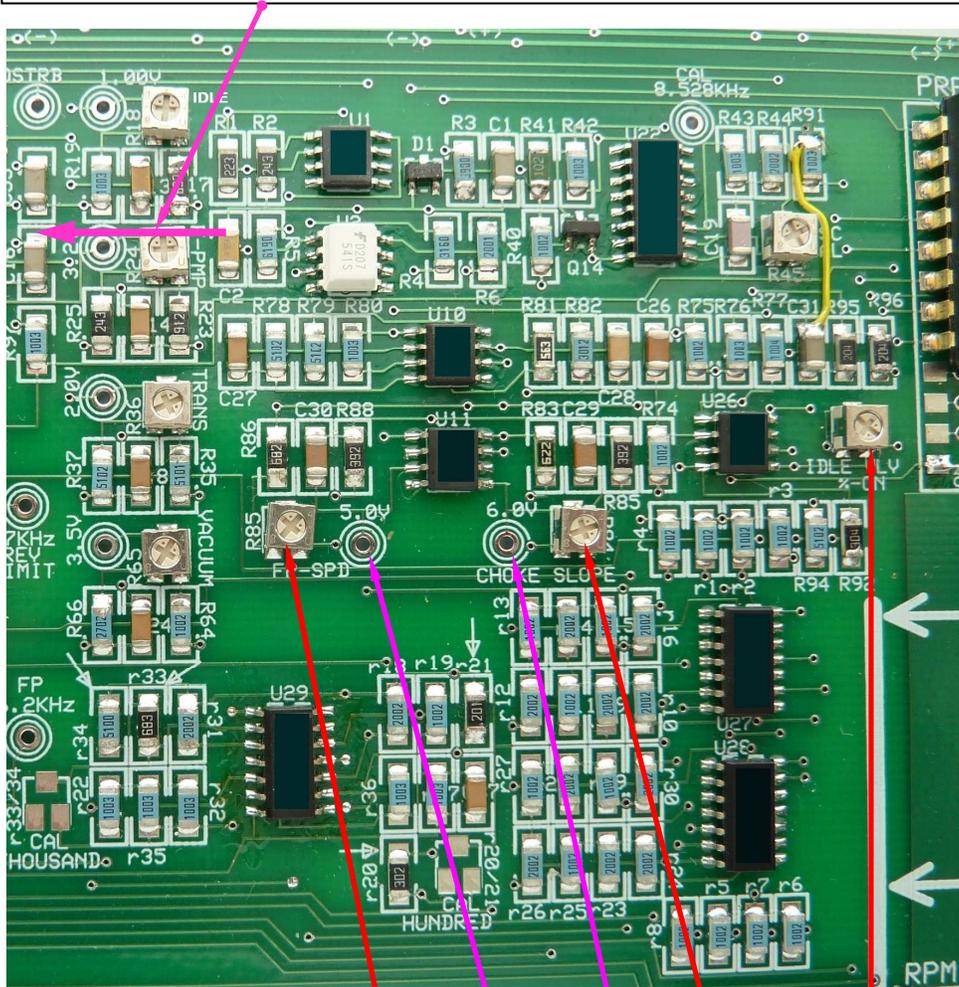
The range of adjustment is 2.7 to 8.7 volts. (27% to 87% of fastest opening rate)
Factory setting 6.0V.

[9] **Idle Compensation** - This adjusts the valve open duration. The maximum open duration by turning the adjustment to full counter-clockwise position, the valve will pulse at a slower rate. For minimum open duration turn the adjustment to the full clockwise the valve will pulse at a faster rate.

[10] Slide the board into the center of the enclosure and replace both end plate screws.

Advanced user adjustments

Move the top slide in this direction to access advanced adjustments.



Fuel pump low speed adjustment

Factory set point 5.0 Volts.

Factory set point 6.0 Volts.

Choke slope adjustment.

Idle Compensation valve duration.

EIS to Distributor Connections

Connecting to a MAGNETIC distributor

1974 to 1976 Ford Duraspark distributor with magnetic pickup.

Duraspark ORANGE connect to EIS (+) ORANGE wire. (Grommet B)
Duraspark VIOLET wire connect to EIS (-) VIOLET wire. (Grommet B)
Duraspark Black connect to EIS (GND) BLACK wire. (Grommet A)

MSD Distributor P/N: 8477, 8577, 8580 (Ford 351C-460 Pro-Billet Distributor)

MSD ORANGE wire connect to EIS(+) ORANGE wire. (Grommet B)
MSD VIOLET wire connect to EIS(-) VIOLET wire. (Grommet B)

Mallory Distributor, Ford, 351C/460, P/N: 3256711

Mallory ORANGE connect to EIS(+) ORANGE wire. (Grommet B)
Mallory VIOLET connect to EIS(-) VIOLET wire. (Grommet B)

Note, MSD extension cable P/N: 8860 wires are Violet (+) and Green (-)

Connecting to points or a DIGITAL distributor

Set the distributor switches from "MAG" to "DIG". See page 20.

Ford points distributor

Connect the points wire to the EIS (+) ORANGE wire. (Grommet B)
EIS (-) VIOLET wire (Grommet B) - Not connected.
Remove capacitor, **do not use**.

MSD Distributor P/N: 8350 (Ford 351C-460 Ready-To-Run Pro-Billet Distributor)

MSD ORANGE wire connect to EIS (+) ORANGE wire. (Grommet B)
EIS (-) VIOLET wire (Grommet B) - Not connected.
MSD RED wire connect to +12 ignition "ON" or same connection as EIS, PINK ignition switch - 20 AWG. (Grommet A)
MSD BLACK wire connect to EIS (GND) BLACK wire. (Grommet A)

Mallory Distributors (including Unilite) P/N: 3756711, 3856711, 425671, 4756711, 5056711, 4756701

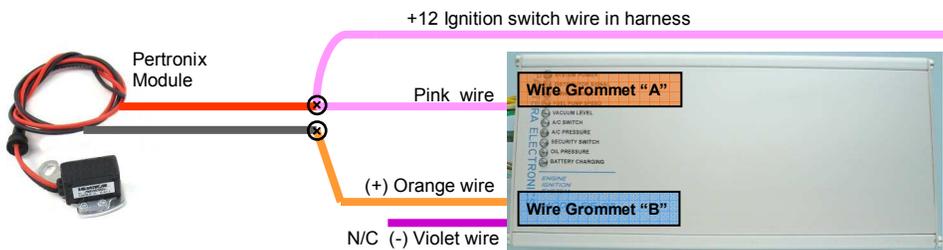
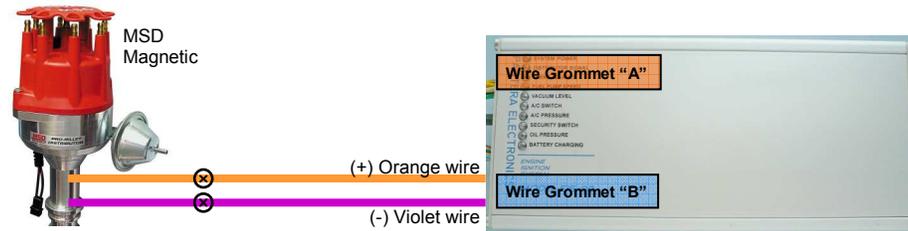
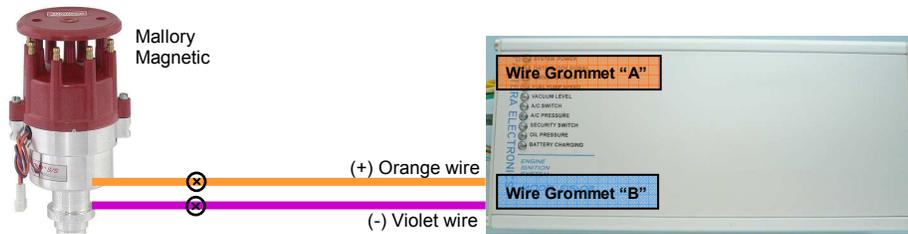
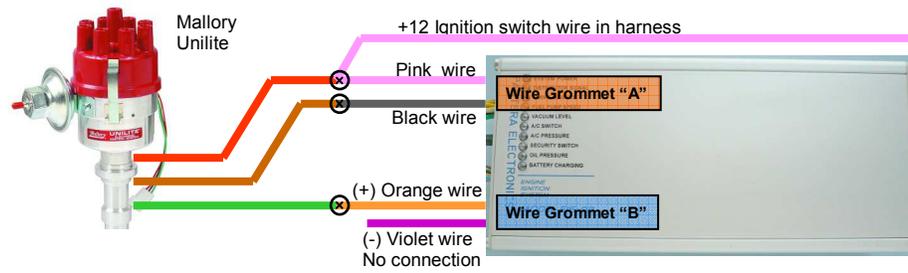
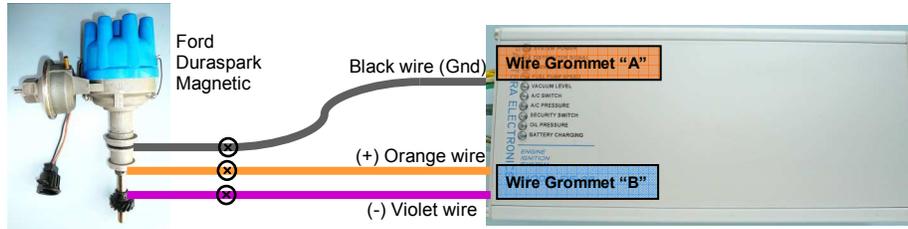
Mallory Green wire connect to EIS (+) ORANGE wire. (Grommet B)
EIS (-) VIOLET wire (Grommet B) - Not connected.
Mallory RED wire connect to +12 ignition "ON" or same connection as the EIS, PINK ignition switch - 20 AWG. (Grommet A)
Mallory BROWN wire connect EIS (GND) BLACK wire. (Grommet A)

Pertronix Module P/N: 1281(typical)

Pertronix Module BLACK wire connect to EIS (+) ORANGE wire. (Grommet B)
EIS (-) VIOLET wire (Grommet B) - Not connected.
Pertronix Module RED wire connect to +12 ignition "ON" or same connection as the EIS, PINK ignition switch - 20 AWG. (Grommet A)

Distributor to EIS Wiring

⊗ = connection



CAUTION!

Due to the high voltage generated by this system, touching the primary side of the ignition coil when the engine is running will result in an *electrical shock*.
The "TACH" terminal of the Electronic Ignition System can cause a mild *electrical shock* if touched when the engine is running.

WARNING!

Do not attempt to operate the Electronic Ignition System without the ignition coil output/high voltage tower disconnected at the *distributor only*.
Do not attempt to operate the Engine Ignition System with the ignition coil output/high voltage tower connected to ground unless it is done through a minimum of 12 inches helically wound or spiral core ignition wire, otherwise permanent damage to the Electronic Ignition System could result.

IMPORTANT

Use only helically wound or spiral core ignition wires and must have at least 300 ohms per foot.
Do not use carbon conductor wires.
Solid Core ignition wires cannot be used, permanent damage to the Electronic Ignition System will result.

Electronic Ignition System Specifications

Operating voltage: 11 - 16 Volts (6V minimum for engine start only)
Average current: 3 amps (ignition only)
Internally over-current protected (no fuse required)
Tachometer output: 300 to 400 Volts @ 100mA.
Ignition switch control: 0.1 Amps @13.5 Volts.
Fuel pump output current: 10 amps maximum
Choke output current: 2 amps maximum
A/C compressor clutch output: 4 amps maximum
RPM limit light output: 0.7 amps maximum
RPM Limiter Maximum: 8500 RPM
Trickle Charger: 0.8 Amps maximum
Vacuum hose connection: 1/8" ID, 1/4" OD Hose.
Case size: Length 8.8", Width 4.1", Height 2.4"
Use only with 8 cylinder even fire engines with single coil ignition system.
Not for use on computer controlled vehicles.

Disclaimer

The products from Pantera Electronics have been design and manufactured with the best quality components known to the engineer. The installation instructions have been written to assist the owner in the proper use and installation of the products. Pantera Electronics can not be held responsible or held liable for the interpretation or incorrect implementation of the products.