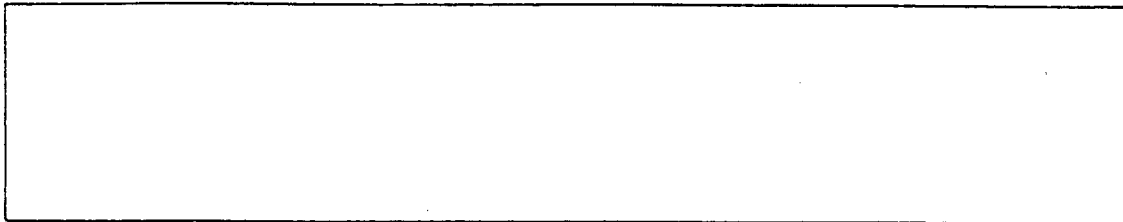


INSTALLATION INSTRUCTIONS

FOR **ACCEL**®

BEI II
39000A SERIES



You have just purchased the world's fastest and most versatile electronic ignition commercially available.

Laser II is a capacitive discharge ignition. This type of ignition may be used very successfully with turbocharged engines, medium and high revving high compression racing engines, as well as performance street engines. Laser II will run flawlessly up to 13,000 RPM on 8 cylinder engines and has been designed with the latest state of art technology, providing protective circuitry.

Laser II will start an engine with a minimum of 7 volts cranking power and will continue to operate at 10,000 RPM with a minimum voltage of 6.5 volts. Laser II will automatically shut down with more than 20-24 volts present at the input circuitry and reactivate once the excessive voltage has been eliminated. This unit will withstand spikes in the charging system up to 100 volts. The Laser II also has a very low current draw, a maximum of 4.1 amps, making it ideal for applications such as long distance circle track and road racing.

The Laser II control module has been designed to work with photocell, points, magnetic impulse, And ACCEL Hall Effect triggers.

Cap 120323
Rotor 130316

NEW DISTRIBUTOR INSTALLATION PROCEDURES

NOTE: -Do not attempt to remove the distributor cap on new unit without loosening the hold down screws.

1. Remove the existing distributor cap. Do not remove the spark plug wires from the cap at this time.
 2. Crank the engine slowly until the rotor blade is aimed at a fixed point on the engine or firewall.
 3. Disconnect wiring from the ignition coil and remove the present distributor. With the rotor installed, place the new distributor in the engine *with the rotor pointed in the same direction as the discarded distributor. Be sure the housing can be rotated sufficiently to set the timing.
 4. Install the new cap furnished. The hold down screws must be tight. For racing applications screws should be installed with adhesive.
 5. Install the spark plug wires into the new cap, one at a time, being sure they are in the same physical location as they were on the original distributor cap.
 6. (Racing II Dual Point Only) Insert high tension coil wire, and connect primary wire from the new distributor to the negative side of the ignition coil.
 7. Start the engine and set timing.
- *Distributor advance is designed with changes made in 45° intervals.

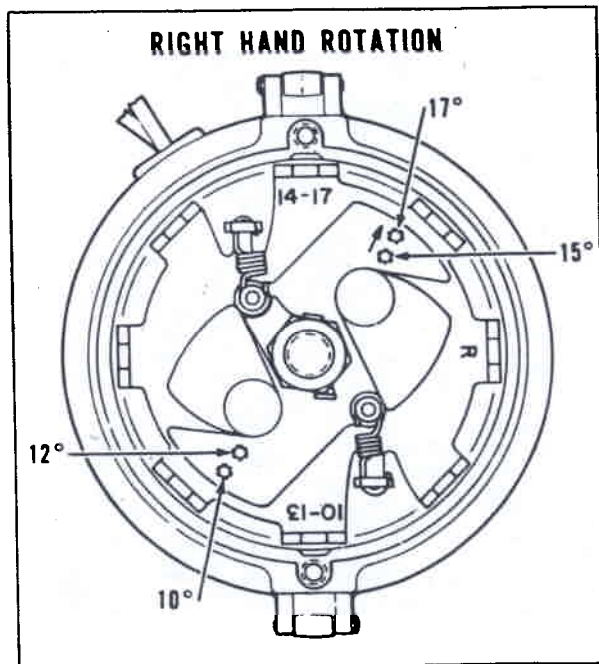
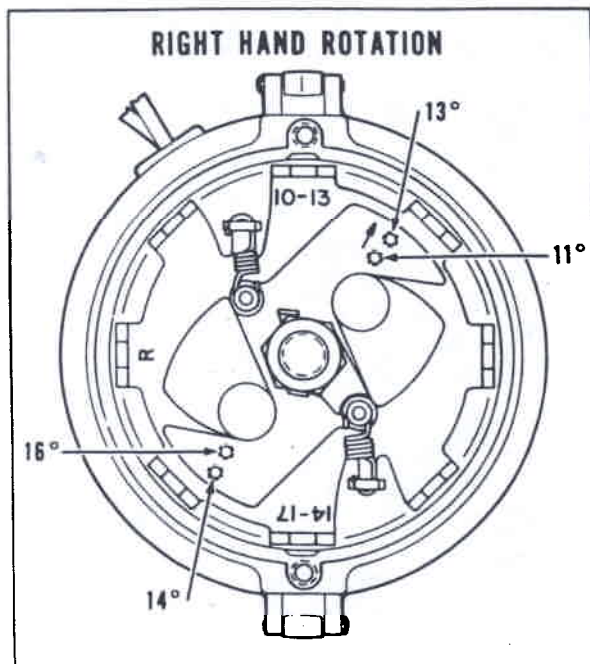
NOTE: If you are not sure of the proper timing setting for your engine, we suggest a procedure called "power timing". Simply advance the timing on a road test until a slight ping is observed under a heavy load, and then back the timing up until the ping is no longer evident.

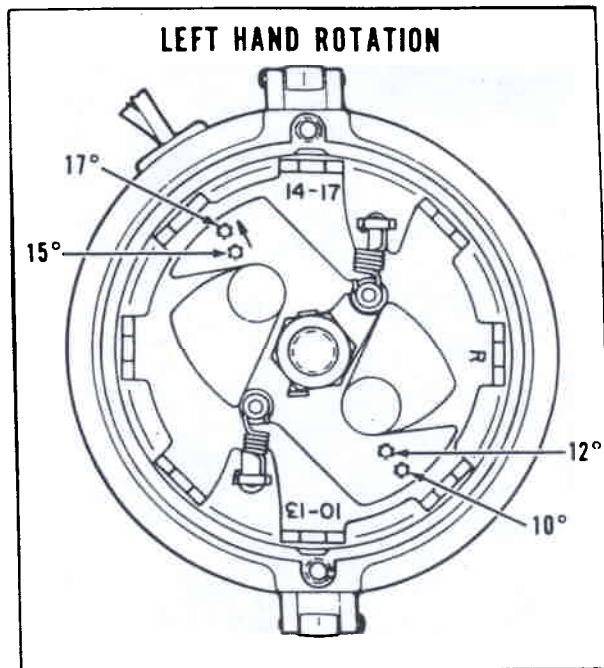
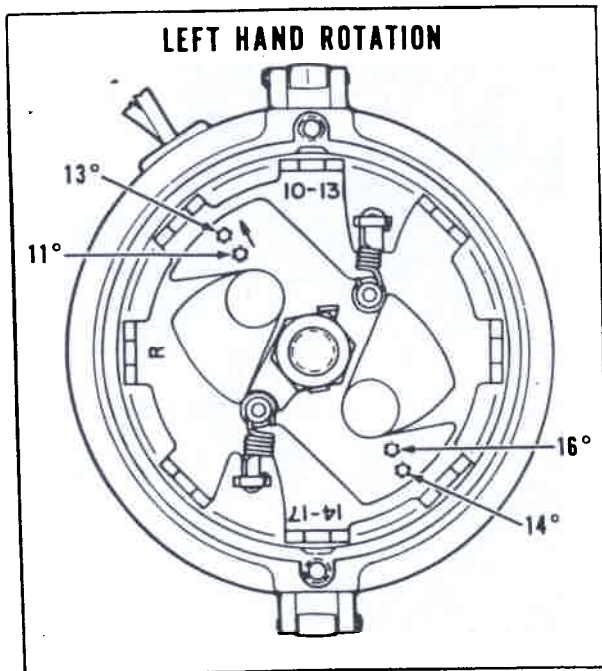
NOTE: As delivered the mechanical advance in your new distributor is set at 12° distributor, (24° engine), for American Motors, Chrysler, Ford and General Motors applications. If an advance change is desired, refer to "Instructions For Timing Advance Curve Changes" below before installing distributor.

INSTRUCTIONS FOR TIMING ADVANCE CURVE CHANGES

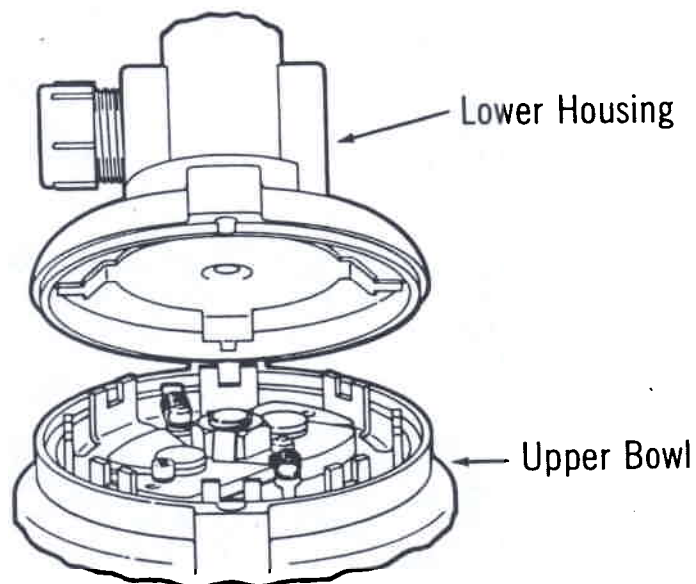
NOTE: To change the timing advance curve on your new distributor, you may leave the distributor in the engine or you may remove it to a bench.

1. Remove the two screws holding the distributor bowl to the lower shaft housing and remove the distributor bowl.
2. Remove the two advance springs.
3. Bend the ears back on the locking tab and remove the center nut. Lift the entire assembly out if necessary.





4. By using the diagram above, determine which hole the stop screw should be located in and which direction the arrow should be pointed for your distributor advance specifications. Example: If you require advance of 14° and your distributor is right hand rotation, (clockwise), the stop screw would be placed in the bottom hole marked 14° and the "S" plate will be installed with the arrow pointing to the 10 - 13° indication on the stop bracket.
5. With the advance assembly placed in the proper location, replace the center nut and secure the locking tabs. Replace the advance springs. The advance mechanism should move freely and have a minimum amount of end play without binding.
6. Reassemble the distributor bowl with the lower shaft housing. Be sure that the tangs in the lower assembly mesh properly with the tangs in the distributor bowl and check rotor position. Reinstall the two screws.



7. (Racing II Dual Point 37000 Series Only) Recheck the dwell. Each contact should be set for 26° , and the total dwell should be 34° to 36° . To do this, run the distributor and unplug the black wire connector in the distributor lead harness. Adjust the red grommet contact to 26° . Reconnect the black wire and adjust the black grommet contact to 36° , which is the total of both contacts. If a distributor machine or dwellmeter is not available, set the contact air gap to $.018"$ to $.020"$. Use the two access holes in the upper bowl cover, (under rotor), for this adjustment.

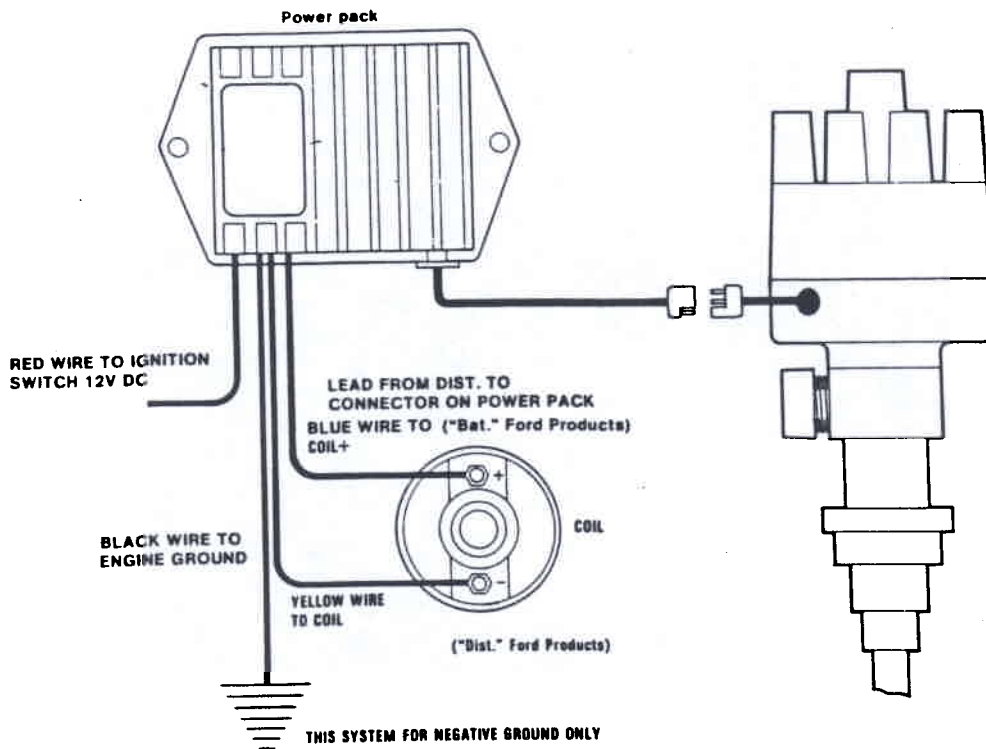
8. Replace distributor in engine, and set timing as per "installation instructions".

•For maximum performance, install 35355 Ignition Amplifier and 140001 Super Coil.

BEI II ONLY

Your Accel B.E.I. II is a solid state electronic ignition system. The unit and its components have been subjected to stringent quality tests during assembly and have undergone a final test just before packaging. You will be pleased with the lack of maintenance after the initial timing adjustment has been made. PLEASE follow the instructions for a successful installation.

Wiring Diagram B.E.I. II (For 12 volt negative ground systems only)



1. Disconnect battery.
2. Install the B.E.I. II distributor in the engine with the gasket, and rotate the housing to a position that eliminates interference with the power pack lead and the mechanical tach, if so equipped.
3. Mount the electronic power pack where it will avoid engine heat and be exposed to as much cool air as possible. **Do not mount the power pack near the exhaust system or on the engine.** The power pack must be mounted so the connector cable from the distributor can be connected without splicing.
4. The wires coming from the power pack are attached as follows: (See Figure A for diagram)
 - A. **Red Wire** - to ignition switch (12 volt D.C. negative ground system).
NOTE: This system is designed to operate best without a ballast resistor wire in the circuit. If used with a resistor, a loss of performance will occur. To operate without a resistor, connect red wire directly to ignition switch.
 - A. **Black Wire** - ground to the engine. **Make sure this ground connection is free from paint, rust and oil.** If the engine is washed, recheck this connection to be sure it is clean and dry.
 - C. **Blue Wire** - to the coil Positive (+) terminal, ("Bat" terminal on Ford Products).
 - D. **Yellow Wire** - to the coil Negative (-) terminal, ("Dist." terminal on Ford Products).
5. Connect the 4 plug connector coming from the distributor to the connector at the power pack.
6. Reconnect battery.

7. Set ignition timing by rotating the distributor housing while using a standard timing light as for conventional ignition systems.

Mechanical Advance Calibration — The standard mechanical advance calibration is 12° distributor or 24° crankshaft. When setting the initial advance, the total mechanical advance, plus the initial setting, determines the number of degrees of spark lead. For example - with standard calibration of 12° (24° crankshaft) plus 10° of initial setting would equal 34° total crankshaft spark lead (34° B.T.D.C.). The actual lead is determined by engine requirement, and total advance should not exceed engine builder's specifications.

IMPORTANT — READ CAREFULLY!

1. To avoid damage to the power pack do not turn engine over with the spark plug wires disconnected. Check spark by removing coil wire from distributor cap and holding ¼" from ground. When cranking engine to adjust valves - check compression, etc. - disconnect red wire.
2. If the distributor is used for racing purposes, or if a high volume oil pump or a steel billet crankshaft is used in the engine, it is necessary that the cast iron distributor gear be replaced with a bronze gear. This is for your engine's protection.
3. Due to the high energy developed by the B.E.I. II, it is imperative that the spark plug wires be in "like new" condition as crossfire and misfire will occur with substandard plug wire. (Spark plug wires must be separated from each other.) See your Accel jobber for specific applications of spark plug wire.
4. Ignition coils are designed for specific performance. If the engine is used with high RPM's, the Accel 140002 Coil should be used. If lower RPM, or street, use a 140001 Coil which has a long spark duration. **Do not use the resistor supplied with 140001 Coil as it is for standard systems only.**
5. The B.E.I. II eliminates spark scatter. If timing scatter still appears on the harmonic balancer when undergoing power timing, the timing chain, oil pump, or cam buttons will have to be adjusted to correct the problem.
6. For those units equipped with a tach drive, the connection is made with a .104" square connection on the tach cable.
7. Many electronic tachometers will not work with a breakerless capacitor discharge system. Should you desire to use an electronic tachometer, check with your tachometer representative.
8. If you are using a R.P.M. Limiter with 3 terminals, connect the normally closed terminal to the + (hot) wire from the ignition switch and the red wire from the B.E.I. II power pack to the common terminal of the Limiter.
9. In order to take advantage of the increased output energy of your B.E.I. II, we recommend gapping the spark plugs .040" - .060". For racing, a richer carburetor setting may be required.

Accel Racing II Dual Point Distributor Adjustment

Point Gap — .018" - .020"

Point Dwell — 26° ea., 34 - 36° total @1000 distributor RPM

Degrees Advance — Round Trackers - 10° distributor @1400 distributor RPM

Drag Racers — 12° distributor @800 distributor RPM

Street — 12° distributor @1400 distributor RPM

Plug Gap — engine manufacturer's recommendation

BEI II Adjustments — Same as Dual Point Advance Specs

Plug Gap — .045" (Use 221000 Gapping Tool)

Coil — Racing - 140002 - 140004

Street - 140001 without resistor supplied

TECH TIPS

Ignition Coils — Mount Accel Coils wherever convenient but in coolest location, never more than 18" from distributor. Be sure polarity is correct. If coil is wired backwards, a 40% loss of energy occurs. If a bulge in a canister coil is noted, there has been too much current through the coil windings. This is caused by leaving ignition switch on, charging voltage too high, no primary resistor or a bad one. (Determine the cause before replacing the coil.)

140001 Super Coil — A high output coil designed for universal 12 volt applications. Resistor supplied to be used for street applications with standard ignition system (points). Do not use resistor for any BEI applications.

Point Sets — Crowned and burnished at factory. Should only be filed in an emergency situation. Prematurely or excessively burned points is a result of improper air gap, wrong or defective resistor, charging system voltage too high, bad condenser, ignition switch left on with points closed. Points will burn grey if electrical system is in proper condition. Replace when pitting occurs.

Rotors — Accel rotors are precision cut to obtain the proper air gap between rotor blade and distributor cap insert. This blade should not be filed as the air gap will be changed. The black carbon build up is a good conductor, so leave it there.

Condensers — Accel condensers are very reliable, made with a heat resistant insulation material, replace it when replacing points.

Distributor Caps — Accel caps are designed for maximum performance and durability, cannot carbon track. Brass inserts are used to prevent oxidation. The black build-up you notice is carbon. Carbon being a good conductor should be left alone. If the cap cracks, no misfire will occur as the alkyl material will not absorb moisture.

Misfire after installation of a high energy coil or ignition system, check following: Leaking plug wires, plug flashover, dirty plug wires (do not use solvent for cleaning), dirty distributor cap, plug wire routing (if side by side cylinder fire in sequence cross the plug wires once). Example: Firing order - 18436572 - cross #5 and #7. Don't forget too lean a fuel mixture.

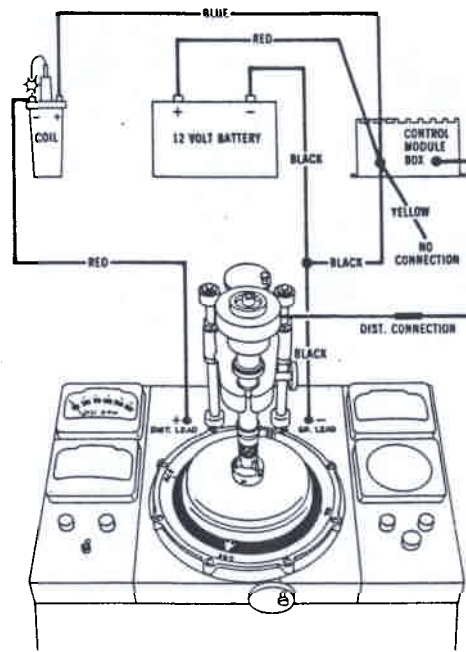
Charging system voltage — should be adjusted to driving habits - mostly highway driving, set low side of specs. - around town driving high side of specs. - racing, high side of specs.

Corona - The blue haze you have noticed around your plug wires at night. This is more noticeable with solid core plug wires. It is the ionization of the air molecules around the wire caused by high voltage. This is a perfectly normal condition.

Racing Plug Application — Heat range for a racing engine is very important. Accel plug numbers indicate the heat range by the fourth digit (241571). If the proper heat range for your engine combination is not known, always start on the "colder" side, "0" cold - "9" hot. Most circle track engines like a "4" heat range. A high compression drag race engine, a "1" or "2" heat range. Remember, your combination determines proper heat range application.

B.E.I. II BENCH TEST

If changes or adjustments are made in the advance curve, you may want to bench test your B.E.I. II before installation. A distributor machine, 12 volt negative ground source, coil wire will be required. Mount the distributor in the distributor machine and wire complete B.E.I. II system per diagram below.



Rotate distributor in proper direction. Determine direction by holding the lower shaft with one hand and moving the upper shaft with the other hand. If shaft moves to right, rotation is clockwise. If it moves to left, rotation is counter clockwise. Rotate distributor slowly, locate degree ring on distributor machine so an arrow points to "0". Increase RPM slowly. Arrow will begin to move at start of the ignition advance. Keep increasing RPM until arrow stops — note number of degrees arrow moved. This reading is distributor degrees advance. Double the reading for engine degrees advance. NOTE: RPM of distributor, double this reading for engine RPM. This is the RPM the ignition advance will total.