



**Installation Instructions for the
ACCEL 300plus ThunderSport
Ignition Kit #49310**

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INTRODUCTION

The ACCEL 300plus ThunderSport Ignition Kit #49310 is designed to convert your Honda or Acura's factory-equipped, inductively-charged internal coil ignition system to a high performance, multi-strike, capacitive-discharged external coil system. The conversion from the stock internal coil to an external coil set-up is necessary because the high voltage and amperage outputs of the ACCEL 300plus ThunderSport control box could easily overheat and burn out the windings of the small internal factory coil.

This kit is designed to be installed without any permanent changes to the stock factory wiring harnesses. No cutting or splicing of any factory wiring is necessary. By saving all the factory stock component parts removed during the installation of the ACCEL 300plus ThunderSport ignition system, you can easily return your engine's ignition system back to factory stock status.

This kit includes the following parts:

Qty.	Part Number	Description
(1)	49310	300plus ThunderSport ignition control box
(1)	140019	CD E-core ignition coil
(1)	M49310	Harness
(1)	120500	Distributor cap
(4)		Hardware kits: INKT1 mounting hardware INKT7 universal coil lead wire kit INKT9 coil by-pass wiring kit INKT10 vibration isolation kit

This illustrated booklet shows the ACCEL 300plus ThunderSport ignition system being installed on a factory stock 1998 Honda Civic EX equipped with a 1.6L D16Y8 1590cc VTEC engine. The installation on your particular year, engine, model Honda/Acura may differ in some details, but it will be similar to what is shown and documented here.

Please read this instruction booklet completely before you attempt to install the ACCEL 300plus ThunderSport Ignition system. The installation is fairly straight-forward and requires only hand tools. It will require about three to four hours to complete. If you have any technical questions, contact the ACCEL Technical Service Department at 216.398.8300 ext. 500.

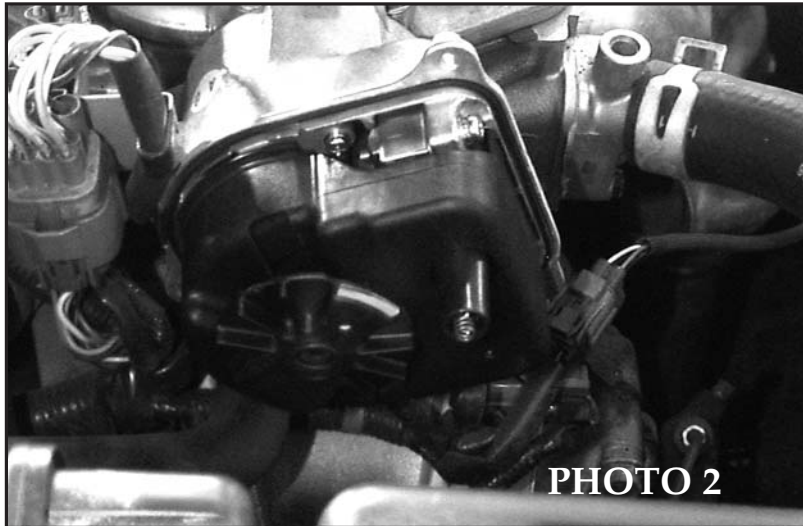


INSTALLATION

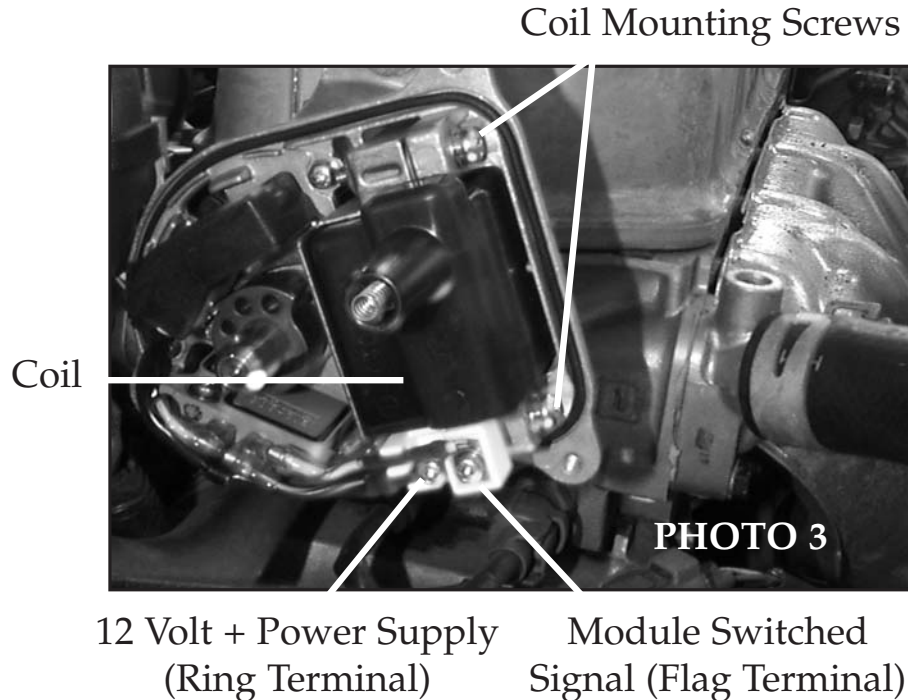
Photo #1 shows the slightly dirty but otherwise factory stock left-hand drive Civic EX engine compartment. To gain easier access to the distributor, it is recommended that you at least remove the air cleaner box cover and air filter. Removing the entire air cleaner box assembly and air inlet tubing will offer greater access to the passenger side of the engine compartment.

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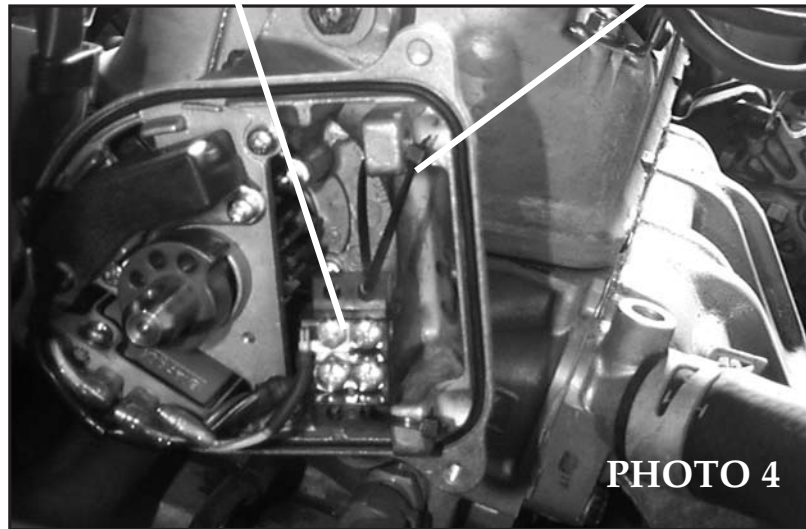
- 1) Do NOT remove the spark plug wires from the distributor cap at this time. Remove the distributor cap from the distributor by removing the three screws that secure the distributor cap to the distributor. Set the distributor cap aside with the spark plug wires still attached.



- 2) Note that the rotor is secured on the distributor shaft by a Phillips head screw (see photo #2). If the screw is not visible, you will have to jog the engine until it becomes visible. This can be done by yourself, but it is easier and quicker with the help of a second person. Once the screw is visible, disconnect the negative battery cable and set it aside so that it can't come into contact with the negative battery terminal. Remove the Phillips screw and slide the rotor off the distributor shaft. Note the condition of the rotor tip. If it is in good condition, it can be carefully cleaned with an emery cloth or fine grade sand paper and reused. If the rotor tip is burnt, heavily oxidized or pitted, the rotor should be replaced.

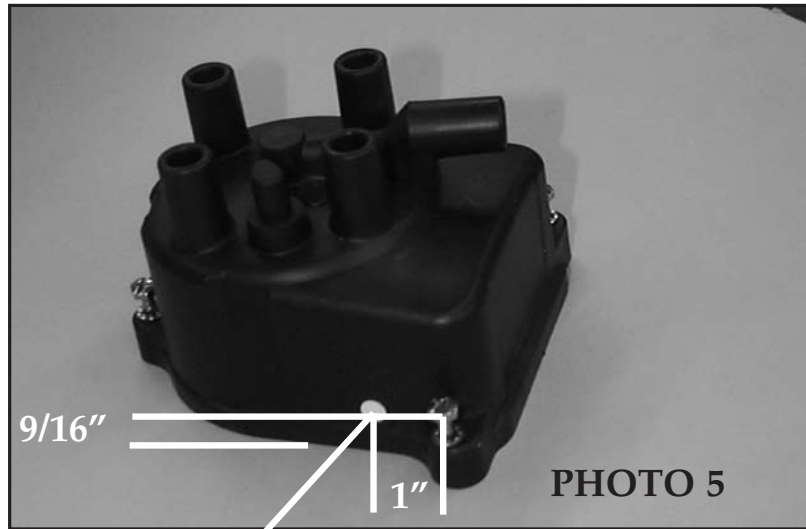


- 3) Now remove the dust cover. See photo #3. Locate the two wire leads that are attached to the factory coil. They are the 12-volt + power supply and the module switched signal, as noted in photo #3. Remove both of these leads from the coil. They are attached by two very short Phillips screws. Remove the two large Phillips screws that are holding the coil to the distributor housing mounting tabs. Remove the coil from the distributor housing.



- 4) Remove the double row 2-way terminal block and nylon tie straps from the poly-bagged coil by-pass hardware kit. If additional nylon tie straps are needed, they are included in the control box and coil mounting hardware kit. Position the terminal block in the distributor housing and secure it, top and bottom with the nylon tie straps as shown in photo #4. Attach both the 12-volt + power supply and module switched signal leads to the terminal block as shown in photo #4.

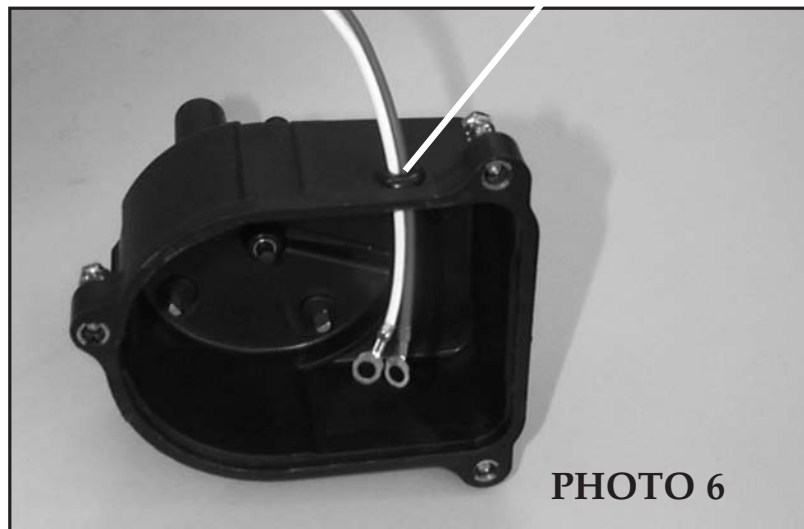
CAUTION: Be careful not to drop these short terminal block screws. If they fall into the distributor, you will have to remove the whole unit to recover them. Also, to attach the flag style terminal of the module switched signal lead to the 2-way terminal block, one of the vertical voltage dams dividers on the terminal block may need to be trimmed. If necessary, do so with great care. These voltage dams keep the circuits from cross-firing or arching to one another. You can use a pair of side cutters or a sharp utility knife to trim the terminal block voltage dam. Remember, it's easier to take a little bit at a time then taking too much and having to start all over again.



Pass Through Hole Drill Location

- 5) The supplied ACCEL Distributor Cap #120500 has been designed with an integral center or fifth tower for the external coil lead. You will have to drill a $3/8$ " pass-through hole in this cap so that the ACCEL external wire harness can be attached to the terminal block inside the distributor. For most applications, the best location to drill this pass-through hole in the ACCEL Distributor Cap is indicated by the dot on the side of the distributor cap as shown in photo #5. The easiest way to drill this hole is by using a drill press, a hand drill or a rotary power tool. DO NOT apply too much pressure while you are drilling or you will crack the distributor cap. Once the hole is drilled, clean up any material around both the inside and outside edges of the pass-through hole.

Seated Grommet in Pass-Through Hole



- 6) Thread the ring terminals on the ends of both the white and red leads on the ACCEL wiring harness through the new pass-through hole in the distributor cap from the outside. Carefully seat the black rubber grommet found on the harness, around the red and white leads wires, into the pass-through hole in the distributor cap as shown in photo #6. A small screw driver or similar tool will help to position the grommet so that it seals flat on both the inside and outside of the distributor cap. This grommet provides a seal against the elements and prevents chaffing of the red and white lead wires against the edges of the pass-through hole in the distributor cap.



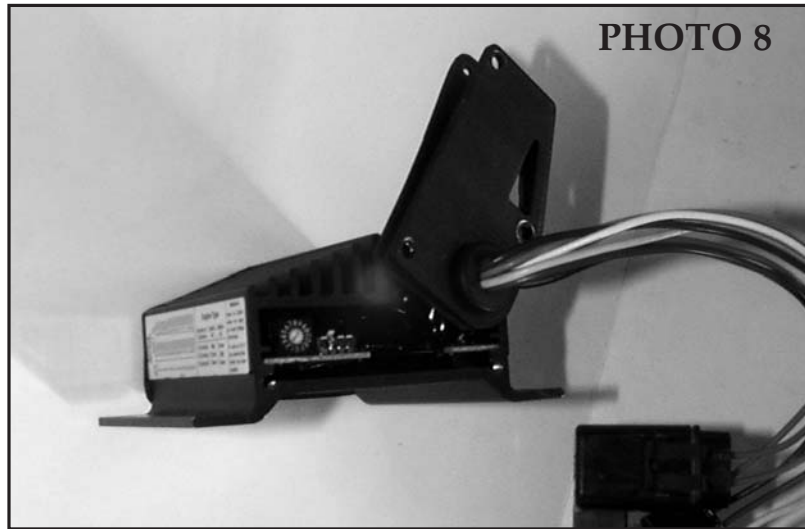
- 7) Inspect the black rubber gasket that seals the distributor cap to the distributor. If it shows signs of being worn, replace it with the new one included in the distributor cap box. Carefully pull the red and white lead wires through the distributor cap to give yourself enough slack to work with. Route the ACCEL red and white harness leads into the distributor, under, behind and around the terminal block as shown in photo #7. Attach the red harness lead to the terminal block directly across from the 12-volt + power lead and the white harness lead directly across from the module switched signal lead, see photo #7.

Reinstall the dust cover. Make sure that you are not pinching the red and white harness leads and that the alignment tabs are positioned correctly. The dust cover may seem loose or not seated firmly on the distributor, but once the distributor cap is installed, the dust cover will be securely held into place. Re-install the rotor and secure with the Phillips screw. Next, slowly slide the distributor cap along the red and white harness leads.

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With a rolling motion, seat the distributor cap onto the distributor. You will need to GENTLY pull out the slack length of the red and white leads inside the distributor cap. You may need to be doing this while you are seating the distributor cap on the distributor to avoid pinching the red and white lead wires. DO NOT excessively pull or tug on the red and white leads, this could damage their connection to the terminal block and render the ACCEL 300plus ThunderSport Ignition system inoperable. Once you have removed the slack on the red and white ACCEL harness leads, secure the distributor cap to the distributor with the three new Phillips screws included in the distributor cap box.

Apply a small dab of RTV silicone sealant to the grommet around the red and white lead wires to provide a weatherproof seal. This is important in applications where the pass-through hole on the distributor cap is facing forward or upward. The green lead wire in the ACCEL harness is for triggering an aftermarket tachometer. If your vehicle is not equipped with an aftermarket tachometer, simply trim off the exposed portion of the green lead or tuck it back under the convoluted conduit covering.

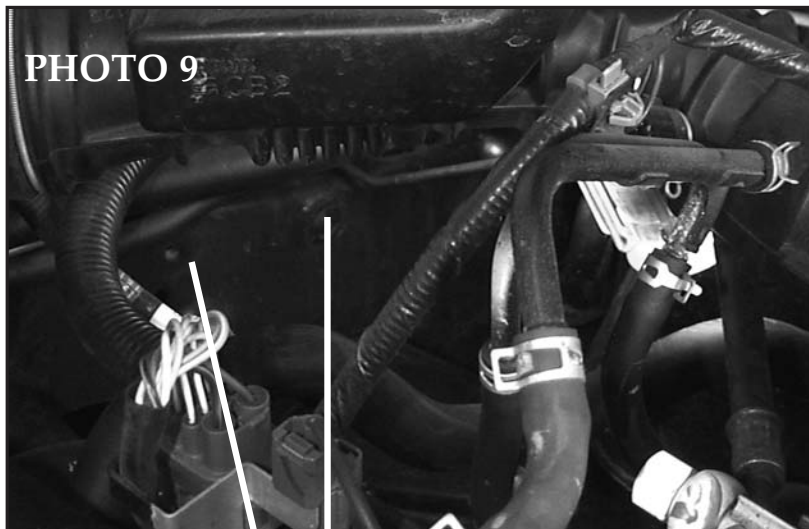


- 8) To set the operating parameters of the ACCEL 300plus ThunderSport Ignition control box, remove the three Phillips screws and pivot the end plate and rubber gasket up on the end of the control box where the pig tail harness leads exit. You will see one rotary switch on the left and four small dip switches in the middle, as shown in photo #8.

NOTE: It is important that the sequential rev limiter be set properly, not only to prevent engine damage, but also to make sure it is not activated at a lower RPM level than the factory set ECU fuel cut-off. If the ACCEL 300plus ThunderSport rev limiter were to be set at a RPM level lower than the factory ECU fuel cut-off, then an ignition spark would not be present in a cylinder, although the ECU would still be firing the fuel injector for that cylinder. This would cause raw fuel to be dumped into the cylinder and exhaust system which could result in backfires and possible tripping of the ECU trouble codes. If this condition were to continue for a period of time, damage to the catalytic converter could result or worse, the cylinders could be washed down or suffer hydraulic failure.

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Determine the factory-set fuel cut-off RPM, which can be found in the factory operator's manual and noted as the maximum recommend engine speed. This should correspond to the noted red line on the factory installed tachometer. Now it's time to set the sequential rev limiter in the ACCEL 300plus ThunderSport control box. For this application we are going to set the rev limiter at 7,000 RPM. By reading the yellow table on the side of the control box, set the rotary dial switch dial to "A" and the first dip switch on the left to the "down" position. Turn on the sequential rev limit by setting the forth dip switch to the "down" position. To tell the control box that your application is a four cylinder engine, you set the second dip switch to the "up" position and the third dip switch to the "down" position, as shown in photo #8. Pivot the end plate and gasket back into position and secure with the three Phillips screws.

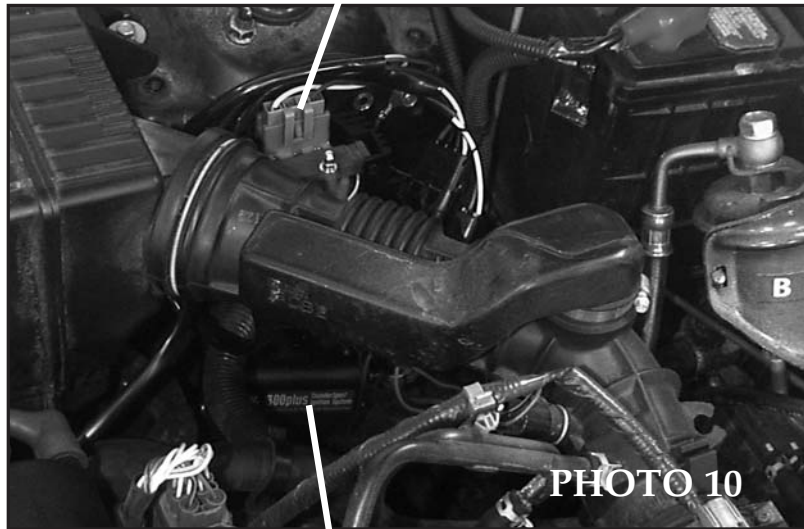


Available Mounting Holes

- 9) The next step is to determine where in the engine compartment to mount the ACCEL 300plus ThunderSport Ignition control box and #140019 CD coil. This will vary by application and vehicle. There is a

control box and coil mounting hardware kit which includes screws, bolts, nuts and other items needed to secure the ACCEL 300plus ThunderSport Ignition system in your engine compartment. Both the control box and the coil can be mounted in any orientation. Make sure the mounting location that you choose is isolated from extreme heat. For this particular installation, we decided that we did not want to drill any additional holes in this vehicle's sheet metal. Instead, we chose to mount the control box on the lower passenger strut tower, using the unoccupied right-hand drive mounting bolt holes as shown in photo #9. The area near the top of the passenger side strut tower was used to mount the coil. This required enlarging the holes in the mounting tabs of both the control box and the coil to accommodate the required 8mm x 1.25mm bolts (not included in the mounting hardware kit). The ACCEL harness included in this kit is designed so that you can mount the control box and coil in any number of locations on the passenger side of the engine compartment. It's all a matter of personal preference and available space.

ACCEL #140019 CD Coil



ACCEL 300plus Thundersport Ignition Control Box

- 10) Once the control box and coil are mounted it is a simple case of plugging in the harness. Because of the harness's design, it can't be plugged in incorrectly. The gray connector plugs into the coil only one way, as shown in photo #10. The two weather-sealed 4-pin connectors, one square and the other flat, plug into the corresponding connectors on the control box's pig tail harnesses. You **MUST** connect the ring terminal on the black lead to a good ground location, preferably direct to the engine block or uni-body. Use the rest of the nylon tie straps and accessories to secure the harness in the engine compartment. It is very important to keep the harness isolated from being chaffed or damaged by moving parts and away from excessive heat.
- 11) Next comes the installation of the new coil lead wire that carries the spark energy from the coil to the distributor cap. The coil lead wire comes complete with the distributor boot and terminal already installed on one end. Insert this end of the coil lead wire into the center or coil lead tower of the distributor cap. Route

the coil lead wire through, around, under and over to the coil. If you have removed any intake air plumbing, reinstall it so that you can make sure there will not be interference with the coil lead wire routing. When determining the desired length of the coil lead wire, remember that it needs to be slack once it is installed. One end of the coil lead wire will be attached to the coil mounted on the uni-body and the other end attached to the distributor on the engine. If the coil lead wire is too short or too taut, you will pull one of the ends off as the engine rocks forward and back. Remember, a coil lead wire makes a bad engine tie down. Once you have determined the correct coil lead wire length for your application, add about one inch in length for safety. Mark the coil lead wire and remove it from the distributor cap. Cut the coil lead wire to length. Strip $5/8$ " off the end of the coil lead wire by using a sharp knife. Carefully and gently cut through the outer jacket, the fiberglass braid and into the inner insulation. Do NOT cut all the way through the inner insulation. If you do, you could nick or cut the inner core alloy conductor and damage the coil wire lead. Photo #11 shows the stripped end of the coil lead wire. If you make a mistake, trim off the damaged end and re-strip the end of the coil lead wire.

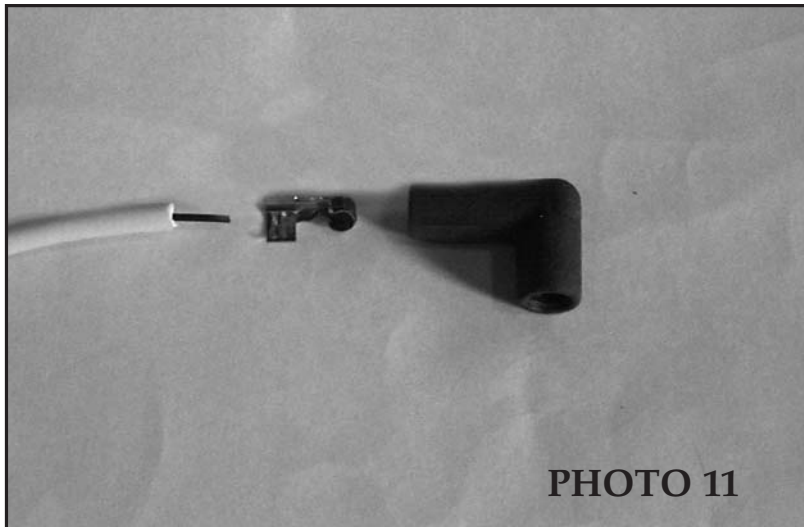
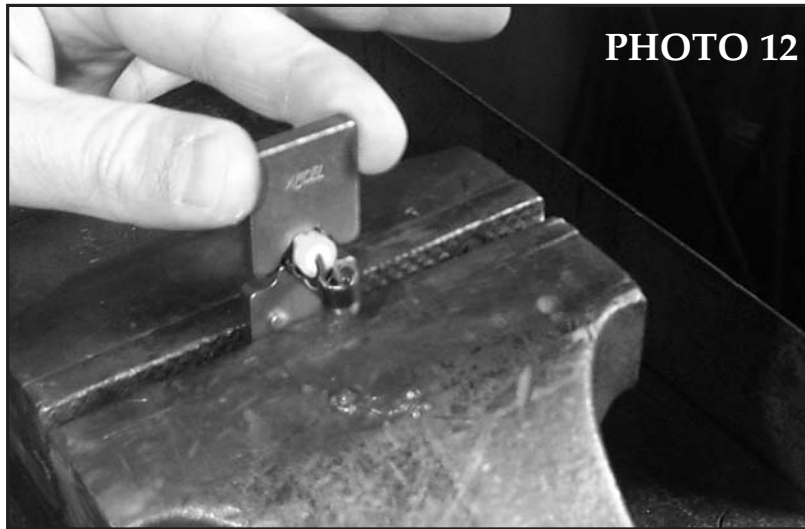


PHOTO 11



- 12) Please see photo #11 for the general orientation of the coil lead wire with its stripped end, the coil terminal and coil boot which are included in the universal coil lead wire hardware kit. To apply the terminal to the end of the coil lead wire (using the supplied steel crimper and anvil), first secure the anvil in a vice. Carefully fold the core of the stripped end of the coil lead wire over and back against the coil lead wire's jacket. Set the end of the coil lead wire into the crimp barrel of the terminal with the folded core against the bottom of the terminal crimp barrel. Using a pair of pliers, partially close the side of the wire crimp barrel around the coil lead wire. Position the terminal and the coil lead wire on the anvil and then the crimper over the terminal's partially closed wire barrel as shown in photo #12. Carefully strike the top of the crimper with a hammer to fully close the terminal's wire chimp barrel. You can also use a quality spark plug wire crimping tool such as ACCEL #170036 HD Professional or 170037 SuperStock to crimp the terminal onto the coil lead wire. Apply some silicone dielectric grease from the supplied packet onto the crimped terminal and carefully insert the terminal into the supplied coil boot. Install the completed coil lead

wire back on the distributor cap, retrace the routing through the engine compartment and plug the coil boot onto the output tower of the #140019 CD coil.

- 13) To make the most of your new-found ignition power, you should replace your factory-installed spark plug wire set. Your factory spark plug wire set has a high resistance core with about 4,500 Ohms of resistance per foot. This high resistance can rob up to 25% of the ignition energy before it can reach the spark plugs! Replace the factory wire set with a high quality, high performance, low resistance spiral core wire set. For this application, we installed an ACCEL 300plus ThunderSport wire set #7913Y.



CAUTION: To avoid miss-indexing the spark plug wire leads on the distributor cap, remove ONE WIRE AT A TIME. Start with the longest spark plug wire lead. First remove it from the old distributor cap, the wire separators and cylinder head valve cover well. Match it up with the longest lead in the replacement spark plug wire set. Install the new spark plug wire lead first into the cylinder head valve cover well, next into the wire separators and then into the corresponding tower of the new distributor cap. Once all the spark plug lead wires are changed, it should look like photo #13.

- 14) Reconnect the negative battery terminal and you are ready to start up your newly fortified engine. If you have installed the ACCEL 300plus ThunderSport Ignition system correctly and did not cross any of the spark plug wires leads on the distributor cap, the engine should start right up. If not, check the firing order of the engine and verify the correct spark plug wire lead placement on the distributor cap. Once the engine is running, verify that the tachometer is functioning correctly. You may notice a slight buzzing or clicking sound emitting from the control box. This is caused by

the normal operation of the capacitor as it delivers the power to the coil. This sound can become amplified due to mounting the control box directly to the sheet metal of the uni-body. To isolate and reduce the noise generated, a vibration isolation kit consisting of rubber and rubber-coated steel washers is included. You can also use a HD racing-style anti-vibration mounting kit such as ACCEL #490050.

- 15) Because of the high energy output of the ACCEL 300plus Thundersport ignition system, your engine now has the ability to increase the air/fuel mixture burn efficiency, unlocking hidden performance potentials. The results you should notice include faster starting, smoother idling, quicker and easier free-revving, as well as increased fuel efficiency and lower hydro-carbon and carbon monoxide emissions. On highly-modified engines with super or turbo charging, high compression pistons or nitrous oxide, the combustion pressure is drastically higher than on a stock engine. This also increases the resistance at the spark plug gap. The ultra-high energy output of the ACCEL 300plus ThunderSport ignition system overcomes this higher resistance and creates a faster, hotter and longer lasting ignition flame kernel for a more complete burn of the highly charged air/fuel mixture. What this translates into are results you can see and feel – such as smoother delivery of power, quicker acceleration, and improved peak power.



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