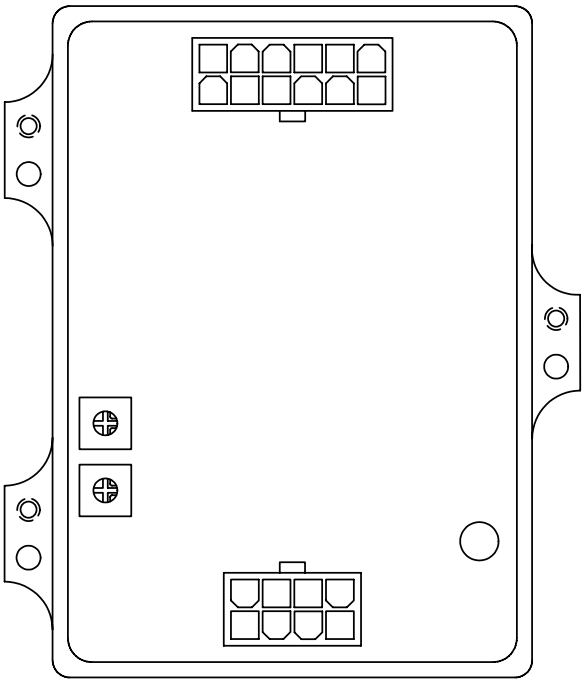
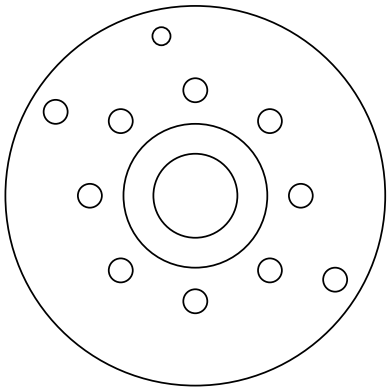
PROBE ENGINEERING, INC.

Installation Instructions

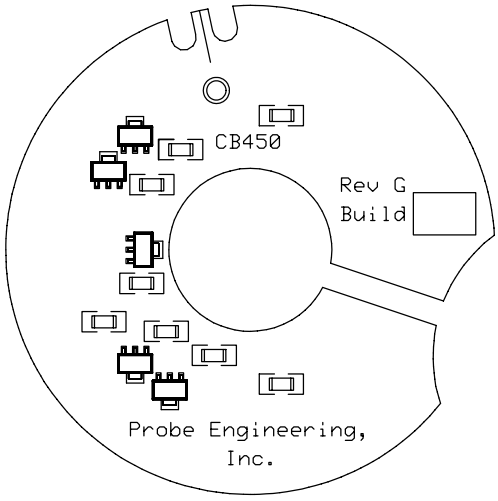
Model BT-45 Electronic Ignition



Control Module



Trigger Rotor



Pickup Plate

PROBE ENGINEERING, INC.

Installation Instructions, Model BT-45
Version 1.0

The Model BT-45 electronic ignition is designed specifically for 1960s and 1970s Honda CB450, CL450, and CB500T motorcycles using derivatives of Honda's U.S.-version 180º crankshaft twin-cylinder engine. The Model BT-45 ignition is not intended for the 360° crankshaft Japanese-market CB450 engine. The two CB450 variants can be easily told apart; the 180° crankshaft U.S. version has two sets of ignition breaker points and two separate coils, while the 360° crankshaft Japanese version has one set of breaker points and one dual-tower coil.

Table of Contents

What should be in the kit:

The Model BT-45 kit includes the following components:

- Control Module
- Pickup Plate (with wire harness)
- Pickup Plate Spacer
- Pickup Plate Connector Housing
- Trigger Rotor
- Power Cable Harness
- Pair of NGK BR8ES spark plugs (the use of resistor-type plugs is required)
- M6 by 12mm screws with rubber-faced flat washers (for retaining the Pickup Plate)
- 9V battery adapter harness (for optional static-timing procedure)
- Spare red, black, green, and orange wires (1-foot long each, for optional accessories)
- Tie-wraps (for organizing the wiring)

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What else you will need:

In addition to the usual small hand tools required to get access to the engine's breaker-points assembly and to remove the fuel tank, side panels, etc., installation will require the following tools and supplies:

- Solderless crimp-type connectors, bullet connectors, or solder and shrink tubing
- Loctite® "blue" medium-strength thread-locking compound or equivalent
- Xenon-flash timing light

Installation:

1. Remove the side panels, if applicable (for general access).

2. Remove the seat.

3. Disconnect the battery.

4. Remove the fuel tank (you will need access to the ignition coils).

5. Remove the alternator rotor cover (for setting the timing).

6. Remove the breaker-points cover.

7. Remove the bolt and washer that secure the centrifugal advancer mechanism and put them aside (they will be reused to retain the electronic ignition's Trigger Rotor).

8. Remove the two screws and washers that retain the points backing plate, and put them aside (they will be reused to retain the electronic ignition's Pickup Plate).

9. Disconnect the yellow and blue wires that go from the breaker points to the coils and condensers.

10. Remove the breaker points, backing plate, and wiring as an assembly. You will have to pull the blue and yellow wires and their gray plastic jacket through the hole in the rear surface of the points housing.

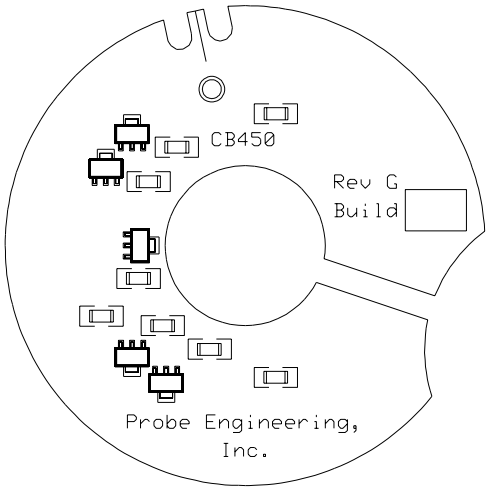
11. Remove the grommet from the hole in the rear of the points housing (if it did not come out with the breaker points wiring).

12. Disconnect and remove the condensers (they should not be used with the solid-state ignition).

13. Remove the advancer mechanism from the 11mm diameter quill on the end of the camshaft. It may need gentle persuasion in the form of mild heat, penetrating oil, or a puller. If a puller is required, you can loosely reinstall the retaining bolt a few threads shy of full engagement to use as the "push" point.

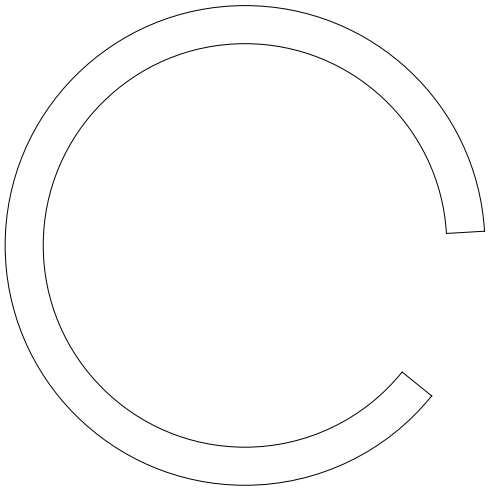
14. Clean any gross rust or debris from the cam-end quill and from the seating surface (shoulder) at the base of the quill.

15. Locate the Pickup Plate in the ignition kit. It looks like this:



16. Seven Teflon-insulated wires surrounded by a braided-copper shield exit from the back surface of the Pickup Plate. The far ends of the wires have crimped-on terminals, but are not installed in a connector housing, so that they can be fed through the wire lead-out hole at the rear of the points housing. Carefully, using just fingers, feed the wires through the hole. The shield may be slid up along the colored wires to give more free length, so that the wires can be fed through the hole more easily.

17. Locate the Pickup Plate Spacer in the kit. It looks like this:



18. Slip the spacer gap around the wire bundle behind the pickup plate, and install the spacer in the original points-plate relief in the housing, oriented as shown in the drawing above (the gap in the spacer straddles the exhaust rocker-shaft locknut).

19. Install the pickup plate on top of the spacer; when the pickup plate is seated, it will be "proud" to the surface of the housing by ten or twenty thousandths of an inch, so that the screws and washers can retain it firmly.

20. Loosely install the two M6 pan head screws with rubber washers supplied in the kit to retain the pickup plate. Tighten just enough so that the spacer and plate won't fall out of the relief.

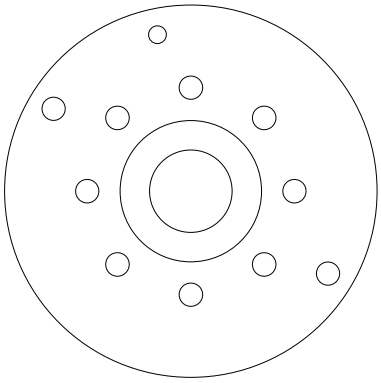
21. There is a yellow line on the pickup plate at about the 11:00 position that splits the "adjuster" tongue right up the middle. Position the yellow line so that it's centered in the adjuster relief cutout in the points housing, and tighten up the two pickup plate retaining screws.

22. Remove the spark plugs.

23. Using the hex head in the center of the alternator rotor, rotate the engine counterclockwise until the 3mm dowel at the base of the cam's quill shaft is approaching the 12:00 position – the engine will be nearing TDC for the left cylinder on the compression stroke.

24. Align the alternator rotor's "LT" mark with the corresponding indicator pointer in the alternator housing. This will put the engine at TDC/compression for the left-cylinder, with the 3mm camshaft dowel more or less "straight up."

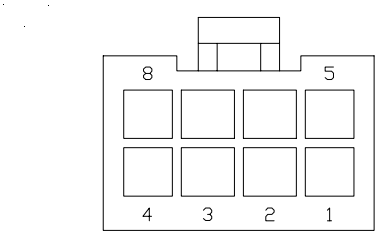
25. Locate the Trigger Rotor in the kit. It looks like this:



26. The rear hub of the rotor has a notch that locates over the 3mm dowel at the base of the quill; slip the rotor onto the quill and register the notch over the dowel.

27. Using the original retaining bolt and washer from the centrifugal advancer, bolt the trigger rotor in place. It's good practice to use the medium-strength (Loctite "blue" or equivalent) anaerobic thread locker on the trigger rotor retaining bolt.

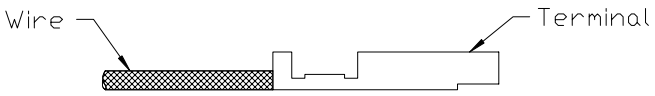
28. Locate the Pickup Plate Connector Housing in the kit. It has barely-legible numbers molded into the rear flange surface that denote each wire's "position" number. From the wire-entry end, it looks like this:



Scale 2:1

29. You are going to install the seven connector terminals of the pickup plate leads into this housing. The terminals insert into this end (this view) of the housing; they push into place and "click" when they are fully inserted and captured.

30. The terminals must be correctly oriented in order to install in the housing. From the side view, the terminals look like this:



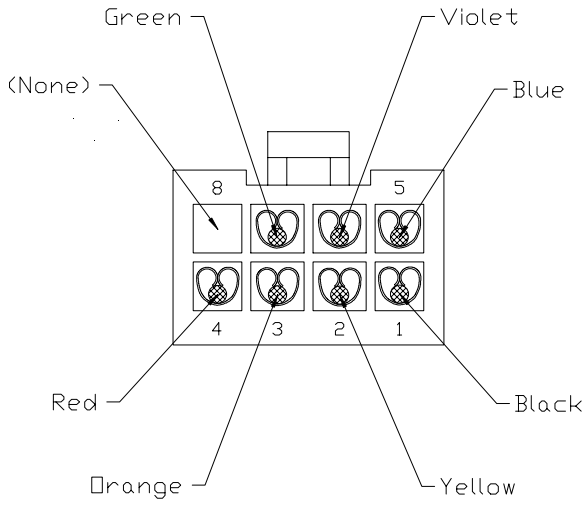
Scale 2:1

Seen from the wire end, the terminals look like this:

Scale 2:1

with a heart-shaped insulation crimp gripping the wire.

31. The terminals install into the housing oriented as shown below, with the wire colors in each position as indicated:



Scale 2:1

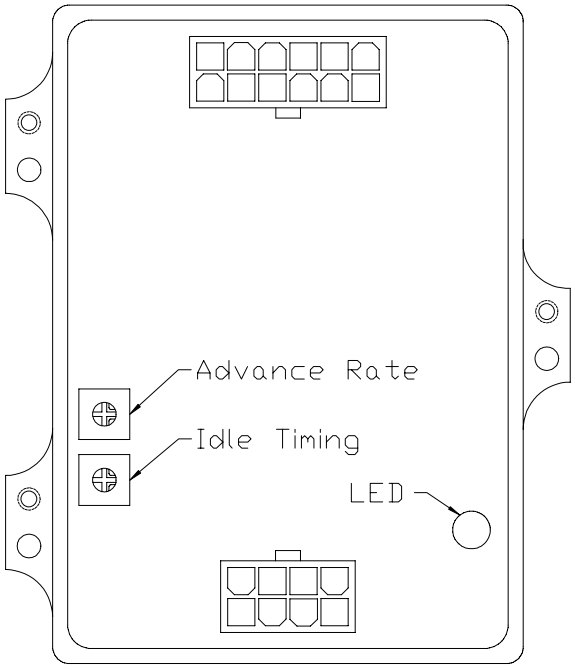
When the terminals are correctly oriented, they will slide into the housing without undue force, and will seat with a “click” when fully inserted. To be sure that the

terminals are fully seated, compare them to the termination of the Power Cable Harness, which is factory-assembled.

If you have poor color vision, or are otherwise unsure of your ability to get the right color wires in the correct location and the terminals properly inserted, STOP! and get assistance from someone who is equipped to do this step. If the wires are installed into the wrong position and power is applied, the system will not work properly and you may damage the Pickup Plate assembly; such installation damage is NOT covered under warranty.

If a wire color does end up in the wrong position, a terminal extractor tool is available by mail order from Digi-Key Corporation (www.digi-key.com); their part number is **WM9918-ND**. By the time it's in your hands, the extraction tool will cost you about $30.00 and will not look like a bargain, but there's no other way to get a wrongly located terminal out without destroying the connector, so take your time and get this critical step right the first time.

32. Locate the Control Module in the kit. It looks like this:



33. There is a 12-pin connector housing at the "top" of the module, 8-pin housing at the "bottom" of the module, two blue potentiometers (one for adjusting the

advance rate, and another for setting the idle-speed timing), and a red LED. The 8-pin connector into which you just installed the pickup plate wires mates with the 8-pin connector housing in the control module, and the Power Cable Harness mates with the 12-pin connector.

NOTE: The installation steps you've completed to this point have already located the Pickup Plate and Trigger Rotor with sufficient accuracy that you will be able to start and run the engine, after which ignition timing will be finalized using your Xenon-flash timing light. If you are a racer with a non-stock or absent alternator rotor, or are experienced in using a degree wheel to set timing, the following optional steps #34 through #44 will guide you through the process before you complete the rest of the installation. If you are NOT using a degree wheel to set the timing, skip directly to Step #45 now.

34. To set the ignition timing using a degree wheel, begin by temporarily hanging the control module somewhere near the left crankcase, so that you can see the module's red LED with your peripheral vision while turning over the engine and watching the degree wheel and timing pointer.

35. Plug the 8-pin connector from the pickup plate assembly into the mating part of the control module.

36. Locate the 9V battery adapter harness in the kit. It has a familiar two-snap connector for a 9V rectangular battery on one end and a 12-pin connector on the other.

37. Snap a fresh 9V battery onto the matching terminals of the connector harness (you do this first, before plugging the harness into the module, so that if you get the battery terminals backward at first, nothing bad will happen).

38. Plug the battery harness into the 12-pin mating part of the control module.

39. Using a socket or box end wrench on the left-hand crankshaft end, rotate the crank slowly counterclockwise while watching the degree wheel, the pointer, and the module's red LED. This will be made easier by first removing the spark plugs, so that you're not working against compression (you will still be working against valve springs, which is trouble enough). If you choose to remove the plugs, be careful not to drop anything down into the cylinders.

40. As you rotate the engine, the red LED on the control module will alternately illuminate and go dark. Lighting up signifies that the left-hand Hall-effect "run" sensor (for the left-hand cylinder) is in the "dwell" mode; this is when coil current

will be passing through the coil when the installation is complete and the engine is running.

41. Exactly as the LED goes dark at the end of the dwell mode is when the spark plug for the left cylinder will fire at the full-advance point. *Note that unlike the points-type setup, for which factory-type "static" timing is usually done at the full-retard position, the electronic ignition's timing LED changes state at the full-advance point.* Also note that once the LED goes dark at the "fire" point, you can't get it to re-illuminate by just "backing-up" the crankshaft a few degrees like you can with a points setup; you must continue rotating the crankshaft counterclockwise to get back into dwell mode for the next "fire" event.

42. If the LED goes dark when your degree wheel is exactly at the desired full-advance "fire" position, you can leave everything set up as is. If correction is needed (the more likely case) to get the timing precisely where you want it, loosen the two M6 retaining screws and adjust the pickup plate's position to advance or retard the timing. Rotating the pickup plate clockwise advances the timing, and rotating it counterclockwise retards the timing. For every 0.022" of movement at the edge of the pickup plate, the timing will change by two degrees at the crankshaft.

43. When you've got the full-advance timing set, tighten the two pickup plate hold-down screws.

44. Disconnect the pickup plate wire harness and the 9V battery harness from the control module.

If you're not a racer using a degree wheel to set the ignition timing, resume the installation at Step #45, below:

45. Find a place where you'd like to mount the control module. Now is the time to plan the routing of the wires from the pickup plate to the module; the plate's wire bundle is 36" long end-to-end, so be sure that the module location you select is within reach of the pickup plate wires.

46. When you mount the module, it is handy to have screwdriver access to the two blue potentiometers. The idle-timing potentiometer is pre-set at the factory, but may be varied by those who prefer more or less idle-speed advance than standard. The advance-curve rate is pre-set at the factory to be all-in (full advance) at 3,250 RPM, but is adjustable to be all-in anywhere between 3,000 and 4,000 RPM. Directions on how to adjust both of these controls are included in Appendix 1 of these instructions.

47. The control module should be mounted where it will not be directly exposed to engine heat. Each of the module's three mounting feet has one M3 x 0.5mm tapped-through hole and a 0.125" diameter clearance hole. Each clearance hole will pass an M3 screw, a #4-40 screw, or a 1/8" diameter pop-rivet. Thus, there are several options available to obtain a secure mount for the module, and the installer should employ his or her preferred method. The module dissipates low power during operation, and will get just warm to the touch. It does not require direct airflow, but should not be mounted in a sealed volume with no airflow at all.

48. Route the pickup plate assembly's wire bundle to the location of the control module. The pickup plate wires are insulated using high-temperature Teflon, and can be routed pretty much anywhere (except to an exhaust pipe!) without major temperature concerns. *However, the pickup plate wires must be kept well away from the spark-plug leads, so that the electronics won't get confused or damaged by radiated spark energy from the high-voltage secondary side of the coil.*

49. Look at the12-pin connector at the end of the Power Cable Harness. On the connector's rear surface are the (hard-to-see) molded-in numbers showing each wire's position; these wires are pre-installed at the factory. Numbers 1 through 6 are in the first row (furthest away from the molded "latch"), and 7 through 12 are in the second row. The wires in each position are described in the following table. For the basic system installation, you only have to deal with the six wires shown in **boldface** type:

♦ Position 1:	**Heavy-gauge green wire – goes to chassis ground**
♦ Position 2:	Open (reserved for kill-switch option)
♦ Position 3:	Open (reserved for electronic tach option)
♦ Position 4:	Open (reserved for electronic tach option)
♦ Position 5:	Open (reserved for electronic tach option)
♦ Position 6:	**Heavy-gauge red wire – goes to switched +12 volts**
♦ Position 7:	Open (unused)
♦ Position 8:	**Heavy-gauge green wire – goes to chassis ground**
♦ Position 9:	**Heavy-gauge blue wire – goes to right-cylinder coil**
♦ Position 10:	Open (reserved for electronic tach option)
♦ Position 11:	**Heavy-gauge green wire – goes to chassis ground**
♦ Position 12:	**Heavy-gauge yellow wire – goes to left-cylinder coil**

50. **Important notes**:

- When routing wires, keep the power cable harness wires separated from the pickup plate wires.
- It is important to keep *all* wires away from the high-voltage spark plug leads. We strongly recommended the use of carbon-type suppression plug wires or modern spiral-wound suppression plug wires with electronic ignition systems.
- If you cannot use suppression-type wires, you must use resistor plug caps (at least 5k ohm, as the Honda original components).
- The use of resistor-type spark plugs is required with the BT-45 system. NGK brand plugs will have an "R" in the alpha prefix if they are resistor type.

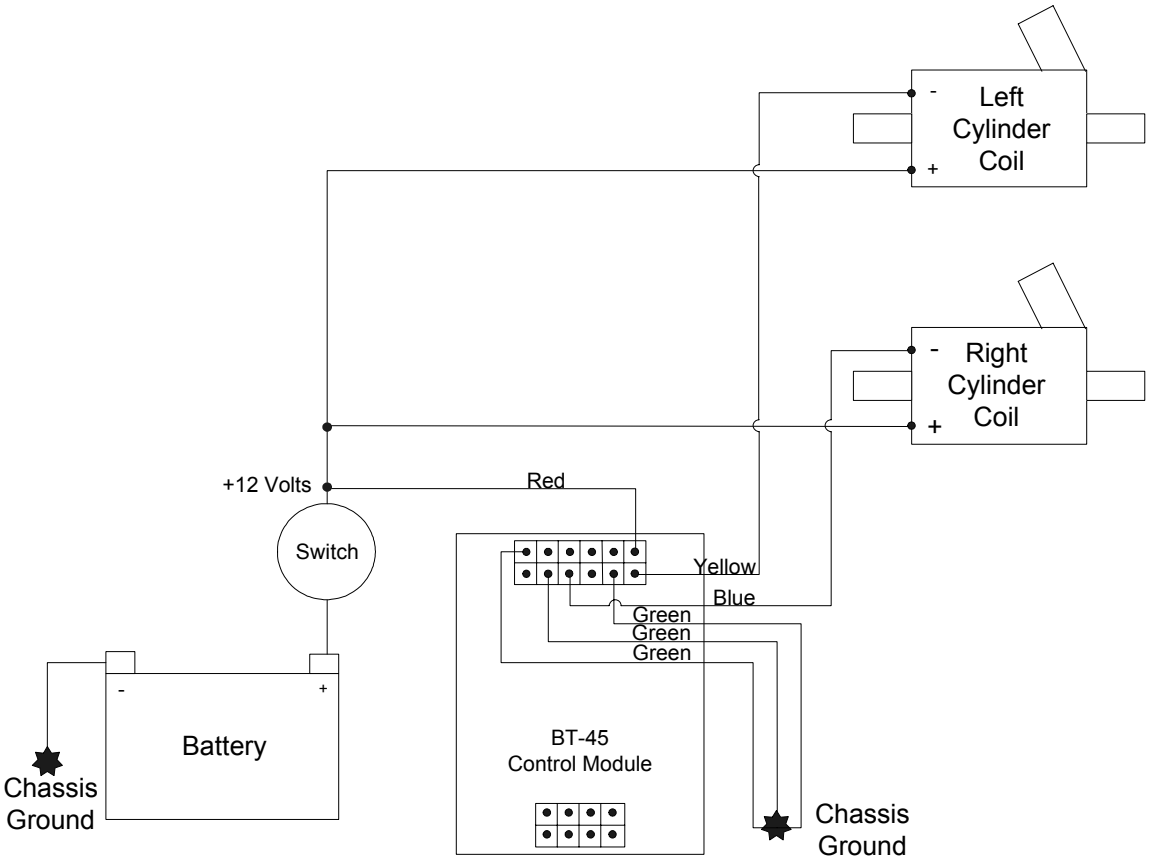
51. The power cable harness' heavy-gauge green wires (connector positions 1, 8 and 11) must go to a good chassis ground. All the usual notes apply regarding the ground being free of paint and being clean, bright metal. It is not unusual to find things such as battery boxes rubber-mounted, with no direct electrical path to chassis ground; make sure your "ground" really is one. The ground wires are 18" long as supplied. If you want to make them shorter, you may, but they should not be extended.

52. The power cable harness' heavy-gauge red wire (connector position 6) goes to a switched source of +12 volts. You can pick this up from the wire supplying +12 volts to the ignition coils. On the stock CB/CL450 series, these are black with a white stripe in the original Honda wiring harness; they go to the coils' (+) connections.

53. The heavy-gauge yellow wire (connector position 12) goes to the minus (-) terminal of the ignition coil for the left cylinder.

54. The heavy-gauge blue wire (connector position 9) goes to the minus (-) terminal of the ignition coil for the right cylinder.

55. The following wiring diagram shows how the system connections should be made. For those not familiar with such diagrams, a "dot" where wires meet signifies that they are connected together electrically, while a "jog" signifies that they are not connected.



56. Once you've got the pickup plate wire harness and the power cable harness wiring and routing complete, plug the two connectors into the control module.

57. Reconnect the battery.

58. Disconnect the spark plug caps and remove the spark plugs. Reinstall the caps onto the BR8ES resistor-type spark plugs supplied in the kit, and lay the threaded base of the plugs down so they contact the cylinder head surface. **Make sure that the spark plugs are well away from the empty spark plug holes in the head, and that the carburetors and cylinders are "dry" (no fuel), so that you will not ignite fuel vapor with the sparks you are about to create at the plug gaps.**

59. Turn the ignition key to the "on" position, or otherwise energize the ignition with battery power.

60. Rotate the engine through a couple of revolutions while keeping an eye on the spark gaps in the two spare plugs. Each plug should spark in turn.

61. If everything looks good, switch ignition power to the "off" position.

62. Disconnect the spark plugs from the plug caps, install the resistor plugs in the engine, and reinstall the plug caps onto the plugs.

If you used the racer/degree-wheel method to set the ignition timing, you may want to skip steps #63 through #70, or else substitute your own timing marks for the factory alternator rotor's full-advance "hash" marks in the following steps.

63. Reinstall the seat, any side panels, and the fuel tank; open the petcock, and set the choke or enrichener, as needed for a cold start.

64. Loosely reinstall the alternator cover; you are about to start and warm up the engine, and this will minimize the oil-fling mess from the "wet" alternator cavity.

65. Start the bike. The kick or electric starter may be used (or for racers, you may use a bump-start or powered starter rollers).

66. Warm up the engine a little bit, so that it will carburet cleanly.

67. Connect a xenon-flash timing light (the bright kind) to the left-hand cylinder's spark plug wire and to the battery, if required.

68. With the engine stopped, remove the alternator cover again, and restart the engine. Watch out for oil fling.

69. With the timing light operating and aimed at the alternator rotor, rev the engine up about 3,500 RPM. You'll see the timing advance from somewhere around the "LF" mark (at low speeds) to the full-advance marks; as you approach 3,250 RPM, you'll see the last degree of two of spark lead come in, and thereafter, there will be no further advance. At 3,500 RPM, the timing light should "freeze" the alternator rotor's timing indicator somewhere between the two full-advance marks for the left cylinder.

70. If correction is needed in the pickup plate position to get the timing spot-on, loosen the two retaining screws and adjust the plate's position clockwise to

advance the timing, or counterclockwise to retard the timing. For every 0.022" of movement at the edge of the pickup plate, the timing will change by two degrees at the crankshaft.

71. Once you have the full-advance timing set correctly, check the idle-speed timing. Let the engine idle at its recommended idle speed (see your owner's manual; Clymer says the correct 450 twin idle speed is 1,000 RPM), and shine the timing light on the alternator rotor. You will see the rotor's "LF" idle-speed timing mark "frozen" somewhere near the fixed reference mark. To finalize idle-speed timing, the blue Idle Timing potentiometer on the face of the control module can be used to alter the low-speed timing delay; turning the potentiometer clockwise increases the timing delay and retards the timing; turning the potentiometer counter-clockwise advances the timing.

72. Move the timing-light pickup to the right-hand cylinder's plug wire and check its timing at 3,500 RPM. The relative spark timing should be very close to that of the left-hand cylinder. Small differences can be "split" by repositioning the pickup plate a little, if desired. Generally, the timing will be as identical as printed-circuit board tolerances and Hall-effect device matching will allow.

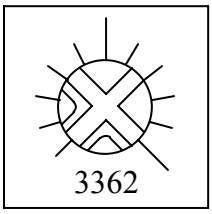
73. When the desired timing has been set and verified, shut off the ignition power, close the petcock, and reinstall the alternator rotor cover and points housing cover, and top up the oil level.

Appendix 1, advance curve options:

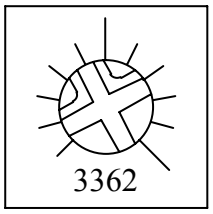
The Model BT-45 system is delivered with the advance-curve rate adjustment potentiometer set for all-in timing at 3,250 RPM. The adjustment range is from 3,000 RPM all-in timing (potentiometer set to its counterclockwise limit) to 4,000 RPM all-in timing (potentiometer set to its clockwise limit). Any intermediate value between the two limits may be obtained.

The following figure illustrates three positions of the advance-curve rate adjustment potentiometer:

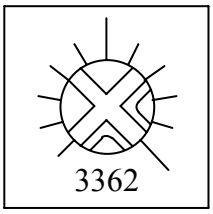
3,000 RPM



3,250 RPM (as delivered)



4,000 RPM



If you look carefully at the potentiometer, you'll see the markings "3362" along one edge, and engraved position markers around the adjustment screw. The screw has a small relieved area that shows where it is set.

The middle image shows the potentiometer setting as delivered, with the all-in timing set to occur at 3,250 RPM. The left image shows the screw at its counterclockwise limit, where the all-in timing occurs at 3,000 RPM. The right image shows the adjustment screw at its clockwise limit, where the all-in timing occurs at 4,000 RPM.

If you change the advance rate using the advance-curve adjustment potentiometer, it will also change the idle-speed timing; advancing the all-in timing from 3,250 RPM to 3,000 RPM will make the idle-speed timing advance, and retarding all-in timing from 3,250 RPM to 4,000 RPM will have the opposite effect. So, if the advance-rate potentiometer is changed, the idle-speed timing potentiometer must be readjusted.

Summarizing, here are the relationships between the various timing adjustments of the BT-45 system:

- Full advance is set by rotating the sensor assembly. Changing the full advance timing will also alter the idle-speed advance, which can then be corrected with the idle-speed advance potentiometer. Changing the full advance point will not affect the advance-curve rate.

- The spark timing at idle is set using the idle-speed advance potentiometer. Changing the idle-speed advance potentiometer setting doesn't affect either the full advance timing or the advance-curve rate.

- The advance-curve adjustment potentiometer changes the engine speed at which full advance is achieved. Changing the advance-curve potentiometer doesn't alter the full-advance timing, but does alter the idle-speed timing, which can then be corrected using the idle-speed advance potentiometer.

Appendix 2, tachometer and kill switch options:

As noted in the wiring table earlier in this document, there are tachometer and kill switch options available. If you've completed the basic ignition system installation, you've already dealt with the six heavy-gauge wires that came pre-installed in the 12-pin power cable harness connector. The remaining five open positions on the connector housing are associated with the tachometer and kill switch options. Their numbers are:

♦ Position 2:	Kill switch
♦ Position 3:	"4-cylinder" tachometer output (2 pulses per engine revolution)
♦ Position 4:	Return (ground) wire to tachometer (powers tach)
♦ Position 5:	+12V power to tachometer
♦ Position 10:	"2-cylinder" tachometer output (1 pulse per engine revolution)

Positions 3, 4, 5, and 10 are for the system's electronic tachometer drive. You can connect a typical electronic tachometer to the control module, and drive it entirely without having to make any other connection to the bike; the tach will draw both power and RPM signals directly from the module.

The control module's tach outputs make two different "rates" available; **connector position 10** carries the **"2-cylinder"** tachometer output, which gives one signal pulse per crankshaft revolution, exactly the way a 2-cylinder 360º crank engine with a dual-tower coil (waste spark on one cylinder or the other on each rev) would do. An electronic tach for a 4-cylinder bike will generally tie to just one coil; these also usually operate at "2-cylinder" tach rates, since each coil services two cylinders 360 crank degrees out of phase, as described above.

Connector position 3 carries the **"4-cylinder"** tachometer output, which gives two signal pulses per crankshaft revolution, exactly the way a 4-cylinder automotive engine would do. This output gives you the option of tapping into the automotive aftermarket for tachometers. Most of these will have 4-6-8-cylinder selection options; pretty much

any automotive tach that can be set to a 4-cylinder calibration will work. We have found aftermarket automotive tachs to be inexpensive, rugged, reliable, and typically more accurate than the average OEM bike tach.

Connector position 5 carries **+12V**, which you can connect to the tachometer to power it (but you don't have to; if you prefer to wire the tach directly into the bike's system, you can). If you use this power lead, it's a VERY GOOD IDEA to put one of those in-line fuse holders into the tach's power lead. A 500mA (one-half ampere) fuse is about right; an Auto-Meter mini-tach, for example, draws only about 150mA with the backlight illumination running.

Connector position 4 is the return (**ground**) wire, which you also connect to the tachometer to power it, if you elect to obtain both tach signal and power from the control module.

Typical automotive aftermarket tach wire color codes seem to have become fairly standardized (BUT READ YOUR LITERATURE, AND USE IT AS A GUIDE!). They are:

- +12V power: red lead
- Ground: black lead
- Tachometer RPM input: green lead
- Backlight: white lead (sometimes this is not present, and the red +12V lead powers the lights, too).

The Model BT-45 installation kit includes terminated wires that can be inserted into the 12-pin connector housing for tach connection, and they are color-matched to the typical automotive aftermarket pattern. They are:

♦ Position 3:	"4-cylinder" tachometer output (GREEN WIRE)
♦ Position 4:	Return (ground) wire to tachometer (BLACK WIRE)
♦ Position 5:	+12V power to tachometer (RED WIRE)
♦ Position 10:	"2-cylinder" tachometer output (GREEN WIRE)

Since you use EITHER position 3 or position 10 for the tach output, there is only one green accessory wire in the kit. The wires are 12" long; you will have to splice them, as appropriate, to your tachometer leads. The terminals preinstalled onto the ends of the wires insert into the housing from the back end (where the molded-in numbers are, and where the pre-installed wires are sticking out). The terminals "snap" into place and are then permanently retained; you can feel and hear them "click" when they go all the way home.

The simplest way to see how the terminals must be oriented to snap them into place is to use one of the other five wires that are already installed in the connector as a guide. You want to align the heart-shaped "insulation crimp" that bites into the colored part of the wire so that it matches the pre-installed wires.

If you get a wire in the wrong hole, the special remover tool is available mail-order from Digi-Key (www.digi-key.com); their part number is **WM9918-ND**.

The last option is the Kill Switch:

♦ Position 2: Kill switch (ORANGE WIRE)

This one's easy. If you install this wire in connector position 2, and the other end of the wire is shorted to chassis ground, the plugs will stop sparking for as long as the electrical connection is made. The kill function does NOT disable the ignition's control module or tachometer; they continue to operate (the module draws about 100mA). What the kill function does is to inhibit the coil current, so that there can be no spark.

If you wire in an old-fashioned momentary kill button and push it with the engine running, all cylinders will stop firing for as long as you hold down the button. You can also use a toggle-type switch to ground, so that the sparks are interrupted when the switch is in the "kill" position. You can connect more than one kill switch to the wire from the control module if you want to; the rule is if ANY ONE of the multiple (parallel-connected) switches is in the "kill" position, there will be no spark.

Other details and notes:

- The Model BT-45 ignition system has two magnets spaced at 180º on the trigger rotor; one magnet results in a "fire" command from the right- or left-hand cylinder's Hall-effect sensor pickup, and the other magnet results in a "dwell" command. "Fire" interrupts battery current through the ignition coil's primary windings, and "dwell" resumes current through the coil; this means that each coil's "crankshaft dwell" is 360º, much longer than is provided by points-type ignitions. At 10,500 crankshaft RPM, this equates to a dwell time of just over 5.7 milliseconds, which is adequate to get most of the maximum coil energy to the plug. The benefit of the electronic ignition's longer dwell time compared to points is higher spark energy (able to jump a larger gap at higher cranking pressures); this will be particularly true at higher engine speeds.

- For those who are running high-compression, high-RPM applications and wish to use high-performance aftermarket coils, a coil with a primary resistance down to 3.0

ohms is permissible. As previously noted, suppression-type sparkplug wire should be used with aftermarket coils (the OEM Honda coils typically do not have replaceable plug wires).

- Coils intended for capacitive-discharge ignition (CDI) systems are generally less than 1 ohm primary resistance, and are incompatible with the Model BT-45 ignition system. The wrong ignition coils will cause overheating and damage to the control module. Many inexpensive multimeters can't measure accurately down to a few ohms, so be especially careful to know what coil resistance you've really got.

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