

The original article, titled, **Troubleshooting Ignitions: Getting to the Points on Time** appeared in the October 1976 issue of Cycle World and was written by Len Vucci. This is an excerpt from the article which includes only information relevant to the CB750 and other SOHC/4 motorcycles.

Proper motorcycle maintenance is less complicated than it looks. Spend a few dollars for basic tools, plan the work before you do it. and follow instructions. You'll save money. the work will be done right and perhaps the most rewarding, you'll know the work was done right.

Last month we looked at theory: how the various types of ignition systems work.

This month we apply the theory, with detailed procedures for inspection and adjustment of ignition systems.

REQUIRED TOOLS

Most ignition adjustments can be made with a few common tools: a spark plug wrench, Phillips screwdriver, medium adjustable wrench. set of feeler gauges, and homemade test light. If the original toolkit is still on hand. the frugal will invest less than five dollars. As this article progresses, specific tools will be referred to and approximate prices mentioned. More than one method may be given to attain a desired result. so costs incurred can vary with individual preference.

A comprehensive owner's or workshop manual should be on hand for reference purposes.

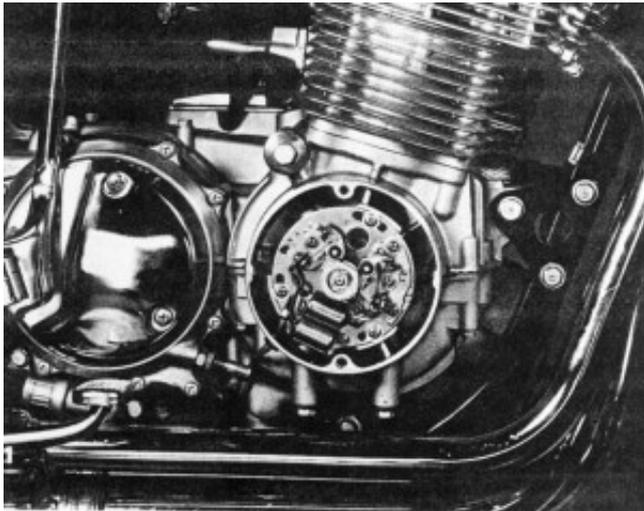
SUGGESTIONS AND PRECAUTIONS

The most important precaution is knowing exactly what procedures you are to follow. One should have all necessary specifications, tools and parts prior to starting.

Determine existing settings before making changes. A prior check gives one a basis for comparison. If the engine has been running poorly and your inspection shows point gap and timing to be far from specifications, you probably know what the problem is before beginning the tuneup. And - which can happen - if the engine ran better before you did the work than after, you can return the settings to what they were before you made any changes.

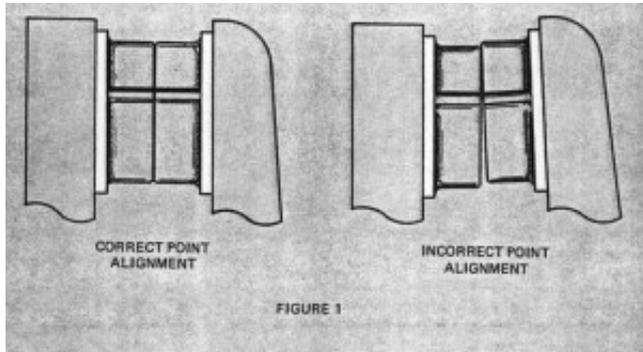
The next thing before actually tackling the work is to make sure the bike is clean. This isn't just being neat. The smallest particle of non-conductive material caught between the ignition points, for instance, guarantees that the ignition won't fire and the bike won't run. Dirt, grease, even lint from a shop rag can ruin an otherwise perfect tuneup. A bath at the local car wash can make the whole job easier.

HONDA 750 FOUR IGNITION Access to Points and Preliminary Inspection



Removing the round cover on the right side of the crankcase will expose the breaker points and related components. After an initial inspection to verify condition of wiring and connections, one should determine if the points need replacement. A slight pitting may be remedied by a few careful strokes with a small, fine file. Point removal may be necessary as things can get mighty crowded. Some #400 or #600

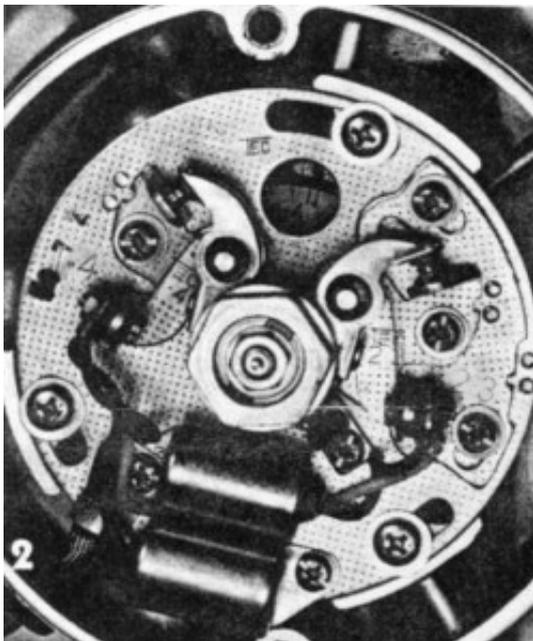
abrasive paper, folded into a narrow strip, can be pulled through the closed points, smoothing them considerably. After any filing or sanding, the points should be thoroughly cleaned. Use a non-residual solvent such as lacquer thinner or alcohol. Observe the usual precautions regarding flammable liquids, if used.



If a smooth, flat surface cannot be obtained by these means, obtain a replacement set. The cleaned or new points should now be checked for proper alignment. Point surfaces should make contact evenly and across their whole surfaces. (see Fig. 1) If alignment is necessary, the stationary contact only should be bent, using a small pair of pliers and much care. Avoid putting pressure on the point contact itself. When proper alignment is obtained, the point gap may now be set.

POINT GAP ADJUSTMENT

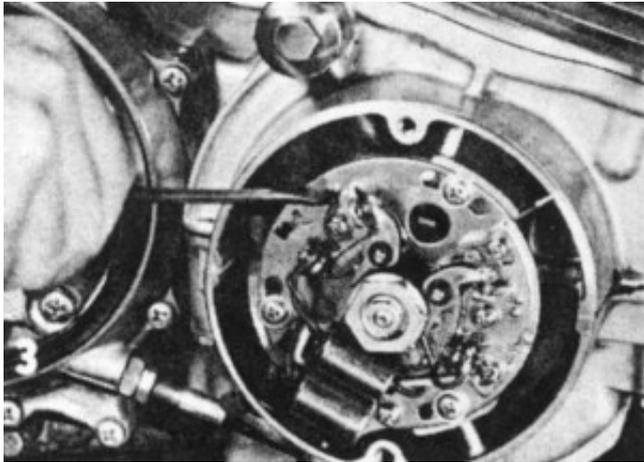
Remove the spark plugs and set them aside. The engine can now be rotated easily. A wrench placed on the large nut at the end of the point cam is convenient, or you can raise the rear wheel, place the transmission in top gear and rotate the engine by turning the wheel.



The Honda Four uses two sets of points, one for cylinders 1 and 4, the other for cylinders 2 and 3. The 1-4 points are adjusted first. Rotate the engine clockwise until the points are at their widest gap. The factory calls for a gap between 0.012 and 0.016. Because it's difficult to be precise with measurements this small, the simple method is to use a 0.014 gauge and work for a smooth easy fit as you slide the gauge

into the gap,

Loosen the breaker point hold-down screw just enough so that the stationary contact can be moved, but is still fairly snug. By inserting a screwdriver in the adjustment slot, the gap can be either increased or decreased. Once the gap is felt to be satisfactory, tighten the hold-down screw and **RE-CHECK** the gap. Invariably, the points creep when the screw is cinched.

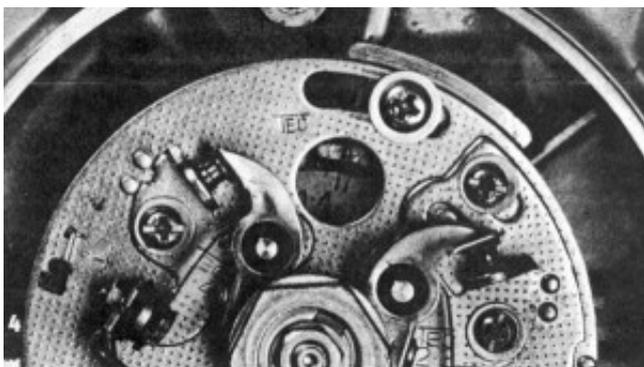


Rotate the crankshaft a half-turn, and adjust the gap on the 2-3 points in exactly the same manner. Clean both sets of points with solvent to remove any debris and timing may now be set.

IGNITION TIMING

There are two methods of setting ignition timing: statically and dynamically. Static timing means the engine is turned by hand and point opening is observed. The dynamic method is used with the engine running. It is usually a better way to attain accurate timing. The static method will be illustrated first.

TIMING MARKS



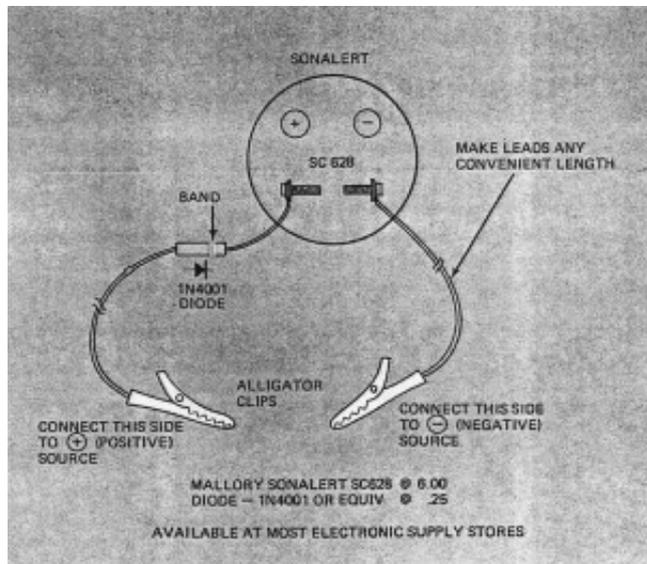
On the Honda 750 Four contact point assembly there is an opening through which the timing marks may be observed. As the engine is rotated, these marks pass a stationary, or reference, mark. When statically timing the engine, we use the "F" mark. Unused at this time is a "T" mark, indicating Top Dead Center (TDC). The third set of marks will be used for dynamic timing.

DETERMINING POINT OPENING

We know from ignition theory that the points are simply a switch, stopping and starting current through the system. To know when the ignition fires, we need to know when the points open. With a battery/points ignition, we can learn this by several methods.

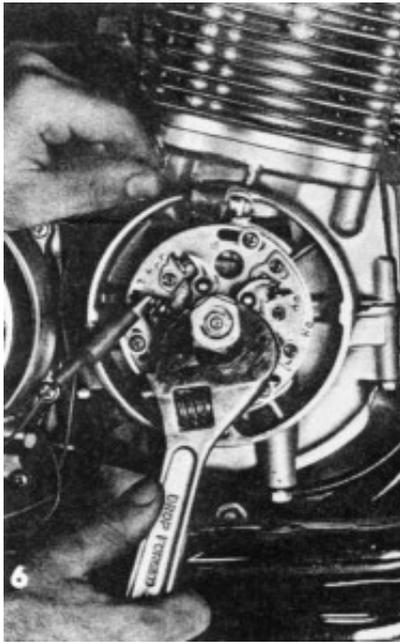


Since the battery voltage is applied through the coil to the points, we have a power source to drive an indicator of some sort. When the points are closed, the voltage is shorted to ground. As the points open, this voltage, no longer shorted, appears at the movable contact point. This voltage may be monitored in several ways. A voltmeter connected across the points shows zero volts when closed, and battery voltage (12 volts) when open. An inexpensive and more convenient method utilizes a test light (taillight bulb for example) with clip-leads attached. This gives a visual indication: points closed, lamp out; points open, lamp is lit.

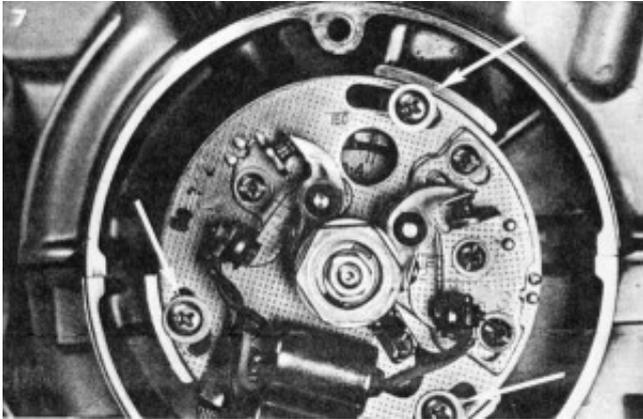


An audible device such as a turn signal beeper or Mallory "Sonalert" may be used. Most convenient of the static timing methods, an audible tone is produced as the points open. One does not have to look simultaneously at both the timing marks and a visual indicator.

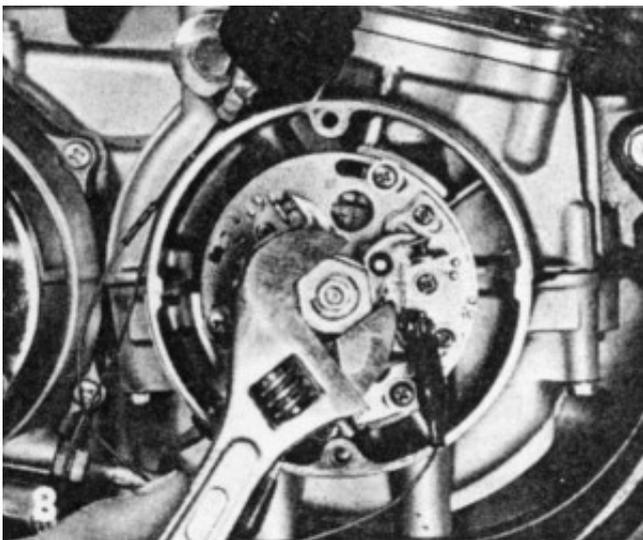
Before attempting to set the timing, attach the plug wires to the spark plugs and lay them on the cylinder head. Providing a ground path for the high voltage may avert possible damage to the ignition coils.



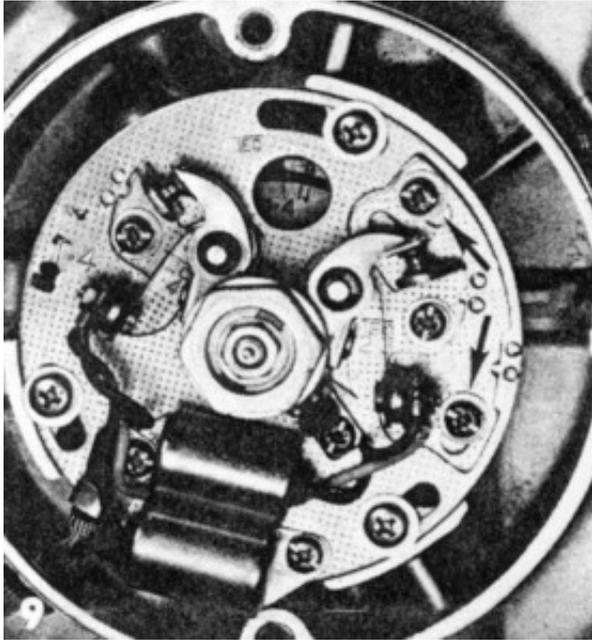
Clip one end of the monitor device to the 1-4 contact points, and the other to ground. Turn ignition on and rotate engine in its normal direction. As the 1-4 "F" mark aligns with the reference mark, the test light should glow. To adjust for proper timing, loosen the three main breaker plate screws.



Rotate the point assembly so that the lamp lights as the timing marks coincide. Recheck after tightening screws. Cylinders 1 and 4 are now timed.



Change the monitor device to the 2-3 points. Rotate the engine until the 2-3 marks coincide with the reference timing mark. The "Sonalert" should be heard.



To adjust the timing, loosen the 2-3 breaker plate screws and rotate the assembly until proper timing is obtained. Tighten the hold-down screws and recheck. This completes the timing procedure.

FINAL ASSEMBLY

Apply a small amount of grease to the cam. This lubricates the rubbing block of the points, decreasing wear and consequent timing change. Use oil only if there is a felt lubrication wick in contact with the cam. Keep all lubricants away from the electrical contact surfaces of the points.

Gap and install a new set of plugs, reconnect the plug wires. Run the engine for a few seconds. If all seems okay, make a quick check of the breaker point assembly and reinstall the points cover.

DYNAMIC TIMING

Although static timing is normally adequate, dynamic timing offers several advantages. Utilizing a high-speed "strobe" light, one is able to see the exact point at which a spark plug fires. Setting the timing is usually easier and quicker. If your bike is so equipped, its automatic spark advance can be checked. A timing light costs about fifteen dollars and is a tool worth considering.

DYNAMICALLY TIMING THE 750 FOUR

Hook up the timing light to the bike according to manufacturer's instructions. Connect the trigger lead to the number four spark plug lead. Start the engine and let it idle. Aim the light at the timing marks, and you should see the "F" and reference timing marks coincide. Adjust the 1-4 timing as outlined previously, with the engine running. Then bring the revs up to 2500 rpm, observing the timing marks. The third set of marks, indicating full advance (**Photo 10 - missing**), should now align with the reference mark.

Shut off the engine and connect the timing light trigger lead to the number two or three plug lead. Repeat the timing procedure for the 2-3 points. Make a quick check of the point assembly and replace the cover.