

## Tech Tips - BMW Owners News [Sometime in 1989 or 90]

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Some time back I suggested that those who know how to adjust ignition timing on a K bike using a strobe, should submit an article on the subject. Finally, someone did - [Rob Lentini](#) of Tucson Arizona.

To Rob, his technique is simple. To many others, it will seem a bit much. And, since it requires disassembly of the advance mechanism, it may void your warranty. Finally while most strobe lights are connected to the #1 plug wire for timing, this technique requires connecting to the #3 wire.

In other words, this is for serious wrenches only.

After those caveats, let me say that it is relatively simple. This method also will let you re-check and re-adjust timing whenever you wish, and the modification to your timing plate only needs to be done once. Here's the technique:

On all my previous bikes (Hondas) I habitually checked not only static (idle) ignition timing, but also total dynamic advance at high RPM. Total advance is most related to power output, detonation, and should be evaluated in addition to static adjustments. I've seen problems in the workings and calibration of advance systems (mechanical and solid state) that causes me to cross-check static timing and total advance to ensure specifications or desired aims are met. I've also slightly (2-4 degrees) advanced the timing on previous machines up to the point of slight detonation under load. This usually peps up performance across the rev range, and improves fuel consumption.

I wanted to apply my experience to my K75S, but was discouraged by lack of timing marks, and BMW's warnings to leave as is! Well ... I couldn't. Here's how it's done.

Remove the T-shaped timing cover at the front of the engine. This exposes the timing pickup plate, which should be marked with a pencil or scribe between the plate and the crankcase to speed reassembly. Remove the two socket head screws that secure this plate, and remove the assembly. Be careful not to lose the two washers on each socket head screw! Now exposed underneath is a small pot-shaped inductive transmitter, and a top dead center (TDC) plate secured by three small socket head screws. Remove these screws, the transmitter, and the TDC plate. It is the TDC plate we will be accurately marking for total dynamic advance, measurable with a common automotive inductive timing light!

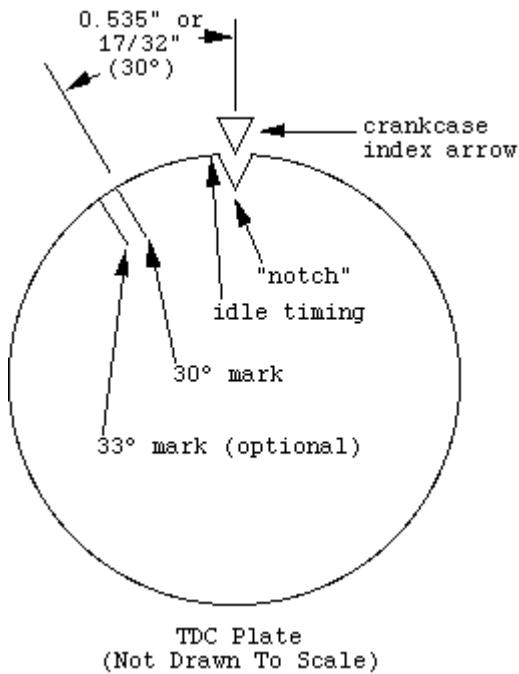
Accurately measure the diameter of the TDC plate mine is 2-3/64 or 2.046 inches. Multiply this diameter by  $\pi(3.14)$ , arriving at 6.424 inches circumference. Divide this figure by 360 degrees, yielding 0.0178 inches per degree of circumference. The K75/100 has a total specified advance of 30 degrees which multiplied by 0.0178 yields 0.535 inches of TDC plate circumference.

With the front of the TDC plate facing you, accurately measure and mark the plate at 0.535 or 17/32 inches counterclockwise from the center of the TDC "notch". This is now your timing light mark for use with an automotive inductive timing light at full advance at high RPM. You may, as I have, make another mark 3 degrees further advanced at 0.578 or 1 9/32 inches from TDC. I used a small cold chisel to make my marks radially from the TDC plate's center. These are easy to spot with a strobe. Small notches could, alternatively, be filed along the plate perimeter. Your choice.

Now reassemble removed parts in opposite sequence. Install the TDC plate with your marks facing forward. Align the plate with the crankshaft dowel pin. Likewise, install the transmitter and three small socket head screws. Be sure they're adequately tight! Install and index the pickup assembly with the marks you made with pencil or scribe. Loosely secure the assembly with the two socket head screws to allow plate to be rotated during adjustment.

Attach the inductively coupled timing light to the number three plug wire, with the power leads to the bike's battery. Start the engine and allow it to warm. Aim the timing light at the TDC plate. Rotate the pickup plate to align your 30 degree mark with the crankcase index arrow when at high RPM (full advance). Secure the plate with the two socket head screws, and recheck your work.

You have now accurately timed your ignition at total advance, a much more important parameter than static timing. At idle RPM, the edge of the TDC "notch" will be close to the crankcase index arrow (about 4-6 degrees initial advance). Blip the throttle, and your timing should smoothly advance from near the "notch" to your 30 degree mark. See my attached sketch for clarification.



With my total advance set at 33 degrees, I experienced slight detonation under load

when at the bottom of Death Valley in February. Performance is markedly improved with advanced timing.

So, K-bike ignition timing is not a mystery, but quite easily accomplished by those so inclined and able. Try it!

A note from Don Eilenberger <[deilenberger@monmouth.com](mailto:deilenberger@monmouth.com)>: It's not necessary to do the math described above if you don't want to. Simply get or make a degree wheel (the protractor your kid has is a good starting point) and scribe in a line at the 30 degree mark!