

## SETTING THE IGNITION ON YOUR BSA WDM20 MAGDYNO

No, it is NOT rocket science! The ignition system on the old war horse is among the simplest you can imagine, certainly compared to present day systems on modern bikes. You only have certain precautions to take: have your magneto, dynamo and regulator tested and - if needed - repaired by a competent specialist.

For an in-depth explanation of the retard/advance system have a look at the article of Ian Wright at [http://members.quicknet.nl/ahum/ignition\\_timing.htm](http://members.quicknet.nl/ahum/ignition_timing.htm) ; an overview of the systems of the other WW2 motorcycles see [http://members.quicknet.nl/ahum/ignition\\_settings.htm](http://members.quicknet.nl/ahum/ignition_settings.htm) .

### *The 'hot-problem*

A common magneto problem is that it easily starts when cold, but a 'hot' start is next to impossible. The cause is the shellac isolation that after 60-odd years is gone. Also, the capacitor in the rotor may be at fault; NEVER ever have it replaced with a NOS (New Old Stock) one! They will not have withstood the tooth of time. Modern ones are made of superior materials.

Dynamos are less sensitive, and easier to repair, but it is strongly recommended to replace the old regulator with a modern, solid-state one.

### *Tools*

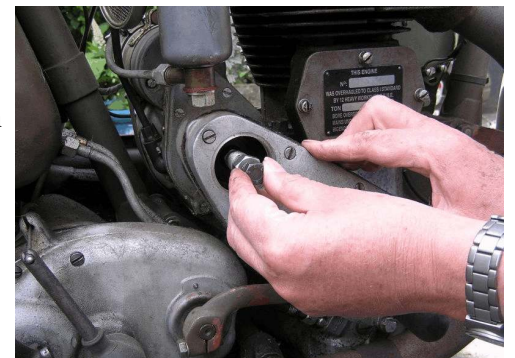
A handy set of tools I alway carry with me. On the left you see the extractor tool; can be made yourself, but unless you are an ace with the lathe, I strongly recommend buying one; they are not very expensive!

Then, the hex key wrench for my modified cylinder head timing bolt, a kebab skewer, the home-made piston stop, the small hook to pull the contact points slightly apart for the paper, the Magdyno spanner, additional magneto spanner set, a package of fag paper (will last you several lifetimes) and a reserve contact breaker set.



### *Preparations*

- 1- If you don't have the hole in the timing cover as used on later models, you will have to remove that cover. Be careful, oil will drip out! On this cover, I made the hole myself on my very versatile Myford lathe; the cap is the same as the chain case inspection cap. Now loosen the Magdyno driving pinion with the extractor; just loosen, do not remove!
- 2- Remove the spark plug and the small cylinder head timing bolt. Put the gearbox in 4<sup>th</sup> gear and let the piston move upwards on the compression stroke by slowly turning the rear wheel. You have to remove the valve spring cover to see if you are really on the compression stroke; both valves should be down, and both tappets should rotate freely.
- 3- Now insert that thin wooden stick (I use a bamboo kebab skewer) and continue turning slowly the rear wheel until the stick does not go up anymore; you are now at TDC (Top Dead Centre). Put a mark on the stick, repeat a couple of times and average, to be sure you are really at TDC !
- 4- Remove the stick and put another mark at 11.1 mm 7/16" for the metrically-challenged) above the first mark.



Use a green (or any other colour at hand) felt pen to mark that 11.1 mm section with the green marking.

*(note that in the first picture I put it upside down on the photo; the shortest part should go down in the cylinder, the other end had been cut askew to prevent putting that part down in the cylinder!)*

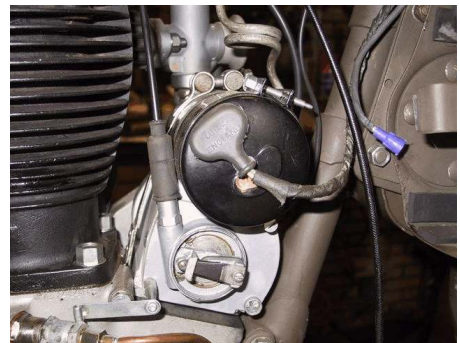
- 5- Put the stick in the cylinder and turn the rear wheel backwards, until the upper mark is flush with the cylinder head; the piston is now at the fully advanced position.

- 6- Beforehand you should have made the piston stop that can be threaded into the cylinder head timing bolt hole, using materials from the box in your workshop with things-that-really-should-have-been-thrown-away-a-long-time-ago-but-that-you-kept-in-case-of-need. Adjust the stop so that it touches the piston at the fully advanced position (11.1 mm before TDC). The thread in the timing bolt hole is 1/4"x25 CEI; mine was knackered beyond recognition so I re-threaded to metric.



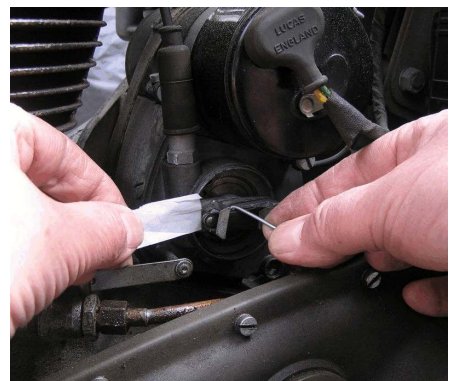
### ***Setting the ignition***

- 7- My Magdyno has the advance cable on the left side (cable slack when fully advanced) which is not original WW2, but strongly recommended! (Conversion can be done by a good specialist) If the cable breaks, you are in the fully advanced (= riding) position, and you only have a slight problem when starting (risk of kickback). But try to drive all the way in retarded mode, and your exhaust valve will soon burn away.



- 8- First, clean the points if necessary; do this with a piece of 600 grit sanding paper, folded double and slide it several times between the points. Set the advance lever in the fully advanced position; in this case, with the cable slack. Now, carefully pull the contact point with the little hook, and insert a strip of cigarette paper between the points. Slowly turn the contact breaker assembly in its direction of rotation until the paper comes loose. You will have to do this a couple of times to get the 'feel' of it. When fully open, the contact points gap should not exceed 0.30 mm (0.012"); adjust if necessary.

- 9- Give a tap on the magneto driving pinion to secure it on the taper; this can best be done using the extractor, screwed in with the bolt fully retracted, giving it a smart blow, and tighten the nut. . The internal and external tapers should be reasonably grease-and oil free, otherwise your ignition will get out of pace rapidly; remember, there is no key and keyway to prevent the pinion turning!



- 10- To check, remove the piston stop, put in that kebab skewer (no green should show) and set the advance lever in fully retarded position; slowly turn the rear wheel until the paper strip comes loose. The green mark should now be fully visible.

That's it!

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WDM 58764

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