Coils AGAIN! - By Popular Request

This third document has been written in response to members' requests for further guidance for owners who now have the FACT device. They can see when coils are misbehaving, but aren't sure what to do. It has been written following an impromptu tutorial in the bar at the 2026 MTFRGB Sprin Tour which gave me some clues as to what other guidance might help.

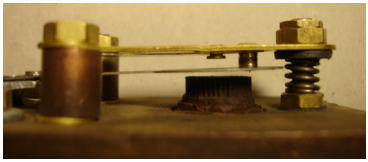
Note that there are two other documents to be downloaded from our website. The Guidance Information covers building the FACT circuit into your complete tester and the basic adjustments; the other, 'Know Your Coils', is a longer treatise on coil function and adjustment. Having re-read both I was initially somewhat at a loss to know what else to add, but here are some extra points and clarifications

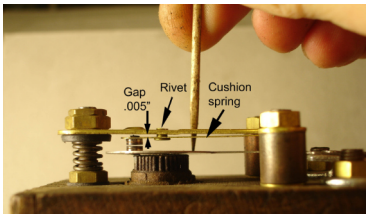
Before you go anywhere near your FACT or other tester

1. Check the 4 nuts that fix the upper and lower points. Variations in humidity and temperature affect the wood and the nuts can become loose. Even if they are tight, slacken each one a quarter turn and retighten to clear any corrosion - the coil relies on conductivity via these screws. It's surprising how many coils can be 'fixed' by this simple check. A 5/16AF box spanner is useful
2. The coil box contact screws through the wood can be similarly affected, so check those and clean the contact surfaces with wire wool or sandpaper etc. They may need careful bending to improve contact

3. Coils can vary in depth, front to back. You will find old ones with big blobs of solder and new-made ones with thin pressed contacts. The coil box wall is quite flexible and if you have a fat coil next to a thin one, the latter may lose contact. We see coil boxes with credit cards etc stuck in to push coils forward. A survey of my coils suggests that 85 +/- 0.5mm is a good target. Add solder or file it off as required. If necessary, fit thinner coils in the outer locations.

4. Have a close look at the coil from the side. Check that
   1. The upper bridge is *fairly* parallel to the top of the coil. If it has a steep slope because the wood has been crushed, add washers under the copper spacers.
   2. The bottom point is well adjusted to align with the top one
   3. The bottom contact point is pushing the top point into contact with the top brass bridge (top photo).
   4. When you push the bottom point down, the top one follows it until it is stopped by the rivet.
   5. When the bottom point is pushed all the way down to contact the iron core, there is then a gap between the points.





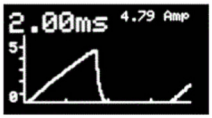
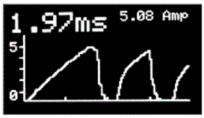
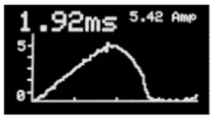
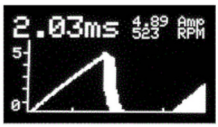
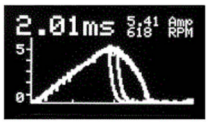
Testing on the FACT

The FACT has 2 modes for checking the capacitor and 4 for checking actual sparks. The MTFCA people produced a 'cheat sheet' which is already shown in the MTFRGB guidance document; parts are reproduced here.

Capacitor Test. Either mode will do. You are wanting 0.4 to 0.6uf capacitance (new 'orange' modern capacitors are 0.47uf) and at least 1Mohm resistance.

- If the resistance is very low, the capacitor is leaking, probably because the coil still has the original paper/foil capacitor
- If the capacitance is about 1uf, the coil probably has the original Ford capacitor. If its resistance is high, it can continue to be used

CAPACITOR TEST-			
	Good capacitor is in the prescribed range.		**Bad Capacitor** causes faulty waveform.
CAPACITOR TEST- Graphical Analysis			
	Good waveform. Note that the waveform traces the ideal waveform.	**Points Closed.** Points must be opened for testing. (Place a piece of paper in points for testing.)	**Bad Capacitor** causes faulty waveform.

SINGLE FIRE TEST			
	Good waveform. Nice ramp with clean drop off.	**Double Spark** caused by improper adjustment of cushion spring.	**Bad Capacitor** causes faulty waveform.
LIVE OSCILLOSCOPE			
	Good waveform Waveforms overlap with narrow lines and a new waveform is just starting on the far right.	**Double Spark** causes lots of overlapping waveforms after the initial ramp.	**Bad waveform** Lots of inconsistent overlapping waveforms.

Spark Test and Adjustment. The Single Fire and Live Oscilloscope modes are the most useful. They show the rise in current up to and beyond the firing point . The Live mode superimposes successive sparks so you can assess consistency. The two important numbers are the 'Time-To-Fire' (TTF) and the peak current.

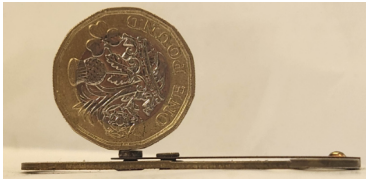
- The TTF should be 2.0 to 2.2ms - but what matters is that all your coils are very similar - ideally within a 0.1ms range - so that on the car, all cylinders have the same spark timing.
- The peak current should be 5A to 6A. Much less and the spark may be weak; any more and the magneto may not cope. (If you read references to 1.3A coil current, that's the average, not the peak)
- The 'Good' waveforms above show a second cycle starting after the main peak. That's fine as long as the first has the right TTF and peak current.

The Adjusting Nut. It's always worthwhile trying this first. The effect is *usually* that tightening down will increase both current and TTF and vice versa. If you unscrew the nut too far, the bottom point may not push the top one all the way to the bridge. Often, adjustment will affect the picture in other ways - causing or curing double sparking for example. **My experience is that the locknut is essential and even tightening it will affect the coi**l. I also find it best to have the nuts bear directly on the bridge; no washer above it.

Bottom Point Adjustment.

Once aligned, the only adjustment is to the tension as shown in the guidance, page 5, top photo. Old literature suggests using a hammer down on the back edge to increase tension and a lever beneath to reduce it. I prefer to use the tool I made from 1.6mm stainless steel, shown here.

Upper Point and Cushion Spring. The thin brass that carries the upper point must have enough tension to ensure that the top point follows the bottom point until restrained by the rivet head. I checked 2 coils and the force to move the point away from the rivet head was 10g to 20g, so more than this 8.75g coin. The tension is adjusted by the tool shown in the guidance document, page 5, second photo. It makes a bend in the upper bridge at point A, shown right. The rivet has been removed for this photo. The travel allowed by the rivet should be 0.005" to 0.010". Best measured with a feeler gauge. Tapping the rivet head will reduce the travel. It *is possible* to restore travel if you go too far. Use a point attachment nut to support the cushion spring, with the rivet head inside the nut. Then gently tap the other end of the rivet via a sharp pointed drift such as a small nail.



Adjusting coils can be frustrating, but you learn by doing, and the results are very worthwhile.

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