Supplemental Information & Instructions for
Balancing Center Lock Wire Wheels

A Little History

Back in the 1980s, we began receiving complaints about wire wheels that were "egg shaped" or so far out of round they could not be balanced. We wound up checking every wire wheel upon receipt using a jig mounted wire wheel hub and a pair of dial indicators. After 6 months, we knew beyond the shadow of a doubt that 99.99% of the wheels were within tolerances. Why then, were we getting so many complaints? It turned out to be the equipment used to balance the wheels. As the new computer controlled balancing machines came into use, our problems increased because the new equipment (and the new technicians) did not understand how the wire wheels had to be mounted in order to be balanced. We prepared these instructions and since then, they have been included with all our wire wheels. Complaints about wire wheels essentially stopped in a matter of weeks. Now, when we get a complaint about wire wheels, it almost invariably comes down to a shop that has ignored our instructions because they have total faith in their "universal" state-of-the-art equipment.

Before you take your wheels to be balanced…

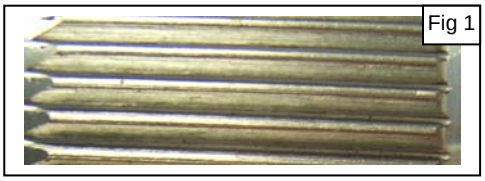


Fig 1

There are a couple of things than need to be done.

Check the splines

Jack up the car. Support it on jack stands.
Remove one wheel at a time, and thoroughly degrease and clean the splines on the wire wheel hub.
Inspect the splines carefully. Fig 1 shows new splines. Fig 2 gives you the traditional guide to worn splines. If the splines are worn, replace the hubs. Putting new wire wheels on hubs with worn or damaged splines will quickly damage the splines in the wheels.

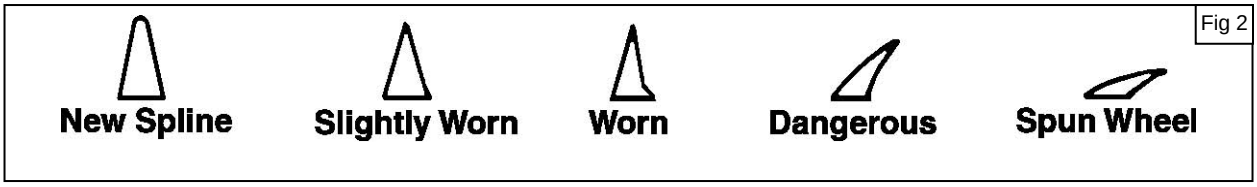


Fig 2

Check the wheels

If the splines are OK, pick a hub to use to check the new wire wheels. Thoroughly clean off the beveled surface on the hub where the wire wheel makes contact (3a). Use a tooth brush and solvent first, then a wire brush if necessary and take your time. Clean and degrease the wheel nut, particularly the bevel (which contacts the wheel) and the threads. Once the hub and wheel nut are clean and dry, mount a new wheel, and tighten the knockoff normally. Attach a sharpened pencil to something high enough to bring the pointer up level with the rim of the wheel. I tape a pencil to a jack stand, but a stack of wood will work fine. The point of the pencil should almost touch the wheel at the point shown (4a). Do not use the rim bead (4B) as a reference. Rotate the wheel, looking for the section of the wheel that comes closest to the point of the pencil. Move the pencil in until is just touches the rim. Now rotate the wheel until there is a gap between the pencil and the rim. Measure it and record the number. Repeat this with all of the new rims.

Fig 3

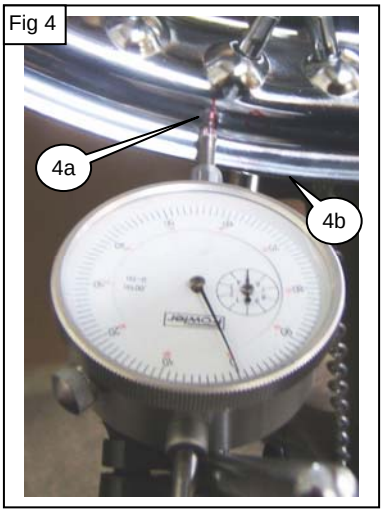


Fig 4

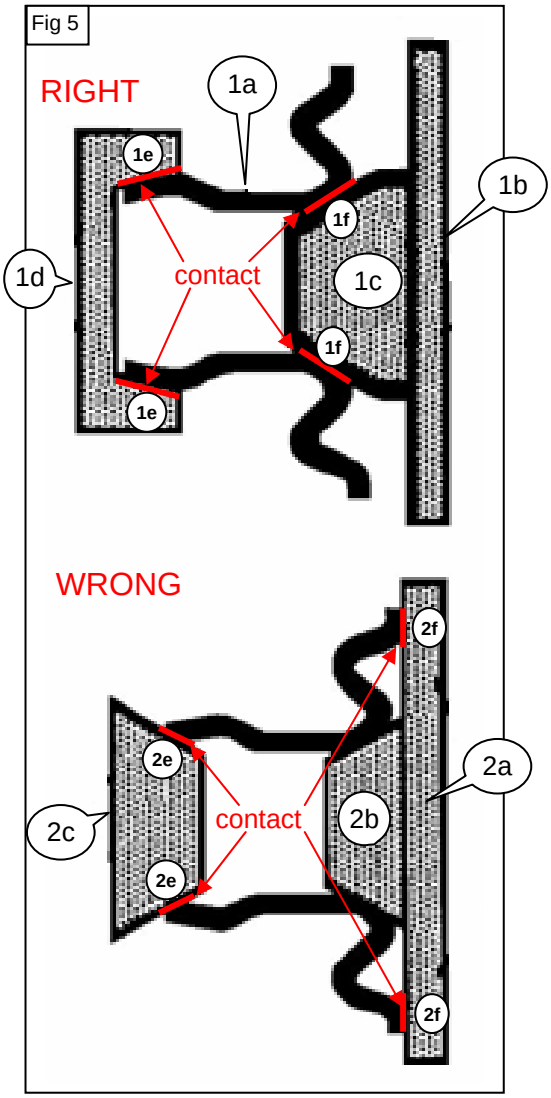
Triumph specifications call for a maximum "wobble" of 0.094" (~ 3/32").
MG was more particular, calling for 0.055".

If your wheels check out OK, they can be balanced.

Please check the wheels before you have them mounted. The manufacturer will not accept any warranty returns if the wheels have been mounted, and regrettably, that means that Moss Motors cannot accept them either.

Balancing Center Lock Wire Wheels

The best way to have wheels balanced is on the car. That way you balance all the rotating mass, and it always produces the best results. However, many shops no longer have the proper equipment. Static balancing, also called bubble balancing is simple and very effective. Most shops will want to use the computer balancing machine because it is quick and very precise.
The illustration (Fig 5) shows the right way and one of the many wrong ways to mount a center lock wire wheel on a balancing machine.



RIGHT
The splined hub or center section of a wire wheel (1a) is mounted on a computerized wheel balancing machine, which consists of the base plate (1b), the sprung cone (1c), and the balancer lock nut (1d).
There are only two machined contact surfaces on the hub of the wheel. The outer surface (1e) is where the wheel nut makes contact. The inner surface (1f) is machined to match the sloped or angled surface machined into the wire wheel hub. *If the sprung cone (1c) and lock nut (1d) touch the hub of the wire wheel anywhere else, the wheel will appear to be "out of round", and if they balance the wheel, it will take an unusual amount of wheel weights to "balance the wheel". Once on the car, the wheels will vibrate terribly because they have not really been balanced.*

WRONG
Wire wheels are frequently mounted on computerized balancing equipment using two "universal cones". This causes several problems. If the sprung cone (2b) is too small, the outer edge of the wire wheel hub will contact the base plate at (2f). This area of the wire wheel hub is not a machined surface and it will cause the wheel to wobble on the machine, making it look like a defective wheel. If the outer cone (2c) goes inside the lip of the hub of the wire wheel, it is touching on two surfaces (2e) that are uneven, and this will also cause the wheel to wobble. There are a number of other problems which vary from machine to machine, but these are the main problems.

How Do I Get This Done Right?
Remember that they are your wheels and your car. Have them balanced on the car if possible. If that cannot be done, ask the members of your club who balances British wire wheels in town. Call the shops yourself- ask them if they have balanced center lock wire wheels. You want to talk to the technician that did it. If they tell you they wobbled a lot and took lots of weight, find another shop. If they say they have done it and they have the proper adapters, check it out. If they have the pieces to mount the wheel correctly (as shown above) see what happens with one wheel. If you checked the wheels before you had them balanced, you know that the technician telling you the wheels are out of round is mistaken, and you can share this document with them and see if they have the proper equipment. If they don't, take your wheels to another shop or have the wheels balanced statically (bubble balanced). Remember to grease the bevels, splines, and threads on the hubs with white lithium grease before you fit the wheels.

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