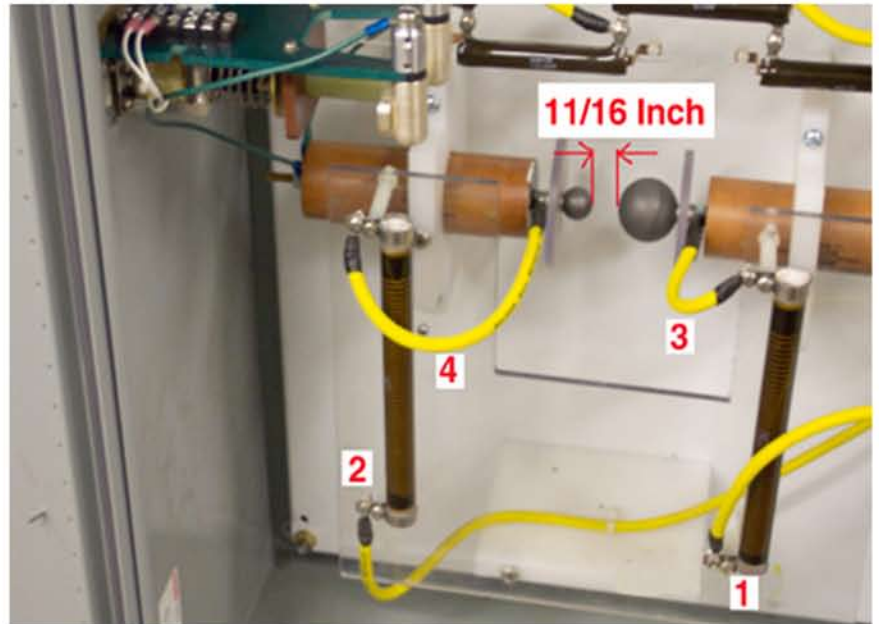


# Gapping the Carbon Balls

The Carbon Ball's gap should be  $11/16$  inch. The distance between the Carbon Balls will affect the NDT's ability to arc to a flaw, and the rotation speed a tire can be rotated at during the electronic inspection. For example, carbon ball gaps greater than  $11/16$  inch will increase the energy applied to the tire. Increasing the energy will increase the likelihood of an arc occurring to a flaw. However, when the distance is greater than  $11/16$  inch the rate of arcing (popping rate) decreases and becomes sporadic.

The popping rate is the sound heard when high voltage is used. The sound is a distinct ticking noise that emanates from within the high voltage cabinet. The ideal sound will be a steady. If the sound becomes random or slow, the gap between the carbon balls may be too large.



If the popping rate slows and becomes sporadic the electrically inspected area decreases. Each tick that is heard from within the high voltage cabinet is an electrical pulse applied to the tire, between ticks there is no electrical pulse, areas of the tire are passed over and not electrically inspected.

As the tire rotates around the electrical probe, small sections of the tire are not electronically inspected. The section width that is not electronically inspected can be decreased by slowing the tire rotation to 80% or less, and ensuring the gap is the optimized for energy and speed,  $11/16$  inch.

Carbon balls wear and require periodic gapping. They tend to flatten over time because of heat created by the high voltage electricity. If the popping sound is excessively fast then the balls are too close together. Hawkinson recommends checking the carbon ball gap at least once every 6 months. If a flat spot of  $1/2$ " diameter has formed on the large carbon ball, Hawkinson recommends replacement of the carbon balls.

The carbon balls are easy to replace. Both the small and large sphere are threaded onto the stand-off attached to the capacitor. The carbon balls are made of a softer material than the steel standoffs they thread onto. Care must be taken not to over tighten the carbon balls when replacing. If the carbon ball is over tightened the threads tapped into the carbon ball will strip causing the carbon ball to be unusable.