

# USING THE AMMCO BRAKE ARCING MACHINE

**Please familiarize yourself with these instructions before starting.  
If you have any questions, please contact  
Wisconsin Chapter's Technical Chairman.**

*Thanks to both Bill Storey and Erwin Haban for putting these instructions together  
and the donation of the Brake Arcing Machine to the Wisconsin Chapter membership.*

## **Purpose:**

The purpose of Arcing the brake shoes to match the brake drums is to maximize the performance of the brake assembly. It is also very much safety related as without this operation, the process of “wearing in” the shoes to match the drums may require thousands of miles of driving. During this break-in process the performance of the brakes are limited. Additionally, during that break-in process, brakes go out of adjustment much more frequently requiring additional attention and adjustments.

## **Pro's and Con's:**

The positive aspect of arcing the brake linings is that the brake shoes will be perfectly matched to the drums giving you the best performance possible upon completion of rebuilding the brakes on your car. The negative aspect would be, depending on the current size of your brake drums, lining material is removed during this process thus shortening the overall time between lining replacement.

## **Preparation:**

The brake drums don't necessarily have to be turned each time you do a brake job, but they should not have runout and be relatively flat and polished across the width of the working surface. Each drum has to be measured with an inside micrometer to determine the exact size and marked on each drum for setting the Brake Arc Machine. Arcing each set of shoes to match each drum should be considered a separate project in itself as the Brake Arc Machine is reset and locked-in each time to match each individual brake drum diameter measurement.

The newly re-lined brake shoes should be carefully inspected as the rivet holes provided in the new linings are not always drilled on center. This condition can cause the linings to be shifted to the side enough that the lining extends over the side of the steel shoe. This condition must not exist at the four points where the brake shoe mounts into the Brake Arc Machine. If this condition exists, the mounting areas are marked on the lining/shoe assembly and this overhang condition is removed by filling or grinding the excess material off.

## **Setting up the Brake Arc Machine:**

The Brake Arc Machine is designed to arc a wide range of shoes both in width and diameter. The Model 'A' uses an 11 inch diameter brake drum. The setting of the machine to the 11” basic drum diameter is accomplished in the following steps: Release lock “A” on the top of the machine by pushing it counter-clockwise  $\frac{1}{4}$  of a turn. Then there is a red knob in the front of the machine by a scale representing the “Basic Diameter” of the brake drums. Pull this knob out and with lock “A” released; slide the upper half of the machine so the pointer on the front scale is aligned to the 11” diameter. Release the red knob making sure it snaps back into the hole provided.

Now that the machine is set to the basic 11" diameter, let's zero out the main adjusting knob 'B' to exactly what your first drum measurement is. This knob is usually backed off beyond the zero on the vernier scale by turning it counter-clockwise until it passes zero and then back clockwise up to the zero mark. At this position the Arcing Diameter setting on this machine is exactly 11.000 diameter. Let's say that your drum measurement is 11.035. You then turn this adjustment knob clockwise an additional 35 thousandths until the adjustment knob reads 11.035. Then re-lock the lock "A" on the top of the machine by pushing it about ¼ of a turn clockwise until tight. The machine is now set for the exact diameter of your brake drum; the lock "A" is to remain locked as well as no moving of knob "B" is done until the arcing of the shoes for this drum is complete.

### **Mounting the Brake Shoe into the Machine:**

The Brake shoes are to not have any pins, rollers or Brake adjusting shafts attached during the arcing process. On the top of the Machine is a knob marked "C". This is the knob used to clamp the lined shoe into the machine. As this machine is used to accommodate various widths of shoes there is a small spring loaded lever and a ratchet rack to bring the clamp assembly to the rough width of the shoe. The shoe mounts into the Brake Arc Machine on four points. The inside of the steel brake shoe where the rivets from the brake lining come through is to be pushed tight against the small round knobs of these mounting points. The larger diameters of these mounting clamps tighten down on the sides of the steel shoe. This is why it is important that no lining material extends beyond the steel shoe as it could tip the shoe in the clamp. The most important part of this procedure is when clamp "C" is tightened, the shoe is securely tight against the four round knobs to hold the geometry and the larger diameters of the clamps are tight against the steel shoe for safety as well as to hold the geometry.

### **The process of Arcing the shoes:**

Note: If your brake shoes have been re-lined with standard linings (3/16" thick), the arcing process will be removing the majority of the stock in the center of the shoe to match the oversize drums. If your shoes have been re-lined with thicker linings (¼" thick), the arcing process will be removing the majority of the stock on the outer ends of the shoe to match the oversize drums.

The long feed screw with the red knob marked "D" is the only knob that is turned to remove stock from the lining. The machine is fixed at a drum diameter measurement that you previously set so quite simply, the knob "D" is turned clockwise incrementally while moving or swinging the compound with the brake shoe past the sanding drum. The threaded feed screw is removable from the half nut by raising the adjusting shaft up, out of the half nut. This feature is provided for a quick rough adjustment to get the shoe closer to the sanding drum when getting started. Do this rough adjustment only with the machine turned off. Then, with the machine still off, slowly arc the

complete shoe past the sanding drum looking for how much clearance you do have, shoe-to-drum. You should continue to turn the red knob marked “D” in the clockwise direction to reduce this clearance.

Once the shoe has been brought up to the sanding drum and has minimal clearance across the whole shoe, you can begin. With Safety glasses on, always park the shoe, one side or the other, “off” of the sanding drum. Turn on the Brake Arc Machine and firmly grasp the knob “D” on the end of the threaded feed screw. Practice making smooth passes by arcing the shoe past the sanding drum. In the beginning, after each pass, with your wrist, turn the feed screw in about ¼th of a turn. On the end of the feed screw where it attaches to the post, you’ll see graduations so you know how many thousandths you are feeding the shoe into the drum. After making several passes with a ¼ turn adjustment per pass, you will notice the sanding drum starting to touch the shoe. After more passes, the length of time the sanding drum is engaged sanding the shoe will be ever increasing. As the load is felt increasing on the machine, the amount of adjustment that you feed the shoe into the sanding drum will have to be decreased. It won’t take too many passes and the depth of cut or amount fed into the drum at the end of each stroke will be about .005, or five thousandths, or one mark on the end of the feed screw for each pass.

You will be able to see the difference between the un-touched and sanded part of the woven lining. You can continue arcing until you have 100% cleanup or as I do, which is about 80-90% cleanup. Remember, the more stock you sand off, the less life you have between replacing linings. I personally like using the ¼” thick or oversize linings on shoes as you can usually arc the shoes to match the oversize drums, yet, when you are finished, have more than the original factory amount of stock left on the linings for a long useful life.

When finished with the first shoe, shut the machine off and back the “D” feed adjustment knob off for the next shoe. Remove the shoe by loosening the “C” knob that clamps the shoe into the machine. Set the shoe into the brake drum and examine the fit-up between the drum and shoe. Mark the shoe so that it will stay only with that matching brake drum. Load and Clamp the second shoe for that same drum and repeat. When the second shoe is finished, remove and examine the results. The first drum and matching shoes are now finished.

### **It’s time to re-set the Brake Arc Machine to a new drum:**

Each drum has a different measurement, so release lock “A” counter-clockwise ¼ turn and turn adjusting knob ‘B’ backing the dial off beyond the zero on the vernier scale by turning it counter-clockwise until it passes zero and then back clockwise up to the zero mark. At this position the Arcing diameter setting on this machine is exactly 11.000 diameter. Look at your next drum and let’s say that your drum measurement is 11.040. You then turn this adjustment knob an additional 40

thousandths until the adjustment knob reads 11.040. Then re-lock the lock "A" on the top of the machine by pushing it ¼ of a turn clockwise until tight. The machine is now set for the exact diameter of your next brake drum; the lock "A" is to remain locked as well as no moving of knob "B" is done until the arcing of the shoes for this drum is complete.

Repeat the "Process of Arcing the shoes" and repeat the process of "re-setting the Brake Arc Machine to a new drum" for the balance of the drum and shoe assemblies on the car. Good Luck!

**Notations:**

At the beginning, the brake drums are measured for their size with a micrometer. This size can be written or marked inside each individual drum with a marking pen, example **11.035**. Four brake drums will give 4 different measurements.

The Venting of the Ammco Brake Arcing Machine during Operation can be Installed / Vented into a Shop Vacuum.

***NOTE: The Use of Reproduction Soft Woven Brake Lining's is Recommended...obtained from Venders...such as Brattons or Snyder's...The linings are made of Asbestos Free Materials for Safety.....***

***NOTE: USING BRAKE LININGS FROM A UNKNOWN SOURCE COULD POSE HEALTH RISK'S TO THE USER AND CONTAMINATE THE AMMCO BRAKE ARCING MACHINE WITH ASBESTOS.***

***NOTE: ONLY BRAKE LININGS MADE OF ASBESTOS FREE MATERIALS ARE TO BE USED WITH THE AMMCO BRAKE ARCING MACHINE.....***