McIntosh Power and Speaker Switch, ALPS 146-183, Repair

April 2022

If you wish to maintain the look and the solid feel of your MeIntosh amplifier, you might want to consider repairing, not replacing, the defective ALPS on-off switches. Please note, this fix only covers the most common problem encountered with these switches; a broken plastic actuator inside the switch. It does not cover any other defects.

Pros and Cons of this fix:

Cons:

1) Requires a new 3D printed actuator; so, you'll need access to someone with a 3D printer.
2) Basic mechanical skills are needed to clean up the original shaft, then drill, tap and cut it a bit shorter.
3) Expect to spend at least one hour on each switch.

Pros:

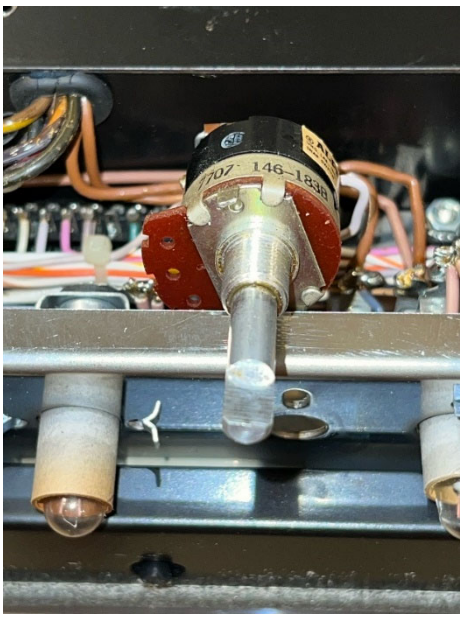
1) The repaired switch will feature a much more robust actuator; about twice as thick as the original and not cut off, on one side, to accommodate a non-existent potentiometer mechanism.
2) The repaired switch will be visually identical to the original switch.
3) The repaired switch will feel like the original switch; low actuation torque and no "plastic" shaft wobble. You'll get shaft wobble, if you replace any all metal shaft with a metal bushing control with a plastic body and plastic shaft control; this is true for any control in any equipment.
4) No need to "machine" a new shaft from scratch.
5) All work can be accomplished with a few hand tools and two hand held power drills.

Step-by-step details:

1) Gain access to the switch by the obvious steps: remove the bottom cover and the glass front panel.

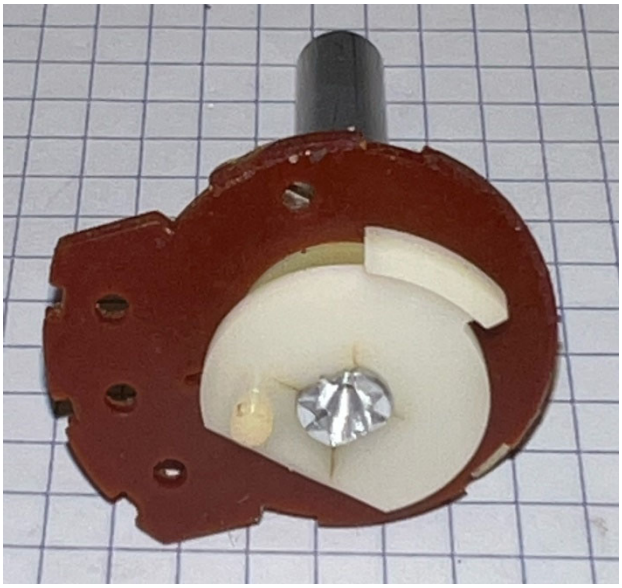
2) Remove the bushing nut holding the switch into the chassis a pull the switch out of its mounting hole.

3) It is OK to leave all wires soldered to the switch, as shown in this picture of a Speaker Switch.



4) Carefully pry open the four metal tabs holding the switch housing to the switch front plate bushing. Be careful not to overbend or stress these tabs since you'll use them again to re-assemble the switch.

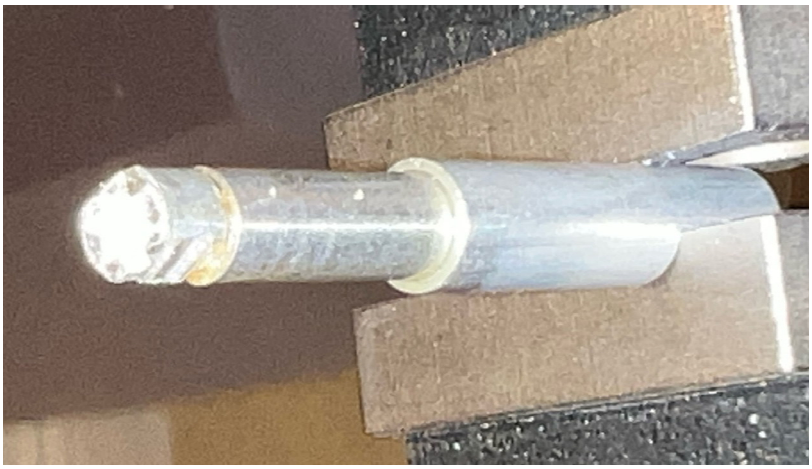
5) Remove the original white plastic actuator or its broken fragments. This picture shows an "intact" original actuator which clearly shows cracks starting to propagate from the metal shaft. This forty-five old switch was close to complete failure.



6) Remove and set aside the reddish phenolic part which separates the front plate from the switch housing. Now you should clearly see the flared shaft which held the original actuator as shown in this photo:

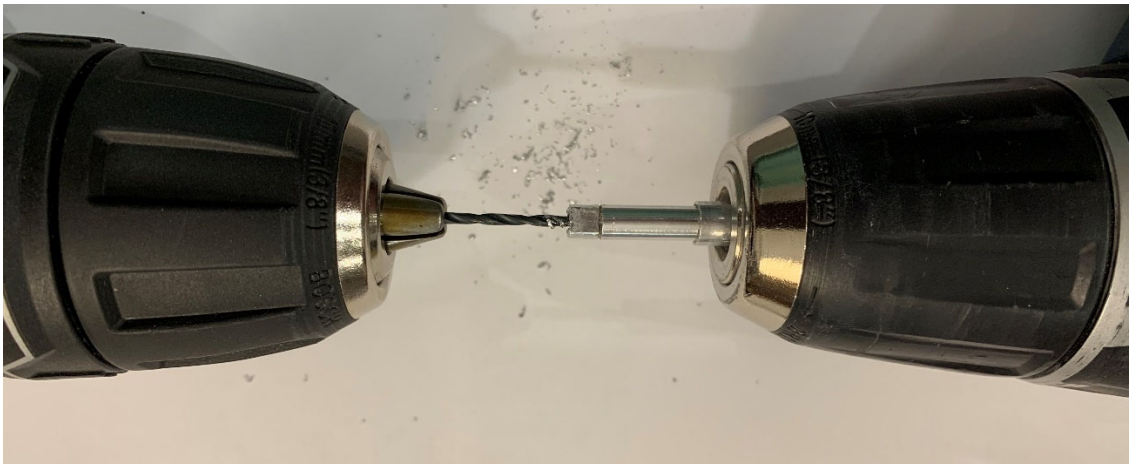
7) Now use smooth jaw pliers to squeeze the flared shaft back into a round shape. This is needed to allow the shaft to be pulled out of the bushing and to assure that the new actuator can be properly snug fitted on the shaft. Parallel jaw pliers are recommended to minimize shaft distortion. If necessary use small files to complete the shaft shape restoration. If the shaft cannot be pulled from the bushing do a bit more squeezing and filing.

8) Now pull the shaft out of its bushing and clean up the shaft and bushing with degreasers and remove any remaining burrs using small files. This picture shows a re-rounded (by plier pinching) shaft before cleaning.



9) Now place the shaft in a hand-held drill. Place a tap drill (#51 if using a #2-56 screw) in the second hand held drill.

10) Carefully align the drills so the tap drill will penetrate the center of the shaft. Fortunately there will be a small dimple in the shaft left over from the original flaring process which will facilitate keeping the drill centered. Only operate the drill holding the shaft, do not operate the drill holding the tap drill, i.e. turn the work piece (shaft) around the tap drill. It is much easier to precisely center drill the shaft if the shaft turns around the stationary drill bit. Drill into the shaft about 3/8 inch, or far enough to allow a tap to enter the shaft to allow a new keeper screw (instead of a flared end) to be fully inserted. The next picture is an example of this “two hand-held drills” proceedure.



11) Use the same tap drill (#51 for #2-56 tap) to cross drill a hole through the round shaft near where the actuator is mounted; about 3/8 inch from the actuator end of the shaft. This hole will allow tapped metal fragments to escape. You’ll end up tapping a blind hole without this cross

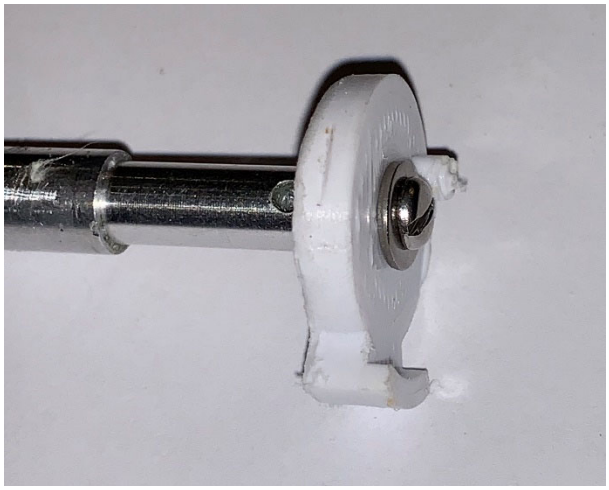
hole: be extremely careful if tapping a blind hole; small #2 taps are likely to break if forced into a blind hole containing metal fragments. This picture shows the center drilled and cross drilled shaft.

12) Replace the #51 drill with a #2-56 tap. Inject tapping lubricant into the new center hole.

13) Again, using the same two hand-held drills, turn the shaft, not the tap, to carefully and SLOWLY "power" tap the new center hole. It is highly recommended that you utilize at least one hand-held drill with adjustable breaking torque (used for driving fasteners). Set the breaking torque low to avoid breaking the tap. Stop tapping if you feel any kick-back torque. Back out the tap, clean it, clean the hole, re-lubricate and try again if the tap begins to "stall".

14) Trial fit the keeper screw and if necessary, drill and/or tap deeper to accommodate the screw. Clean away all tapping compound and fully degrease and file off any burrs.

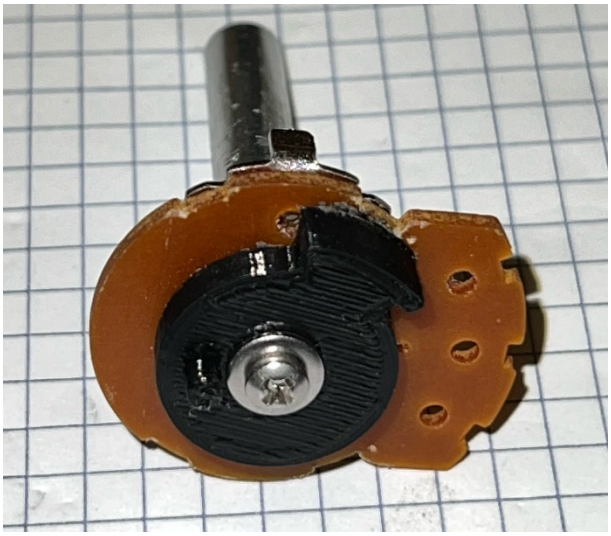
15) Now trial fit the new actuator onto the shaft. This picture shows a "white" actuator:



16) Now, remove the keeper screw and flat washer. Carefully mark and then cut off the remaining portion of the flared shaft. This is necessary to assured that the actuator will be held tight against the shaft shoulder stops.

17) Finally Put a small amount of lubricant on the shaft and into the bushing. Then insert the reworked shaft into the switch bushing and place the phenolic plate on the inside of the bushing plate. Finally re-install the replacement actuator and secure it in place with the keeper screw and washer. Gently tighten this screw … it's easy to over tighten and strip the newly tapped threads in the aluminum shaft.

18) If you are concerned about keeping the same alignment of the switch housing and phenolic spacer as the original switch then be sure to align the actuator as shown in this picture (showing a black actuator). The flatted shaft for the knob is lying on the grid paper pointing away from you, while the actuator stop tab points to about 2 o'clock. Note, the phenolic spacer and bushing with its anti-rotation pin as shown in this image, will need to be about rotated 180 degrees before installing into the original housing. The next picture is looking into the switch housing. This the orientation of the switch when installed in the amplifier chassis: Gap for phenolic spacer extension is to the right and the anti-rotation pin on the front bushing would be at the bottom.



19) Lastly, carefully align the bushing to that the flatted shaft end (for the knob) is facing toward the anti-rotation pin on the bushing plate. Then carefully align the switch housing so the punched in metal "stops" are on either side of the actuator stop arm. Before re-bending the four housing tabs, hold the switch together with your fingers and test the action. There should be little, or no, rotational slop and you should hear the switch electrical contacts click on and off. Also make sure the phenolic spacer is positioned correctly.

20) Remount the switch in the chassis. Perform power on tests before replacing the front panel and bottom cover.

Please note: You might be able to skip the steps about drilling and tapping for a new keeper screw if you are willing to risk possible breakage of the new actuator, and possible permanent damage to the shaft, by re-flaring the shaft end. You should either use a keeper screw or re-flare the shaft to assure that the actuator will remain on the shaft at all times. Having the actuator firmly attached to the shaft is the only way to assure that the shaft will remain in the switch body and not get pulled out when the knob is removed! If this occurs, you'll be forced to pry open the switch housing and then re-secure the actuator onto the shaft.