

# How to De-Oxit

## **INTRODUCTION:**

*You don't need to know much about electronics, nor do you need to take much apart, to use DeOxit correctly on 90+ percent of receivers and other vintage gear. Basically, you need to unscrew the top and bottom covers, and PERHAPS (but often not) remove the front faceplate. It's really pretty easy to do, if you can just use a screwdriver to unscrew (and screw back in) a screw, and point a spray can, turn a knob back-and-forth, and wiggle a little Q-tip or mascara brush!*

*Although all this is a simple enough thing to do in real life, all written out in detail like this it gets a bit long. You might want to print this out on paper and read it through once or twice before beginning, perhaps even keeping it beside you as you do the work, and checking off the steps as you go.*

## **MATERIALS:**

\*A screwdriver or two that will fit the screws holding on the covers.

\*A DeOxit kit, with both spray can (with little red straw) and little bottle of red DeOxit, and the same for the yellowish DeOxit Gold (formerly called ProLube).

\* Either a little mascara brush (or two) or a couple pipe cleaners and/or some Q-tips (the kind that don't come apart easily). If you buy one of the DeOxit kits that comes with some little things like these, then that's all you'll need. You might also want a few paper towels.

\* If it turns out that you need to remove the faceplate (but you may not have to), then you might also need a very small Allen wrench or jeweler's screwdriver to remove the tiny set-screws that are sometimes used to secure larger knobs and maybe two rounded-bottomed spoons (regular kitchen spoons) to pry up knobs that are stuck tightly on the shafts, along with some cardboard, cloth or leather scraps to protect the faceplate while doing this.

## **STEPS:**

### **Remove Top Cover:**

1. Remove the screws that are holding on the top cover, and put them safely aside in a small paper cup or dish or something, as you remove them, so they won't be lost. Label that container ("top cover screws") and set it where you won't spill it or lose it. Lift off the cover and set it aside in a safe place where it is out of your way but you can find it again.

### **Remove Bottom Cover:**

2. Stand the receiver up vertically, so you can access the bottom of the receiver. [You

may wish to put down a piece of cardboard or scrap of linoleum or something like it underneath the receiver, to protect your table-top from scratches, and to facilitate turning the receiver around sometimes for easier access.] Repeat step 1 for the bottom cover. You might need to remove the feet, as well, in order to remove the bottom cover, but sometimes you don't have to. Be sure to put the screws into their own receptacle and label it ("bottom cover screws").

### **Only Remove Faceplate if Necessary:**

3. Look at the area behind the faceplate. Can you see the potentiometers and switches? Those are the things that the shafts of the knobs and such on the front panel go into. If you can see them, and access them at least with the little red straw tubes that come with DeOxit spray cans, then you don't need to remove the faceplate. This is the case with most receivers.

### **Removing the Faceplate:**

4. I won't detail the process for removing the faceplate itself on a particular model, but give general instructions, as it will vary from model to model and usually isn't necessary, anyway.

If you do have to remove the faceplate, study it carefully first, and take some digital pics and make notes, so that you can replace it properly afterwards. MOST of the time, though, it is very simple: just remove the knobs from the front, and unscrew a couple of screws holding it from the backside, and it will lift right off.

If there are a lot of knobs with different sizes, you might even want to make a diagram on a sheet of paper, and tape each knob where it belongs, on the diagram.

### **Dealing With (Removing) Stubborn Knobs...**

To remove stubborn knobs that don't want to pull off by hand, use two rounded spoons: slip the spoons under opposite sides of the knob, bowls facing down and handles opposing each other, and push down on the spoon handles to "lever up" the knobs. Put protective cloth, cardboard or leather underneath the bowls of the spoons first, though, to protect the faceplate against possible scratches.

Some knobs, often the larger ones like the volume knob, have a tiny screw set down inside a small hole on their side, which anchors them to the shaft. With those, you need to use a tiny-sized allen wrench to loosen that, before the knob can be pulled off.

Sometimes you'll need a jeweler's screwdriver (Phillips head), but almost all of the brands require allen wrenches instead. Usually these are about 1.5mm in size. Both sets of small Allen wrenches and jeweler's screwdrivers can be found cheaply at any good hardware store. Get a set of the really tiny ones, and one of them should fit.

Some knobs shafts may be anchored to the faceplate with hex nuts. If those are there, you can either loosen them with an appropriate-sized hollow-shaft hex-nut driver, if you have one, or else carefully get it started using needle-nosed pliers (be careful not to slip

and scratch the faceplate: you may want to protect it first with a couple layers of masking tape to be safe). unscrew the nuts and any washers underneath, and set them aside in a safe place, labeled so you you'll remember where to put them back when re-assembling.

### **Now Let's Start Cleaning the Pots (Potentiometers)...**

5. So, let's assume you've already removed the top and bottom, and --only if necessary (which it probably wasn't)-- the faceplate, and you can see all the pots and switches. Potentiometers ("Pots" for short) are the little cylindrical can-like things with a shaft sticking out of them. There will be one (or else some kind of switch) at the end of each shaft leading in from a control knob.

There will be one or more small holes in the outer metal case of each Pot. These may be drilled holes, or just openings created where the metal cases had little tabs bent inwards to hold them on. It doesn't matter; just find one or more small holes that give access to the inside of the pot.

Start with one, and direct the spray from the DeOxit spray can, using the straw, into the hole and give it a good spray or two into the interior. You don't have to over-do it; the DeOxit will run all over inside, once you get it sprayed right in there, but use enough. Usually two blasts for about a second each will be enough. If there are multiple holes, shoot a blast through each hole, to ensure you get some into all the contact areas. After spraying, immediately (a few seconds won't matter, but don't wait minutes or the DeOxit will have evaporated too much) work the corresponding knob back and forth (from left to right) a few dozen times, through its full range of motion.

Repeat the spray-and-turn process described in step 5 for each and every pot.

### **Clean the Switches, Too:**

6. Also do the same cleaning process for every switch. You want to clean the surfaces where electrical contact is made, so spray those and work them back-and-forth. Sometimes the switches are not enclosed in cases as the pots are, so you can see their contact surfaces. In these cases, spray (or brush) the DeOxit directly onto the contact surfaces. Some switches are covered in metal boxes like the pots are, though. SOMETIMES these boxes have little covers that easily lift off: if so, you can remove the cover and spray the contacts directly. Whatever form they are in, it doesn't matter: just spray through any little holes or openings you can find in the case, or else directly on to the contacts, and then do the back-and-forth thing with the knob shaft, a few dozen times or more.

### **After Cleaning Each Time, Apply Lubricant/Protectant:**

7. For EACH of the above things you've cleaned (pots and switches), AFTER cleaning them with the DeOxit red stuff, you'll want to follow-up with a shot of DeOxit ProLube or DeOxit GOLD, to lubricate and protect the switches. Just spray it in there and work the

knobs a couple times to spread it around. You don't need to work the knob dozens of times for this step, since you aren't trying to scrape off oxidation any more, just spread the lubricant.

#### **Clean Jacks and Socket Contacts, Too:**

8. After you have finished cleaning all the pots and switches along the faceplate, you still aren't quite done. Look at the jacks where the headphones get inserted. There will be some springy metal strips there, that make contact with the headphone jack when it is inserted. Clean those off with the red DeOxit, using small mascara brushes (or Q-tips) inserted through the jack-hole, or even just reached in through the side if there is room for them. [Use DeOxit red stuff from the little bottles for this, not the spray. Clean them well, then add a layer of the ProLube/Gold stuff. Just apply it with a Q-tip or brush, same as the red stuff. Alternatively you can just put some of it on the headphone plug, and run it in and out of the jack a few times, turning it a little, as a means of application. Again, you don't need to "work" the lube so hard: use the red stuff for the cleaning, and the gold as a final step, just to add a protective and lubricating film to your newly-cleaned surface.

Repeat this process for any other contacts that haven't been cleaned, such as microphone jacks if there are any, in the faceplate area. At this point, you should have cleaned every pot, switch or jack in the faceplate area.

#### **After the Front-side contacts, Clean the Back-side Ones, Too:**

9. Now turn to the BACK of the receiver. There will be more contact points there, where RCA jacks are inserted for inputs and outputs. You'll need to clean each one of the jacks. Don't just clean the outside parts you see from the outside. It is critical that you clean the INSIDE parts, where the center shaft of the plug goes in. Use either pipe-cleaners or mascara brushes, with some DeOxit brushed on them from the little DeOxit bottles. Brush in-and-out with the DeOxit-ed mascara brushes or pipe cleaners, as if they were, uh... well, you know, "getting it on"! You'll probably be able to see the contact surfaces from the inside, and can see that they are getting cleaned. When you think they've had enough and are fully clean, add a final dose of the ProLube/Gold stuff to lubricate and protect the newly-cleaned surfaces.

#### **Make Sure You Clean ALL the Connector Surfaces:**

10. Now, having cleaned all the RCA jacks, look at what else is on the back of the receiver. You probably have some more contact surfaces there, where electrical contact is made between two conductors, such as screw-connectors to attach antennae, and some form of speaker connectors. Clean each of those surfaces, too, following the same steps as above (a good scrubbing with red DeOxit, followed by a protective bit of the gold stuff). By this time, you should be able to do this "on autopilot", while enjoying background music from your other system.

### **Don't Forget to Clean the Fuses, too:**

11. There is another type of contact surface that you shouldn't forget: the fuses! There will probably be one power fuse, accessible from the back side of the receiver. Unscrew the cap that holds it in place. You may be able to do this with your fingers. Otherwise it will probably have a big "x" you can use a thin coin like a dime or a large Phillip's -head screwdriver to loosen it up with. Remove the fuse and clean both ends of it, as well as both ends of the fuse holder. You'll probably need to stick a DeOxit- carrying Q-tip, mascara brush or pipe cleaner into the hole, to clean the inside contact surface. Again, you can follow-up with the Gold stuff (but you knew that already by now, huh?). Now look at the inside areas of the receiver. There will probably be a few more fuses scattered around the circuit boards inside. One by one (so you don't mix them up!), remove and clean the ends of the fuse itself, along with the little holders that it clamps into. Then replace the fuse, and move on to the next one. Repeat until you've cleaned up every fuse you can find.

### **You Are ALMOST Finished!...**

12. At this point, you should have cleaned up every electrical contact surface --pots, switches, and jacks-- in the front and back of the receiver, as well as all the fuses. Basically, you are FINISHED with the DeOxit cleaning process!

### **But the Relay Contacts May be Dirty, Too:**

BUT... there is one thing I should mention, just to be complete: There is one more non-permanent or intermittent contact type in your receiver, which can oxidize and affect function and sound. That is the contact surfaces in the relays.

These are usually semi-complex-looking thingies housed in clear plastic boxes, with black plastic bases. You can see the little contact points on metal leaf-spring things inside them. I would suggest just leaving them alone, unless you find they are causing a problem, as they can sometimes be tricky to open up (some cases aren't made to be opened), and if you screw them up you'll have to buy new ones.

But if you really want to be thorough, those surfaces should be cleaned, too. IF the case comes off, then you can just gently put a little strip of regular typing/photocopy paper between the contacts, gently close the contacts on the paper, and pull the paper out. You may see some dark streaks or smudge lines on the paper the first time you do this: that is the carbon/oxidation being removed. Do this about twice, or until the paper comes out completely clean. Be careful to do this gently, making sure you don't twist or bend the metal strips: the contact surfaces need to make perfectly square face-to-face contact.

If the relay contacts are very dirty, you may need to try using a VERY fine sandpaper, like 1500 or 2000 grit, but try the regular paper alone first --scratches from sandpaper are more likely to create faster re-oxidation in the future. Frankly, if the contacts are that

dirty that you need sandpaper, you might want to consider replacing the whole relays, but that is a task beyond the scope of this post.

MOST OF THE TIME, you'll be fine just leaving the relays alone, so you may want to skip this if it intimidates you, but as long as you can get the case open easily, it is worth doing.

IMPORTANT REMINDER: You DO NOT USE DeOXIT OR ANY OTHER CLEANER ON RELAYS!!! Just dry clean them with paper (or very, very fine sandpaper/emery paper).

### **A Few Things to Consider Before We Are Done:**

13. NOW you have cleaned every single contact surface in your receiver. The electrons should be able to flow freely through all their intended channels, pretty much as they did when the thing was brand new. YOU ARE ALMOST FINISHED!

Many people recommend waiting overnight, to be sure all the DeOxit has dried, before turning on the receiver. Just as many people (including myself) wait only ten minutes or so before turning the power back on, and never seem to have a problem. The choice is yours.

In any case, if you plan to do further troubleshooting, you may wish to plug in and turn on your receiver before re-attaching the casing, to try it out. If you do this, remember that there is dangerous live current inside it, and don't touch anything inside, except the usual controls and such on the outside that you would touch anyway in normal use.

Also, if you have the case off, make sure nothing foreign (like a screwdriver shaft, pipe cleaner, etc...) is touching anything inside the receiver. If you accidentally short anything out, you may not only hurt yourself, but you may easily "fry" parts of the receiver.

However, if you are a non-technical person who doesn't know what they are doing and won't want to start fiddling with further repairs, anyway, then I suggest you close it all back up, before testing it.

There is one reason why you might want to test it first, though: Sometimes one DeOxit treatment isn't enough to fully clean really dirty contacts, and problems may remain or recur if they aren't yet clean enough. If you test it at this stage and still get some crackling when operating one of the controls, you can blast it again with DeOxit and re-crank that control (i.e., repeat the whole cleaning process for that control) again. It is easier to do this before putting the case back on, than after!

### **Re-Assembly Time:**

But let's assume that you are finally finished and ready to re-assemble things:

Start by re-attaching the faceplate and knobs, if you took them off (you probably didn't, anyway). Then re-attach the bottom plate (including the feet, if you removed them). Last of all, replace the top cover.

If you set your knobs and screws and such all aside carefully, and kept the screws for each section in separate, marked containers as I suggested before, this should be very

easy. If you kept the screws for each section separate, then if at any stage one screw is left over (a "proverbial" problem!), at least you'll know which section it came from, which will considerably shorten the time and hassle it will take to find where it goes.

Once everything is all covered back up again, you should have a receiver that looks just like it did before, but now all the oxidation that acted like blockages in pipes have been cleared out, and the electrons have freedom to flow again where they are supposed to. Connect it back up, turn it on, and check the sound. Try all the functions and controls. Turn them all back and forth a little or operate them a few times. Everything should be quiet and right.

### **Some Simple Troubleshooting:**

If you still have crackling or dropouts, then one of two conditions exists:

(1) Some of the contacts (as mentioned above) may not be clean enough yet, so you may need to open it back up and clean those. Most of the time you can tell if this is the case, as the problem will come and go exactly when you fiddle with that particular contact, so you can tell which control needs re-cleaning. HOWEVER, if there are several contacts that are still dirty and are chopping in and out randomly, it can be a little confusing to identify which ones are the problem. [That is one reason why we don't always bother to test the results after cleaning each separate control. It is better to clean them all first, and then test.] It is very unlikely this will happen, though, if you followed the above instructions properly.

**OR**

(2) If you are still having problems, there may be something else wrong, like failing components inside. That is for a tech to handle (or DIY, if you are willing to learn enough electronics repair), and beyond the scope of this post.

Most of the time, if you have followed the above process, your receiver will function fine, and sound markedly better than it has in many years.

### **What's Next?**

I'd still recommend doing (or having done) a complete re-cap and check-over, setting of bias and DC offset, and tuner alignment, but that is way beyond this post. Even if you decide to take it to a tech and have all (or some) of this done, at least you may save some money by having done this much first, since otherwise your tech will do it first, himself, and charge you for his time doing it. Remember to tell the tech **EXACTLY** what you did!

### **NOW You have FINISHED!**

CONGRATULATIONS! You have just finished your first full, correctly-done DeOxit treatment of your receiver! Do it once, do it right, and you shouldn't have to re-do it for quite a while