How To Core Glass, or "All My Life's A Circle"

Many of you have written to ask, "How DO you make those perfectly circular cabochons?" and we've directed you to our fabulous sets of diamond coring drill bits, which has, in many instances prompted the next question, "How do you USE them?", which has prompted the writing of this article.

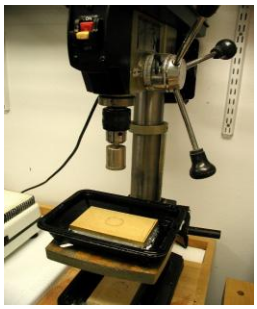
Now that you know how to build a "Drill Buddy", you are well on your way to being able to core glass; however you WILL need one other important tool, namely a drill press. Now, before your eyes glaze over at the thought of another "expensive" piece of machinery, let me put that myth to rest by assuring you that you CAN and SHOULD get a very nice drill press for UNDER $60.00!! I got mine for $49.99 at a wonderful hardware store called Harbor Freight, (click on this link and type "Drill Press" in the Search Box in the upper left of Harbor Freight's home page) but I've seen many other great bargains at Home Depot, Ace, Lowe's and even those wonderful hometown hardware stores! You DON'T need a fancy drill press that has all the bells and whistles, so don't be talked into buying a drill press that makes great martinis; you DON'T need anything THAT clever! By the way, since you may be making a trip (either virtually or in person) to the hardware store, make SURE you purchase a good pair of safety glasses and some hearing protection as well – you're going to need them!

Okay, so now that you have purchased a drill press, you need to find a place to mount it. Yes, ideally you SHOULD mount the drill press to a work bench or table because it is a top-heavy piece of equipment and is designed to be semi-permanently mounted to a sturdy table.

Once the drill press has been securely mounted, you will want to lower the table (that's the flat tray that slides up and down the column) so that it is out of your way before you insert a drill bit.

Inserting a drill bit into the chuck of the drill press is done just as easily as you would insert a drill bit into hand-held drill. You will first open the chuck to allow for the insertion of your bit and then manually tighten the chuck before using the chuck key to tighten the chuck securely around the shank of the drill bit. It is important that you make sure the drill bit is seated properly inside the chuck and that it is properly secured!

Now, place your empty (no water, no glass) Drill Buddy onto the drill press's table and adjust the table height by raising it back up the column until the table gets to within about two inches of the drill bit. At this point you will need to tighten the table into position so you can check to see whether the height is sufficient for your drilling purposes. DON'T tighten the table to the point where it makes further adjustments more difficult, at this point you are fine tuning the position of the table, you can lock it into position later!



Using the device with three arms, which I will hereafter refer to as the pilot feed lever (I've heard it referred to by many different names, such as capstan wheel, three-handled spindle and quill feed to name but a few), you will grasp one of the arms of the pilot feed lever and bring it slowly toward you so that the drill bit is lowered down toward the Drill Buddy. Does the drill bit connect completely with the block of wood in the drill buddy? If so, you can gently release the pilot lever arm and properly tighten the drill press's table into position. If the drill bit does not connect with the block of wood, you will gently release the pilot lever arm and slide the drill press's table a bit higher up the column and repeat this process until your bit comes in complete contact with the wood block. Remember, you need room to maneuver your glass pieces in and out of the Drill Buddy and you will also need to move the Drill Buddy on and off the drill press's table, so the whole idea of adjusting the table is to allow ease of use! Take your time, this is an important step! Here's a great illustration of all the components of a drill press.

Once you have made all your adjustments, you will want to plug in your drill press but before you do, you MUST BE CERTAIN THAT THE ELECTRICAL OUTLET IS HIGHER THAN EIGHT INCHES FROM THE BASE OF THE DRILL PRESS!! Why you ask?? Well, let's not forget you WILL be using water to core your bits and water and electricity are a dangerous combination! By making sure that the outlet for the plug is HIGHER than eight inches from the base of the drill press, you are ensuring that IF water should splash out of the Drill Buddy and onto the power cord, it could not travel into the outlet. This simple bit of common sense is too often overlooked!! Now, you may plug in your drill press!

We know you're anxious to begin, but there are a few more important issues we simply must discuss, like safety glasses; you simply MUST wear safety glasses when working with your glass! We strongly recommend polycarbonate safety glasses with WRAPAROUND lenses (meaning that your eyes are safe from any objects that might enter from the sides). These are inexpensive and are sold at any hardware store! Your prescription glasses are NOT sufficient! Safety glasses are designed to fit OVER any prescription glasses. You may also want to wear an apron because this can be messy work!! If you have long hair, be SURE to tie it back securely! Do NOT wear gloves and DO NOT wear a shirt with droopy cuffs!! SAFETY FIRST!!

Now, your Drill Buddy is in place on the table of your drill press. You have checked to ensure that when the pilot feed lever is lowered onto the wood block it makes a complete connection (I'm just checking here). Your drill bit is well secured in the chuck and your table has been tightened securely in place. (Still checking!) You PROMISE you have assessed the situation with your electrical outlet and that there isn't ANY chance that water could EVER make it into the outlet?? Got those safety glasses on?? Okay, then we're ready to proceed to the next step.

It's now time to add water to the Drill Buddy. You can do this simply by filling an old Clorox bottle or milk jug with cold, clean water and dispense enough water into the Drill Buddy to cover the block of wood. Now, place your glass piece onto the block of wood and continue adding water until your glass is under water as well (at least 3/8ths of an inch)! Lass TIP – The colder the water, the better. If you can add ice water, or even a few small ice chips to the water in the Drill Buddy you will help preserve the life of your diamond coring drill bits! Keep that water handy as you WILL be adding water regularly! Now, <u>remove</u> your glass piece.

Before we begin coring, take a moment to familiarize yourself with the drill press's ON/OFF switch. Go ahead and turn it on, then turn it off. Do this a couple more times, just so you're comfortable. Ready to begin the actual coring process? Great! Place your glass back onto the wood block in the Drill Buddy and hold it down gently, but firmly against the block. DO NOT turn on the drill press yet!

Before you begin coring you will need to get some idea of WHERE you want to make your first cut. While holding the glass firmly against the wood block, you will gently lower the pilot feed lever until the drill bit makes contact with the

glass. At this point you may decide that you need to adjust the position of the glass and or the Drill Buddy in order to make the cut exactly where you want it on the glass. SLOWLY release the pilot feed lever (NEVER just let go of this lever) and reposition the glass and/or the Drill Buddy and repeat this process until you are satisfied that the drill bit will core a piece of glass in the desired spot. Once you're satisfied with the position of your glass, DON'T let go, or the glass will move and you'll be back to square one!

Before turning on the drill press, check to make sure you have a good grip on your glass and that you are pressing it firmly to the wood block. You will need to be comfortable with the fact that you will be holding the glass while coring the piece, so make sure your fingers are out of the way! Ready? Turn ON the drill press and allow a few seconds before you SLOWLY lower the pilot feed lever toward the glass. When the bit first hits the water it will kick out a bit of spray, but just remember it is VITAL to ensure that your glass in UNDER the water while coring! When the bit first comes in contact with the glass you may hear a most unpleasant high-pitched squealing (aren't you GLAD you are wearing some hearing protection?) Don't be alarmed by the noise; just keep SLOWLY lowering the pilot feed lever as the diamond coring bit chews its way through the glass. The key here is patience. This is not a race! As the drill bit nears the bottom layer of your glass, you may hear a subtle "click" or "snap" and this means your bit has "broken" through to the wood block. Now here's the most important part of all … SLOWLY release the pilot feed lever (while still holding on firmly to the glass) and then turn off the drill press. Do not attempt to move the glass until the drill press is completely OFF!

Now, in SOME instances, your perfect little glass circle is lodged up inside the drill bit (this happens more often with the larger CORING bits, as opposed to the very smallest bits that are only used to BORE a small hole through the glass). When this happens, you will need to remove the drill bit from the drill press and insert a mandrel (a metal rod about 1/16th of an inch in diameter) into the holes at the top of the in the drill bit and poke the glass out. The Two Lasses are now INCLUDING a mandrel with all our drill bit sales!

Once you have freed your little gem from the drill bit, you can place the bit back into the chuck, tighten it into place and repeat the process. Check your water levels each time before you begin and when the water becomes too murky (from

the glass sludge), you should dump the "swill" in the Drill Buddy and add a fresh batch of water.

You WILL need to do a bit of fine tuning with either a diamond sanding block and/or a grinder in order to smooth out any little rough spots before fire polishing. I think you will see that the results are WELL worth it!

One last little tip, BEFORE you begin coring pieces of expensive dichroic glass, practice on some inexpensive scrap to help you get acquainted with the process. And let me add that while all of this "sounds" very complicated, it really is not. Much of this article is devoted to your personal safety and is written in great detail, so that you can core glass with confidence!