

THE FLEX SHAFT

The flex shaft is a very important tool used in jewellery making and it is indispensable once the user becomes comfortable with its' features and familiar with all the different attachments. There are so many members at the KLMC, that it is difficult to reach out to make sure that everyone knows how to use it properly. Not everyone gets instruction on it and therefore may be using it without full knowledge of how to utilize the attachments both effectively and safely. There is a lot to cover. PLEASE read this from start to finish, as there is potential for mis-using the flex shaft and therefore being unaware that anything is wrong....and it's really hard to change a bad habit. There are pictures included along the way because visual learning is always easier.

The drawers have been re-organized with all the finishing and sanding items to make it even easier to access, as everything is placed in categories and in order of their grits. It seems things get messed up on a regular basis, so PLEASE pay attention to the labels and put things back from where you got them. It would be extremely frustrating for the next person if they think they are going from coarse to fine, only to find out that the order of grits has been switched. This is just common sense and also being considerate to everyone who is using it after you.

PROPER USE OF THE FLEXSHAFT

For safety, a dust mask and glasses must be used unless the plastic screen is in place. For extra safety, a mask and glasses are still a good idea even if using the shield. There are two units. The secondary unit, in the corner, is impossible for a lefty to use as the shaft is not long enough to curve way over to the left of the desk and then face right for use. **IT IS EXTREMELY IMPORTANT THAT THE FLEXSHAFT IS NOT PUT INTO AWKWARD BENDY POSITIONS.** This is why the motor is placed up above the desk, so that the shaft is not bent and stressed. Please do not put the shaft into sharp bends. This is a death wish for a flex shaft. Also, it is important to ground your hands so that there is more control when using the flex shaft. Bring your working hand as far down the hand piece as possible so that

your hands are actually touching. This can be accomplished in an “under” position (pen grip), or an “over” position (fist grip).



By joining your hands so that they are one, it makes precision and accuracy much easier than coming at your piece free wheeling and from afar with no thoughts about control.



The shorter the cantilever from your working hand to the piece the better, so that means your hands should be together, and your forearms should be anchored onto the table top.



No one has perfectly steady hands, so by grounding your arms and your hands, you will do a better job.

Also, putting the flex shaft under severe friction/tension is not good. If you are drilling a hole in metal, especially if it is thicker, you need to use lubrication (wax

or speedy lube) on your bur, and you need to put the drill bit in and out to let the pieces of metal move out of the hole so that the bur doesn't seize. It's just like drilling through a piece of wood. The woodworker drills a bit, then pulls the drill bit out to let the sawdust be released. Everything that we can collectively do to maintain the equipment and extend the longevity of our tools will mean a better environment within which we can work, without frustration and confusion. If we are all on the same page, we will diligently go forward from here, making every effort to keep our working space clean, organized and in good working order.

KNIFE EDGE SILICONE SANDING/FINISHING DISCS



These go from white (coarse) to black (medium) to blue (fine) to pink (extra fine). If you have a blob of solder, or lots of scratches, or lots of finishing to do, don't start with the 3M radial discs....you'll be wasting your time and wasting these very expensive finishing discs. Please start with these silicone discs. The white (coarse) is very aggressive and will remove big hunks of unwanted silver/solder. Going through the series will bring your piece to a nice shine, which then can be improved upon with the radial discs. The white ones are work horses, and because they are used the most for removal of blobs and scratches, they wear out more quickly and will need to be replaced more often. There are lots of these both in the little drawer as well as in the unit to the left of the black units, which holds more inventory. That being said, don't squander them. Everything has a price tag on it, so use it until it needs to be thrown away.....and then THROW IT AWAY! DON'T PUT LITTLE TINY WORN OUT DISCS BACK IN THE DRAWER!



However, sometimes, when the disc has worn from a knife edge to a round edge, you need to change it to get back to a knife edge if you are still working in a tight space. In this case, don't throw the disc out, as there's still more life in it.



POP-ON SANDPAPER DISCS



These go from coarse to extra fine. These go on special pop-on mandrels. Please keep these mandrels with the discs, as they seem to find their way into other drawers and then are hard to find. They can only be used with these discs which are to be placed on the mandrel with the SANDPAPER FACING DOWN.



It is almost impossible to place them face up. The metal “lock” is on the sandpaper side and that’s what holds it on the mandrel. By placing the finishing surface down, you can see what you are doing from above without blocking your view with your hand and the flex shaft and it prevents you from putting the flex shaft in a bent position.



These are excellent for getting into tight spaces and make far less mess than the silicone discs. The coarse disc is also terrific for removal of scratches and excess material, just like the coarse silicone knife edge disc, and similarly, going through the series will take you from sanding to finishing. Again, if there’s still life in the sandpaper, then leave it on the mandrel, but if it’s spent please throw it away and replace it with a new one for the next person. There are also some paper screw-on sanding discs, but the number is very small. I have put these in the second unit as they probably won’t get used as much since it’s far easier to pop on than screw on the discs.



BULLET NOSED SILICONE FINISHERS



These correspond in grit and colour to the knife edge discs. These are good for getting into corners, but the point on the end gets lost quickly. You can use sandpaper to re-shape the tip (with the flex shaft running) if needed, but they are a good adjunct to the discs. They can be found in the second row right under the corresponding discs, and use a specific mandrel onto which the finisher is screwed. To change them, they just need to be unscrewed from the mandrel. If they are very well seated and won't budge, put the mandrel back in the flex shaft, place the chuck key and hold it in a locked position. With the mandrel stiff and steady, it will back off easily and can be replaced.



3M RADIAL DISCS



These go from yellow (extra coarse) to red-brown (coarse) to blue (medium) to pink (fine) to peach (extra fine) to light green (extra extra fine). These should be used after removing large blobs and scratches as mentioned above. These discs are VERY expensive, so please use them in the SECONDARY stage of finishing so as not to waste them. And again, please keep the mandrels in the correct drawers, and when you decide that there is no more oomph in the discs, then throw them away. Don't put them back in the drawer. These mighty little discs can still pack a whollop even when they look worn, so use them to the bitter end, then throw them away. They should be stacked four to five at a time with the fronds curling down to the RIGHT. The flex shaft turns counter clockwise in the forward position, so with the fronds curling right, when the flex shaft is in action, the fronds will rotate on the metal in a passive "with the grain" direction, instead of "against the grain", which wears the discs out prematurely and is



counterproductive in the finishing process.

These crazy little discs can get into nooks and crannies like nothing else can and are wonderful for patiently getting to that beautiful shiny finish.

CHANGING DISCS

For either the radial discs or the silicone discs, both being used on a screw mandrel, there are two ways to go. Firstly, you can engage the chuck key and hold it there to “lock” the shaft mechanism and use the yellow screwdriver which is sitting on top of the left side unit to remove the screw, then change the disc(s), and replace the screw OR, even simpler, place the flex shaft in the REVERSE position, hold onto the disc(s) gently and VERY LIGHTLY press the pedal, and the screw will come out. After replacing the disc(s), put the flex shaft back into the FORWARD position, place the screw in place, and VERY LIGHTLY press the pedal and it will engage into place. If it is too intimidating to do it this way, then use the screwdriver.



While we're talking about placing the mandrel in the flex shaft, there are THREE important things to mention. The first one is that the mandrel needs to be FULLY SEATED in the unit.



Fully seated

Failing to do so puts your safety at risk as there is a reason why the shaft is long....it needs to be gripped securely. If you place the mandrel high in the flex shaft there is not as much holding power, and then a risk that the mandrel could either bend at the shaft, making it useless (\$\$) or even worse, fly out and cause injury to you and the flex shaft....not great.



Not full seated

Secondly, the mandrel needs to be FULLY TIGHTENED with the chuck key...put your guts into it! If it is not tight, again, it will come loose and wreck the mandrel because it will bend AND it could be dangerous when it comes flying out. Thirdly, use the chuck key to bring the aperture of the hole really close to the size of the shaft, so that when you put in the mandrel it is sitting almost tight, and is secure enough to tighten down and ensure that it is in STRAIGHT.



Correct



Incorrect

There are two different sized mandrels, so this is a very important thing of which to be aware.



If the mandrel is placed even slightly off centre, which is really easy to do as it is difficult to see with your naked eye, the mandrel will rotate off the centre axis and bend as soon as it hits whatever is being polished/sanded/finished.



Mandrel placed off centre axis

Ultimately, it will bend and be wrecked and may come loose and become a safety hazard. It is always best to run the flex shaft BEFORE using it on your metal to ensure that you have placed the mandrel in STRAIGHT. It is one little extra step that takes seconds, but could prevent a disaster. Wrecking a mandrel is a shame, and preventable, but wrecking the flex shaft or hurting yourself is completely avoidable by taking this extra little precaution. This tool is super simple to use. But use COMMON SENSE. Seat the mandrel fully in an already almost tightened aperture and screw it in tightly. Period.

CYLINDRICAL SILICONE POLISHERS



These are also found in the left side drawer unit. There seems to be some misunderstanding about the purpose of these polishers. The reason they are cylindrical, is that they are to be used specifically for CONCAVE spaces...i.e. inside of a ring. Seeing the shape of most of these finishers indicates that they are being used for everything else as well.



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The silicone discs and sandpaper discs are available for convex and flat surfaces, so let's keep these guys for what they were intended, because once they lose their cylindrical shape, they are useless inside of a ring as the surface area isn't being hit all at the same time. To replace these, they simply screw off, but if they are stuck, use the technique discussed above for the bullet nosed finishers. These are in specific drawers labelled blue (coarse), green (medium), grey (fine) and beige (extra fine). These seem to have the worst habit of ending up in the wrong compartment, so again, please take time to be careful, so that the next person is using the proper thing in the proper order. They get darkened from use and it is difficult to see the colour, but taking it out and putting it back should keep things in order. If there is any confusion, just use your fingernail to scratch the surface and the colour will become obvious.

The chuck keys have been moved to the top right of the left unit and the top left of the right unit. By moving them, the attachments that go together can be kept

in a straight line so that it will be easier to keep things organized. There is also a third chuck key which will just be on the table or on either unit.

FELT PADS



These are on removable mandrels as well as non-removable mandrels. They are labelled DISCS and BULLET for both ROUGE and TRIPOLI. PLEASE KEEP THESE IN THE PROPER DRAWER so someone's precious project doesn't get wrecked from using a tripoli felt when the user thought he/she had a rouge felt. There are also some BRUSHES, which don't get used much. They were originally separated so that some were designated for tripoli and some for rouge. They look rather untouched. If you were to use one for tripoli, it would be spent and garbage by the time you were finished. Some of these are removable on screw on mandrels and some are not, and thus would be thrown out in their entirety once used. Be careful not to throw out a screw on mandrel with these! Just check the top for a screw....if there's no screw slot, it's a throw away, but not until it is fully used. If there is a screw, then replace the brush or felt pad as needed using either method discussed previously.

WIRE BRUSHES



There are silver coloured ones and brass ones. The brass ones are softer and gentler. These are used to produce a soft matte finish on your piece if you are not

interested in a shiny finish. You will get the same effect if you use the rotating brass polisher by the drill press. Some people are frightened of the polishing wheels for tripoli and rouge as they spin things out of their hands easily. There is a learning curve for these wheels WHICH IS SPECIFICALLY WHY EVERYONE SHOULD BE WELL VERSED IN USE OF THE FLEX SHAFT as it gives you an option if you are not comfortable with the polishing wheels. The rotating wire brush, however, is very gentle and not scary at all. So, if you are looking for a matte finish, it is just as easy to get this with the big wheel as it is with the little wire mandrels on the flex shaft.

SEPARATING DISCS



There are diamond edged metal ones, and two sets of non-metallic discs, one being thin and the other being thick. The metal ones can be very aggressive and should be used with great care! But they are terrific for removing something from a piece, as well as cutting through or separating two pieces from each other, and also for making designs in stone. Just be VERY CAREFUL. The non-metallic discs are good for cutting through wax, but never for metal as they aren't strong enough and will shatter.

SPLIT MANDRELS



These are for use with sandpaper. They haven't really taken off but they have their place when finishing INSIDE a ring. They were recommended by a real jeweller! Jewellers HAVE to get the insides of their rings flawless, where most of us just say "good enough!"but if you are making something as a gift, or if you are anal (!) or you are selling your ring, these are fabulous. The jist is that you secure a piece of whatever sandpaper you wish in the slot and tape it down. It is important to place the paper the correct way up as, again, with the flex shaft spinning counter clockwise, you want the sanded side to be curling face-up over the mandrel. The paper spins around the mandrel and makes a crazy buzzing noise while hitting the inside curvature of the ring which gets sanded evenly! If you use these and take a section of sandpaper and tape it in, PLEASE mark with a sharpie which grit is in place so that the next user knows what it is and can change it if it is not what he/she wants.

