

IMPRESSIONING MANUAL FOR AMATEUR LOCKSMITHS

Version 1.01

PREFACE

Although there are some good resources on the Internet describing how locks work and how to pick them, there so far hasn't been much good information available regarding impressioning. The purpose of this manual is to fill that void. While impressioning doesn't share the glamour attached to picking, it is nonetheless a very effective tool for both amateur and professional locksmiths. Just give it a try and you will see that it works.

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1.0. INTRODUCTION

1.1. Impressioning is a method of fitting a key to a lock without taking the lock apart. Basically, here is how it works: A key blank is inserted into the lock, then turned to bind the pins. When the pins are binding, the key is wiggled or moved to produce marks on the blank. If a pin is at the shear line it will not bind, and no marking will occur. When marks are found, the places on the blank which have marks are then filed. The marking and filing process is repeated as necessary to produce a working key which raises all the pins to the shear line, thus opening the lock. Although impressioning is not hard to learn, it does take some practice to develop the skill. Of course, the more you practice, the easier it gets!

1.2. How long does it take to impression a key? With practice and by making use of shortcuts, it is not unusual to be able to make a key in about 10 minutes. Some locks will take longer. Sometimes as little as 5 minutes is possible if you are both lucky and skilled. If you try to pick a lock, you don't know in advance if it will take one minute or thirty. With impressing, opening a lock is a more reliable and predictable process.

2.0. PRACTICE LOCKS

2.1. You can start out with any lock, but I will suggest starting with an average sized four-pin Master padlock. They are easy to impression, and blanks can be easily obtained at a hardware store. You should get more than one blank for practicing. Five is probably a reasonable number.

2.2. Below are some depth and spacing data for the Master padlock, which as you will see later, can be useful (although not necessary). The depths are measured from the bottom of the blade of the key, up to the bottom of the cut where a pin will rest.

Cut #	Depth	Cut #	Depth
0	.280 "	4	.220 "
1	.265 "	5	.205 "
2	.250 "	6	.190 "
3	.235 "	7	.175 "

The distance from the shoulder of the key to the first pin is .185", and the spacing between pins is .125" (you really don't need these last two numbers, but they may be helpful references as you are first learning to recognize what the marks look like).

2.3. Another good approach to using a practice lock is similar to that sometimes recommended for learning picking: Get a lock cylinder and remove all the pin stacks but one. After you have impressed the one pin lock, add another pin stack and try again. Continue adding pin stacks until you can impression the whole lock.

3.0. FILES

3.1. Six inch, #4 Swiss-cut round or pippin files are normally used for impressing (the files are called 6", but are actually about 8" long including the tang). Both types of files taper down to a smaller cross-sectional size towards the tip. The round file is usually used in conjunction with a small flat or triangular file which is used to shape the flat sides of the cuts on a key. The pippin file has sort of a teardrop cross section, rounded on one side, and with two flat surfaces meeting at a knife edge on the other side. The flat surfaces are used like the flat file above to shape the sides of cuts.

Chances are that you won't find these kind of files in your local hardware store, just because they have finer teeth that are required for most purposes. Locksmith suppliers carry them, of course. You can also get them through a machinist's or jeweler's supply house.

3.2. The particular #4 Swiss-cut pattern is used for impressing work because it leaves a very fine, slightly dull, and slightly corrugated surface on the blank, which permits visible marks to be made by the pins rubbing on the blank with very little pressure. A few locksmiths use a #2 Swiss cut pattern because it cuts faster, but most authors specify the #4. Having tried both types, I strongly recommend the #4 also.

3.3. It is also a good idea to get a handle for the file, as it permits better and more comfortable control of the file. A file card is a special brush made to clean the teeth of a file. The soft brass of the key blanks tends to clog up the teeth on an impressing file a little bit, which affects the quality of the fine surface you are trying to produce on the blank. Don't be cheap - get a file card too.

3.4. A few tips on using files: Files cut only on the forward stroke. So, push the file slowly and evenly forward with gentle cutting pressure, and draw back the file without any cutting pressure. Particularly when impressing, do not apply pressure when drawing back the file, as it tends to polish the surface of the blank (a dull surface is needed when impressing). Hold the file with an extended index finger pushing down on the top edge of the file to control cutting pressure. Light cutting pressure will produce the finest finish for producing visible marks. Use heavier pressure to remove material rapidly, followed by lighter strokes to finish the surface for marking.

4.0. BLANKS

4.1. Soft brass blanks are the best for impressing. Steel blanks are much harder than is desirable, and aluminum blanks develop fatigue cracks easily when using hard turning tension. If you can only find bright plated brass blanks, you will have to file the plating off the top of the blade with your impressing file. Only file deep enough to remove the plating, because with some locks a #0 cut requires the full un-cut height of the blade. With the plain brass blanks, you also need to smooth the top of the blade with your impressing file in order to leave a surface that will show marks - just be careful not to take off too much.

note: Some lock manufacturers use #0 and others use #1 to indicate the highest depth cut. For consistency, #0 will be used in this manual when referring to the highest depth cut (unless otherwise noted), which is equal to or very close to the full un-cut height of the blade of the key blank. A #1 cut refers to a cut which is one step lower than the un-cut height of the blank.

4.2. Some people like to prepare the blanks by either thinning them down in width with a flat file, or knife edging the top of the blade. In both cases the idea is that a very thin piece of metal can more easily be deformed than a thick one. In the case of thinning down the blade, it can also be wiggled around more in the keyway. When thinning a blade, do not thin the area immediately adjacent to the shoulder of the blank where the blade enters the keyway. You will be applying hard turning tension on the blank later and it is important not to weaken it at the point where most of the turning stress is applied.

Knife edging is used more often when the pull-out method (more about this method below in [section 5.5.](#)) of obtaining marks is to be used. Knife edging is used to thin only the top of the blade to make the initial marks more visible. To knife edge the blade, file both sides of the top

the blade at about a 45 degree angle. The idea is not to make it really sharp like a knife, just to make the edge weak enough to mark more easily on the top surface.

4.3. As an example of the utility of knife edging or thinning, I took a new blank for a Master padlock and prepared the flat top surface of the blade with my impressing file. After some wiggling, I could see one mark at the tip of the blade, which is enough to start with. But, I then knife edged the blade and wiggled some more. This time I could easily see marks from all four pins. With the knife edging, less wiggling was required and the marks were much more visible.

5.0. MAKING THE MARKS

5.1. There are three commonly used methods for making the marks. They are called wiggling, tapping, and pulling. In each of the methods, the blank is inserted in the keyway, then turned hard to bind the pins. Usually turning pressure is applied in the direction you want the lock to open, but you can try both directions to see which leaves better marks. It is important to make sure that the blank is evenly seated on the bottom of the keyway before applying turning pressure. If you are holding it tilted, some of the pins will already be pushed up and won't leave any marks.

5.2. When impressing, you will need something to hold the blank because of the repeated hard turning tension used (the tension is harder than is used for picking, but not hard enough to break the blank). A small pair of vice-grips (no larger than the 5" size) works well. Attach the vice-grips like a handle, aligned with the long the axis of the key blade (not at a right angle like a turning wrench). There are also some commercially made handles for impressing. There is at least one with a trigger handle to help pull out the blank uniformly each time, when using the pull-out method.

5.3. Wiggling is accomplished by applying turning tension, then wiggling the blank up and down causing the top of the blank to rub against the tips of the bound lower pins.

5.4. Tapping is a variation of wiggling. The blank is inserted into the keyway, then a steel rod is placed in the hole in the bow (handle) of the key to provide turning tension. A small mallet is used to tap on the bow to make the impressions. Tapping on the top of the bow pushes up the tip of the key by lever action, and tapping on the bottom of the bow pushes up the back of the key by direct action.

5.5. The pull-out method only works after you have cut down to at least a #1 depth, hence the popularity of knife edging the blank, then using the wiggle method to see if there are any #0 cuts to start with. To use the pull-out method, apply turning tension, then pull out on the blank (don't try this method on disk or wafer locks, because the disks may bend or break). Unlike the wiggle and tapping methods, the marks produced by pulling will not be exactly where the pins are, the distance away being related to how far you pull the blank out (maybe 1/16"). For this reason it is helpful to scribe lines down the side of the blank after the pin locations are found by the wiggle method, to use as a reference when filing. The advantage of the pull-out method is that it can leave more easily visible marks than the previously mentioned methods.

5.6. There is more than one way to implement the pull-out method. One technique involves attaching a C-clamp to the bow, then using the C-clamp to provide turning tension on the blank. A screwdriver is placed between the side of the bottom end of the C-clamp and the face of the lock, then the screwdriver is twisted to pry the C-clamp (and therefore the blank) in a direction out from the face of the lock (no more than about 1/16").

5.7. An effective hybrid approach is to first put turning pressure on the blank, then add pulling pressure (without actually pulling the blank out enough to start making marks - the pressure is just take up any slack between the blank and the pins and to put more tension on the pins) using your vice-grips or a commercial impressing handle, then bump or tap the blank up and down to make the marks stand out more than they would otherwise. Remember to file where the pins are, as with other pull-out techniques (see [section 5.5.](#) above).

5.8. There is an optimum amount of turning tension to apply to the blank for any particular lock. It is the rubbing action of the pins against the blank that polishes the surface of the blank to produce the little marks used for impressing. If too little tension is used, the pins will move too easily and not mark. If too much turning tension is used, the pins will jam and not mark - the pins have to be able to move a little to polish the blank's surface.

5.9 You will have better control of the impressing action if you hold the blank and handle with your hand up near the head of the blank and the face of the lock, rather than having your hand farther away.

5.10. Wrist action, rather than action from the elbow is more effective in moving the blank within the keyway to produce marks - the recommended action is more to tilt the key up and down from the wrist with a bit of a snap, verses just lifting and lowering the blank.

6.0. SEEING THE MARKS

6.1. The mere act of preparing the flat top of a soft brass blank with an impressing file, inserting the blank in a lock and removing it, without any wiggling or turning, will leave marks on the blank. There will be some streak marks where the pins have dragged across the specially prepared surface. Try it and you will know these marks look like so you will not confuse them later with the useful marks.

6.2. The useful marks you get are not really depressions in the surface of the blank (except maybe when a pin is almost at the shear line - if you start seeing deep gouges, the lock is probably about to open). A mark is normally just a subtle change in the reflectivity of the surface of the blank. The impressing file leaves a slightly dull finish, and marking will slightly polish it. To see the marks turn the blank in the light. When you hold it at the right angle, the marks appear as little tiny shiny dots. They can be hard to see in bright light, so if working outdoors, sun glasses may be helpful. Some people like to use a magnifier to see the tiny dots - even with a magnifier, you still have to turn the blank in the light just right to see the marks. With a little practice, you will locate the marks very quickly.

6.3. If impressing a dirty or weathered lock, you may find little specks of debris on the surface of the blank after marking. If there any doubt as to what you are looking at, wipe off the top of the blank to see if you actually have a mark rather than a tiny speck of dirt.

7.0. FILING THE MARKS

7.1. The rule for filing marks is simple. If you see a mark, you file there - if not, you don't (except when using the pull-out method - in which case if you see a mark, you file where the pins are; see [section 5.5.](#), above). Whatever you do, don't be tempted to guess - if you're not sure if you have a mark or not, don't file there. Work on making and seeing the marks first.

7.2. File only 2 or 3 strokes at a time before looking for more marks, because you only have to file a cut a few thousandths of an inch too deep, to pass by the shear line (a shortcut, allowing more filing at one time, follows in [section 8.1.](#)).

7.3. As the cuts are filed deeper the sides of the cuts will start to become parallel with each other, looking something like the letter U. If you leave them that way the key will get stuck in the lock. Use a flat file, or the flat side of your pippin file to angle the sides the cuts at about a 45 degree angle from vertical, making the sides of the cuts look more like the letter V. The bottoms of the cuts should remain rounded. It can be helpful to look at some other keys, then try to duplicate the shape of the cuts.

7.4. Some locks have fat pins and some lock have skinnier pins. There seems to be a natural tendency to use the middle part of the file, leaving fairly wide cuts. The cuts only need to have a radius a little bigger than the radius of the pin tips. For locks with skinny pins, try using the file more towards the tip, where it is narrower.

7.5. If you can see more than one mark at a time, it is ok to file them all at once or one at a time.

7.6. Sometimes a pin will stop marking before it reaches the shear line. So, don't be surprised when a pin that has stopped marking starts marking again after some of the other pins have been brought to down the shear line. Just keep filing until the pin stops marking again.

8.0. SOME USEFUL ACCESSORIES

8.1. For locks that are factory keyed, only certain standard pin depths are used. The standard pin depths are listed in "depth and spacing" manuals and code books available from locksmith suppliers. You can also figure out what the standard depths are (within certain tolerances) by measuring the cut depths on other keys for the same type of lock you are working on. If you think a lock is keyed to factory depths, there is no reason to look for new marks after only two or three file strokes. If you get a mark at some standard depth #n, then just file down the cut to the next standard depth, #n+1, and look for marks again.

It is helpful to have a key micrometer or dial caliper to measure the depths. A key machine can be used to speed up the impressing process by quickly cutting down to the next standard depth. Punch type code machines, such as the Clipper are especially useful out in the field. If you

use a machine to make the cuts, you will need to lightly touch up the surface of the cut with your impressing file before looking for more marks.

9.0. SHORT PINS

9.1. Some locks use "short pins" for the #0 depth ~ #2 depth cuts. When short pins are present, you can look into the keyway and see the dividing line between the upper and lower pins. It is possible to "read" the short pins to determine the depth of cuts needed on the blank without any impressing being required.

9.2. To identify the short pins visually, use a flashlight (or an otoscope, if you have one) and a straight pick, lift up all the pins as high as they will go, then look into the keyway. Withdraw the pick slowly to drop the pins one at a time. If you see the dividing line on a pin stack, depending on it's position in the keyway you can estimate the depth of cut for that pin from your experience with other locks of the same type, without doing any impressing at all. Again, if you are familiar with the particular type of lock, and you don't see any dividing lines at all, then you will know that you can start by filing down all the cuts to perhaps the #1 depth or maybe the #2 depth, etc., because you know that none of the cuts can be any shallower than that.

9.3. Another way to find the short pins is to use a probe. The probe is a straight pick, filed to a sharp point. Mine has a blade length of about 1-1/4" long. The height of the blade is about .055" at a distance of 1/2" from the tip. My probe has a series of dots down the side to measure how deep it is in the lock. To use the probe, lift up all the pins as high as they will go, then pull out the probe until the last pin drops. Slide the probe down the side of the pin and stop if you feel a dividing point between upper and lower pins. Note at which reference dot the probe is at, then push it all the way into the gap between the upper and lower pins. Note how much farther the probe has moved into the keyway. By measuring how far you can push the probe into the gap, you can measure the size of the gap, and therefore determine the cut depth for that particular pin. Repeat the process for each pin. As an example, I have found that a #1 cut on a Schlage "C" keyway will barely probe - the dividing line can be felt, but the probe cannot be pushed between the upper and lower pins. In the same lock a #0 cut has a gap of about .020" - .025", which means that my probe can be pushed in a little less than 1/4". The Master padlock can also be probed: My particular probe will enter the gap of a #1 depth pin stack about 3/16", and will go in farther for a #0 depth pin stack.

9.4. Probing can also be used to assist picking. If you can tell which pins are short and which are longer before you start picking, you will have a better idea how you are going to need to manipulate the pins.

9.5. Probing will leave little scratches on the side of the pins, but it doesn't hurt the lock.

10.0. SPOOL PINS

10.1. Upper spool pins are no problem because the upper pins never go below the shear line when impressing. A few locks have lower spool pins. Using the probe you can often feel the shoulder of the spool, which feels different than a short pin because of it's shape. If you find a

lower spool pin, file down the cut for that pin until it stops marking. Impression all the other pins normally. When only the spool in is left to be impressed the plug will turn a little and catch on the spool pin. At that point, file down the cut for the spool pin until it starts to mark again. Then continue filing it just a little bit more to bring the dividing line between the upper and lower pins down into alignment with the shear line.

11.0. PROBLEMS WITH BLANKS

11.1. Due to the stresses encountered during impressing, sometimes a blank will start to crack, usually on the blade near the shoulder where it just enters the lock. If this happens, stop - you don't want a broken-off key in the lock to extract. You can duplicate the cracked blank on a machine or by hand, then continue impressing with the new blank. If you don't have a key machine, or a key micrometer for duplicating the cracked key, there is an old method you can use: Smoke the blade of the cracked key blank over a candle, covering it with soot. Clamp it next to a new blank using a vice, C-clamp, vice-grips, etc., then file down the new blank until you just start to hit the soot on the old key blank. As soon as you start to scrape off the soot, stop filing. It is important not to go too deep.

11.2. If you are cracking blanks more than occasionally, you probably are using too much turning pressure. Strive for moderation - just enough pressure to make the marks.

11.3. Turning and wiggling a blank in one direction, then turning the other way and wiggling again tends to fatigue the blank faster than working in only one direction. So, especially watch for cracks if you are using both directions.

11.4. If you accidentally make a cut a little too deep, there are a couple of ways to try to save the blank. It can be peened with a small hammer or pin punch on the side of the blade, just below the bottom of the cut to raise the bottom of the cut, or a little solder can be added to the bottom of the cut. Solder is very soft, however, and won't last long. So a duplicate will need to be made from your impressed key pretty soon.

11.5. If you find that you have lowered a particular cut to the maximum depth (e.g. #9) without finding the shear line, you obviously have filed too far. To save the good part of your work, duplicate the blank except for the one overly-deep cut, then continue impressing with the duplicate blank.

12.0. MASTER KEY SYSTEMS

12.1. After you have impressed one lock in a master key system, the other locks will probably have only two or three pins with different depth cuts. If you impress a few different locks you will soon have a master key at some level.

13.0 DIRTY LOCKS

13.1. A lock that has been oiled can be extremely hard to impress. A long time ago, gasoline was used to flush out a dirty lock. Today, some no-residue electronics spray cleaner would

probably work well. After flushing out the lock, you can speed up the drying by blowing some air into the keyway. There are canned compressed air "dusters" which are suitable for this purpose.

14.0. DISK TUMBLER LOCKS

14.1. Disk tumbler (wafer) locks can be easily impressed using the same techniques described for pin tumbler locks. However, pull-out techniques should not be used because of possible damage to the disks.

14.2. Typically, a little less turning pressure is used when impressing disk locks as compared to pin tumbler locks.

14.3. The impression marks made by disk locks may look different than the marks made by pin tumbler locks. Depending on exactly how the disk is contacting the blank, you can get anything from a small dot at the edge of the blank, to a straight line across the width of the blank.

14.4. Sometimes it is possible to determine the key cut depths for a disk lock without doing any impressing at all. The technique is called "reading" the lock, and with practice it can be done in seconds. To read a disk lock, use a straight pick to lift up all the tumblers. Slowly pull out the pick watching each tumbler as it falls. You will see that some disks protrude further down into the keyway than others. Typical disk locks use 5 different depths, numbered #1 through #5, with a #1 cut being at or near to the full height of the key blade, and a #5 cut being the deepest. The #1 tumblers protrude the least amount into the keyway and the #5 cuts protrude the most. By comparing the amount each disk protrudes with respect to the other disks, and with respect to landmarks in the keyway (such as the side warding), it is possible to estimate the depth # of the cut. Usually, the difference between cut depths for disk locks ranges between .015" - .025", with .020" being very common. Here are some common depths:

cut #	depth	cut #	depth
1	.240"	4	.180"
2	.220"	5	.160"
3	.200"		

Specific depths for particular locks can be found in "depth and spacing" manuals, or by taking measurements on keys for other locks of the same type.

14.5. A disk tumbler lock must be in its shell to be read properly, because the tumblers must be resting in the shell slot to be read correctly.

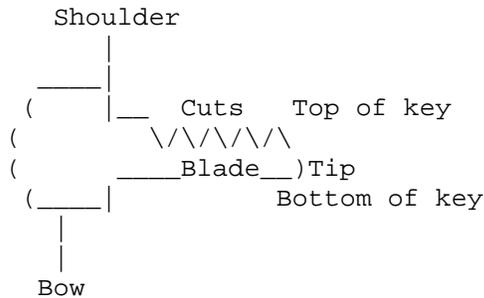
15.0. IMPRESSIONING OTHER TYPES OF LOCKS

15.1. Using the same basic principles as are used for pin tumbler and disk tumbler locks, many other types of locks can be impressed also. Without going into detail about particular specialized techniques, some other types of locks that have been impressed include:

1. Warded locks

2. Lever locks
3. Tubular locks
4. Chicago double bitted 11-wafer locks
5. Double-sided wafer locks
6. GM sidebar locks
7. Sargent Keso locks
8. Medeco locks

16.0. GLOSSARY



Blade

The part of the key that is inserted into the lock.

Blank

A key before any cuts have been made, or a key that is not fully cut and is thus not yet operational.

Bow

The handle of the key.

Cuts

"V" shaped notches cut out from the top of the blade for the purpose of raising the pins up to the shear line.

Depth

The depth of a cut is measured from the bottom of the blade up to the bottom of a cut. Depths are numbered starting with #0 (or sometimes #1) as the highest depth.

Grooves

Long narrow milled out areas along the sides of the blade to allow the blade to bypass the wards in the keyway.

Keyway

The part of the plug where you insert the key.

Lower pins

The pins of a lock that contact the cuts on the key. Also called bottom pins.

Pin stack

The combination of a lower pin sitting beneath an upper pin. In master keyed locks, additional master pins may be located between the lower and upper pins.

Plug

The part of the lock that you put the key into, and which turns to operate the lock.

Shear line

The dividing line between the plug and the shell (the height to which the tops of the lower pins must be raised to open the lock).

Shell

The outer part of the lock that surrounds the plug.

Shoulder

The edge of the key that touches the face of the lock to define how far the key is inserted into the lock.

Spool pin

A pin that has a groove cut around its periphery. The groove is intended to catch at the shear line as a deterrent to picking.

Tang

The end of a file where a handle is to be attached.

Tip

The very end of part of the key that you stick into the lock first.

Upper pins

The pins in a lock that sit on top of the lower pins. Also called top pins.

Ward

Protrusions that stick out of the sides of the keyway to allow entry of only the correct type of key blank.

17.0. BIBLIOGRAPHY

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[Q: The Fine Art of Impressioning \(in a nutshell\)](#)

This FAQ is in response to many questions about impressioning locks.

I'd first like to say that lock impressioning is not easy. You are not going to be an expert overnight, and you are not going to be able to impression every lock that you come across. It's a slow process as compared to picking, and requires an investment in tools and information that are not a requirement for lock picking.

The object of impressioning is to create a working key for the lock in question without disassembling the lock or using other "decoding" methods such as "reading" to decipher the combination of the lock.

If you plan on doing this for a long-term hobby/sport/profession, here's what you'll need (in no particular order of importance):

1. 6" Swiss #4 or #2 round or pippin file with a handle.
2. Brass File card or brush to clean file with.
3. A good pair of locking vise grips.
4. A good light source.
5. Key blank book.
6. Magnifying glass (if you've poor eyesight)
7. At least one metric ton of patience. 😊
8. Keedex impressioning plate and vise.
9. A good silicone or teflon lube.
10. Cleaning cloth.
11. The right keyblank(s).
12. Blue Sharpie (optional).

O.k. Now that's in place, let's discuss briefly what can and cannot be impressioned in terms of locks.

The 2 and 4 track high security locks found in vehicles are one of the types that should not be impressioned without lock specific tools. These locks damage very easy because of delicate and split or "half" wafers found in the lock. Even inserting a blank key can potentially damage parts inside the lock.

Otherwise, anything else is pretty much fair game with a little innovation and some extra, lock specific tools that won't be discussed here. (yet.)

Choosing the blank.

The first step to impressioning a lock after acquiring the necessary tools, (and the lock of course) is to find out what keyblank is required. The easiest way is to look at the key that actually works the lock (if there is a key available). For our example, the keyblank I'm looking at has two sets of numbers "1145" and "SC1". This keyblank fits into the most popular residential Schlage locks including entry sets, handlesets, and deadbolts.

Keys will usually have numbers, or letters, or a letter/number combination stamped into them to identify what it is. If this is the case, you're set.

If you have a working key and it does not have any type of identifying marks, you're not out of luck yet.

Another method is find yourself an Ilco keyblank book (thanks to those who asked to make mention of the most popular manufacturer), or go to the local hardware store and ask THEM to find the correct blank for you. Basically what they do, is compare your key to pictures and profiles in a book, (like comparing criminal photographs, almost) until they find the correct one. Most of the time these catalogs can be acquired for free or a very low cost from a distributor. Your local locksmith may be willing to hand you his old book for free as well since they're updated yearly.

Now, if your lock does not have a key, and there's no name on the lock, latch, or strike plate, you're still o.k. Simply get some paper and trace exactly the shape of the keyway in the plug. Reference your keyblank book (which is handily broke into sections) and you should be able to identify exactly what keyway it is.

Example: Our Schlage lock has no key, but from the name on the lock, we can look in the keyblank book under Schlage to find the section with the most common keyways. After I trace the shape of the keyway, I can compare it with the profiles in that section to find the precise key I need.

Sources for blanks:

There are a variety of sources for blanks, and it will depend on your status (whether you're a locksmith or have access to a supplier) and economics (how much you're willing to spend).

Listed in no particular order here are some sources:

1. Internet
2. Your local locksmith(s).
3. Hardware Stores such as Home Depot and renovation stores.
4. Retail stores such as Walmart or Canadian Tire or their like.
5. Mall kiosks that do engraving or sell novelty items like lighters, etc.

Always buy at least two blanks, and five or 10 would be preferable. If you find yourself enjoying this a lot your best bet would be to become friends with a local locksmith who can get bulk pricing on keyblanks, or the owner of a hardware store who might be willing to cut you a deal on keyblanks that you need.

Lock Preparation

Once the correct blank has been selected for your pin/wafer tumbler lock, the next step is to prepare the lock for the task.

I know this is going to surprise some of you, but it is important NOT to lubricate the lock just before you decide to impression. Here's why.

Although the ideal situation is to have a perfectly clean and more importantly dry lock, unless you are working with a brand new, off-the-shelf-lock this is not likely to happen. If you do want to give yourself the best chance of success, go ahead and thoroughly clean out the lock yourself either through disassembly, or heavy use of a lubricant to flush out the lock. Then, run your blank key in and out, wiping the debris off in between, until the blank comes out clean and dry. (This may take awhile.) Then let it sit and dry overnight just for good measure.

Lubricating a lock loosens any debris in the lock and allows it to go floating around, and it will most likely end up sticking on the keyblank and making it difficult to find those all-important marks that you need to see. Rubbing the

debris from the keyblank may also cause those important marks to disappear, so now you understand why we don't want to do that.

If you do own, or can purchase a Keedex impressing plate, you can clamp this in a vise, then insert your lock cylinder into one of the appropriate holes, clip it into place and you're ready to go. If you don't own one, you'll need to clamp your lock in a vise, or affix it in some manner that will allow you to comfortably do your work without strain. You can leave the lock in the door you're working on, of course, but I would suggest if you don't have a discreet place to work on it, to move the lock to a place where you can.

Great. Let's move on.

Keyblank Preparation

In selecting a keyblank, where possible, purchase blanks that are brass-colored (goldish). These will afford you the best opportunity to see the impressing marks. Avoid steel (rare) and especially aluminum (dull-gray) as aluminum keys will twist and break too easy for this particular type of work. Steel keys are rarely found in hardware stores, etc. because of their expense, so don't worry too much if the only keyblanks available to you are the shiny silver ones. These are most likely a mix of brass and nickel, and are perfectly adequate for the task at hand.

To begin preparing your key blank, insert it into the lock you are about to impression. Then, slide your vise-grips onto the bow (the portion of the key normally gripped) of the key as close to the face of the cylinder as you can get without touching, then move them back another 1/8 of an inch (or 3mm) to allow for manipulation of your blank and clamp hard. Make sure the vise grips are very tight. We want as close to zero wobble as possible. Remove the keyblank and hold it on the edge of a table, or your knee with the blade up. (This is the part which will look like teeth when we're done impressing.)

Examine carefully the top edge of the blade. You'll notice that it is a fairly "rough" finish with tiny lines and blotches going in all sorts of directions. Our goal is to get rid of these so they do not affect the presence of marks.

1. With the key blank held by our left hand (or reverse if you're a lefty) and our

#4 Swiss file, (and in the forward direction only) in one motion from bow to tip, we're going to lightly rub this initial finish off. Now, here's a tip to remember. Start with the tip of the file against the shoulder stop of the key, push the file both forward (perpendicular to the key) AND towards the tip of the key. By the time you reach the tip of the key, you should have travelled at least equidistance along the length of your file (if not more) as well. Use no more than five or six light strokes if possible. An alternate method is to use light sand-paper. This is not a technique I've tried myself yet, but if it works for you, great!

2. Check your progress and insure that your "stroke" is even and level. Do NOT rock the file as you go across. A few light strokes should "clean" the surface of the blade to a nice matte finish with no surface blemishes. Remember that at this point we do not want to remove any more material than necessary, we just want a nice clean and mark-free surface.

Knife-edging

Knife-edging is a technique often recommended by some professionals for speeding up the process of impressioning. The idea is to thin the blade of the key to almost a point (like you would if you were sharpening a knife) to allow the pins/wafers to mark the material easier.

Here's how it's done. With the key in the same position as mentioned above, tilt it away from you at approximately a 45 degree angle and begin filing in similar strokes. After approximately 10-20 strokes, flip the key around and perform the same exercise on the other side. Eventually, you should end up with a similar clean, mark-free surface as mentioned before, except that you now have almost a semi-sharp edge on the blade of the keyblank. Be careful to remove as little material from the top as possible. In knife-edging, the "sharpened edges" are the important surfaces in this case, so make sure they are mark-free.

From my own personal experience, I must say I have had mixed results with knife-edging a keyblank to prepare it. Especially in regards to pin-tumbler locks, I've personally found it easier to see the appropriate marks without using the knife-edging technique.

I've mentioned it in this FAQ, though, because it is a valid technique, and

greatly speeds up impressioning times for simple wafer locks and important for impressioning higher security locks such as those with nasty sidebars, etc.

Thanks to Mark for asking the question on the use of a marker on the edge of the blank to view marks. Can't believe I forgot to mention it. This method will actually work best if the lock is clean and dry, and I generally use a Blue Sharpie (when I use a marker) since it is easily discernible from lock debris. It is a viable method to use as well, and I would suggest it especially for beginner's as you will be able to more easily identify the correct marks. Be sure to clean the lock out well once you're finished though. 😊

This completes the preparation phase.

Technique

Of all the steps involved in impressioning, technique comes second only to blank preparation in importance. You can have all the other stuff in place, but if you don't do this part right, you're in trouble.

Step 1.

With your vise grips centered and tight on the bow of the key blank, and the key prepped, insert the key into the lock.

Holding the vise grips comfortably, (ie. not a death-grip nor loose) turn the key CW firmly. Holding the key in this position, rock the key up and down quickly but not hard. I usually perform this action for a count of 5.

Step 2.

Stop the rocking motion, still holding the key in the CW direction. Then, allow the key to return to the original position.

Step 3.

Gripping the vise grips again, turn the key CCW and perform the rocking action once again for a count of 5. Cease rocking motion, then allow key to return to neutral position.

Step 4.

Repeat steps 2 & 3 again.

Step 5.

Remove the key from the lock in one smooth motion. This is easy to do at the start since no filing has been done, but after a bit of time in the process may be complicated by cuts that have been made. Insure that the key is centered in the lock and ready for removal.

Step 6

Again in one direction only, give the visible mark 3-4 firm strokes with the file. I generally do not use more than the first 3 inches of the file to do this as I don't want the cut to go either too wide or too deep.

Looking for marks

Greg Miller describes what to look for very well from an experience standpoint, but I'll try to clarify a bit in hopes more of you will understand.

Keep in mind that during this process you are most likely NOT going to see marks in all positions all the time. In fact, you are most likely going to see only one or two each time. It is vitally important that you file in only ONE position during a cycle, and also important that you file just enough that the mark disappears, no more, no less.

The marks you are looking for will be round dots, circles, circles, or distinct lines (that eventually turn into dots or circles) that will become more pronounced as you get close to the proper depth. (with pin tumblers) With wafer tumbler locks, the marks will look more like extremely fine filing or minute dents on the edge of the blade. It is necessary to view the keyblank edge from as many angles as possible with a good light source. Any jagged lines, or squiggle marks should be ignored. Do not get upset if you don't see any marks at a given time, and DON'T GUESS! Simply go through your cycles again, and insure that the keyblank edge is "fresh" and "clean" of marks. You can

remove the squiggles, etc. with very fine file strokes if you wish.

As a comparison, perform this: Take a pen (the type that you press the button on top to reveal the pen tip) and with the pen tip retracted, press it into your hand or arm firmly enough to make a mark. Then, watch carefully as that mark fades. The central "dot" basically performs in reverse the view you're going after.

When you begin hearing the pins "click" distinctly in the lock, this is a sign that you are approaching completion. Don't get excited, just continue your method. Once the lock turns, it doesn't necessarily mean you're finished either. You will need to continue the process until the key turns smoothly and/or the marks disappear completely. Keep in mind to only file where marks can be seen. Once the key works smoothly, your task is complete.

If you are performing this task for a customer, you'll need to duplicate the cuts onto a fresh blank. DO NOT give the key used to impression to the customer. The keyblank used has been stressed, and maybe crack or break suddenly, and I'll leave to you to guess who'll be responsible for removing it from the broken lock for free.

Varjeal, do you know of any good sources for the file...that is still relatively cheap? I saw a round one from mcmaster.com that is only about \$12, but I am not sure if you have to be a company to buy it or not. Plus they dont have a pippin file.

Lockmasters.com is a good source to see what the average to high price for the proper file would be. Otherwise, do a search for wood working and craft/hobby type on-line stores. I probably paid about \$25 Can for mine. (my \$60 one shattered into bits one day.

Varjeal, do you think you can include some pics when you go through the technique portion? I am having a difficult time finding my marks and not really sure what to look for.

6.0. SEEING THE MARKS

6.1. The mere act of preparing the flat top of a soft brass blank with an impressing file, inserting the blank in a lock and removing it, without any

wiggling or turning, will leave marks on the blank. There will be some streak marks where the pins have dragged across the specially prepared surface. Try it and you will know these marks look like so you will not confuse them later with the useful marks.

6.2. The useful marks you get are not really depressions in the surface of the blank (except maybe when a pin is almost at the shear line - if you start seeing deep gouges, the lock is probably about to open). A mark is normally just a subtle change in the reflectivity of the surface of the blank. The impressing file leaves a slightly dull finish, and marking will slightly polish it. To see the marks turn the blank in the light. When you hold it at the right angle, the marks appear as little tiny shiny dots. They can be hard to see in bright light, so if working outdoors, sun glasses may be helpful. Some people like to use a magnifier to see the tiny dots - even with a magnifier, you still have to turn the blank in the light just right to see the marks. With a little practice, you will locate the marks very quickly.

6.3. If impressing a dirty or weathered lock, you may find little specks of debris on the surface of the blank after marking. If there any doubt as to what you are looking at, wipe off the top of the blank to see if you actually have a mark rather than a tiny speck of dirt.

<http://www.gregmiller.net/locks/impress.html>

hey that was a great post - is it possible that lubricating the cylinder or dirtying it up - can prevent impressing - short term - i know it wont be very good for the lock - r there any known techniques for preventing impressing - or making it much harder to do - im only looking for a short term solution - until finances allow me to install a electronic lock - this site has been a great help to me -

use a match well the carbon anyway .blacken the blank with carbon and insert the blank bit of a wiggle and that will show your spacings therefore only look at those areas and you wont confuse the marks with anything else or grab a key that has cuts of the same type and use it as a ref for the spaces if you know were to expect the marks to appear it makes life soooooo much easier 😊

thricefact: lubricating the lock is much preferable to "dirtying it up". To prevent impressing, the use of security pins such as mushroom, serrated, and spool can also be an effective deterrent.

locknut: Blackening the blank is another technique that may be used, I use the sharpie because I find it more durable and less likely to "smudge" on the blank during insertion/withdrawal. Knowing the spacing for a particular keyway being worked on is extremely useful, and occasionally I'll code cut a blank to the shortest depths 0's or 1's (will still mark the keyblank slightly without removing significant material) just so that I have the proper spacing. I especially do this in situations where I'm not familiar with depth and spacing for a particular keyway. Good points. 😊

I have not had an opportunity to try this out, so be wary:

Cut a blank to all 0 or 1 (depending on the lock etc.) with a code cutter and a good sharp cutting wheel. DO NOT DEBURR the key

Insert, wiggle bind, etc as though you were impressing a key normally. Marks should be fairly easy to see, just progress the cuts until you get a working key.

It does work, especially on locks where you are not familiar with the spacing, etc.

Chucklz mentioned a good method if you have access to a machine. It helps with the spacing, getting the cuts to the right depth increments, and helps the key to move in and out a bit smoother. When using a file to impression just angle your file and rub it across the "points" you will make in-between the "valleys". This will keep the key from going in and out rough.

1. If the newer people here aren't aware. Ilco is the key blank maker catalogue to try and find blank profiles. They should be available in every locksmith supply store.
2. I agree with your lack of success using a knifeedge on pin tumbler locks although I've found it works great on wafer locks.
3. SLOW DOWN AND PREP THE BLANK PROPERLY. It will greatly improve your success rate. When preping the blank one other option is a small piece of very very fine sandpaper. I prefer this to using my pippin or swiss to prep the blade.
4. When you first start the markings will be very light, however, the closer you

get the heavier they start marking. Heavy marks is telling you to slow down and not file too deep.

5. Brass blanks are the best but buy more than a couple. You will probably tear several in your first attempts. The most economical size for the hobbyist would be to buy a box of 50.

6. If you need further visual aid to develop this skill you may want to purchase Hank Spicer's "Filing for Dollars". In my opinion one of the best impressioning videos made.

7. practice, practice practice, it takes time to train the eye for seeing the markings

Varjeal states that security pins can prevent or make more difficult, impressioning. In fact, while picking may be uncertain, impressioning can be seen as a certain way of getting a lock open, and security pins are usually top pins, so as you cut away the blank, you are lowering the bottom pins into the plug. I believe that as long as security pins remain top pins, (and lock manufacturers do not want the malfunctions and broken keys that would result from making spool bottom pins) impressioning can be seen as a sure way of opening a lock you cannot successfully pick. Just my opinion.

Wake up and smell the Kafka!!!

I learned three decades ago, when the #2 cut ten inch or twelve inch rattail file was the one used, pippin files are sold for a lot of money by locksmith jobbers, so try a jewelers supplier also, a #4 cut is even finer, and will leave a good surface to mark on. If using a round rattail file, be aware that you should try to keep 45 degree cam angles at the edges of any deep cuts, the bottoms of the cuts are essential, and any of those saw tooth peaks that occur between these are ok to cut off. I learned the knife edge technique for the start of the process, as it gives good position points for the pins, if you have a scribe point, it is useful to mark these positions on the side of the blank to follow as you go down into the blank. One time, a lock was being difficult to impression so I began to make the cuts on the blank at a 45 degree angle down rather than straight across, which carried a sharp edge down into the key. This makes a key that will not copy easily, but it got the job done. and once the depth information is known, you can make a key that is cut straight across with out

much difficulty. there is a box with lights in it that is sold to look for impressions in, I don't know how good this is, it depends on the angle of the light. Impressioning is best done in sunlight, a good impression is a round dent made by the pin tip, but I have seen drops of oil deposited by the pin tip that look exactly like this dent, but can be wiped off with a cloth, so I always wipe before reading the impressions, If you want to impression a master padlock in a laminated body, the little brass peanut cylinder flops around in there a bit, and the impressions will all be on the shoulder of the keyblank made by the last lamination, so cut down that shoulder a bit but remember that you still need part of it to index the key in the cylinder. I used to impression by eye, but my eyes aren't what they used to be and I use a ten power jewelers loupe, which can be held in the eye by natural skin tension, and no effort should be made to grip it with face muscles, just push the top edge up, and set the bottom edge in against this tension. (I have also been a silversmith, thus the loupe, and some people think thats why I polish my picks, but i say its for low

<http://www.youtube.com/watch?v=z08VMebsyNE>

<http://www.youtube.com/watch?v=CejwNR401Lw>

<http://www.youtube.com/watch?v=YhGEAFJB1rA>

http://www.youtube.com/watch?v=RJ_3YqD6fDE

<http://www.youtube.com/watch?v=8mzKV6XZprk>

<http://www.youtube.com/watch?v=8Ohq-UNBm-A>

<http://www.youtube.com/watch?v=8Ohq-UNBm-A>

<http://www.youtube.com/watch?v=8mzKV6XZprk>

http://www.youtube.com/watch?v=qsl_4obz9ic

<http://www.youtube.com/watch?v=EXv9Dhq2yag&list=PLB422C19E3C1D4B2B>

<http://www.youtube.com/watch?v=FZore3uvJxU>

<http://www.youtube.com/watch?v=vq5EvuYsp-8>

<http://www.youtube.com/watch?v=e8QnG5RHGy8>

<http://www.youtube.com/watch?v=kl3XxLcaiFs>

<http://schuydertowne.com/media.php>

<http://www.youtube.com/watch?v=-PqzkoQQ7s>

<http://www.youtube.com/watch?v=gNKvPS1ac6E>

<http://www.youtube.com/watch?v=ChbyaXBKNY8>

<http://www.youtube.com/watch?v=W07ZpEv9Sog>

<http://www.youtube.com/watch?v=e8QnG5RHyq8>

http://www.youtube.com/watch?v=jCz3_ladHNM

<http://www.youtube.com/watch?v=4o1biyuS8GM>

<http://www.youtube.com/watch?v=s8aQSxXoLFk>

<http://www.youtube.com/watch?v=qpDJC4vK7O0>

<https://www.youtube.com/watch?v=e07VRxJ01Fs&feature=youtu.be>

<http://www.youtube.com/watch?v=vmitPlo0BAU>

http://www.youtube.com/watch?v=_P4QNIt5Wfl

<http://www.youtube.com/watch?v=7LHeY35zxxM>

<http://www.youtube.com/watch?v=z08VMebSyNE>