The National Safeman™

AUTUMN 2007

MICRODRILLING

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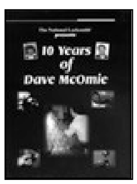

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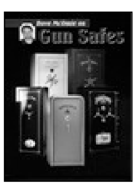

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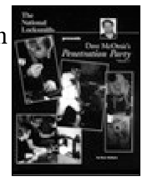

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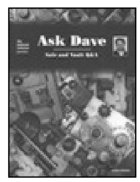

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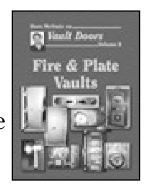

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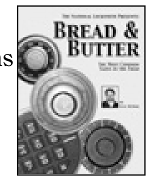

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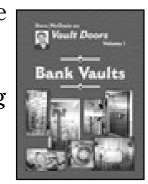

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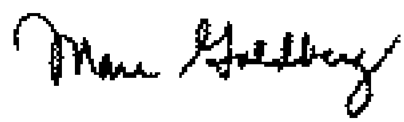

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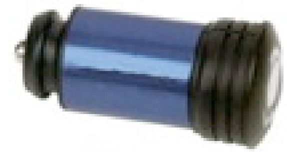

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DIRECTOR'S PAGE

Dave McOmie

In This Issue

Microdrilling is my favorite way of opening a safe. I like it more than drilling big holes, more than manipulation, more than punching, more than any other method. This fascination might be due to a personality quirk, or it might be due to microdrilling's many virtues, most of which we will discuss early in this issue. Let me be clear: my goal with these issues on microdrilling is not ecumenicism, but persuasive and aggressive advocacy, resulting in mass conversion. I am a proselyte, trying to save holes (from being drilled too large) and convert naysayers to diehard practitioners of the most fun a safecracker can have while at work. Come over from the dark side, y'all!

What is Microdrilling?

Well, what is a microborescope? There is no clear answer. Scope makers adhere to no terminological standard. Some use "mini," some use "micro," some use no such designations, and the diameters at which such designations are used are not uniform by a long shot. So, since we are pioneers, we have the right—no the DUTY—to make it up as we go! I propose that true microdrilling requires a 1/8" or smaller hole, which in turn requires the use of a true microborescope (less than 3mm in diameter). Quasi-microdrilling involves a 3/16" hole and in almost all cases, a 4mm scope. Everything 1/4" and above is just regular, ordinary, spammy, missionary-style safecracking. In this issue, we have examples of both real and quasi microdrilling. Enjoy, and let me know what you think, guys. My email address, as always, is at the bottom of this page.

PenParties

Three PenParties are scheduled for the fall of 2007. I will be in Orlando, Florida; Nashua, New Hampshire; and Dallas, Texas. See my website (www.davemcomie.com) for details.

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MicroDrilling: Overview

About hole size, a common attitude among safe techs is, "it makes no difference to me what size hole I drill, cuz the repair is the same no matter what size the hole is." I am trying to persuade such techs to change that attitude, or at least to modify it to the following: *sometimes hole size doesn't matter (within reason, of course), but other times it does.* This article is an argument for that modified position.

There are three main reasons for sometimes advocating micropenetration: First, it can make the cosmetic repair on a safe's exterior much easier. Indeed, I usually don't even bother removing the dial ring when repairing it. Second, the smaller the hole, the less chance you have of damaging the lock. This is an important consideration when we are talking about an obsolete lock that has a very small target area. And third, your first successful micropenetration grants you automatic and honorary membership into Club Micro!

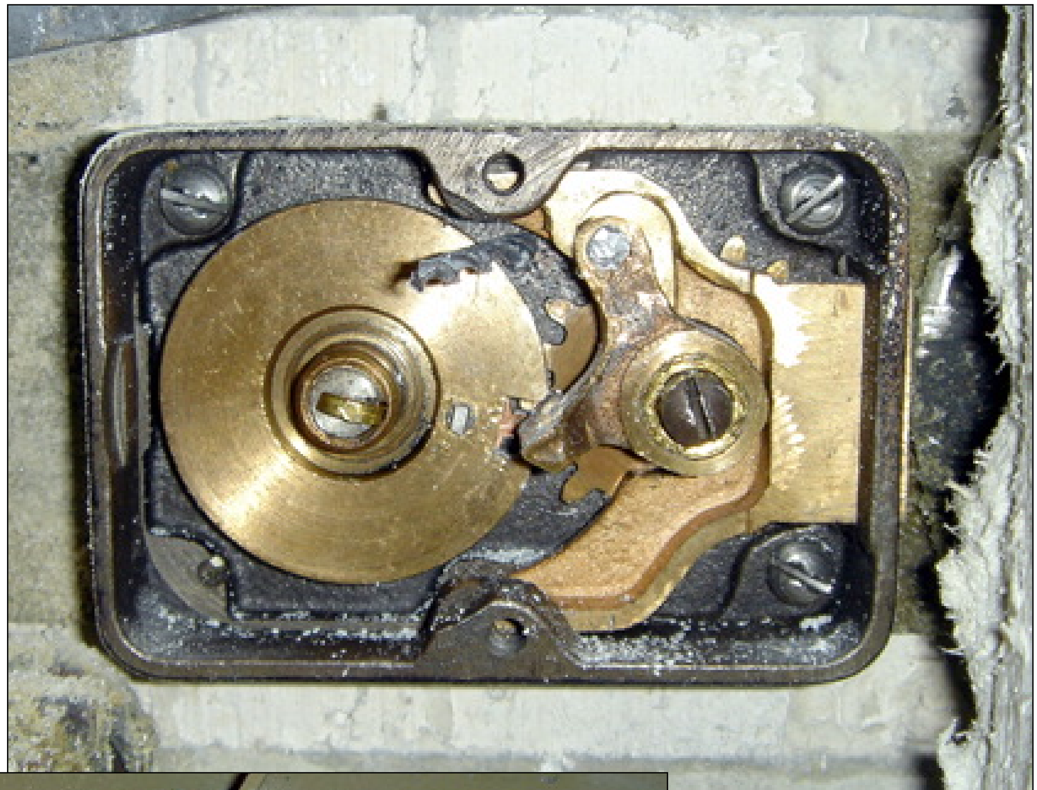
OK, let's look at these reasons in some detail, starting with repair and exterior cosmetics.

▶ *This Cary was drilled open by a safe technician who obviously had no safe books or scopes. That is at least a ½" hole. Worse, that gaping wound was placed in a difficult place to repair and cover. If he had drilled at TDC (Top Dead Center) he could have covered his gargantuan repair site with a service sticker. But that is not an option here. A sticker placed above and as close to the dial ring as possible will only cover the upper half of the hole repair. He is going to have to paint, or the repair is going to be obvious and ugly. Ughhh.*

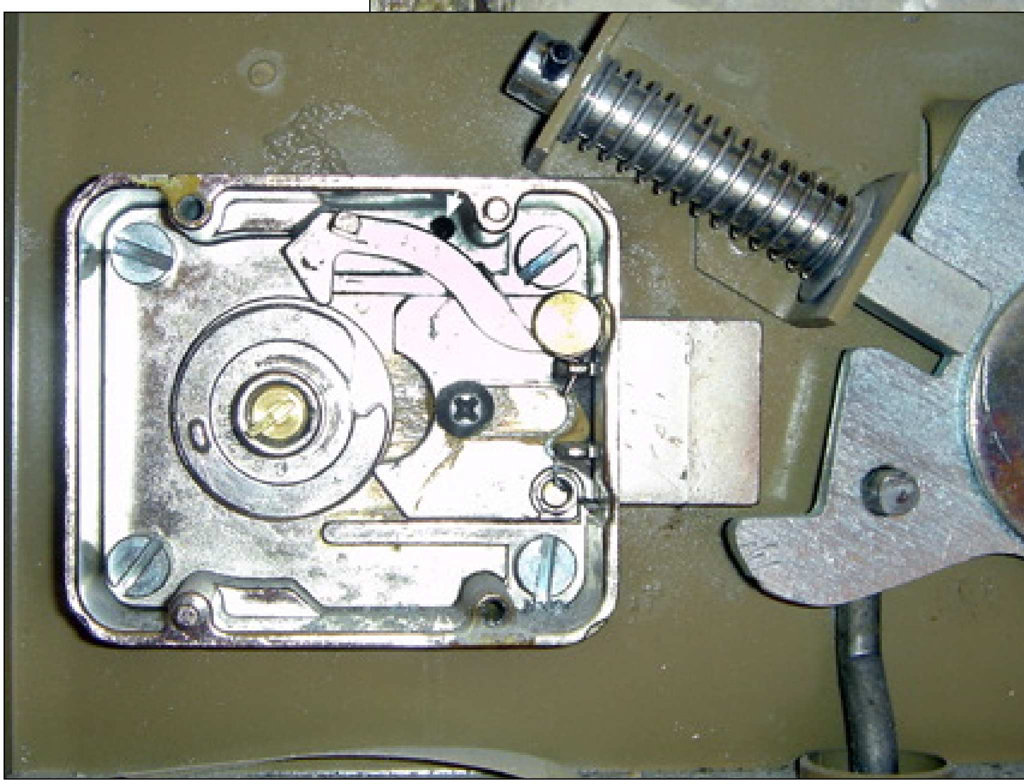
◀ *This identical model Cary was drilled by a safe technician who possessed the knowledge and equipment to microdrill with precision and panache. The ⅛" hole will be filled with tiny bearing balls and steel epoxy, which will dry a medium gray. Before the epoxy is dry, it will be gently sanded smooth, wiped clean, and a black paint pen will be dabbed onto the gray, producing a nearly invisible repair in just a few minutes.*

◄ *The Yale OC-5 in this safe was drilled at a left-right angle through the dial ring at 83 with a 1/8" high speed bit. When the hole is this small, you can often get away with leaving a tiny gray dot on the ring. (The gray dot is the dried steel epoxy.) The only issue is the slight ridge that a high speed bit leaves on the material being drilled. My favorite ways of dealing with this little ridge are (a) use a tiny sanding wheel (either in a dremel or high speed drill motor) to bring the ridge down flat before the steel epoxy is introduced into the hole, or (b) use a larger bit as a kind of reamer, to bring the ridge down flush with the dial ring.*

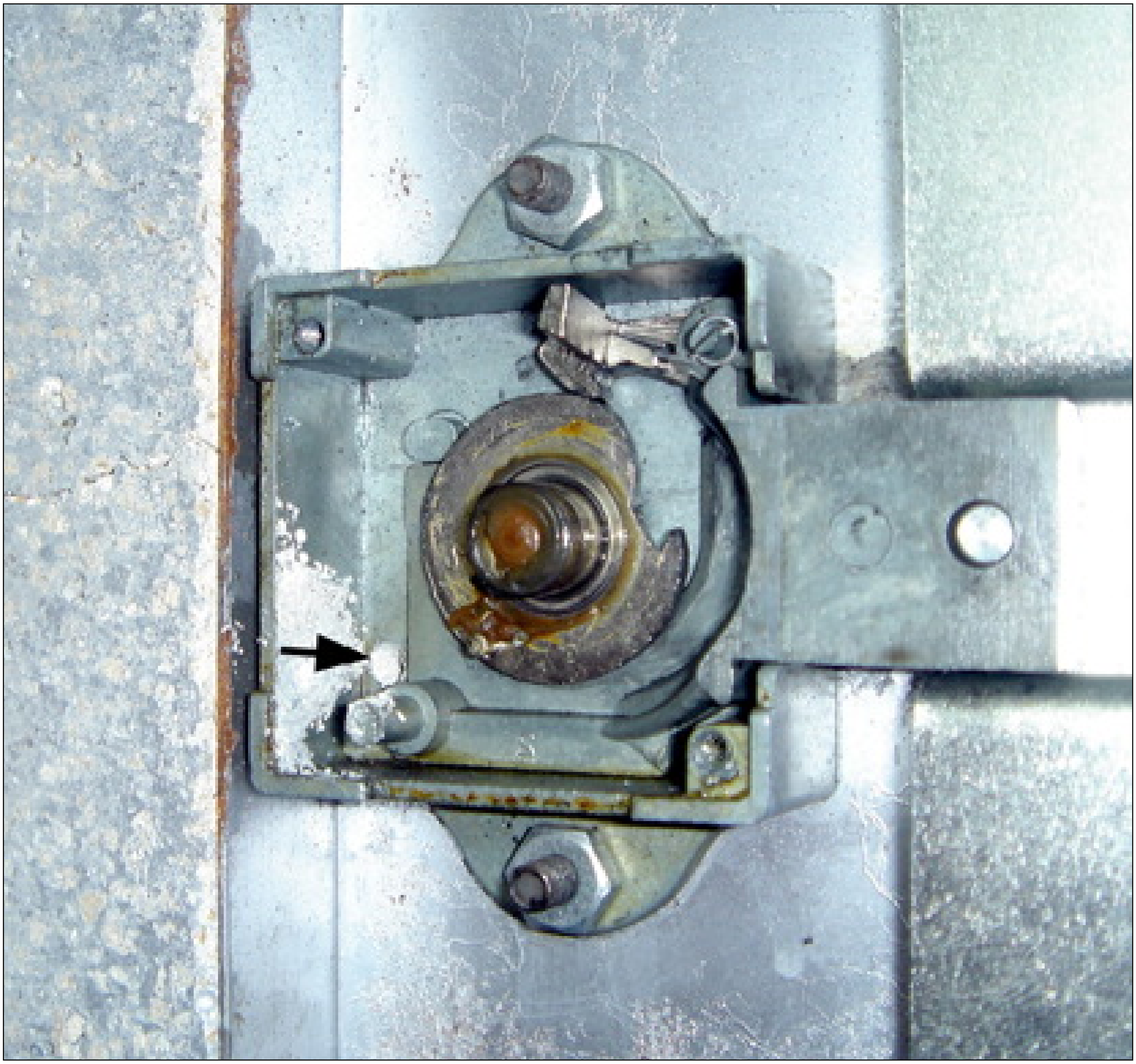
► *This is a very small dial ring from an early Herring-Hall-Marvin pressed steel fire safe. It was drilled pretty much straight, through the dial ring at 39-40 (70# dial). Again, because the hole is 1/8" in diameter, the repair is simple: gently and carefully take the ridge around the hole down flat, fill the hole with steel epoxy and perhaps a few small bearing balls, and put a little dab of black paint over the repair site. Good to go!*



▶ *The Yale OC-5 has a very small target area. The most important thing to keep is mind is, DON'T BUGGER THE ROLLER GEAR! The best way to avoid the roller gear is to drill at 83 with no up and down angle (left to right only), and to use as small a bit as possible. Thanks go to Ed Barr, for his nice 83 w/one angle modification of my old 86 w/compound angle DP.*



◀ *Here is an old Center Manufacturing lock from an older Meilink. This is the lock that replaced the S&G 6709 w/extended bolt in these home duty safes. We often punch the handle cam, but when the safe is in beautiful cosmetic condition, we micro drill the lock. This requires precision and tiny bits, as our two favorite target areas are very small.*



Tiny locks like this were produced by just about every major manufacturer of safe locks: Sargent & Greenleaf, Federal, Eagle, Yale, etc. They are all difficult to penetrate without doing damage to the lock. The wheels in this Federal lock are less than 1 1/8" in diameter, and they fit snugly in that tiny lock case. No room for a big hole! My favorite drill point on these lock is outside the dial ring at 42, up at a steep angle. (More on the angle later, when we cover this actual safe.) The point now is simply that the smaller the hole, the smaller the chance of the lock being damaged or ruined.

On the preceding pages, we examined some dial rings and locks, and saw a clear difference between small holes and large holes. We now turn our attention to the tools we use to make those holes and to view through them: namely, our drill bits, drill motors, and beloved scopes.

In my own work, I use six sizes of carbide drill bits: 1/8", 3/16", 1/4", 5/16", 3/8", and 1/2". Rarely do I go below 1/8" or above 1/2". As most of you know, I am a huge fan of StrongArm bits, and for three reasons: they cut extremely well, they are very durable and break-resistant, and—this one is important—on that rare occasion that a SA bit does break, it shatters into pieces, rather than leaving a huge hunk of carbide welded into the bottom of the hole. More about this in a few pages.

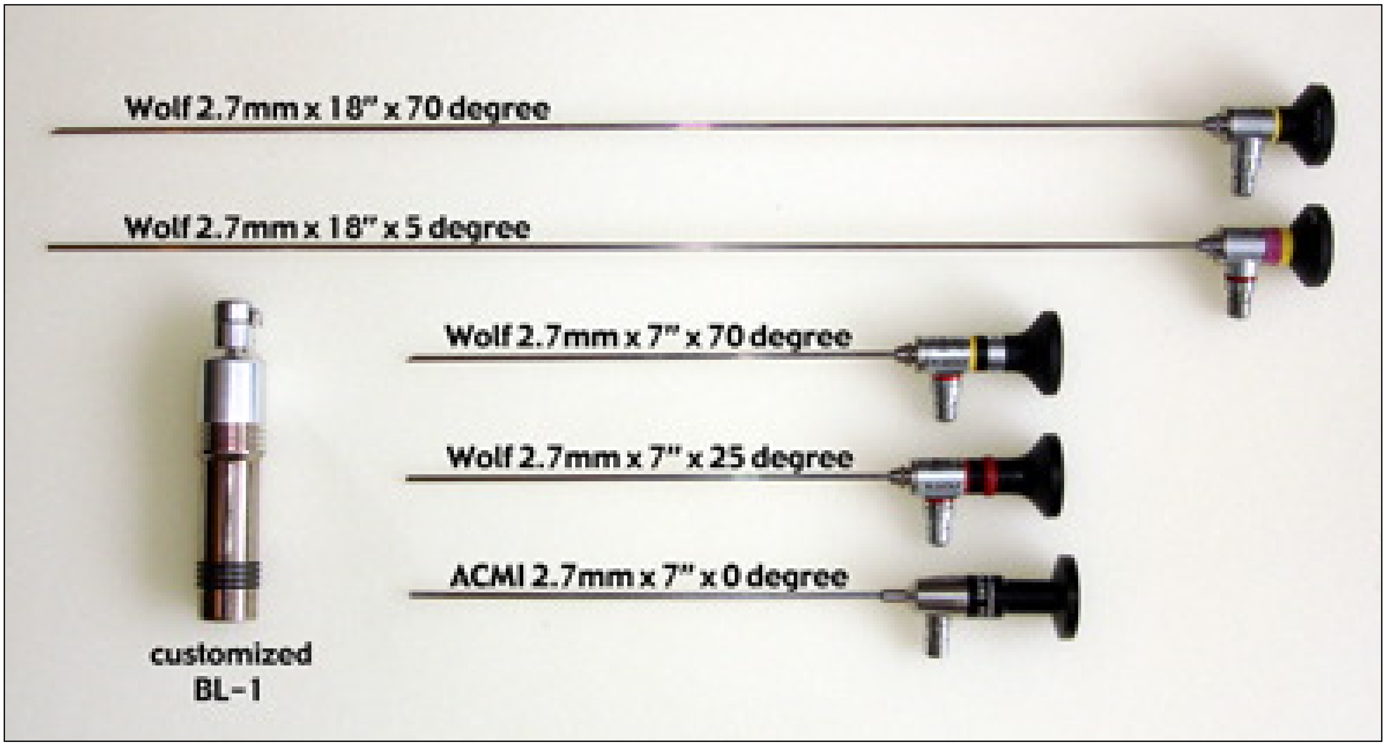
Note: StrongArm's drill bits are a few thousandths larger than the size indicated on the shaft. This means that a 1/4" SA will not fit down a true 1/4" hole. So, get in the habit of drilling through the mild steel with a larger bit. Example, if you plan on using a 1/8" SA to penetrate the HP, then start with a HSS bit somewhere between .135 and .158. Switch to 1/8" SA for the HP, and then use a 1/8" (.125) HSS bit to enter the lock.

Scopes come in a variety of diameters, lengths and directions of view (not to mention fields of view). Most professional safecrackers today are using medical-grade optics, from such high-end endoscope makers as Storz, Wolf, Olympus and others. This is a good thing, because medical-grade optics have superior images and light transmission qualities. The biggest reason for having a small diameter scope, such as a 2.7mm or 4mm, is being able to drill small diameter holes. In most (but not all) cases it is silly to drill a 1/2" hole when the intended scope would fit in a 1/8" diameter hole. The accompanying chart shows the proper size hole to drill for each size scope.

Note: the smaller a scope's diameter, the more brittle it is. Treat it accordingly!

What Size Hole To Drill?

2.7mm scope	1/8" hole
4mm scope	3/16" hole
5mm scope	1/4" hole
6mm scope	1/4" hole
6.5mm scope	5/16" hole
8mm scope	3/8" hole
10mm scope	7/16" or 1/2" hole



Here are five microborescopes that reside in two of my own scope cases. The upper two are very long (and very brittle), and they are normally housed in a long Olympus case I use on long-distance jobs. (The case is 27" x 10" x 5" which adds up to 42 linear inches, just under the technical limit for carry-on luggage.) The shorter three scopes are from a foam-lined Zero Halliburton briefcase that I use on jobs I drive to, and where the penetration with be through the door.

This is probably a good place to make an important point about microdrilling. Actually, it is a clarification about the chart on the preceding page. If you are NOT going to be penetrating HP, you can actually drill a little smaller than the chart indicates. For example, if you are microdrilling a Sentry (no HP), and your scope is 2.7mm or .106 in diameter, you don't have to use a .125 drill bit. You can comfortably use a .115 or so. It isn't a good idea to go much smaller than that, because drilled holes are seldom perfectly straight. They bend just a little. And you don't want your scope to try and negotiate a bend…do you? Get in the habit, whenever possible, of drilling at least .010 larger than your scope. A little wiggle room is always nice. ☺

The most common mistake techs make when trying to microdrill is using too much pressure and not enough speed. A little tiny 1/8" SA bit simply will not take much pressure. There is only one technique I use when drilling HP with a 1/8" bit: low pressure and high speed. From long experience and many failed experiments, I learned that with small diameter bits, pressure is the enemy. The upshot: if you want to microdrill, you MUST have a high-speed drill motor. Here are two of my favorites: an old 5000 rpm Rockwell, and the inimitable Bosch Hornet, which turns at 4500 in second gear. Unfortunately, both of these fabulous motors have been obsolete for decades. But all is not lost, because you can still buy a small, high-speed motor. Here are a couple you can Google: Milwaukee 0101-20 (about $150), and Fein ASY630 (about $300).

My personal favorite size of drill bit for cutting homogeneous HP is 3/16". The reason is simple: 3/16" maximizes pressure at the tip of the bit, and is very durable, despite its diminutive stature. I was curious about the physical facts in play here, so I contacted Mike Madden at Livermore Labs. Mike asked a few Ph.Ds on campus about drill bits and tip pressure. Their collective answer can be found on the next page.

For every 100 lbs of force on a drill bit, the following is true:

1/8" bit has 2597 lbs on tip

3/16" bit has 1152 lbs on tip

1/4" bit has 648 lbs on tip

5/16" bit has 415 lbs on tip

3/8" bit has 288 lbs on tip

1/2" bit has 162 lbs on tip

For those interested in the math, here is the relevant equation: $100 \div (\pi \times r)^2$

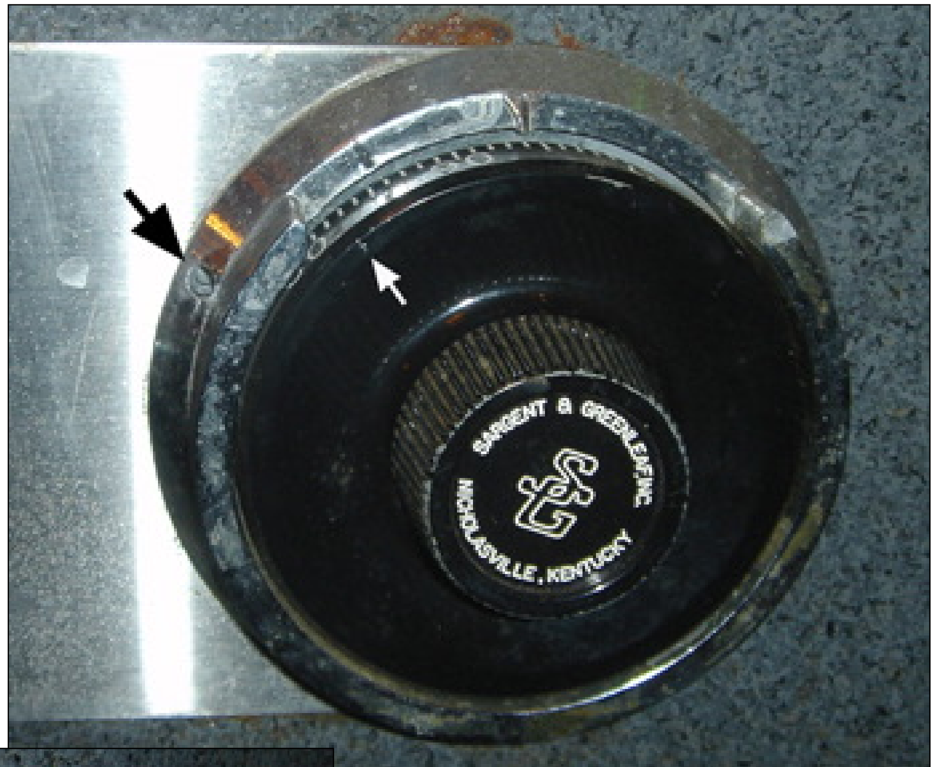
The 100 represents the 100 lbs of force we are applying against the material being drilled. So, to work out the tip pressure of a 1/4" bit, we proceed as follows: the diameter of a 1/4" bit is .250, which means the radius is .125. Pi times the radius is rendered as 3.14 x .125 which comes to .3926. We then square .3926, which is .3926 x .3926, which comes to .154. We divide our lbs of force, which is 100 in this thought experiment, by .154, and the result is between 648 and 649 lbs of tip pressure. (Your results may vary slightly, depending on how many decimal places out you carry each number.)

When we combine the mathematical results with real world experience, here is what we get: in theory, 1/8" bits ought to plow through HP like butter. I mean, with a measly 100 lbs of force against the material we are penetrating, that little bit can apply 2597 lbs at the tip of the bit. The problem is that a 1/8" SA cannot take even close to that much pressure. But a 3/16" can no problem. So, 3/16" is the much better size for penetrating HP. It offers the perfect combination of strength and tip pressure. The next time you drill an NCR ATM, put me to the test: put a 7/32" hole through the mild steel, and then use a few 3/16" SA's to penetrate NCR's excellent HP. You will find they work far better than 1/4" drill bits, and the reason is directly related to the far greater pressure on the tip of the drill bit. Try it, you will be amazed!

None of the above should be construed as me arguing against using 1/8" SA's. No way. I use them all the time, but ONLY on wimpy HP. If the HP is very hard at all, you will have to move up from 1/8" to 3/16" to get through it efficiently. Simple as that.

Gary Fire Safe

Our opponent: a Gary fire safe on the lower half of an over/under supermarket unit. (We microdrilled the upper door—a Gary round door—in the last issue of NSO.)



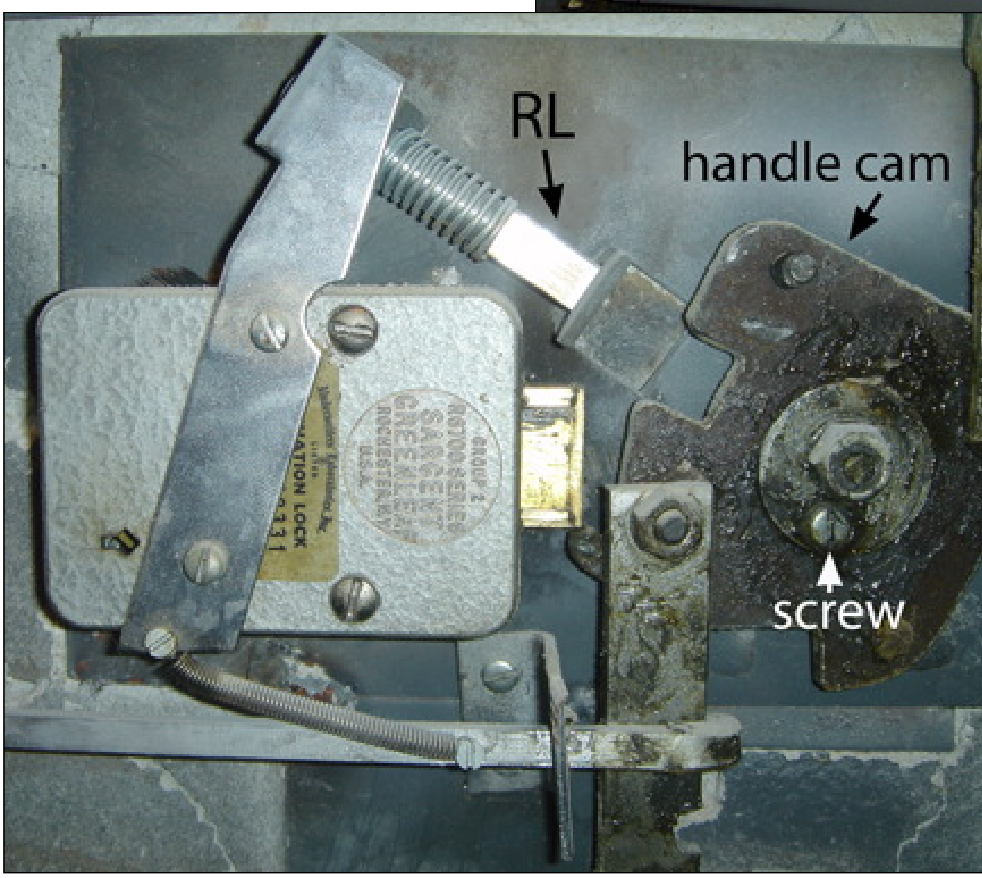
I forgot to take a "before" shot of the dial. So here we have our outside trophy shot, with arrow pointing to hole drilled straight in through the dial ring at 83. How did I know where 83 was? Simple: I rotated the dial until 83 was visible, then I made a very small scribe mark on the dial at 83. I then rotated the dial to 0, and used the scribe mark to locate my DP on the dial ring. During the repair phase, a Sharpie marker (or black paint pen, I cannot remember which) rendered the scribe mark invisible.

A StrongArm 1/8" was used in a Bosch Hornet to penetrate the fairly wimpy HP, and a 1/8" HSS bit was used to enter the lock case.

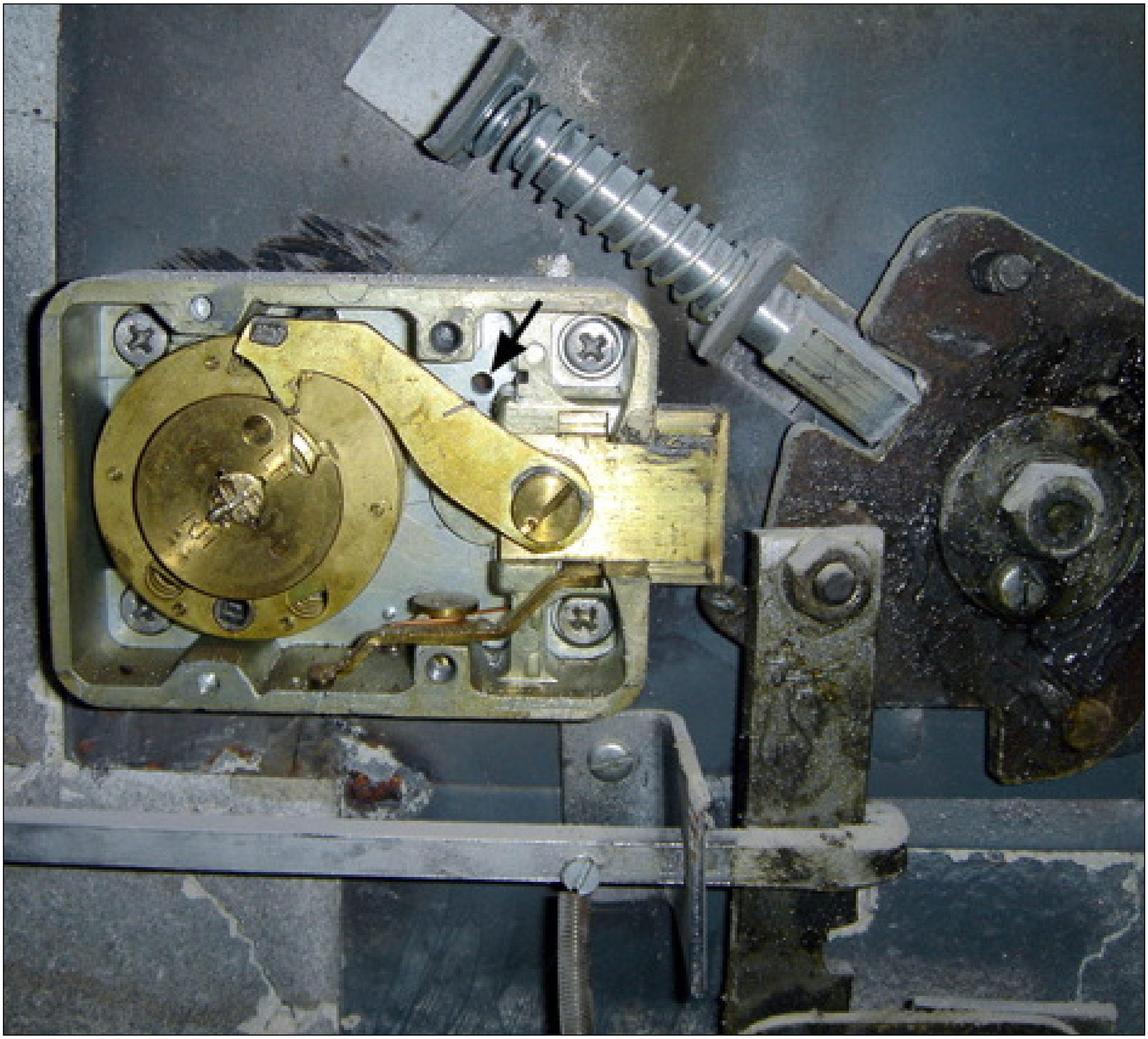
◀
Back side of door with back panel attached. There is a CKH in the back panel, but alas, it is not aligned very well with the CKH of the lock.

▶
Profile of door with tape measure provides two important measurements: depth to door bolt center is 2-11/16", and total door thickness is pretty close to 4-1/4".

▶ *Back panel removed. Even though this is just a fire safe, it has a 4-way boltwork! That's right, there are two bolts on the hinge side, one on the opening side, and one each top and bottom. One annoying thing about many early Gary fire safes is that you have to remove the upper hinge-side door bolt to get at the lock.*



◀ *Close-up of area around lock, handle cam, and relocker. Notice the white arrow pointing to the shear screw. Often made of brass, this screw is designed to break if too much stress is put on the handle (by a burglar, of course). When the screw shears, the handle spins freely, and you have to come up with an alternative method of retracting the boltwork. I usually drill for a door bolt, push it in, and it carries the other bolts with it.*

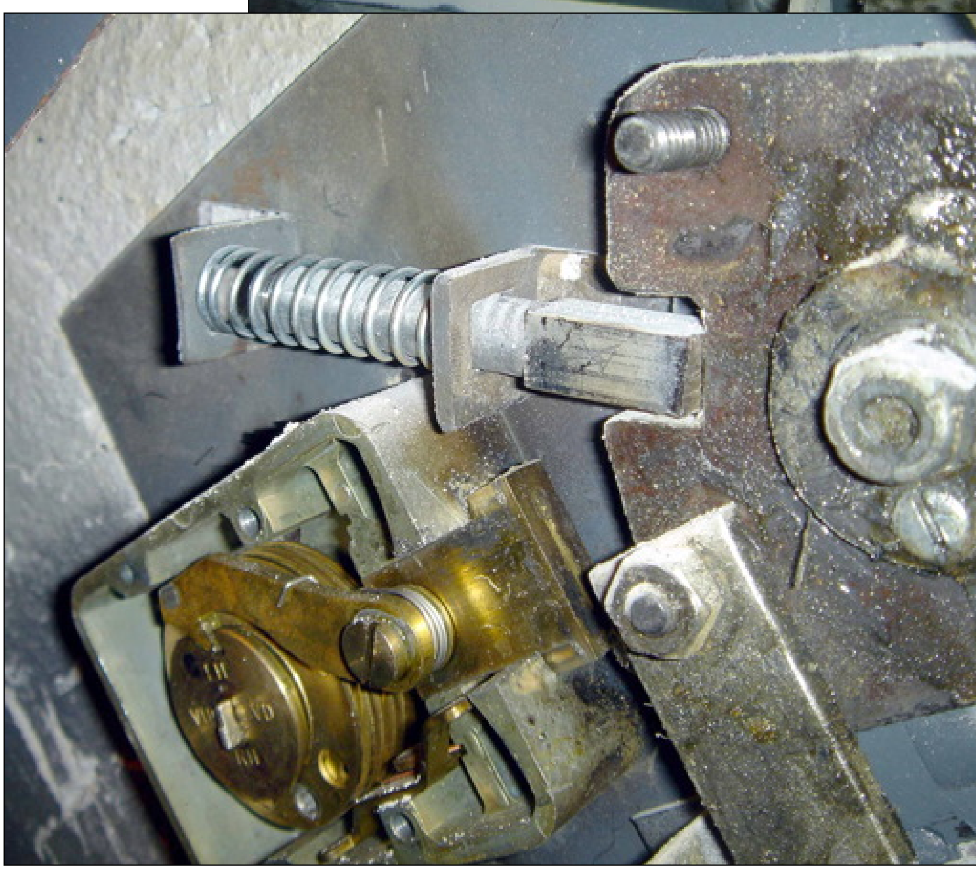


So, where did that hole through the dial ring at 83 come out? The black arrow tells the tale, in this exquisite trophy shot. There are three basic ways of dealing with this scope hole:

(a) line up the wheel gates at your hole, taking all readings at the opening index, and then subtract 15 from all numbers.

(b) line up the wheel gates at your hole, taking all readings from the center of your hole, then draw a hatch mark on the dial ring at the fence location (98), and finally, dial the combo at the hatch mark.

(c) if you have a wide-angle 2.7mm right-angle scope, you can align the wheel gates right under the fence (with a little practice). This is a little tricky the first few times, because you are trying to see just slightly over the horizon. But I urge you to try it, because like so many other things in life, practice makes it come easier and easier over time.



Gary relockers can sometimes be a royal PITA to defeat, because they are square on one end, and round on the other. When the RL fires, the square portion fires through the square cutout in the relocker guide bracket. Trying to push the RL back up through the square cutout can really try one's patience. Sometimes the best solution is to punch the RL far enough to bypass the cam plate. This will bend or break the guide bracket, but it can be rebent or lightly hammered right back to its former shape.

Gardall Fire Safe

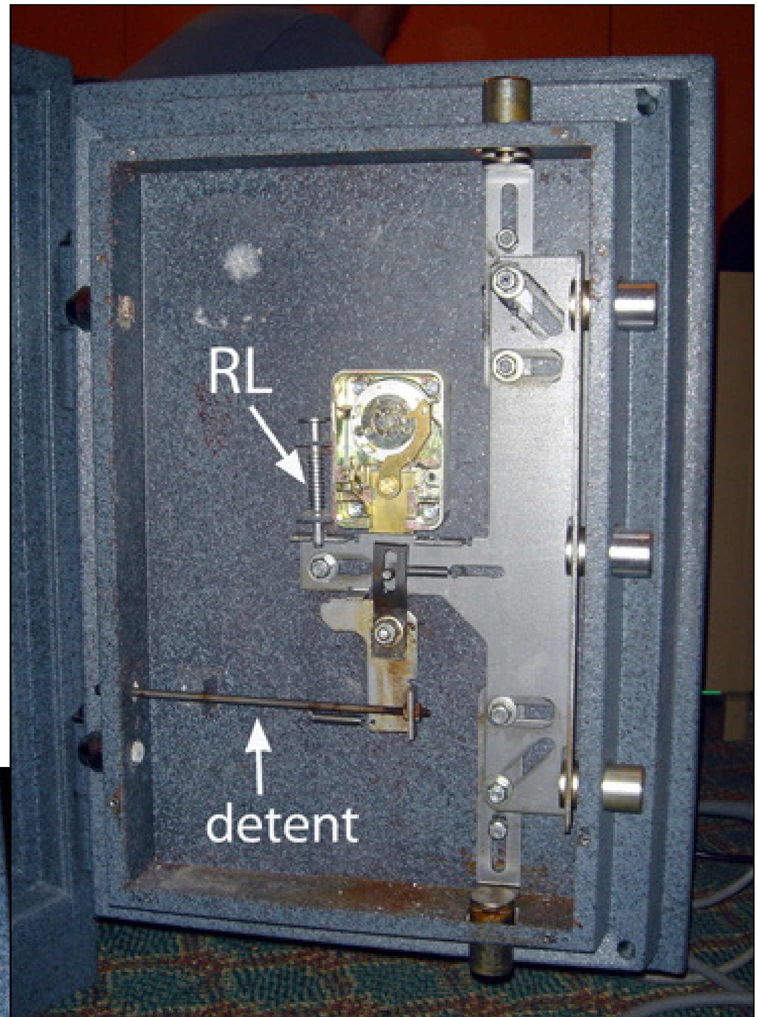
Our opponent: a Gardall fire safe at a recent PenParty. Could it be side- or top-drilled to scope the CKH? Yes, but not easily. We'll see why in a few pages. This one Simon Blatz and I will microdrill right through the Ilco dial ring. (Simon is still the youngest PenParty attendee to drill his own safe—he first did it at age 11!)

►
We might as well get right down to business. Here is the outside trophy shot, with hole in dial ring at 58. Hmmm, the Gary fire safe in the previous article was drilled through the ring at 83. Why the heck was this one drilled at 58? Because the lock in the Gary was mounted RH; the lock in this Gardall is mounted VD.

◄
One of the virtues of drilling anywhere along the bottom of the dial is that the repair is in an area that users simply don't see or scrutinize. This photo was taken at the angle at which most users approach the dial. Even if the repair is less than cosmetically perfect, it is OK, cuz it won't be noticed.

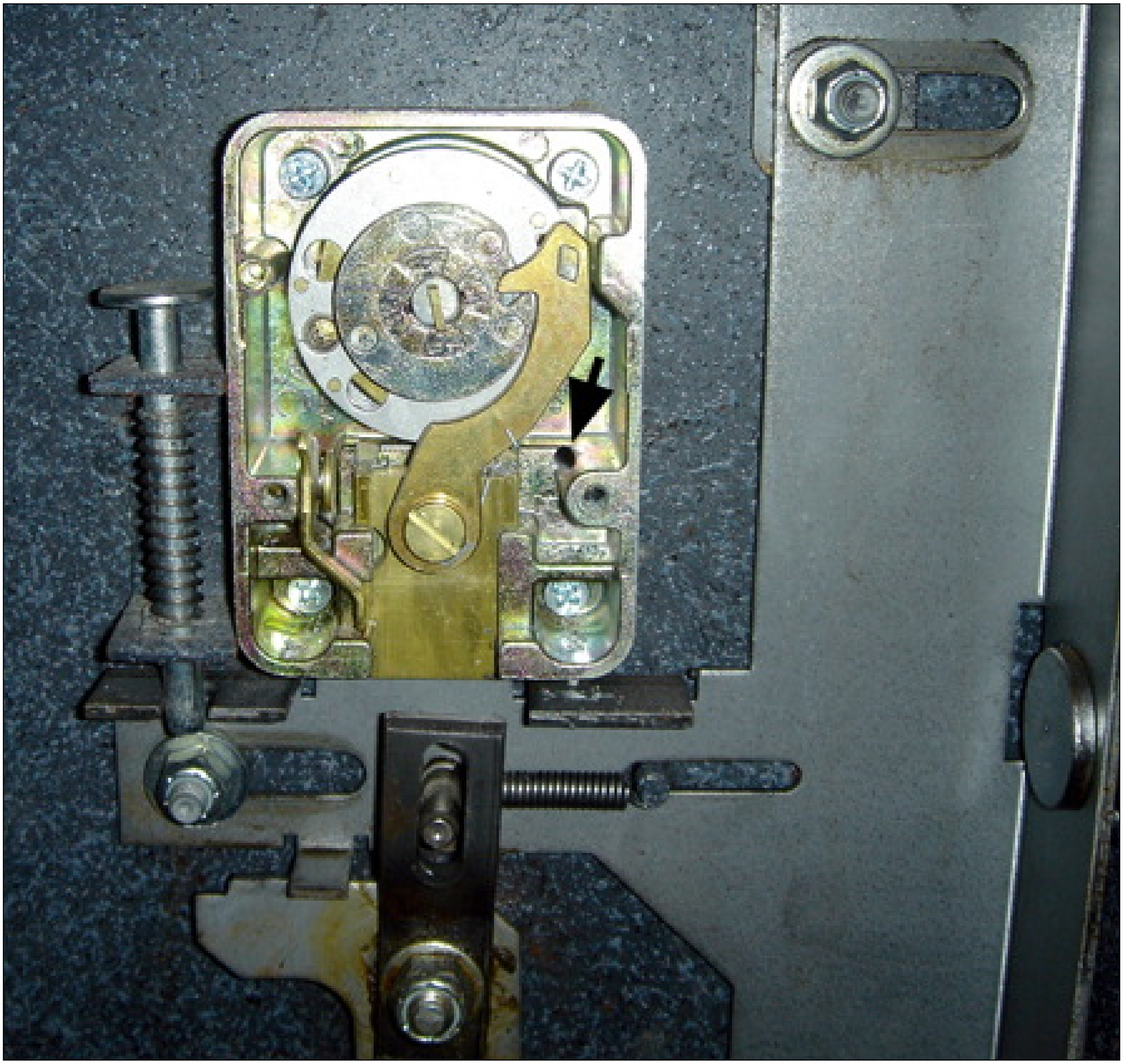
Back side of door with back panel removed. Arrow points to change key hole (CKH) in the panel. Hmmm, so if there is a CKH in the panel, why did I say that scoping the CKH was not easy? The answer in a moment.

This is a nice, 3-way boltwork, with three door bolts on the opening side, and one each top and bottom.



Profile of door, with tape measure providing two pieces of information: depth to door bolt center is 3-1/2", and total door thickness is very close to 4-3/16".

Here is why so many Gardall safes are difficult on which to scope the CKH: there is a double dastardly, triple diabolical sticker right over the CKH on the lock itself! On an easy-to-drill safe, it just doesn't make sense to fight with this sticker. Use an opening technique that avoids a brutal and bloody brouhaha.



With back cover removed, we see inside the Ilco lock. The arrow points to the scope hole that was drilled through the dial ring at 58. If the "up" angle had been any less, the drill bit would have ended up in the mounting screw-hole post. Note to self: either drill straight or at a pretty good angle, to avoid drilling into the post. Nice work, Simon!

Cole Fire Safe

Our opponent: a Cole-branded fire safe.

►
Close-up of dial and handle. So, which lock is inside this safe? Notice the lack of a changing index. In many safes of this era, this often indicates an S&G 6709. This Cole is no exception, and the lock is mounted VD.

◄
I chose to drill a .115 hole through the dial ring at about 45 (with dial set on 0), up at a pretty steep angle. This requires drilling through the lock bolt slide, but it does no harm, provided the HSS bit is sharp. (A carbide bit turning at high speed would probably burr up the slide and make lock bolt retraction a little difficult.)

◀
Back side of door with back panel attached. Notice there is no CKH. This makes sense, since there is no changing index on the dial ring either.

▶
Back panel removed. This is a clean and simple boltwork: two door bolts, both on the opening side, a VD-mounted 6709, and no RL. There is no HP in this door.

Close-up of lock and handle assembly. Arrow points to hole that was drilled through dial ring at 45, at a steep upward angle. If you choose to imitate this method, be sure and use a sharp HSS bit to penetrate the lock case and lock bolt slide, so as to avoid a burring problem. And when you are microdrilling, remember to take your time. Let the drill bit do the work. Too much pressure breaks bits and results in slightly curvy holes. You don't want to force your scope into a curvy hole! Seriously, the best advice I can give anyone who wants to get into microdrilling is this: relax and have fun with it.

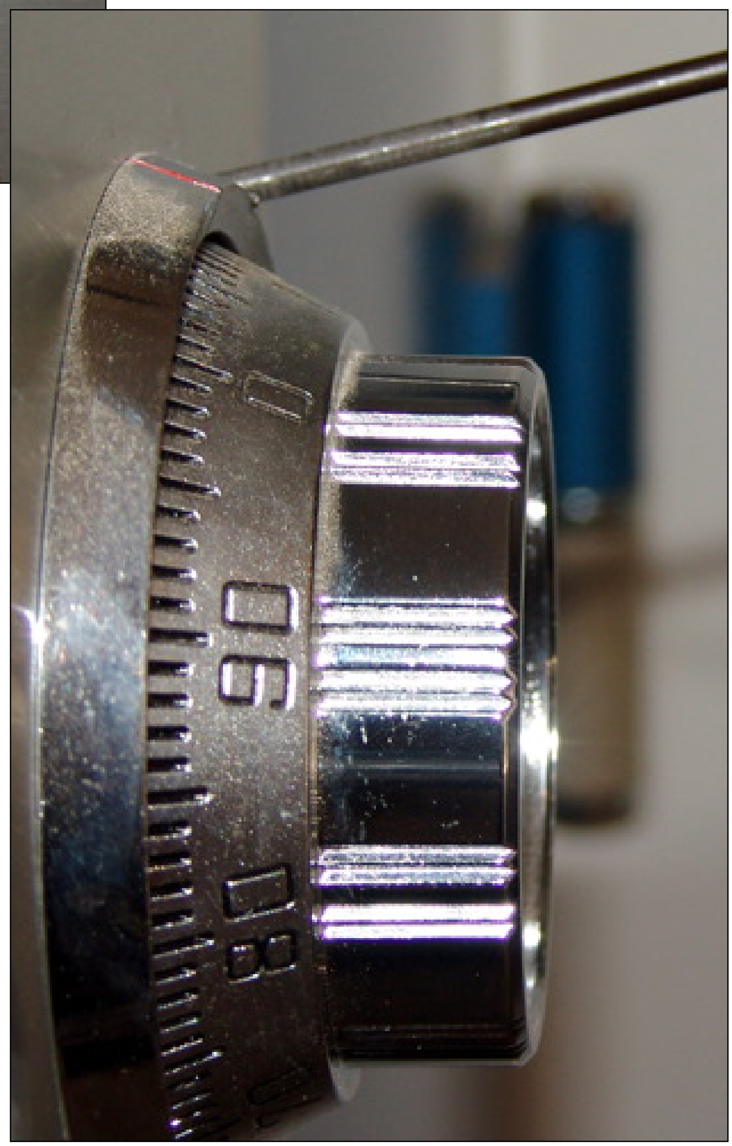
Amsec Data Safe

Our opponent: a Japanese-made Amsec-branded data safe. This one is a little embarrassing: it's mine, and I lost the combo. The story is familiar: I had the combo lock on daylock for many years, and was just using the key for quick access. And then one day, one of my 3-year-olds spun off the dial. I was genuinely surprised when I could not remember the combo. To say that it chapped my arse would be an understatement. Plumbers do not like fixing their own toilets, and safecrackers do not like drilling their own safes!

▶ *Close-up of handle, keylock, and dial.*

▲ ***This dial is not removable without breaking, because it is pinned onto the spindle, as we will see in a few photos. Well, I wasn't about to start breaking my own stuff, so I made the decision to microdrill, down at an angle, through the dial ring between 7 and 8. Now, this dial ring is very thin; not much room for a drill bit. I carefully placed a tiny bit right on the slender flat spot around the edge of the dial ring, and pulled the trigger of my cordless DeWalt. That's right—I was so perturbed at myself, that I refused to get out any of my real safecracking gear!***

◀
With no HP, this was an easy drill. The trick, as always, is to not get in a hurry. Let the drill bit do its job, slow and easy, with minimal pressure.

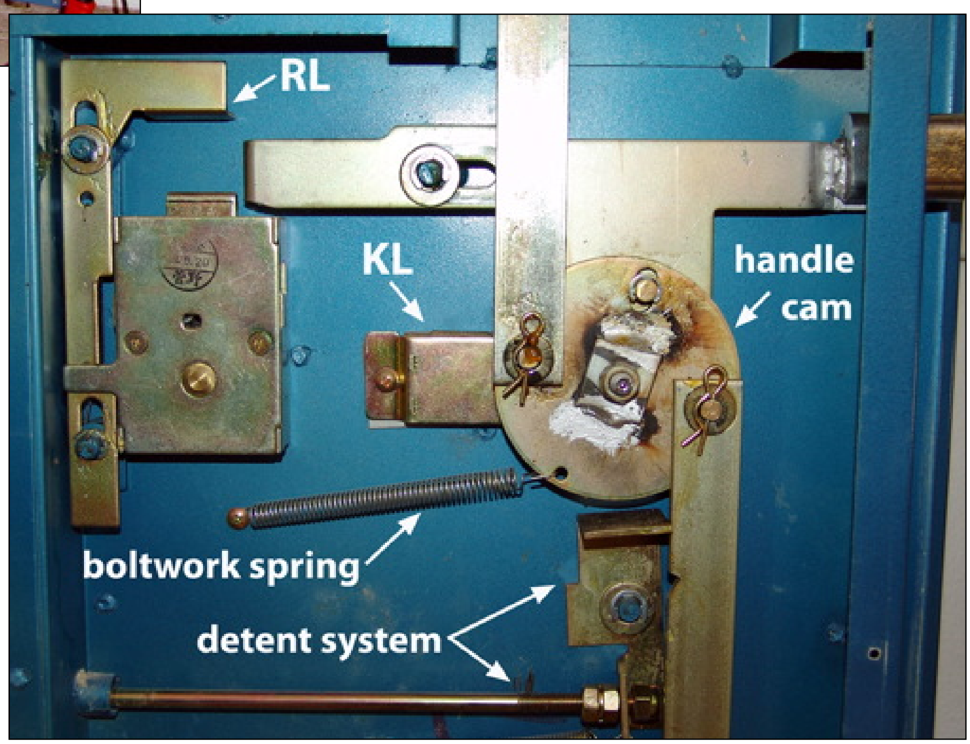


▶
Here is the drilling angle.

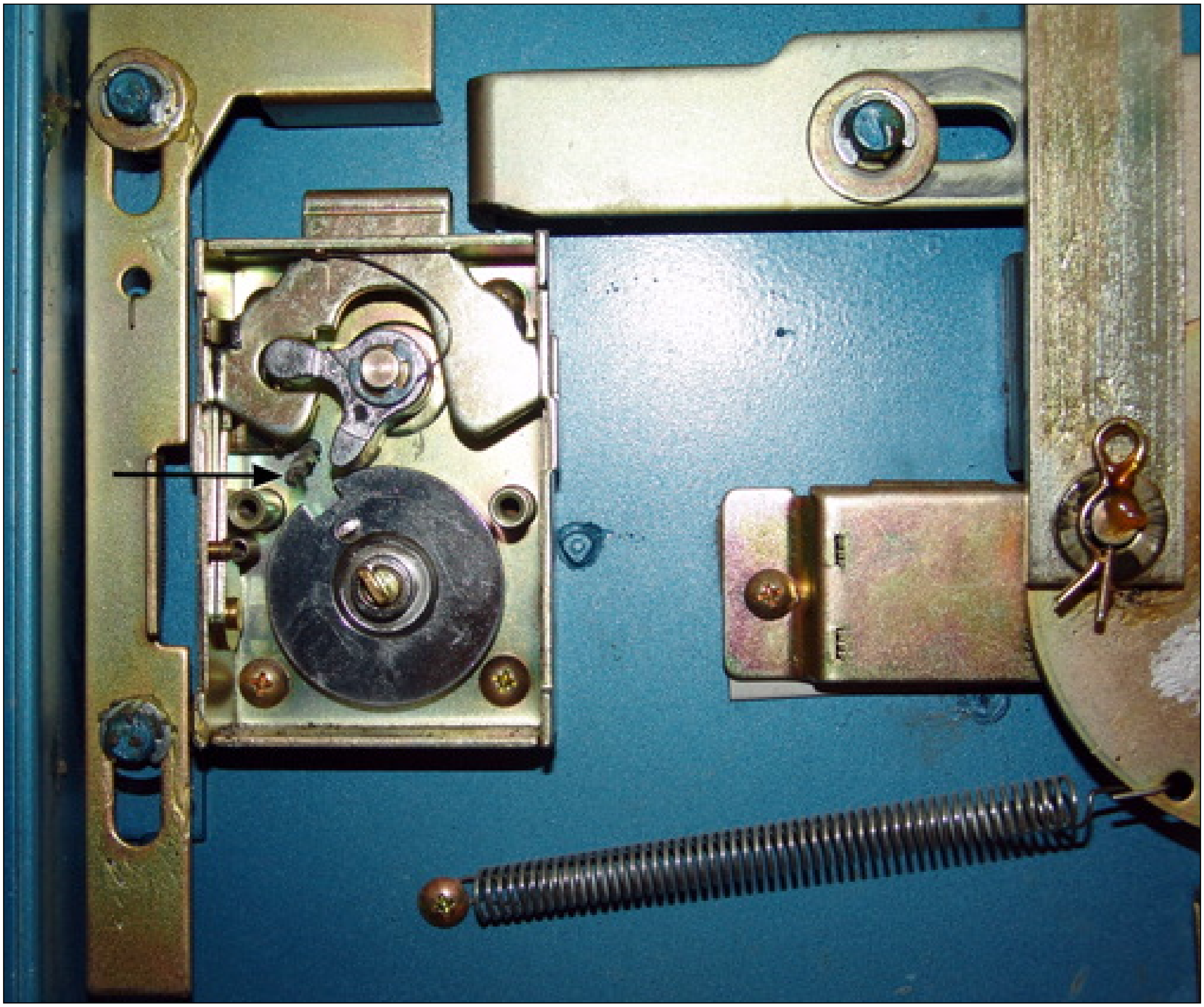
▶
Handle is being held in the fully unlocked position.

◀
Door is open. There is no CKH in the back panel.

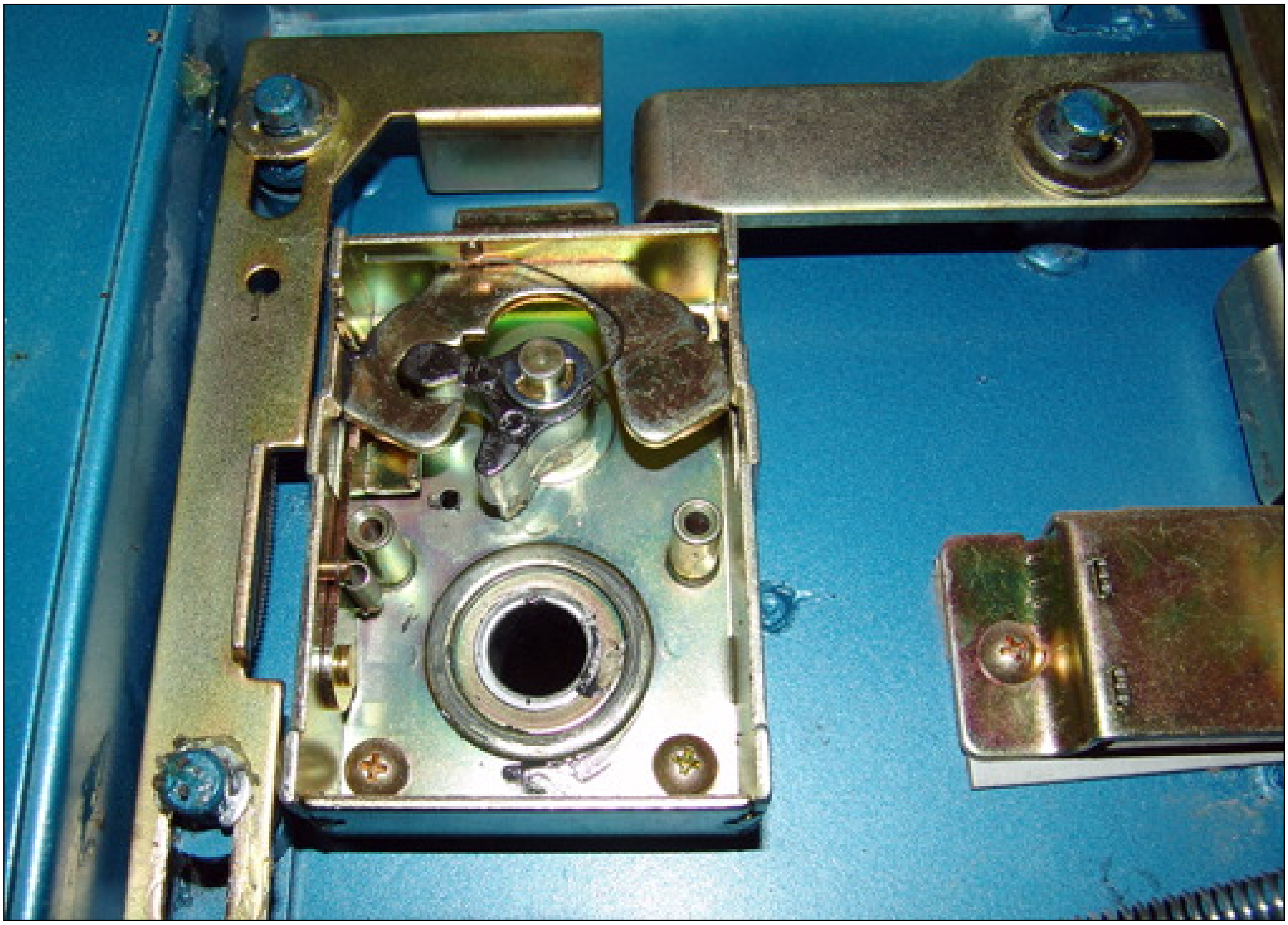
◀ *Panel removed. This is a 3-way boltwork, with two door bolts on the opening side, and one each top and bottom.*



▶ *Close-up of all the important stuff: VU combo lock, relocker, keylock, handle cam, automatic boltwork throwing spring, and detent.*



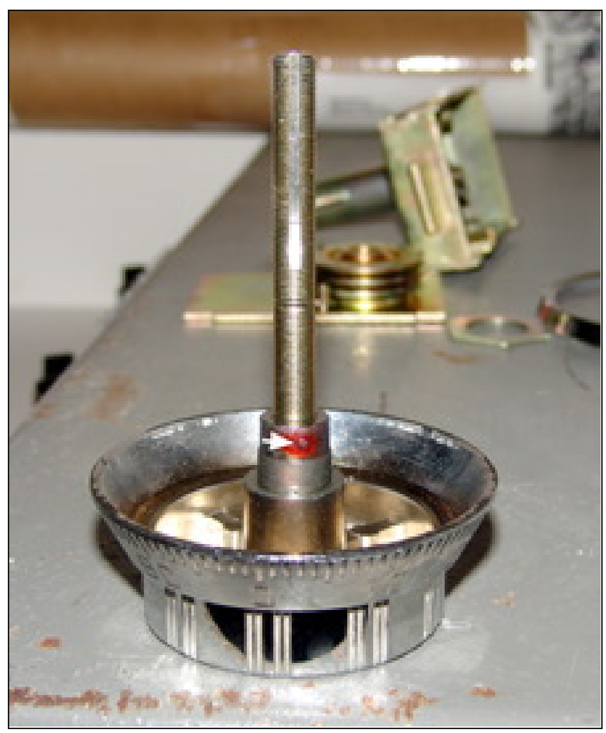
With back cover of lock removed, we see drill bit sticking through victory hole (see arrow). The external relocker is in the fired position, and will block retraction of the boltwork.



I didn't realize it at the time, but this DP (Drill Point) can also be used to defeat the internal RL. The internal RL is that flat piece immediately to the left of the drilled hole. OK, I'll admit it: I don't like dialing combos to get into my own safes. For that reason, most of them have been retro'd with elocks. Like most Americans, I want instant gratification—I want into my safes PRONTO! So, I wanted to retrofit this safe with an easy-to-install elock. But which one? Well, it depends on how much work a guy is willing to do. And given that that was not a paying job, I wanted the work to be minimal. Here was the issue: this lock is mounted with sheet metal screws, not the standard 1/4" x 20 that we are used to seeing. I could either dink around, or I could install a lightweight elock with the same sheet metal screws that were used originally. Given my lazy nature, you can probably guess which choice I made.

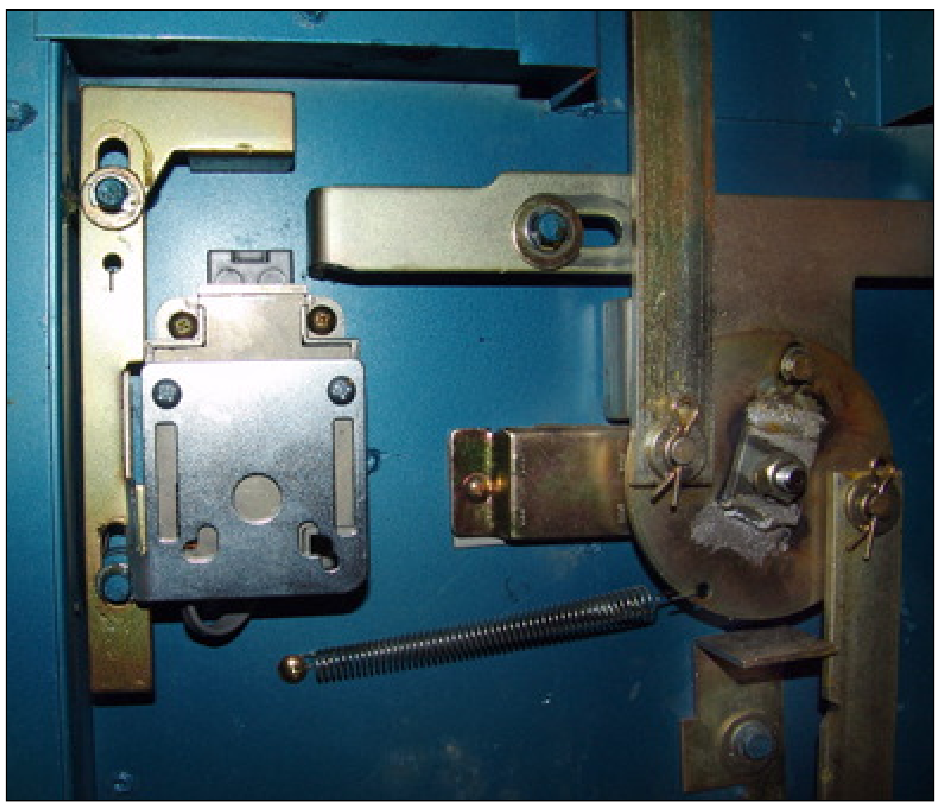
▶
With dial removed, we see a dial ring held on by a tube nut. That's right—this combo lock has a tube.

◀
The tube lock. The purpose of the tube is to prevent insulation from getting into the spindle and lock, and it also negates the need for dial ring mounting screws.



▶
The dial. Arrow points to the little pin that makes removing these dials undesirable in almost all cases.

◀ *Original lock has been removed.*



▶ *So what lock did I put on? A used Amsec ESL-10 I took off another safe. This was the perfect lock, because the older ESL locks are very light. A heavier lock would have exerted too much of a pull on the mounting screws for me to be comfortable. But this ESL went on beautifully. In my view, the ESL is a hugely underappreciated lock. I know it is plastic and pot metal, but I have had fewer problems with these locks than any of the elocks made by Kaba or S&G. To each their, own, eh?* ☺

Mosler Fire Safe

Our opponent: a Mosler fire safe.

◀
Dial and handle. Hmmm, which lock is inside this safe? Well, the chances are it is either a B-6 or a B-101. Let's see if we can tell them apart.

▶
Dial to handle is very close to 4". This tells us for sure that the lock is NOT a B-6. (The B-6 is too large to fit.)

▶
Starting to drill through dial ring at 84–85. When starting the hole, your drill bit needs to be perpendicular to the material being drilled. Hence the extreme angle here. If we tried to start the hole straight on, the bit would slip off the dial ring and scar the ring and door. Not good!

◀
Once the hole is started, we gently move the motor and bit down to the desired drilling angle. In this case, we are drilling pretty much straight (or trying to—I am not the straightest natural driller).

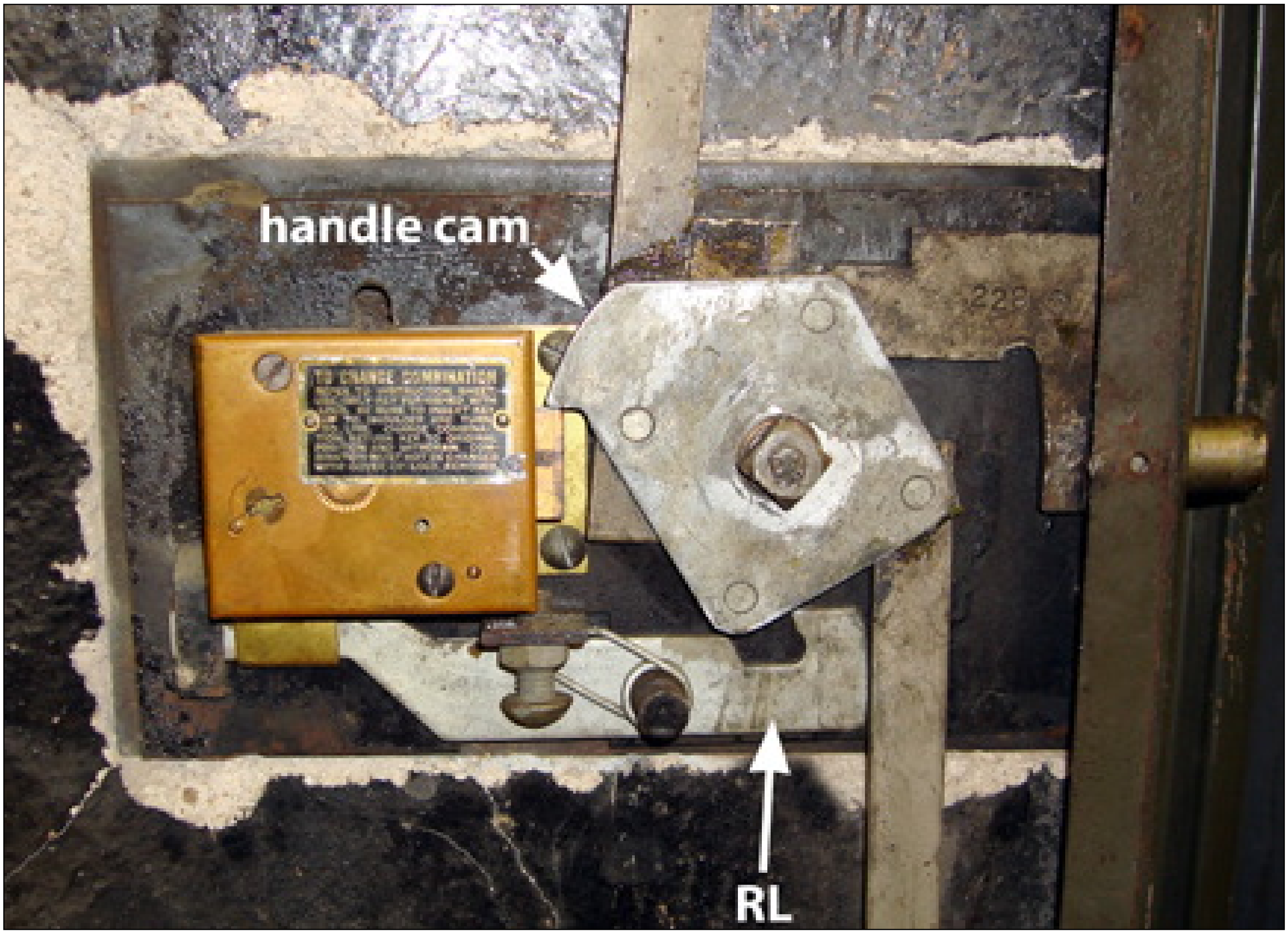
◀
OK, that is a pretty good looking 1/8" hole through the dial ring. Too bad it's not through the HP too. Sorry to say, 1/8" SA's would not cut the Mosler HP, so I had to increase the hole size.

▶
Widening the hole out to 3/16". Even with sturdy 3/16" SA bits, the HP was tough to get through. Had to use a SA lever rig, high speed and a fair amount of umphhh!

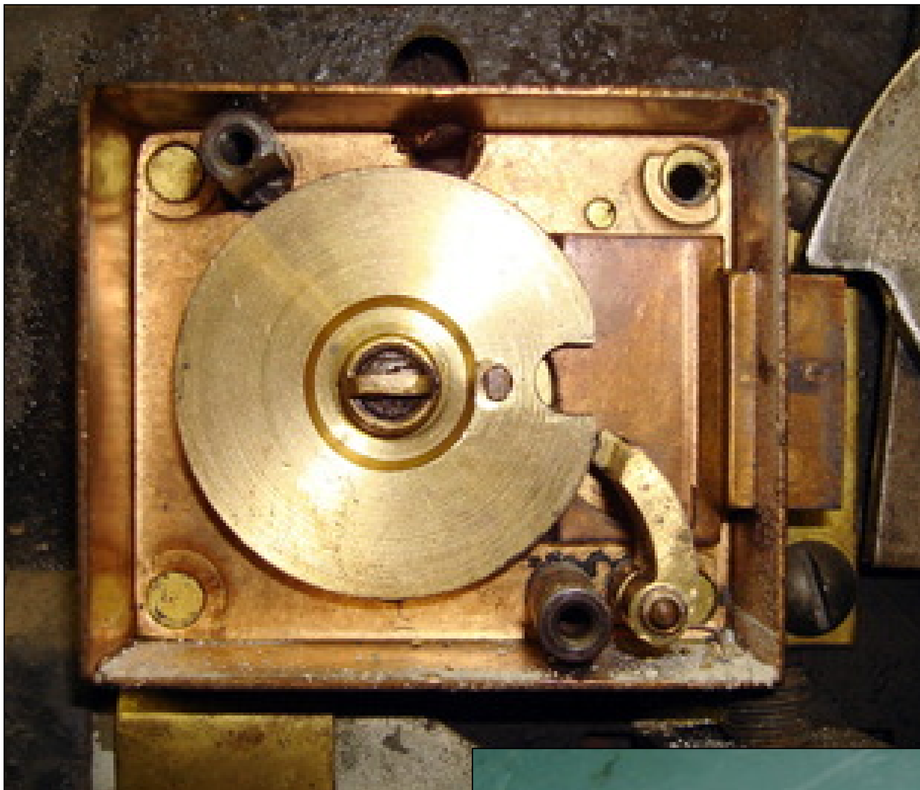
▶
Here is the result of enlarging the hole. This is less than ideal. The enlarged hole crept up onto the ridge on the dial ring, which makes a perfect repair a little more difficult, because we have to deal with the ridge now. No biggie, but an annoyance, because I should have done a better job enlarging the hole. (The new meat should have all been taken from the non-ridge side of the dial ring.)

◀
Back side of door with back panel attached. This is a 3-way boltwork, with one door bolt on the opening side, top and bottom.

Back panel removed.



Close-up of lock, handle cam, and relocker. Notice that the tip of Mosler's handle cam is above the lock bolt, rather than below. Handy to know that, because one day you just might want to punch the handle cam. And if you are going to punch the tip of a handle cam in far enough to bypass the lock bolt, it sure helps to know whether to drill up or down from dial center!



◀
Back cover of lock removed. Notice that this safe was drilled before. That is a big hole up at TDC (Top Dead Center). But, whoever did it did a nice external repair. Indeed, look back at photo two and notice the label covering their repair site. My guess is that they removed that label from the back panel, and moved it to the front of the door to cover their repair site. Nicely done! Now, try to find the hole that we drilled. See it? Look harder!

▶
Three big, key-change wheels are attached to the back cover. If the wheels were mesh-change, this would be a B-101. But the fact that they are key-change changes the lock number to a KCB-107.

Drill bit shows the path to victory, right through the upper mounting screw hole. I probably could have opened the lock without resorting to transferring, but it must have been my mood: I transferred, using my favorite method: align all wheel gates at the hole, taking all readings from the opening index. Add about 15 to each number, and voila, she is open!

Meilink Wall Safe

Our opponent: a Meilink wall safe. This one was in a locksmith van, rather than in the wall of a home. I was tempted to do some cool side drilling, but I wimped out and microdrilled. ☺

► *My favorite DP on this vintage of Meilink wall safe is to angle drill up sharply through the dial ring at 42.*

◄ *Now that is a sharp angle!*

◀
Back side of door with back panel attached.

▶
Back panel removed. This is a 1-way boltwork, with two door bolts on the opening side. The lock is mounted RH, and is directly attached to the boltwork.

Back cover of peanut lock removed. This photo wasn't taken until I had blown the insulation out of the lock, and started filling the hole with steel epoxy. But you can clearly see the hole in the lower left corner. That is the best and safest place to drill this lock. It requires transferring, but the peace of mind of knowing that I am not going to damage the lock is worth it.

◀
I often forget to photograph repairs. I need to change that bad habit into a good habit and start taking photos of the repair steps, just like I do the opening steps. I get asked about repairs a lot, and I intend on showing more of this oft-neglected aspect of our work in the future. In this photo, I have filled the hole with steel epoxy. I have not sanded the ridge down yet, but I will before the next photo is taken. (The ridge I refer to is the tiny rim of metal that is pulled up by your drill bit when you commence drilling. It always needs to be flattened, else you will have a ridge that can be felt when you run a finger along the dial ring.)

▶
Ridge flattened, epoxy sanded smooth, dial ring painted. I can't remember whether I used a black paint pen, or a Sharpie marker. Either works just fine, with a slight edge in quality going to the paint pen.

• • • CERTIFICATION FOR THE

Certification for the safeman is finally a reality! As part of the NSO's continuing commitment to the working safeman, we now offer a tri-level certification program that will set new standards for excellence in the industry. Pass the Level One test and you will become an RST–Registered Safe Technician. This will add an element of professionalism to an employee's resume, and/or to an employer's yellow page ad.

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COST:

NSO Members–$50.00

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Those who have already taken and passed the Level One test, please turn the page for information on the Level Two test for the Certified Journeyman Safecracker.

StrongArm MicroDrill Package

To microdrill through HP, you need several things: patience, a kickarse high-speed drill motor, and some carbide drill bits. It is no secret which brand of carbide bit I prefer: StrongArm (SA for short). As I was putting this issue together, I contacted Jeff Volosing about running a special on a nice package of small diameter drill bits. This is what we came up with: four 1/8" x 4", six 3/16" x 4, and four 3/16" x 6". Regular price on these 14 drill bits is $88; the NSO Special is $70.50 plus five bucks shipping. Thanks, Jeff. Take advantage, guys—I did!!!

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One Cool Safe Poster

WOW! Need I say more? Guy Zani has put this poster together, and he is offering them to NSO members for the fabulous introductory price of $14.95 plus $5.95 shipping. That's right, guys—for barely twenty bucks you can have the conversation piece of the month in your office or shop! And just so you know, this is not a small poster. It measures three feet tall and two feet wide!

One Cool Safe Poster

NSO Special $14.95

Guy Zani

Email: theantiquesafecollector@yahoo.com

Wolf and Storz!

This scope kit comprises, two scopes, three adapters, a case, a light source and light cable. More specifically, a Wolf 5mm x 7" x 10 degree (basically a straight-view scope); a Wolf 5mm x 7" x 70 degree (basically a right-angle scope); a Storz 481-C mini light source with 150W of power; and a Storz light cable. Also included are three adapters to go onto existing scopes you might have or later acquire, so that they too can be used with this awesome light source and light cable. Both scopes are in excellent condition, with crystal clear images and fantastic light transmission. The Storz light source shows no sign of having ever been used. Price for the entire package is $1495 plus shipping.

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TAX CUTS AND FAIRNESS

Let's put tax cuts in terms everyone can understand. Suppose that every day, ten men go out for dinner. The bill for all ten comes to $100. If they paid their bill the way we pay our taxes, it would go something like this:

The first four men (the poorest) would pay nothing. The fifth would pay $1. The sixth would pay $3. The seventh $7. The eighth $12. The ninth $18. The tenth man (the richest) would pay $59. So, the ten men ate dinner in the restaurant every day and seemed quite happy with the arrangement, until one day, the owner threw them a curve.

"Since you are all such good customers," he said, "I'm going to reduce the cost of your daily meal by $20." So, now dinner for the ten only cost $80. The group still wanted to pay their bill the way we pay our taxes. So, the first four men were unaffected. They would still eat for free. But what about the other six, the paying customers? How could they divvy up the $20 windfall so that everyone would get his 'fair share'? The six men realized that $20 divided by six is $3.33. But if they subtracted that from everybody's share, then the fifth man and the sixth man would each end up being 'PAID' to eat their meal. So, the restaurant owner suggested that it would be fair to reduce each man's bill by roughly the same amount, and he proceeded to work out the amounts each should pay.

And so: The fifth man, like the first four, now paid nothing (100% savings). The sixth now paid $2 instead of $3 (33% savings). The seventh now paid $5 instead of $7 (28% savings). The eighth now paid $9 instead of $12 (25% savings).The ninth now paid $14 instead of $18 (22% savings). The tenth now paid $49 instead of $59 (16% savings).

Each of the six was better off than before. And the first four continued to eat for free. But once outside the restaurant, the men began to compare their savings. "I only got a dollar out of the $20," declared the sixth man. He pointed to the tenth man "but he got $10!" "Yeah, that's right," exclaimed the fifth man. "I only saved a dollar, too. It's unfair that he got ten times more than me!" "That's true!!" shouted the seventh man. "Why should he get $10 back when I got only $2? The wealthy get all the breaks!" "Wait a minute," yelled the first four men in unison. "We didn't get anything at all. The system exploits the poor!" The nine men surrounded the tenth and beat him up. The next night the tenth man didn't show up for dinner, so the nine sat down and ate without him. But when it came time to pay the bill, they discovered something important. They didn't have enough money between all of them for even half of the bill! And that, boys and girls, college professors and safecrackers, is how our tax system works, or should work. The ones who get the most money back from a reduction are those who paid in the most. Tax them too much, attack them for being wealthy, and they just may not show up at the table anymore.

—*Author Unknown*