The official publication of ALOA SPAI, an international association of security professionals

November 2017



SECURING YOUR SUCCESS

U.S. VETERAN, INDUSTRY NEVBIE

A look at the first participant in the ALOA veteran education program and how you can get involved

Tibbe Key Generation How to use impressioning to complete the job

Creating a Properly Combinated Cylinder

Using Spare Parts to Save Money | Selling Your Business | Dorm Room Break-In Investigation

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2008 Dodge Avenger Remote Repair
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Generating a Tibbe Key for a Ford Transit Connect
Stacy Hetchler, CAL, shows you how to use impressioning to create a key.
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Mission Statement: The mission of the ALOA Security Professionals Association, Inc., as dedicated members of the security industry, is to ensure professional excellence and ethics; create a public demand for professional locksmith services; represent and speak for the locksmith industry; and expand the exchange of trade information and knowledge with other security-related organizations to preserve and enhance the security industry.

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1993-1995 Breck Camp, CML

Henry Printz, CML*

1987-1989

Dallas C. Brooks, RL

1979-1981

1977-1979

1974-1977

1972-1974

1970-1972 William Dutcher, RL* 1968-1970

1966-1968

1964-1966 William Meacham*

1962-1964 Robert Rackliffe, CPL*

Edwin Toepfer, RL*

*deceased

1960-1962

1956-1960

Automotive Work: ALOA Can Help

CANNOT BELIEVE IT WILL SOON BE Thanksgiving! Time seems to be moving at a record speed, and it seems as if the older I get, the faster it moves. The Greater Philadelphia Locksmith Association (GPLA) has recently held their annual tradeshow and banquet, where the industry's most prestigious award (The Philadelphia Award) is presented to one particular individual who has made a significant contribution to the industry. The GPLA has always had a special place in my heart, as my grandfather was a founding father. One thing in particular that I learned from him is that you should always strive to give back to the industry and — as he frequently said — "leave the industry better than you found it." I can honestly say that this year's recipient perfectly fits the mold of the industry's finest traditions of giving back by sharing knowledge and experience. Congratulations to Ierome Andrews! This was an honor well deserved, and I cannot think of anyone more deserving.

This month, we'll be focusing on the automotive locksmith. Over the years, technology has made great strides on the automotive front, and it's become somewhat of a specialized field. It has advanced to the point that it's almost impossible for the general locksmith to keep up. Not only does the automotive locksmith have to continually obtain the knowledge needed to service his customers properly, but there is also a

significant investment in specialized equipment, transponder blanks, software/updates, etc. As with all areas of a locksmith business, or any business for that matter, it's very important to be able to get a return on your investment. I personally would rather stay home than break even!

So if you'd like to get that return on investment and make a profit doing automotive work, ALOA can help! We have some of the best instructors and classes in the country. Not to mention, our classes enable so many networking possibilities with other successful ALOA members. As a member, you have access to an abundance of resources, such as this *Keynotes* magazine, including back issues. ALOA also offers numerous business classes during our annual convention, as well as at the Security

> "So if you'd like to get that return on investment and make a profit doing automotive work, ALOA can help!"



Leaders Business Conference where you can learn how to run your business more effectively — and maybe even get some tips on how to market it toward automotive work.

I will wrap this up now, but I'd like to take this moment to personally thank everyone for all the prayers, cards, flowers and general acts of kindness during my recent hospital stay and surgery. Everything went well, and while the recovery time is a little too long for my liking, it will be a piece of cake with all the love and support I've received from you all.

Best regards,

WIA

Jim Wiedman, CML President ALOA Security Professionals Association, Inc. president@aloa.org

Thankful for Our Association

OVEMBER BRINGS A TIME OF thanks for those of us here in the United States. It's a time for celebration and feasting, family and friends. As we give thanks this month, I want to say that I, the rest of the staff and the board are all thankful for your continued support of ALOA. This is your association, and we're all happy to play a part in it.

We try to show our appreciation to our members in many ways. One way that we like to do so is via our many recognition programs. From offering credentials to honoring our members for their achievements, we like to shine a light on those who are putting forth the effort to better the association and better themselves. Such actions include recognizing our Lifetime Benefactor members, Life Members and those who receive annual awards from ALOA and SAVTA such as the Presidents Award and Education Service Award.

We have now established a centralized location on our website where we permanently honor members who have been recognized for such achievements. Located at www.aloa.org/membership/ awards.html, the page includes honorees going back several years so you can see the many members who have achieved so much. Thank you for your dedication.

Hopefully, you're thankful for what ALOA brings you as well, as we sure try to give you a great value for your membership. As you receive your renewal notices and prepare to send them back in, take a few moments to consider all that your membership brings you. I'm sure you know about all the information and communication we send your way, such as our regular update emails and the very *Keynotes* you're reading now. We work hard to bring you the best technical and industry information so you can stay up to date.

And then we send you business! Through our referral program and your access to the newly revamped FindALocksmith.com site, you can have more business sent your way via your membership. ALOA further helps your business operations with access to bonding, insurance programs and various discounts.



Of everything ALOA offers, though, I believe the greatest benefit is our people. Our members are like a big family. So many of you give back, mentoring those new to the industry, providing help where you can. You teach. You network. You offer jobs and input. You share job stories with each other and generally offer an unparalleled network of support.

For all of this, I am thankful. Thank you for being a part of ALOA and making it the wonderful association it is.

Mary Q. May

Mary A. May Executive Director mary@aloa.org



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ALOA at the GPLA Convention

HE GREATER PHILADELPHIA LOCKSMITH ASSOCIATION recently held its annual convention, and ALOA had good representation there, as usual. As one of the bestattended industry events — besides the ALOA Convention & Security Expo, of course — the GPLA Convention is well respected in the locksmithing community. GPLA is the secondoldest continuously operating locksmith association in the United States, second only to the Master Locksmiths Association of New Jersey, and as such holds a special place in the industry for many.

This year, ALOA Executive Director Mary May received the Lee Rognon Award at the convention. Named for the first executive director of ALOA, the award honors its recipient for fostering cooperation between associations. But additionally, the award recognizes the spirit of extreme dedication and hard



Several members took advantage of the PRP sitting, including Steven Barnett (left front), Ashley Porter (right front) Winford Hayes, CPL (rear left) and Andrew McGuire (rear right).

work that its namesake had. Congratulations to Mary!

Additionally, several ALOA representatives were in attendance — including immediate past president Tom Foxwell, RL, CFDI, CAI; Northeast Director William L. Mandlebaum, CML; AIL President John Truempy, CRL, CMIL, IFDI, AIL; and Non-Voting Director Robert E. Mock, RL. A PRP sitting was held at the convention as well. The SAVTA Advisory Board held their fall meeting there, where Joe Cortie handed over the presidency to Mike Potter. Joe Reustle, Gene Gyure and Dave LaBarge were also present.

Missed out on attending industry conventions this year? Save the date for the 2018 ALOA Convention & Security Expo in National Harbor, MD, July 8-14! Congratulations to Larry Schwalb, who won the GPLA door prize of a full 2018 ALOA Convention registration.



Congratulations to Larry Schwalb, who won a 2018 ALOA Convention full registration package. ALOA donated the package as a door prize at the recent GPLA Convention.



Several awards were presented at the GPLA convention. From left to right: Marty Arnold presents the Lee Rognon Award to Mary May; Cliff Shafer presented the Gerald J. Connelly, Jr. Pioneer Award to George Hill of Keedex; Sven Hellwig, Sr. presented the Industry Award to PDQ Industries, and it was accepted by their president, Bill Tell; Paul Kline presented the Hermann C. Hennsler, Jr. Award to Sven Hellwig, Sr.; and Bill Young presented the Philadelphia Award to Jerome Andrews.

NEWS BRIEFS

dormakaba has expanded its catalog of building information modeling (BIM) objects found on the cloud-based platform bimobject. com. Users can now access more robust representations of dormakaba door hardware, interior glass systems and entrance systems product lines, with access to Revit downloads, product information, links to specifications and other data.

Jet Hardware's updated Auto

Guide for 2017-early 2018 is now available for download at www. jetkeys.com. The



guide includes a transponder shell listing as well as updated on-board programming procedures where available. Travis Willis has joined Leola, PA-based PDQ Manufacturing as national sales manager for integrated locking and access solutions.

He serves customers nationwide from his office in Fort Collins, CO, and will help roll out the company's PDQ SMART product line.



Before joining PDQ, he was employed with AccessNsite, a division of American Direct.

Securitech has launched a new mobile-friendly website at www.securitech.com.

IN MEMORIAM

Howard Johnsen of Hans Johnsen Company, passed away on September 8. He was a past president of SHDA.

ALOA Life Member and past board member **Herman Stroud** of Broaddus, TX, has passed away. He had been an ALOA member since 1970.

Roy W. Nicholas, CML, of

Accurate Lock & Security Inc. in Bellingham, WA, has passed away. He was a member of ALOA and the Northwest Lock-



smith Association and served as convention chair for Tri-Regional Locksmiths.

PRODUCT BRIEFS

Corbin Russwin, an ASSA ABLOY group brand, has upgraded the ML2000 Series mortise lockset. This Grade 1 mortise lock features an adjustable front to accommodate square or beveled doors, a 1" deadbolt throw and a field reversible latchbolt for rehanding without disassembling the lock case. It's



available in 51 mechanical and electrified functions, including vandal-resistant and behavioral health options, 59 standard trims and Museo Collection decorative lever designs, in 13 finish options. A wide range of occupancy indicators is also available for the lock.

Master Lock has released the Magnification Combination Padlock, which has an optical grade 360-degree magnification lens to



assist in tough-to-see situations. Features include a larger font size in all numbered positions, tactile feedback and a no-slip grip. It's available in silver, red and blue. Lucky Line has introduced a new Key I.D and Organization Kit. It fits most standard keys and allows for color coding. It includes 10 key caps, five Label-It key tags, 10 key identifiers, 10 metal-rimmed paper tags, five key tags and 10 1" split rings.

Westinghouse Security has debuted the W-NVR wireless surveillance camera kits for residential or business applications. W-NVR Kits offer users the ability to replay past events and view real-time movements. Available in two models, W-NVR4 or W-NVR8, the kits include four or eight cameras, network video recorder, power supplies and mouse. Both versions support Android and iOS. The network video recorder has a built-in wireless router and a 2.4G wireless transmission. The cameras are also portable, allowing a quick and easy move to another location. The only installation requirement is positioning the camera next to a power source. Once the cameras are installed, users set up the network video recorder and wait for "Smart Link" to connect the cameras to the NVR. *Imagenetical*

What's New

CALIFORNIA

Daly City Jay C. Larson Sponsor: Yvette Sink

COLORADO

Colorado Springs Paul Coleman *Sponsor: Randy Harrell* Loveland Victor Jensen *Apprentice*

CONNECTICUT

Marion Alexander D. Bullard Sponsor: Gilbert N. Wade

GEORGIA

Peachtree City Latha Ravi Sponsor: Barry McMenimon

ILLINOIS

Carmi Michael D. Le Buhn *Apprentice* Peoria Rodney M. Doran *Sponsor: Ross Duman*

CALENDAR

DECEMBER

December 4-9 Six-Day Basic Locksmithing ALOA Training Center Dallas, TX education@aloa.org or (800) 532-2562, ext. 101

FEBRUARY 2018

February 5-10 Six-Day Basic Locksmithing ALOA Training Center Dallas, TX education@aloa.org or (800) 532- 2562, ext. 101

APRIL

April 30-May 5 SAFETECH 2018 Hyatt Regency Milwaukee 333 West Kilbourn Avenue Milwaukee, WI 53203 conventions@aloa.org or (800) 532-2562, ext. 240

MICHIGAN

Clarkston Darryl Landskroener Detroit Todd Gambino

NEW MEXICO

Deming Michael Lockard Institutional Member Jose Contreras Institutional Member Rio Rancho Jeffery W. Gurley Sponsor: Joseph Gurley

NEW YORK

Corona Davidawy Arias Uniondale Ronald Moor

OHIO

Cuyahoga Falls Ron Harker

For a complete calendar of events, visit www.aloa.org.

MAY

May 14-19 Six-Day Basic Locksmithing ALOA Training Center Dallas, TX education@aloa.org or (800) 532- 2562, ext. 101

JULY

July 8-14 2018 ALOA Convention & Security Expo Gaylord National Harbor 201 Waterfront Street National Harbor, MD 20745 conventions@aloa.org or (800) 532-2562, ext. 240

OKLAHOMA

Duncan Kimberly A. Welch Tulsa Chris Talley Moore Kyle Bird-Fitzgerald *Apprentice*

PENNSYLVANIA

Philadelphia Walter A. Burwell *Sponsor: Winford Hayes, CPL* Shai Cohen

SOUTH CAROLINA

Dalzell Michael L. Brown

We Need Your Help

Attention, ALOA members: Help us eliminate the ongoing industry problem of scammers by screening the new applicants listed on these pages. If you have questions or concerns about any of the applicants, please contact Kevin Wesley, membership manager, at (214) 819-9733, ext. 219, or email kevin@aloa.org.

TEXAS

Dallas Haim Malka

WASHINGTON

Port Hadlock Garron J. Petrick

These applicants are scheduled for clearance as members of ALOA. The names are published for member review and for comment within 30 days of this *Keynotes* issue date, respectively, to ensure applicants meet the standards of ALOA's Code of Ethics. Protests, if any, must be addressed to the ALOA membership department, signed and submitted via e-mail to membership@ aloa.org or via fax to 214-819-9736.

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IAIL Updates

Tom Resciniti Demont, division president, provides the latest in IAIL news.

RECEIVED A NUMBER OF POSITIVE RESPONSES TO HAVING A FORENSICS conference at the Aaron M. Fish Security Training Center at ALOA headquarters in Dallas, TX, in the fall of 2018. As I explained, you'll be able to take all of the required courses over a three-day period and sit for the CFL exam. Find the requirements to sit for the exam on the ALOA website by clicking on the IAIL tab and then searching for CFL information. If you are having problems, contact me directly, and I will help you. Just remember: You must be a member of IAIL for one full year before you can sit for the exam. So, pay your \$50 IAIL dues along with your ALOA/SAVTA dues, and you'll be good to go.

If you have a CV and would like to submit it so you can be listed as an expert witness with IAIL, please send it directly to me. If you're already a CFL, please submit an updated CV to help us keep your file up to date.

Here are a few tidbits on the International Association of Investigative Locksmiths (IAIL). We have members in more than 16 countries, supported by our directors such as Ross Squire, ML, CFL, headquartered in Australia, and Director Bill Petley, CFL,

headquartered in Canada. Our Director at Large Hans Mejlshede, CML, CFL, covers Denmark and Western Europe. The rest of our directors are covering the United States: Scott Paulhus, CRL, in Rhode Island; Tom Ware, CML, CPS, CFL, in New Jersey; Brian VanDenburgh, CAL, CFL, in Indiana; Rick Shuford, CRL, CFL, in North Carolina; and I, as your president, kind of fill in as needed.

I'd like for you to submit some articles for publishing so our colleagues can read some of the interesting cases we've had to deal with over our careers as investigative locksmiths. It goes without saying that what you submit will be similar to but not actually the case you worked. We don't want to violate ethics or create a situation that would produce problems.

As everyone gets ready to enjoy spending time with family and friends at Thanksgiving get-togethers, remember to reach out to the needy in your area by donating your time and/or money to help those who are less fortunate than ourselves. Local food banks are always looking for volunteers, especially at this time of the year.

If you have any questions please send me an e-mail at IAILPresident@aloa.org. 🔊



Tom Resciniti Demont, AHC, CAI, CFDI, CFL, CMIL, CML, CMST, ICML, IFDI, LSFDI, ARL, President, International Association of Investigative Locksmiths,

IAILPresident@aloa.org.

Get Published!

IAIL members: Submit your articles for the Investigative Spotlight department. Send your information to Ross Squire at ross@abcforensic.com.

SPOTLIGHT INSTITUTIONAL



Dorm Room Break-In! (Or Not)

Vernon Kelley, CFDI, CFL, CMIL, CPL, ICML, IFDI, LSFDI, dons his CFL hat to find the truth in an on-campus investigation.

> HE RESIDENTS REPORTED THAT THERE WAS AN INTRUDER IN THEIR dorm room last night, and they claim he got in by picking their lock" were the first words Sergeant McNamara said when he walked into my office. (Names have been changed to those wearing a shield.) "Do you think it's possible?"

"Possible," I said, "but improbable. It's much more likely that they just left their door unlocked accidentally."

And so began the saga of the "picked lock" caper.

Let me set the stage for you. I'm employed at a college where I very often work with campus police during investigations. I've assisted them investigating the mundane (a stolen empty camera case, for instance) to felony-level crimes. With 28 years in the locksmith business — 18 of them at this college — I can often help fill in the blanks using my intimate knowledge of locksmithing and security, and of that facility in particular. (Hey, I'm one of about 10 people on campus who knows where the mascot costume is stowed!)





Figure 1. Most investigative locksmiths use an otoscope, but the author prefers an ophthalmoscope, such as this one from Heine.

Most of my assistance to campus police usually involves running event histories of the travels of "persons of interest" across campus or reviewing some other employee electronic or physical key access assignment.

In this instance, I got a chance to don my Certified Forensic Locksmith hat and perform an actual cylinder and pin examination.

To continue with the caper, a lock change was performed after the so-called break-in. Once the cylinder-in-question was returned to my shop, I called the good sergeant with a suggestion. "Do you want me to disassemble the cylinder and perform a pin examination for you? It'll only take a few minutes. I can actually tell you if someone attempted to pick it or not."



Figure 2. On the left is a Corbin Russwin Master Ring cylinder, and on the right is a Standard Corbin Russwin.

"You can do that?"

I said, "Sure."

Mere moments later, Sarge was back in my office, where we proceeded into the shop. I'm sure his instinct told him that the residents were being, well, somewhat less then truthful. He was eager to see evidence to prove his suspicion.

The Investigation

I began my examination by explaining that the types of tool marks we may observe if someone attempted to bypass the cylinder using a tool other than a key. While this was not a formal examination that was to be included in his report as evidence, I performed the inspection while the sergeant was in attendance and explained everything I was doing and why.

The first step was to examine the cylinder, looking for any plainly visible abnormalities — namely, any attempted wrenching of the cylinder or any striations in the face of the cylinder. The telltale signs of wrenching are tool marks — usually made by pliers or other wrenching tool — located around the edge of the face of the cylinder where the finish scalp is peened around the raw edge of the cylinder.

Looking at the face of the cylinder, I looked for signs of picking. In this case, I was looking for evidence that a pick left striations on the face of the plug near the entrance. Every locksmith I know, including me, has made this mark by accident while picking a lock. While picking (or, more likely, raking), your tool slips out of the keyway and leaves a barely noticeable mark on the cylinder. Most people won't look for this mark, or even care. But this is clear evidence of an attempted bypass to an investigative locksmith.

I found no outward signs of an attempted bypass.

Next, I looked into the keyway with my ophthalmoscope (see *Figure 1*). Most investigative locksmiths use an otoscope, but I prefer an ophthalmoscope because it has different power magnifications as well as the ability to view objects in different colors. An otoscope would've worked just as well for this examination.

All I was doing at this point was looking for any striations just inside the keyway, as well as on the first pin. Nothing had been disassembled at this point, and I wasn't using any tools, such as a diamond pick, to move pins inside the plug.

Again, I found no signs of an attempted bypass.

It was time to take the cylinder apart at this juncture. I removed the cam screws and cam to remove the plug. I made sure that I didn't use a metal follower of any kind. I used a plastic follower, but a follower made from wood would have sufficed, too. Again, even though this wasn't a formal exam, I didn't want to spoil any potential tool marks, which could happen using a metal follower. I carefully laid out the bottom pins in order.



Figure 3. Using his pocket microscope from Control Company, the author found no signs of picking on the pins.



Figure 4. This image shows an example of a pin showing evidence of an attempted bypass via picking or raking.

Because this was a Corbin Russwin Master Ring cylinder (*Figure 2*), I had to remove the top cap to remove the build-up, master and top pins and the springs. Again, all were laid out in order.

Now we were ready to get do to the nitty gritty. I carefully placed the first bottom pin on my carpeted workbench with the point facing up, and using my trusty pocket microscope from Control Company, I found... nothing. I carefully placed the second bottom pin with the point facing up and, using my trusty pocket microscope, I found... nothing (*Figure 3*).

If I needed to make an official report and document my findings, I would've used my Celestron digital microscope to view the pins. It's tremendously easy to take great photos of pins or any other very small part using a digital microscope. There was a time not too long ago when using digital microscopes during an examination such as the one I conducted was laughed at. In fact, some courts wouldn't even accept images taken with a digital microscope as evidence. That has changed. Feel free to take evidentiary photos with impunity. I think that you can guess what I found with pins 3 through 6, but I'll state it for the record anyway: I found nothing. There were no signs of anything other than normal pin wear that you'd expect to find on a 20-year-old mortise cylinder.

Just to be sure, I carefully cleaned all of the pins with a clean rag to get a better view of each pin. The same result: nothing.

Here's an example of what I would've found if there actually was an attempted bypass via picking or raking (*Figure 4*). As you can see, when picking tools are used to attempt a bypass, the hard spring steel that almost all picks are made out of will leave behind noticeable (to a forensic locksmith) bright tool marks on the soft and relatively dull brass pins. Marks can also be seen on pins that have more of a nickel-silver finish; they'll just be slightly more difficult to see. But marks will be there, nonetheless.

Each step of the way, I let Sergeant Mc-Namara see what I was looking for using the same tools I was using. He could see the same evidence — or lack thereof that I was observing. That was the end of my examination. Later that day, Sarge meet with the residents and their parents, described my examination and my conclusion. At that point, the residents confessed that they "probably left the door unlocked accidentally."

My thoughts exactly.



Vernon Kelley, CMIL, CPL, CFDI, ICML, IFDI, CFL, has been involved in the locksmith and security industry since 1989, and is a licensed lock-

smith in the state of New Jersey. A noted instructor and editor, he's co-author of the book Institutional Lock Shop Management. Vernon has served on the ALOA board of directors, and he is currently the first trustee of ALOA Institutional Locksmiths and director for the ALOA Scholarship Foundation. A recipient of the prestigious Lee Rognon Award, as well as the Robert Gress Award, Vernon is the Supervisor of Access Control at The College of New Jersey. Since 1971 QUALIT AFES BUILT **Over 40 Years Strong...**

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SPOTLIGHT BUSINESS



Baby Boomers Hang Up Their Picks

Tom Resciniti Demont explains the basics of preparing to sell your security business.

N 2016, THE EXODUS OF BABY BOOMER LOCKSMITHS FROM OUR PROFESSION began. After busting their butts for 30 to 40 years, it's time to enjoy the fruits of their labor. What a lot of these hardworking locksmiths are finding is that it's more difficult than they thought to sell their company. Employees have no money to invest and are reluctant to go into debt for what they see is more responsibility than they want to take on and largely are not interested in owning. They're paid a decent wage and value their free time more than a drive to build something.

When I was a young apprentice locksmith, I couldn't wait to own my own locksmith company. If my boss would have offered me the company, I would have thought I'd died and gone to heaven! Why is it different today versus the 1960s and 1970s? Many younger locksmiths today never had to want for anything. As children, they only have to mention they'd like to have something, and their parents would run out and buy it

for them. What ever happened to saving up your pennies and buying it yourself? We saw this in our own families where the owner's wife didn't work in the business and was the primary caregiver to the children. These children very rarely went into the family business because of how they were raised. You know the old saying: "Go to college and make something of yourself!" Some of these kids found out after college that they could make more money as a locksmith than from that piece of paper hanging on the wall!

Like some of the owner's children, our employees wanted for nothing growing up — and because of that, they feel that everything should be given to them! Now, doesn't that just rub you the wrong way when you worked so hard to build your locksmith business? I have been helping locksmiths sell their businesses for more than 20 years, and in the past three years, there's been an increase in locksmiths wanting to sell. Not to retire — just to cut back and let someone else worry about the day-to-day operation.

That's right; not retire but take on a different role in the company, mostly as a part-time employee or, as I like to call myself, "working retired." It's a term I coined when my wife would yell at me, "You're retired. Stop working!" And my response would always be, "It's called 'working retired!'" Is it work to me? No, because I'm enjoying what I like doing, and when you enjoy what you're doing, it's not called work.

How to Sell

To put your employees at ease about buying the business from you and not having the boss to help out, you can say you aren't going anywhere — just cutting back to enjoy things such as dinner at home in the evenings, going on vacation, or taking a long weekend to go fishing or antique key machine hunting (like me). When you're selling the business to your family or employees, you might want to take a different tact because they don't always have the money to pay up front what the business is worth. Instead, work out a 10-year buyout at 10% of the gross revenues and hold the note on the business until you're paid through the tenth year. I did a similar deal with my employees for my rep agency. After three years, they decided that they were making more money than what was projected, so they negotiated a cash buyout — OK by me as long as I got my money.

Also, I owned the building the agency was in, and I was their landlord. After finishing up with them, I offered to sell the building to them. When they turned it down, I sold it to an investment group. When I sold my lock company, I owned all four of the buildings, and the buyers only bought the business. I'll honestly state that I made more money off the real estate than the sale of the companies (I acquired the real estate through my companies as part of growing the business and retained it personally).

Here's a scenario that has come up often: The employees have managed the shop for the past year because the locksmith died. What we're left with is a purchase of accounts, inventory and equipment.

When you're taking your inventory, count everything and write down the part numbers so you can look it up when you're pricing the inventory. Don't get into discounting anything yet. Once you have your inventory cost, then you can use discounting as a negotiating tactic. So, let's throw a reasonable number on our inventory of \$125K, plus or minus.

Our next area of concern is equipment; on your financials, we would call this your main assets. All of your assets are priced at replacement cost only. This is very important because if you lose the "When you're taking your inventory, count everything and write down the part numbers so you can look it up when you're pricing the inventory."

piece of equipment, what would be the cost to replace it? You must think along these lines to make sure you price your equipment correctly.

Start in one room and work your way through all of the rooms and the trucks. Don't forget work benches, keyboards, desks, file cabinets, shelving and every key machine you have. An average-sized locksmith shop has 20 key machines, welders, grinders, drill presses and milling machines. List every piece of equipment separately and give serial and model numbers. The size of the benches and work tables are important for pricing. Sam's Club sells work benches and work tables, and your cost there is \$200 for a work table and \$300 for a work bench with drawers. It doesn't matter that you made them yourself. Remember: replacement cost!

The trucks are priced at fair market value. I don't like trucks as an asset because they lose their value too quickly. What I would do is purchase the trucks personally and lease them back to the company for three years. That way, I get the depreciation and the company gets a lease write-off. After three years, I sell the vehicle to the company at the current market value, and the company writes it off for another one to three years.

Take your time and log everything, and no item is too small to list. Once you have compiled all of your assets, you're going to come up with a number of around \$150K, plus or minus.

Now, let's look at the numbers. You'll notice that I didn't include accounts receivable. Why? Because most buyers don't want the receivables, and if they do take them, they will only accept receivables that are below 45 days. It's better for you to just keep these and collect the money yourself.

Item One: 25% of Sales	\$250K
Item Two: Inventory	\$125K
Item Three: Assets	\$150K
Total Selling Price	\$525K

Now you start to negotiate based on an all-cash purchase. There are a lot of variables that we aren't taking into account, such as how profitable you are. That is argumentative, and you shouldn't go down that road. You should let the buyer think that there is a gold mine here and it just takes the right management. In all reality, this company should net out and sell for \$250K cash or \$525K over no more than 10 years.

Please feel free to contact me at any time with questions about your business, and try to attend my management class that deals entirely with employees or my new class "How to Sell or Buy a Locksmith Company." Contact me at TechnicalServicesInc@comcast.net. @



Tom Resciniti Demont, AHC, CAI, CFDI, CFL, CMIL, CML, CMST, ICML, IFDI, LSFDI, ARL, President, International Association of Investigative Locksmiths,

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Thinking Like a Burglar

After trying to finesse his way through an attacked safe, Gary Stephenson changes roles and plays the burglar to open it.

T'S NOT NORMAL FOR US AS SAFE ENGINEERS TO OPEN A SAFE LIKE A BURGLAR would attempt it — by force rather than finesse. We normally attempt to open safes and strong rooms with the minimum amount of damage. We repair any drilled holes to a similar or even better quality, ensuring the integrity of the protection capability of that safe or strong room.

I have seen and been involved in attack-testing new units, which is always interesting. And sometimes in the field, we get a chance to do it differently because of the condition of an attacked unit. The following is an article about a safe that was attacked in a store that sold tools, among other things.

The burglars were onsite for about 10 hours. Luckily, they didn't seem to have too much about them in regard to safe-cracking skills, but they did manage to make a right old mess of the safe and put it beyond any hope of repair, which gave me the option of having a play about with it.

Assessing the Mess

This thing was a mess. Part of the safe door and body skin had been peeled, and the barrier had been attacked in various places, exposing nasty, fine, sharp wires used to strengthen the barrier material. I had to be very careful where I put my hands or any exposed skin. The hinges had been attacked, the handle was gone, and about 3 inches of screwdriver shaft was protruding from the keyway of the Fichet key lock.

Initially I didn't know if they had set off the AED/relockers, but one step at a time



Figures 1 and 2. The burglars made a mess of the safe and put it beyond any hope of repair. After a 10-hour burglar attack, the safe's handle was gone, and a part of a screwdriver shaft was left in the lock.



on jobs like this. I had a key, so I thought I would try to get the screwdriver shaft out of the lock and see if I could get the key to work. I have a mate I play snooker with, Dangerous Dave, who is notoriously tight, but he didn't have a patch on that screwdriver shaft. Trying to get it to move, I snapped off most of the bit that was protruding from the keyway, but I persevered and eventually freed it up.

I was, however, a tad surprised at the amount of it that came out of the lock. They had punched it in, hit either the shroud or the backpan, and just kept on punching, curling the screwdriver shaft around in a curve when it ran out of space. This meant it had caused a bit more damage to the Fichet MXB key lock than I was hoping. Because I know this key lock has an internal relocker built in to block the lock bolt's retraction in case of a punching attack on the nozzle, I looked at the damage and decided the open-with-a-key option was looking to be a no goer.

Developing Plan B

A rethink was needed. A look about through the various holes available to me with the scopes showed me that the lock was super messed up and that the relockers had been fired. Even worse was that there were four of them.

A bit of an explanation is probably required here for anyone not familiar with the Carena range of safes. We normally see these in either Grade 2 or Grade 3 (a European grading system) flavors. Despite being advised by French safe engineers (who see a lot more of these than I do) that the Grade 2 should have one pair of AED pins, and that the Grade 3 should have two pairs of AED pins, I regularly see the Grade 2s with two pairs of pins.

All the safes are prepped for having two pairs, but it seems to me that this is a bit random judging by what I come



Figure 3. About 3 inches of the screwdriver protruded from the lock.



Figure 4. The remaining bit of screwdriver was finally extracted from the keyway.



Figures 5-8. These show the barrier removal and the rebar above the hardplate.

across with the Grade 2 versions. Two of the mount pillars that the flat bolt rail runs on have holes above and below them. These have springs and relock pins in them that are held off by spring clips that are kept closed by the routing of the AED cord. If the tension on the cord is released, the spring clips spring open, allowing the AED pins to shoot out of the door into shouldered rebates in the flat boltwork plate, preventing its retraction.

Unfortunately, on this safe, I had all

four fired. I also had no handle, as well as a messed-up lock to contend with, so it wasn't going to be a quick opening. Other issues with this safe are the curved door, which makes mounting standard drill rigs difficult, even if you have a skin still on the door and a decent-quality hardplate. Also, the AED pins shoot from inside the door-barrier material away from you, so taking them out in such a way as to be able to easily repair the unit can be problematic. There is a mounting position for a second lock on this door, and part of the burglars' attack had exposed this keyhole and taken out a bit of the safe's barrier material down to the inner skin and reinforcing mesh.

Following the Burglars' Lead

This damage was above the good hardplate, so I decided to carry on with what the burglars had started and see just how big of a hole I could get in without too much effort. My thinking was that I could pry up the E-plate that the lock lifted, and that would bypass any problems with the key lock. I also wondered if I could deactivate the top pair of AED pins from the inside if I could get my hand inside the backpan.

It sounds weird as I read that back, because we've probably all been ribbed by or ribbed another safe engineer about the size of holes drilled to get a safe open and "just stick your hand in and unbolt the lock" type of comments, but as I said, on this one it didn't matter.

Drills on hammer, and hammer and chisel made short work through the barrier material, exposing the wire mesh reinforcing and inner safe bedplate. I was aiming for a hole I could get my hand into without having to work too hard, so I let the mesh and hardplate below dictate the size of the hole (you can see the edge of the hardplate just below the square hole).

An angle grinder took out the mesh and inner doorplate, and pulling out the square of inner bedplate brought out a deflector plate with it that covers the top of the Eplate. When I pulled up on the E-plate, it came right out of the hole, so everything was going well so far and the lock problem was bypassed.

Taking care of the top pair of AED pins was a bit more fiddly because I had two bolts to undo that covered a plate that stopped the fired pins from coming out too far. I was using a scope to guide my spanner and could only get a fraction of a turn of the spanner each time before having to reposition it. It took a while, but I got there eventually, and once the plate was off, the top two AED pins were jiggled out quite easily.

Final Steps

I just had the bottom pair to deal with now, and I had to do this in the conventional manner — drilling through the front of the door pins to the tubes holding the AED







Figures 9-11. The inner doorplate section is cut out, and the E-plate is lifted out of hole. Also shown is a close-up of the E-plate that blocks the boltwork.



Figure 12. This is an image of the inner door.



Figure 13. Close up, notice the springs of the top AED, positioned in the upper right.



Figure 14. The cover plate for top pair of AED pins was unbolted through square hole.



Figure 15. Here are the inner compartments.

Figures 16 and 17. These are the labels on this particular safe.

springs, pulling the springs out, and then using a strong rare earth magnet to pull back the pins while jiggling the boltwork until they came back. Whatever the AED pins are made of, they don't react well to a magnet, even a strong one, but they came back in this instance. I have, however, in the past had to use the vacuum-pump tube to grab and pull them back. I don't like to do this if I can help it because you run the risk of getting of getting debris in the vac pump. It wouldn't have mattered in this instance, but normally if you want to repair the safe, then as little damage as possible to ease the repair is preferable.

I had no handle to drive the boltwork, but the big square hole allowed me to reach in, grab the bolt rail, and pull it back while taking the weight of the door because of the damaged hinges. In the heat of the moment of getting the boltwork back, it can be easy to get carried away and forget that you are going to drop a heavy door on yourself. So, on a safe that has been attacked, even if the hinges look OK, just take care as it's not always obvious what burglars have done to it during the attack. @



Gary Stephenson started out as a locksmith before specializing in safe work. He works full time on safes and vaults for the Chubb safe company in the U.K.



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2008 DODGE AVENGER REMOTE REPAIR

Stacy Hetchler, CAL, shows you how to save money with spare parts.



Figure 1. The coil wire is broken, so no signal can be sent or received.



Figure 2. Gently put it in the vise to hold without breaking it.



Figure 3. We always save our old stuff, so now we can take the coil off this spare one and put it on the customer's remote.



Figure 4. There are four small solder points to get the coil off.



Figure 5. A small soldering iron tip is best. A hot air gun would also work.



Figures 6-7. Here, we are putting something under the chip or coil so it will pop off when ready to do so.

24







Figures 8-10. Gently lift each corner as you work around the four sides.



Figure 11. Now that you have the old one off, you can put the used one back on by reversing what you did.

Once you get used to doing this, it's very easy and fast. You can save money if you save parts and then put it back together and collect. I know there are many who might say, "Why go to all that work?" This only took about five minutes start to finish. How much do you get for a remote? How much do you pay for new ones? Do you salvage used ones? This made us money, and we had no outof-pocket expense. @



Stacy Hetchler, CAL, has been a locksmith since 1995 in South Central Texas, focusing primarily on the automotive segment. In his limited personal time, he plays soccer and paintball, and flies helicopters while he listens to music. He teaches locksmithing for various associations,

including ALOA. He adds, "All proceeds from my work go to my sweet daughter, Khoal, and my little man, Greisun — and of course my great and supporting wife, Candee."



Figure 12. Place this on the board and tack it down in one corner first.



Figure 13. We used a small blade from an X-ACTO knife and a hot air gun. These can be found almost anywhere and only cost about \$75.

U.S. VETERAN, INDUSTRY NEWBIE

 $\star \star \star$

Wade Martin shares his experience being the first participant in ALOA's veteran education program. **By Wendy Angel**

REALLY HAD NO IDEA WHAT I WANTED TO DO." When Wade Martin left the Army after three years of service, he was a new father with one previous semester of college and a need for direction. He was working as a security guard at an outlet mall when the locksmith industry came calling. He had heard that a church friend he'd known since middle school was hiring, and John Hines, owner of full-service Area Wide Locksmiths in Lampasas, TX, decided to give him a shot.

"I have had pretty good experiences with veterans," says Hines. "They tend to be a more responsible class of employees."

So Martin came on board in March of 2016 without any real knowledge of what it meant to be a locksmith. "It sounded like something that would be interesting, would keep me busy and I wouldn't get bored doing it. I was definitely right about it being interesting and not getting boring. I've done a lot of stuff working for him that I didn't think a locksmith would do. I figured we'd be unlocking doors and making keys, but it goes well beyond that." Coming on board as a newbie to the industry, both Martin and Hines knew that extensive training would be needed. But on-the-job training can sometimes only take you so far, particularly in smaller cities and in smaller shops where you don't see every type of job on a regular basis.

Hines, who has been an ALOA member since 1998, saw an email from ALOA about the veteran education program and mentioned it to Martin. "We had been looking to get me some more training. We were trying to find a way that I could go and learn some of the stuff we don't see very often. That's when the scholarship



Figure 1. Wade Martin of Area Wide Locksmiths in Lampasas, TX, is the first participant in ALOA's veteran education program and the first recipient of the sponsored scholarship to help allay travel costs and wages while undergoing training.



Figure 2. John Hines, owner of Area Wide Locksmiths, hired Wade Martin in part because of his past good experiences working with veterans.

opportunity really hit home. We were able to do that training."

ALOA began its veteran education program in 2016 for exactly this reason: to assist veterans with training and to help out industry employers at the same time. ALOA sought out and received approval for G.I. Bill funding that will grant each veteran up to 376 hours of training at no cost to them or their employers. Through this training, veterans who are new to the security industry can receive valuable training to help them ease into civilian life and a new career.

Addition to ALOA's efforts, generous sponsors Allegion and ASSA ABLOY stepped up to make the training process even easier for veterans and their employers. Their generous donations are funding scholarships to veterans, enabling them and their employers to offset both travel costs and supplement wages during the training period. Such benefits are invaluable, particularly to smaller shops with limited budgets.

"It has certainly opened more doors than would have been available to me any other time," says Martin. "We're a small-town business and stay very busy, and it's hard to get the time and money to go train somewhere. It's really opened up the availability to learn things that I wouldn't have been able to any other way. John is a great teacher and I learn nearly every day, but things like motorcycles or lock manipulation we just don't see very often."

The scholarship money allowed him to attend the five-day Basic Locksmithing course at the Aaron M. Fish Security Training Center in Dallas as well as go to the 2017 ALOA Convention & Security Expo. There, he took several courses, including ones on basic electricity, motorcycles and LFIC. His favorite? Basic Group 2 Lock Manipulation, taught by Scott Gray, CPS.

"It was very well worth it. A lot of great people there were willing to teach younger guys like me who have a lot of questions and curiosity. Everybody there was very helpful. The instructors were great. The class sizes weren't so large that they couldn't take some time out for helping



Figure 3. While Area Wide Locksmiths is a full-service shop with a 1,700-square-foot retail storefront, shown here, the small town they are in means that they don't see some kinds of jobs very often. Because of that, training at the ALOA Convention and the training center in Dallas, TX, meant better exposure for Martin to different kinds of jobs.



Figure 4. Martin originally thought locksmiths only cut keys and unlocked doors, but he soon discovered they do so much more.

students with things they were struggling with. It was a really good experience for me."

And Martin wasn't the only one who saw a benefit; his employer did as well. When Hines hired Martin, he knew that training was going to be important and necessary. The veteran education program and the scholarship money helped really make it happen. "This just made it so much more affordable because of the Allegion scholarship that allowed him to get his wages and travel expenses paid for," says Hines. "It really helped us as a company." But he says the biggest difference it's made is in Martin's confidence. "He was always self motivated, but his ability to make first contact with a customer, to do a site survey and see what they need to do, then follow up with the right parts and pieces... he's really grown."

Hines urges other security professionals to give hiring veterans a shot. "They seem to have a lot of self motivation and drive. I feel it's a good connection to help our veterans who sometimes have trouble transitioning back to civilian life. That's been a way I've been able to have a positive impact for Wade specifically. Make that commitment to go out and help those guys who are putting their lives on the line to protect our freedoms." Jim Hancock, ALOA's manager of education who helped spearhead the program, agrees, and urges everyone to consider hiring veterans in their workplaces. "If we, as an association and as a profession, train these wonderful men and women but have no place for them to go, then we're no better than other entities out there that simply take the government's money and give nothing back," he says. "We're doing a disservice to the people we're training and to the industry in that we may be losing some of the brightest minds and future giants in business by not giving them a chance."

The ease of the program has impressed

Hines. He said there really wasn't much effort on his part, as Martin completed the scholarship application, and neither one was out of pocket for any travel or training expenses at all after reimbursement. In fact, a little bit of funds might be left, so the two are exploring the next potential educational options at the training center in Dallas. Hines says that education is so important, and you even end up learning just as much from your peers in your classes as you do from the instructors. "Commit to education. There are so many pieces to this locksmith puzzle that you simply cannot get from your day-today operation."

Hines has been impressed with Martin and his professional development, and sees business ownership in his future. Whether it's taking over Area Wide Locksmiths at some point or striking out on his own, Hines says Martin has what it takes.

But for now, Martin will be enjoying his newfound skills on the job, continuing to learn and grow every day. "My favorite part is probably safe work. Or when you get to take apart a lock and fix it with what you have. I like the creating something out of nothing aspect. There's not very much about my job that I don't like." @

Interested in learning more about the veteran education program or getting on ALOA's list of employers open to hiring veterans? Or perhaps becoming a sponsor for additional scholarships? Email education@aloa.org and put Veteran Education in the subject line.



Wendy Angel is the editor of *Keynotes*.



Figure 5. Martin is the only full-time locksmith aside form owner Hines. Hines foresees Martin one day owning his own business — maybe even taking over this one.



Figure 6. Martin says he enjoys pretty much everything about his job, but probably prefers safe work above all the rest.



GENERATING A TIBBE KEY FOR A FORD TRANSIT CONNECT

Stacy Hetchler, CAL, shows you how to use impressioning to create a key.



Figures 1-2. *Figure 1* shows the 2011 Ford Transit Connect we are working with, and the Tibbe decoder is in *Figure 2*. What we're going to do is only read the lock to establish the location (space) of the #4 depth. All Tibbe locks have at least one #4 depth. You can also take a blank Tibbe key and just impression to do the same as the #4 depths. It will make some sizable impressioning marks. The Tibbe marks well if you wish to use this method only. However, we're combining the two to save us some time and establish where the #4 depths are.



Figure 3. We established with the reader that the last two cuts are #4 depths. The Tibbe decoder does everything backwards for some reason. So, looking at this picture, you would think the first two are #4 depths, but it's read backwards.



Figure 4. Then, write the spacing on the window to indicate the #4 depths and proceed to impression the rest of the spaces. Cut the keys using Laser Key Products Xtreme "S" machine to put the two #4 depths on the key blade. The next series of pictures will show mounting and cutting the keys with the machine.





Figures 5-6. Put the blade in the Tibbe adapter to hold in place while cutting it. Place the blade in sideways so it slides into place, and then rotate horizontally and push forward to tighten down.



Figure 7. On the left, we're locking the blank in place.

	Laser Key Products File Operations Help	
🎒 📣 🗄 e 📓	Step 1 : Select Correct Key Type	Step 2 : Confirm S
	Automotive type/Manufacturer Search	DSD: 35 Key Black: EC
and the second s	to21 Se	arch Manufacturer: FC
Street And	Click on selected item to display addition	al info. Spaces: 6
	358.FORD.FO21 TIPEE 358.FORD.FO21 TIPEE	Depths: 4
		Cut: Ex
		Jaw: Ja
	Enter Key Code (optional):	Find
	Depths:	Jaw Clamp: E
915	25, 35, 45. Side & Spaces:	Cutter:
	622, 543, 465, 386, 307, 228,	Story S
	Side B Spaces: 622 543 465 385 307 228	Manufacturer Info
Stin O'	Status	FOR INSTRUCTION
Figure 8	Figure 9	

Figures 8-9. Place the adaptor containing the key into the jaw #1 of the key machine. In *Figure 9*, we've started the software and selected DSD 358, also known as FO21.



Figure 10. We enter only #1 depths in the first four positions, and then enter #4 depths in the last two positions.





Figures 11-12. After cutting the first two angles, rotate the key 180 degrees and cut the other side.





Figures 13-14. Now take the Pippen file (or 6" flat file) to continue the impressioning technique.





Figures 15-16. You'll now start seeing impressioning marks on the blade, as we see here. You have to file both sides of the blade. So, you'd file the two depths and then turn the blade over to do the other side.





Figures 17-18. The Tibbe ignition lock looks like this. This lock is no longer being produced and placed on any vehicles anywhere. The last use was on this Transit up until 2016 models. This unit is now using the HU101.

Once we've identified the impressioning marks, mark them with a file to begin the process of progressing. As we'll see in the following photos, we'll have found the spots where we see marks and need to start filing. Again, the 6" flat file works great turned sideways on its edge to file.



Figures 19-20. We are using the Pippen file in these pictures, as that's our go-to file for impressioning. The flat file is in *Figure 19*, and the Pippen is in *Figure 20*.



Figures 21-22. We will indicate our marks, as stated before, so we know where the impressioning is showing up.



Figure 23. After filing a bit, try it in the door to see if it turns or makes more marks. In this case, it did turn, but it also made one more mark.



Figure 24. It's a little hard to see in this picture, but the mark is there. Once we filed it, we then tested it in the ignition, and it worked perfectly.



Stacy Hetchler, CAL, has been a locksmith since 1995 in South Central Texas, focusing primarily on the automotive segment. In his limited personal time, he plays soccer and paintball, and flies helicopters while he listens to music. He teaches locksmithing for various associations, including

ALOA. He adds, "All proceeds from my work go to my sweet daughter, Khoal, and my little man, Greisun — and of course my great and supporting wife, Candee."



Figure 25. We when working with the Transit Connect, it's easy to determine if it is or is not a transponder system by looking between the lock cylinder and the shroud. If it's a transponder system, you'll see the transducer coil around the cylinder. In this case, we don't see a coil, so we know this is not a transponder-based system. Even some of the newer ones 2016+ models are not transponder-based.

We hope you can use this information to increase your skill levels and build your library. O



MASTERKENNER</t

William M. Lynk, CML, CPS, CMIL, ICML, M.Ed., provides instruction on creating a properly combinated cylinder.

ANDS-ON LEARNING IS ALWAYS THE BEST, BUT THIS ARTICLE IS THE next-best thing. The following text shows you how to translate the TMK and related change keys into a properly combinated cylinder that will open with both keys and their related masters.

Before we embark on the math, let's do a quick visual review of an actual cylinder. This particular cylinder will use only one master pin for our example. Below are the two bittings. Note that they differ by only one numeral change in the second position from the left:

- Change Key Bitting = 241534
- Master Key Bitting = 261534

If this was a Schlage set of keys, they would work. But, if they were Kwikset, there would be a MACS violation within the TMK. Also, the change key could be cut down to make a master key. But, as our first example, we will simply look at the operation of the keys and cylinders.

Within our cylinder, bottom pins are blue, and the top pins (drivers) are red. Master pins will appear as green. In the first diagram, there are no master pins. The change key is inserted and raises the pins to the operating shear line, as it should. No other key (bitting) will operate this particular cylinder at this point (*see Figure 1*).

In the second diagram (Figure 2), notice that one master pin was inserted in

"There are many tech manuals and manufacturer booklets that cover the complete process of combinating, especially for the specific product you're working with."



Figure 1. Within the cylinder, bottom pins are blue, and the top pins (drivers) are red.



Figure 3. The master key is inserted. With the deeper cut in the second position from the bow, the pins in chamber two will drop down to again align with the shear line so the lock can still operate.

chamber #2. The change key will continue to operate the cylinder; however, another key (master) will also be able to operate the cylinder as well.

In *Figure 3*, the master key is inserted. You should see that with the deeper cut in the second position from the bow, the pins in chamber two will drop down to again align with the shear line so the lock can still operate.

Math First!

Always do the math on paper first before ever dropping any pins into a cylinder! Begin first by lining up your bittings neatly in columns. I have had locksmiths hand me bittings scrawled out on rim cylinder boxes, which is not the industry standard. Neatness = accuracy. Place your TMK at the top, then the CK below it.



Figure 2. One master pin was inserted in chamber #2. The change key will continue to operate the cylinder.



Figure 4. For single cylinders, it's often useful to have pre-printed charts available.

Example #1 - Schlage

These are the two new bittings handed to you (in no particular order):

CK = 279838 TMK = 435472

Bittings lined up: 4 3 5 4 7 2 (TMK) 2 7 9 8 3 8 (CK)

Charting

For single cylinders, it's often useful to have pre-printed charts available, not only to accurately show your bittings and related pins, but for future reference down the road. An empty chart

			_	Keyw	ay:	
Location:					D	ate:
Comments:						
	1	2	3	4	5	6
Top Master Key Bitting (TMK)	4	3	5	4	2	2
Change Key Bitting (CK)	2	7	9	8	3	8
		-	·			
Top Pins						
Top Pins						
Top Pins Master Pins						

1

Figure 5. To begin math calculations, write in your bittings above the black box area in the chart.

Cylinder Co Useful when calculating pin	de	d P	inn entional p	ing	Ch ler cylin	ders.
Cylinder Label:				Keyw	ay:	
Location:					D	ate:
Comments:						
Top Master Key Bitting (TMK) Change Key Bitting (CK)	1 4 2	2 3 7	3 5 9	4 4 8	5 7 3	6 2 8
Top Pins						
Master Pins	2	4	4	4	4	6
Bottom Pins	2	3	5	4	3	2
		,	Plug	Area	•	

Figure 7. To find your master pin, look at the two numbers in each column for TMK compared to CK. Subtract the smaller number from the larger number for the difference.

Cylinder Co Useful when calculating pin	de stacks	d P	inn entional p	ing		art ders.	
Cylinder Label:				Keyw	ay:		
Location:					D	ate:	_
Comments:							_
Top Master Key Bitting (TMK)	<u>1</u> 4	2 3	3 5	4 4	5	62	
Change Key Bitting (CK)	2	7	9	8	3	8	
Top Pins		, i					
Master Pins Bottom Pins	2	3	5	4	3	2	
			• Plug	Area	•	Baccill	

Figure 6. After the bittings are in the chart, determine what your bottom pin values will be.

Cylinder Co Useful when calculating pin	de	d P		ing	Ch ler cylind	art ders.
Cylinder Label:				Keywa	ay:	
Location:					D	ate:
Comments:						
Top Master Key Bitting (TMK) Change Key Bitting (CK)	1 4 2	2 3 7	3 5 9	4 4 8	5 7 3	6 2 8
Top Pins	.200"	.165"	.165"	.165"	.165"	.165"
Master Pins	2	4	4	4	4	6
Bottom Pins	2	3	5	4	3	2
		•	- Pluş	g Area	•	Littler F3

Figure 8. Calculating top pins will depend on the system being used. Schlage uses "graduated drivers" (1, 2 and 3) based on the plug total (bottom pin plus master pin).

such as Figure 4 will work nicely for our example.

You can see that all of the necessary information is located on this chart at the top. Notice that the bittings are written toward the top of the box. Below the thick black area, the related pins for that chamber will be written. Bottom pins will be listed at the bottom, and so on. It is similar to an X-ray view of the lock itself.

To begin the math calculations, write in your bittings above the black box area in the chart (*Figure 5*).

Determining Bottom Pins

Now that your bittings are in the chart, you'll want to first determine what your bottom pin values will be. How do you do that? Look at the two numbers in each column for TMK compared to CK. Find the smaller number (shallower cut). They are shown in blue below and will be the bottom pins:

4 3 5 4 7 2 (TMK) 2 7 9 8 3 8 (CK)

Bottom Pins: 2 3 5 4 3 2

Place those numbers in the chart in the bottom pins area (*Figure 6*). A word of caution: In a conventional Sargent system, for example, the "zero" depth is similar to a number 10! For your BP and MP math, change the zero to a ten, and your subtraction will be correct. This is also true of some of the Corbin Russwin systems.

Determining Master Pins

To figure out what the master pins will be, just use simple thirdgrade math! Here's how to do it:

- 1. Look at the two numbers in each column for TMK compared to CK.
- 2. Subtract the smaller number from the larger number for the difference.
- 3. That will be the master pin.

4 3 5 4 7 2 (TMK) 2 7 9 8 3 8 (CK)

Thus, your master pins (shown in green) will be:

$2\ 4\ 4\ 4\ 6$

Now, include them in your chart (*Figure 7*).



Figure 9. This image is the key and pin specifications chart for Kwikset.

Determining Top Pins

Calculating top pins will depend on the system being used. For example, Kwikset uses a set .180" top pin for most chambers. Schlage uses "graduated drivers" (1, 2 and 3) based on the plug total (bottom pin plus master pin), and you then select from a list:

If plug total = 0, 1, 2, 3, then use .235" (#3) top pin. If plug total = 4, 5, 6, then use .200" (#2) top pin. If plug total = 7, 8, 9, then use .165" (#1) top pin.

Let's assume our chart is Schlage. Go ahead and fill in the correct top pins from the list above. Your chart should look like *Figure 8*.

Example #2: Kwikset

Let's try a second common lock that almost all locksmiths have pinned: Kwikset. Fill in an empty pinning chart for this Kwikset example using the following bittings:

Change key bitting of: 51324 Top master key bitting of: 46235

If you're unsure of the steps, review what we previously learned with the Schlage cylinder. *Figure 9* is the key and pin specifications chart for Kwikset.

Cylinder Co	ode	d P	inn	ing	Ch	art
Cylinder Label:KwiKse	et	in conve		Keywa	ay:	ers.
Location:		1.0			Da	ate:
	4	2	2	4	E	6
Top Master Key Bitting (TMK)	4	4	2	4	5	0
Change Key Bitting (CK)	5	1	3	2	4	
Top Pins	.180	.180	./80	,180	.180	
Master Pins	1	5	1	1	1	
Bottom Pins	4	1	2	2	4	
		,	Pluş	g Area	•	



Figure 11. ASSA uses a reverse designation for their bottom pins.

Figure 10. The results of your completed pin chart for Kwikset should look like this chart.



Figure 12. Our final example will be a small format interchangeable core (SFIC) that will include buildup pins. We also will have one additional key bitting: The control key. It isn't considered an operating key, as it only serves to move the control lug for removal or insertion of the core into its housing. It has a separate shear line, known as the control shear line, above the plug (operating) shear line.

The results of your completed pin chart for Kwikset should look like Figure 10.

Are They All This Easy?

Unfortunately, no. The concept is the same, but at times, you may be dealing with cylinders that have buildup pins (also known as control pins) when working with interchangeable cores, both large and small format. Often, there will be formulas, specific to a particular manufacturer that you will need to use.

Here's a common formula for determining the buildup pin that works for a number of different interchangeable cores:

(CTRL Cut + ?) – (Plug Total) = Build Up Pin/Control Pin

The "?" depends on A2, A3 or A4 for SFIC, and what dimension the control area is for various LFIC manufacturers.

To complicate the matter, ASSA, for example, uses a reverse designation for their bottom pins. The listing is opposite of what we know and are used to for con-

ventional pin tumbler systems (Figure 11).

Below is the factory formula for calculating the buildup pins in an ASSA large format interchangeable core:

 $20 - {TP + [10 - (BP - MP)]} = Build$ Up Pin

With a clear understanding of what is happening and practice, it becomes easier with time. This is a good example of how a hands-on class can compliment learning of a confusing topic.

Example #3: SFIC

Our final example will be a small format interchangeable core (SFIC) that will include buildup pins (Figure 12). We also will have one additional key bitting: the control key. It isn't considered an



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	Bottom Pin	and the second	
Key Depth:	Length:	Coded Numbe	
.3187"	.110"	0A	
.3062"	.1225"	1A	
.2937"	.135"	2A	
.2812"	.1475"	3A	
.2687"	.160"	4A	
.2562"	.1725"	5A	
.2437"	.185"	6A	
.2312"	.1975"	7A	
.2187"	.210"	8A	
.2062"	.2225"	9A	
	Wafer Pin		
	Length:	Coded Number	
	.025"	2B	
	.0375"	3B*	
	.050"	4B	
	.0625"	5B	
	.075"	6B	
	.0875"	7B	
	.100"	8B	
	.1125"	9B	
	.125"	10B	
	.1375"	11B	
	.150"	12B	
	.1625"	13B	
	.175"	14B	
	.1875"	15B*	
	.200"	16B	
	.2125"	17B*	
	.225"	18B	
	.2375"	19B*	
*Not	Used in a Pure 2-Step Pro	gression	

INTERNE

</t

Figure 13. This chart shows A2 SFIC System key bitting and pin specifications.

Figure 14. This photo is an example of a LAB A2 SFIC pin kit.





operating key, as it only serves to move the control lug for removal or insertion of the core into its housing. It has a separate shear line, known as the control shear line, above the plug (operating) shear line.

For this example, we will be using the A2 system specifications. It is a two-step progression type with pins/cuts ranging from 0-9 (ten increments), and no MACS violations exist when using standard .150" spacing. Master pins, control pins (build-up pins) and top pins are all pulled from the "wafer" portion of the pin kit. The specs are as shown in *Figure 13*.

In addition, because SFIC pins have a diameter of .108" — smaller than conventional pins at .115" — you will need a dedicated pin kit for the A2 system. *Figure 14* is an example of a LAB A2 SFIC pin kit.

Charting

The math calculation for an SFIC will require the use of a different pinning chart. *Figure 15* is an example of one such chart.

#1	#2	#3	#4	#5	#6	#7
#1	#2	#3	#4	#5	#6	#7
#1	#2	#3	#4	#5	#6	#7
#1	#2	#3	#4	#5	#6	#7
#1	#2	#3	#4	#5	#6	#7

Figure 16. You can easily construct your own pinning chart using a Word document and inserting a table.

Again, notice the added key bitting (CTRL) and the added pin row (control/build-up pins).

You can easily construct your own pinning chart using a Word document and inserting a table. *Figure 16* is one we will use for our example.

Insert Bittings

We'll use the following bittings for this SFIC example, as if they were written out by hand:

CK = 5 1 6 9 5 3 0 TMK = 7 5 0 1 3 9 4 CTRL = 1 3 8 3 7 5 2

Do exactly as we have done in the previous examples: Add your bittings to the chart first. Be extremely careful to put them into the correct rows!

	ALC: THE DR. V. K. T.					Contraction of the second	A CONTRACT OF A CONTRACT OF
	#1	#2	#3	#4	#5	#6	#7
CTRL							
ТМК							
СК							
	#1	#2	#3	#4	#5	#6	#7
TP							
BUP							
MP							
BP							

Figure 17. Add the bittings to the chart first, being careful to put them into the correct rows.

Determining Bottom Pins and Master Pins

This is done exactly as we did in the Schlage and Kwikset examples. One thing to watch: Do not use or consider the control key bitting (CTRL) for BPs and MPs! It's not an operating key and isn't keyed up to the plug shear line. Simply compare the CK bitting to the TMK bitting. This is a source for mathematical errors if you don't remember this point.

Figure 18 shows what you should have.

Determining Build Up Pins

There are a few formulas that will accomplish this task, all getting you to the same result. We'll use the conventional formula shown earlier:

(CTRL Cut + ?) - (Plug Total) = Build Up Pin/Control Pin

In this formula for A2 systems, the "?" number will be 10.

	#1	#2	#3	#4	#5	#6	#7
CTRL	1	3	8	3	7	5	2
ТМК	7	5	0	1	3	9	4
СК	5	1	6	9	5	3	0
	#1	#2	#3	#4	#5	#6	#7
TP							
BUP							
MP	2	4	6	8	2	6	4
BP	5	1	0	1	3	3	0

Figure 18. Determining bottom pins and master pins for this example is done exactly as noted in the article text in the Schlage and Kwikset examples. This chart shows the numbers you should have.

CUTS	#1	#2	#3	#4	#5	#6	#7
CTRL	1	3	8	3	7	5	2
ТМК	7	5	0	1	3	9	4
СК	5	1	6	9	5	3	0
PINS	#1	#2	#3	#4	#5	#6	#7
TP	12	10	5	10	6	8	11
BUP	4	8	12	4	12	6	8
MP	2	4	6	8	2	6	4
BP	5	1	0	1	3	3	0

Figure 20. For the example in the article text, your completed SFIC pinning chart should appear like this.

				AR A PROP			
	#1	#2	#3	#4	#5	#6	#7
CTRL	1	3	8	3	7	5	2
ТМК	7	5	0	1	3	9	4
СК	5	1	6	9	5	3	0
	#1	#2	#3	#4	#5	#6	#7
TP							
BUP	4	8	12	4	12	6	8
MP	2	4	6	8	2	6	4
BP	5	1	0	1	3	3	0

Figure 19. Fill the number 4 in for the BUP in the first chamber, and work the rest of the cylinder for BUPs similarly.

This represents the incremental difference between the two shear lines. Simply fill in the control bitting and subtract the plug total (BP + MP), and this will supply the build-up pin for that chamber. Here's what the chamber #1 would look like from the math:

(1+10) - 7 = 4

Fill the number 4 in for the BUP in the first chamber, and work the rest of the cylinder for BUPs similarly. Your chart should now look like *Figure 19*.

Determining Top Pins

Because the pin stacks in any A2 system should each total 23 in a properly combinated SFIC, it's now just a matter of finding the missing numeral. For chamber #1:

$$5 + 2 + 4 + ? = 23$$

OR: 23 - 11 = **12**

Always make sure each of the chambers add up to 23. Double checking your work is important, as simple mistakes can easily be made.

Thus, your completed SFIC pinning chart should appear like *Figure 20*.

You Can't Believe Everything You See!

The pinning chart to follow was created from a disassembled small format IC, using the A2 system. Pins were measured and converted into integers. All the locksmith had was the change key to that core. *Figure 21* shows the data he copied into the pinning chart.

What this locksmith didn't do was *double check* that each chamber added up to 23. Can you find the error?

Chamber #7 does not add up to 23, but rather 24. Either he measured wrong, converted wrong, or the core was not combinated properly (*Figure 22*).

If the incorrect top pin were inserted, this action would not adversely affect the operation of the core with either the correct control key or correct operating keys. By not checking for these types of errors, you may not be as lucky and wind up with a core that doesn't operate. Always check your math, and especially the math of others. The actual process of "reverse engineering," as in this previous example, is beyond the scope of this article; however, it shouldn't prevent you from checking pin stack totals to ensure accuracy.

Watch Out!

One of the biggest mistakes I've discovered through teaching master keying classes is a misunderstanding of the relationship between bottom pins and master pins as related to the change key and master key bittings.

For some reason, many beginners seem to think that the bottom pin will

match the change key bitting, and the master pin will match the cut of the master key. Nothing could be further from the truth. As you know from our discussions, the bottom pin will be: the *shallowest* cut of either the CK or the TMK. The *difference* between these cuts will be the master pin. Don't fall into that preceding rut.

Also, the second-biggest mistake locksmiths fall victim to is mixing up numbers in the pin section of the pinning chart at the bottom with the bitting numerals at the top. Yes, the two are intertwined, but they aren't the same! Pin increments relate to pins, and bittings are key cuts. Make sure you don't indiscriminately mix the two, or errors will result.

Collect Parts, Tools and Kits

With the math completed, you're ready to prepare for combinating. In your designated work area, lay out in front of you the items you'll need for this process. This will include:

- 1. A pin mat or area to secure your cylinder
- 2. A pin kit
- 3. Tools
- 4. Pinning chart

IC Coded	I Pi	inni	ng	Cha	art			
Core Label: Ultra Core (side groove) Keyway: TB								
Location: Dr. Rodriguez's office - Rm. 137 Date: 6/3/02								
Comments: 626, 7-pin; QI	U-1.0	CKe	y #1	4				
ſ	1	2	3	4	5	6	7	
Control Key Bitting								
Top Master Key Bitting								
Change Key Bitting	8	7	2	1,	0	1	8	
Top Pins	9	10	7	4	11	6	8	
Build Up Pins	6	6	8	14	8	14	8	
Master Pins	2	6	6	4	4	2	6	
Bottom Pins	6	1	2	1	0	1	2	
1		1	•	ı Plug Are	a 4			

Figure 21. This pinning chart was created from a disassembled small format IC, using the A2 system. Pins were measured and converted into integers.



Figure 22. The locksmith who created this chart didn't double check that each chamber added up to 23; chamber #7 does not add up to 23, but rather 24.

There are many tech manuals and manufacturer booklets that cover the complete process of combinating, especially for the specific product you're working with. These tech manuals can often be obtained on the manufacturers' websites. A good source is the LSA association's website: https://www.lsamichigan. org/tech_manuals.html. Numerous locksmiths nationwide use this free resource for many of their lock and key needs.

Your Design Experience Has Now Concluded!

We have now come to the end of our fourinstallment series on master keying design. This was only a basic how-to that you can supplement with many of the excellent books on the subject by experts such as Billy Edwards, Jerome Andrews, Don O'Shall and others. Hands-on classes are offered by ALOA, ILA and various local associations such as LSA, GPLA and others. Master keying software should now make more sense to you and can be used as an aid to creating, supporting and modifying master key systems that you may be servicing.

We haven't even touched on the more advanced concepts that I teach in advanced master keying classes, including keying conferences with the client, the TMK register, record keeping, limited position progression, "Always do the math on paper first before ever dropping any pins into a cylinder!"

using incidental masters to your advantage, key division, positional master keying, vertical master keying, expansion specifications, manufacturer specifics, master ring particulars, selective masters, multiplex keyways and dealing with unplanned contingencies. But, don't stop now! Continue on and better your understanding of this complex and fascinating field.

A heartfelt 'thank you' is extended to Billy B. Edwards, CML, Jerome V. Andrews, CML, and John Hubel, CML, ICML, M.Ed, for their assistance in preparing for this series on master keying. @



William M. Lynk, CML, CPS, ICML, M.Ed., has been a locksmith since 1975 and is the owner of www.ICLSglobal.com. Bill is an IC specialist,

an industry author, the subject matter expert on IC for ALOA, and an ALOA ACE instructor, teaching classes on interchangeable cores and master keying across the country. He has originated SFIC Technical Manuals for both national and international lock manufacturers, and maintains a working relationship with the major lock and security manufacturers throughout the world. In 2013 and 2015, he was named *Keynotes* Author of the Year.

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BACK TO BASICS



Figure 1. The lever and rosette appeared this way on every lock on every door; the levers weren't in the correct position.





Figures 2-3. This image shows a set of Best 45H spring cages. *Figure 3* is a side view of them.

Improvising and Other Tales

Learn from a job story by **Tony Wiersielis**, **CPL**, **CFDI**, where he had to clean up a previous contractor's messes.

> HIS MONTH, I'M GOING TO SHARE ONE OF THOSE STRANGE JOBS THAT CAN only make you wonder what "they" were thinking. I also have a few pictures of something I found on a job last week and a neat tool I saw a door installer using recently.

Before I start, here's a shout out for some help. I work two days a week at a college in Manhattan as their locksmith. I guess I'm a "rent-a-locksmith" there, but I digress. There are a lot of Bisley file cabinets with locks made by Lowe & Fletcher. There are three-digit codes on the locks. The code series is in the 2-300 range, I believe, and uses an Ilco LF-1 blank.

I can't find this on the old code program in the college shop, but I was able to get the cuts and a printed HPC card for my Blitz as a favor from an associate, but I can't keep bothering him. If anybody can provide me with the code info for that series, and I don't think there are many bittings, I'd be eternally grateful. You can contact me at aew59@juno.com.

The Job

My friend Bill was called to a job in a small town just north of New York City. About 70 Best 45H mortise locks had been installed by a contractor on a renovation project at a school for the visually impaired. The problem was that someone at the school picked out lever handles for these locks that were not made by or for use with Best mortise locks. Apparently, some genius told them any handle and spindle would fit any lock, and that just ain't so.

Bill got there and saw the lever and rosette you see in *Figure 1* on every lock on every door. The problem was that the levers weren't at the three o'clock or nine o'clock positions, as you'd expect them to be. Every one of them sagged downward about 45 degrees.

Take a look at *Figure 2*. This is a set of Best 45H spring cages. They don't come like you see them; I did it that way to keep the parts together. Take note of the square hole in it. The spindle passes through the hole on both sides of the door, and the springs in the cage apply rotational





Figure 4. This photo shows two examples of what you can use to tighten the rings. On the left is a Unican wrench, and on the right is a Best wrench.

Figure 5. This image shows one of the white plastic rosettes fitting over a round disk.

pressure to keep the levers in the proper position with no sagging.

Figure 3 is a side view of them. The outside cage has two threaded studs that pass through the lock, and the two screws pass through the inner cage and thread into them. Notice the two "rose rings" with the small holes in them and the large threaded part on both the inside and outside cages. Once the spring cages are installed on the door, a rosette fits over the threads, and the rose rings are tightened down using a spanner wrench, which you'll see in action later.

I want to stress to you the importance of having the proper tool to tighten the

rings, and that you actually use it. I've found that when carpenters install these locks, they tend to hand-tighten the rings because they don't have the proper tool, and then they walk away. The problem is that the rings work themselves loose and cause the levers to bind and droop. Then they call and say there's a warranty issue with the locks. There isn't; it's the way they were installed.

Figure 4 is two examples of what you can use to tighten them. On the left is a Unican wrench, and on the right is a Best wrench. The Best wrench is almost exactly the same as the Schlage wrenches that used to come with each of their

heavy-duty locks. Other lock brands have similar tools that will work on Best, but I can't tell you who off the top of my head.

If you're new to the trade, you should make it your business to collect these tools when you can. You can't run down to the home center and pick one up; nobody has these but us. You can buy the Best wrenches from Best distributors. If you install a lot of Unicans or heavyduty Schlage, save whatever wrenches the customer doesn't want. Established shops usually have a box of these tools on a shelf.

Back to the story. *Figure 5* shows one of the white plastic rosettes fitting over a



Figure 6. In this photo, notice that there's no square hole as there is in the Best spring cage.



Figure 7. This photo shows that the white plastic rosette won't fit over the threaded part of the cage.



Figure 8. In this photo, the author is using a step bit to enlarge the hole in the rosette.



Figure 9. This photo shows the difference in size after drilling.

round disk. There's an inside and outside disk that are screwed together through the door just like the Best spring cages. The problem is, they aren't spring cages; the rosettes fit on them, and the levers fit into them and don't do anything else. *Figure 6* shows two of these, one with a plastic bushing and the other without. Notice that there's no square hole as there is in the Best spring cage. There's no spring tension on the spindle, which is why the levers droop. So how do we make this work?

The first thing is to get the spring cages, as you've already seen. *Figure 7* shows that the white plastic rosette won't fit over the the threaded part of the cage. Because it's made of plastic, Bill figured that it might be possible to enlarge the hole to fit fairly easily.

In *Figure 8*, you see me using a step bit to enlarge the hole in the rosette. The

flexible plastic couldn't be held in a vise without damage. It turned out to be fairly easy to hold the rosette in my hand while using the step bit, but it required heavy gloves for safety. It also required some serious concentration to avoid enlarging the hole too much. *Figure 9* shows the difference in size after drilling. The larger hole allowed the rosette to fit over the threaded part of the spring cage.

Figure 10 shows me tightening the rose



Figure 10. The author is tightening the rose ring to hold the rosette on the spring cage.



Figures 11-12. *Figure 11* shows the author center punching the spot on the spindle where the screw contacts it, and *Figure 12* shows the dimple he made in it.



Figures 13-15. The author removed the plastic bushing from the metal disc (*Figure 13*) and slid it over the lever (*Figure 14*). *Figure 15* shows the completed levers ready to be reinstalled on the doors.

ring to hold the rosette on the spring cage. I did this on the outside cage, (the one with the threaded studs), to save the installer time. I can't do this ahead of time with the inside cage because the inside gets screwed to the outside, and then the rosette goes on over it.

One of the curious things about these lever handles was that the outside lever wasn't held on the spindle with a roll pin as a standard Best lever would be. Both inside and outside levers were held on by Allen set screws. We needed to use genuine Best spindles but modified them so the setscrew had something to bite into on the outside spindle. *Figure 11* shows me center punching the spot on the spindle where the screw contacts it, and *Figure 12* shows the dimple I made in it.

The diameter of the lever — where it fits into the spring cage — turned out to be a little smaller than the hole. This caused the lever to be be sloppy when installed. The answer was to remove the plastic bushing from the metal disc (*Figure 13*) and slide it over the lever (*Figure 14*). This solved the problem. *Figure 15* shows the completed levers ready to be reinstalled on the doors.

The reason for the white levers had something to do with the limited vision of some students. Apparently, it's easier to see white than any other color. There



Figure 16. When the door unlocks, the gray piece is pulled to the right, and the point drops into the "V," allowing the outside hub to drop. Then you can turn the lever to unlock the door.



Figure 17. The author found a mysterious clear lubricant in the case.

were some brown levers on janitor closets, but we didn't find any tactile or abrasive finishes on any of them. For the new guys, these finishes are rough to the touch so as to warn a blind person that whatever is in the room might be hazardous.

I spent most of my time prepping the spindles, removing the bushing and setting up the levers to be reinstalled. Bill would remove the levers on 3-4 doors and bring them to me to prep. By the time these were ready, he'd be back with four more, and so it went. If I got too far ahead of him, I'd go and reinstall a few while he caught up. We were able to convert about 70 locks in one day and finish the job, but it was a looong day.

A Sticky Situation

This one was a service call for a Best electrified mortise lock that a maintenance guy had worked on before me. The problem, aside from the fact that a non-locksmith played with it, was that when one swiped the card, it took a while before the door would open — sometimes taking three tries. I was told that the lock was "lubricated," and that it hadn't helped. Could I please replace it?

I disassembled the lock and found something that irks me to no end. Whoever installed the lock and the access control system had a severe case of "I'mnever-going-to-see-this-lock-again-itis." When I pulled the lock out of the mortise pocket, the wire from the electrified hinge came out of the raceway at the back of the pocket. They made the splice inside the pocket and there was no slack at all. Zilch.

For the new guys, this is why this pisses me off: The door was right next to a desk. If I had some slack, I could have laid the case down and opened it up to see what was going on. Instead, I'm either cutting the wires and re-splicing them, or I'm holding the the lock as I open it. Holding it while working on it is, to me, like playing Russian roulette with five bullets in the chamber, so I cut the wires at the splice.

Maybe it's just me, but I try to look ahead when installing an electrified device so the next guy doesn't pull his hair out. Just so you know that this isn't all altruism and concern for my fellow man, I know that I might very well be the "next guy." Take a look at my picture at the end of the article; I don't have enough hair to be pulling it out to begin with.

If you're going to install this stuff, don't cut the wire short. Leave a "service loop" of a couple of feet of wire in the mortise pocket if it won't interfere with anything. If it's a panic device and the wire comes through the tail end through a door loop, stuff the extra wire in the frame or the bar if you can. End of rant.

Take a look at *Figure 16*. It's blurry, but you can see the the pointed piece under the screw and the corresponding Vshaped notch on the gray piece below it.



Figure 19. The tool shown is a homemade jig used to hold tabs in

Figure 18. The author is holding the case and shaking it to see if the part will come loose.

When the door unlocks, the gray piece is pulled to the right, and the point drops into the "V," allowing the outside hub to drop. Then you can turn the lever to unlock the door.

While it was still connected, I swiped my card, the grey piece slid back, and I watched it take five seconds for the pointed piece to slide into it to free the hub. Several times, it timed out before it dropped before it could unlock. Not good at all.

I opened up the case and found the stickiest "lubricant" I've ever seen in my life. I mean, I don't even know what it was, but the situation reminded me of the time some clown poured melted butter on a floor safe as a lubricant. At first I thought it was Vaseline, but it was clear. You can see it in *Figure 17*. In *Figure 18*, I'm holding it up and shaking it to see if the part will come loose, and it wouldn't.

It took me 15 minutes with Simple Green and a roll of paper towels to clean it off all the parts. I re-lubricated it with a silicone-based product, and everything was fine. When I reinstalled the case, I first added some wire to the splice to leave a service loop. Before I put it back together, I had the customer swipe his card repeatedly while I held up the lock for him to see everything moving freely (I also showed him why it didn't work before I cleaned it). I did this so he had no doubts that the lock didn't need to be replaced when I was done.

place for spot welding.

Cool Tool

The tool you see in *Figure 19* is a homemade jig used to hold tabs in place for spot welding. You can see the welding machine to the left. When this frame was installed, there was no cutout at all for a strike. The door company was responsible for this and had to fix the issue. We couldn't have the door unlocked in the interim, so I installed the lock, and we cut a hole for the latch with a Dremel.

I wish I had more pictures. The door

guy showed up and cut out for the strike with a jigsaw and cleaned it up with a file. He drilled the holes for the welds and attached the taps loosely with the screws. When he got the tabs inside the frame, he tightened the screws, which clamped them to the inside of the frame.

He welded — I believe it was MIG — making several passes to fill in the holes, grinding a little between passes. When everything was smoothed out, he hit it with some primer and put the strike in. It looked like it had been done at the factory. It was that good, and he did it in about a half an hour. Beautiful! *®*



Tony Wiersielis, CPL,

CFDI, has more than a quarter century of experience and has worked in most phases of the trade throughout the New York

metropolitan area. He was named *Keynotes* Author of the Year for 2016.

Everything That Rolls

Jim Hancock, CML, CMST, provides an update on automotive locksmithing education.

S RAPIDLY AS OUR INDUSTRY HAS CHANGED IN THE PAST 20 YEARS, NO aspect has changed as quickly nor as much as the automotive world. If you've worked as an automotive locksmith in the past 20-plus years, either exclusively or as a piece of the business pie, you've seen the technology change from mechanical keys to VATS, PATS, MATS, transponder, keyless entry, single side, double side, 2 track, 4 track, Tibbe, Slim Jims, J-tools, long reach tools, wedges, air wedges, depth keys, Curtis clippers, card and disk code machines, T-Code, MVP, HotWire...and so on and so on. The bottom line is that the automotive world, while always one of continuous change for locksmiths, has had a technological explosion and now requires more training than ever.

ALOA has been working to introduce new classes to the automotive world for the past few years. It's been a slow process, as we've refused to rush classes out that were not fully developed or that didn't have a hands-on component. As an industry, we probably exemplify Edgar Dale's Cone of Experience more than any other.

As such, we now offer a more complete line of automotive locksmith classes than ever before. Thanks to the subject matter experts, Mannie Natal, Tony Cagle, Steve Sacco and Ed Woods (as well as a few others), we have what is developing and maturing into a track of learning that will allow a student to go as far as he or she chooses in learning automotive locksmithing. Just in the past six months, classes that have been updated or added to the automotive line-up include: Automotive Essentials, Intermediate Domestic Automotive, Intermediate Foreign Automotive, Advanced Automotive and EEPROM Basics.

These classes go along with our existing line-up of Transponders A-Z, Modern Automotive Key Generation, Motorcycle Locksmithing, Advanced Transponder, Keyless Remotes and others. There are no less than a half dozen other topics in the works as well. Again, they are hands-on so the learning stays with you as opposed to watching a PowerPoint of someone else doing the work. We are also working on a set of training videos that will be on our website as refreshers for anyone who needs a how-to reminder.

To show your pride and proficiency, the Certified Automotive Locksmith (CAL) exam has been revised to be more relevant to today's automotive locksmith as well as adding the new Certified Master Automotive Locksmith (CMAL) credential that covers subjects both new and older. Along with this revamped and new credential, there will be items offered soon in the ALOA Bookstore specific to your CAL and



CMAL certification.

None of this would be possible without the help and support of our manufacturer partners in the automotive world: ILCO, JMA, Bianchi, STRATTEC, Advanced Diagnostics, ASP and a few others. Thank you so much.

Finally, none of this is possible or important without you, the members. You need to support these manufacturers as a way of thanking them for their assistance to your association. We need you to attend these trainings and tell us what we need to add or change to make them better. And we also want to add your name to the list of CALs and CMALs to show your expertise.

To paraphrase the Beatles, "Baby, you can drive my car.... education." Sorry, John and Paul. ☞



Jim Hancock, CML, CMST, ALOA's education manager, began his locksmithing career at the age of 8 in his grandfather's lock shop in Gulfport, MS. He has

worked in every aspect of the business, from shop tech to mobile tech to operations management. In 2003 and 2009, he was presented with the ALOA ACE Award as Instructor of the Year. You can reach him at jim@aloa.org or (214) 819-9733.



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List all phone numbers used by	your company/companies:		
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How long have you worked in th	ne locksmithing/security ind	ustry?	
ALOA member Sponsor Name/ Sponsor Name (Required)	Who introduced you to ALC	A? ALOA Num	1berYears known
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Name	Company		Phone Number
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Check <u>only one</u> box from the categories listed below:

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Persons actively engaged in the locksmith/access control industry for a minimum of two years and have achieved one of ALOA's recognized program designations.

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I certify that all statements are true and, if accepted as a member, I agree to abide by the rules, regulations, and Bylaws of ALOA, and further agree to adopt the Code of Ethics of ALOA as my own, and adhere to it to the best of my ability. Should my membership be discontinued, I agree to return my membership card and cease use of all ALOA insignia.

Signature

Date Signed

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