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March 2021

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Contents

March 2021 | Volume 67, Issue 3

34

16

Spotlights

What's New

Departments

Features

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KEYNOTES

MARCH 2021 | VOLUME 67, ISSUE 3

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Keeping the Faith for 2021

WELL, WE HOPED that we would be able to bring you increasingly better news this year as the pandemic improved. Unfortunately, that won't be the case across the board, as we are not going to be able to hold SAFETECH 2021 in Reno, NV.

Sadly, local restrictions have prevented the convention venue from meeting its obligations. It is, of course, heartbreaking news to not be able to hold SAFETECH two years in a row. We were looking forward to hosting at this new-to-us venue, the Atlantis, and seeing a different part of Reno. In better news, we've arranged to hold SAFETECH 2023 there, so our planning will not be for naught.

We all are looking forward to next year's SAFETECH with our return to Lexington, KY. After a two-year absence for this convention, it's going to be a heck of an event! Please mark your calendars now for April 4-9, 2022, and be sure to join us.

"We all are looking forward to next year's SAFETECH with our return to Lexington, KY. After a two-year absence for this convention, it's going to be a heck of an event!"

Keeping an Eye on ALOA 2021

But, as it always does, the world keeps spinning. While we have the temporary bad news about SAFETECH, we have so much left to look forward to this year. This year's ALOA Convention & Security Expo in Orlando is still in motion, and we have every reason to believe at the moment that we will be there July 25-31.

Florida has been one of most "open" states with the fewest lockdown restrictions during the pandemic, and there's no reason to believe that will change in the near future. Even more importantly, the Centers for Disease Control says that most of the U.S. population will likely be vaccinated by May, and the infection numbers have been trending down dramatically for a while now. As of right now, the summer Olympics in Japan are still a go. Even Disney has been reopening parks on a restricted basis.

We have so many check marks in our column right now where the convention is concerned. And when we are there, the staff, board and volunteers will do everything in their power to keep you safe while you take classes and browse products: social distancing, hand-sanitizing stations, encouraging mask wearing and more.

Look for ALOA convention registration information in the next issue of *Keynotes*, and check your email inbox for more information in the coming months as well.

And do keep your spirits up, as things overall are looking up. It's been a difficult year-plus, but so many things are trending in the right direction right now. It's easy to lose hope in the face of ongoing challenge and adversity, but all of this will soon pass.

Until then, stay safe and well, and we'll see you in July!

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

Looking Forward to the Next Conventions

WE ALL HAD HIGH hopes that this year would be infinitely better than 2020. While some things are improving on the pandemic front, we are all, sadly, still being affected. Budgets remain tight, gathering restrictions remain in many locations and many continue to contract the virus. Unfortunately, SAFETECH 2021 in Reno, NV, is another victim.

Due to local restrictions, we will not be able to move forward in holding this year's SAFETECH Convention. While it's devastating to not be able to hold this event two years in a row, we are looking forward to next year with increased enthusiasm. We hope to make SAFETECH 2022 the best yet.

To all potential attendees, instructors, volunteers and vendors, please save the dates of April 4-9, 2022, and plan to be with us in Lexington. This convention is an industry favorite, and we can't wait for its return! I know a lot of you feel the same.

ALOA 2021

While this year's SAFETECH Convention cannot take place, we are still moving forward with ALOA 2021 in Orlando. We are hopeful that by July, restrictions will be lifted and the pandemic will be in a better place. Please continue to hold the dates of July 25-31, 2021, and keep your eye out for registration information in the next issue of *Keynotes*.

"Your support means so much to the association, and it's allowed us to adapt our education offerings during the pandemic to continue to serve you."

Not being able to hold ALOA 2020 was a great disappointment to all who attend and plan this incredible event, and we will do everything in our power to hold the 2021 ALOA Convention & Security Expo. We will also do everything we can to keep you safe while you attend. We plan to have social distancing in classrooms, maintain sanitizing stations throughout and encourage mask wearing.

Thank You, Members

I wanted to take a minute to once again thank all of you who renewed your memberships in 2020 and 2021. We absolutely know how difficult the last year has been, and we know that funds are tight for many of you, just as they have been for us. Your support means so much to the association, and it's allowed us to adapt our education offerings during the pandemic to continue to serve you.

Thank you for your continued involvement in ALOA, and we look forward to a brighter future for all.

Mary A. May

Mary A. May
Executive Director
mary@aloa.org

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As part of its 100-year celebration, Master Lock is releasing several new products, including the ProSeries Bluetooth Padlock.

Master Lock Celebrates 100 Years

To celebrate being in business for 100 years, Master Lock is launching a 360° marketing campaign and previewing new user-led innovation. The company debuted a commemorative logo that incorporates the brand's original "Master Lock Lion" symbol and will be featured across packaging, digital and advertisements and on limited-edition merchandise.

As part of the celebration, Master Lock is holding a sweepstakes where consumers can win a digital shopping spree and other prizes at www.MasterLockSweeps.com. In April, Master Lock will recognize those who strengthen communities through its new "Community Champions" program. Through a call for online submissions, select individuals who've shown exemplary community commitment will be rewarded with a cash prize and a donation in their name to a deserving beneficiary.

The newly upgraded Masterlock.com also has enhanced product content and search functionality. The company is also introducing new products such as the ProSeries Bluetooth Padlock, the Key Tether Lock Box and the 1921D Padlock, a limited-edition product that features the commemorative logo and a black weather-resistant cover. It will be available online and at select retailers.

NEWS BRIEF

RemoteLOCK

RemoteLock has announced the addition of Daniel Bailin as chief product officer. He will be responsible for developing and driving the company's technology road map and product innovation strategy. Bailin has more than 20 years of experience in the access control, biometrics and semiconductor industries. Prior to joining RemoteLock, he was the senior vice president of sales, marketing and product for UniKey, where he oversaw the product and go-to-market strategies for the company's embedded mobile access technology. He has also held leadership roles with HID Global and Arrow Electronics and holds degrees in electrical engineering and chemistry.

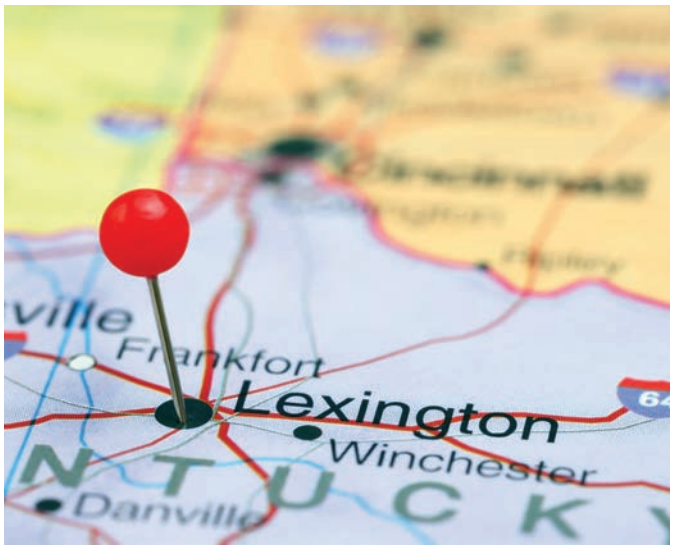
IN MEMORIAM

Past ALOA Board member **Rick Ohmit** has passed away. A Life Member of ALOA, he had been a member of ALOA since 1982 and a member of SAVTA for more than 20 years.

Long-time ALOA member **Ronald "Red" Howell** passed away in January in San Diego. He had been a member since 1978 and was very involved with his local chapter, the California Locksmith Association.

Kenneth J. Bradbury, ARL, of Hyannis, MA, has passed away. He had been a member of SAVTA since 1992 and an ALOA member since 2013.

Save the Date for SAFETECH 2022



SAFETECH 2021 SADLY CANNOT GO ON, BUT YOU CAN still keep SAFETECH 2022 in your plans! Mark your calendars for April 4-9, 2022, and save the dates. We will be back in the heart of the safe and vault industry at the Griffin Gate Marriott in Lexington, KY. This is sure to be a fantastic time as we celebrate the return of the industry's foremost event.

Keep ALOA 2021 in your sights as well, and save the dates of July 25-31, 2021. Look for more information and registration materials in the next issue of *Keynotes*. For any questions, please email conventions@aloa.org.

PRODUCT BRIEFS

RemoteLock has expanded the number of August and Yale locks that are supported on its platform to include Wi-Fi-enabled August smart locks and the line of Yale Assure Locks with Wi-Fi. RemoteLock's universal access control platform allows multi-family property managers to remotely control any door, using various credential types, with locks from many leading manufacturers.

ABLOY USA Critical Infrastructure has announced the recent integration of the CLIQ Plugin within Security Center from Genetec Inc., a technology provider of unified security, public safety, operations and business intelligence solutions. Integration of the CLIQ Plugin allows operators using Genetec Security Center 5.7 and up to assign access rules of cardholders granting access to CLIQ locks, in addition to allowing programming of CLIQ intelligent keys with proper access rules. The CLIQ system itself removes the expense of physically rekeying locks and replacing keys since rekeying is done electronically.

Heads-Up Lock Co. has released a solution that helps customers and employees stay socially distanced during the COVID-19 pandemic and beyond. The product offers a visible indication of restroom availability that can be seen up to 300 feet away, reducing people standing in line. The locking device is ADA approved and affordable, and the kit contains everything needed for installation in a single-stall restroom. For more information, visit www.headsuplock.com.

PDQ has introduced an interconnected lock to its pdqSMART Stand-Alone and Networked Access Control device lineups. The new interconnected lock combines the added security of a deadbolt and the easy egress of a lever, linking them together for simultaneous action. Suited for multi-family, senior living and student housing applications, the lock has the ability to lock/unlock via smart devices, keys, RFID or PIN pad; can fit standard door prep; has scalability for thousands of devices and users; and requires no hard wiring, control panels or servers. Software is cloud-hosted with wireless mobile management, and free firmware updates are provided. For more information about pdqSMART, visit www.pdqsmart.com.

Access Tools, a manufacturer of car opening tools, has made replacement tips for its Long Reach Tools and In-The-Door Tools. The Store-N-GO Replacement Tips (#SNG-TIPS) kit includes 12 replacement tips for most of the Access Tools Long Reach Tools that feature the Store-N-Go Handle. The Power Grip Tip Set (#PGTS) has 12 assorted replacement tips for a wide variety of Access Tools Long Reach Tools and In-The-Door Tools.

NEW APPLICANTS

ALASKA

Fairbanks
- **Rochelle A. Larson**
  Larson's Locksmith & Security, Inc.
  Sponsor: Charity A. Craft

Kodiak
- **Jonathan Sholl**
  Sholl's Locksmithing Services
  Sponsor: Glen I. Davies, CPL, AFDI

GEORGIA

Brunswick
- **Edward Booker**
- **Diana Carter**
- **Patrick Rowell**
  Collins Lock and Safe Inc.
- **Tara Seidel**

Waverly
- **Levi Payne**
  Collins Lock and Safe Inc.

ILLINOIS

Grayslake
- **Joseph E. Booker**

Rosemont
- **Ahmad Abu Matar**

INDIANA

Portage
- **Timothy W. Fryer**
  Sponsor: Wayne A. Hopkins, RL

LOUISIANA

New Orleans
- **Karl B. Eckert**
  Kolonel's Keys LLC

NORTH CAROLINA

Greensboro
- **Dennis R. Dillard**

Shawboro
- **Timothy W. English**

OREGON

Beaverton
- **Hector Palomares**
  A-MAX Security Solutions Inc.
  Sponsor: William Blanchard, CML, CPS, CAL

PENNSYLVANIA

Pittsburgh
- **Carl R. Powischill**
  Powischill Contracting

TENNESSEE

Morrison
- **Christopher L. Bramlett**
  Bankpak

TEXAS

LaPorte
- **Bruce Hallman**
  Innovative Tracking Technologies LLC

BAHAMAS

Eleuthera
- **Michaela C. Graham-Wells**
  Sentry Shield Security & Locksmith Company
  Sponsor: Alberto R. Gorbea

ALOA CERTIFICATIONS

CRL
- **Jessica Dvorak, CRL**
  Mundelein, IL
- **Graem J. Kubin, CRL**
  Addison, IL
- **Paul Toh, CRL**
  Chicago, IL

CPS
- **Matthew D. Churchill, CPS**
  Phoenix, AZ

We Need Your Help

Attention, ALOA Members: Help us eliminate the industry scammer problem by screening these applicants, who are scheduled for clearance as ALOA members, to ensure they meet the standards of ALOA's Code of Ethics. Protests, if any, must be made within 30 days of this *Keynotes* issue date, addressed to the ALOA membership department, signed and submitted via e-mail to membership@aloa.org or via fax to 214-819-9736. For questions, contact Kevin Wesley, membership manager, at Kevin@aloa.org or (214) 819-9733, ext. 219.

CALENDAR

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

MARCH

March 10-12
IML Security Expo
Universal City, CA
www.imlss.com

March 28
Key Generation
Lockmasters
Nicholasville, KY
lsieducation.com
(866) 574-8724

March 29
Advanced Automotive Transponders
Lockmasters
Nicholasville, KY
lsieducation.com
(866) 574-8724

JULY

July 25-31
2021 ALOA Convention & Security Expo
Caribe Royale, Orlando, FL
conventions@aloa.org or
(800) 532-256

Looking Ahead to ALOA 2021

It's a big letdown for our members that SAFETECH in Reno was cancelled, but none of us want to travel until this COVID-19 pandemic is contained. We now look toward to Orlando this July for the ALOA Convention and pray to God that we have a handle on this stuff before it drives us all crazy.

The ALOA convention in Orlando should be a new awakening for our industry. There will be classes and hands-on events for everyone in the forensic field. Whatever your forensic specialty is, make sure you have the latest knowledge so you can be the best in you chosen field.

New Recertification Requirements

The new recertification forms were sent to ALOA Education, and they should start administering them once everyone signs off. I want to thank Beta Tam for all of his hard work in pulling together these requirements for recertification. There must be strict guidelines for recertification so our credentials can withstand scrutiny from attorneys looking to discredit our witness.

For those of you who are active investigators, the requirements are nothing but a restating of your active cases. Those of you who have not worked a case in the past three years will be required to do a case report on a topic of the CFL committee's choosing. This is to show that you still have the skills to meet your credential.

We always encourage forensic investigators to keep education upmost in their thoughts. During the pandemic, online classes are an easy way to stay sharp and up to date on the latest techniques and procedures.

If you have any questions, suggestions or ideas, please contact me directly 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.

An Institution of "Non-Institutionals"

By John Truempy, CRL, CMIL, IFDI, CFL

Just like in our day jobs, ALOA Institutional Locksmiths (AIL) receive a lot of support from "non-institutionals," if I can coin a phrase. In our day-to-day work within our institutions, we count on the support of the carpenters, electrictions, security and many other shops, depending on your institution's structure. From my personal experience, the lockshop may support others more than they support us, but in the end, many non-locksmiths help us get our jobs done.

So, it should come as no surprise that it would hold true on the association level. AIL Board members like Steve Fryman, John Plunket and Jack Walder will always help with whatever the division needs. And just about any member I talk to will offer their help to support the AIL mission. As president of the AIL division, I rely on the support and advice of the AIL members and board. The pandemic has surely changed the topics members want to talk about, but that will be the subject of an article at a later date since COVID-19 is still a moving target.

Tom Demont

Recognizing Efforts

So let me talk about *non-institutionals* who have been instrumental in advancing the AIL mission, even during these troubled times. The first one who comes to mind is **Tom Demont**.

Tom and I have been friends for more years than either of us is willing to admit. (Although anyone who has borne witness to the two of us interacting in a

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Tom Foxwell

Jim Wiedman

Noel Flynn

meeting would think otherwise. That's just the passion each of us brings to a conversation.) He has served on my boards of directors — and I on his — long before the ALOA Institutional Locksmiths division was a thing. In fact, Tom recruited me directly when AIL was an idea of his when he was ALOA president. (The recruiting process involved wine and Italian food... and more wine. He is Italian, after all.)

Tom will tell that you he is an institutional locksmith, but I always remind him that fixing a lock on a destroyer in the middle of the Pacific Ocean does not automatically grant you admission into the "institutional" club. (I also frequently remind him they don't make ships out of wood anymore!) But there would be no AIL if not for "Godfather Tom" being the instigator for forming the division.

While I am in the habit of typing the name "Tom," let's talk about another: **Tom Foxwell**. Foxwell (another longtime friend) and I have always played well together. Before he retired, (congratulations, Tom!) he interacted with institutional locksmiths practically on a daily basis.

One of his institutional customers needed training to meet the inspection part of *NFPA 80 Standard for Fire Door & Other Opening Protectives*. He and I worked with Godfather Tom and, within weeks, we had the *Life Safety & Fire Door Inspector* (LSFDI) program ready. Another time, Foxwell and I talked about a group of institutional locksmiths who were meeting informally in the D.C. area. So, we pulled together chapter formation paperwork for their group and, before I knew it, we had our first AIL chapter.

I call **Jim Weidman** my brother (at least figuratively), and some of the stories I could tell about the two of us would not make it through the editorial process! What I can say is that he may run a commercial lockshop, but he sure thinks like an "institutional." What else would you expect from a guy who met his wife in prison! (Before the questions start to flood into the ALOA headquarters, Jim and his wife are former corrections officers.) Jim has been one of the AIL's biggest supporters.

Finally, there's **Noel Flynn**. He won't even *try* to claim to have fixed a lock while in the Navy, and he doesn't deal with institutional lockshops for a living. I didn't get to know him on a personal level until I joined the ALOA board as president of AIL. Noel has been in our industry as a financial guru for decades. If you've been following his long-running busines column in *Keynotes*, I'm sure you've come to the same conclusion about his financial intellect that I have: Noel is a legitimate business and financial genius.

Noel and I have become good friends, just like anyone you spend hours with during a Godfather Tom meeting. Noel and I seem to always be on different committees, but we always find time to talk about ALOA business, especially the monumental financial issues facing ALOA in the next few years as a result of the pandemic. Noel's advice to the ALOA board in the last year has been indispensable, in my opinion.

The Pandemic's Impact

COVID-19 T-boned 2020, and the world turned upside down. At my day job, I now need to interact with departments like Human Resources and the Office of General Council on an almost-daily basis. Similarly, I need to interact more often with other departments, staff and board members at ALOA to get a better handle on AIL financial issues.

AIL has the smallest budget of all of the ALOA divisions. We make this work to our advantage. We can often use the programs of the other divisions to minimize spending:

- We don't host our own convention. Our members can attend all events hosted by other divisions.
- Our division can use other divisions'

PRP testing programs. We review the exams to be sure we have questions that meet the needs of AIL members.

- Our board members use vacation time from our full-time jobs for AIL board activities to minimize the financial impact to the division.

During "normal" times, this is a great situation, but this past year has been anything but normal — and the upcoming year isn't going to be much better. However, AIL membership will remain steady because, in most situations, our members are "essential workers," and the division's income is relatively stable as a result. Nonetheless, strict money management will be both ALOA's and AIL's highest priority for the foreseeable future. We need to make every member dollar count.

Analyzing profit and loss statements became a "thing" I really needed to understand for the first time, but I was way out of my comfort zone. I needed the advice of someone in business with vast financial experience: I called Noel, and did he ever come through! His analysis of AIL finances was profoundly astute, and his council is much appreciated. Noel continues to serve ALOA and AIL with his tremendous insights into intricate money management matters.

Godfather Tom got ALOA Institutional Locksmiths started, Foxwell helped the division grow immensely, and Noel stepped in to dispense sound financial wisdom in desperate financial times. (See me in Orlando, and I'll tell you about the antics of the "brothers" Jim and John!) AIL is doing remarkably well, and thanks to some *non-institutionals*, the division can look forward to a sound financial future.

John Truempy, ICML, CRL, CMIL, IFDI, is employed at the University of Pennsylvania, where he's been a locksmith for more than 28 years. Prior to that, he spent a few years as a commercial locksmith and worked for the State of New Jersey at Trenton State Psychiatric Hospital. As the first president of ALOA Institutional Locksmiths (AIL), the ALOA SPAI division, he has over 15 years of association management experience. He has written many books focusing on both practical and esoteric applications for master key systems, including *Advanced Master Keying Skills* and *Master Key System Specification, Application & Management*. He also teaches both fundamental and advanced locksmith subjects.

A Deeper Look at the Saginaw Column

Andrew Taylor discusses a few issues you can encounter during repairs.

THE SAGINAW COLUMN PLAYS AN IMPORTANT ROLE IN THE AUTOMOTIVE industry. It could be argued that it is the most popular steering column in the history of the horseless carriage. Not only did it define GM automobiles for more than 20 years, it could also be found on AMC vehicles and Chrysler vehicles that needed the tilt-wheel option until 1989. It's also the favorite for retro-mod builders working on antique cars because of the versatility in mounting options.

This robust design features many modifications for various uses, but it does have a few problems that can show up after time that we may be called upon to repair. This article is not aimed at simply making keys for this design (that subject has been discussed ad nauseam over the years). I'll discuss possible repair issues that can arise from the weak points in this design.

We'll start our discussion at the point where the retainer for the cylinder is reached. For the example car, I've included pictures from a 1998 Cadillac DeVille that I disassembled at a local junkyard (see *Figures 1-4*).

"A rarer problem is that the holes the hinge pins ride in can get worn and wallowed out, which means replacing the housing."

Figure 1. This is the target vehicle the author used for most of the pictures. It's resting in the junkyard to be parted out.

Figure 2. This is a view before disassembly. At a junkyard, it's not necessary to reassemble, so practice here is always fun.

Figure 3. This image shows the point where most articles on this column stop, but it's where this one starts. All steps leading to here have been discussed often, so they need not be repeated.

Figure 4. The first step of the journey involves removing these three screws and moving the cylinder out of the way.

Once we get to the point where we remove the cylinder, as others have discussed, we find our way deeper into the column. Three Torx T30 screws hold the upper cover in place on the housing, so remove them and carefully slide the cover off. The wires for the turn signals and airbag only give you a short leash, so I prefer to tilt the wheel down to give a bit more leeway in getting the cover past the post of the shaft.

You'll notice a funny-shaped piece of plastic fall to the floor. Save that because it functions as the actuator for the dimmer switch when you pull the turn-signal arm toward you. It takes a delicate touch to hold it in place with one hand while adjusting its angle with a probe when reinstalling the housing — it rides in a slot on the back plate around the tilt wheel handle and has to line up in the hole of the upper cover. It's caked with grease, and that is your friend. The grease helps it stay in place, so don't remove it!

Potential Issues

Now that we've exposed the housing, we can get to some common issues that arise with this design. The basic function is that turning the key turns a gear that pushes and pulls a rack that, in turn, hooks into a linkage by way of a loop. That linkage then works the switch mounted halfway down the column. The reason for the loop is to keep a positive connection to the linkage, no matter what the position of the tilt wheel. Turning the gear also pulls the steering wheel lock

Figure 5. The high/low beam actuator rides around a pin in the back cover and stays in place by virtue of the heavy grease that keeps it lubricated.

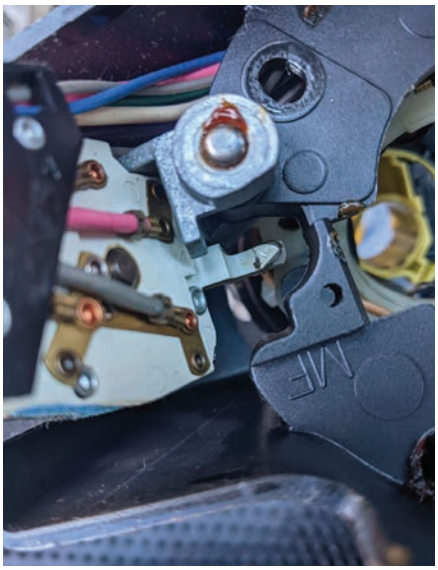

Figure 6. This shows the hole in the upper cover that the high/low beam actuator sits in during reassembly.

Figure 7. The exposed housing is shown after the cover has been removed.

Figure 8. This side view of the workings shows where the gear moves the rack and retracts the steering wheel locking pin.

Figure 9. The rack itself is shown.

away from the lock plate, allowing you to turn the wheel while driving. You'll often encounter the complaint that the key just turns freely without engaging the switch in any way, and here we find the two possible culprits: The loop on the rack can break — usually because the switch is getting harder to work, and extra pressure is being applied. This means replacing the rack and, as a precaution, replacing the switch as well.

Another issue is wear on the gear where it sits in the housing, allowing it to become sloppy in the hole and not holding the rack firmly against the spring-loaded slot it rides in. This allows it to slip off the linkage at the other end. As these are still popular columns, parts can still be found at some auto parts stores and on eBay, so rebuilding is still an option. To replace the rack, you have to disassemble further though.

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Figure 10. The tilt-wheel spring is behind its retainer, which pushes in and turns to release.

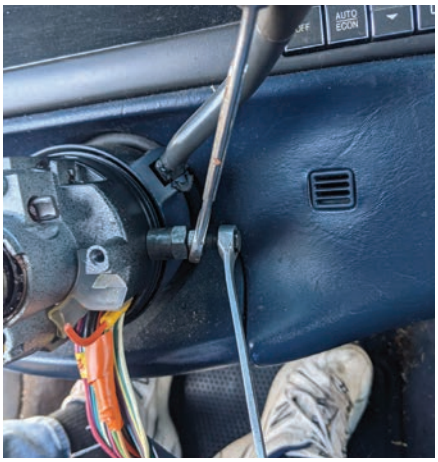

Figure 11. Using the hinge pin puller removes the two hinge pins connecting the ignition housing to the lower housing.

Figure 12. You can see two out of the four screws that hold the lower housing tight to the tube. Note: In a normal setting, you would not cut all of these wires.

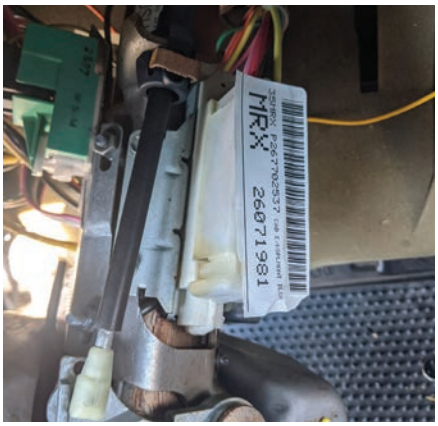

Figure 13. The ignition switch is mounted down the column past the column-mounting bracket.

Under a sheet metal cap is the pressure spring that snaps your tilt wheel back up when you hit the lever. It's fairly easy to remove on the GM column by taking a #3 Phillips screwdriver to the square hole and pushing in and turning. I'm sure there's a particular "factory" tool for the job, but the #3 works fine. You want the wheel tilted up for this to take as much pressure off as possible, and angle it back down afterward to your pleasure. Then, you need a hinge pin puller for the pressed-in hinge pins. I know for sure places like Snap-on and Matco carry them, but I can't swear you'll find a Harbor Freight version. People have reported success using the right threaded screw and a claw hammer (I can't remember if it's #10 or #8), but they are definitely not something to just "pry out." Once the pins are out, you can pull the housing off as long as you work the hooks of the tilt wheel with its handle to let go of the pins they grab onto.

Once we get this far, we can see the cause of another common complaint: The tilt wheel doesn't want to lock in place. It just flops around all over! There are four screws that hold the lower housing to the column tube. They work loose over the years, so even though the tilt wheel grips are grabbing their pins faithfully, the whole thing feels like it's going to drop in your lap.

The quick fix is to simply tighten the four screws and reassemble, but the best solution is to tighten them, then remove the screws, one at a time, apply fresh Loctite and reinstall. If you try to remove all four at once, the metal plate that they screw into can unhook itself from the slot in the tube and you have a fight to realign it, so one at a time is the simpler way. A rarer problem is that the holes the hinge pins ride in can get worn and wallowed out, which means replacing the housing, but at that point, you might as well search out a new column, considering the labor.

Replacing the Switch

As I mentioned earlier, the final piece of the whole starting puzzle is the switch, mounted halfway down the column. If you have to replace the switch, there are two ways GM mounted them on the tube. The first example is my target car in the junkyard, the Cadillac, and the second is a Firebird that I played with a few days later. The method on the Firebird is actually the more common one GM used.

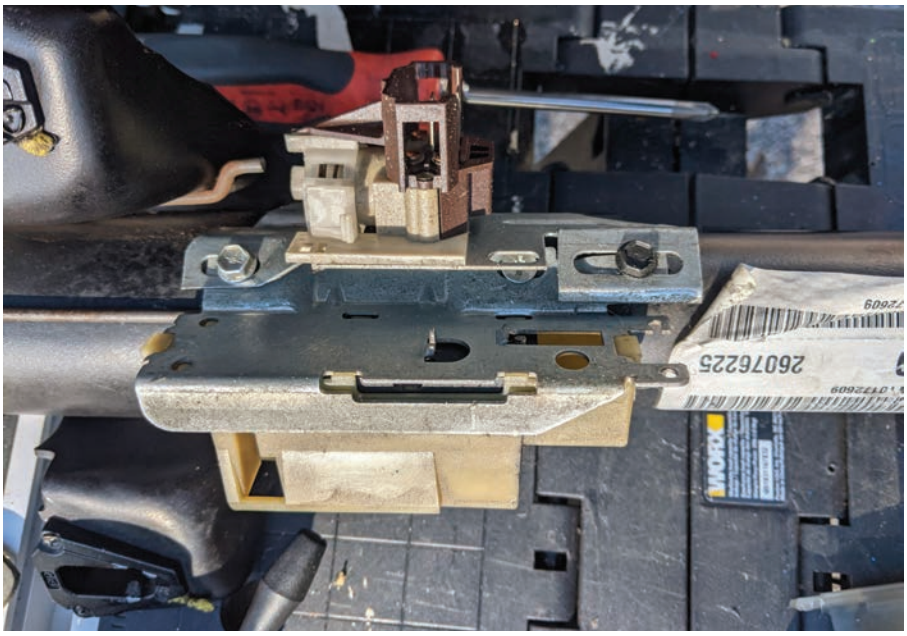

Figure 14. This is the more typical alignment, where the ignition switch shares the mounting screws with the dimmer switch.

Figure 15. The linkages for the ignition switch and dimmer switch are running parallel down the left side of the column. You can also see the wire harness for the accessories added to the turn signal stick.

On the DeVille, the switch just sits there by itself with two screws holding it to the tube, so replacing it is fairly straightforward. Remove the old, install the new and check the timing. The slots for the screws are slots on purpose. The easiest way to make sure the key has proper range is to remove the ignition key, set the switch to ignition off and install. Afterward, check that it not only reaches the start position but also turns back enough to reach the accessory.

The more common design on the Firebird has the dimmer switch sharing the same screws as the ignition switch, which means you have to set the timing on both at the same time. The preferred method is to bring a marker and outline the screws on the dimmer switch plate *before* you remove the screws, so you can realign them as they were before. This particular picture (*Figure 14*) was from a later model with an added a third screw that made it possible to time the switch before mounting the dimmer switch. This saved me a bit of time, but on the older ones, the back screw has a threaded top. This means you can align the switch, tighten down the back screw, align the dimmer, add a nut and tighten the first screw. All of this is easier to do by dropping the column from the dash by removing the 13mm screws, but it can be done without doing that if you have the patience and a bucket full of swear words.

"There are four screws that hold the lower housing to the column tube. They work loose over the years."

I did include a final picture showing how close together the linkages run on the left side of the column. You'll find, on reassembly, that the linkage for the dimmer switch has a tendency to get hung up on the bracket holding the column up, because it was an afterthought. It will take a bit of playing to get it settled to moving smoothly as you reassemble the parts.

When you are going this deep into the Saginaw column, the most important tool in your box will be your patience; you'll often find that you have to back up and try again. Once properly assembled, these columns can provide 20 or more years of hassle-free use and abuse, but getting things "just right" means you don't want to chase a deadline. Also remember, this design was built to require a heavy grease.

Andrew Taylor, 57, has been locksmithing since 1983 and self employed since 1989. He originally apprenticed under Tom Sprouse in New Jersey and is the owner of Taylor Locksmith in Virginia Beach. He does commercial, residential and automotive work but prefers automotive for the variety.

Establishing Best Practices for Your Business

Noel Flynn explains the importance of best practices and how to apply them to various situations.

This is the 19th article in our "Tools for Managing Your Business" series. Far too often, the concept of best practices is presented in an unnecessarily complicated manner, using sophisticated-sounding definitions that confuse and turn off business owners and managers. All you really need to know is that, although there is usually more than one way to do something, there's likely a "best way" to do it. This "best way" is known as a best practice, and your business can benefit from employing such protocols. While we don't think of best practices as being part of our daily personal and professional lives, you'll quickly realize that we are surrounded by them.

To set the appropriate tone, let's begin by recognizing that when business owners or managers are sorting out a problem, they tend to engage in a structured, deliberative approach. Upon learning the circumstances surrounding an incident or situation, one of the fundamental things we try to ascertain is whether or not our protocols (procedures, techniques, guidelines, instructions, standards, specifications, etc.) were followed. Of course, this presumes that we have such protocols in place and that our employees were aware of them and their appropriate application.

This juncture represents a proverbial fork in the road. If our employee followed our procedures, that's very different than noncompliance. What we are *not* going to discuss in this article are instances of gross negligence or complete lack of common sense because best practices are not likely to solve those issues. As the scientific community has confirmed, although we hold out hope, "There is no cure (or even a vaccine) for stupid." Let's consider some familiar examples that embrace the best practices concept.

Assembly of a Toy

Perhaps one example of a best practice that we can all relate to is that *joyful* (feel free to substitute "stressful") experience of assembling a toy or bicycle for your kid's birthday, Christmas or Hanukkah. (Could this be where our kids actually overheard and ultimately learned those four-letter words? It seems like only yesterday when those lovely Christmas carols helped to drown out that cursing!) Remember how the instructions boldly proclaimed that this toy was "so easy to assemble, even a 5-year old can do it?" I can't be sure, but these may be the same people who told us that the check is in the mail and the other five or six most famous lies. Sorry, editorial and decency standards preclude us from listing them here, but you know what they are! Is it any wonder so many retailers offer assembly services for consumer products? Is what remains of your sanity worth that extra $XX to have the store assemble that toy or bike? Such services have no doubt saved countless lives — and marriages too! So, where did this familiar story begin?

Obviously, when the manufacturer designed the toy or bicycle, they wanted to minimize transportation expense and labor by shipping the product unassembled. As I learned from my years in the logistics industry, this is also known as KD or "knocked down." The engineering staff creates an assembly process and develops a set of instructions for the consumer or end user. Typically, such assembly/installation instructions are intended for the DIY (do-it-yourself) consumer but can also apply to professionals. Certainly, they knew, or should have known, that if their product proved to be too difficult or time-consuming to assemble, the result would be lots of unhappy campers, returns and bad reviews. In today's internet world, bad news travels faster than juicy high-school rumors. Too many bad reviews can create a negative reputation, which ultimately translates into the kiss of death for a product. These same assembly principles also apply to product installation.

Why Are There Problems With Assembly and/or Installation?

I can tell you, from many years of personal experience in a wide variety of manufacturing environments, that engineers are not the right people to develop a set of *final* assembly or installation instructions. Preliminary? Yes. Final? No. Why? Because people with mechanical engineering degrees are not your average bear when it comes to mechanical aptitude. Understandably, they tend to become too intimately familiar with their products after working on them for years. Finally, more often than not, they typically simulate assembly or installation in an artificial, controlled lab-type environment. Whereas, in the real world, assembly and/or installation must often be done on our knees in a place with inadequate lighting while we are crouched down in awkward pretzel positions. OK, let's also admit that a few engineers may be sadists. Hint: "When all else fails, read the instructions." Yes, I suppose you could recruit a 5-year old. Clearly, you think outside the box!

Emergency Evacuation Plans

Try to imagine the chaos that would ensue if students never had fire drills. In case of emergency, there are many different ways students and teachers could exit a school. Although perhaps not the best example, we can all appreciate the benefits of developing what was believed to be the best way to orchestrate an orderly emergency school exit plan. If we pause to think about it at a fundamental level, such a plan was essentially a best practice in the broad sense. So here, again, the basic elements of best practices abound. Next, let's consider some business applications.

ISO 9000

In a past life, I worked with a well-established manufacturing company in the United Kingdom. At that time, the European Union's business community had embraced what was known as ISO 9000. In case you're not familiar with this: It was essentially a set of quality standards developed by the International Organization for Standardization. To achieve the necessary certification by third parties, companies were required to establish, document and then apply virtually all of their internal processes. As you can imagine, this certification required a Herculean effort. Failure was not an option, because a lack of this certification placed the company at a competitive disadvantage. Indeed, lack of certification effectively rendered companies unqualified (literally) to be suppliers or subcontractors to many firms, especially larger ones. More than one million companies achieved ISO certification. However, in more recent decades, many companies have abandoned the ISO club because of the expense and, for some, a feeling of overkill through extreme bureaucracy.

Why I am I mentioning this? Because, if we boil down the essence of an ISO 9000 certification (and future iterations), it includes what is essentially a set of best practices on steroids. Determine and document your procedures and processes, apply them consistently and when they fail, refine and/or replace them. Yes, this is a gross over-simplification, but the point is that the "best practices" concept has been around in military and business for a very long time, albeit under different labels. You may remember when Total Quality Management (TQM) was all the rage. Many of the largest companies in the world

have endorsed the fundamental concept and benefits of best practices, with different labels. Next, let's zero in on some more specific business applications.

Answering a Business Telephone

We can all relate to calling a business, and if we are lucky enough to reach a human, we notice the numerous ways that phones are answered — a broad range of everything from a loud "What do you want?" (reminds me of Eddie Murphy in *SNL*'s hilarious "Mr. Robinson's Neighborhood") to "Hello, you've reached ABC company. I'm ___. How may I help you?"

As a business owner or manager, you probably have a phone-answering method that you believe is the most appropriate for your particular situation. This is a good time to remind ourselves that each incoming phone call may be a prospective customer's first contact with our company. As we have discussed many times in previous articles, you don't get a second chance to make a first impression.

Customer Service Applications

Let me stipulate that I have never worked as a customer service representative (CSR), which is generally considered to be one of the more stressful roles in an organization. However, I did stay at a Holiday Inn. (Sorry, I couldn't resist that reference to the well-known TV commercial campaign.) I have been responsible for the customer service departments of several major companies, the largest of which had 14 CSRs and was led by a department manager who reported directly to me. In addition to proper recruiting and training, perhaps one of the most vital things that I learned was the importance of establishing and implementing best practices. Whether you have one employee handling such matters amidst other duties or an entire dedicated customer service department, the same principles apply.

Training Employees

Sooner or later, you will likely find it necessary (or at least desirable) to train one or more employees in the role of a CSR, even if their actual job titles are something else. As with any training situation, being able to access established best practices can be enormously helpful in your onboarding process. This can really pay off big time by helping to evade rooky mistakes, especially those that could have easily been avoided. Remember, what's clear to you (or another experienced individual) is most likely not so obvious to the trainee. And let's not forget that even experienced employees will likely have somewhat different approaches to some jobs or tasks. But wouldn't you prefer them to do it the best way?

Service Business Applications: Repairs and Installations

For many service businesses, installation and repair can be excellent areas to apply best practices. It's common for service business owners to have backgrounds as technicians. This is both good and bad news. The good news is that you are familiar with installation and repair techniques and situations. The bad news is that, at least in some instances, you've probably embraced one particular way of doing things, *which may or may not be the best way*. Admit it, you know you enjoy the raw power rush you get from saying, "My way or the highway," as you mimic Clint Eastwood's Dirty Harry delivering his famous refrain of "Go ahead, make my day." But isn't there something to be said for consistency? Yes, absolutely, unless perhaps your employees affectionately describe you as being "consistently inconsistent." Pause for a moment as that one marinates just a bit!

The Cost/Benefit Ratio of Best Practices

So, you say that you don't have time to develop best practices for your business. Do you have time to go back and clean up a mess that should not have happened? How much time will it take you to earn back your customer's lost confidence? What will it cost you to replace a customer that you lost for all the wrong reasons? Isn't it better to do it right *the first time*? (This reminds me of Bill Clinton's testimony when he said, "It depends on what the meaning of 'is' is.") Our question is: What does "do it right" mean? Of course, the answer is "do it according to our best practice(s)."

It is better to invest the effort up front to prescribe how you want certain things done than to repeat instructions over and over to new employees or individuals learning a different role or task. We are probably familiar with the words of Fred R. Bernard, who is credited with coining the phrase "one look is worth a thousand words," which is often stated as "one picture is worth a thousand words." Inspired by the intrinsic wisdom of Fred's observation, manufacturers continue the trend toward primarily reducing assembly or installation instructions to illustrations. The fewer words, the better! Yes, saving on printing costs, avoiding ambiguity and facilitating multiple languages are all benefits.

Many firms now use videos for indoctrination and onboarding of new employees. This approach is efficient, consistent and done without taking up the valuable time of an HR person or trainer. Indeed, there are numerous videos on YouTube that are inexpensive to create and free to view. They can be watched repeatedly on demand and are a wonderful reference. Let's face it: Some instructions (especially how-to types) are far more helpful

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in video form than in written form. The same can be said for your best practices, especially installation/repair instructions.

Creating Buy-In and the Right Atmosphere

When you are ready to get serious about developing your best practices, remember that you can either ram this best practices stuff down your employees' throats or engage them in the process.

This reminds me of a situation I encountered when asked to straighten out customer service–related issues involving several departments in a larger company. The work environment had devolved into various forms of germ warfare between several departments that were required to work together in certain customer situations. The factional silos had been gallantly erected like pillboxes, and the intramural blame game was perfected to an art form. How could this be fixed while also attending to my many other responsibilities? Incidentally, just to make sure it wasn't too easy to fix, the various players were physically dispersed all over North America and the world. All shared one thing in common: Each group was absolutely convinced that the *other departments* were the problem! I should add that, as is so often the case, these were basically good employees.

As a consultant, I didn't have a clue about all of the permutations, intricacies, system nuances or numerous other considerations of this business, nor did I have the time or ambition to learn. Yet, I had to find a viable solution. After ruling out the preferred traditional go-to managerial options of courtyard executions, public floggings and assorted macabre remedies, I resorted to a relatively simple approach. I could have just issued an edict and proclaimed a solution, but that would risk imposing the wrong resolution — or at least not the *best* resolution. Moreover, at least one of the factions (perhaps all) would have reluctantly accepted my directive(s) under silent protest and never fully embraced the fix.

So, naturally, I fired all of them and asked Tony Soprano to make the problem go away. Rumor has it they're all buried in shallow graves in the New Jersey Meadowlands, near Giants Stadium… not too far from Jimmy Hoffa. So, what did I really do?

Since the total number of employees was too large to be manageable, I had each department elect/appoint one representative to participate in a team led by me: "The Exorcist." We stipulated that each faction would accept and embrace whatever their respective reps agreed to. I took on the role of facilitator, teed up the situation, added some structure and guard rails, and tasked the team with finding solutions that they (and I) could live with. Notice that I did not say perfect or ideal solutions. After much back and forth, some role reversals and getting to know each other better, they eventually became more flexible and open-minded. They undug their heels and collectively worked out acceptable approaches to the recurring issues.

Why is this relevant, you ask? Because, ultimately, these decisions took the form of less-than-perfect best practices (written by me), which went on through additional iterations, improving each time. Perhaps more importantly, we got the job done, and every person with skin in the game felt like he or she had a voice in the process and outcome.

I can't over-emphasize the importance of this broad participation and ultimate buy-in. After all, the individuals with the experience and knowledge developed the processes and rules of engagement. All I did was play Judge Judy and facilitate a constructive process to develop and articulate their best practices. Truth be told, they would probably say that I was more like Judge Roy Bean — the salon keeper and justice of the peace, aka "the hanging judge." Perhaps you remember how this factual, larger-than-life character described himself as the "Only Law West of the Pecos." I'll bet you're wondering if any of these team members went on to become corporate leaders or pillars of industry?

In full disclosure, perhaps I should also mention that, upon completion of this project, each of the participants subsequently re-

quired enrollment in lengthy psychological therapy, but eventually made full recoveries. Indeed, one is said to have developed superb basket-weaving skills while at the institution and another is still unable to make left turns. But what the hell… no plan is perfect!

One Bite at a Time

Like so many other endeavors in your business, as Joey Two Tons from Jersey City (Tony Soprano's cousin) said, "The journey of 1,000 miles begins with one freakin' step." Incidentally, some claim it was actually the Chinese philosopher Loa Tzu who said it, but you will appreciate that nobody wants to be the one to correct Joey and risk "sleeping with the fishes!" So, it may be best to just *forgetaboutit*.

Incidentally, if you've never been to metropolitan New Jersey, remember that the proper etiquette when meeting someone is *"Howw you duu in?"* The polite colloquial response is *"Howw YOUU duu in?* As is hopefully evident by now, having earned business degrees from two New Jersey universities — along with experience negotiating labor agreements with the NJ Teamsters and dealing with NJ longshoremen crews — I am a qualified interpreter, in case you need such services.

Irrespective of the source, why not apply Joey's wisdom to developing best practices for your business? With word processing software and video camera tools, we can construct a library and build upon it. Let's begin applying these principles.

Alternatives to Consider

The importance of buy-in notwithstanding, you may want to consider developing some draft best practices (BP) to jump-start your initiative. One approach is to release a draft BP document to the team and ask them to refine it. Start with something easy, such as how to answer the phone, which is one of the formatted examples you will find later in this article. The idea is to remove any anxiety that may exist among team members. Sometimes, when we are confronted with something unfamiliar, we prefer not to risk looking like we don't know what is appropriate, because we lack direct experience. Seeing one or two specimens (relax, nothing to do with DIY colon screening kits) can place team members at ease by removing the mystery.

You could elect to present a BP document that has some portions blank or incomplete so team members can complete it. You might even present several variations of verbiage and ask the team to select the preferred alternative, similar to multiple-choice test. Do whatever works best to engage the team and get moving. It's usually best not to ask team members to write BPs or present their ideas standing in front of a group. Avoid immediately shooting down ideas or suggestions, especially in the beginning. Let team members feel empowered and, if necessary, ask the team to stack rank the suggestions. If you're not familiar with the term "stack rank," it just means assigning some sort of alpha or numeric ranking or expression of desirability, such as A, B, C or 1, 2, 3 on a scale of 1-5, with 5 being the best, etc.

"When you are ready to get serious about developing your best practices, remember that you can either ram this best practices stuff down your employees' throats or engage them in the process."

To finalize the process, like a veteran sheep dog (yes, of course you can be the alpha, as long as you don't try to mark your territory around the office), guide the discussion by consolidating suggestions and offering refined verbiage that all participants can embrace as theirs. Remember, you can modify — and hopefully improve upon — these first-pass BP editions later on. Get the team enthusiastically engaging in the process and seeing how this makes sense, and then they will be ready to tackle the more complicated and difficult BPs later. Don't seek perfection, especially in the embryonic stages! Next, let's take a look at how to structure our best practices.

Structure and Format

Although there isn't any particular structure required for your best practices, they will be easier to develop and look more professional if you employ a logical format. Think about what we need and the questions we seek to answer.

- **Topic** - What does this BP pertain to?
- **Effective Date** - Self explanatory
- **Purpose** - What are we trying to accomplish?
- **Application** - Under what circumstances will this apply?
- **Process** - What are the sequential steps to be taken?

Let's use the simple phone-answering example we discussed earlier.

ABC COMPANY – BEST PRACTICES
Telephone Answering
Effective Date _____, 2021

Topic
Telephone answering

Effective Date
Clearly indicate whether this is an "initial" BP or "revised" BP (if so, what version?). Users must be able to ascertain which version is current. Some companies include an "issued date," usually because they release new/revised BPs in time to provide advance notice, prior to their effective dates.

Purpose
To ensure consistent answering of our incoming telephone calls in a professional manner

Application
All external calls received via ABC landlines. Does not apply to our intra-company calls (ABC employees answering internal or external phone calls from colleagues).

The Process
Answer incoming calls as promptly as possible in a friendly, welcoming voice, using the following greeting:
"Hello, you've reached ABC company. _____ speaking. How may I help you?"

An acceptable abbreviated alternative is:
"ABC Company, _____ speaking. How may I help you?"

If call volume prevents you from answering the incoming call within four rings, endeavor to place your current call on hold, clearly explaining this to the caller.

Pick up the new call and ask politely, "May I place you on hold for just a moment or call you back promptly?" If necessary, apologize, take the new caller's number and arrange to return the call. Return the call promptly or at the agreed upon time.

Conclusion

Hopefully, after reading this article, you are ready to subscribe to the merits of BPs. You should seriously consider introducing the best practices concept into your business. Sure, it requires some invested time up front (what worthwhile endeavor doesn't?), but you'll be glad you did it, and your employees will be too!

When you are ready to begin that journey, reread this article to refresh your memory. I promise that you won't get a visit from Tony Soprano! Engage your team members and create an atmosphere of empowerment where they feel ownership of the task at hand. Start small with something simple, such as the phone-answering example. Be a facilitator, not a dictator.

"Engineers are not the right people to develop a set of *final* assembly or installation instructions."

Once the team has begun to embrace the value of having best practices in your business, consider permitting each participant to suggest a topic that the team should work on. It might be something considered problematic or a topic known to have caused internal and/or external consternation. Remember, it may not matter that some team members are from different departments, because all input is welcome. Indeed, it's often those who are not close to the issue who can see it more clearly.

Of course, be that veteran sheep dog, keeping the effort on track, and be sure to avoid drifting into turf-related issues or intellectual quagmire. An important part of your job (as facilitator) is to pilot the vessel and make sure it remains on course.

Build out your installation or repair processes step by step, and where applicable, refer to any available relevant videos or create your own. Establish the best way and then figure out how to communicate it to those who need to know. But don't be afraid to update and improve upon it; better tools or techniques may be discovered. Use this information in your training and onboarding of new employees. Codify all this best practices stuff somewhere sensible such as in a binder, and consider copywriting it. There is no doubt that you can do this. Good luck.

The topic for our next article in this series will be "Demystifying Your Income Statement," where we'll explain and decode this important financial statement, without the accounting mumbo jumbo."

Noel Flynn is a degreed business management consultant with global senior leadership experience, including more than 20 years in manufacturing, wholesale distribution and consulting sectors of the security industry. Noel has been a senior executive, officer, board director and adviser to not-for-profit and for-profit companies in numerous industries worldwide. This includes being an ALOA board member since 2011, and he is also an ACE instructor, developing and teaching business management.

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All the Right Moves: **Spinning a Load**

This article series provides information on safety tips, tools and equipment for safe techs. **By Gene Gyure, CRL, CAI, GSAI**

THE IDEA FOR THIS SERIES OF ARTICLES CAME ABOUT A FEW MONTHS ago while trying to decide what my next article submission to *Safe & Vault Technology* or *Keynotes* would be. I kept seeing posts on Facebook and ClearStar about others' safe and vault moves that sometimes made me cringe from the lack of safety concerns. At the very least, I was left shaking my head.

So, I asked myself, "What can I do about it?" After thinking really hard about this question for several months, I finally came to the conclusion: absolutely nothing. I can't stop people from doing unsafe moves or from using the wrong equipment for a job, or from not doing a site survey prior to bidding the job or making up an equipment list. I also can't force people to understand their equipment or any of the many safety aspects of this industry. Excuses abound among those making the posts, but it all boils down to a lack of proper education — or in some cases, a lack of concern, because nothing bad has happened yet.

My fear is that another safe tech or locksmith will see some of these posts and, without a proper education on the techniques and equipment used, might attempt safe and vault moves that result in injury — or even worse, death. It is not unusual for me to hear about someone who lost a leg, foot, finger or even his life because of a slip in judgment regarding safety concerns. Mostly, I hear about this from members of the moving industry, but members of our industry are not immune to the same consequences. My case in point would be, for those who knew him, the late Bob Stabley.

My education in this field has come by way of learning from some of the very best in our industry, as well as personal experience. Who are some of the very best movers and riggers in the industry? In my opinion, they are Joe Henderson, Ed Stites, Frank Zykan, Bill Boughman's crew, Dave Richardson, Neil Messick, Dave Fullarton and, of course, Rolland Dicks. Some of these guys took the time to help me understand, while the others showed me by example. There are a lot more movers and riggers out there that I know, but these are the guys who have influenced me personally.

During the SAFETECH conventions for several years, SAVTA had presented a Safe Moving and Rigging class. This has usually been offered as a two-day version. There is so much information that needs to be covered that, in my opinion, the two-day class is necessary to cover as much as possible in the time available. It is my hope that this class might be revived for future SAFETECH conventions.

So, what am I going to submit in these articles? Safety, tools, specialty equipment, cribbing, trailers, straps, trucks, safety, pallet jacks, roll-a-lifts, stairs and elevators, safety, aluminum sheeting, packing materials, safety, floor protection and much, much more. I will talk about ways you should and shouldn't use certain equipment. There might also be interviews or references from others in the industry. The whole concept is to present a series of articles designed to help the beginner, as well as the intermediate, safe and vault mover become better and more conscientious movers and riggers. Oh, and did I mention there will be an emphasis on safety?

So, here we go.

Spinning a Load

Have you ever pulled a safe off your trailer or truck using a pallet jack and gotten it right up to where you need to go with it, only to find out that you have it sitting on the pallet jack the wrong direction? Now, before you can put the safe into place, you need to reorient the load to face the proper direction. How do you accomplish this without going through a bunch of steps and a lot of time? There is an easy way to do this; let me tell you about it.

"I kept seeing posts on Facebook and ClearStar about others' safe and vault moves that sometimes made me cringe from the lack of safety concerns."

First, let me highlight that safety is a concern at all times while moving any kind of safe, file cabinet, heavy load or whatever. It is recommended that you never perform any of these moves without a partner. Can these moves be done by yourself? Probably, but not safely. Always have someone assist you.

Side note: I have been blessed to have two very good assistants when it comes to safe moving. They both have listened and learned a lot from me through the years, and I can trust them to do a lot of moves without my supervision. Both of them are not small people, but to be fair, I have also had my vertically challenged daughter assist me on moves. So, the size of the person doing the move is not as much an issue as knowing the techniques to perform the move.

Back to our hypothetical safe. Let's say you need to have the door facing to your left as you set it in place. But, in your haste to remove it from your truck, you picked it up in the wrong direction — maybe with the door facing toward you. No problem. It's an easy fix.

Figure 1. This image shows the file cabinet and our selected block of wood.

For demonstration purposes, we will be using a fire-resistant file cabinet with a weight around 400 to 450 pounds. This could be just about any safe, file cabinet or heavy load up to about 500 or 600 pounds. I have even used this technique on safes as heavy as 2,200 pounds, but they were short and squat safes with a low center of gravity. I would not recommend this for a really tall and heavy safe. Remember, safety first.

Figure 2. This photo shows the placement of the block on the floor directly in front of the pallet jack with the load.

Figure 3. We see the pallet jack being driven over the block of wood. It is important to note that the block needs to be centered under the cabinet as much as possible. This allows for proper and safe balance, as we will demonstrate.

Figure 4. We are slowly releasing the pallet jack hydraulics to allow the cabinet to set on the block. When the pallet jack hydraulics are fully released, the block of wood will suspend the cabinet about ⅜" in the air above the pallet jack forks. It is at this point your assistant has the easy job of balancing the cabinet in place. The pallet jack will remain where it is, once again for safety reasons. If the load becomes off balance for any reason, the pallet jack will catch it before it becomes an issue.

Figure 5. As one person continues to balance the cabinet, the other person will slowly swivel the cabinet the desired direction. Here, we see the cabinet at a 45-degree angle to its previous position.

"Safety is a concern at all times while moving any kind of safe, file cabinet, heavy load or whatever."

This is a simple and effective method for repositioning a safe, file cabinet or heavy load. Don't use it for moving that 4,500-pound monstrosity in the corner of the jewelry store or that 3,600-pound AMSEC composite safe with the top and bottom doors. But, for a lot of smaller and lighter safes and cabinets, this is just one more technique in your arsenal for safe moving.

To recap a few items for safety:

1. Always leave your pallet jack under the load as you perform this technique.
2. Always center the block under the load.
3. Always have an assistant help balance the load.

Be safe out there. Remember, it is about "All the Right Moves."

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Figure 6

Figure 7

Figures 6 and 7. Simply continue to swivel the cabinet until it is in the desired position. Once you have the cabinet in position, simply jack the pallet jack up. Lift the cabinet off the block and proceed to your desired installation location.

NOT MASTER KEYING

Sometimes customers need to be talked out of master keying certain locks. **By Ralph Forrest-Ball**

It's no secret that my favorite area of locksmithing is master keying. Unfortunately, there are many situations where a customer wants a master-keyed lock, and it's the locksmith's job to talk them out of it. First, let's review some terminology, and then we'll jump right into my top-10 list of situations where master keying might be a bad idea.

Simply put, master keying is the art of making two different keys operate the same lock. Typically, one is the change key and the other is the master key, and we say the lock is "master keyed." Alternatively, locks that are intended to operate with just one key are called "single keyed," abbreviated as SKD. In rare cases, you might want to make more than one change key operate the same lock, which is called "cross keying."

An extreme example of this is maison keying, where the goal is to make the lock operate with every change key from the entire building. (The word "maison" means "house" in French.) Locksmiths sometimes get confused by the term "cross keying," thinking it means a mistake. That's not the case, as it's something you do on purpose. When it happens accidentally, that's called "key interchange."

The most common method for master keying pin-tumbler locks is split-pin master keying, which involves putting an extra pin (called a "master pin") between the bottom pin and driver pin. In rare cases, master pins may be stacked on top of each other, or the chamber might be left empty. Putting master pins in more than one chamber almost always enables additional incidental keys to operate.

We often take advantage of this to create "incidental master keys" in a three-level master key system (change key, master key and grand master key). A lock that's pinned to the change key and the grand master key will automatically operate with the incidental master key. Incidental keys work because every cut on the key is identical to a corresponding cut on one of the operating keys for that lock.

For example, suppose the grand master key A is 345612, and the change key AB6 is 363452. Notice that both keys start with a 3 and end with a 2.

Figure 1. Master keying weakens the security of residential-grade locks.

Figure 2. Locks on the perimeter of buildings are particularly vulnerable.

Positions like that — where the change key is identical to the top master key — are called "constants." Constants are good. Constants are your friends.

Now, consider a key cut to 345452. The first half of the key is identical to the grand master key, and the second half is identical to the change key. Such a key would operate the lock, whether we want it to or not. We can take advantage of this and use 345452 as the AB incidental master key.

Unfortunately, the existence of incidental keys greatly increases the chances for key interchange, which is why ANSI/BHMA A156.28 (the industry standard for master keying) specifies that locksmiths should minimize the incidental keys "by using the fewest possible master pins per cylinder." In other words, use as many constants as possible to reduce the likelihood of key interchange.

There are essentially three types of key interchange. First, a random key from outside the master key system might operate one of the locks because it's identical to one of the change keys, a master key or one of the incidental keys. Second, a key from inside the system might operate a lock (where it wasn't intended to) because it's identical to the change key for that lock, or a master key or an incidental key. Third, the lock might be manipulated by a key that wouldn't be expected to operate that lock but sometimes turns anyway. Manipulation is often called "key picking."

Using a bump key is another example of manipulation. Locks are generally not intended to operate with a key cut to 999999, but (sometimes) it turns. Key interchange by random outside keys, or by manipulation, is impossible to avoid entirely. But master keying tends to make it worse, and steps should be taken to minimize the risks. Key interchange by keys inside the system is unacceptable and must be eliminated. A properly designed master key system should have no internal key interchange.

When Master Keying Might Be a Bad Idea

Residential-Grade Locks

Residential locks (typically five-pin ANSI grade 3) generally start out as low security (see *Figure 1*). Master keying makes them worse. Master-keyed locks are easier to pick and bump. They jam more frequently and are more prone to key interchange. Since master keying decreases security, it's better to start from a position of strength. That means commercial-grade locks (typically six-pin ANSI grade 2, or better).

Exterior Doors or Padlocks

The perimeter of the building is particularly vulnerable (*Figure 2*). That's where intruders are able to attack the lock while still outside the building. Once they're inside, they might be motivated to hurry and get out fast, but while they're still outside, they may be able to take their time. This is especially true at the back door or any place that's poorly lit or not visible from the street. In the case of a padlock, they might be able to carry the lock away and work on it at their leisure.

Master-key systems can be hacked. This is an unavoidable consequence of split-pin master keying. Essentially, every lock that operates with the master key contains the information about what the cuts are on the master key. If you know the change key and exactly what pins are in the lock, you can deduce the bitting of the master key. Anyone with access to a master-keyed lock and its

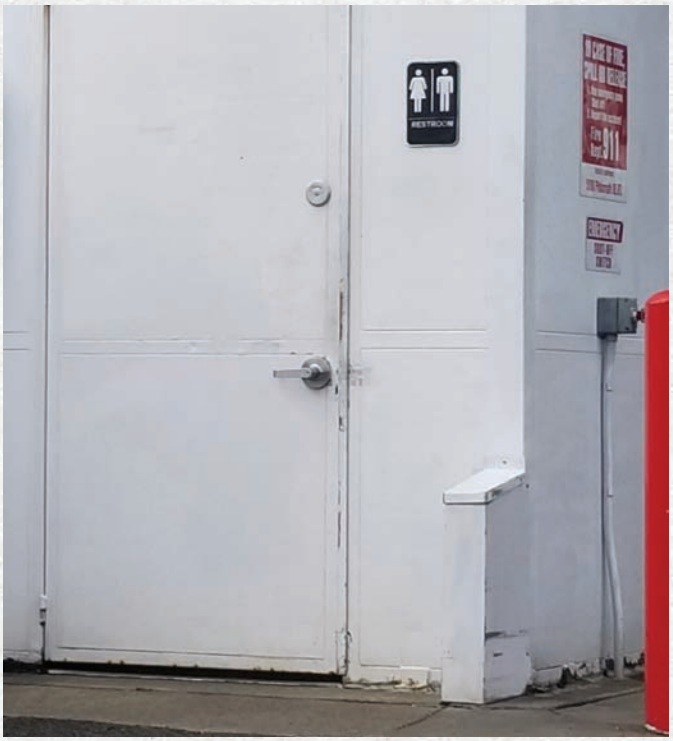


Figure 3. Bathroom doors that require a key are prime targets for the Dayton Method.

Figure 4. For office closets, one solution is to single key the closet but master key the office door while using the same change key.

change key can disassemble the lock and measure the pins.

Even worse, there's a rather straightforward method for hacking the system that doesn't even require disassembling any locks. It's called the Dayton Method, and yes, it's on the internet.

It generally requires a copy of a change key, a small supply of key blanks and a means for cutting keys by code (preferably a code machine or possibly a hand file). With some planning and patience, an intruder just needs to walk up to the door, test a key and walk away. Lather, rinse, repeat. After about a dozen tests, they'll figure out the master key. Afterward, they can enter the building and go anywhere they please without having to stop to pick each lock along the way.

One way to defeat the Dayton Method is to use patented keyways. If the attacker can't obtain key blanks, they are dead in the water. However, patents don't physically stop someone from using a 3D printer. Also, patents eventually expire. A motivated and educated attacker is difficult to stop.

And that brings me to an important side note about troublemakers. Think about the people who typically use the building. Are they generally trustworthy and well behaved? Or are they mischievous and destructive? Engineers like to take things apart. Teenagers have a knack for breaking things. And "lock sport" is a growing hobby whose enthusiasts enjoy picking or bypassing locks. If people like this will be present in the building, that's an argument against master keying.

In addition to the Dayton Method, it's sometimes possible to hack a master-key system even without a supply of key blanks or a code machine. An attacker who has been issued a change key might file down their key, attempting to match the cuts on the master key. This is why it's a good idea to include a shallow cut in a progressed position when selecting the top master key. If the master key is shallower than the change key, filing will never get you there. However, it still may be possible to file down in some of the other positions, creating an incidental master key. This could allow the attacker to access large sections of the building, if not all of it.

Bathrooms

Just like exterior doors or padlocks, a bathroom is a prime target for the Dayton Method (*Figure 3*). A visitor may ask to borrow the bathroom key, at which point they can duplicate the key or just decode the bitting of the key and make another one later. If they can acquire a handful of key blanks, this visitor could come back on other days, test the keys and hack the system. You can prevent this attack by single keying the bathroom door lock so the master key doesn't operate it.

Remember, bathrooms are generally low-security environments. Most likely,

the only reason the customer wanted a keyed lock there at all (instead of a privacy function) is so visitors need to ask permission to use the bathroom. However, the cleaning crew (which usually carries a master key) needs access to the bathroom. With this in mind, the locksmith might choose to master key the bathroom door lock but leave two or three chambers empty. This defeats the Dayton Method because there may be hundreds or even thousands of different keys that operate that lock, and there's no easy way to tell which one of them is the master key.

Closets

Suppose there's a closet inside your office. Just because the cleaning crew needs to get into your office at night doesn't mean they need to get into your closet too. It might be nice to have a place where you can put things like your laptop or personal items (*Figure 4*). An easy solution is to master key the outer office door but single key the closet, while still using the same change key.

For example, if the master key is AA and the change key is 23AA, the locksmith can pin the office door to use both 23AA and AA but pin the closet inside the office to use 23AA only. In that situation, the keying schedule would specify 23AA for the outer office door, which, by default, means the AA master operates there too, and 23AA (NMK) for the closet inside. The "NMK" stands for not master keyed. That's how you indicate that there are two versions of the 23AA lock: one master keyed and one not master keyed.

Hallways

Often, customers will ask locksmiths to make the lock on the hallway door operate with all the change keys from that entire hallway. This might be dozens of keys. This is an example of cross keying (possibly even maison keying), and it should not be taken lightly. Pinning a lock to operate with multiple change keys is easy. The tricky part is making it work only with those change keys and not the other change keys from elsewhere in the building (or old change keys that are no longer in use).

In some cases, it may be impossible to cross key the lock without creating key interchange. The customer likely won't understand this because they think master key systems are like electronic access control, where you can easily program in or out individual users.

Generally, it's more secure to give the hallway its own change key or, better yet, single key the lock — especially if the hallway has an exterior door. Because many people use that hallway, be prepared to issue multiple copies of this hallway key and rekey that hallway door on a recurring basis (maybe once per year).

There is an exception: If the hallway itself doesn't need much security, it might be acceptable to cross key the lock, perhaps even leaving most of the chambers empty. Maybe there's nothing worth protecting in that hallway. But be sure to inform the customer that such a lock would operate with not only all the keys in use but also all the discontinued keys — and even some other random outside keys.

Speaking of access control, that leads me to the next topic.

Figure 5. Single key the override cylinder so the master key won't operate here.

Bypass or Override

Electronic access control systems frequently incorporate a mechanical means to bypass the electronic security in case of power loss or malfunction. This is especially true if it's a standalone numeric keypad right there on the door (*Figure 5*). The customer often wants to assign each person a unique code because they want the lock to keep track of which code was used at what time on which day. We call this the "audit trail" feature, and it's

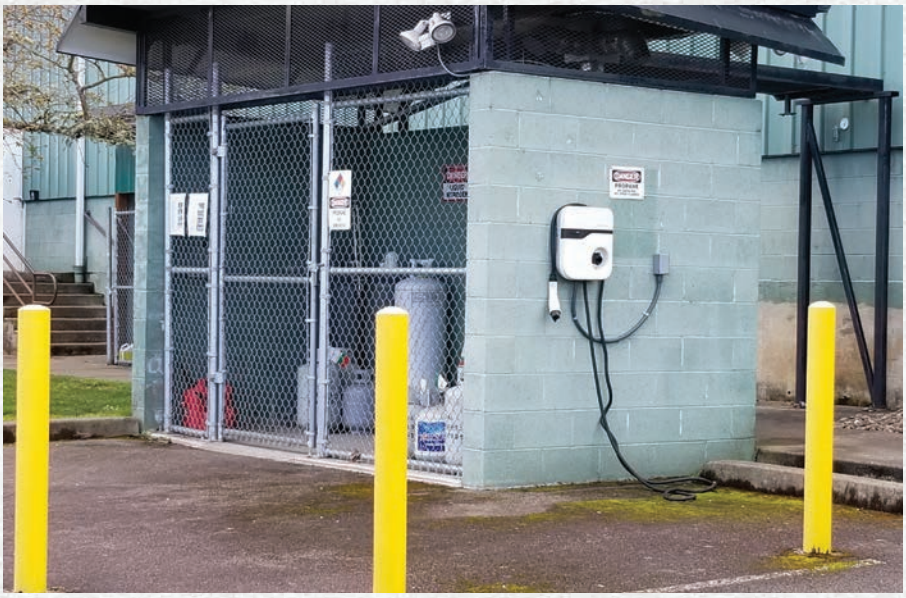


Figure 6. Areas with dangerous machines or chemicals or those with high voltage should have single keyed locks to prevent unneeded access.

usually not available on less expensive (or residential-grade) electronic locks. The more expensive locks (which usually have an audit trail) are available with or without a key override. You specify which one you want when you order the lock.

But think about what happens when you master key the override cylinder. Suppose this is on a storeroom door. If some stock items are missing, we can consult the audit trail. It tells us which codes were used recently. But it gives us no information whatsoever about who might have used a key to bypass the lock. Who has keys that will operate this cylinder? If it's master keyed, who has access to the master key? This defeats the whole purpose of the audit trail!

If the customer is serious about using the audit trail, the mechanical override key should be for emergencies only, and the customer should severely limit who has access to the key. Single key the lock so the master key won't operate here. We'll assign this cylinder its own special key. We won't give it an ordinary label like 24AA. We'll give it a special label, SKD1, which indicates it's single keyed.

Unlike NMK, this is a situation where this particular key never works with the top master key. That's why they don't have ordinary key symbols. If you had several of these, the first would be SKD1, the second SKD2, etc. Because these keys never work with the master, they could be on an entirely different keyway.

For example, if most of the building is Schlage, you might use Sargent for the SKD locks. This helps prevent internal key interchange. Clearly, that wouldn't work if you wanted the key to work with the master in some places but not others. If your SKD keys have a different keyway, you can just use random keys for those locks (but still record them on the bitting list). Alternatively, if you choose to use the same keyway for the SKD locks as the rest of the master key system, be sure to pick the bittings for the SKD locks from the bitting list and mark them as in use, just like you would any other change key.

Maintenance and IT

Just like the cleaning crew doesn't need to be in your closet, they don't need to be in the room where the company's computer server is kept. The last thing you need is for someone to spill a bottle of bleach on a $10,000 machine. Computers often need to be kept cold and supplied with power 24/7. Master keying the door to the server room makes it too easy for someone to unplug the server (because they need the outlet for a vacuum cleaner), or accidentally leave the door open, letting out all the cold air. Single key this lock, even if the rest of the building is master keyed. Only the IT crew needs to carry this key.

The same goes for rooms that contain dangerous machines or chemicals, or those that are high voltage (*Figure 6*). Allowing the cleaning crew or others to access these areas creates unnecessary liability. Just like the computer sever room, single key this lock and give the key to only the people who actually need it.

Keep in mind that this doesn't mean all such doors must be keyed different. You might have three janitor's closets, all of which use the same SKD3 key, and two mechanical rooms, both of which use the same SKD4 key. These locks are single keyed and they are in keyed-alike groups.

A System With No Documentation

Suppose you get a call at 4 p.m. on a Friday afternoon from the manager of an insurance agency. They just fired one of their employees and want that person's office door rekeyed right away. You arrive at 4:30 p.m., disassemble the lock cylinder and discover that it has master pins in it. You talk to the manager, who replies, "Yes, the building is master keyed. I have the master right here. Oh, by the way, I want the new office key to still work with my master key." This would be the perfect time to consult the bitting list, which shows the bittings of all the keys in the system. Look at keys that are in use, keys used in the past and (most importantly) keys that are available for future use.

Figure 7. When the customer doesn't have the bitting list available, single key the lock.

Figure 8. Areas where valuables, such as medications in a healthcare facility, are kept should not be master keyed, according to the author.

But, this master key system isn't yours, and you don't have the bitting list (*Figure 7*). So you ask the manager if they have a copy of the bitting list. They stare at you blankly. You ask if they have any documentation at all for their master key system. The manager says, "No, that would be in the hands of the locksmith who installed all our locks five years ago. I tried calling them at 3 o'clock, and they didn't answer the phone. That's why I called you."

Now, you have a big problem. Without seeing the bitting list, you don't know what bittings are available. If you select a random key and try to use that as a change key, you run a serious risk of creating internal key interchange. That is unacceptable. The ALOA Technical Standards have something to say about this situation.

Master Key System Integrity: *No attempt will be made to expand any master keyed system without first obtaining a valid key bitting array and list of all key bittings currently in use. If this is not possible, the lock shall be keyed SKD or a new master key system generated.*

You could try again to contact the locksmith who maintains this master key system. However, even if you get them on the phone, they might not be eager to share the information with you. And, since it's 4:30 p.m. on a Friday afternoon, generating a whole new master key system isn't much of an option.

That leaves the SKD option: single key the lock. Pick a new random key, pin the lock to that key only, and forget about the master key. This at least accomplishes the goal of preventing the fired employee from entering their office over the weekend. There is still a tiny risk of key interchange, but it's no worse than the risk we take every time we rekey an ordinary lock. On Monday morning, you can contact the other locksmith to explain what happened. Then they can go over and rekey the lock again, using a change key from the bitting list, and get it back into the master key system.

There is a last resort option, which is to obtain the bitting list by reverse engineering the system. Often, this is just as time consuming as creating and installing a whole new master key system. But there are times when it might be a better option, such as when the individual users are hard to reach and the customer is motivated to keep as many locks as possible unchanged. This is a topic for another day.

Where Valuables Are Kept

Some businesses keep large amounts of cash on hand overnight. A thrift store might have jewelry. An assisted living facility might keep medications locked up (*Figure 8*). All of these are examples where the additional risks caused by master keying usually outweigh the benefits of convenience. This is a prime example where one particular door in a master key system should be single keyed. In fact, you may want to put a high-security lock on that door. Speaking of valuables...

Sleeping Areas

Avoid master keying residences. Master keying an office building presents a risk. Someone could defeat one of the locks (or hack the system). What happens once the intruder is inside? They might steal a laptop, for example. You can replace a laptop. If there's a human being sleeping behind that door, that person could

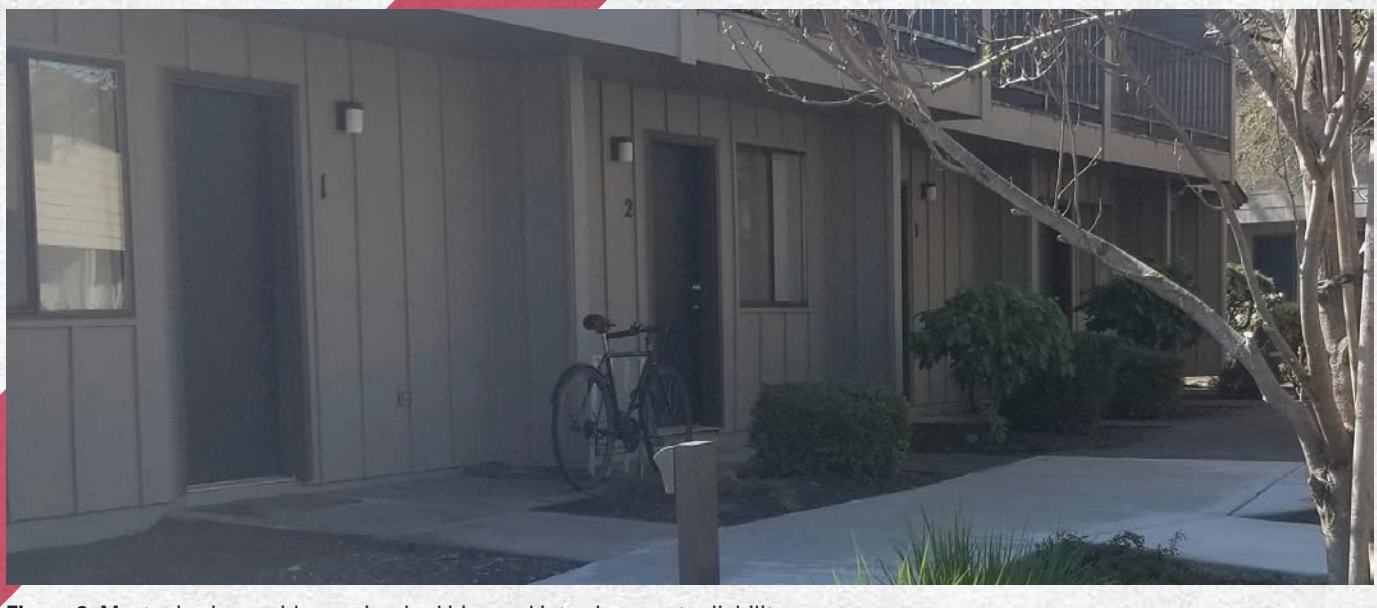


Figure 9. Master keying residences is a bad idea and introduces extra liability.

get assaulted or murdered. You can't replace a human being. Just putting it in monetary terms, a lawsuit involving stolen office machines could be several thousand dollars, but a lawsuit involving the death of a human being could be several million dollars. Usually, it's not worth the risk.

There are some exceptions to this. If each sleeping unit has two locks on the door, you could master key one of them and single key the other. For example, all the knobs in an apartment building might be master keyed while all the deadbolts are single keyed. Each tenant has a change key that operates their knob and their deadbolt. But the master key only gets you in if the deadbolt has been left unlocked. When the maintenance crew needs access to the apartments, they instruct the tenants to leave their deadbolts unlocked that day.

Another exception is sleeping units where there is a compelling reason for needing quick access in an emergency. One example is an assisted living facility. When a resident has a medical emergency, the staff would be glad to have a master key that gets them in quickly without having to search for the right key on a huge key ring. Another example is a dormitory that periodically conducts fire drills or surprise health and safety inspections. But what about an ordinary apartment building, where there is no compelling reason for a master key? What if building owners are dead set on the idea of a master key system, and you can't talkthem out of it?

Unfortunately, if you flatly refuse to take the job, the customer may just shop around and find another locksmith willing to do it. Even worse, that locksmith might be poorly trained and use bad methods. They might use the shoebox method, where change keys are chosen randomly, and there's no way to prevent internal key interchange. They might use total position progression, putting master pins in every chamber, despite the industry standard of minimizing the number of incidental keys by minimizing the number of master pins. If it comes down to having a well-designed master key system built (reluctantly) by a well-trained locksmith, or having a poorly designed master key system built by an amateur... the first option might be better.

But first, try to convince the owners of the apartment building that master keying residences is a bad idea. Inform them that master key systems can be hacked. Remind the customer that human life is more valuable than property. Offer to sell them a key-storage cabinet. At the very least, you should try to convince the owners to replace any residential-grade locks with commercial-grade before the master keying begins. And, of course, remind the customer that master keying decreases security.

If you are well versed in the art of master keying, you might feel eager to put your knowledge to good use. But, in situations like those listed here, it might be wiser to leave the locks single keyed.

Ralph Forrest-Ball was a math teacher for 12 years before becoming a full-time locksmith. He joined ALOA in 1997 and earned the CML credential in 2009. From 2009 to 2019, he was the owner of Emerald City Locksmith in Eugene, OR, and he was the winner of ALOA's Best Shop contest in 2011. He currently works part-time as a consultant in Corvallis, OR.

FITTING KEYS TO A FIVE-LEVER SCHRODER LOCK

Thomas Latané works with an antique lock and old keys to create a functional set of keys.

THIS LOCK WAS BROUGHT TO ME IN NEED OF A KEY (*SEE FIGURE 1*). The owner and I speculated that it was made for a safe or a cell door because it could be opened from one side only. While reading about its history, I learned this company extensively manufactured locks for jails, so it likely was for a cell door.

The customer had found a couple old cast and drilled keys that fit the keyhole and center pin but had bits too small to be modified. The front and back plates of the case are wrought iron, as is the bolt. The walls of the case — which include some interior structure — are cast iron, and the five levers are cast brass.

The bolt was stamped with the manufacturer's name: "SHRODER LOCK CO." (*Figure 2*). The lines across the end of the bolt were created by stacking sections of thinner bar and forge welding them to build up the bulk desired for the end of the bolt. Had the smiths started with a wrought iron bar the size of the heavy end of the bolt and forged such an abrupt transition to reduce the rest of the bar to the thickness necessary to make space for the five levers, the material would have been stressed — so stressed that it would have been in danger of breaking at the shoulder. If the piece made it through production without breaking, it perhaps could have broken sometime in the future.

There is a single rivet that held the stack of pieces in place while being heated for the weld. Another approach, seen

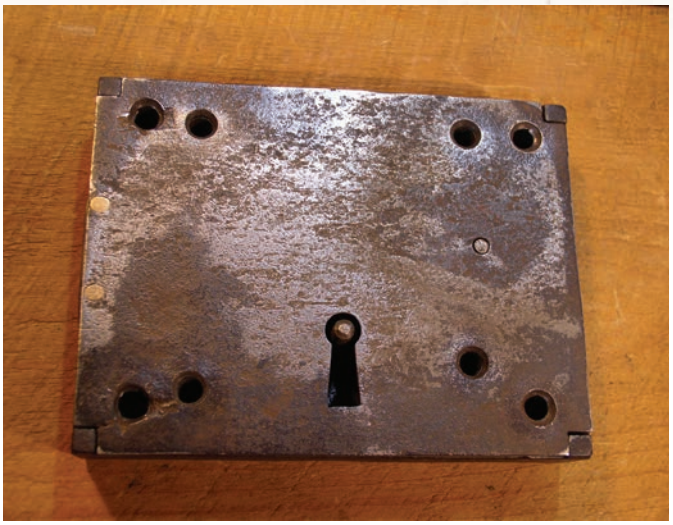


Figure 1. The customer suggested the lock was from a safe or a jail cell.

Figure 2. The bolt was stamped with the manufacturer's name: "SHRODER LOCK CO."

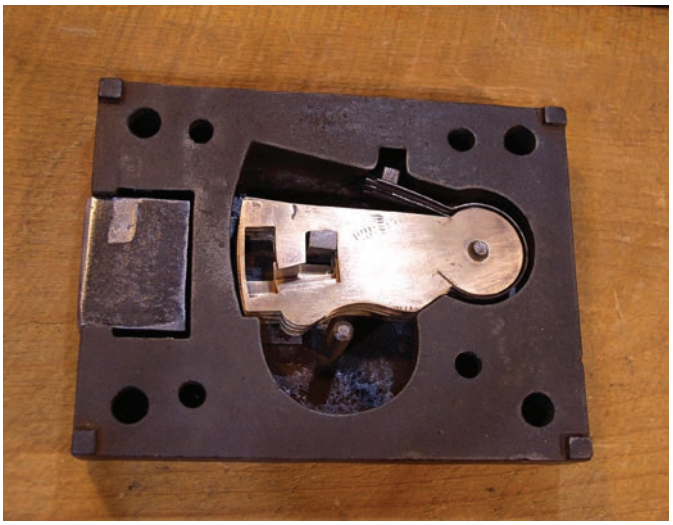


Figure 3. The front plate of the lock has been removed to reveal the casting surrounding the stack of levers on top of the bolt.

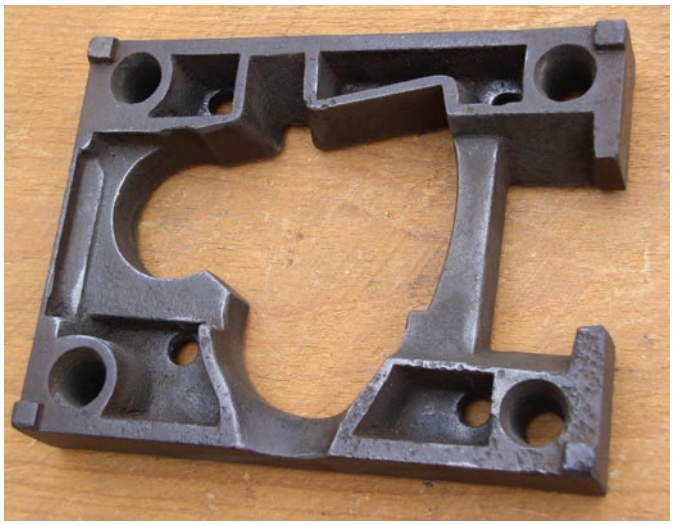


Figure 4. The hollow spaces reduce the weight and require less cast iron for production.

in earlier locks, was to give the end of the bar an accordion fold to pile up material to be welded. Though no rivet was required, a little more skill was necessary for this process.

A Look Inside

The front plate of the lock has been removed (*Figure 3*) to reveal the casting surrounding the stack of levers on top of the bolt. The levers are mounted on the back plate. They must be lined up correctly — when lifted by the bit of the key — for the gate in each to allow the post that's anchored to the bolt to pass through. The simpler tumblers in earlier locks only required that the key lift them out of the way before the bolt could be drawn. The lever visible on top of the stack will be raised the highest by the key. The rest of the levers, like those in *Figure 7*, have channels that extend beyond the gates to catch on the post if lifted too high, or if the levers were not lifted enough.

The cast iron section has been removed and turned over to show the hollow spaces (*Figure 4*). These reduce the weight and require less cast iron for production. On what would be the bottom edge of the lock when installed, there is a beveled opening. It's too small for a finger but large enough to allow dust, insect debris or seeds deposited through the keyhole by rodents to fall out of the case.

The levers are stacked on a pin secured to the case back (*Figure 5*). There is a slot cut in the bolt, allowing the bolt to slide past the pin while the pin helps guide the bolt's

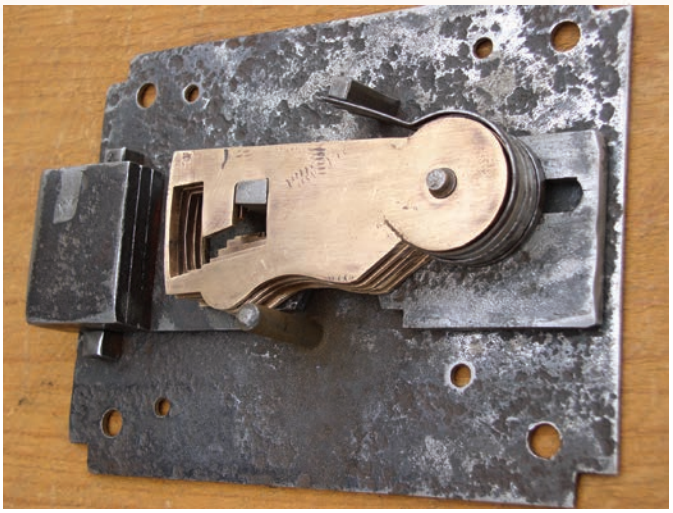


Figure 5. The levers are stacked on a pin secured to the case back.

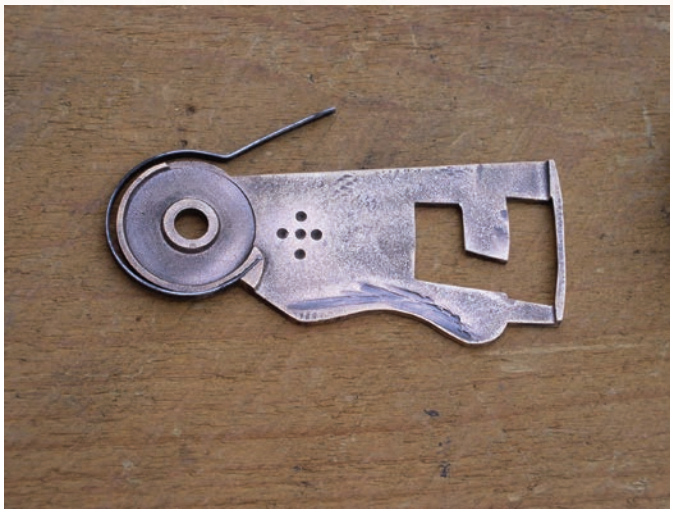


Figure 6. This image shows the back of the top lever.

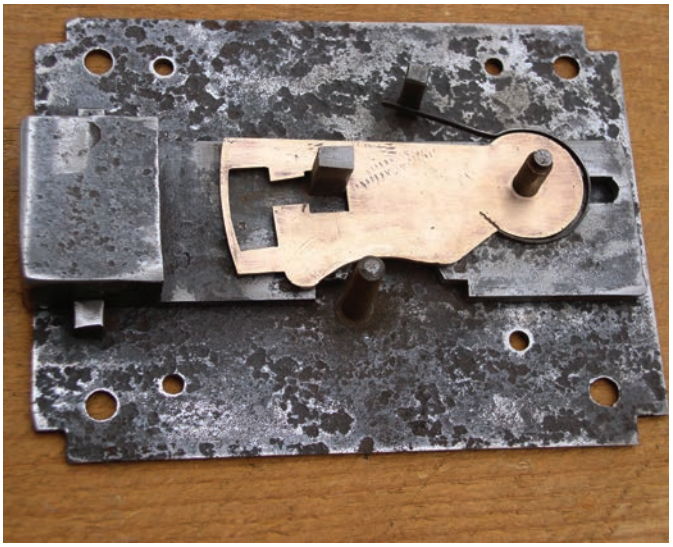


Figure 7. All but one of the levers have been removed.

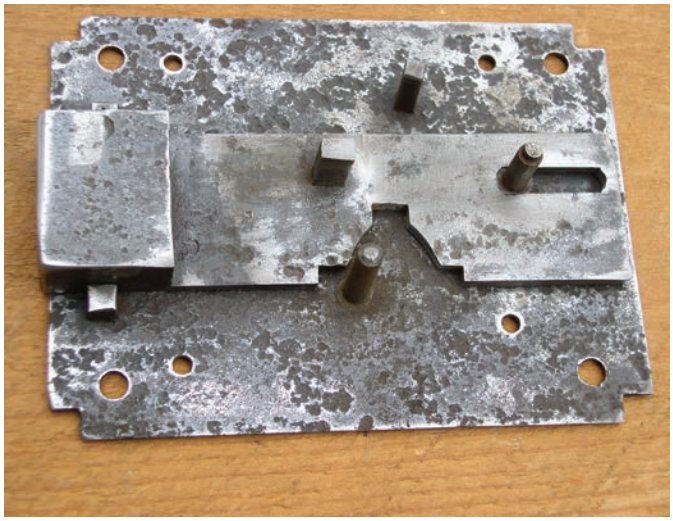


Figure 8. Everything has been removed from the back plate except the bolt.

travel. The springs on the levers are braced against another post on the back plate.

Figure 6 shows the back of the top lever. The thicker material on the edges of the round section and the opposite end reduce the contact friction between levers. Each one is distinguished by the number of dots cast into its back. The brass around the spring has been pinched against the steel to hold the spring in place. Every lever has a number of dents made with a fuller parallel to the edge that contacts the key. This spread the brass toward the edge and was probably done sometime in the life of the lock to make up for wear over the years.

All but one of the levers have been removed in *Figure 7*. You can see the notch to catch on the post if the lever is raised too high. Two posts that help guide the bolt in its travel can be seen near the heavy end of the bolt.

In *Figure 8*, everything has been removed from the back plate except the bolt. The slot allowing the bolt to slide past the lever pivot pin can be clearly seen and so can the notch in the bolt that receives the bit of the key.

The Key

The old key has had steel for a new bit brazed on opposite the old bit (*Figure 9*). The edge of the new bit was filed to create a saddle that matched the curve of the key stem. The parts were wired together and laid in the coals in the forge, where they were heated until small pieces of brass sheet melted and flowed under a coating of borax flux.

I sawed off the old bit and filed the stem to remove its remnants and brass left on the surface (*Figure 10*). The lever positions have been marked on the bit,

Figure 9. The old key has had steel for a new bit brazed on opposite the old bit.

Figure 10. The old bit has been sawed off, and the stem has been filed.

Figure 11. The stem of the key had been flattened on two sides, thereby removing some of the ornamental banding.

Figure 12. The second key had a broken bow that had been unevenly reattached with poor gas welds, so a new bow was made.

and cutting has begun. After the bulk of waste was removed with a hacksaw, each notch was filed to fit its corresponding lever. I started with the first lever against the bolt and — when that lever was lifted the right amount to line the gate up with the post — added another lever and filed the bit to raise that one the right amount.

Somehow, the stem of the key had been flattened on two sides, thereby removing some of the ornamental banding (*Figure 11*). This has been filed some to bring back the design, but not enough to round off the stem again. The completed key was warmed and treated with a browning solution to create a rust patina. It was then coated with a hot wax and linseed oil mixture containing iron oxides.

The second key (*Figure 12*) had a broken bow that had been unevenly reattached with poor gas welds, so a new bow was made. There were defects in the stem that had been brazed by someone in the past, but the new bit went on well.

Tom Latané grew up in Baltimore, Maryland where he constructed a blacksmith forge in his parents' backyard in the early 1970s. He and his wife, tinsmith Catherine, have operated a shop in Pepin, WI, since 1983. There, along with forging lighting and other hardware using historic hand techniques, Tom forges and files keys for old locks and produces new padlocks, door locks and chest locks.

A Panic Bar Trim Conversion

Tony Wiersielis, CPL, CFDI, walks you through the conversion and some micro-adjustments to rod length and offers some storage tips.

This month, I've got several things, starting with a conversion job in which we had to replace a non-fire-rated PHI concealed vertical rod panic bar trim with one made by Securitech. This came about because of an error by the architect and the contractor who installed the hardware. I'm also going to explain the micro-adjustments you can make to the length of the rods on this type of panic bar — something that's often overlooked. Finally, I'll show you a new Veto Pro Pac item I just installed in my van and revisit a trick for storing tools.

Figure 1. A PHI MLR concealed vertical rod panic device is shown.

The Conversion: Why and How

The problem started with *Figure 1*. That's a PHI MLR concealed vertical rod panic device. For the uninitiated, MLR stands for motorized latch retraction. There's a motor inside the bar instead of a solenoid, which, in my humble opinion, is a step up in many ways. The wiring passes through a concealed door loop and into the hinge side of the bar. This was specified by the architect and installed by the contractor.

If you look closely at *Figure 1*, you'll notice carpet on the other side of the door through the glass, and at the bottom left, you'll see a patch of grass below the bar. This door leads out of an enclosed, open-air atrium and into a hallway of the school. Herein lies the issue: The push side of the bar is exposed to the elements, which is not a good thing for an electrified bar. This was installed without anybody noticing the possible issues.

The answer was to remove the MLR unit from the bar altogether and replace the trim with one that was electrified. The new trim would be on the inside of the building, avoiding any weather issues. *Figures 2* and *3* show the new Securitech trim, inside and out.

This trim is designed to align exactly with the mounting holes on a PHI panic bar, the same as a PHI trim. This was to be activated by a keypad on the inside of the door. The idea was to not allow

Figure 2

Figure 3

Figures 2 and 3. You can see the new Securitech trim, inside and out.

Figure 4

Figures 4 and 5. These images show the existing trim from both sides.

Figure 5

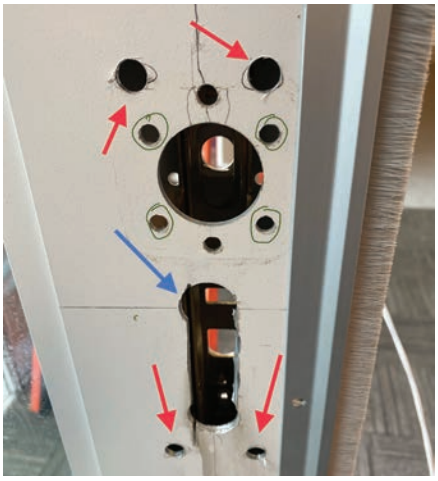


Figure 6. The author added the top and bottom two holes (red arrows) to match the studs on the new trim, and he cut the oval-shaped hole (blue arrow) for the finger lift.

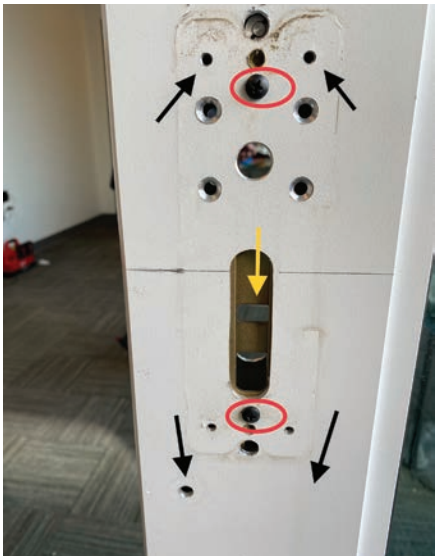


Figure 7. The black arrows point to three of the tapped mounting holes.

students into the atrium without a teacher to punch in the code, but to always allow them to get out of the space.

Figures 4 and *5* show the existing trim from both sides. This was the first time I'd seen this particular type of trim, and a simple pull handle accompanied it. You'll see later how we filled in the holes left behind by the removal of the handles.

Figure 6 shows how we modified the prep to accommodate the new trim. We added the top and bottom two holes (red arrows) to match the studs on the new trim, and we also cut the oval-shaped hole (blue arrow) for the finger lift. That was done by using a ¾" hole saw at the top and bottom and my 3" cutoff tool to remove the waste. The green circles are the holes for the cylinder trim I showed you earlier.

Figure 7 shows the panic bar side of the door. Notice the outline of the head of the bar. The black arrows point to the tapped mounting holes, or at least to three of them; one arrow points to where there should have been another hole. Within the red circles are the black screws that

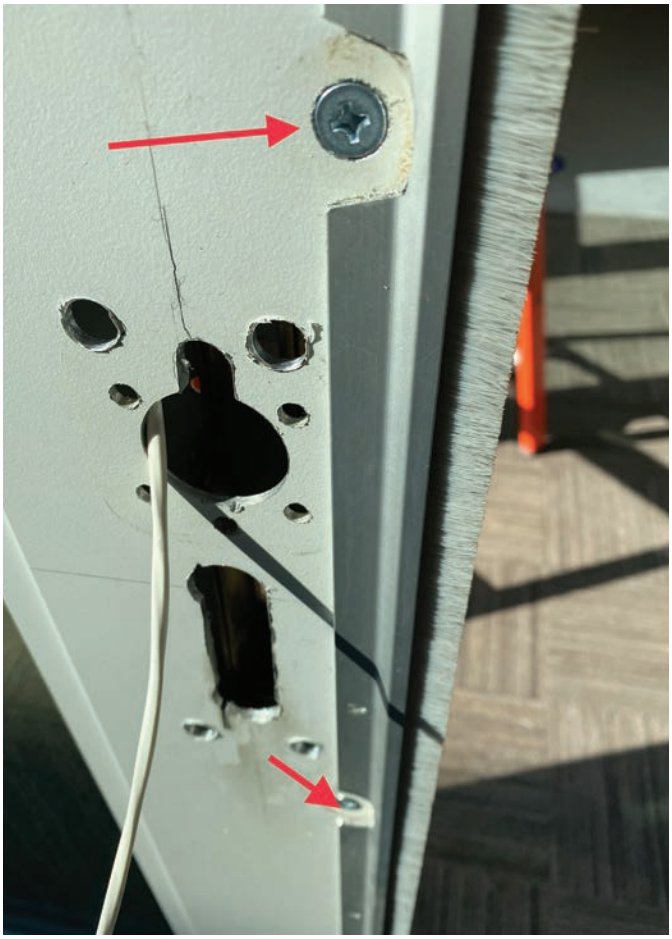


Figure 8. The author drilled a hole through both vertical tubes and ran and secured the wire along the top channel and dropped it down to the prep. He also countersunk ¼-20 flathead screws (red arrows).

Figure 9. The author screwed the screws into the sexbolts (red arrows).

hold the internal rod assembly in place. The yellow arrow is pointing to it within the oval cutout. Notice that the cutout was precut at the factory on this side of the door for the finger lift of the bar itself. We had to cut that hole on the trim side of the door because the old trim was only a cylinder and had no finger lift.

Dealing With the Electronics

Our next issue was that the electronics were now contained in the new trim at the head of the bar and the wires came into the tail end of the bar. We pulled out the existing wire, spliced another length to it and ran it up the aluminum tube on the hinge side. We had to drill a hole through both vertical tubes, run and secure the wire along the top channel and drop it down to the prep, as you see in *Figure 8*. Remember the pull handles I told you about earlier? We countersunk ¼-20 flathead screws (red arrows in *Figure 8*) on this side of the door and screwed them into the sexbolts you see in *Figure 9* (also red arrows).

We had one other issue to overcome: The finger lift on the trim was lifting higher than it should have, causing the top rod to not work properly. We decided to cut off some of the finger lift (*Figure 10*) to solve the issue, and it worked. *Figure 10* shows the completed trims installed.

Here's a tip: The doors we were working on had magnets in the top rail that held open contacts on the frame. When the doors opened, the contacts closed, triggering an alarm after a delay. The school knew we were there, but the alarm was annoying. So we taped a small magnet over the frame contact to silence it while we worked on the open door. We had to remove it any time we needed to close the door, but it beats a constant alarm. You would do well to keep two magnets on your truck for this purpose.

Writing the above paragraph reminded me to remind you about ladder safety. Make sure you follow the rules, but remember that bad things can happen no matter what you do. *Figure 11* shows my left ankle as it is today after one of the

Figure 10. The completed trims are installed.

Figure 11. The author suffered injuries after falling off the second step of a 4-foot ladder. Important reminder: Always **practice ladder safety!**

Figure 12. There should be two holes drilled above and below the head of the bar to access a pair of micro-adjustment screws.

"The push side of the bar is exposed to the elements, which is not a good thing for an electrified bar."

screws was removed. I was installing a magnet for a contact in the top rail of an aluminum door when that happened. I was on the second step of a four-foot ladder. But, I digress.

Figure 13. The arrow is pointing to the bottom rod screw.

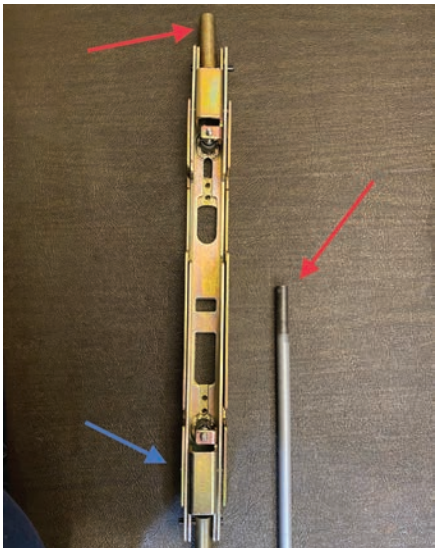


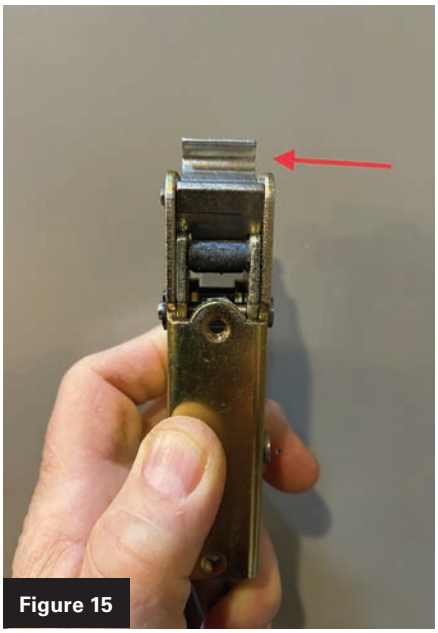
Figure 14. The threaded part of the rod (red arrow on the right) screws into the carriage where you see the second red arrow. The blue arrow points to the bottom of the carriage.

Setup and Micro-adjustments

As part of the installation of this concealed vertical rod device, there are supposed to be two holes drilled above and below the head of the bar to access a pair of micro-adjustment screws. One is shown (black arrow) in *Figure 12* for the top rod. *Figure 13* shows the arrow pointing to the bottom rod screw. The trouble here was that nobody drilled those holes when they installed it. We had to do it.

Before I go further, let me explain the initial setup adjustments when installing PHI concealed vertical rods. I'll get back to the micro-adjustments shortly.

Figure 14 shows the part of the concealed rod carriage assembly that the trim and panic bar interact with. The threaded part of the rod (red arrow) screws into the carriage where you see the second red arrow. This applies to top and bottom rods. The blue arrow points to the



Figures 15 and 16. As the door closes, the trigger on the top latch (*Figure 15*) hits the strike, and it flips the latch upward into the locked position (*Figure 16*).

Figure 17. A side view of the latch is shown.

Figure 18. A screwdriver blade is depressing a spring-loaded pin that prevents the screw from moving if not depressed.

Figure 19. The lowest point of adjustment is shown.

word "bottom," as in bottom of the carriage. There's about a ¾" range of adjustment available when the rods are being installed. You adjust the rod length — top or bottom — by screwing it in or out of the carriage.

How it works: As the door closes, the trigger on the top latch (*Figure 15*) hits the strike, and it flips the latch upward into the locked position (*Figure 16*). *Figure 17* shows a side view of the latch. Gravity pulls down the top rod and the moving part of the carriage assembly, and the bottom rod (if used) drops the bottom bolt into a hole in the saddle or floor. When the bar is pushed in or the trim lever is turned, the carriage lifts the top rod up until the latch flips down and holds in the open position, with the trigger back in its original state.

If the top rod is too long, the top latch won't lock completely — though it may appear to — but can open if someone pulls on the door with enough force. If it's too short, the top latch won't go completely into its fully unlocked position and might go back to the locked position with the door open. In that case, the door won't be able to close. You want to check your work and make sure that you can't pull the door open and that the top latch doesn't pop into the locked position at the wrong time.

I explained all that because you'll often find these scenarios when non-locksmiths install this hardware, and you might have to fix it. You'll find it's not overly difficult to get it right during installation. To shorten or lengthen an installed rod, remove the two screws holding the latch, keeping a grip on it, and rotate it as many full turns as you need. Put the screws back in and check that everything works properly.

The micro-adjustment screws you saw back in *Figures 12* and *13* allow you to

"We had to cut that hole on the trim side of the door because the old trim was only a cylinder and had no finger lift."

adjust the rod lengths slightly without needing to use a ladder or unscrew anything, which makes your life easier. The first time I saw one of these carriage assemblies outside of a door, I was struck by the way the micro screws worked. *Figures 18-23* show how they work. For clarity, the carriage is horizontal, not vertical as it would be on a door.

Figure 18 shows a screwdriver blade depressing a spring-loaded pin that prevents the screw from moving if not depressed. *Figure 19* shows the lowest point of adjustment, or the shortest rod. Pay attention to the slanted slot on the inner piece with the roll pin through it. *Figure 20* shows the highest point of adjustment to the longest rod. *Figure 21* shows the back of the mechanism. Of course, the bottom rod adjustment is the reverse of the top. The non-slanted slot shows that you're getting about ½" of adjustment using these screws.

Figures 22 and *23* show what the carriage looks like when locked and unlocked. Look at the two screw holes to see the difference. The carriage is down when locked and up when unlocked. One more thing: The cover on the head of the bar conceals these screws. Once you take that off, you'll only see one screw at a time; one is visible when the bar is locked, and the other can be seen when it's unlocked.

Figure 20. This image displays the highest point of adjustment to the longest rod.

Figure 21. You're looking at the back of the mechanism here.

Figures 22 and 23. These images show what the carriage looks like when locked and unlocked.

Figure 24. The author keeps tools that he needs but doesn't use everyday in these zipper bags from Home Depot.

Figures 25 and 26. This round steel rod from IKEA costs $4. The author screwed it into a channel in his truck (*Figure 26*).

Figure 27. The new KP-XL from Veto Pro Pac has 19 pockets and plenty of grommets for securing it to a wall, truck doors or cages.

Figure 28

Figure 29

Figures 28 and 29. These images show how they made one of these Lockwood "pot-type" closers work like a modern-day parallel arm closer on an out-swinging door.

Some Thoughts on Storage

I like to keep tools that I need but don't use everyday in these zipper bags from Home Depot (*Figure 24*). I used to keep them in several Sheetrock buckets, but then I figured out a way to hang the bags on carabiners in my old truck. When I got my latest truck, I couldn't do it at first, but I finally figured it out. *Figure 25* is a round steel rod I bought at IKEA for about $4. I screwed it into a channel in my truck, and *Figure 26* is the result. I don't need the bucket anymore.

Figure 27 is a brand-new item from Veto Pro Pac: the KP-XL. This is a hard vertical panel with 19 pockets and plenty of grommets to secure it to a wall, truck doors or cages. Mine is mounted on the metal wall between the cab and cargo area of my van, right behind the drivers seat. Until I got this, that area was wasted space. Go to vetopropac.com and check it out.

A Mini Blast From the Past

For the newbies, you don't see this much anymore: *Figures 28* and *29* show a Lockwood "pot-type" closer on a parallel arm or corner bracket with a hold-open arm. These images show how they made one of these closers work like a modern-day parallel arm closer on an out-swinging door. Makes you wonder if anybody ever cracked his head on it. *Figure 30* shows that they used Lockwood locks as well.

Tony Wiersielis, CPL, CFDI, has more than 30 years 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 and serves as ALOA's Northeast Director. Reach him at aew59@juno.com

Figure 30. Lockwood locks were used in this instance as well.

Keys in a Pod

By Jim Hancock, CML, CMST

Okay, bad pun for a title, but hey, 2020 was a rough year. It's hard to come up with much better at this point (Note: If you read most of my articles, you know this is really as good as it ever gets, but don't tell the newbies).

The "pod" refers to podcasts. For us old folk, a podcast is a "radio show" offering that can be downloaded from any number of sources and listened to at one's leisure. ALOA launched its own podcast, *Locksmith Talk With ALOA*, in November 2020 with no idea how it would be received or if it would be something sustainable. Well, at this writing, it has been a wonderful success.

Our show producer, board member Tyler Thomas, takes an idea I have for a show or interview and develops it after discussions with the potential guest. It's then put into the more-than-capable hands of the best host/moderator/orator/overall great guy we could have gotten, William Lynk. He arranges the schedule to talk to the guest and records the session. He very masterfully guides them through questions and elicits as much information from them as possible.

And finally, the guests: We have had a veritable who's who collection of guests discussing topics of importance to the locksmith industry. Just to name a few:

- Joe Cortie on GSA
- Lloyd Seliber on master keying mistakes
- ALOA Attorney Barry Roberts on legal considerations for locksmiths

Go Listen

And have I mentioned these episodes are free? Let me say that once more: *free*. As an ALOA member (and non-members too, for a short time), you can download these for free simply by going to your favorite podcast provider such as Apple, Google or Spotify and searching for "Locksmith Talk With ALOA." We rely on sponsors to help fund the podcast. Of course, we would never turn down donations, but the episodes are absolutely free for members to listen to.

"And have I mentioned these episodes are free? Let me say that once more: *free*."

There are so many more guests coming this year, including the ALOA presidential candidates discussing their vision for the organization and current ALOA President Jim Wiedman discussing 2020's impact on ALOA and the upcoming year. We will also cover electronic topics, safe work, employer/employee relations and so many more great topics. Listen in.

Jim Hancock, CML, CMST, is ALOA's education manager. You can reach him at jim@aloa.org or (214) 819-9733.

ALOA

ALOA Security Professionals Association, Inc.

Membership Application

CANDIDATE PLEASE TYPE OR PRINT

Name: ❑ Mr. ❑ Mrs. ❑ Ms. First_____ Last_____ MI____ Designation_____

Business Name _____

Mailing Address _____

City_____ State_____ Zip Code_____ Country_____

Work Phone_____ Home Phone_____ Fax_____

Email Address_____ Website_____

Date of Birth (required)_____ Place of Birth_____ Social Security # (required) _____

US Citizen? ❑ Yes ❑ No If No, citizen of what country?_____

ALOA occasionally makes its members' addresses (excluding phone numbers and email addresses) available to vendors who provide products and services to the industry. If you prefer not to be included in these lists, please check here: o

PROFESSIONAL INFORMATION

Please check the description that best describes you (check all that apply)

❑ Locksmith Owner
❑ Electronic Security
❑ **Institutional**
❑ Automotive
❑ Security Professional
❑ Safes
❑ Employee Technician
❑ Mechanical Door Locks & Hardware
❑ Investigative
❑ Other _____

Are you licensed to perform Locksmith/Access Control work in your state? o Yes o No If Yes, License #_____

Business License #_____ EIN # _____

Any other license held by applicant (Contractors Lic., Low Voltage) _____

Any other states you do business in and licenses held in those states _____

List all phone numbers used by your company/companies:_____

_____

Number of Employees_____ ❑ Store Front Business ❑ Mobile Only

How did you learn locksmithing/access control? _____

How long have you worked in the locksmithing/security industry? _____

ALOA member Sponsor Name/Who introduced you to ALOA?
Sponsor Name (Required)_____ ALOA Number_____ Years known _____

Have you ever been a member of ALOA before? ❑ Yes ❑ No If Yes, when?_____ ID #, if known _____

Are you a member of any local locksmith association? ❑ Yes ❑ No If Yes, name of association: _____

Give the names and phone numbers of two industry-related references:

Name_____ Company_____ Phone Number_____

Name_____ Company_____ Phone Number_____

IMPORTANT: Have you ever been convicted of a felony? ❑ Yes ❑ No If yes, please give details on a separate sheet.
All convictions are reported to the Advisory Committee for review.

A routine background check is performed on all new applicants, unless you live in a State in which passing a background check is a part of the licensing requirements. Non-US citizen background checks are required. If you live in a country that does not allow third party background checks, you will be required to submit an authentic report upon request (no copies/duplicates allowed) before final membership approval can be granted. A copy of your business permit/license, license number, business card, company letterhead or suitable proof of employment in the locksmith/access control business must accompany application.

TYPES OF MEMBERSHIP AND REQUIREMENTS

Check only one box from the categories listed below:

Active Membership

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.

❑ US and US Territories	$255	❑ I elect to Go Green	$230
❑ International	$270	❑ I elect to Go Green	$200

International Association of Investigative Locksmiths Membership

Must be an ALOA Member in order to join the IAIL.

❑ US and US Territories $55

Probationary Membership

Persons undergoing training to qualify as an Active member, who have not received one of ALOA's recognized program designations. No person shall be a probationary member for more than three years.

❑ US and US Territories	$255	❑ I elect to Go Green	$230
❑ International	$270	❑ I elect to Go Green	$200

Probationary Membership – No Sponsorship Required

Persons undergoing training that are new to the industry and do not know any Active member for sponsorship. Probationary period extended from 90 days to one (1) year. Probationary status lifted if sponsor acquired within year. Must obtain license if residing in State requiring licensure. A second background check will be performed by ALOA after 2 years of the 3 year maximum term. Any violation of ALOA Code of Ethics during probationary period will result in immediate termination of membership.

❑ US and US Territories	$255	❑ I elect to Go Green	$230
❑ International	$270	❑ I elect to Go Green	$200

Allied Membership

Persons whose position in the locksmith/access control industry relates to locksmiths, and cannot qualify for any other class of membership.

❑ US and US Territories	$255	❑ I elect to Go Green	$230
❑ International	$270	❑ I elect to Go Green	$200

Note: Your application will be processed with a 90 day waiting period.
Any institutional locksmith not using his/her work address must submit a letter from employer stating that you are an institutional locksmith.

DUES AND FEES

An application fee and the appropriate dues must accompany the application in order for processing to begin.
Application Fees Schedule:

US and US Territories $70
Canada, Denmark, Ecuador, New Zealand $160
Australia, Bahamas, Barbados, Belgium, Belize, Bermuda, China, France, Haiti, Philippines, UK $210
Israel, Korea, Papua New Guinea, Saudi Arabia, United Arab Emirates $360

Applicants from countries not listed must submit background check and report from local Law Enforcement with application.

FINAL CHECKLIST

❑ Required Proof of Employment in Industry
❑ Annual Dues Amount _____
❑ Application Fee _____
Total Amount Due _____

METHOD OF PAYMENT

❑ Check ❑ MasterCard ❑ Visa ❑ American Express ❑ Discover

Card Number_____ Expiration Date_____ SEC_____

Print Name on Card _____

Signature_____ Date_____

I understand and consent that in the course of reviewing this application ALOA may review publically available information for the purpose of verifying the information submitted and do a background check.

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

Dues, Contributions, Gifts are not deductible as charitable contributions for Federal income tax purposes. Dues payments are deductible as an ordinary and necessary business expense. However, donations made to the Legislative Action Network ARE NOT deductible as a charitable gift or business expense.

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www.dugmore.com

Fried Brothers Inc.
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www.fbisecurity.com

Hans Johnsen Company
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Fax: 214-879-1520
www.hjc.com

H L Flake Co.
Phone: 800-231-4105
Fax: 713-926-3399
www.hlflake.com

IDN Incorporated
Phone: 817-421-5470
Fax: 817-421-5468
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Intermountain Lock & Security Supply
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Fax: 801-485-7205
www.imlss.com

Jovan Distributors Inc.
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www.jovanlock.com

Key4, Inc.
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Fax: 213-788-5444
www.key4.com

Keyless Entry Remote, Inc.
Phone: 402-671-5100
Fax: 402-671-5100
www.keylessentryremotefob.com

Keyless Ride
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Fax: 409-216-5058
www.keylessride.com

Lockmasters, Inc.
Phone: 859-885-6041
Fax: 859-885-1731
www.lockmasters.com

Locksmith Ledger International
Phone: 847-454-2700
Fax: 847-454-2759
www.locksmithledger.com

Locksmith Resource
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www.locksmithresource.com

Midwest Keyless
Phone: 815-675-0404
Fax: 815-675-6484
www.midwestkeylessremote.com

MTS International Limted Co.
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Fax: 281-920-4748
www.mts-locks.com

Security Lock Distributors
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Southern Lock and Supply Co.
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www.stoneandberg.com

TimeMaster Inc.
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Transponder Island
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U.S. Lock Corp.
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Framon Manufacturing Company Inc.
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Stanley Security Solutions Inc.
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www.stanleysecuritysolutions.com

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Classified Advertising Policy

Classified advertising space is provided free of charge to ALOA members and for a fee of $3 per word with a $100 minimum for nonmembers. Classified ads may be used to advertise used merchandise and overstocked items for sale, "wanted to buy" items, business opportunities, employment opportunities/positions wanted and the like. Members or nonmembers wishing to advertise services or new merchandise for sale may purchase a "Commercial Classified Ad" for a fee of $4 per word with a minimum of $100.

Each ad will run for three consecutive issues. For blind boxes, there is a $10 charge for members and nonmembers. All ads must be submitted in a word document format and emails to adsales@aloa.org by the 15th of the month two months prior to issue date. ALOA reserves the right to refuse any classified advertisement that it deems inappropriate according to the stated purpose of the classified advertising section.

Listen to ALOA's New Podcast!

Have you heard? ALOA has a new podcast! Listen in to Locksmith Talk With ALOA each week as host William M. Lynk, CML, CPS, CMIL, ICML, M.Ed., interviews the brightest minds involved with the locksmith industry. Visit the Education calendar on ALOA.org for a link to the podcast.

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	2218	27″	23″	25½″	22″	18″	17″	875	1
	3822	43″	27″	28½″	38″	22″	20″	1,440	2
	5022	55″	27″	28½″	50″	22″	20″	1,895	3
	6222	67″	27″	28½″	62″	22″	20″	2,350	4
TL30	**1818**	23″	23″	20¼″	18″	18″	12″	690	1
	2218	27″	23″	25½″	22″	18″	17″	920	1
	3822	43″	27″	28½″	38″	22″	20″	1,530	2
	5022	55″	27″	28½″	50″	22″	20″	1,940	3
	6222	67″	27″	28½″	62″	22″	20″	2,300	4
	7236	77″	41″	28½″	72″	36″	20″	3,400	4

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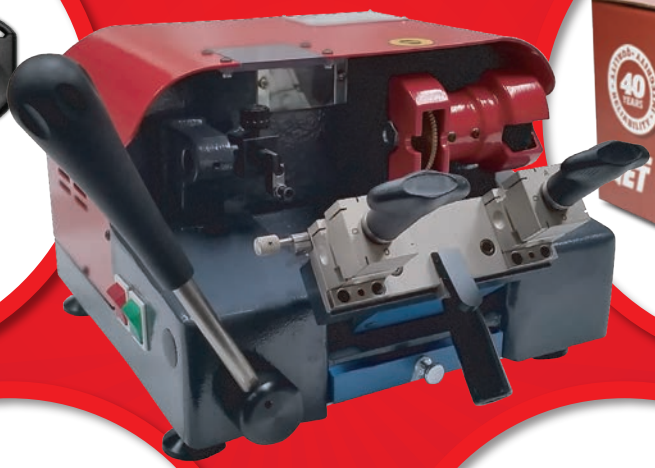

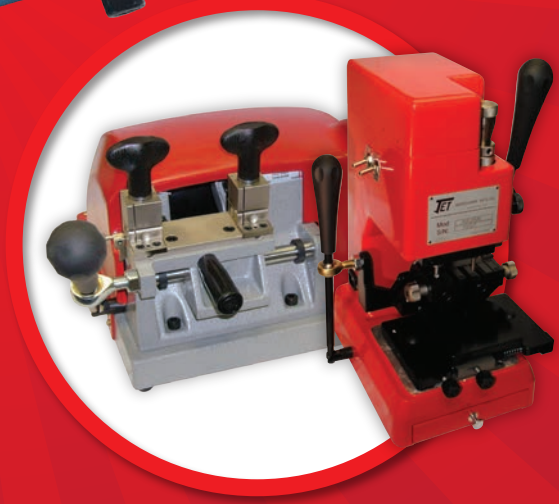

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