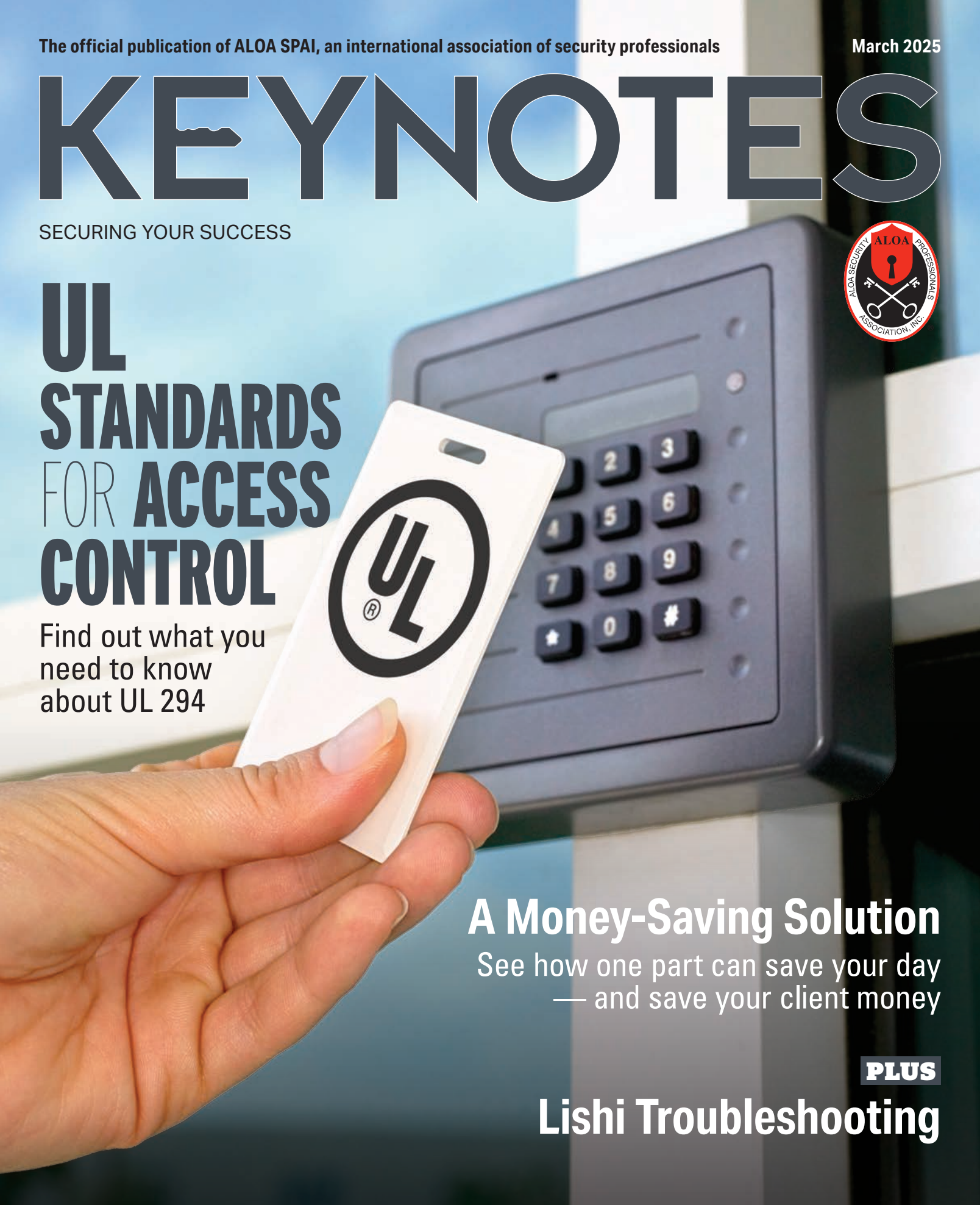
The official publication of ALOA SPAI, an international association of security professionals

March 2025

KEYNOTES

SECURING YOUR SUCCESS



UL STANDARDS FOR ACCESS CONTROL

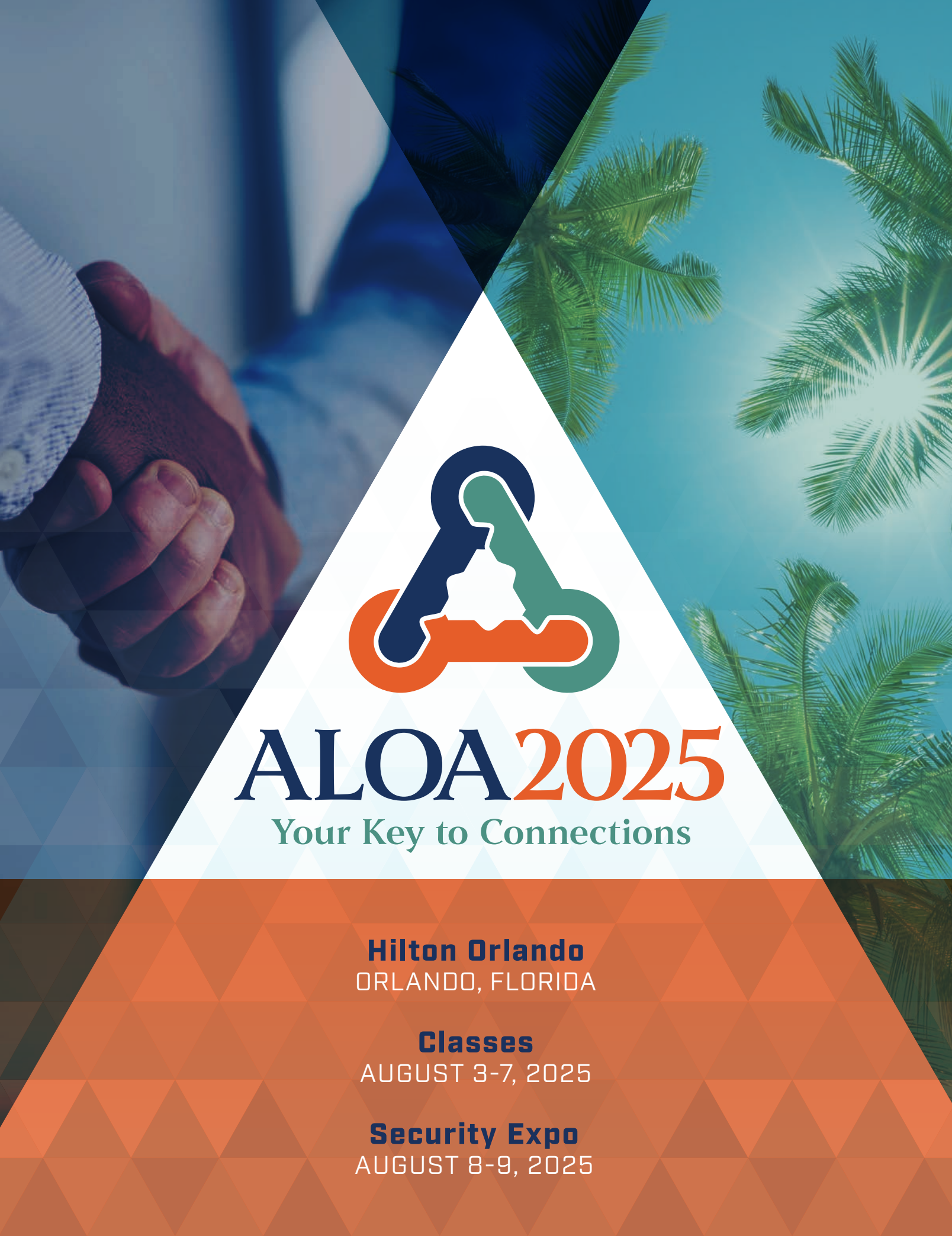
Find out what you need to know about UL 294

A Money-Saving Solution

See how one part can save your day — and save your client money

PLUS

Lishi Troubleshooting



ALOA 2025

Your Key to Connections

Hilton Orlando
ORLANDO, FLORIDA

Classes
AUGUST 3-7, 2025

Security Expo
AUGUST 8-9, 2025

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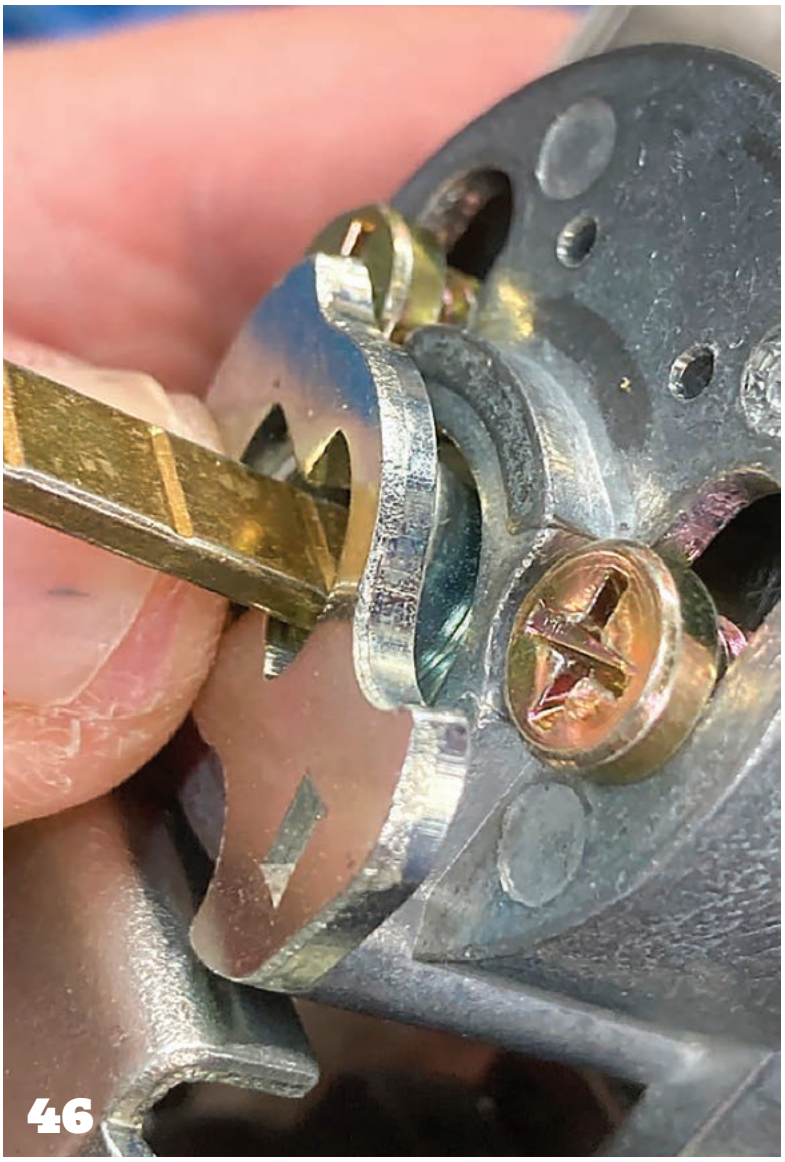
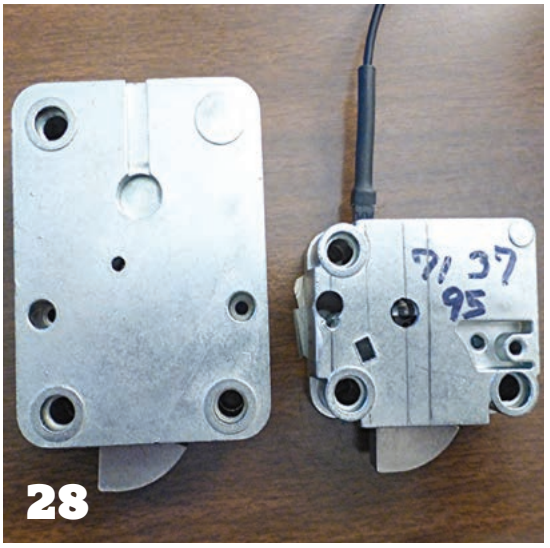
BDK Blue Dog Keys

KEYNOTES





Spotlights

What's New

Features

Departments

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Top: Lisa, Stephanie Bottom: Vivian, Melissa

KEYNOTES

March 2025 | Volume 71, Issue 3

POSTMASTER:
Send address changes to:
Keynotes, 1408 N. Riverfront Blvd., Dallas, TX 75207.

Mission Statement: The mission of the ALOA Security Professionals Association, Inc., as dedicated members of the security industry, is to ensure professional excellence and ethics; create a public demand for professional locksmith services; represent and speak for the locksmith industry; and expand the exchange of trade information and knowledge with other security-related organizations to preserve and enhance the security industry.

Policies and Disclaimer: *Keynotes* is the official publication of the ALOA Security Professionals Association, Inc. (ALOA SPAI). *Keynotes* does not guarantee the accuracy of any data, claim or opinion obtained or quoted from an acknowledged source. The opinions expressed by the authors do not necessarily reflect the official views of ALOA SPAI. Advertisements and new products or service information does not constitute an endorsement by ALOA SPAI, nor does the Association accept responsibility for the inaccuracy of any data, claim or opinion appearing in this publication due to typographical errors on the part of the authors, Association staff or its agents. ALOA SPAI reserves the right to refuse any article for any reason, and to edit submissions for accuracy, clarity and fairness.

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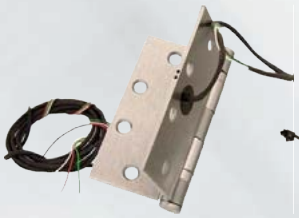
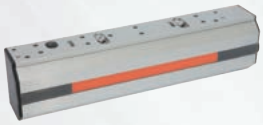

Electrified Hinges


Electrified Locks


Electric Strikes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June 2 - 13 Maryland	October 6 - 17 Kentucky
July 7 - 18 Kentucky	December 1 - 12 Maryland

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Thoughts on ALOA

WHEN WE RECEIVE MEMBER QUES-tions or comments, we always want to address them, so I wanted to clarify a few things for you all. Some people have questioned if the ALOA Board members get a salary. There is not one penny in salary paid to the Board members (including the president and secretary). The staff is paid, however. The Board members serve to better the profession for *all* locksmiths. Board members can get reimbursed for travel expenses, but most of them do not put in for that money. They pay all their expenses out of their own pocket and save the organization money.

In the past, the Board was dominated by large shops. Now the majority are one- and two-person shops. We have tried to get younger members to run for the Board to get new ideas. The directors, president and secretary have term limits (set by the bylaws) so that no one can remain on the Board forever.

Conventions

We understand members' financial and travel challenges and are getting the conventions away from tier one cities trying to move to tier two cities. When choosing convention locations, we have to consider if the site is big enough to meet our needs (convention floor space and number of classrooms), how easy it is to get there (drive or fly, etc.) and the cost of the rooms for attendees. Things that factor in are the availability of direct flights and their costs as well. We are trying to get away from the vacation destinations, as most of the members are not bringing their families anymore. However, we also try to look at where the members want to go. Las Vegas seems to be a popular place to go (at least from the attendance numbers), and it also happens to have some cheaper flights than most cities in the U.S. Reno is not as popular to attend because of the difficulty getting there from most of the U.S.

Bill Mandlebaum, CML
President
ALOA Security Professionals Association, Inc.
president@aloa.org

> **"We are working on a new consumer section for www.aloa.org, and this will contain some information to help educate consumers on the scammer issue."**

Board Meetings

Board meetings are open to anyone who wants to attend. This is in our bylaws. You can attend (and probably be bored to death), but to participate you need to contact the president or the chairman of the board to get added to the agenda. If the Board goes into executive session, you would have to leave the meeting during that time, but could come back once the executive session is over. There are limited reasons that the Board can go into executive session, and they cannot do it just to hide from members. It has to be something like discussion of salaries, etc., that cannot be made public knowledge. The minutes are posted on the ALOA website so any member can see them. Nothing is hidden.

Scammers

"ALOA should do something about the scammers and Google." We hear this all the time. We have spent money on public education about the scammers, and it has done no good. The attorney general in Ohio sued one big scammer years ago and won. It took almost a year to get it into court. The leader of the organization took off back out of the country as soon as he was convicted, and the state did not collect one dime despite all the money it cost. About three months later, the group started back up under another name. The attorney general just gave up.

Google is so big that they listen to no one and could keep us tied up in court for years, which would bankrupt us. We have tried contacting them about using ALOA to vet the locksmith listings, and they turned the idea down. They want to do their own thing, and as long as it is making them money, they are not going to change.

However, we are working on a new consumer section for www.aloa.org, and this will contain some information to help educate consumers on the scammer issue. Once this is up and running, we could use our members' help in sharing that link on your business social media accounts to help get the word out. We will publish information and wording in a future issue of *Keynotes* for you to use. It will take the help of our members to get this information distributed widely, and it will help your own business to share this information as well.

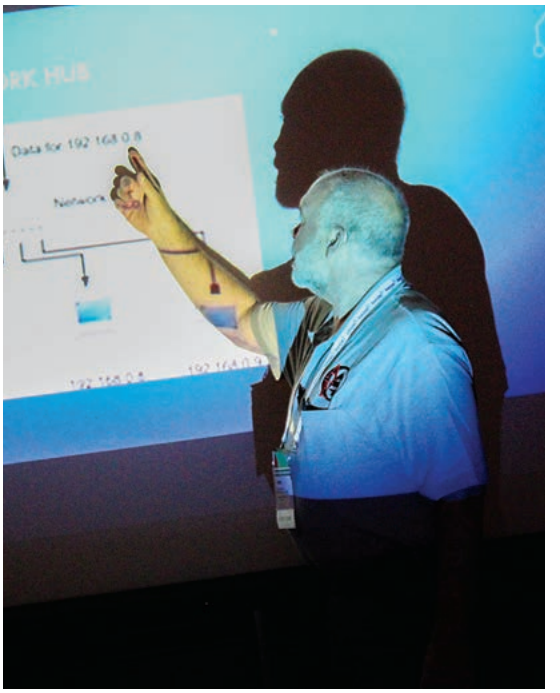
Classes

Why attend an ALOA class and not just use the manufacturers' cheaper classes? ALOA classes are designed to teach *all of* the products in that category, not just one. If you are an institutional locksmith, maybe you only use one manufacturer's line, but most of us are small locksmiths and run into multiple different products in the field. It is nice to have at least a general knowledge of all the products, and then you can go to the manufacturers' websites for more specific information. ALOA is also not selling any product. The manufacturers are. That is where they hope to make the expenses from their classes back.

"I can learn everything on YouTube." We have heard that many times. While it is true that there is a lot of good information on the internet, there is also a lot of bad information. People put things out there to impress with how much they know when they actually know very little. You need the background to see and understand when someone is blowing smoke at you. Having a basic knowledge from classes will let you probably see and understand this. Has the lock they are showing been altered to make it look much easier than it is to make themselves look good? Very possibly.

I hope this information clarifies some things. We are always here if you want more information or have additional questions. ALOA aims to be transparent, so please feel free to reach out. Thank you for being members, and I hope to see you at SAFETECH in April and the IAAL Auto Lock Expo in May.

Get Educated at Upcoming Conventions



SAFETECH IS COMING UP FAST! WE WILL be in Lexington, KY, April 7-12 at the Griffin Gate Marriott. It is going to be a fantastic time since Lockmasters and Sargent and Greenleaf are both having anniversaries around that time, and we will be holding some special off-site events in honor of those. Not to mention, the classes are taught by the industry's best instructors, as always, and there are plenty of classes for those just starting to learn about safe work. It is shaping up to be the biggest SAFETECH Convention in a long time.

For questions, email conventions@aloa.org. You can register now at www.aloamembers.org, and the full class listing and brochure are available on the SAFETECH tab on www.aloa.org.

IAAL Auto Lock Expo

The IAAL Auto Lock Expo is coming up in May as well — our second time holding this convention. It is going to be a wonderful event with an automotive focus. The venue is right in the middle of the U.S. (which is what many of you wanted). Cedar Rapids, IA, has plenty to do as far as entertainment, and we are going to have a great group. This is a beneficial event to attend to make contacts who can help you with technical questions and future work. Whether you're a seasoned automotive expert or new to this area of the industry, you're sure to meet a lot of wonderful people.

Registration is open, so go to www.aloa.org to take a look at the classes and schedule. Be sure to get your hotel room booked as well. The discounted early registration deadline is April 18.

ALOA Convention

And do not forget the ALOA Convention & Security Expo in August. More details will be coming soon, and the registration brochure will be inside the May issue of *Keynotes*. For now, keep saving those dates of August 3-9, and you can also go ahead and book your hotel room at the Hilton Orlando by calling the hotel at (888) 488-3509 and asking for the ALOA discounted rate.

Remember that the ALOA Scholarship Foundation program is for *all* approved training, not just the ALOA Convention. You can apply for a scholarship for the SAFETECH and IAAL conventions as well as other approved classes, such as the Fundamentals class held at ALOA headquarters in Dallas. Find out more on the ASF section on www.aloa.org.

ALOA Elections

ALOA Board elections are coming up. Please note that the ballot and bios will be included in the May issue of *Keynotes*. You will be able to either mail in your ballot, or easily vote online. Keep an eye out for it in that issue, and remember to vote! This is your association, and you should have a say in its future.

See you at SAFETECH!

Mary A. May
Executive Director
mary@aloa.org

> "It is shaping up to be the biggest SAFETECH Convention in a long time."

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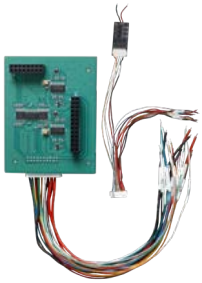

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Register for SAFETECH!

SAFETECH IS FAST approaching, but there's still time to register! The early registration deadline is March 14, but you can keep registering after that date at the non-discounted rate.

For more information on classes and events plus the link to register, visit www.aloa.org.

SAFETECH 2025

Congratulations to the Wisconsin Chapter on 30 Years

ON JANUARY 25, THE WISCONSIN CHAPTER OF ALOA celebrated its 30th anniversary in Eau Claire, WI. It was a well-attended luncheon, and the chapter held a silent auction to raise money for the association. ALOA President Bill Mandlebaum attended and presented the chapter with a certificate in recognition of the anniversary.

ALOA recognized the Wisconsin Chapter's 30th anniversary with a commemorative certificate and by donating an ALOA 2025 education package for a drawing. Congratulations to the winner, Alan Morgan!

The chapter also had a drawing for a full education package for ALOA 2025 in Orlando, FL, donated by ALOA. Congratulations to Alan Morgan, the winner!

NEWS BRIEFS

Locinox has released its new catalog, which is now available digitally at www.locinoxusa.com/Catalogues/usa.

GPLA Installs New Officers and Directors

SNOW-COVERED ROADS AND 12-DEGREE temperatures could not put a chill on the dinner meeting and officer installation ceremony of The Greater Philadelphia Locksmiths Association (GPLA) on Monday, January 20, in Pennsauken, NJ. After dinner, ALOA SPAI chairman of the board and recent Philadelphia Award recipient, John Truempy, CFL, CRL, CMIL, ICML, IFDI, LSFDI, administered the oath of office to the incoming officers and directors in front of approximately 60 members and guests.

New president, Paul Kline, RL, accepted the gavel from outgoing president, Ed Fitzgerald, CML, after Ed delivered a thoughtful speech about the future of GPLA and the industry to the attendees.

Established in 1949 — and instrumental in the formation of ALOA Security Professionals Association — The Greater Philadelphia Locksmiths Association is one of the oldest continuously operating associations in the country. More information about GPLA can be found at gpla.org.

Congratulations and good luck to all the new GPLA officers and directors:

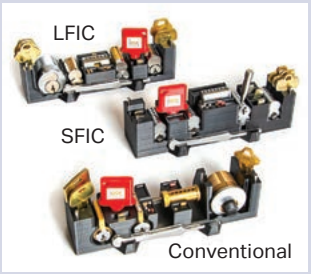
President - Paul Kline, RL
Vice President - Mike Nimmo
Secretary - Kevin Donaghy, AHC, CRL
Corresponding Secretary - Jim Handschuh Sr., CIL
Sargent at Arms - Jim Handschuh Jr., AFDI
Treasurer - Martin Arnold, CRL

Board members
Chairman of the Board - Sven Hellwig Sr., CRL
Anthony Buenaflor
Randolff Carpenter, CFPS
Steven Kaufman
Ken Kramer
Maurice Onraet
Barry Wilenski, CRL
John Williams, CRL

PRODUCT BRIEFS

Don-Jo Manufacturing has new conversion plates for 1⅜" doors for going from mortise locks to cylindrical locks. It converts an 86-prep cutout to a 161-prep cutout, has a ⅞" latch hole, measures 8" x 1" and comes in PC, SL, DU and 622 finishes.

The **LockCaddy Mini-B**, which comes in black or orange, stores keys and parts for pinning and stamping. It's lightweight, portable and stackable and can be secured to a workbench. It comes in conventional, LFIC and SFIC styles to securely hold cylinders. For tutorials on LockCaddy Products, go to LockCaddy.com.



PDQ's 6300/6400 Series exit devices are designed to enhance safety and usability by allowing operation with minimal force. The addition of the 5P accessibility device enables PDQ to meet California's stricter regulatory requirements for exit devices. It's available with both top and bottom rod and LBR for surface and concealed vertical rods. Compatible models include rim, concealed vertical rod and surface vertical rod.

Codelocks has extended its CL5000 electronic lock range with a new Do Not Disturb (DND) range, which includes the CL5010 DND mortise latch and the CL5020 DND mortise lock. The do not disturb feature is activated by pressing a red button on the backplate. When activated, only the master and sub-master codes can unlock the door. If a standard user code is entered, the lock's LEDs will flash, an alert will beep, and the door will remain locked.

They come in brushed steel or solid black finish and are certified to the 3-hour UL 10C Fire Test standard. The electronic lock generates up to 200,000 openings from four AA batteries. The CL5000 DND features Codelocks NetCode Technology, which allows the facility owner or manager to set a date and time-sensitive code remotely via the Codelocks Connect Portal.

Codelocks has also released the CL500KEY Mechanical Lock, designed for heavy-duty use in high-traffic areas. It has options for code, code-free and key access and can be supplied keyed alike. It's available in a range of models, including tubular latch and mortise lock models with and without code-free access. It has two coded plates for installation on both sides of the door in a back-to-back option, and an auto deadbolt is an available option when using in a mortise lock application. It comes in stainless steel or marine grade finish and is compatible with XT2 Weather Cover.

CALENDAR

MARCH 2025

March 5-7
IML 2025 Expo - California
Universal City Hilton
Universal City, CA
www.imlss.com

March 12-14
2025 Locksmith Pro Expo
Sheraton DFW Airport Hotel
Irving, TX
www.locksmithproexpo.com

March 31-April 4
ISC West 2025
Venetian Conference Center
Las Vegas
www.discoverisc.com

APRIL 2025

April 6-12
SAFETECH 2025
Griffin Gate Marriott
Lexington, KY
conventions@aloa.org
www.savta.org

April 24-25
Banner Solutions 2025 Security Professional's Trade and Training Expo
Houston, TX
www.bannersolutions.com

April 28-May 2
DHI Spring Classroom Series
Grand Sierra Resort and Casino
Reno, NV
www.dhi.org

MAY 2025

May 2-3
Professional Locksmiths Association of Alberta Convention and Trade Show
iHotel
Red Deer, Alberta, Canada
bod@plaa.org

May 15-18
IAAL Auto Lock Expo
Cedar Rapids, IA
conventions@aloa.org
www.aloa.org

JUNE 2025

June 11-13
IML 2025 Expo – Texas
Gaylord Texan Resort
Grapevine, TX
www.imlss.com

AUGUST 2025

August 3-9
2025 ALOA Convention & Security Expo
Hilton Orlando
Orlando, FL
conventions@aloa.org
www.aloa.org

IN MEMORIAM

ALOA and POLA member **Ray Hayes** has passed. He had been an ALOA member since 1992.

Marvin Nickels Rhoda, 77, passed away on December 9, 2024. He was the owner of Advance Safe & Lock in Southaven, MS. He has been an ALOA member since 1983 and a SAVTA member since 1997.

Irving Isicoff, a longtime member of ALOA, passed away July 12, 2024, one month shy of his 95th birthday. He had served as president of ABC Svinga Brothers Corp. in Miami.

NEW APPLICANTS

ARIZONA

Tucson
- **Orion M. Dugger**
  Desert Coyote Locksmith

CALIFORNIA

Ramona
- **Adriana Olinger**
  Ramona Locksmith

COLORADO

Firestone
- **Jonathan C. Jensen**
  Electronic Security Professionals, Inc.

Longmont
- **Dave N. Gammage**
  St. Vrain Valley School District

FLORIDA

Daytona Beach
- **Brandon Cash**
  Cash Boys Locksmith
  Sponsor: James A. Hamilton, CRL, AFDI

Fort Lauderdale
- **Patrick Pointu**
  South Florida Mobile Locksmith LLC
  Sponsor: William L. Mandlebaum, CML

Miami
- **Ivaylo Drumev**
  ABRITES USA LLC
- **Ventzy Valchev**
  Arbrites USA, LLC

Oviedo
- **Bob Brown**
  Hayman Safe Company, Inc.

GEORGIA

Brunswick
- **Johnathan Moore**
  Collins Lock & Safe, Inc.
- **Malik Smiley**
  Collins Lock & Safe, Inc.

ILLINOIS

Wheaton
- **David Southworth, CRL, LSFDI**
  The Flying Locksmiths - Chicago Suburbs

IOWA

Ottumwa
- **Kristine Kaelin**
  AA Locks and Keys
  Sponsor: Luke J. Pieper, CRL

KENTUCKY

Nicholasville
- **Matthew Gordon**
  Locknet
- **Nathan Matthew**
  Locknet
- **Jimmy Shteynberg**
  Locknet

MARYLAND

Clinton
- **Vernando Jenkins**
  MISS, Inc.

MICHIGAN

Dexter
- **Jon Marcum**
  Security Lock Service, Inc.
  Sponsor: Joel W. Kocevar

Grand Haven
- **Lorenzo Barrientos**
  Keys Done Rite
  Sponsor: Edward R. Woods, CMAL, CPS, CAI

Onsted
- **Tawn A. Wilson**
  A-1 LOCK & SAFE

MINNESOTA

Hastings
- **Steven J. Bartz**
  Hastings Lock And Key
  Sponsor: Patrick D. Moseng, CRL

NEVADA

Las Vegas
- **Curtis S. Wong**
  Imperial Gaming Supply Inc.
  Sponsor: Cecilia Wong

NEW MEXICO

Clovis
- **Randon C. Mares**
  A1 Lockpro/Pax Key Shop

NEW YORK

Middle Village
- **Melissa Collado**
  Meil Collado

West Hempstead
- **Peter Duffy**
  i Lock New York Inc.

NORTH CAROLINA

Iron Station
- **Brian A. Woodward**
  Anchor Security and Locksmith

OREGON

Portland
- **Andrea Burton**
  Chown Hardware

PENNSYLVANIA

Stowe
- **Michael Mullin**

TENNESSEE

Nashville
- **Randy Waters**
  Hosse And Hosse Lock and Safe Company

TEXAS

Arlington
- **Billie Jo Stoddard**
  Royal Key Supply

Dallas
- **Kevin Wesley**
  ALOA

Haltom City
- **Ryan Cook**
  Hey Locksmith Inc.
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WE NEED YOUR HELP

Attention, ALOA Members: Help us eliminate the industry scammer problem by screening these applicants, who are 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 email to membership@aloa.org or via fax to (469) 543-5241. For questions, contact Kevin Wesley, membership manager, at Kevin@aloa.org or (469) 453-5207

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REGISTRATION NOW OPEN!

See SAVTA.org for class information and to register.

Register for SAFETECH and the IAAL Auto Lock Expo

Hurry to be a part of these exciting conventions this spring.

REGISTRATION IS OPEN FOR our two spring events: SAFETECH 2025 in Lexington, KY, and the IAAL Auto Lock Expo in Cedar Rapids, IA. Registrations are pouring in for SAFETECH, so hurry to register!

The early registration deadline to get the discounted rate for SAFETECH is March 14, and that's also the deadline to book your hotel room at the contracted rate. Rooms at the Griffin Gate Marriott are $159 plus tax and a $15 resort fee that gets you everything from high-speed internet access and a welcome cocktail to bike rentals and free bottled water at the front desk. Book your room by calling the hotel toll-free at (800) 228-9290 and using the group name "SAFETECH." Reservations can also be made via the link at SAVTA.org. Hotel reservations

CEDAR RAPIDS

made after Friday, March 14, 2025, will be based on availability at the group rate.

To register for classes, go to www.aloamembers.org. You can view class descriptions on the SAFETECH Convention tab on www.aloa.org to plan your schedule. There are some fun events at this convention, so plan to attend everything you can!

IAAL Auto Lock Expo

We're gearing up for the 2025 IAAL Auto Lock Expo as well! Race to Cedar Rapids, IA, May 14-17 to take part in the premier automotive-only locksmith convention! Register by April 18 to be entered in the drawing to win a swag bag worth $500, incuding a one-night stay at the Doubletree Cedar Rapids (with breakfast and free parking) and tons of Cedar Rapids and location-branded items like an insulated cup, T-shirts and more!

Choose from 30 classes to learn the latest technology and techniques. There will even be free classes and demos on the trade show floor on Saturday, May 17.

Cedar Rapids is centrally located and easy to drive or fly to — and many activity and dining options near the hotel.

Registration is open on www.aloamembers.org, so sign up now and book your hotel room. Call the DoubleTree by Hilton Cedar Rapids at (319) 731-4444 and use the group name "IAAL." Reservations can also be made online using the hotel link under the IAAL Auto Lock Expo tab on www.aloa.org. After Friday, April 18, at 5 p.m., the rate may increase, and rooms may no longer be available.

Reserve Your Booth Space!

There's still time to reserve a booth at the IAAL Auto Lock Expo or secure a sponsorship. Be a part of this exciting event catered to your automotive audience! ALOA/IAAL Associate members get a discounted rate on booth space.

The trade show takes place 10 a.m. to 4 p.m. on Saturday, May 17, and sponsorships are available for the trade show, classes and events. Support IAAL and ALOA and further your marketing dollars by sponsoring lunches, lanyards, events and more. This is the perfect way to network one-on-one with customers.

For more information about booths and sponsorships, please contact Conventions Manager Kelly Parker at (912) 713-9680 or conventions@aloa.org.

Electronic Access Control — "Scotty, Beam Me Up!"

By ALOA SPAI Director of Education William M. Lynk, CML, CPS, ICML, CMIL, CAI, M.Ed.

I GREW UP WITH THE ORIGINAL Star Trek episodes in the 1960s. I must admit, I still watch the reruns on MeTV on Saturday nights. The allure to me was the incredible foresight they had with devices and what we now call "electronics." The "photon torpedoes" make me think of the proton therapy in today's cancer therapy. The "communicators" are reminiscent of the flip phones we had in recent times. This was all developed when the Apollo spacecraft ran on a computer in 1969 less powerful than today's cellphone! What does this all mean? It means that our locksmiths today need to pay close attention to the importance of electronics blended in with our expertise with mechanical access locks. It is a choice to accept or reject the ongoing development of how access control is now being integrated into our world. The choice is yours.

Where Are My Keys?

I am sure you can all recall when misplacing your keys meant retracing your steps throughout your home or office. Keyless entry systems allow you to unlock doors with a PIN, fingerprint or even your smartphone. In addition, if you need to let a babysitter or contractor into your home, just send a temporary access code. You can always revoke that code when necessary — no physical keys are needed. We know that traditional keys can be copied almost faster than the speed of light. Digital credentials, though, are much harder to duplicate.

Surreptitious Entry

Most traditional locks can be picked, bumped or manipulated by determined intruders. Electronic locks offer advanced security features that make unauthorized access a bit more challenging. There are electronic locks that have built-in alarms that activate when someone attempts to force them open. Built-in encryption and rolling codes make many electronic locks resistant to tampering or hacking.

Electronic Access Control: Who's Invited?

A positive feature of most electronic locks is the ability to monitor and control who enters your property and when. Access logs will tell the story. It's synonymous with having a security guard on your locks 24/7. The same is true for businesses where monitored access control is even more critical.

Management can give access based on job roles, restrict certain areas and even revoke permissions remotely. Access can be granted only to those who have legitimate business in various areas.

I Am Locked Out!! Maybe Not . . .

Everyone has had some time in their life when they were locked out of something — a car, home or business. This doesn't have to be the case with electronic locks. If you forget your code, you can access it on your smartphone. If your phone is not available, perhaps your fingerprint or eye scan can allow you entry. Many electronic locks have a backup battery or an emergency access feature, ensuring that even in a power outage, you still can gain legitimate access.

Drawbacks: Nothing's Perfect

Electronic locks can be a fantastic solution for many, but they do not come without some potential drawbacks. Technology can fail, software glitches occur, and connectivity issues can arise. But the same drawbacks can plague a mechanical lock: parts rust, broken keys happen, gunk can be pushed into a keyway, etc. And, most electronic locks will require power, and batteries do die. There also may be a learning curve with installing, managing and programming electronic locks. But as a security professional, isn't it advantageous for you to learn about this growing area? That may ultimately be in your best interest.

ALOA Electronics Education

Remember in past columns when I said to expand your horizons by stepping out of your comfort zone? Well, electronics is exactly that for many traditional locksmiths. Luckily, ALOA has certifications for electronics. The first testing level is Certified Electronics Locksmith (CEL). Those who have passed that and are more experienced in electronic access can test for the Certified Master Electronics Locksmith (CMEL) certification.

Two of our ACE Instructors have the highest CMEL certification: James Ashley, CPL, CMST, CMEL, CFL, CFMST, CAI, and Greg Perry, CML, CPS, CMEL, AMKS, CAI. ALOA offers classes in electronics and access control at our conventions to help develop your skill level and increase your potential income. Maybe it's time to take full advantage of those offerings. When we release the class schedule for the 2025 ALOA Convention & Security Expo, consider taking a class in this subject area.

Conclusion: Can We Embrace the Future of Electronic Security?

Whether we like it or not, electronic locks represent a significant advancement in security technology. It is easy to see how they offer enhanced security, convenience and integration capabilities that make them a valuable addition to any home or business. As locksmiths, we need to make sure our service menu includes this technology. Traditional locks and keys still have an important place within our security world, but so do electronic locks. It's your choice as the security professional to reject or embrace that reality. However, embracing it will get you a lot farther on your continuing locksmith journey.

ALOA SPAI Director of Education William M. Lynk, CML, CPS, ICML, CMIL, CAI, M.Ed., has been a locksmith since 1975 and is the owner of www.ICLSglobal.com. Bill is an IC specialist, an industry author, the subject matter expert on IC for ALOA, and an ALOA ACE instructor, teaching classes on interchangeable cores and master keying across the country. He has originated SFIC Technical Manuals for both national and international lock manufacturers, and maintains a working relationship with the major lock and security manufacturers throughout the world. In 2013, he was named *Keynotes* Author of the Year.

Life Safety Codes in the Means of Egress: Fact or Fiction?

Learn about some common misconceptions about life safety codes.

By Vernon Kelley, CFDI, CFFDI, CFL, CMIL, CPL, ICML, IFDI, LSFDI

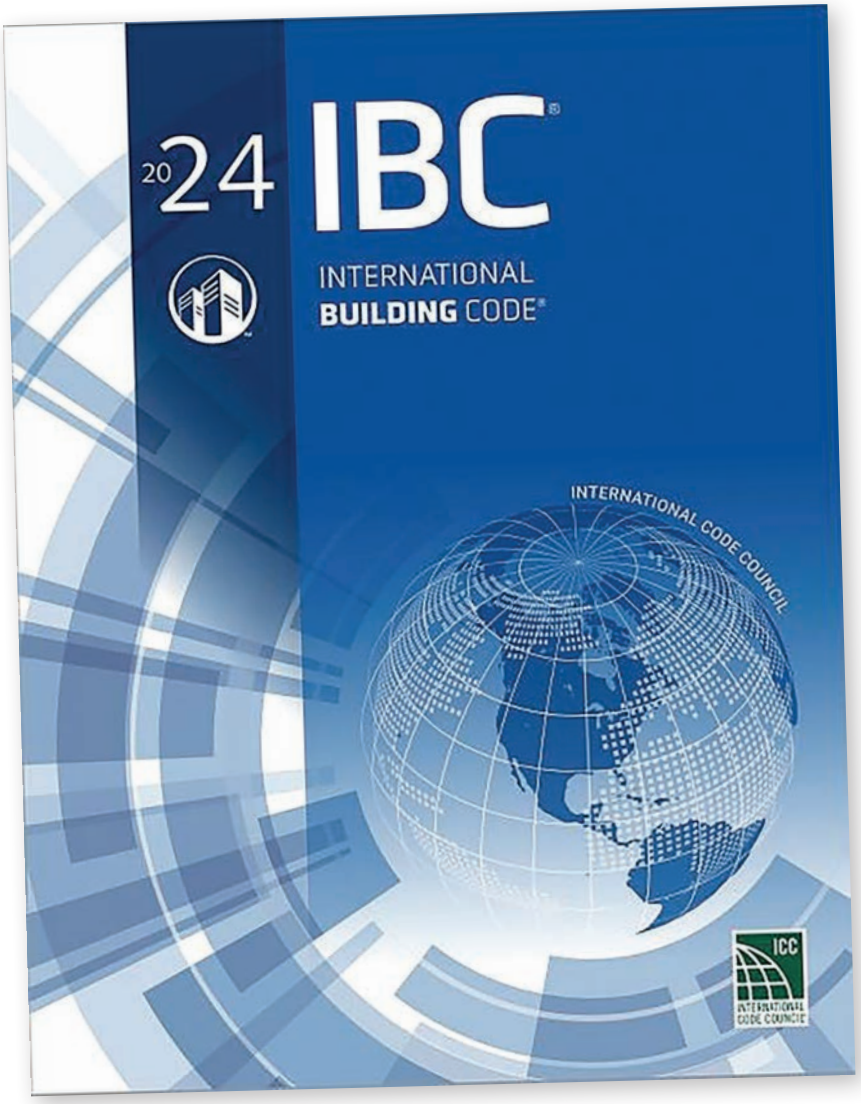

FIGURE 1. The International Building Code contains a lot of material that is irrelevant for our trade.

I THINK MOST OF YOU WILL AGREE that performing work on doors and door hardware that are fully code compliant is as complicated as it is worrisome. Locksmiths and low-voltage access control technicians need to understand the implications of the work being performed under a cornucopia of life safety codes, referenced standards, and even federal law. The reference material one needs to read and more importantly, understand, can be overwhelming. Just look at this lineup of material a locksmith needs to be familiar with:

- Americans With Disabilities Act Standards for Accessible Design
- ANSI/ICC A117.1 Standard for Accessible and Usable Buildings and Facilities
- ICC International Building Code
- NFPA 70 National Electric Code
- NFPA 80 Standard for Fire Doors and Other Opening Protectives
- NFPA 101 Life Safety Code
- NFPA 105 Standard for Smoke Door Assemblies and Other Opening Protectives
- NFPA 5000 Building Construction and Safety Code

> **Life safety codes are regulations designed to ensure the safety and well-being of occupants in buildings.**

Simple, right? I very seriously doubt that you agree with that statement.

Understand that not every jurisdiction you perform work in will have adopted all the above codes and standards. But knowing which codes are in effect in the jurisdiction you're working is a big part of the challenge of code interpretation.

I've been teaching life safety code in the means of egress (to borrow Tom Demont's description of the content) classes since 2008 in one form or another. In that time, I heard many misinterpretations of codes and standards by students. Some of the misinterpretations could conceivably have tremendous legal ramifications to them and their business if a tragic event takes place at a door they last touched.

Another thing I've learned about teaching this content is that *it's really boring.* (Now, there is always the chance that, as the instructor, I make the content boring. But I'll leave that determination up to my students. I hope they'll be kind in their reviews.)

To try to shake up my code classes, I tried a different presentation of my ADA/barrier-free class. I turned it into something akin to a game show, and I was really happy with the results. Far fewer students slept, ran away screaming or threatened to commit ritual seppuku during class. I'll consider that a modest win.

In the coming months — and possibly years considering the amount of content that needs to be covered — I will attempt to educate readers in the ways of this esoteric subject matter in a unique manner: As more of a game rather than a study hall. Welcome to "Life Safety Codes in the Means of Egress – Fact or Fiction?"

Let the games begin.

FIGURE 2. The IBC is by far the most prevalent building code in the country.

Fact or Fiction?

When referring to "life safety codes," all manner of building construction and renovation is addressed under that phrase.

Fiction

While a couple of the publications listed above — namely, the Internation Building Code and NFPA 5000 — address life safety issues, those two books address many other subjects that are way outside of our normal areas of interest such as roof pitches, materials used for construction, and the density of concrete for foundations (see *Figure 1*).

While there is no specific definition readily available, the phrase "life safety code" has become somewhat of a catch-all phrase encompassing codes and standards that ensure a building occupant's ability to evacuate (or find refuge within) a building in an emergency.

Life safety codes are regulations designed to ensure the safety and well-being of occupants in buildings. They cover various aspects of construction, design, and maintenance to minimize hazardous situations to building occupants such as fires, active shooter/hostile events and other emergencies.

Knowing that, much of the material found in IBC and NFPA 5000 is irrelevant for our trade. It's also worth noting that the IBC is by far the most prevalent building code in the country *(Figure 2).*

Fact or Fiction?

NFPA 101 Life Safety Code is used by all jurisdictions as their standard for life safety code issues.

Fiction

Unfortunately, as convenient as NFPA 101 is for our industry due to its hyper-focus on life safety in the means of egress, it's not the life safety code resource used by most jurisdictions,

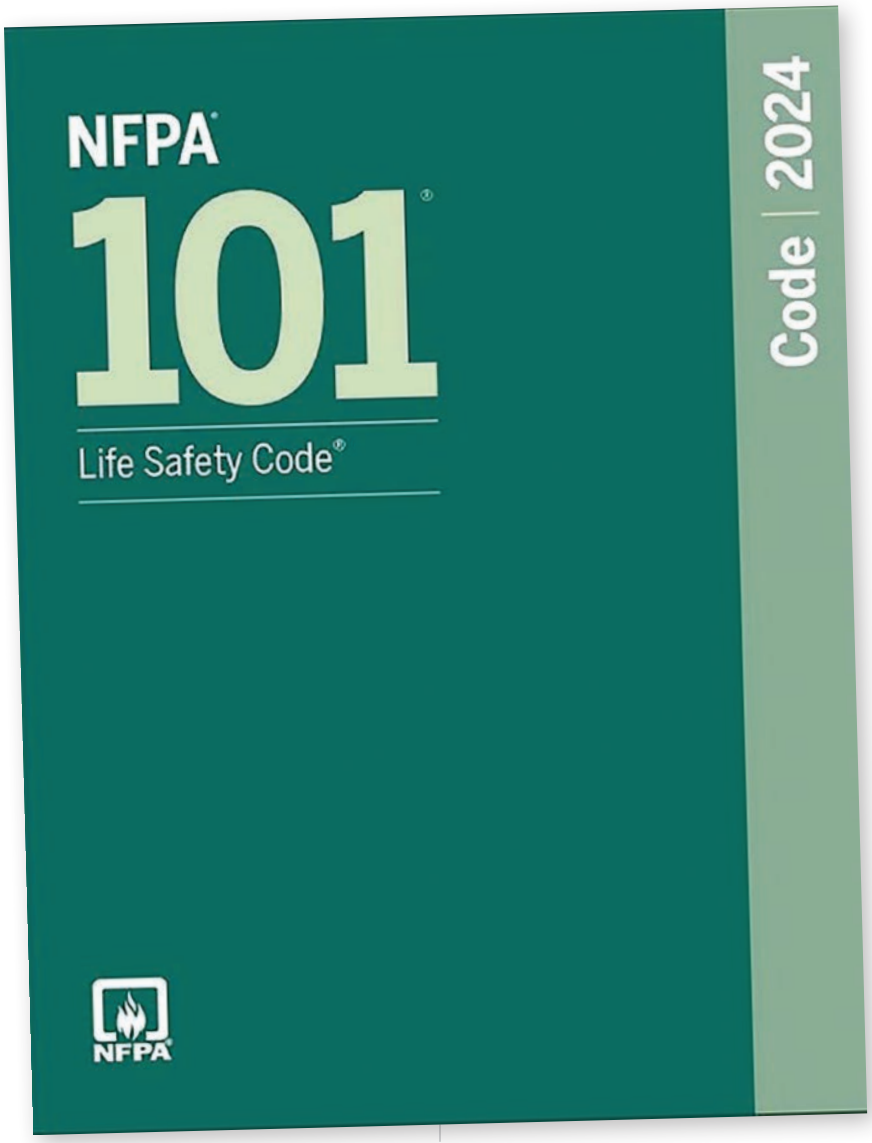

FIGURE 3. Except for one sector, ***NFPA 101*** is not the life safety code resource used by most jurisdictions.

except for one rather large business sector *(Figure 3)*.

Since all states have adopted portions of, or the entirety of, IBC as their construction code, most jurisdictions now use IBC Chapter 10 - Means of Egress as their code for life safety in the means of egress compliance.

There is one very significant exception to the above statement: the health care industry. Due to regulations supported by the Joint Commission and the Centers for Medicare & Medicaid Services (CMS), locksmiths working in those environments need to know about NFPA 101-2012. Most local jurisdictions have exceptions in their ordinances for health care facilities to adhere to Joint Commission and CMS life safety codes instead of following the locally adopted codes *(Figure 4)*.

Fact or Fiction?

"Codes" and "Standards" are not the same and have distinct differences in their meaning.

Fact

Some people sometimes use the words "code" and "standard" interchangeably when referring to codes in the general sense. But it's important to know the difference.

> ***Code*** *– A set of rules that knowledgeable people in a specific subject matter recommend for others to follow. A "code" is not a law but can be adopted into law.*

> ***Standard*** *– A more detailed elaboration — the nuts and bolts — of meeting a code. Standards often outline equipment testing methods, inspection procedures, and installation processes.*

For example, the International Building Code — a model building code — references NFPA 80. While IBC indicates where fire doors need to be installed based on the occupancy classification of a building (or a portion thereof), NFPA 80 Standard for Fire Doors and Other Opening Protectives creates standards for installation procedures, maintenance and inspection requirements related to fire door assemblies. And fire doors are a subject that should be very near and dear in the hearts of locksmiths since there is a lot of potential liability involved in such work.

"Some of the misinterpretations could conceivably have tremendous legal ramifications to them and their business if a tragic event takes place at a door they last touched."

Fact or Fiction

The National Fire Protection Association and the International Code Council are government-sponsored organizations and have the authority to enforce any code referenced in their publications.

Fiction

The National Fire Protection Association (NFPA) and the International Code Council (ICC) are what are known as standards organizations. Essentially, NFPA and ICC are self-appointed governing bodies that create codes and standards for use or adoption by others.

> ***Standards Organizations*** *– Bodies that develop, coordinate, promulgate, revise, amend, reissue, interpret or otherwise contribute to the usefulness of technical standards to those who employ them. They create uniformity across producers, consumers, government agencies, and other relevant parties regarding terminology, product specifications, protocols and more.*

ICC and NFPA are not a part of any government organization and have no legal authority to require any government to adopt their codes, nor do they have any authority to enforce the codes they have created. The codes and standards created by ICC and NFPA only become law once they are adopted by a government entity.

On a related matter, neither organization gets a "kickback" on any fines levied by any government entities to fund their respective organizations, as I've heard on more than one occasion. These organizations earn a sizable portion of their income via sales of publications and training classes. Sorry, conspiracy theorists.

Thanks for tuning into the incredibly exciting first round of "Life Safety Codes in the Means of Egress: Fact or Fiction?" Stay tuned for more thrilling episodes coming to a *Keynotes* issue near you!

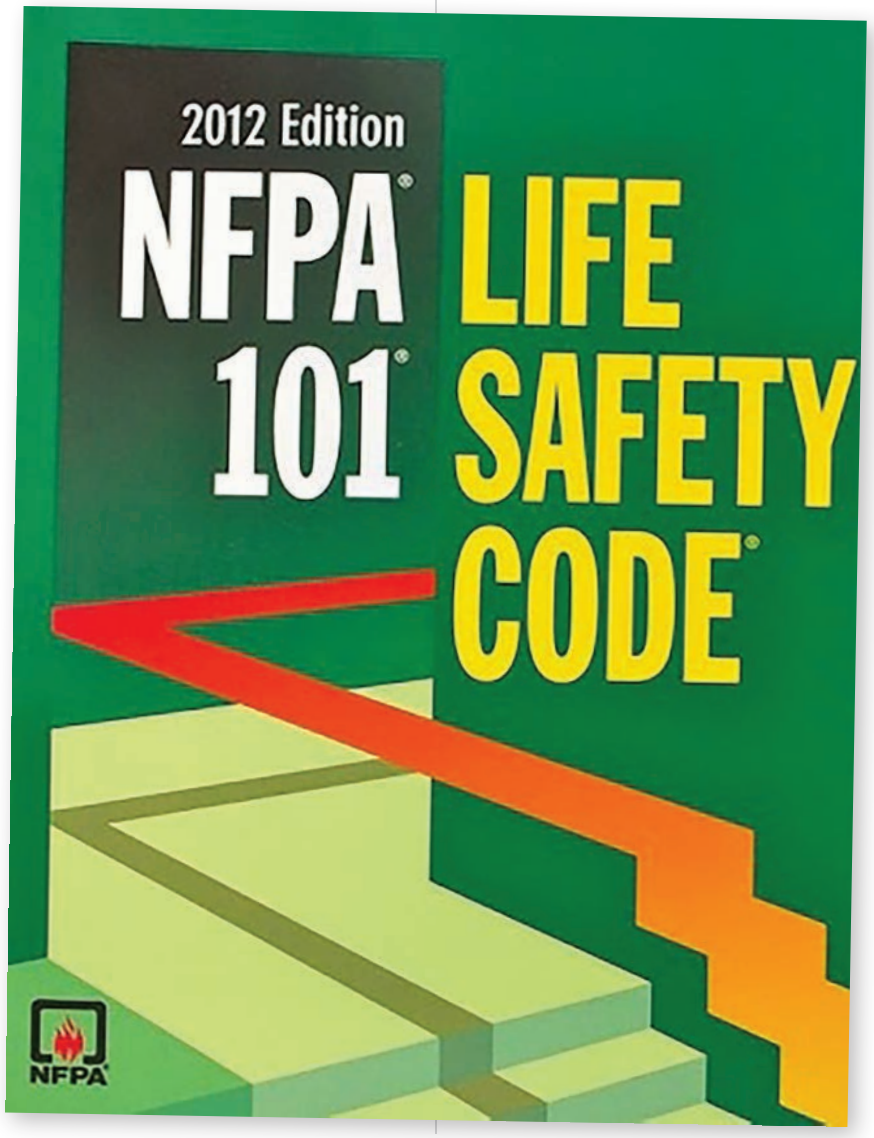

FIGURE 4. Locksmiths working in health care need to know about ***NFPA 101-2012***.

Vernon Kelley, CFDI, CFFDI, CFL, CMIL, CPL, ICML, IFDI, LSFDI, has been involved in the locksmith industry since 1989. He is the proprietor of Vernon Kelley Security Consulting, LLC. A noted instructor, writer, and an expert in fire and life safety codes in the means of egress, he's co-author of the book, *Institutional Lock Shop Management* and is editor-in-chief of the *IAIL Forensic Locksmith Manual.* Vernon is currently the first trustee of ALOA Institutional Locksmiths, secretary for the ALOA Scholarship Foundation, and an ALOA SPAI non-voting director. He's a recipient of the *Lee Rognon, AIL Influential Leader, Robert Gress, Gerald J. Connelly, Jr. Pioneer, Ray D'Adamo ACE Instructor of the Year,* and *Keynotes Author of the Year* awards.

Lishi Troubleshooting

Aidan Coates, CRL, provides solutions to a few common problems with Lishi use.

FOR LOCKSMITHS, LISHI tools can be a game changer, offering a faster, less invasive way to handle lockouts and all-keys-lost situations. On the other hand, when they do not work as expected, it is easy to fall back on the time-consuming method of removing the lock and reading the code. But what if you could troubleshoot these issues and avoid that frustration altogether?

It is understandable why many people struggle with Lishi tools. With the large variety available, it makes it difficult for the average locksmith to master every tool for every keyway. However, in this article, I will demonstrate that with a sufficient understanding of common problems when picking with Lishi, you can develop proficiency with a keyway without ever having used that specific tool. You may already understand the basics, but by knowing exactly what problems you might run into and how to solve them, you can be prepared to conquer any lock before you show up at the job site. While much of this information is directed toward automotive Lishi tools, many of these principles apply directly to standard pin tumbler keyways as well.

FIGURE 1. The author has found that Tri-Flow lubricant works best for Lishi picking.

Conversations with other locksmiths inspired me to write this article. It is apparent to me that many locksmiths have given up on learning certain Lishi keyways due to the learning curve. Upon learning that the car in the lockout is a Toyota, for example, they had already made up their minds that they would be using a long-reach tool.

Problems From the Start

A typical problem with any kind of lock that you intend to pick with a Lishi or standard pick could be dust or debris. I have experimented with Houdini, WD-40 and Tri-Flow and have found that Tri-Flow works best for Lishi picking (see *Figure 1*). Most locksmiths I have talked to recommended spraying some on a key blank or the tool itself before inserting. However, you can also simply insert the nozzle into the keyway (while using it to push the dust shutter aside if it is an automotive lock) and spray to lubricate the lock. You will notice that lubrication makes feedback much easier to feel while picking with Lishi tools.

Trouble Feeling Stiffness

On some high-security keyways, such as Ford door locks that use the HU101 tool *(Figure 2),* you may not feel any wafers that are stiff. In the scenario where every wafer position feels loose or "bouncy," try picking each position deeper than you normally would, and see what happens. It is not uncommon that once you begin lifting the wafer, it will present stiffness again, and you can continue until it is set. While testing positions, if you feel that you have overset a wafer, it is easy to restart picking since you have just begun.

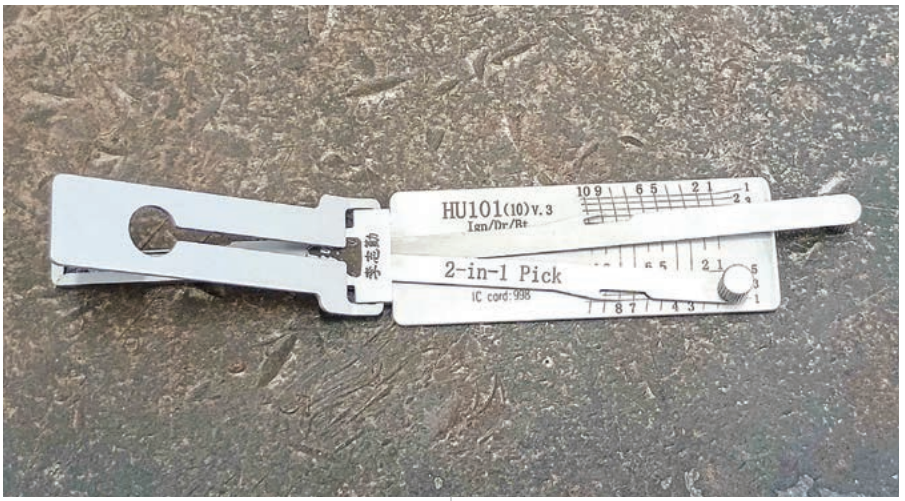

FIGURE 2. The tension bar opened on the HU101 tool.

Serrated Wafers

On other high-security keyways, you may discover that a wafer feels set after being picked, yet after noticing that every other position is also loose, you find it was never fully set to begin with. This is especially common in some European auto locks. It is particularly noticeable in Volvo, for example, where every wafer may feel as though it must be set multiple times to finally pick. Serrations on the wafers may cause the wafer to feel set at multiple depths, much like serrated pins in a pin-tumbler lock. So, what is the solution? While picking any automotive door lock, a locksmith's biggest fear is over-picking multiple wafers and having to restart. If you notice that a wafer feels set at different positions, try setting each tumbler at the shallowest (or lowest) depth it will feel set. Then, systematically feel for a wafer that will bind again when pressure is applied past that depth. Be careful not to over-pick any wafer. The key is to feel whether the wafer binds and provides counter-rotation as you move the lifting arm, meaning it should be picked, or whether it tightens up and increases the pressure required to move it while providing no rotation in either direction.

Once you have set all the wafers, you may still find that the lock does not turn. This can happen when some wafers are not fully set. This brings us to our next question. They all feel picked; which one am I missing?

There are times with every keyway where it will feel like you have picked each wafer, but the lock will not turn. In this situation, it is easy to get frustrated and want to restart. This wastes time unnecessarily and will only increase your frustration. First ensure that every wafer feels just as loose as the others. You may be surprised to find one wafer that is less loose than the others or has more spring pressure. Then, try going just a little farther than you normally would with the lifting arm, and you may get a small click. If not, release a small amount of tension to only reset the most recently picked wafer. Then, resume normal tension and pick it again. This will bind the next wafer again, and check for an over-picked wafer at the end.

> **"As with anything else in this trade, the only way to know everything is to sit down with a tool and practice until you have perfected it."**

How do I know how much tension is specific to each keyway? This is a common question asked by those struggling to learn more difficult keyways. Putting too much pressure on the tension bar can completely prevent the tool from being able to pick the lock. It is tricky for those who are new to the tools because every lock feels different. While some keyways require more tension than others because of the actual spring pressure in the lock, it would not be fair to make a chart by keyway due to the variability of the tension required in each specific lock. Instead, it is important to learn how to tell what kind of tension is needed while picking. Each lock will "tell" you what it needs.

As a rule of thumb, start with light tension and gradually increase it as you progress through the lock. On higher-security, more precise keyways, you will want to keep light tension all the way through, even though it may be tempting to use more force. Remember that while these tools are durable, they do break, and you should never use so much force that they bend.

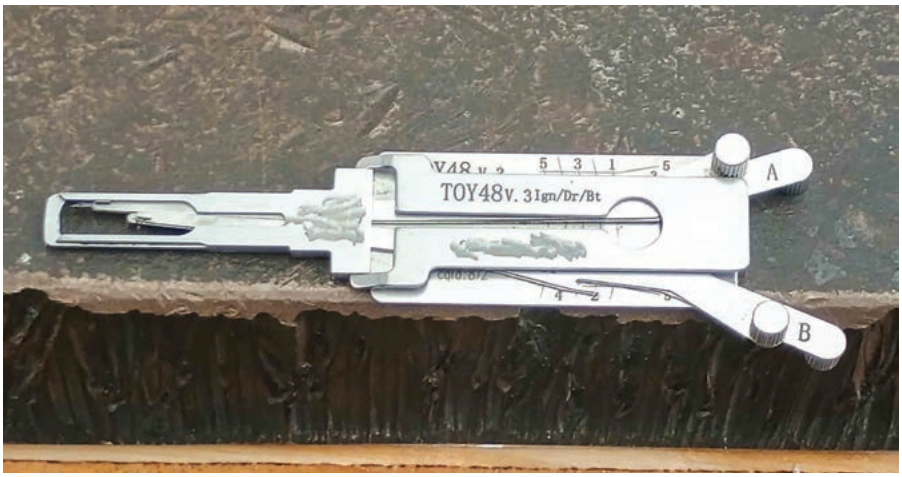

FIGURE 3. The tension bar closed on the TOY48 Tool.

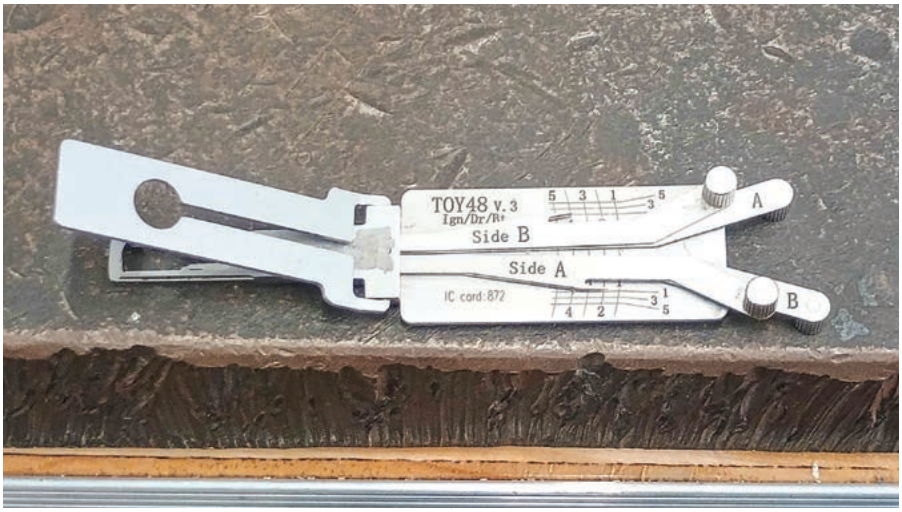

FIGURE 4. The tension bar opened, revealing all four lifting arms.

Another less general rule of thumb for tension is that if you hear each wafer make an extremely loud audible click as it is picked, you are using too much tension. Someone standing a few feet away in a quiet room should, for the most part, not be able to hear each wafer set. At most, picked wafers should be heard only by you and preferably only felt. This comes as a surprise for many locksmiths who want to put as much force as possible on the tool.

Two-Arm Trouble

In deeper conversations about Lishi tools with fellow locksmiths, I discovered a pattern. The number of lifting arms on the tool made a large impact on their willingness to attempt to use it. The TOY-48 4-arm tool (pictured in *Figures 3* and *4*), for example, was feared and avoided at all costs. While I can agree that the tool is significantly more difficult than domestic standard security tools, I will argue that with proper technique, the low number of spaces and depths make it no different than any domestic high-security keyway.

When using multi-arm tools, the key is to develop a consistent picking pattern and stick to it. Some locksmiths like to keep a mental note of which positions have been picked and try to skip them entirely. This is a bad idea while using Lishi tools. Because there is no consequence for checking a position to feel if it is set, you should develop a sequence to pick in and stick to it until the lock is open. Personally, on one- or two-arm tools, I pick the positions in order. I will pick three, for example, then go down to four, then back up to five and go back to the beginning once I have exhausted positions. On four-arm tools such as the one mentioned above, I will pick all of side A, then all of side B and then restart at side A, using the above method for each arm.

Using this method, there is no need to keep track of each picked space, and you will save time that you would have wasted skipping over a position that unset itself and needs to be picked again.

Final Notes

There are a few other issues that can be encountered while Lishi picking that are not mentioned in this article. As with anything else in this trade, the only way to know everything is to sit down with a tool and practice until you have perfected it. The next time you are tempted to bypass Lishi, take the time to troubleshoot and refine your technique — it will pay off in the long run.

Aidan Coates, CRL, is an employee of Crowell Lock & Safe in Ada, Oklahoma, and a Certified Registered Locksmith. As well as being an ALOA member, he also serves on the board of directors for the Oklahoma Master Locksmith Association. He enjoys learning new things about the locksmithing industry and conversing with other locksmiths to understand new techniques, tools, and discoveries.

ALOA

ALOA Security Professionals Association, Inc.

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CANDIDATE PLEASE TYPE OR PRINT

Name: ❑ Mr. ❑ Mrs. ❑ Ms. First_____ Last_____ MI____ Designation _____

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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: ❑

PROFESSIONAL INFORMATION

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

❑ Locksmith Owner
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❑ Safes
❑ Employee Technician
❑ Mechanical Door Locks & Hardware
❑ Investigative

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:_____

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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	$285	❑ I elect to Go Green	$240
❑ International	$295	❑ I elect to Go Green	$210

International Association of Investigative Locksmiths Membership
Must be an ALOA Member in order to join the IAIL.

❑ US and US Territories	$65

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	$285	❑ I elect to Go Green	$240
❑ International	$295	❑ I elect to Go Green	$210

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	$285	❑ I elect to Go Green	$240
❑ International	$295	❑ I elect to Go Green	$210

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	$285	❑ I elect to Go Green	$240
❑ International	$295	❑ I elect to Go Green	$210

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 $80
Canada, Denmark, Ecuador, New Zealand $170
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 (Effective 2/1/2024 there will be a 3% surcharge on all credit card payments.)

❑ 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.

Return to:
ALOA, 1408 N. Riverfront Blvd #303, Dallas, TX 75207
Fax (469) 453-5241 • Email: membership@aloa.org

Phil Agius

What do you see as the biggest challenges the physical security industry faces?

Our lock shop has transformed into more of a contract hardware business. We added hollow metal doors and frames about 20 years ago, and that business has blossomed. Our door business accounts for about 60% of our lock shop business. One of the biggest challenges I see on that side of the business is terrible architecture work. We get quote requests regularly that have horrible hardware lists, improperly labeled doors and all sorts of mistakes. When I first started quoting, I would ask the architect questions when I saw they had something wrong. These days, I just quote what I see and go from there. I don't think most architects have a good enough knowledge of door hardware and should really be discussing the hardware selections with someone in the industry instead of copying it from one job to another. Other challenges include competing with Amazon and big-box stores; we recently got rid of most of our residential displays in the showroom and just carry a few catalogs customers can look through. Most people would rather sit on their couch and buy online, it seems, in our area. That isn't necessarily a bad thing; less inventory keeps expenses down, and you can bump your labor rate.

What are your predictions for the future?

I don't think keys are going anywhere anytime soon. Sure, digital locks and key fobs make our lives a lot easier, but when things go belly up, there are a lot more problems and cost to fix it. We see more access control in our area, so understanding that and finding a good electrician to partner with is key for commercial locksmiths. Residential locksmiths are always competing with the scammers, and until some type of regulation comes into play, that will continue to be difficult. On the automotive side, there is a lot of money to be made; we need to keep up with technology.

How have ALOA and SAVTA benefited you?

Over 30-plus years in the industry, I have attended at least 25 ALOA conventions. When I was young, it was always great sitting around the bar after the show closed, listening to my dad and his gang (Steve Young, Bill Reed, Gerry Finch, Jerry McNickle, Hank Spicer and Michael Miller) chat; there was so much knowledge to gain from that crew.

Back in the '90s at ALOA Cincinnati, our booth was right across from the ALOA van that they were giving away, and just before they drew the winning ticket, my brother Mike told me to grab a few tickets. I bought four for $20, and told Mike he owed me $10. He didn't have a 10, but everyone seemed to have a five in their pocket, including my dad and Milt Clark. Five minutes later, one of our tickets was drawn. We all had a good laugh. I remember driving home with my dad riding shotgun; he couldn't stop laughing. Good times!

Years in the Industry:
33 years (started helping my father when I was 6; full-time in 1992)

Title:
President

Company:
Framon Manufacturing Company, Inc./ Frank's Key & Lock Shop, Inc.

Hobbies:
Playing hockey and pickleball, boating, getting back into golf (with a long way to go)

A Tool of a Different Color

Jeff Gater, CML, completes an opening using a multi-colored tool.

THIS WAS A NEW EXPERIENCE for me. This Cannon Safe had the NL Universal RotoBolt, more commonly called the mini RotoBolt because the lock case is half the size of a standard lock case *(see Figure 1).* Although I had previously replaced one of these locks for a national service provider (NSP), I never had to open one with a malfunction or a lost combination.

It's not always possible to practice on the same lock model you'll potentially have to open, but I had a used mini RotoBolt to experiment with. After dissecting the lock and taking internal measurements, I felt confident about drilling open this lock — that is, until I was in front of the safe.

The one I worked on was a Cannon Landmark 80 safe *(Figure 2).* Cannon tech support had sent the customer a new keypad to try. That didn't work, and the wire was left dangling out of the safe. The plug on the wire was identical to the one used on a LA GARD Basic keypad. I attached the customer's keypad first and entered the combination he was sure of. The lock responded with one long beep for about two seconds. I received the same results with a different NL keypad. I also tried a LA GARD keypad and received the same results. At the time, I did not know the NL lock "wrong entry code signal," which is one long beep. It didn't really matter — wrong code or defective circuit board, I had to drill this lock open.

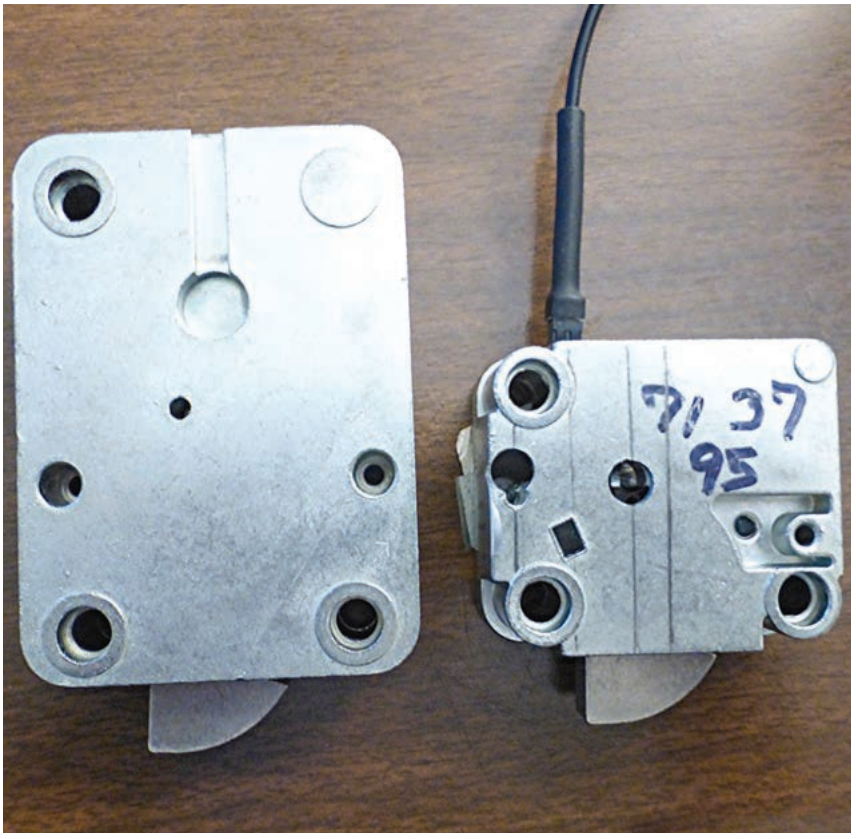

FIGURE 1. The NL Universal (Mini) RotoBolt NL-UR-20-20 on the right is half the size of the NL Standard RotoBolt EM-20-20 lock on the left. From the author's past research, he suggests perhaps the smaller lock is less expensive to manufacture and requires a smaller mounting surface. This would require less barrier material to protect against drilling as well.

FIGURE 2. Here is the Cannon Landmark 80 gun safe.

FIGURE 3. This photo was from a previous lock replacement job. The lock is very close to the BCH as it blocks the carrier bar from moving.

FIGURE 4. This string of beads with lead shot on one end was made for finding the mini lock inside of a safe. It was purchased at SAFETECH 2019 from Taylor Technologies.

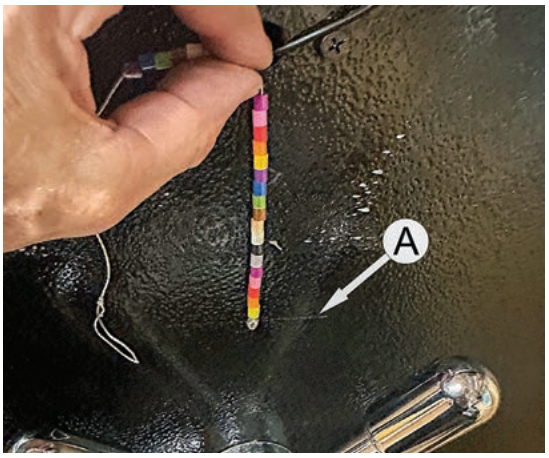

FIGURE 5. The string of beads is first dropped inside the spindle hole until it touches the lock. The distance is easily marked using the colored beads. Then the beads are held on the outside of the door. A horizontal line is drawn at "A." This represents the top of the lock case, or the plug side of the lock.

Planning to Drill

The spindle hole for the keypad wire was huge, and it was plain to see without a scope that the lock was not directly behind the keypad. Using a 70-degree scope, I could see the lock was below the hole. I did find a photo of the inside of the door that showed the lock was very close to the bolt control handle (BCH) *(Figure 3)*.

However, estimating distances through a 4 mm scope is not one of my strong skills. How was I going to determine the location of the lock? I needed a tool like a wire to reach in and down until it touched the lock case. Then it dawned on me: I have a tool made exactly for this purpose, purchased in 2019 from Taylor Technologies. I was told Ryan Taylor's young son had invented and made it. I did a quick search on the Taylor Technologies website and did not find this tool, so it must have been discontinued.

> **"I needed a tool like a wire to reach in and down until it touched the lock case. Then it dawned on me: I have a tool made exactly for this purpose."**

The tool is a string of different-colored beads, with a lead shot at one end *(Figure 4)*. I simply dropped the lead weight into the hole until it stopped. I noted which color bead was at the hole and then removed the tool *(Figure 5)*. The measurement between the lead shot and the noted color bead gave me the distance to the top of the lock case. I assumed the mini lock was mounted on the center line between the spindle hole and the BCH. If it wasn't, I could drill another hole. For the moment, I needed a starting point.

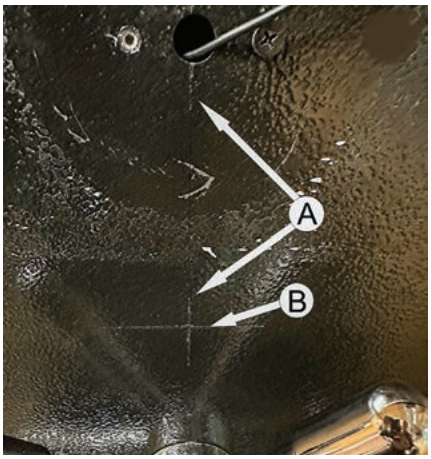

FIGURE 6. "A" is the center line drawn between the spindle hole and the BCH. The author's best guess (which was wrong) was that the lock was mounted on the center line. The horizontal line at "B" represents the top or plug side of the lock case.

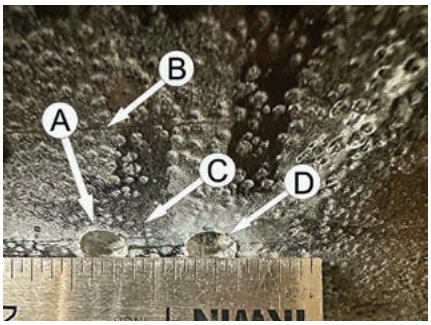

FIGURE 8. The author's first hole at "A" was in the wrong place. The hole is ⅞" from the horizontal line at "B" and ¼" left or counterclockwise from the vertical line "C." If the lock had been mounted on the center line between the spindle hole and the BCH, this measurement would have worked. The correct hole is at "D."

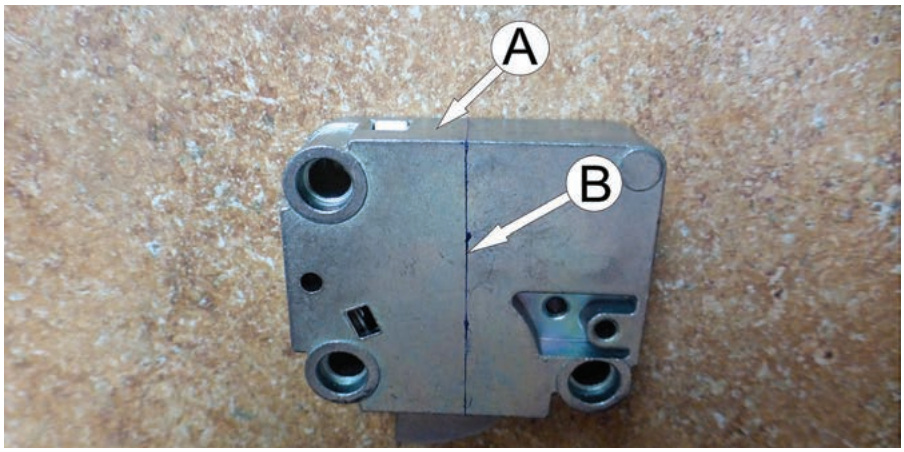

FIGURE 7. A center line was drawn on the lock case at "B" of the author's used lock. The top or plug side of the lock is at "A."

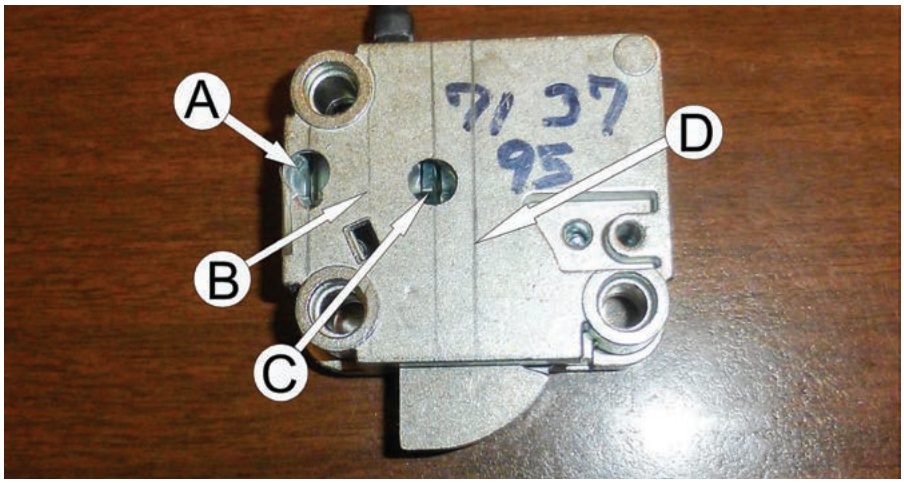

FIGURE 9. The author's first hole was at "A." "B" represents the center line between the spindle hole and the BCH. The target hole "C" is ⅜" from line "B." The target hole is exactly 5" down from the spindle center, ⅜" counterclockwise. The center of the lock case is at "D." If the center of the lock were mounted perfectly between the spindle hole and the BCH, the author's first hole would have gotten the safe open.

I drew a straight line through the center of the spindle hole down to the center of the BCH. I marked the distance to the top of the lock case using my beaded string measurement and drew a horizontal line *(Figure 6)*. I then drew a center line through my used lock case *(Figure 7)*. I placed the lock on the center line I had drawn, with the plug side of the lock case against the horizontal line. This was my starting point. The locking cam is ⅞" down from the plug side of the lock case and ¼" left (counterclockwise) *(Figure 8)*.

Drilling Begins

I marked the hole and started drilling with a ¼" StrongArm 2 drill bit. I expected to hit some resistance, but the drill bit was cutting nicely while I applied pressure with a lever rig. I didn't expect the thickness and hardness of the hardplate. After about 30 seconds of drilling, I expected to be through the hard stuff and into the lock case, but I had to take a break after a full minute of drilling. I was scratching my head and asking myself how thick the hardplate was. I examined the drill bit, and it still looked sharp. I examined the hole as well, and I was making progress — just not as quickly as I expected. Even though my first bit looked good, I chucked up a fresh drill bit anyway and started drilling again. I was then in a better frame of mind because I had resigned myself to keep drilling until the drill broke through the hard barrier.

Upon entering the lock, my first look through the scope left me wondering where in the lock case I was. I took the back cover off my used lock. I was a full ⅝" off from my target *(Figure 9)*.

This told me the lock was not mounted on the center line between the spindle hole and the BCH. I had to make another hole ⅝" to the right of my first hole. Using constant and even pressure with a lever rig, I let the drill bit cut at its own pace through the 5⁄16" of laminated hardplate.

The hole was on target. Using an ice pick and a scope, I pushed the blocking cam straight back and turned the BCH CW to open the door *(Figures 10-12)*.

> **Upon entering the lock, my first look through the scope left me wondering where in the lock case I was.**

Completing Repairs

I removed the old lock and plugged the holes with 5⁄16" plugs made by the late Gerry Forder. I did not have a new NL mini RotoBolt for lock replacement. I opted to use a SecuRam swing bolt. This required me to drill and tap one hole to secure the larger lock case size. I made a hole deep enough to tap the needed 1/4-20 threads, but my tap would not cut threads into the hardplate. The lock sits on 1⁄16" of mild steel on top of the hardplate. The tap cut threads into the mild steel just enough to secure the lock. Most of the stress would be on the two

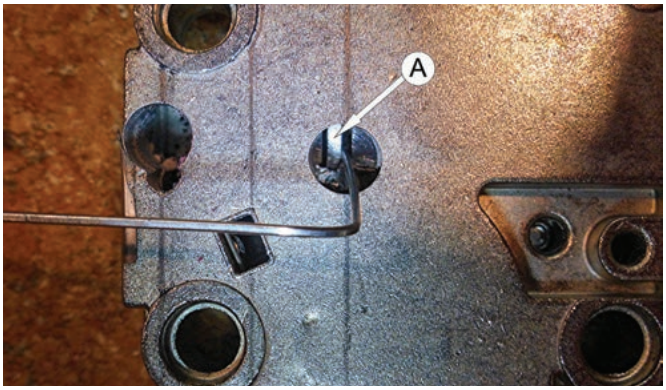

FIGURE 10. This photo shows a bent paper clip pushing the blocking cam at "A" straight back. The author used an ice pick on the job site. See *Figures 11* and *12* for a look inside the blocking cam.

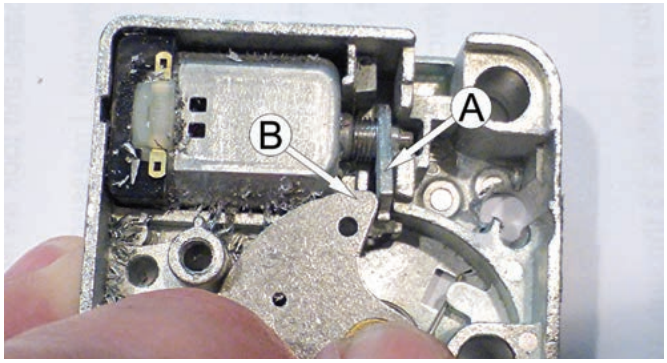

FIGURE 11. Here is an inside look at how the lock functions. The blocking cam at "A" prevents the swing bolt at "B" from rotating. When the motor is energized, the blocking cam rotates up, allowing the swing bolt to move when the BCH is turned on the outside.

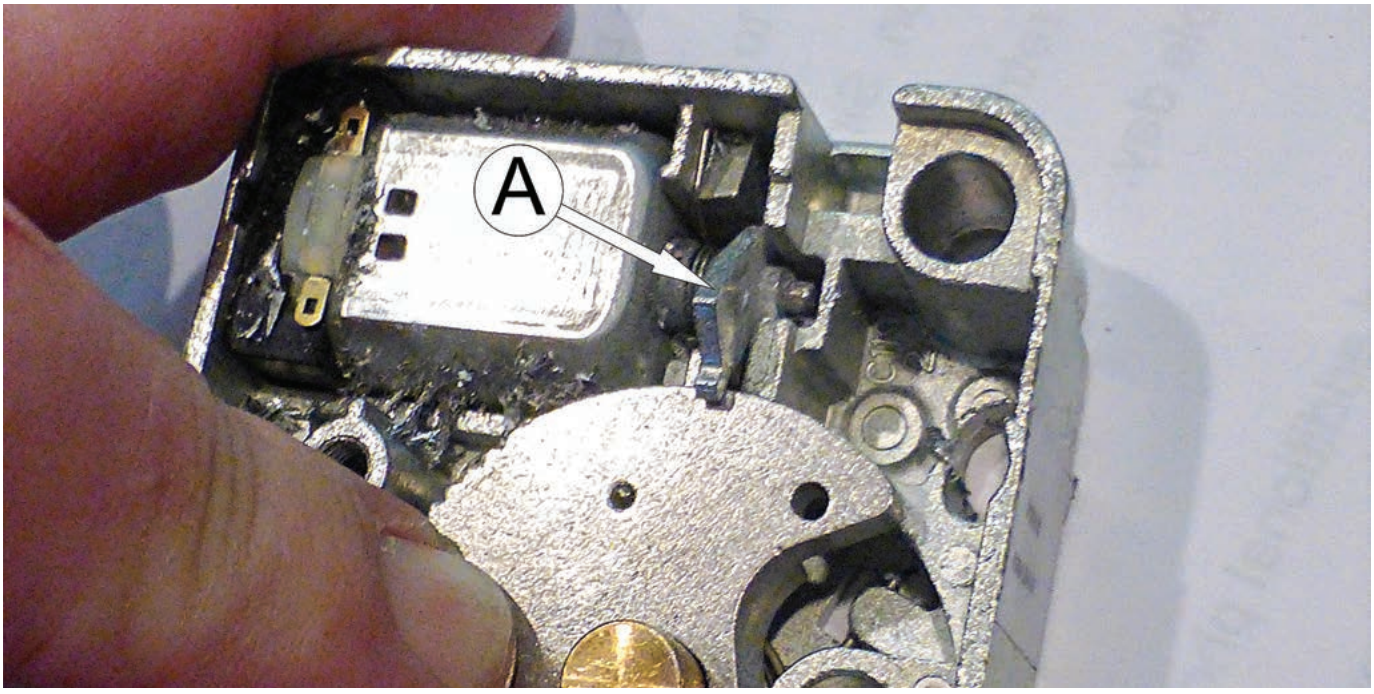

FIGURE 12. Here, the blocking cam at "A" has been rotated up, allowing the swing bolt to move to open the safe.

mounting screws closest to the swing bolt, so I was content the lock would not fall off the door if placed under duress *(Figure 13)*.

To summarize, if you get one of these Cannon gun safes with the NL mini RotoBolt, a good starting point is 5" down from the spindle hole center, ⅜" counterclockwise *(Figure 14)*. After penetrating the lock case, locate the blocking cam and push it straight in. Then turn the BCH clockwise.

When I returned to my office, I noticed the lock had a label with a code printed on it. I connected the keypad with a battery and entered the code. The lock beeped twice, and the motor energized. The code on the label was a service code *(Figure 15)*. The default service code is 5-5-5-5-5-5 when the lock is new out of the box. Before installing the lock (unless an NSP sent the lock to you), the service code must be changed to your own secret code. This action will activate the user code to work on 1-2-3-4-5-6. Since my customer's lock worked on the service code, I have to conclude the customer forgot their code or tried to change it on their own and messed up somewhere during the procedure.

Having over 45 years in the locksmith trade, safe opening still makes **Jeff Gater, CML,** feel like an apprentice. "When I gave up keys for autos and access control to specialize in safe work, I had no idea the depth of knowledge and skill that would be involved." Each safe opening is an adventure, from the characters involved to the tight spaces safes are installed in and the surprise complications that lead to extra holes. Safe opening is an exhilarating chess game between manufacturer and safe technician.

FIGURE 13. The author installed a SecuRam Basic swing bolt. Notice there is no relock trigger plate or external relock on this safe.

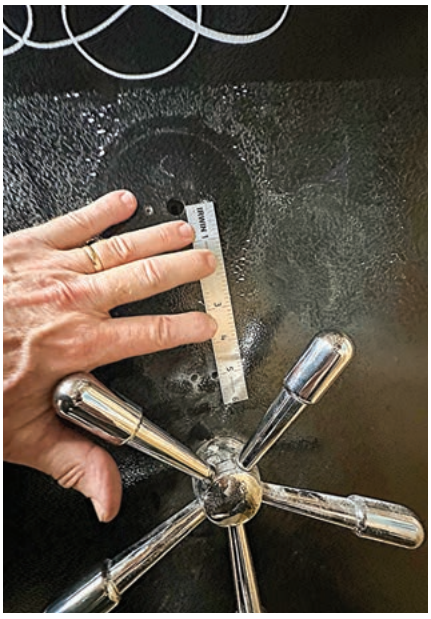

FIGURE 14. To the blocking cam, it's 5" down from the spindle hole center and ⅜" counterclockwise. Drill into the lock case and push the blocking cam straight back.

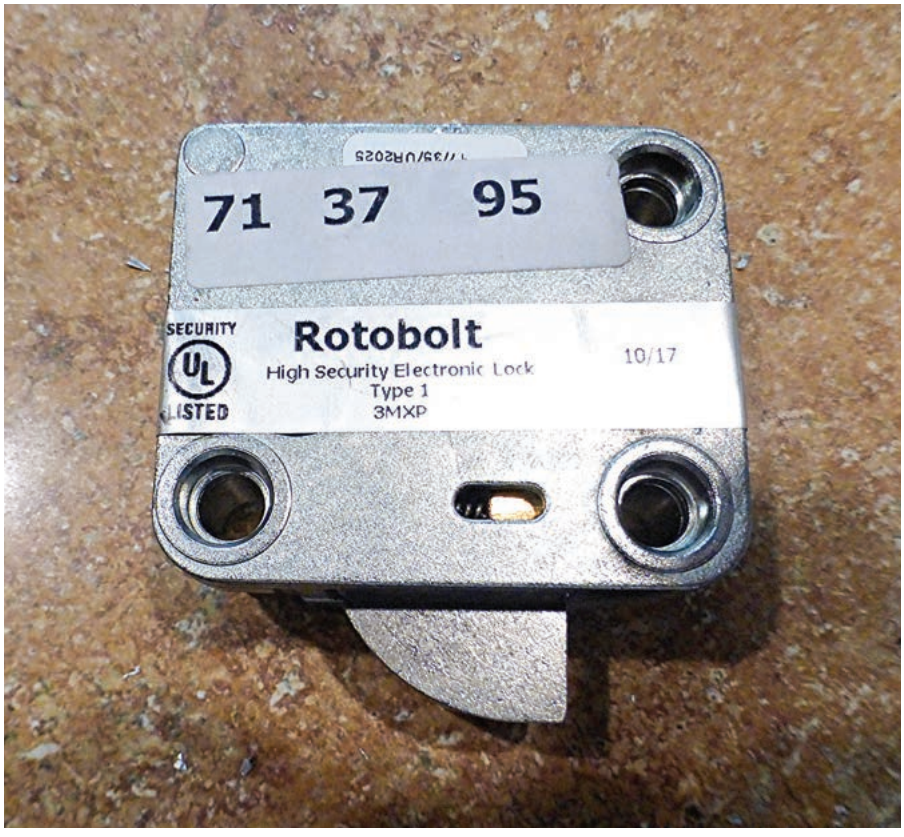

FIGURE 15. The code on the label is a service code that might be retained by the manufacturer. Since the author's customer received a new keypad from Cannon, the author assumes Cannon does not keep records of service codes — or they only use the service code when they send out a tech for a warranty issue.

Products & Services Guide

Managing Employees and Marketing

Dave O'Toole continues his series on how locksmiths can leverage the changing environment to grow their businesses.

The previous installment in this series was in the January/February issue of Keynotes.

A **FUNDAMENTAL DECISION** you have is whether you want the responsibility of employees. This decision will shape your working life as well as your home life.

If you decide that you do not want the responsibility and would prefer to work on your own, then you have the opportunity of working mobile or in a shop on your own and subcontract if necessary.

If you decide to hire employees or subcontractors, it will allow you to grow your business, and hopefully in years to come the opportunity to enjoy a better lifestyle. By hiring good staff, you can work *on* the business and not *in* it! Whether you hire technicians or administration staff to do the laborious paperwork, it frees you up to concentrate on growing the business and diversifying into other areas of locksmithing that you are not proficient or comfortable with.

- Value and pay a proper wage to your good staff at all times, as it is very expensive and time-consuming to train new ones.
- You can hire locksmiths who specialise in different areas to increase your services or one who will help you with the administration. Use all the talents of your team. You may have one staff member who is great on the computer and can generate business for you over the internet. You may have another staff member who has an aptitude for sales and would love to get you new customers when times are slack. Either way, do not be afraid to get your staff to multitask.

Learn to delegate and trust your employees, but have systems in place for accountability. Always be aware that an employee could leave and become your competition while taking some of your customers with them. A bit of time spent drawing up report sheets will pay you huge dividends in the long term. Regularly check the sheets and monitor staff activities and input into your company. Some sheets and charts worth considering:

- Daily signing on time sheet for all staff either by paper or electronically.
- A form for each employee detailing their jobs for the week, including if they were completed with times on-site and whether payment was collected.
- Job sheets for bench work and who completed it.
- Expense sheet for each employee to check their purchases, including fuel, tools and sundries.

Write down five specific things for the employee to do every evening for the following day in their own personal diary. They can be simple things like sorting inventory, cleaning the shop or van (time permitting). It will get done if written down. Check diaries at the end of the week.

Always follow the correct procedures when disciplining employees. They do

have rights and can sue if proper procedures have not been followed.

Factor in the cost of family members doing work without charge or at low wages in case you need to replace them and pay full wages.

Some staff members, especially the next generation of family, want to improve the business. They are younger and usually hungrier and will embrace new technology to drive the business forward. Give them the opportunity, and they might surprise you!

Using New Technology

Part of managing staff is also providing them with tools to create a more efficient environment. There is much advanced and exciting technology on the market today to help the locksmith:

- Key machines that are so precise with code cutting facilities and will read worn keys. Some have automatic feeding and cutting that will save labour time, especially with high-volume, single-key orders. These are normally computerised and expensive but may add great value to your company and should be considered if necessary and you can afford it.
- Computerised counter invoicing and bar code tills are invaluable to busy shops that do a lot of invoicing. Normally, locksmith invoices are of low value and time-consuming for your bookkeeper to computerise or keep account of. By the counter staff inputting, this will save you administration costs. It can make pricing and ordering of stock so much easier if managed well.

Smartphones can be used for:

- Photographing or videoing jobs or when trying to source locks.
- Saving work details emailed from the customer with an audit trail.

“Locksmithing is a unique industry, and by thinking outside the box for low-cost advertising and marketing ideas, you will increase your business.”

- Invoicing and emailing report sheets directly to the customer from the vans.
- Downloading product information, programming instructions and maps for directions.
- Vehicle tracking devices and dashboard cameras can record attendance at locations for pricing and invoicing for work carried out.
- Monitor any personal use of vehicles and fuel costs.
- Facilitate insurance issues or police investigations.
- WhatsApp is a great app for communicating with staff and customers.

There are special software packages available for locksmiths to help with invoicing, stock ordering, and control and service jobs sheets. Some software programs can interface with your supplier’s product and price guides and order automatically when stocks are running low.

There are programs that can even automatically dispatch service calls to the nearest service van by using the vehicle tracking system on board.

Marketing and Advertising

As mentioned earlier, marketing and advertising should be considered vital in running a profitable business. I would even go as far as to say that they are more important than job skills to grow your business. There are many books written on this subject, but I have listed some of the traditional methods of advertising used by locksmiths:

- Word of mouth
- Business cards
- Leaflets and flyers
- Stickers
- Billboards
- Shop and van signage
- School journals
- Calendars
- Direct mail
- Office desk promotional accessories
- Local directories
- Phone operator directories
- Internet/website
- Social media (LinkedIn, X/Twitter, Facebook, Instagram, TikTok)
- Newspaper
- Local radio
- Networking organisations
- Trade magazines
- Exhibitions and trade shows
- Sales rep on the road

Locksmithing is a unique industry, and by thinking outside the box for low-cost advertising and marketing ideas, you will increase your business. You can:

- Fit service stickers to the inside of doors you have worked on, which advertises your company name, phone number and website address.
- Hand deliver invoices to your customers if possible, as it gives you the opportunity to meet them face to face. You will be surprised how often you will get additional work from them. Use the back of your invoices to advertise all the services that you provide.
- Donate prizes to your large repeat commercial customers for a Christmas raffle. It will be appreciated by all the staff (including accounts payable) and will generate more work for you.
- Advertise a phone extension number or unique reference number for each individual ad, or ask the customer

where they got your number so you can measure each ad's effectiveness.
- Advertise that you belong to your locksmith association for credibility and status.
- It's easier and cheaper to keep a customer than it is to get a new one by looking after customers and giving a great service with a fair price.

The Internet

Many locksmiths are now using the internet to advertise, as it has replaced phone books as the main source for new business. The internet has become so popular now that to get to the top of the listing, you will have to pay for it either by paying per click or paying time or money for SEO. Paying per click is quite expensive, as locksmithing is considered a premium service by Google. The current cost per click in some major cities is so high that it has been known for competitors to click and use up the allowance. You have added competition from scammers who advertise cheaper rates. They are known to invest heavily in pay-per-click ads, which drives up the cost.

A major problem now is that customers (especially young adults), Google services on their smartphones. If they are locked out of their house or car, they will Google and call many locksmiths to get the best price possible. As a result of the increase in usage, locksmiths who pay for clicks are incurring added costs and increasing their advertising spend. You could use a separate phone number to monitor the response and actual returns from paid internet advertising to see how cost effective it is.

Use proper search terms that suit your company to benefit from internet advertising. You can monitor search terms and results on "adwords.google/keywordtool" to help your market research. You can find the most common words and terms used by customers to source locksmith services and include them in your search terms. Terms like "emergency locksmith service" "24 hour locksmith" or "locksmith near me" incur heavy costs.

> **"Fit service stickers to the inside of doors you have worked on, which advertises your company name, phone number and website address."**

A locksmith I know measured his return on internet advertising. He was paying $16 per click, and he discovered that each job he got from Google click cost him on average $38. Some were big jobs with materials involved, but most were standard callouts, making those jobs unprofitable.

In the U.S., Google is considering changing its business model. Instead of pay-per-click advertising, they may select certain areas to advertise locksmiths who pay them directly for call referrals, even if they don't get the work.

Evaluate the Competition

When planning your advertising, it is always worthwhile to evaluate the local competition. You can do this by studying them online and seeing what services your competitors are offering. It is surprising what you can learn! For example, in one area that I investigated, there were 53 locksmiths advertising services which listed the following services and claims.

Services advertised

Lock specialists 33
Lock and door opening 28
Lock fitting 27
Burglary repairs 16
Emergency boarding 15
Car opening 14
Replacement door and frames 13
Safes 8
Glazing 7
Key cutting 6
Alarms 5
Master key systems 5
Door repairs and carpentry 4
Door entry systems 4
Access control 3
Auto specialist 3
Digital locks 3
Grilles 3
Security doors 2
Shop 2
Roller shutters 2
CCTV 2

Claims

No callout charges 21
24-hour service 18
1-hour response 10
Free estimates 7
Discounts offered 8
Work guaranteed 6
Non-destructive 5
Trade membership 5
Years' experience 5
Police checked 4

I know that, in this town, I would not waste too many resources advertising emergency lock opening, as the market is overcrowded, and the prices I can guarantee you will be very competitive in these sectors. There are, however, very few companies advertising high-end services like master key systems, access control and safes, which would be more lucrative. By itemizing the services and selling points of each company advertised in your local area as I have done below, you will get a better idea as to what services to promote more than others while still supplying regular locksmith services.

Seven of those ads advertised emergency car lockouts for $15, which would make it impractical to advertise car lockouts to grow your business — unless they were scamming!

Check the internet regularly for locksmiths in your area and see what new promotions they are advertising. Google Maps is very popular for customers to source service providers locally. It flags the location of business premises on a map of the area.

Be a mystery shopper and call your local competitors to find their call out charges and labour rates.

Be Professional

Advertising and marketing can be as simple as the name or logo on your shop, van or shirt. That means a clean shop, clean van and clean clothes!

It is very important to look and act presentable at all times when doing your work. It is always a good advertisement for your company, and you can comfortably charge a proper rate.

Many companies spend a lot of money advertising their phone number. Yet when the calls come, the phone is answered very unprofessionally. This deters the customer from buying. The phone should always be answered like the following, for example: "Good morning, ABC Locksmiths, Steve speaking. Can I help you?" This instills confidence in the customer, and they are more likely to buy from you. Other simple ways to reassure the customer:

- Aim to arrive when scheduled, and offer identification on arrival. If running late, phone ahead to the customer and advise them.
- You should do the job professionally. When opening locks, use picks instead of slipping or drilling locks, as that is what is required of you as a locksmith. Put on a little show for the customer and put a little time in, as they will be reluctant to pay for a few seconds work that they feel they could have done themselves. Emergency locksmith work is a grudge purchase for the customer. You may have travelled an hour to get there, but many customers do not value your service once the door is open and they are in.
- If the locks are of poor quality, then offer professional advice about upgrading the security without a hard sell or frightening the customer. You have a better chance of getting the work, as the customer will trust you more.
- Put plenty of detail in your invoicing, such as lubricating hinges or adjusting door closing speed. The more content in the invoice, the more you are appreciated by the customer and the easier it will be to get paid.
- On completion, leave your business card with a guarantee excluding door warping, vandalism, etc., and thank the customer for their business.

Dave O'Toole is the European Director for ALOA and president of the European Locksmith Federation. He has owned and operated a locksmith business in Dublin, Ireland, for 41 years. He is the founder and owner of Bella Smart Lock, a hands-free smart lock technology for the elderly and people with disabilities.

UL Standards for Access Control

Find out what you need to know about UL 294. **By Randolff Carpenter Sr., CEL, LSFDI, CAT I & II**

IF YOU INSTALL, SERVICE OR maintain electronic access control systems, you need to know about the UL 294 *Standard for Access Control System Units*. This is a UL, or Underwriters Laboratories (now known as UL Solutions), standard — a published document. It certifies that manufacturers have used best practices when manufacturing the listed device, as well as the specific approved application(s) by the end user(s). This ensures that the device used in an electronic access control system will provide all of the life safety, security and performance needed by each individually tested device. A

UL certificate does not certify proper application of a device. That is left to the knowledge of the technician and the requirements of the authority having jurisdiction or (AHJ).

The written standard stipulates the required construction, performance and operation divided into several components for laboratory testing and rating. Once an item meets all of the minimum manufacturing requirements, it is sent for laboratory testing in the exact configuration as stated for the listing. The device then gets tested under a myriad of conditions to ensure both its operational safety compliance and performance. Only then is it given a UL 294 certified listing.

This is exactly why I always use the device manufacturer's power supply when possible for the electronic door hardware that was chosen. It was tested using a specific power supply and should always be used with that rated device. This certifies that when the power supply is powering a life safety device, it will meet or exceed the performance standards of that manufacturer for a reasonable period. The power supplies and components that you choose must be cross-listed with each other to meet the UL listing compliance. This is also why power supplies do not have universal mounts in them. The enclosures were not designed and tested to contain other manufacturers' power supply boards.

The power supplies can be either Class I or Class II — International Electrical Code Rating (IEC) or National Electrical Code (NEC) — with the difference being the protective insulation between the current carrying conductors and the end user. NEC ratings are much safer than IEC ratings. The NEC rating of Class 2 (different than Class II) refers to the output capabilities of the AC/DC power supply. The power supply board installed

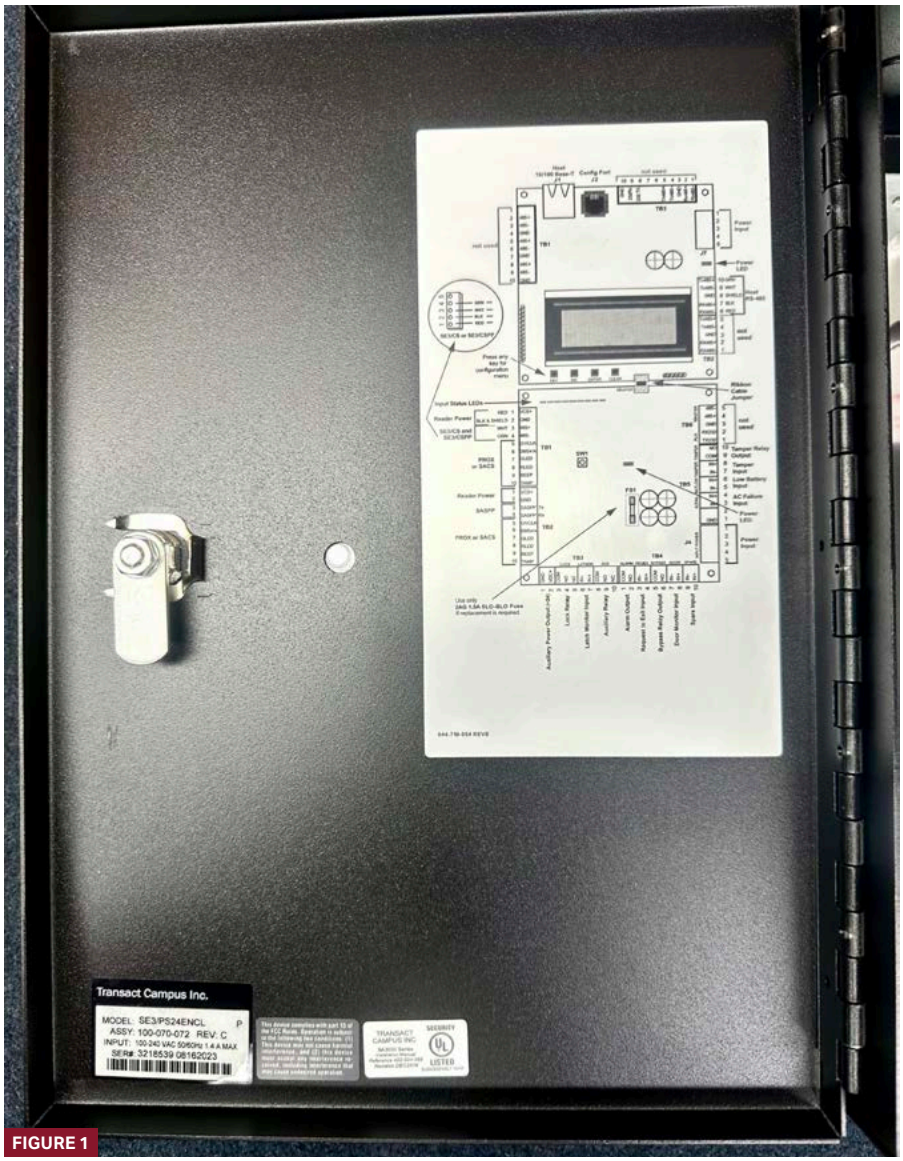

FIGURE 1

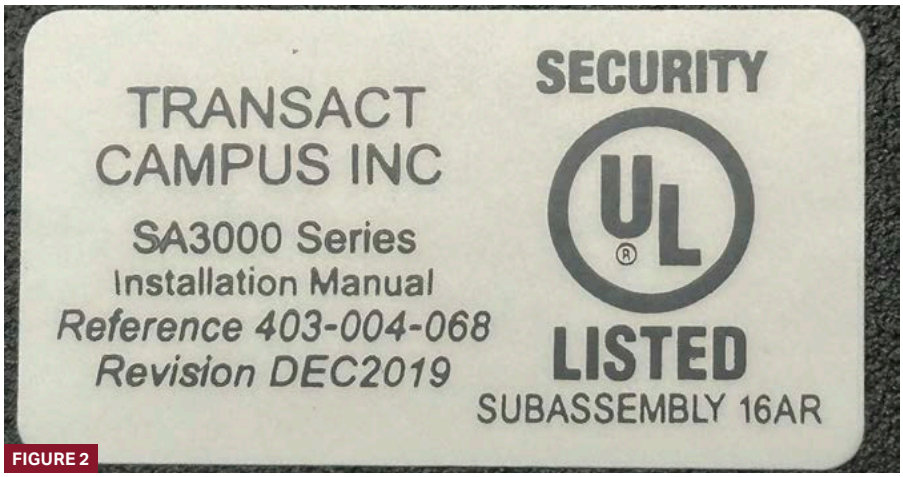

FIGURE 2

FIGURES 1 AND 2. Shown are a UL Listed enclosure with a power supply and a UL listing label.

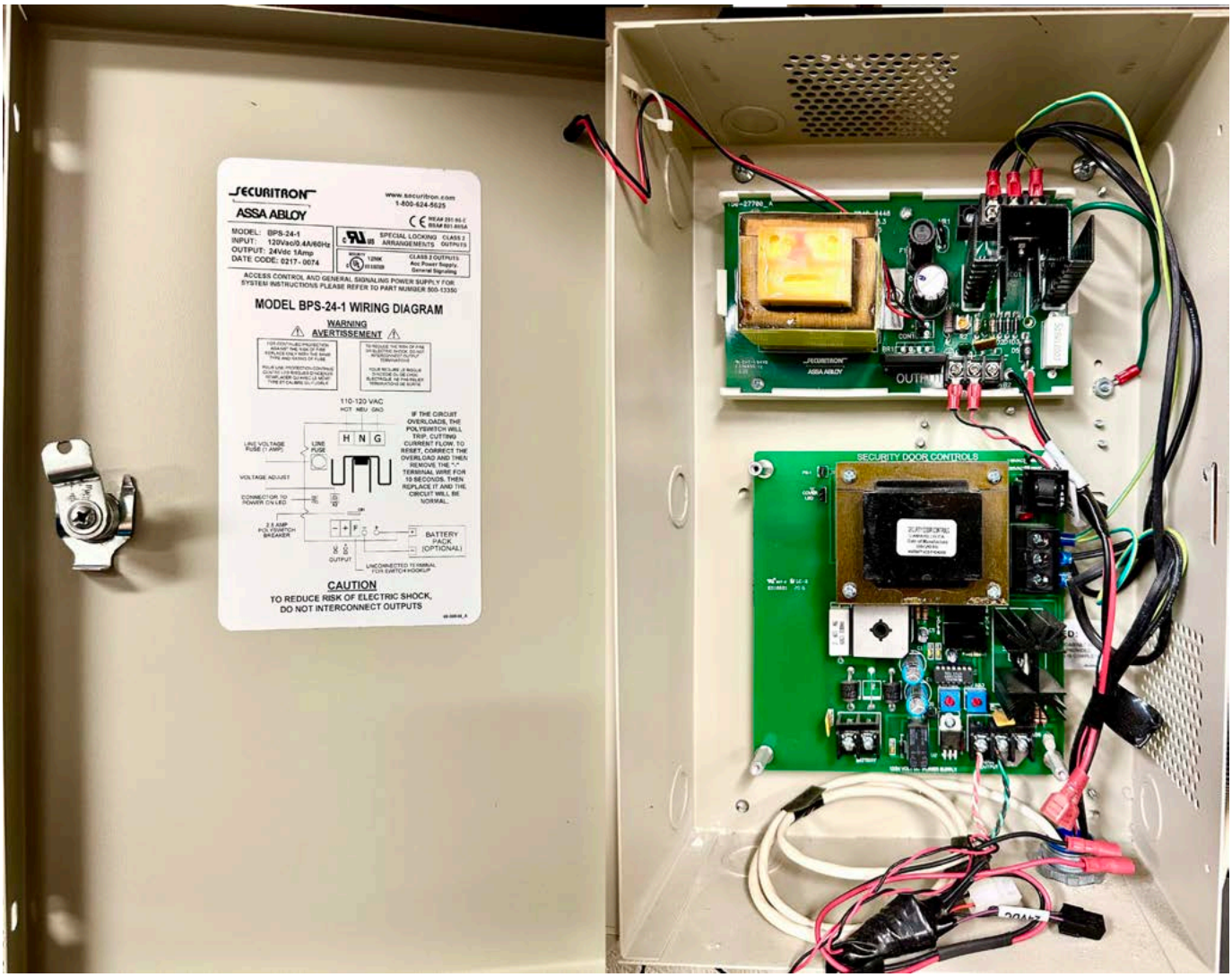

FIGURE 3. Here is a picture of a UL Listed Securitron power supply with two different power supply boards mounted in it. This would never meet UL. Fortunately, this is just a bench testing setup at the author's shop.

in the rated enclosure originally was performance tested and UL listed with that specific enclosure. The power supply met all the testing and performance criteria, such as power output, heat dissipation and electrical isolation as well as the physical attack rating for a specific application to earn that UL listing.

When you are servicing or repairing systems, you must use UL Listed devices that were specifically approved for the intended installation without substitution, unless it is approved by the Authority Having Jurisdiction (AHJ). (Note: Minor changes to a system are rarely inspected by an AHJ). Other power supplies may work and provide sufficient or even more power than required. However, they may also cause detriment, such as interference with communications, or clipping — or, worse, they can fail during a critical life safety event.

Using only the listed equipment that was originally installed is also a great way to minimize your exposure if something happens that has legal implications. You can be held responsible for altering a life safety device or not using the proper life safety equipment should someone be injured or worse. This is one of the major reasons to use only equipment that is UL Listed and installed exactly as it is or was specified by the system designer or architect.

Changes Made to NFPA and IBC

In 2009, a new section, 7.2.1.6.3, was introduced to the NFPA 101 (National Fire Protection Association) *Life Safety Code*. It was specifically created for electrically locked elevator lobby doors, thus requiring a UL 294 listing for the electronic locking device. During the onset of this new code requirement, only the electronic lock mechanism was listed, but not the switch or any of the safety devices. The groundwork for requiring the UL listing for this one device paved the way for the current NFPA 101 and the International Building Code (IBC) model codes for locking systems. There

> **The power supplies and components that you choose should be cross-listed with each other to meet the UL listing compliance.**

are some other codes or standards that may apply and are quite similar.

In 2012, the IBC listed its initial requirement for UL 294 certification. This was primarily intended for electromagnetic locks, citing the 1999 edition of UL 294 and all revisions through 2009. Later, in 2015, the IBC requirements for UL 294 listings added the following sections to the code book:

- 1010.1.9.6 - *Controlled Egress Doors in Groups I-1 and I-2*
- 1010.1.9.7 - *Controlled Egress Doors in Groups I-1 and I-2 * with exceptions*
- 1010.1.9.8 - *Sensor Release of Electrically Locked Egress Doors*
- 1010.1.9.9 - *Electromagnetically Locked Egress Doors*

All the locking systems referenced in these four sections of the IBC mandate UL 294 listing with certification. All four sections pertain to electronically controlling the ingress and egress of the same door. The exception to this part of the IBC is where the areas that are controlled are occupied in whole or in part by persons with clinical needs, or that require restraint and/or containment for psychiatric needs.

To understand this section of the model code, you should know how the IBC defines the occupancy groups. They are as follows: (A) Assembly, (B) Business, (E) Education, (F) Factory, (I) Industrial, (M) Mercantile, (R) Residential, (S) Storage and (U) Utility. Basically, a UL

FIGURE 4. Here is a UL Listed Von DuPrin EPT10, Electronic Power Transfer hinge (10 wire), which is used to transfer power to electric mortises, strikes or exit devices on a hinged door. Never supplement a door chord for a power hinge, as a fire door will specify exactly what can be connected to it, or the system designer will have specified a certain product.

FIGURE 5. Here is an example of two UL Listed devices and their respective UL certifications.

FIGURE 6. This is a fire-rated electric door strike that can be used on either a UL1034 certified door or a UL294 certified door. In this case, what makes the difference is the fire rating.

294 certification is not required only on Delayed Egress Doors in Groups B, F, I, M, R, S and U. Doors in these occupancy groups may require some other certification, but not UL 294. Doors in occupancy group (E) Education don't require a UL 294 certification when a delayed egress lock is installed on a classroom door with less than a 50-person occupancy rating and the door is not the primary means of egress from the building. This would be a small classroom or office, not a large (A) assembly room (over 50 occupancy).

UL294 can be over-applied. Understanding of the intent of the code — to require the listing is only where egress is restricted — is essential. If you review the codes, you will find there are different requirements by both the IBC and the NFPA. Both have multiple sections requiring UL294. There is a great article referencing the codes: *Greene, Lori, 2021 UL294 Follow Up iDig Hardware, May 4, 2021.* Here are a few key codes to take away from that article on areas of the code requiring UL 294.

IBC Sections:

1010.2.11 - An electromagnetic lock released by a switch in door mounted hardware.

1010.2.12 - An electromagnetic lock that is released by a sensor that detects an approaching occupant.

1010.2.7 - A fail safe electromechanical lock that allows free egress to a stairwell and can be remotely unlocked on the stair side for stairwell reentry.

1010.2.13 - Delayed egress hardware which delays egress for 15 seconds and allows egress on activation of a fire alarm.

NFPA 101 Sections:

7.2.1.5.7 - Remote lock/unlock of a fail-safe electro mechanical lock on stair side for stairwell re-entry.

7.2.1.6.1 - Delayed egress panic hardware which delays egress for 15 seconds, that allows immediate egress on a fire alarm.

7.2.1.6.2 - Sensor Release of Electrical Locking Systems.

7.2.1.6.3 - An electromagnetic lock released by a switch in door mounted hardware.

IBC 2015 required that delayed egress locks be UL 294 listed. However, NFPA 101 does not require a UL 294 certification at all locations where electrified hardware might be used. Thankfully, code-compliant equipment is specified by the systems engineer or architect when designing a system. Typically, most system designers are a minimum of National Institute for Certification in Engineering Technologies (NICET) certified, so you don't have to worry about it, right? Wrong. You are still responsible for ensuring compliance. In conjunction with that, the AHJ may have additional requirements that exceed the local code requirements, or they err on the side of safety. The usual question is, "Does the AHJ have that authority?" Yes, the AHJ maintains that right.

Even though all these standards directly affect the electronic access control systems, many installers and service personnel working in the electronic security and/or locksmithing industries either do not understand or are unaware of these changes. These codes and standards now cover all the following topics: delayed egress systems, power supplies, power supply combination panels, keypads, biometric readers, card readers, electric strikes, electrified exit devices and kits used to electrify existing hardware. There are also codes and standards for the door cords, electrified hinges, sounders, exit signs and even the signage on the door. You need to understand all of this to effectively install and maintain electronic access control systems.

UL Listings Versus Fire Rated

Electronic locks are not all treated the same. Some locks, although similar in usage and application, have different specifications and grading for physical attack resistance, fire rating or other essential requirements. Additionally, some devices are designed only for use on a residential burglary system. They are not rated for commercial use, nor are they designated as a life safety device. Electronic locks and hold-open devices that integrate a fire alarm control panel (FACP) with an electronic access control panel require things such as end-of-line supervision for the power and detection loop. They will also have specific operational requirements that are listed in NFPA 72, UL 1076 and UL 294.

You may be requested to provide UL 294 certified equipment on a door that is fire rated, and also the same for a similar door that is non-fire-rated. This will leave some technicians asking why they need a separate UL 294 certification on a fire-rated door that has essentially the same operational use as the non-fire-rated door. This confusion stems from a lack of understanding of fire-rated versus UL 294 listings.

Fire-rated door hardware, electronic locks or alarm equipment receive a fire rating that is issued at the time of testing. The rating is based on the duration the device can withstand burning, the ability to maintain safe operation during a fire or notification of a fire. On the other hand, a UL 294 listing is for the construction, performance and operation of a device when used in an electronic access and/or security system properly. The UL listing has nothing to do with the fire rating. Understanding the difference between UL listings, fire ratings and model codes is critical when operating in anything other than residential environments.

> **“The essence of the UL 294 certification is that the listed device's use is intended for securing both sides of the same door via some sort of electronic control.”**

Which UL Listing Is required? UL 294 or UL 1034.

Determining which listing to provide should be a black-and-white answer. However, there is always gray area added by the AHJ. As with any model code, the AHJ interprets what is written in the code books (unless specified in writing by the system designer and approved by the AHJ) and determines what is required when performing the inspections.

One of the reasons the systems are permitted and inspected is to allow time for plan review by the AHJ prior to the start of work. This is generally where the AHJ will add stipulations before approving plans. As with most codes, when in doubt, apply the strictest requirements,

FIGURE 7. This is an example of a door that would be UL294 certified, as both the ingress and the egress side of the same door are controlled. (TCNJ Campus Police Sub-Station)

FIGURE 8. This is an example of an electric latch retraction add-on device. This is used to electrify an existing exit device that is not currently controlled and saves on the cost of a completely new device.

and you generally can't go wrong. As many of us have experienced, even if it is not written in the code book, the AHJ can require it. Always check with them about the local requirements before you start the job.

What determines the need for UL 294 listed equipment versus UL 1034 listed equipment? The primary difference is that UL 294 applies to electronic door hardware controlling ingress (access into the controlled area), and it restricts free egress (exiting from the controlled area via the same door) due to an electronic locking device. Example: You swipe an ID to enter. To leave through the same door, you need to either swipe a reader or activate a request-to-exit device electronically bypassing or unlocking the door from inside the controlled area.

UL 1034 applies to hardware that controls the ingress only and not the egress through the same door. Example: You swipe an ID to enter. To leave through the same door, you simply use the handle to exit without any electronic switch activation, automatic or manual. The difference is how many sides of the same door are controlled.

Wrapping It All Up

An easy way to distinguish between the two standards is that UL 294 controls (2) sides of a door, and UL 1034 controls (1) side. As ridiculous as this may sound, it is an easy mnemonic to spare you some confusion. Which standard applies if I am using an exit device with an add-on electronic latch release kit added to an existing fire door? Step 1: Forget the fire rating; it does not apply to the question. Step 2: If you can exit the area without activating any electronics either manually or automatically, then your door falls under UL 1034, not UL 294. Remember, an inspector can still require either UL certification even if the door technically does not require one. At the end of the day, it is the AHJ that ultimately decides what certification is required or not.The main intent of UL294 is creating standards for the use of electromechanical locks used to prevent free egress, You do not need UL294 for a card swipe unless it controls a lock that prevents you from leaving freely.

The essence of the UL 294 certification is that the listed device's use is intended for securing both sides of the same door via some sort of electronic control. The UL certification is a written document that ensures the device used can withstand a certain amount of force in an attempt to bypass the lock, it operates correctly for the intended usage, the intended usage is correct and the device was tested for this application specifically to last a reasonable amount of time. UL certifications are usually required by insurance companies, bond companies and AHJs.

> **"Understanding the difference between UL listings, fire ratings and model codes is critical when operating in anything other than residential environments."**

Numerous codes and standards are applied throughout an electronic access control system. It is virtually impossible to remember every single code. You need to invest hours of time annually reviewing these codes and standards along with any changes that may apply. Any system can be installed. The difference between your system and the competitor's is your knowledge of the codes and the proper, practical and safe application of all devices to accommodate the client's needs.

Randolff Carpenter Sr., CEL, LSFDI, CAT I & II, has been working in the electronic security industry since 1990. He was the proprietor of Atlantic Technologies for 34 years and The Atlantic Group for 23 years. He is currently employed by The College of New Jersey as an Electronic Security Specialist/Systems Programmer. He is a member of ALOA and ALOA Institutional Locksmiths (AIL) and serves as a board member of the Greater Philadelphia Locksmith Association (GPLA).


INTERNATIONAL
ASSOCIATION OF AUTOMOTIVE LOCKSMITHS
AUTO LOCK EXPO 2025
RACE TO CEDAR RAPIDS
120
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160
180
200
Get Ready to Floor It.
May 14–17, 2025
Cedar Rapids, Iowa

A MONEY-SAVING SOLUTION

Rick Karas, RL, CFDI, AFDI, explains how a little something called P/N 60-7000-0815 can save your day — and save your client money.

FIGURE 1. Here is the part in the factory packaging.

YOU MIGHT JUST BE THINKING to yourself, "What the heck is P/N 60-7000-0815?" This is a Yale part number. If you work with Yale exit devices, then P/N 60-7000-0815 is something that you'll want to be familiar with. Knowing what it is just may get you out of a jam one day.

The Call

A property manager called to ask if I could go to her commercial building and look at a lock that had been causing her and her staff some strife. Over the phone, I asked her what the exact problem was, and she told me it was finicky. Sometimes, the lock seemed to get jammed when the key was turned. She also told me that the building engineer's key would sometimes get stuck in the lock


FIGURE 2


FIGURE 4

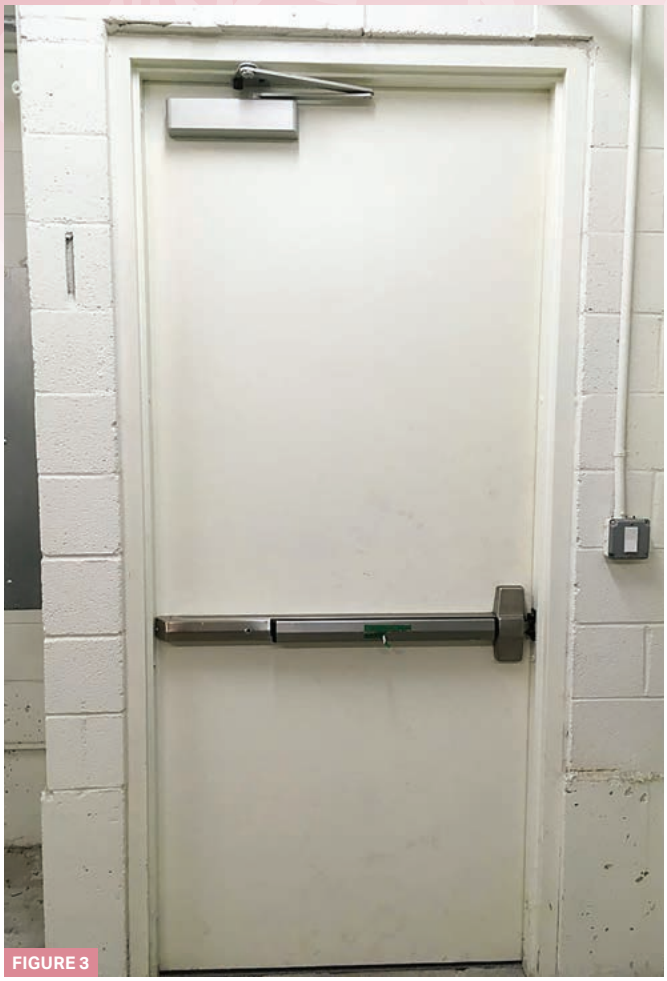


FIGURE 3

FIGURES 2-4. The hardware on the door was a Yale fire exit rim device *(Figures 2* and *3)* with outside Yale 626F exit escutcheon trim *(Figure 4).*

and that there seemed to be a problem with the lock handle. She said that she really could not accurately explain the problem and asked me to take a look in person. She asked me to contact the building engineer when I arrived because he knew more about the situation and could show me exactly what was happening.

When I arrived at the building, I met with the building engineer as instructed. He took me to see the door with the lock causing the problems. I noticed that the lock was neither a mortise nor a cylindrical lock as I had imagined based on my telephone conversation with the property manager. It was a Yale exit device with an exterior escutcheon trim. The building engineer took out his key, put it into the cylinder, turned his key, and it got jammed. He said, "This is what it keeps doing." He told me that the lock had always given him problems since he had been at the property and that it had never worked exactly right. He said that he always had to fiddle with it. He confided in me that they had another company out twice to repair the lock with no success. That company told him that the lock was defective, could not be repaired and would need to be replaced. I asked him if he knew what the defect was. He did not know other than that's what he had been told and that it needed to be replaced.

He was frustrated and told me that he was OK with replacing the entire exit device; he just wanted the problem fixed. I told him I wanted to take a look to determine what was going on. If there was a defect, I wanted to know.

The Hardware

The hardware on the door was a Yale fire exit rim device *(Figures 2* and *3)* with outside Yale 626F exit escutcheon trim *(Figure 4).* The trim had a Schlage rim cylinder installed in it. The reason for that was that the building's keying system used Schlage Everest. This trim, the 626F, can be used with all Yale 7000, 2100, 1800 and 1500 series exit devices. It also can be converted for classroom or storeroom function very easily in the field. I will get to that in a bit.

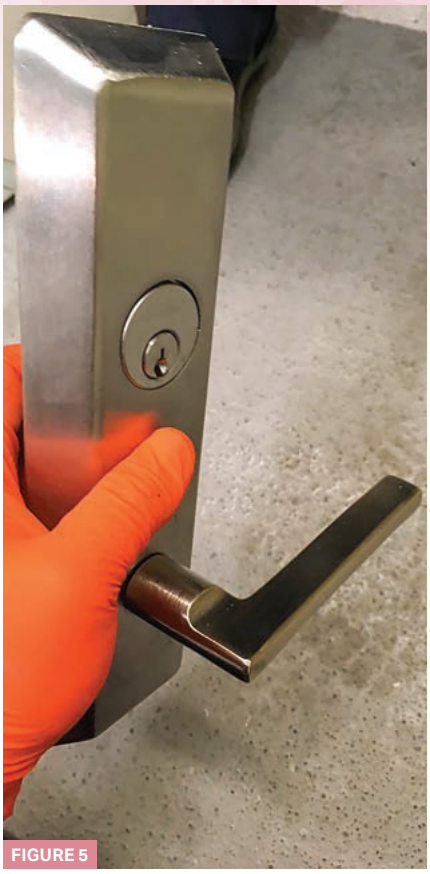


FIGURE 5

FIGURE 6

FIGURES 5 AND 6. This is the Reflections Lever Hudson TB design.

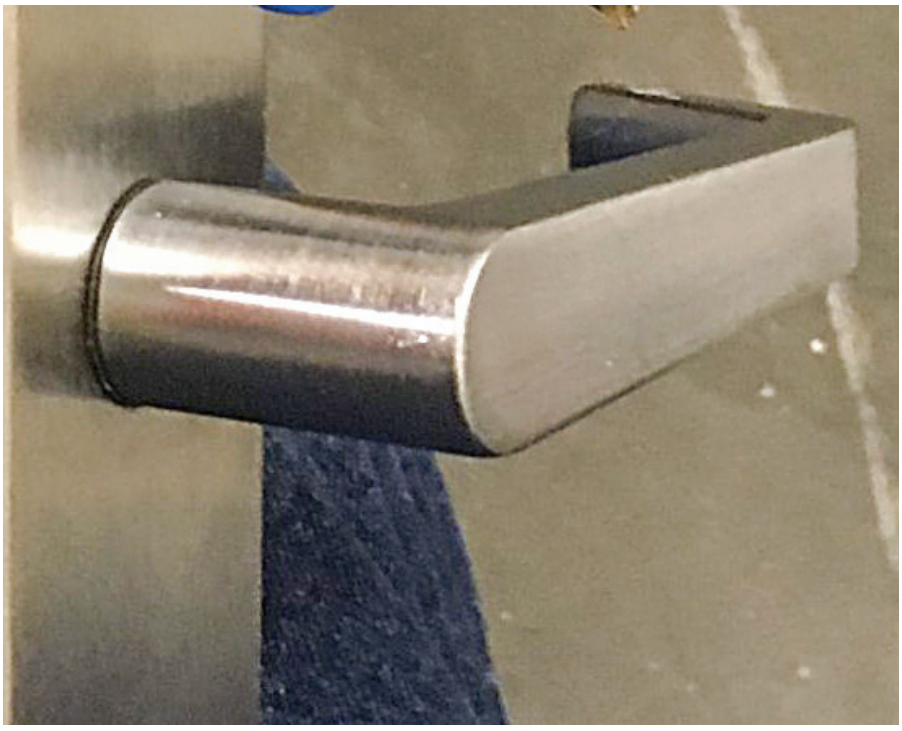


FIGURE 7. On this door is the Standard Trim Augusta AU.

> "THE PROBLEM IS THAT THE CAM IS MADE TO ACCEPT A YALE TAILPIECE AND NOT A SCHLAGE ONE."

I also worked on a second door that had the same problem. The only difference was that the handle trim on the second door was different than that on the first door. So, in some of my photos, you may notice two different trim designs. The trims were identical except for the handle designs. Shown in *Figures 5-7* are the two trim designs: the Reflections Lever Hudson TB Design *(Figures 5* and *6)* on one door and the Standard Trim Augusta AU *(Figure 7)* on the second door. One door was to an electrical room, and the other door was to the emergency generator room. Both are very important rooms that need to have operational locks at all times.

The Diagnosis: Incompatibility

The building engineer agreed to let me take a look, although he was adamant about replacing everything. I could tell that he thought that having me look at it would be a waste of time and just result in replacing everything anyway. I removed the Yale fire exit device trim so I could see what was going on. Once I removed it, I could tell that there was a problem with the Schlage rim cylinder and the Yale housing assembly's cam. The Schlage tailpiece was too narrow and was installed vertically, and when turned, it was getting jammed up in the cam. This is what was causing all the headaches; there was nothing defective about the hardware at all. It was working exactly as it was designed. The problem was a compatibility issue with the

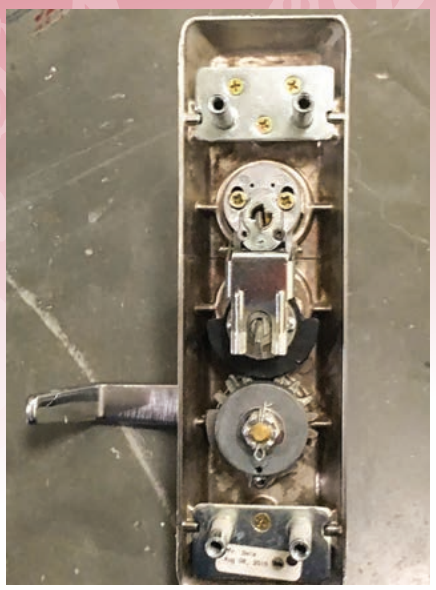


FIGURE 8. Here, you can see the Yale trim.

hardware. I informed the building engineer what the problem was, although I am not sure he completely understood. Hopefully, you will.

Explanation: Cam Assembly Not Compatible With the Rim Cylinder

The Yale trim *(Figure 8)* has a cam assembly *(Figures 9* and *10). Figure 9* shows the cam assembly installed, and *Figure 10* shows the cam assembly removed from the trim. The cam assembly is made specifically for a Yale rim cylinder and is not intended to be used with a Schlage rim cylinder. The tailpiece from the rim cylinder goes into the slot on the cam horizontally. This allows the tailpiece from the rim cylinder to turn the cam that is attached to the housing assembly. It may look complicated, but it's a pretty simple design. The problem is that the cam is made to accept a Yale tailpiece and not a Schlage one.

Yale and Schlage tailpieces are very different. The Schlage tailpiece is not as wide as the Yale tailpiece *(Figures 11* and *12).* The red arrow is pointing to a Schlage tailpiece, and the green arrow

FIGURE 9. The cam assembly is installed.

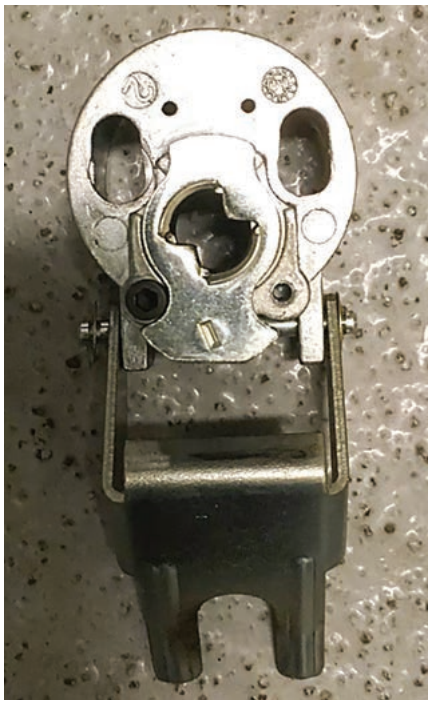
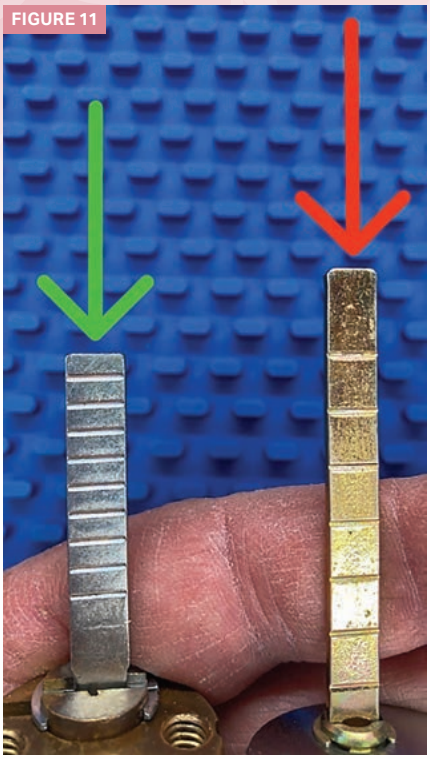
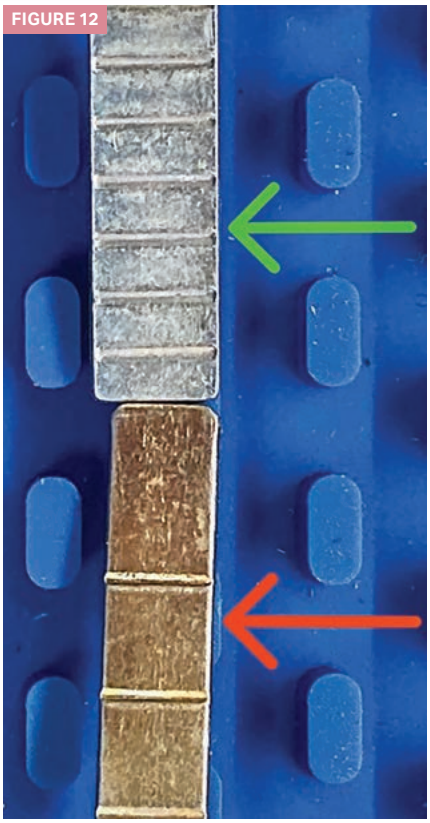


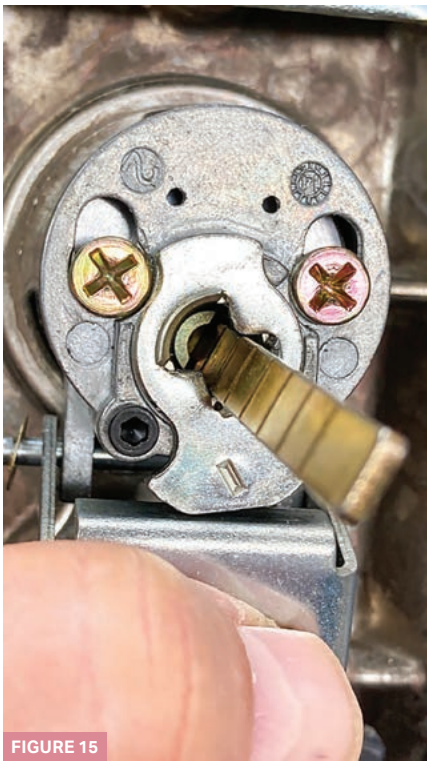
FIGURE 10. The cam assembly is removed from the trim.

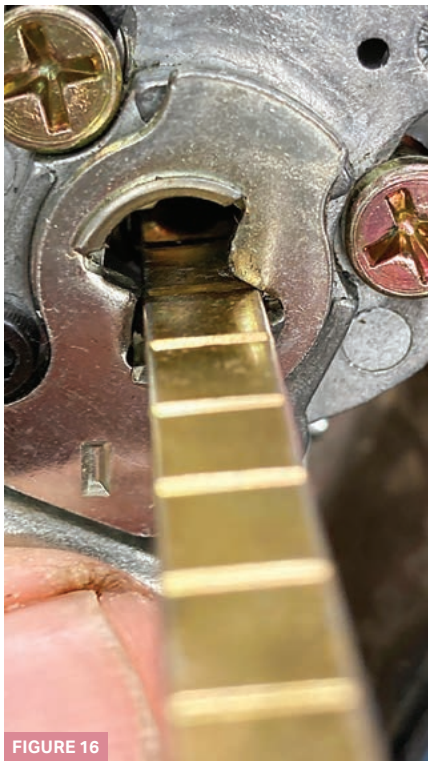




FIGURES 11 AND 12. The Schlage tailpiece (red arrow) is not as wide as the Yale tailpiece (green arrow).

FIGURES 13 AND 14. When a Schlage tailpiece is turned inside a Yale cam, it may either get jammed or slip by the two notches in the Yale cam.





FIGURES 15-17. The author was able to duplicate the lock's problem in his shop.

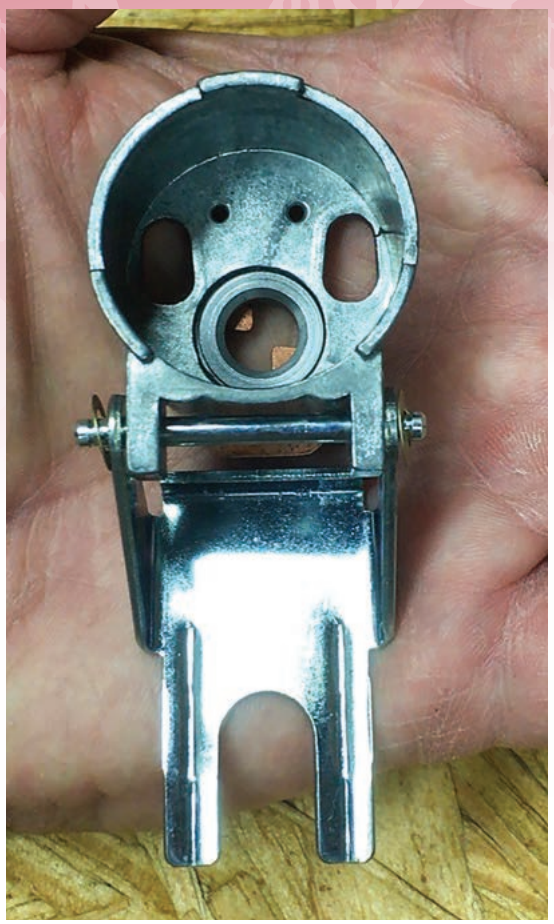


FIGURE 18. The solution is an accessory part called the Schlage Cam and Housing Assembly.

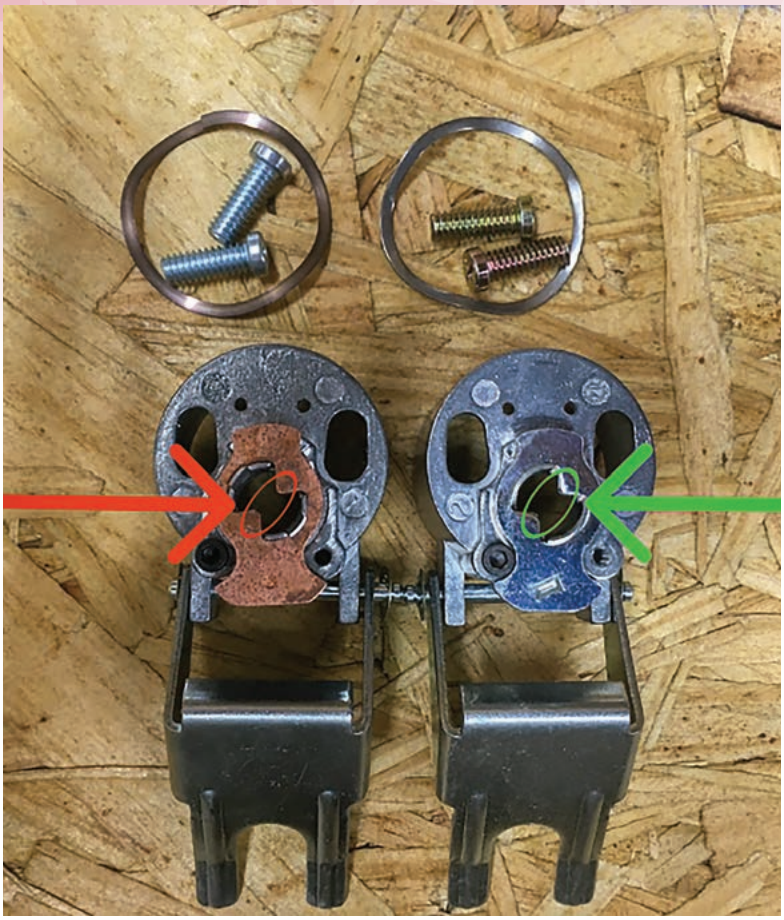


FIGURE 19. Pictured here are the Schlage cam and housing (red arrow) and the Yale cam and housing (green arrow).

is pointing to a Yale tailpiece. Because of the width difference, when a Schlage tailpiece is turned inside a Yale cam, it may either get jammed or slip by the two notches in the Yale cam (*Figures 13* and *14). T*his is what happened to my client's locks. This will put the tailpiece in a position that it is not intended to be in and cause a problem. This is exactly what my client had originally told me: "The key got jammed and then stuck." Although the building engineer did not know it, he told me exactly what I needed to know! I was able to duplicate the problem in my shop, as seen in *Figures 15-17.*

The Solution

Yep, you got it: P/N 60-7000-0815! Yale makes an accessory part (replacement cylinder housing) specifically for Schlage rim cylinders in the escutcheon that is for the Yale 7000 series exit devices. The accessory part is called the Schlage Cam and Housing Assembly (*Figure 18).* This is the description in the Yale 7000 Series Exit Devices Catalog that explains exactly what the Schlage Cam Assembly P/N 60-7000-0815 is: "This cam and housing assembly includes a cam engineered to accept Schlage rim cylinders. No modifications are required to existing 500 or 600 series exit device trims, thus maintaining the trim's classroom and storeroom functions. To order, specify part number: 60-7000-0815."

> "ORIGINALLY, THE BUILDING ENGINEER WAS ADAMANT ABOUT REPLACING EVERYTHING."

The difference between the Schlage and Yale cam and housing is that the Schlage has a narrower slot on the cam for the Schlage tailpiece to go into. This allows for the Schlage rim cylinder to work properly without any problems. Pictured in *Figure 19* are the Schlage cam and housing (red arrow) and the Yale cam and housing (green arrow). If you look carefully, you can see that the gap between the two points on the Schlage is narrower than the gap between the two points on the Yale.

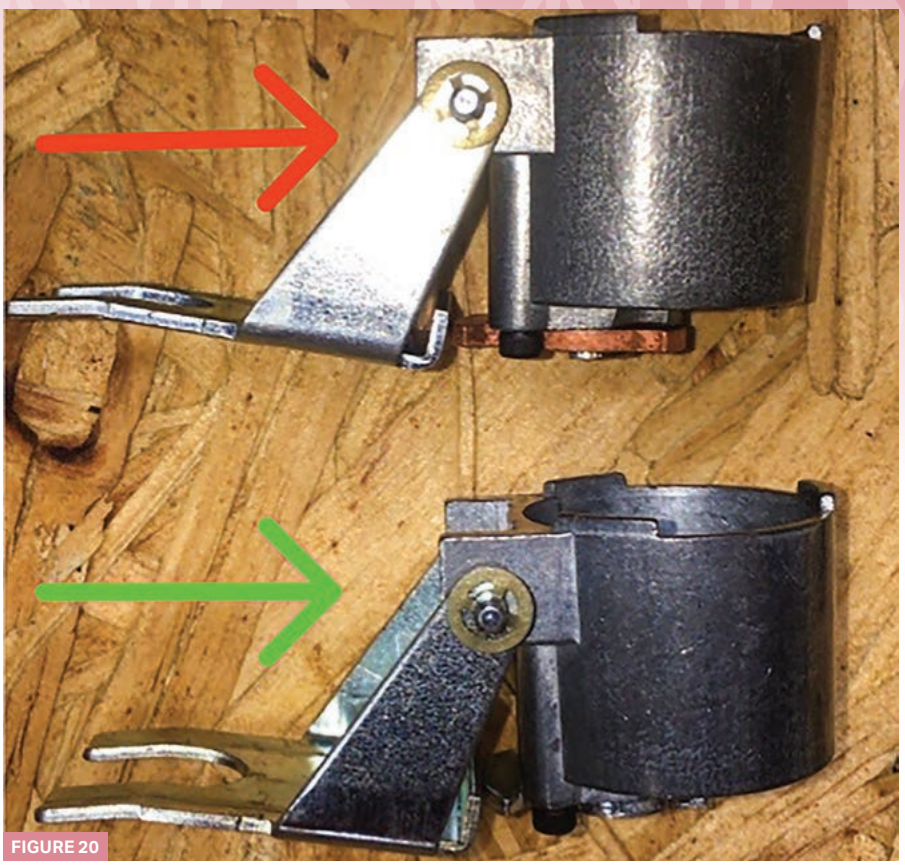


FIGURE 20

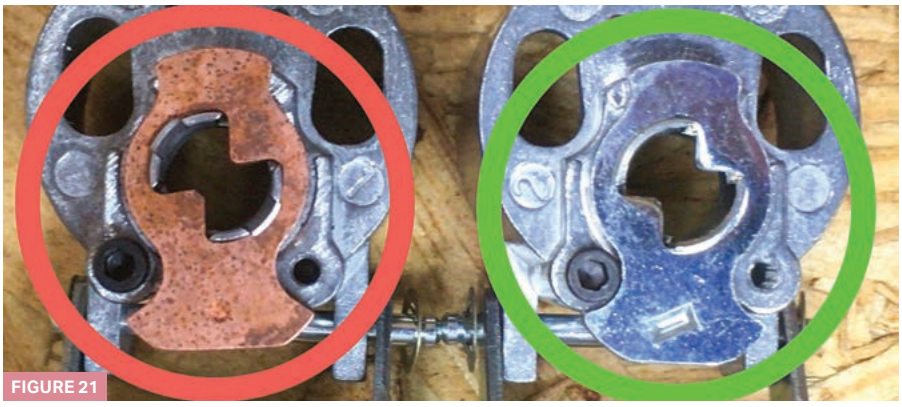


FIGURE 21

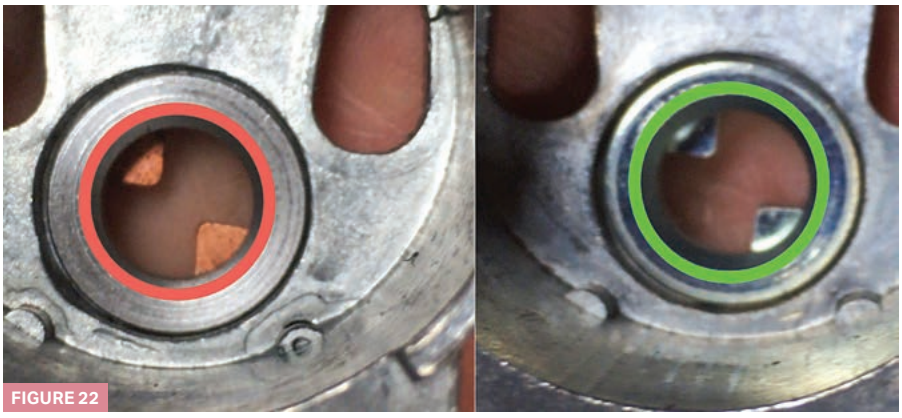


FIGURE 22

FIGURES 20-22. The gap between the two points on the Schlage (red) is narrower than the gap between the two points on the Yale (green). The Schlage has a slight copper color to it.

> "VISUALLY, THE SCHLAGE CAM HAS A COPPER COLOR TO IT, WHEREAS THE YALE DOES NOT."

If you look at *Figures 20-22* carefully, you can see the difference in the Schlage (red) and the Yale (green). Visually, the Schlage cam has a copper color to it, whereas the Yale does not.

A side note about copper: While out in Utah, I took a trip with my family to visit the Bingham Copper Mine. The mine is the largest man-made excavation and deepest open pit mine in the world. It is considered to have produced more copper than any other mine in history *(Figure 23)*.

Replacement and Installation

I removed the Yale cam and housing assembly and installed the Schlage cam and housing assembly P/N 60-7000-0815. The process is straightforward.

Here are the simple steps:

1. Remove the cover screws and the cover from the latch assembly of the exit device *(Figure 24)*.
2. Remove the four screws holding the trim to the door and remove the trim. *Figure 25* shows the screws removed.
3. Remove the two screws holding the rim cylinder to the trim *(Figure 26)*. The blue arrows are pointing to the screws. **Very important**: Make sure that the cam is pointing down, as shown in *Figure 26*. Failure to do so may result in damaging the cam because the head of the rim cylinder screw may bind underneath the cam, lifting it and damaging the compression fitting holding it in place. *Figures 27* and *28* show the head of the rim cylinder screw catching under the

FIGURE 23. As an aside, the Bingham Copper Mine is the largest man-made excavation and deepest open pit mine in the world and has produced more copper than any other mine in history.

FIGURE 24. The author is removing the cover screws and the cover from the latch assembly of the exit device.

FIGURE 25. The four screws holding the trim to the door have been removed.

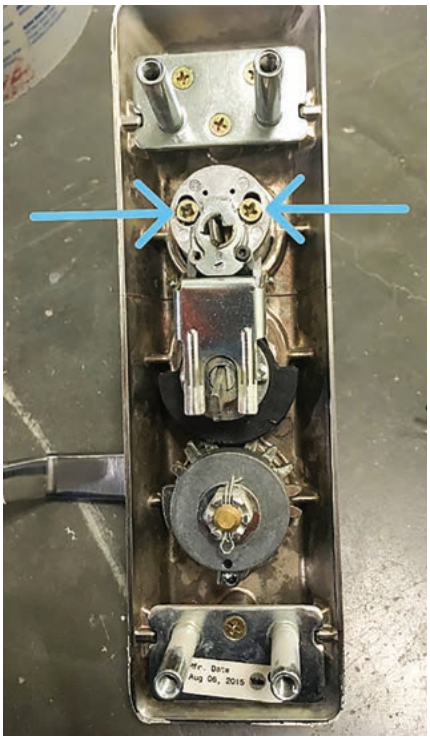
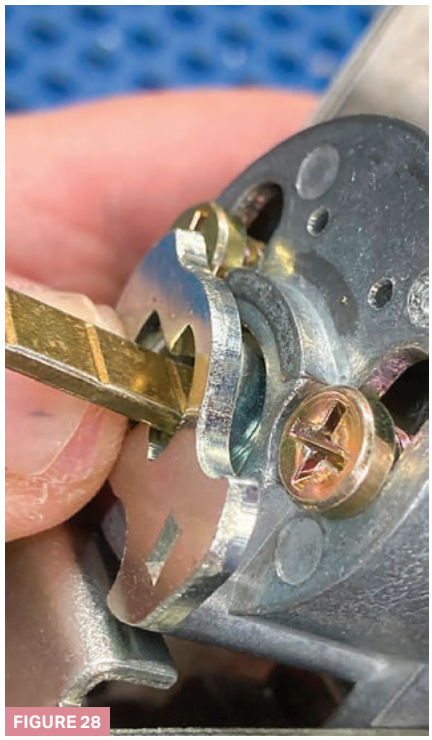


FIGURE 26. Make sure that the cam is pointing down, as shown here.



FIGURES 27 AND 28. The head of the rim cylinder screw is catching under the cam because the cam is not pointing down.


FIGURE 29


FIGURE 30


FIGURE 31


FIGURE 32

FIGURES 29-32. You can see here the damage that can occur if the cam is not pointing down.

> "I NOTICED THAT THE LOCK WAS NEITHER A MORTISE NOR A CYLINDRICAL LOCK AS I HAD IMAGINED BASED ON MY TELEPHONE CONVERSATION WITH THE PROPERTY MANAGER."

cam because the cam is not pointing down. *Figures 29-32* show the damage that will occur. As a safety precaution, I would recommend removing the two screws that hold the rim cylinder in place with a good old fashion handheld screwdriver so that you can feel if there is an accidental bind between the head of the screw and the cam.

4 Remove the cylinder housing assembly (Yale). *Figure 33* shows the escutcheon trim with the Yale cylinder housing assembly removed.

5 Install the replacement cylinder housing assembly made for Schlage (60-7000-0815) with the Schlage rim cylinder. *(Figure 34).* When installing the rim cylinder, make sure the tailpiece is *horizontal* and not vertical. *Figure 26* shows the tailpiece in the vertical position; this was how it was when I arrived. If the tailpiece is installed vertically, then the placement of the Allen screw will be reversed, meaning that the classroom position of the Allen screw will become storeroom, and the storeroom position of the Allen screw will become classroom. Also, remember to make sure that the cam is pointing down, as seen in *Figure 34.* Tighten the screws but make sure not to crank down super tight on the rim cylinder; it's best not to overtighten it. I would recommend a little bit of blue thread locker 242.

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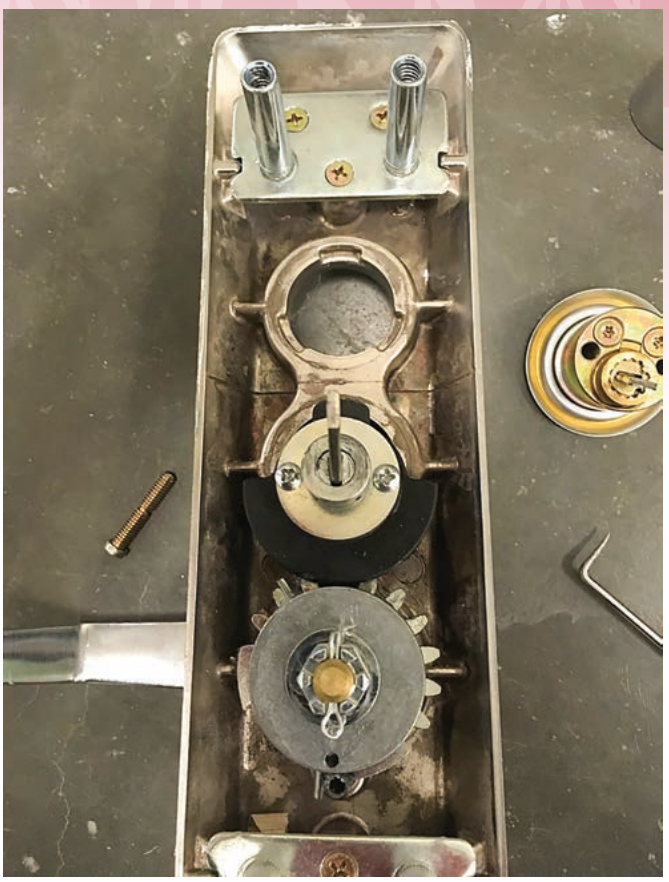

FIGURE 33. Here is the escutcheon trim with the Yale cylinder housing assembly removed.

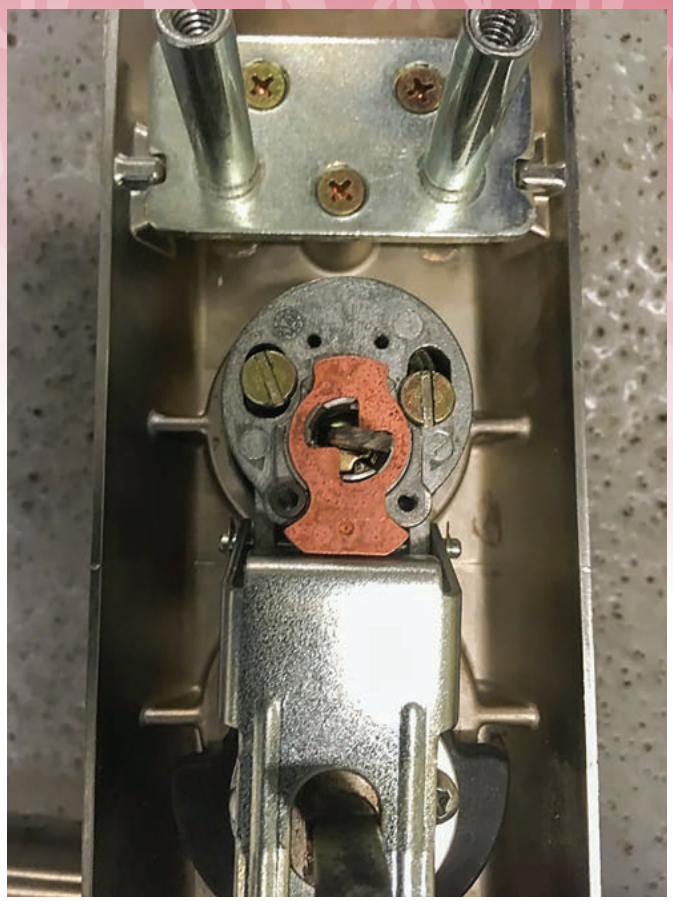

FIGURE 34. The replacement cylinder housing assembly is installed.

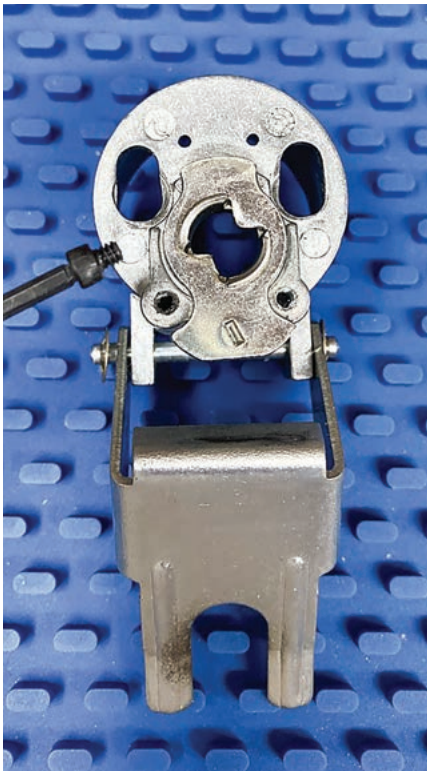

FIGURE 35. Remove the Allen screw with a 3/32" Allen wrench.

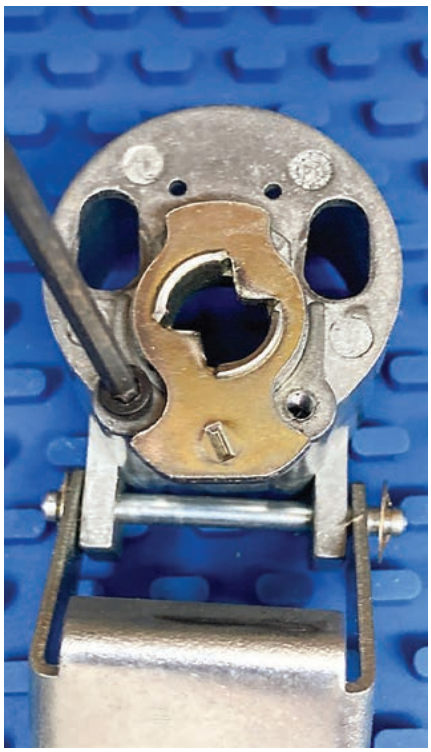

FIGURE 36. For classroom function, remove the Allen screw from the right side of the cam and install it on the left side of the cam.

FIGURE 37. For storeroom function, remove the Allen screw from the left side of the cam and install it on the right side of the cam.

Classroom/Storeroom Conversion

One of the nice features of this Yale exit device trim is the flexibility to either be used as classroom or storeroom function. The conversion only takes a few moments and can be quickly done on-site:

1. The Allen screw will need to be removed with a 3/32" Allen wrench. *(Figure 35).* Make sure that the cam is in the down position before removing the Allen screw.
2. **Function Screw Positions:**
   - A. Function Screw Position (Classroom): To convert the trim to classroom function, remove the Allen screw from the right side of the cam and install it on the left side of the cam, as shown in *Figure 36.*
   - B. Function Screw Position (Storeroom): To convert the trim to storeroom function, remove the Allen screw from the left side of the cam and install it on the right side of the cam, as shown in *Figure 37.*
3. Check the cylinder and make sure that the key, cylinder and trim function properly.
4. Reinstall all the lock hardware and make sure everything is working properly. It is best to do this with the door open.

It's a Win-Win

Originally, the building engineer was adamant about replacing everything. After all, these doors led to the building's emergency generator and electrical room — pretty much the heartbeat of the building. He did not want to have problems with either of those doors, especially if there were an emergency. I could understand his position. However, replacing all the hardware would have done absolutely nothing to resolve the problem; it was the wrong answer for the problem. Had he done so, he would have just wasted his time and money and would have been no better off than he was originally.

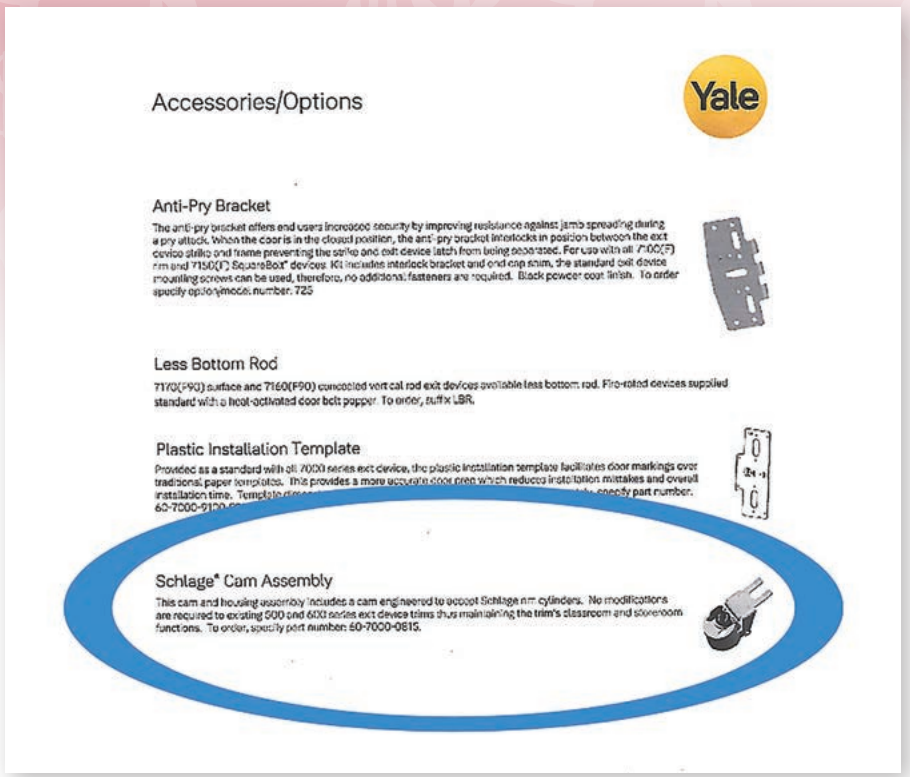

FIGURE 38. This part was the real hero of this job (taken from page 58 of ASSA ABLOY's Yale 7000 Series Exit Devices Catalog under Accessories/Options).

The problem here was neither the Schlage rim cylinder nor the Yale exit device, both of which were working fine by themselves. The problem was the incompatibility of two products and the lack of knowledge of how to make them compatible.

What the prior contractors must not have realized was that the answer to the problem could be found on page 58 of ASSA ABLOY's Yale 7000 Series Exit Devices Catalog *(Figure 38)* under Accessories/Options.

Both the building engineer and the property manager were extremely pleased with how everything turned out and that I was able to make the repairs. The building engineer was pleased because he no longer had to worry about the lock failing in an emergency; one less thing for him to worry about. The property manager was happy because she saved money. (Which is the best way to make a property manager happy!) On my side, I got a new client, made some money and even got a few referrals to other properties. I was more than happy with the outcome. In the end, it was certainly a winning situation for everybody!

Rick Karas, RL, CFDI, AFDI, started in the locksmith industry in 1983. A licensed locksmith, he has experience with many physical security disciplines, including access control systems, intrusion detection systems and video monitoring systems. He works in both commercial and institutional settings. Rick owns Phil-Rich Lock, which serves the Washington, D.C., metropolitan area. He was named *Keynotes* Author of the Year in 2023.

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Galaxy Lock and Alarm, a reputable business located in Throggs Neck section of the Bronx, New York, is seeking a motivated buyer to continue servicing our valued customers in the future. This is an ideal opportunity for someone with 10 years of experience in the field of locksmithing, low voltage locking systems, and safe work to take over a well-established business. Favorable terms for the right person.

Key Highlights:

- Over 40 years in business on the same block with the same phone number
- 1000 sq ft retail store with a 2-car garage
- Owner will assist with transition to ensure maximum income from existing client base

If you are interested and qualified in this golden opportunity, please send your resume to: galaxylock@optonline.net. **<5/25>**

Van and Inventory For Sale

Retiring KW Lock & Security, Inc after 50 years in business. For sale are a 2016 white Chevy Express G2500 Van with A/C in like-new condition along with tools, equipment and stocked inventory (business itself and accounts are not for sale). Van setup includes shelves, cabinets, workbench, backup camera, hockey puck locks on the doors, stereo radio/CD player and automatic windows. Asking $50,000 for everything. Cashier checks accepted. Some extras could be arranged at the time of the sale. Located in Montgomery County, Maryland. Emailing is preferred. Contact Tom Lucas at abettersmith44@gmail.com or 301-467-0541. **<5/25>**

Partner Needed

Licensed locksmith with more than 40 years experience in the industry is looking for a partner in a new locksmith agency business Please call Mike with Superior Lock Service at (464) 204-4098 if interested. **<5/25>**

Key Cutting Machine For Sale

Framon Model 2, key cutting machine, Serial number 751515
Included is "Key cutting depth and spaces information book
Cost is $499.00 which includes shipping to any of US 48 States
Contact: Towerkey3@aol.com, cell 813 601-7940 **<5/25>**

Classified Advertising Policy

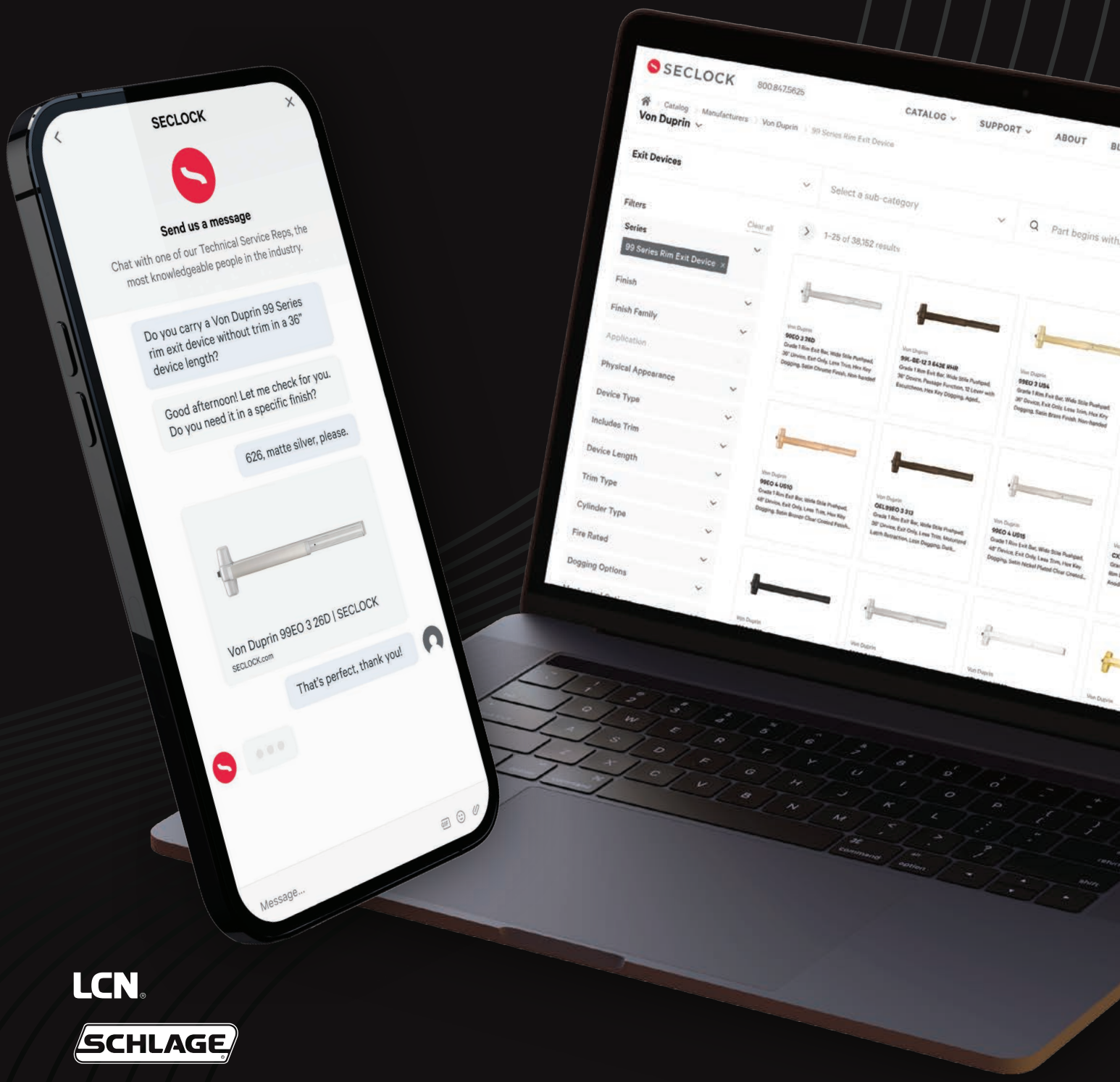
Classified advertising space is provided free of charge to ALOA members and for a fee of $3 per word with a $100 minimum for nonmembers. Classified ads may be used to advertise used merchandise and overstocked items for sale, "wanted to buy" items, business opportunities, employment opportunities/positions 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.

Advertiser	Ad Location	Website	Phone Number
Assa-Ruko/Technical Services	page 33	www.assatechnicalservicesinc.com	(724) 969-2595
Autel	pages 9, 33	www.autel.com	
Big Red	page 33	www.bigredsafelocks.com	(877) 423-8073
ClearStar Security Network	page 61	www.clearstar.com	(360) 379-2494
Framon	pages 1, 27	www.framon.com	(989) 354-5623
Hollon Safe	page 7	www.hollonsafe.com	(888) 455-2337
Lock Caddy	page 17	www.lockcaddy.com	(708) 246-6769
Lockmasters	page 5	www.lockmasters.com	
SECLOCK	back cover, page 33	www.seclock.com	(800) 847-5625
Turn 10 Wholesale	page 3	www.turnten.com	(800) 848-9790

SECLOCK.COM

There's nowhere else to go!



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