February 2018

KEYNOTES

SECURING YOUR SUCCESS

THE
ELECTRONIC
ACCESS CONTROL
ISSUE

Simplifying Codes
What you need to know about codes for electrified hardware installations

Getting Started With Electronic Access Control
A few easy-to-install products

PLUS

Take the 2018 ALOA Locksmith Pricing Survey

The Revolution Keypad Lock | Recognizing CFLs | ALOA 2018 Preview

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KEYNOTES

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

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Embrace the Electronic Security Market

I TRULY HOPE THAT ALL OF OUR members are experiencing a good start to 2018. I personally am extremely optimistic that 2018 will be the best year that I have had in quite a while. Those who know me fairly well know that I have been combating some significant health issues over the last five years, including cancer. While the battle is not completely over, I feel confident in saying the worst is definitely behind me. Unless, of course, I just jinxed myself by putting that in writing!

I am sure that everyone has set some goals for this year, and maybe even made some New Year's resolutions. While most of your goals and resolutions are likely personal in nature, remember that it is vital to also take the time to set some goals for your business. The only real difference between a growing business and a dying one are the goals that we set and achieve. I realize that is a fairly simple statement and concept, but it is also very true.

While one of your goals may or may not be to embrace the electronic security market, I certainly hope that you consider it. While electronic security may not be something you ever thought you would be interested in doing, it is — without a doubt — a growing part of our industry. No matter what areas you work in — including commercial, industrial, institutional, automotive or even residential locksmithing — some aspect of it either has or will include some kind of electronic element. I know that over the last few years, it has surprised me that more and more residential customers have been inquiring about electronic locks on their houses. While I have had commercial businesses moving that direction for quite some time, I never thought that I would see our typical residential customers looking at these types of products.

Looking at our membership demographics, it's probably not surprising that we have quite a few older members (including myself). As we age, we seem to become more and more resistant to new things and new technology. Let's face it folks: Technology is going to continue to progress whether we want to embrace it or not. Who would have thought 20 years ago that we could be carrying a telephone around with us that had more computing power than the desktop computer we were using at that time? Just the mobile phone market has grown more than most of us could have ever imagined. Not only has that market grown, but it has also integrated into our industry. There are people right now who can see who is at their front door and lock or unlock their homes with their Apple or Android phone, even when they are far away from their residence!

I know there is an argument that no matter how technology advances, there will always be physical locks and keys. While this argument may be true, unless we are willing to embrace electronic security and technology in some form or fashion, our businesses will suffer and lose a certain amount of sales and revenue. At the very least, it's something to think about.

Best regards,

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

Making the Convention Work for You

AS A MEMBERSHIP ORGANIZATION, ALOA has staff who are here for you, the members. In everything that we do, we try to determine what you want and need, and what would be most beneficial to you as security professionals.

As the flagship event of the association, the annual ALOA Convention & Security Expo is important to you — and to us. We know that, for some, this is the one time each year when you can set aside several days to take classes, network and learn about new products from all of the top manufacturers and distributors under the same roof.

The value that you receive from the convention is important to us. We want to ensure that you are getting the classes you want, the exhibitors you need and the locations you love. We secure cost-effective venues, find sponsors and work diligently to keep conventions affordable while also providing you with a good atmosphere.

And we recognize that, above all, your time is precious, as you all lead busy lives and have your businesses and careers to attend to.

ALOA knows that these priorities are always in flux, and what's important to our members one year may not hold true five or 10 years from now. The industry changes. Technology changes. New members come on board with new needs and wants.

This is why we survey our members every year to get a pulse on your thoughts about the convention. We truly want to know what you would like to see at the next convention: what classes you'd like to take, what events you enjoy and your thoughts on location.

Because of your responses over the years, we've made the Security Expo two days over Friday and Saturday, allowing those who wish to attend only the tradeshow to better manage their schedules. We've worked to make our educational packages what you need, allowing for different numbers of days so you can take the number of classes that you want to. We know you want to see new vendors at the Security Expo in addition to your favorites, so we work hard to bring in new companies each year to give you a fresh experience.

Because of member feedback, we also brought back the Kick-Off Party, giving attendees another chance to connect and share stories. Two years ago in Orlando, we had record attendance, and last year's Kick-Off Party in Rosemont was a popular event as well.

Member requests also resulted in ALOA hosting the annual Women in Locksmithing reception during the convention, giving women in the industry a place to connect, network and provide support to each other. Each year, this event grows, and we can't wait to see how this group continues to evolve. If you're a woman working in any aspect of the security industry, we would love to see you at this year's reception in National Harbor.

Over the past few years, members have consistently said that the most important factors to you are location, affordability and training. We've looked for accessible and affordable locations, and we're sure that you're going to love the small-town feel of National Harbor this year while enjoying the ease of traveling to the area.

And we're adding new classes each year to give you the training you want. Last year, we added several new automotive classes to enhance that track, and we can't wait to show you what's in store this year. More details coming soon.

We want to continue to make the convention the best it can be to benefit you, the members. We love feedback, and the convention wouldn't be the great event that it is without your input. For any comments, questions or concerns about the ALOA Convention or other events and benefits, please contact us at membership@aloa.org. We are always here to listen.

Thanks for being a part of ALOA, and see you in National Harbor in July!

Mary A. May
Executive Director
mary@aloa.org

Penn-Ohio Locksmith Association Honors ALOA Leaders

At the December meeting of the Penn-Ohio Locksmith Association (POLA), President Dan Billheimer presented the Jensen Award for contributing to education to Mike Potter, president of SAVTA (photo on left). Bill Mandlebaum, CML, ALOA's Northeast Director, presented the Trustees Award to POLA President Dan Billheimer for his contributions to the association.

NEWS BRIEFS

>> **ASIS International**'s annual security conference has been renamed to the Global Security Exchange (GSX). The next conference will take place September 23-27, 2018 in Las Vegas.

>> **Mary Dover** has joined Lockmasters as its new sales manager. She most recently worked at Clark Security.

>> **Master Lock**, which was founded in Milwaukee in 1921, has been declared the "Official Lock of the Milwaukee Bucks Locker Room" at the upcoming Wisconsin Entertainment and Sports Center. The new arena will equip player's lockers with Master Lock's new electronic built-in locker locks, and the Bucks Locker Room Report will be presented by Master Lock after each Bucks home game.

Mary Dover

Reminder: Submit Your ALOA Board Election Materials

There's still time to run for the ALOA board! Nomination forms are due March 1 and can be found in the December issue of *Keynotes* or by contacting membership@ALOA.org.

PRODUCT BRIEFS

>> **Lockmasters** has updated its Little Black Box to be able to open S&G Spartan and Titan Locks from first production until February 2016 as well as the S&G 6123 Series Locks from 2000 until January 2016. The Little Black Box will also now work as a keypad for S&G, LA GARD (analog) and LP Locks.

>> **ABUS** has released the 74M Insulated Safety Padlock as part of the Insulated 74 Series. The 74M is designed for lockout/tagout applications and features a solid brass body and cylinder for corrosion resistance. It is ideal for harsh environments and confined-space applications. It comes in nine colors, and the plastic-covered lock body and shackle are non-magnetic and dielectric. This padlock is key retaining.

>> **VIZpin** has announced the launch of VIZpin ROLES, a new feature for their Access Control as a Service (ACaaS) product. This new feature allows users to grant access to large groups of users using a pre-defined list of readers with unique schedules for each reader. Instead of updating one user at a time when there is a schedule change or more access points are needed, users can change the ROLE and everyone with that ROLE is automatically updated.

>> **Yale Commercial**, an ASSA ABLOY group company, has released its A-ALR Emergency Exit Option for 6000 Series Exit Devices, suitable for commercial applications concerned with loss prevention, including retail and hospitality. It has an aluminum rail design with ANSI/BHMA Grade 1 certification. The built-in alarm is powered by a 9V battery and sounds at 90 dB at 10 feet from the device. Other features include several alarm modes, low battery warning, tamper resistance and a red LED indicator to display that the device is armed.
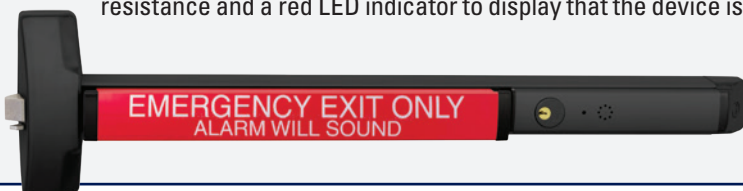
IN MEMORIAM

>> **Kenneth R. Vitty, CFVI, CFL, CML,** one of the charter members of IAIL and former IAIL board member, passed away in December. He had served in the U.S. Army and then worked as a police officer and later as a detective for the Port Authority of New York & New Jersey. He retired from law enforcement in 1991. He then became a locksmith and an arson investigator with Sterling Investigative Services until his retirement in 2016. Donations can be made to Popcorn Park Zoo (ahcares.org) in Ken's name.
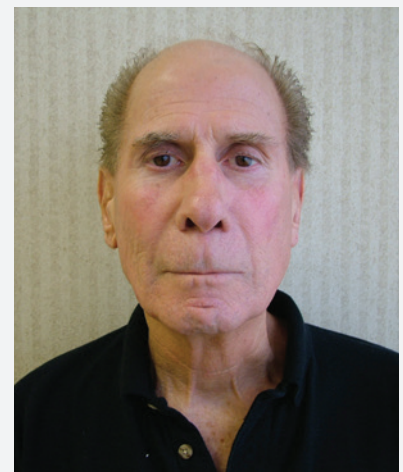
CALIFORNIA
Newhall
Jeremiah D. Burdette
Sponsor: Timothy Braun, RL

FLORIDA
Parrish
Duste M. Patterson

GEORGIA
Atlanta
Iftah Sagi
Peachtree City
Larry Adams
Apprentice Member

ILLINOIS
Chicago
Adam Koltowksi
Lombard
Elad Vaknin

INDIANA
Muncie
Michael R. Stephens

KANSAS
Topeka
Hunter G. Adam AFL
Sponsor: Dana R. Hall, CRL

KENTUCKY
Elizabethtown
Bill Wood

MARYLAND
Windsor Mill
Bradley W. Johnson
Sponsor: William M. Lorenz, CRL

MICHIGAN
Brighton
Caleb A. Miles
Apprentice Member

NEVADA
Las Vegas
Eric Vollmer
Sponsor: Keith A. Anderson, RL

NORTH CAROLINA
Charlotte
Lisa C. Williams
Sponsor: Winford D. Hayes Jr., CPL

OHIO
Northfield
Thomas F. Fiore
Sponsor: William R. Mutch

PENNSYLVANIA
Philadelphia
Olga Slivotska
Williamsport
Jon T. Rieppel
Sponsor: Timothy D. Aderhold, RL

SOUTH CAROLINA
Columbia
Jeremy R. Warren
Sponsor: Mike K. Jordan, ARL

TEXAS
Houston
Debra A. Simpson
Sponsor: Randy L. Simpson, CML, CPP
McAllen
Ben Y. Levi
Palmhurst
Francisco Garcia Jr.

WASHINGTON
Everett
Lisa A. Miller
Investigative Locksmith

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

We Need Your Help

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

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

FEBRUARY 2018
February 5-10
Six-Day Basic Locksmithing
ALOA Training Center
Dallas, TX
education@aloa.org or (800) 532- 2562, ext. 101
This class is also being offered May 14-19, October 1-6 and December 3-8.

MARCH
March 8-10
LOU-MISS
Fundamentals of Master Keying and Large Format Removable Core Svc.
Instructor: John Ray, CPL, CAI
See ALOA Calendar

March 18
PRP Test Sitting at IDN Hardware Sales
Holiday Inn-Cleveland South
Independence, OH
Contact Bill Mandlebaum at
brasskey@woh.rr.com or 419-352-9119

March 22
Classes at HL Flake:
Life Safety Codes - Demont
Advanced Shop Management - Demont
Comprehensive Safe Servicing – **Woodyear**
Pro Picking Techniques – **Woodyear**
Contact Linda Payne at Linda.payne@hlflake.com or 800-231-4105

APRIL
April 26-27
IDN Hoffman
Classes TBD plus PRP Sitting
Omaha, NE
See ALOA Calendar

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

JUNE
June 21-23
2018 Southern Lock Trade Show & Learning Expo
Learning Expo: June 21-22 at Hilton
St. Pete Carillon Park
Trade Show: June 23 at the St. Petersburg Coliseum
St. Petersburg, FL
www.southernlock.com

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

Thank You to Our CFLs

Division President Tom Demont recognizes the new and recertified CFLs for 2017.

As we embrace the New Year with so much to do and so little time to do it, start planning classes for your certified forensic locksmith (CFL) exam now. The Forensics I & II two-day class will be held at SAFETECH in Milwaukee, WI, this May so safe and vault technicians can complete this mandatory requirement on the road to their CFL in Safes and Vaults. To date, we have had 17 safe techs complete the two-day class so they can test for the CFL.

Your CFL committee has brought you new CFL certificates to add to or achieve your specialty CFL credential: You can achieve a CFL credential in Automotive, Architectural Hardware Assemblies, General Investigation and/or Safes and Vaults. You could be a listed CFL expert in multiple related fields.

If you think a career in forensics is something that interests you, then plan on attending the ALOA Convention in National Harbor, MD, this July in the Washington, D.C area, and we will give you an opportunity to complete specific CFL class requirements at that time. Or plan to attend the IAIL conference this October 17-21 at our training center in Dallas, TX.

I would like to thank these CFLs for recertifying in 2017:

Name	Member Number	Credential	Expiration Date
Thomas Demont	012	CFL	2020
Thomas Ware	273	CFL	2020
Keith Whiting	285	CFL	2020

The following CFLs will be recertifying this year:

Name	Member Number	Credential	Expiration Date
Mark Ames	429	CFL	2018
Jonathan Costa	456	CFL	2018
Ronald Coulombe	399	CFL	2018
Mark Culver	591	CFL	2018
Glenn Hennings	165	CFL	2018
William Kushnick	508	CFL	2018
Liberal Oliveira	369	CFL	2018
Bill Petley	113	CFL	2018

New CFL for 2017:

Name	Member Number	Credential	Expiration Date
Vernon Kelley	415	CFL	2020

We wish all of our CFLs much success with their investigative work and hope that they have a prosperous 2018. We will be introducing a new IAIL class this year titled "Expert Witness." For those of you who would like training in becoming an expert witness, sign up early, as this class will fill up quickly when announced.

If you have any questions, suggestions or ideas please contact me directly at IAILPresident@aloa.org. ✆

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

Get Published!

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

SAFETECH 2018
April 30 - May 5
Milwaukee, WI

Get Ready for Convention Time!

SAFETECH REGISTRATION IS FULLY UNDERWAY. HAVE YOU MADE YOUR plans to attend yet? If not, you're not going to want to miss this chance to get the best safe and vault instruction in the industry, unparalleled networking and a fantastic Milwaukee location.

Milwaukee was recently named as one of four "Emerging Cities for Meeting and Event Destinations" by Meetings Professionals International. What does that mean for you? It means you're getting an exciting location that has been recognized by major companies as being a friendly, convenient, safe and fun place for your educational experience. The city has had an explosion of hotel growth, and its entertainment district — packed with restaurants and nightlife — is part of the area surrounding the newly built Wisconsin Entertainment and Sports Center. Add in the casinos, Harley-Davidson Museum and abundance of public beaches with access to Lake Michigan, and you're sure to have fun while there. Did we mention the Wisconsin cheese and beer?

And, of course, the classes at SAFETECH are unbeatable. We've added several new classes this year to enhance your educational experience. Try taking Introduction to Time Locks or Mechanical Key Lock Decoding, Theory and Practice, or learn a new mechanical skill by taking 503: Machine Shop Fundamentals - Vertical Mill Machine.

Visit the SAFTECH convention page on SAVTA.org, or contact us at conventions@aloa.org or (800) 532-2562.

**2018 ALOA Convention
& Security Expo
Classes: July 8-12
Security Expo: July 13-14
National Harbor, MD**

Registration will open for ALOA 2018 in April, but that doesn't mean you can't start planning your experience now! We can't wait to share what's in store for you.

The location for this year's convention is unbeatable. National Harbor, MD, provides a small-town feel with big-city benefits. You're just a short train ride, water ferry or car ride from all of the sights of the Washington, D.C., area, but you also have so much to do near the convention site.

National Harbor is conveniently located near two major international airports, giving you so many choices on flights from all over the world at reasonable prices. The convention itself will be convenient as well, with all classes and the Security Expo in one great place: the Gaylord National Resort & Convention Center. This is not the typical Gaylord property: It's smaller, more quaint and will require no more walking than the average hotel. And

with so much nearby, it's the perfect convention location.

Adjacent to the hotel, there is a boardwalk area with shops, restaurants and nightlife right there on the waterfront. Take a ride on the Capital Wheel to get fantastic nighttime views of the city, go to the nearby dueling piano bar or grab a bite at one of the 40 area restaurants. From nightlife to family fun and dining of all types, you can't beat the convenience and walkability of the National Harbor area.

The full week of education will have old favorites and new classes — there's something for everyone! Whether you want to brush up on the basics or learn a new skill, we have a class for it. After reading about electronic access control in this issue of *Keynotes*, get started in this exciting area of work with one or more of the four electronic locksmithing classes. Or get educated on forensics to

become an investigative locksmith by taking Arson Forensics or the Expert Witness class. Round it out by learning about advanced manipulation, and you have several new service areas for your business.

As always, we'll have all the events you love: the Kick-Off Party with food and fun, the Women in Locksmithing Reception, International Reception, the Membership Meeting and so much more. Add to that countless chances for networking, and you can't afford to miss the opportunities that ALOA 2018 brings for your business and career.

For more preview information, please see the brochure included with this issue of *Keynotes*, and look for more details in the April issue of *Keynotes*. We can't wait to see you in National Harbor!

Want to learn more? Visit the ALOA convention tab on ALOA.org, or contact us at conventions@aloa.org or (800) 532-2562. ☞

The 2018 ALOA Locksmith Pricing Survey

ALOA INVITES YOU TO PARTICIPATE IN A SURVEY DESIGNED to help us better understand how our members price their services. Your individual answers will be completely anonymous and are strictly confidential.

The survey will take about 10-15 minutes of your time. You may take the survey by answering the questions on the following pages and sending the completed form to madison/miles media, 624 Six Flags Drive, Suite 226, Arlington, TX 76011; or faxing it to (877) 845-1230. You may also take the survey online at https://www.surveymonkey.com/r/ALOAPricingSurvey2018.

All surveys must be completed and received by February 16, 2018.

Thank you in advance for your participation.

Answers to all questions are strictly confidential. No individual member will have access to the information submitted by another individual member.

The results of this survey are being confidentially compiled by our marketing agency, madison/miles media, not by a locksmith or security professional.

The results will be released only in compilation form, such as average or mean price. Further, these results should not be used in setting present or future prices. Each locksmith/security professional must alone decide how to use the information and set prices.

Please note that all questions refer to what you have charged in the past.

---

1. Which of the following best describes your job function?
- ❍ Owner
- ❍ Partner/decision-maker
- ❍ Other (please specify) _____
- ❍ Apprentice/trainee
- ❍ Technician

2. Which of the following best describes your work environment?
- ❍ Mobile service only
- ❍ Storefront (fixed location) only
- ❍ Mobile service from a storefront
- ❍ Institutional
- ❍ Government
- ❍ Other (please specify) _____

3. How many full-time employees does your organization have (including you)?
- ❍ 0 (I'm the only employee, and I work part-time)
- ❍ 1
- ❍ 2
- ❍ 3-4
- ❍ 5-7
- ❍ 8-12
- ❍ 13 or more

4. How many years have you been in business?
- ❍ Less than 1
- ❍ 1-3
- ❍ 4-6
- ❍ 7-9
- ❍ 10-15
- ❍ 16-20
- ❍ 21 or more

5. Where is your business located?
- ❍ US, North Central (IL, IN, IA, MI, NE, ND, SD, WI)
- ❍ US, Northeast (CT, DE, DC, MA, MD, ME, NH, NJ, NY, OH, PA, RI, VT, VA, WV)
- ❍ US, Northwest (AK, ID, MT, OR, WA, WY)
- ❍ US, South Central (AR, KS, LA, MO, OK, TX)
- ❍ US, Southwest (AZ, CA, CO, HI, NV, NM, UT)
- ❍ US, Southeast (AL, FL, GA, KY, MS, NC, SC, TN)
- ❍ Outside of the US (please specify) _____

6. Please indicate the annual gross revenue of your organization. (If you are primarily an institutional locksmith, please select your department's annual operating budget.)
- ❍ $0 to $30,000
- ❍ $30,001 to $60,000
- ❍ $60,001 to $120,000
- ❍ $120,001 to $250,000
- ❍ $250,001 to $500,000
- ❍ $500,000 to $1 million
- ❍ More than $1 million

7. What are your business hours?

	Start Time	End Time
Monday through Friday	☐☐:☐☐ ❍ AM ❍ PM	☐☐:☐☐ ❍ AM ❍ PM
Saturday	☐☐:☐☐ ❍ AM ❍ PM	☐☐:☐☐ ❍ AM ❍ PM
Sunday	☐☐:☐☐ ❍ AM ❍ PM	☐☐:☐☐ ❍ AM ❍ PM
Holidays	☐☐:☐☐ ❍ AM ❍ PM	☐☐:☐☐ ❍ AM ❍ PM

8. Do you offer true 24-hour service?
- ❍ Yes
- ❍ No

9. In 2017, what was your service charge for a residential service call at the following times?
For this and all of the following questions, please enter dollars AND cents (example: $ 24.00 or $ 23.50).

During normal business hours (M-F) $ ___ . __

Weekend day (Sat/Sun) $ ___ . __

Weekend night (Between 5 p.m. and 10 p.m.) $ ___ . __

Weekend late night (Between 10 p.m. and 7 a.m.) $ ___ . __

Holidays $ ___ . __

10. In 2017, what was your service charge for a commercial service call at the following times?

During normal business hours (M-F) $ ___ . __

Weekend day (Sat/Sun) $ ___ . __

Weekend night (Between 5 p.m. and 10 p.m.) $ ___ . __

Weekend late night (Between 10 p.m. and 7 a.m.) $ ___ . __

Holidays $ ___ . __

11. In 2017, what was your hourly rate for the following types of work you performed? (If you did not perform the work in 2017, please do not enter a price.)

Flat-rate, commercial $ ___ . __

Flat-rate, residential $ ___ . __

Flat-rate, automotive $ ___ . __

Travel $ ___ . __

Waiting $ ___ . __

12. In 2017, what was your rate for the following types of key duplicating you performed? (If you did not perform the work in 2017, please do not enter a price.)

Standard American $ ___ . __

Double American $ ___ . __

Side Cut Auto $ ___ . __

Tibbe Stile 6 or 8 Track $ ___ . __

Transponder Key/Fixed program $ ___ . __

Transponder Key/Clone $ ___ . __

Transponder Key/Clone Encrypted $ ___ . __

Foreign Single $ ___ . __

Foreign Double $ ___ . __

Transponder Key $ ___ . __

Tubular Key Small $ ___ . __

Tubular Key Standard $ ___ . __

Tubular Key Large $ ___ . __

Bit Key Single $ ___ . __

Bit Key Double $ ___ . __

Safe Deposit $ ___ . __

Everest/Non-Restricted $ ___ . __

Everest/Restricted $ ___ . __

High Security (ASSA, Medeco, Primus, Multilock) $ ___ . __

Interchangeable Core, Best Type $ ___ . __

Interchangeable Core, Everest Non-Restricted $ ___ . __

Interchangeable Core Keymark/Other Restricted $ ___ . __

Duplicating Broken Key Charge $ ___ . __

Key Stamping Per Stamp $ ___ . __

13. In 2017, what was your rate for the following types of automotive work you performed? (If you did not perform the work in 2017, please do not enter a price.)

Open Auto/ Passenger Compartment (Less Service Call) $ ___ . __

Open Auto/ Trunk (Less Service Call) $ ___ . __

Impression First Key $ ___ . __

Code Cut Key $ ___ . __

Develop Transponder Key American $ ___ . __

Develop Transponder Key Foreign $ ___ . __

Develop Vats Key $ ___ . __

Develop Motorcycle Key $ ___ . __

Program Transponder Key American $ ___ . __

Program Transponder Key Foreign $ ___ . __

Open Car American $ ___ . __

Open Car Foreign $ ___ . __

Fit Key to American Ignition $ ___ . __

Fit Key to Foreign Ignition $ ___ . __

Fit Key to American Door & Trunk $ ___ . __

Fit Key to Foreign Door & Trunk $ ___ . __

Rekey Ignition American $ ___ . __

Rekey Ignition Foreign $ ___ . __

Rekey Door American $ ___ . __

Rekey Door Foreign $ ___ . __

Rekey Trunk American $ ___ . __

Rekey Trunk Foreign $ ___ . __

14. In 2017, what was your rate for the following types of rekeying services you performed? (If you did not perform the work in 2017, please do not enter a price.)

Commercial Key In Knob/Lever $ ___ . __

Commercial Key In Knob/Lever/ No Key $ ___ . __

Residential Knob Lever $ ___ . __

Residential Knob Lever / No Key $ ___ . __

Rim Cylinder $ ___ . __

Rim Cylinder /No Key $ ___ . __

Mortise Cylinder $ ___ . __

Mortise Cylinder /No Key $ ___ . __

Bit Locks $ ___ . __

Safe Deposit Lock Each Nose $ ___ . __

Tubular Lock $ ___ . __

Locker Lock $ _____ . __

SFIC-LFIC $ _____ . __

High Security Mortise $ _____ . __

High Security Rim $ _____ . __

High Security KIK/L $ _____ . __

Shim Cylinder $ _____ . __

Pick Cylinder $ _____ . __

Rap Open Cylinder $ _____ . __

Bump Open Cylinder $ _____ . __

15. In 2017, what was your rate for the following types of lock installation work you performed? (If you did not perform the work in 2017, please do not enter a price.)

Deadbolt New $ _____ . __

Deadbolt Replace $ _____ . __

Key in Knob/Lever New $ _____ . __

Key in Knob/Lever Replace $ _____ . __

Mortise Lock New $ _____ . __

Mortise Lock Replace $ _____ . __

Exit Device Rim New $ _____ . __

Exit Device Rim Replace $ _____ . __

Exit Device Mortise New $ _____ . __

Exit Devicemortise Replace $ _____ . __

Exit Alarm Lock New $ _____ . __

Exit Alarm Lock Replace $ _____ . __

Exit Device VR New $ _____ . __

Exit Device VR Replace $ _____ . __

Exit Alarm Lock VR New $ _____ . __

Exit Alarm Lock VR Replace $ _____ . __

High Security Strike New $ _____ . __

Door Guard New $ _____ . __

Adams Rite New $ _____ . __

Adams Rite Replace $ _____ . __

Narow Stile Deadbolt New $ _____ . __

Narow Stile Deadbolt Replace $ _____ . __

Narow Stile Deadlatch New $ _____ . __

Narow Stile Deadlatch Replace $ _____ . __

16. In 2017, what was your rate for the following types of door installation work you performed? (If you did not perform the work in 2017, please do not enter a price.)

Hollow Metal Door New $ _____ . __

Hollow Metal Door Replace $ _____ . __

Wood Door New $ _____ . __

Wood Door Replace $ _____ . __

Refinish or Paint Door $ _____ . __

Threshold New $ _____ . __

Threshold Replace $ _____ . __

Door Guard Top $ _____ . __

Coordinator New $ _____ . __

Coordinator Replace $ _____ . __

Hinge Replace $ _____ . __

Door Viewer New $ _____ . __

Door Viewer Replace $ _____ . __

Pest Strip $ _____ . __

Sealant Insallation $ _____ . __

Remove and Reinstall Tempered Glass Door $ _____ . __

17. In 2017, what was your rate for the following types of door closer work you performed? (If you did not perform the work in 2017, please do not enter a price.)

Overhead Closer New $ _____ . __

Overhead Closer Replace $ _____ . __

Concealed Closer New $ _____ . __

Concealed Closer Replace $ _____ . __

Floor Closer New $ _____ . __

Floor Closer Replace $ _____ . __

Rim Door Closer New $ _____ . __

Rim Door Closer Replace $ _____ . __

Adjust Door Closer $ _____ . __

Spring Hinge New $ _____ . __

Spring Hinge Replace $ _____ . __

18. In 2017, what was your rate for the following types of padlock work you performed? (If you did not perform the work in 2017, please do not enter a price.)

Find Combination By Code $ _____ . __

Impression Key Pin $ _____ . __

Impression Key Wafer $ _____ . __

Code Cut Key $ _____ . __

High Security By Code $ _____ . __

SFIC By Code $ _____ . __

19. In 2017, what was your rate for the following types of safe and vault work you performed? (If you did not perform the work in 2017, please do not enter a price.)

Change Combo Hand (Mesh, Pin, Screw, Etc.) $ ☐☐☐☐.☐☐

Change Combo Key $ ☐☐☐☐.☐☐

Service Lock (Electronic/Electro-Mechanical) $ ☐☐☐☐.☐☐

Service Lock (Mechanical) $ ☐☐☐☐.☐☐

Service Dial & Ring $ ☐☐☐☐.☐☐

Install Lock New $ ☐☐☐☐.☐☐

Install Lock Replace $ ☐☐☐☐.☐☐

Manipulate Lock 1st Hour $ ☐☐☐☐.☐☐

Manipulate Lock Each Additional Hour $ ☐☐☐☐.☐☐

Drill Lock to Open Record $ ☐☐☐☐.☐☐

Drill Lock to Open Money Old $ ☐☐☐☐.☐☐

Drill Lock to Open TL15 $ ☐☐☐☐.☐☐

Drill Lock to Open TL30 $ ☐☐☐☐.☐☐

Drill Lock to Open TL60 $ ☐☐☐☐.☐☐

Drill Lock to Open TL30 x 6 $ ☐☐☐☐.☐☐

Drill Lock to Open TL60 x 6 $ ☐☐☐☐.☐☐

Drill Floor Safe $ ☐☐☐☐.☐☐

Repair Door Fire Safe $ ☐☐☐☐.☐☐

Repair Door Money Safe $ ☐☐☐☐.☐☐

Repair Vault Door $ ☐☐☐☐.☐☐

Repair in the Floor Safe $ ☐☐☐☐.☐☐

Install Vault Door (Under 2000 pounds- Fire Door, Ft. Knox, Etc.) $ ☐☐☐☐.☐☐

Move Vault Door (Under 2000 pounds- Fire Door, Ft. Knox, Etc.) $ ☐☐☐☐.☐☐

Move Safe Up to 300 Pounds $ ☐☐☐☐.☐☐

Move Safe 300-900 Pounds $ ☐☐☐☐.☐☐

Move Safe 900-1800 Pounds $ ☐☐☐☐.☐☐

Move Safe 1800-3000 Pounds $ ☐☐☐☐.☐☐

Move Safe Over 3000 Pounds $ ☐☐☐☐.☐☐

Move Safe Up or Down Per Step $ ☐☐☐☐.☐☐

Cribbing Per Foot $ ☐☐☐☐.☐☐

20. In 2017, what was your rate for the following types of work you performed regarding installation of electric locks, strikes and maglocks? (If you did not perform the work in 2017, please do not enter a price.)

Electric Strike New $ ☐☐☐☐.☐☐

Electric Strike Replace $ ☐☐☐☐.☐☐

Maglock New $ ☐☐☐☐.☐☐

Maglock Replace $ ☐☐☐☐.☐☐

Core Door for El Lock and Install Lock / Hinge $ ☐☐☐☐.☐☐

Electrified Hinge/Pivit New $ ☐☐☐☐.☐☐

Electrified Hinge/Pivit Replace $ ☐☐☐☐.☐☐

Electrified Lock New $ ☐☐☐☐.☐☐

Electrified Lock Replace $ ☐☐☐☐.☐☐

Electronic Cylinder New $ ☐☐☐☐.☐☐

Electronic Cylinder Replace $ ☐☐☐☐.☐☐

Power Bolt New $ ☐☐☐☐.☐☐

Power Bolt Replace $ ☐☐☐☐.☐☐

Pir to System New $ ☐☐☐☐.☐☐

Pir to System Replace $ ☐☐☐☐.☐☐

Control Box New $ ☐☐☐☐.☐☐

Control Box Replace $ ☐☐☐☐.☐☐

Exit Button New $ ☐☐☐☐.☐☐

Exit Button Replace $ ☐☐☐☐.☐☐

Reader/Keypad New $ ☐☐☐☐.☐☐

Reader/Keypad Replace $ ☐☐☐☐.☐☐

Digital Keypad New $ ☐☐☐☐.☐☐

Digital Keypad Replace $ ☐☐☐☐.☐☐

Prox Pad New $ ☐☐☐☐.☐☐

Prox Pad Replace $ ☐☐☐☐.☐☐

Magstrip Swipe Reader New $ ☐☐☐☐.☐☐

Magstrip Swipe Reader Replace $ ☐☐☐☐.☐☐

Video Entrance System New $ ☐☐☐☐.☐☐

Video Entrance System Replace $ ☐☐☐☐.☐☐

TWO GATES OR NOT TWO GATES?

That is the question asked by Tom Gillespie, CML, CIL, CCL, during an electronic access job.

Most of the electronic access jobs performed by our shop fall into one of three categories: electrified exit devices, electric strikes and electrified locks. These are sometimes accompanied by card readers or keypads, but often are installed in coordination with an alarm or access company that provides the activating device and credentials.

Starfleet Lock and Safe Inc. focuses a lot of bank work on safe deposit boxes, safes and vaults. One of our biggest banking customers recently has been on an expansion project. They've been purchasing small hometown financial institutions and bringing them into their banking family. We always perform the security upgrades. They bought another smaller bank and decided to retrofit it before they moved in. As part of this upgrade, they asked us to enhance the security of the vault day gate.

Within a few days of surveying the bank job, we met with another customer (a large pharmaceutical warehouse operation) to evaluate their locks, safes and vaults — including, coincidentally, the day gate.

Mosler Vault

Figure 1. The Mosler vault was in the basement of this bank. Because the vault was empty of any safe deposit boxes, they decided to use this secured room as their IT room. The regular vault door was going to be left open during normal business hours and secured at night.

Mosler Day Gate

Figure 2. The Mosler day gate had the standard key-operated lever lock. The door was blocked open with duct tape over the latch when we got there. A little searching around provided the proper operating key.

Springlatch
Figure 3. They needed an electric lock with audit trail to secure the day gate. The keyed Mosler lever lock that was on the door would need to be replaced with something better.

Keyed Lock
Figure 4. The existing lock was sturdy and substantial. The large brass deadbolt used a heavy roll pin embedded into the bolt to withdraw the latch when the key was turned.

Glass Door
Figure 5. Although our first thought was to install an electrified lock with audit trail, the glass door prevented a simple refit. The concept of calling in a glass specialist to determine the feasibility of cutting into the material was quickly replaced with the KISS concept: keep it simple, stupid!

Strike Plate
Figure 6. The existing strike was a solid block of aluminum that had been milled to accept the latch bolt. The idea was simply to install an electric strike to allow day gate access. Instead of withdrawing the latch for access with an electric lock, we'd release the other side of the equation.

Latch Alignment
Figure 7. With the lock reassembled and installed, it was time to see what our options were to provide access to the vault. Being surface-mounted, the strike would have to be enclosed in its own housing, achieve the same alignment as the existing strike and, if possible, have some adjustability.

Electric Strike
Figure 8. We're using one of our favorites, the HES 5000 Series. We use a lot of these because of the durability, flexibility and various options available.

Securitron
Figure 9. The strike idea was fine, but we needed to mount it properly to be effective. Checking our shelves, we found a Securitron UHB-BK8 Universal Header Bracket for electromagnetic locks. We checked the dimensions and found it had adequate clearance to install the electric strike with no binding of wires.

Keedex
Figure 10. The Keedex KDLA-12 armored door loop was chosen to route the wiring from the strike to the wall. The armored material was strong yet flexible and allowed us to direct the wire run wherever we need it.

Wire Junction
Figure 11. The connection to the electric strike bracket would come in from the bottom. By disassembling the cover and bracket on one end of the loop, the flexible cable was released by removing the set screw, collar and C-clip. The loop connection on the wall end is something the other vendor would attach when they installed the access control system.

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Strike Mounted

Figure 12. The header bracket was cut to accommodate the strike and mounted to the frame using the same two mounting points from the original strike plate. By mounting the loop directly to the bottom of the channel instead of using the "end box," it made for a cleaner installation.

Gate Alignment

Figure 13. With the day gate closed, there was about 3/16" gap between the gate lock and strike bracket. The red wire is visible in the photo through a mounting hole in the bracket. A snap-in plastic plug covered this access hole and another one when installation was complete.

Strike Profile

Figure 14. With the strike in place, the trim and faceplates were installed, and everything was checked for proper operation. The customer was pleased with the overall appearance of the install and rewarded us financially in short order.

Finished Install

Figure 15. The completed installation shows the unit all buttoned up and awaiting the access control technicians to run their wire and mount the loose end of the armored cable.

The Second Day Gate

Figure 16. This Diebold vault was securing the "special" product lines of a well-known pharmaceutical giant. The vault day gate was only accessible after entering the facility, signing in and securing a chaperone, being allowed through a succession of doors with the security badge, signing in and out of each opening on the proper clipboard and waiting for various sensors and alarms to be disabled.

Inside Latch
Figure 17. On the inside of the vault, a small aluminum knob was used to retract the latch. Although the gate and key lock were different from the glass day gate, they would have also worked with the electric strike setup we'd used earlier.

Schlage Deadlatch
Figure 18. The big difference was that the level of security on this vault was substantially higher than the one at the bank. We'd be installing a Schlage B250 mechanical dead-latch with a Schlage Primus XP key cylinder for mechanical access to the vault.

Strike Block
Figure 19. The machined aluminum strike block was virtually identical to the bank day gate. This one did have an additional angle bracket, seen here protruding out of the edge of the block through a machined cutout.

Keedex Box
Figure 20. On this install, we decided to use the Keedex #KBES3A weldable gate box. The standard box on the left is ready to be welded into place on a gate. We would not be welding in the vault (for all kinds of safety, air quality and other issues); we simply drilled the box on the right to accept the same two mounting screws that secured the original strike.

Drill Holes

Figure 21. The back of the box was drilled to accept the mounting bracket for the Keedex KDLA-12 armored door loop. In this install, we're using the standard end cap and mounting bracket supplied as part of the loop package. If you look closely, you'll see where we've added five new holes.

Drill Bracket

Figure 22. Remnants of a Securitron Z-Bracket provided an L-shaped piece that provided the thin spacing we needed to align the box with the day gate latch. This provided an additional component that needed to be drilled and tapped prior to installation.

Mount Bracket

Figure 23. The armored door loop end bracket was attached to the strike box. The center hole was de-burred and sanded to allow a smooth path for the wiring. The box will be removed once again for a couple coats of paint prior to the final install.
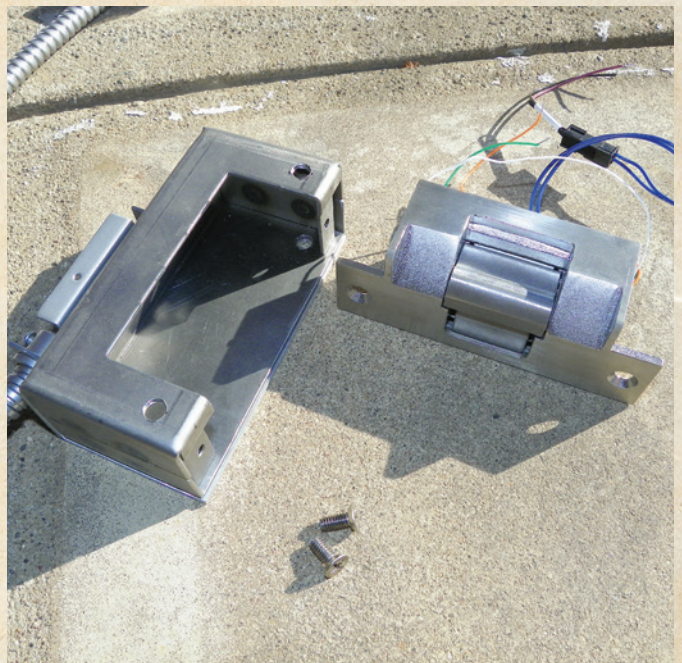
Electric Strike

Figure 24. We're using the HES 7501 Series. This model has additional wiring for the latch position monitor (LPM). At this point, the strike can be installed in the box to check the alignment and clearance for screws to verify that they miss the wiring in the added holes.

But Wait… There's More!

The title of this piece is "Two Gates or Not Two Gates?" While we did plan and prepare for security upgrades on two different day gates, we only completed one.

The overall scope of the job for the pharmaceutical customer included a complete rekey and hardware upgrade for the whole facility. In addition to the day gate, this included adding electrified access control on two sliding mesh gates, converting various pieces of old hardware to meet ADA and life safety codes and replacing a variety of cylinder brands to a new Primus XP master key system.

Alas, between the time of our survey and prep work, another international pharmaceutical giant bought out this company. They are still in the process of deciding if they'll even retain this location and its large group of employees. If they stay, we'll likely do the security upgrade, but maybe not to the full extent that was originally envisioned.

If they close this location, we've got an extra couple pieces of hardware to go back on the shelf for the next job. So the question remains… two gates or not two gates? ☞

WHY DON'T YOU TRY?

It's always encouraging to see familiar names and faces when opening the pages of *Keynotes* and *Safe and Vault Technology* magazines. The time spent to absorb the information on products, specialty applications and problem-solving solutions is always time well spent. While many veteran techs have been sharing their experiences for years (and reaping the financial rewards), new authors are always welcome. We encourage any locksmith or safe technician to submit an article, even if you've never written one before. We'll help any tech tell his or her story… Why don't *you* try?

Tom Gillespie, CML, CIL, CCL, is a 49-year veteran of the security industry. Since 1969, he has expanded his experience in the retail, manufacturing and distribution segments of our industry. Tom has taught educational seminars throughout the U.S. and Canada. He has authored numerous books, newsletters and articles for security industry publications. He is semi-retired but is still active in locksmithing. Tom can be reached at tomxgillespie@gmail.com.
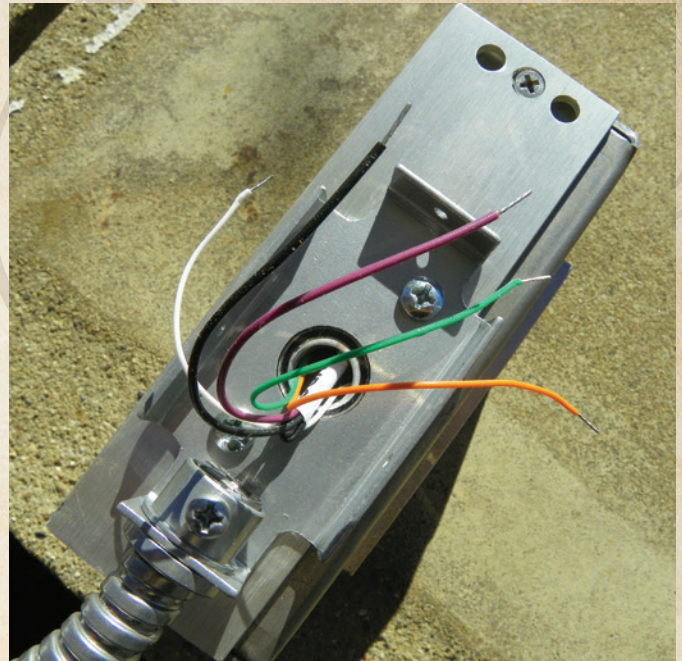
Mounted

Figure 25. With everything in place, the wires are passed through the back of the box to a termination point in the end bracket. Once again, we would supply and install the hardware while the access control company will do the final hookup and system programming.

Ready to Install

Figure 26. The completed unit is finished and ready to install in the vault. Bench testing has been performed to insure smooth operation, and all we're doing is waiting on the call from the customer to proceed with the installation.

SIMPLIFYING CODES FOR ELECTRIFIED HARDWARE

Lori Greene, DAHC/CDC, FDAI, CCPR, provides a run-down of life safety codes that affect electrified hardware installations.

WITH SEVEN CODE CATEGORIES TO CHOOSE FROM, IT'S LITTLE WONDER that the code requirements for electrified hardware continue to be confusing for many. In this article, I'll attempt to simplify the process of identification for seven categories addressed in the International Building Code (IBC) and NFPA 101 – Life Safety Code. I will also provide a brief explanation of each and highlight any recent code changes. It's important to note that many of the code applications fall into the category of "special locking arrangements," and I strongly encourage readers to use the included code references to conduct additional research on their own.

Controlled Access/ Free Egress
IBC – 1010.1.9 (2015), 1008.1.9 (2012); NFPA 101 – 7.2.1.5 (2015 and 2012)

Rather than thinking about seven categories, it helps to simplify the process by separating them into just two: free egress and special locking arrangements. The majority of electrified hardware installations fall into the category of controlled access/free egress, so we will begin there. These are applications that allow free egress without any additional release overrides, fire alarm release or the activation of other mechanisms required

Figure 1. When a door equipped with an access control reader allows free egress using normal operation of the hardware, it is not typically considered one of the special locking arrangements.

for egress. An access control reader is typically mounted on the ingress side of the opening to control access. On the egress side, the door hardware allows free egress — just turn the lever or push the touchpad of the panic hardware. The access control system typically includes an electrified lockset, electrified lever trim, electric strike or electric latch retraction panic hardware. If electric latch retraction devices or electric strikes are installed on fire doors, they must automatically provide positive latching upon fire alarm.

Because this type of system allows free egress at all times, without the activation of an alarm or mechanism, it is not addressed by the codes as a special locking arrangement. As a result, these doors are subject to the typical code requirements for operable hardware: doors must be readily openable from the egress side without keys, tools or special knowledge or effort, and without tight grasping, tight pinching or twisting of the wrist. One operation must unlatch the door from the egress side, and operable hardware must be mounted between 34 and 48 inches above the floor. Again, most electrified hardware applications fall into this category.

Special Locking Arrangements

Both the IBC and NFPA 101 include requirements for a continuous and unob-structed path of free egress travel from any occupiable point in a facility. However, there are a handful of specific situations where locking arrangements are allowed to restrict immediate egress. Applications that fall into this category are often called special locking arrangements. If you are dealing with electrified hardware that doesn't allow free egress without the activation of a fire alarm or sensor, it will typically be addressed by one of the categories outlined below. Because these applications can delay or even prohibit occupant egress, it's vitally important that they be used only in the occupancy types where they are allowed and in strict accordance with the code requirements.

Figure 2. In the 2015 edition of the IBC, the activation time for delayed egress locks was changed from one second to three seconds, which is consistent with NFPA 101.

Delayed Egress

IBC – 1010.1.9.7 (2015), 1008.1.9.7 (2012); NFPA 101 – 7.2.1.6.1 (2015 and 2012)

We'll begin with the important clarification that delayed egress is very different from controlled egress. Delayed egress locking systems do exactly what the name suggests: They delay egress for 15 seconds — or 30 seconds when approved by the Authority Having Jurisdiction (AHJ). The requirements for use of these locks vary between the IBC and NFPA 101. The IBC does not allow delayed egress locks on assembly, educational or high hazard occupancies — although, the 2018 edition of the IBC includes some exceptions affecting classrooms and courtrooms; NFPA 101 includes limitations specific to each occupancy classification.

There are many conditions that must be adhered to if delayed egress locks are to be used, including a sprinkler/fire alarm system that releases the lock to allow immediate egress upon activation, a local audible alarm, signage, remote release, emergency lighting, immediate release upon power failure and limitations on the number of delays in an egress route. Activation requirements to begin the 15-second timer include a maximum force of 15 lbs. applied for no more than three seconds. Activation had previously been required after a one-second application of force, but this was changed to three seconds in the 2015 edition of the IBC, making it consistent with the existing NFPA 101 requirements. The 2015 edition of the IBC also added a requirement for delayed egress locks to be listed in accordance with UL 294–Access Control System Units.

Controlled Egress

IBC – 1010.1.9.6 (2015), 1008.1.9.6 (2012); NFPA 101 – 18.2.2.2.5-6, 19.2.2.2.5-6 (2015 and 2012)

Unlike the 15- or 30-second delay found in delayed egress systems, controlled egress locks have an "infinite delay," meaning that they remain locked until evacuation is needed. Use of this application is restricted to healthcare occupancies where the patients require containment for their safety, and the building must be equipped throughout with an automatic sprinkler system or automatic smoke or heat detection system. It is intended to allow certain types of units to have locked doors in a means of egress when this control is needed to prevent patient elopement. Controlled egress locks are frequently used in areas such as memory care facilities that house dementia patients, or maternity and nursery units. Other areas such as pediatrics and emergency rooms may also be permitted to have controlled egress locks.

Once controlled egress locks are installed in a healthcare facility, all clinical staff is required to carry the keys, codes or other credentials required to operate these locks, and the unlocking procedures must be part of the facility's emergency plan. Like delayed egress locks, these products must allow immediate egress when power is removed. The locks must also automatically unlock to allow immediate egress upon actuation of the fire alarm or sprinkler system. A remote switch located at the fire command center, nurses' station or other approved location must directly break power to the lock to unlock the door. However, some areas — such as behavioral health units or a location where an infant abduction system is used — may be exempt from the automatic unlocking requirements.

The IBC states that a building occupant must not be required to pass through more than one door with a controlled egress lock

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Figure 3. Controlled egress locks are allowed in some healthcare units, but staff must be prepared to facilitate egress if needed.

Figure 4. The section called "Access Controlled Egress Doors" was changed to "Sensor Release of Electrically Locked Egress Doors" in the 2015 IBC.

before entering an exit, and emergency lighting is required at the door. The 2015 IBC also added a requirement for the locking system to be listed in accordance with UL 294. The NFPA 101 requirements vary slightly, so refer to the referenced code section for specifics.

Electromagnetic Lock With Sensor Release

IBC – 1010.1.9.8 (2015), 1008.1.9.8 (2012); NFPA 101 – 7.2.1.6.2 (2015 and 2012)

This is another category that, understandably, causes a great deal of confusion. In past editions of the IBC and in NFPA 101, the section that applies to mag-locks released by a sensor is called "Access Controlled Egress Doors." As a result, this section is sometimes misapplied to doors with access control readers even when the hardware allows free egress without sensors or other release

devices. To help alleviate this problem, the title of the section was changed to "Sensor Release of Electrically Locked Egress Doors" in the 2015 IBC.

When a mag-lock released by a sensor is used, in addition to the motion sensor that detects an approaching occupant, the lock must be unlocked by actuation of the fire alarm/sprinkler system (if present), loss of power and a signal from a manual release device, typically a push button. The push button must unlock the lock for 30 seconds independent of the access control system and be located 40 to 48 inches vertically above the floor and within five feet of the door. Ready access must be provided to the push button, and it must be marked "Push to Exit."

These systems should not be confused with mag-locks that are unlocked by door-mounted hardware. That application is addressed in the next section of this article.

Electromagnetic Lock With Door Hardware Release

IBC – 1010.1.9.9 (2015), 1008.1.9.9 (2012); NFPA 101 – 7.2.1.5.6 (2015 and 2012)

A section addressing electromagnetic locks released by a switch in the door-mounted hardware was added to the IBC and NFPA 101 in the 2009 editions, which clarifies the code requirements for doors with mag-locks that are released by hardware mounted on the door rather than the sensor discussed in the previous section. The door-mounted hardware may include a lever handle, panic hardware, sensor bar or other device equipped with a request-to-exit switch (REX or RX).

When a mag-lock released by door-mounted hardware is installed, the door must be equipped with listed hardware mounted on the door leaf, which incorporates a built-in switch to directly release the electromagnetic lock

Figure 5. Mag-locks released by hardware mounted on the door are addressed in a separate code section from mag-locks released by a sensor.

and unlock the door immediately. The release device must have an obvious method of operation and be readily operated with one hand under all lighting conditions. The code requirements that address this application do not require the lock to unlock upon actuation of the fire alarm or sprinkler system, but the lock must unlock upon loss of power.

Elevator Lobby Egress

IBC – 3006.4 (2015), 713.14.1 (2012); NFPA 101 – 7.2.1.6.3 (2015 and 2012)

Doors between an elevator lobby and a tenant space are often locked for security, but the egress stairway may be located within that space. In order to allow building occupants access to that egress route during a fire alarm, NFPA 101 (2009 edition or later) allows fail-safe locks to be installed on elevator lobby doors if the criteria listed in the code are met. The IBC does not currently include a section specific to locks on elevator lobby doors; elevator lobbies are required to have a code-compliant means of egress, so methods used to secure the doors would be limited by the IBC to an alarm to deter use of the door, or possibly a delayed egress lock. Some jurisdictions have adopted modifications to the IBC that specifically address locks on elevator lobby doors, so be sure to check your local codes for additional requirements.

Depending on the occupancy classification, electrified locking of elevator lobby doors is permitted by NFPA 101, provided the building has an automatic sprinkler system or a fire alarm system. The lock must unlock automatically upon actuation of the sprinkler system or fire alarm system (except when the system is initiated by a manual fire alarm box) and upon loss of power to the lock. When the lock is unlocked, the doors must remain unlocked until the fire alarm system has been manually reset. If the locking hardware has a latch, there must be code-compliant hardware on the door leaf to release the latch. Locking systems used on elevator lobby doors must be listed in accordance with UL 294, and a two-way communication system must be installed in the elevator lobby to allow a building occupant to call for help.

Stairwell Re-entry

IBC – 1010.1.9.11 and 403.5.3 (2015), 1008.1.9.11 and 403.5.3 (2012); NFPA 101 – 7.2.1.5.8 (2015 and 2012)

Stairwell re-entry is a confusing issue to navigate, in part because of the differing requirements between NFPA 101 and the IBC. However, for buildings more than four stories, the shared requirement to remember is that if stair doors are regularly locked on the stair side, they must unlock during a fire alarm to allow re-entry into the building. This allows firefighters to gain access to each floor and ensures that if a stairwell becomes compromised by smoke, occupants are able to leave the stair through remotely unlocked doors and find another exit.

The other source of confusion regarding stairwell re-entry centers around the use of fail safe versus fail secure hardware — specifically, electric strikes. Because electric strikes on fire doors must be fail secure and locks facilitating re-entry are typically fail safe, electric strikes may not be used for stairwell re-entry. Occasionally, electromagnetic locks are installed on stair doors, particularly for retrofit applications, but latching hardware is required in addition to the mag-lock to provide the positive latching required for fire doors. Typically, a fail safe lockset or fail safe lever trim for fire exit hardware is used to meet the stairwell re-entry requirements.

Now for the differences between the IBC and NFPA 101. With

Figure 6. Electrified locking of elevator lobby doors is only addressed by NFPA 101, not the IBC, although some jurisdictions have modified the IBC to address the locking of elevator lobby doors.

Figure 7. The stairwell re-entry requirements vary between the IBC and NFPA 101; the IBC requires all stair doors to allow re-entry, with the exception of the discharge door.

the exception of the 2003 edition, the IBC requires all stair doors to facilitate re-entry and be remotely unlocked from the fire command center. In addition, the IBC requires high-rise buildings to have a stairway communication system. This means that when compliance with the IBC is required, all stair doors that are locked on the stair side are required to be remotely unlocked — regardless of how many stories are served by the stairwell.

NFPA 101 does not require re-entry on stairways serving four stories or fewer, so mechanical locks may be used if NFPA 101 is the adopted code. NFPA 101 also includes an option called "selected re-entry" that allows doors on certain floors to be mechanically locked, while others allow re-entry. Before installing mechanical locks on any stair doors, it's best to confirm which code applies, and the specific requirements of that code.

Conclusion

When working with electrified hardware, the easiest way to determine which code requirements to follow is to start by correctly identifying whether or not the hardware allows free egress at all times without the activation of a fire alarm, sensor or other device. If the hardware allows free egress, consult the Controlled Access/Free Egress section above. If the hardware does not allow egress by normal operation of the door hardware, refer to the applicable code section. As we've seen, the category titles can be misleading, so having a thorough understanding of the key differences between those sections will help ensure that you consult the appropriate one. Please take the time to research to the referenced code sections within this article for more nuanced explanations, as this summary is not intended to provide complete information about each of the types of electrified locks referenced.

As always, your state or local requirements could differ from those of the IBC or NFPA 101, so it's important to be aware of the codes in your facility's jurisdiction. Guessing can lead to costly repairs and could potentially endanger building occupants, so always refer to the published codes for the detailed code requirements, and consult your local Authority Having Jurisdiction with any questions or for more information about specific local requirements. ✍

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IT'S TIME FOR A REVOLUTION

Greg Perry, CML, CPS, provides a walk-through of the Revolution stand-alone keypad lock.

Figure 1. This photo shows the existing door with a standard lever lock. Notice the distance to deadbolt above the lock. There was not enough room for a taller push-button lock, and because this was between two office areas with separate exits, the customer wanted to keep the double-cylinder deadbolt. I could have moved the deadbolt up, but why do so when I could try out the Revolution?

RECENTLY, A LOCAL CREDIT UNION WANTED AN electronic access control lock, but they had a deadbolt on the door that needed to be removed to use my normal go-to electronic lock; it seemed like a good time for a Revolution.

Revolution locks are an ASSA ABLOY stand-alone keypad lock from Arrow. A similar-looking product that will accept a wireless module to network locks together is available from another ASSA ABLOY company, Yale.

The Revolution is a pretty simple lock to install, with only one additional hole for the power/communications cable and an additional thru-bolt compared to most common lever locksets. The lock uses a capacitive keypad that is activated anytime you touch it with several fingers or the palm of a hand. The lock can be placed in "easy" or "advanced" mode. The lock will walk you through programming and opening with verbal commands. If your customer desires, the lock can be changed to silent mode through programming.

In the easy mode, nine PIN codes (one supervisor and eight user codes) are available. Programming is very easy. Before installing the battery cover or if you need to make changes, remove the battery cover, then push the "I" button above the batteries. The first code to enter is the supervisor code. After entering the code — which can be from four to 12 digits long

Figure 2. The only additional hole added was for the cable and upper thru-bolt. The original lock used the fairly common $\frac{5}{16}$" hole thru-bolt spacing of $2\frac{3}{4}$" apart.

Figure 3. This image depicts the front and back halves of the lockset. The only additional disassembly is the same as most locks: remove the inside lever and trim to install the spring cage first.

Figure 4. In this photo is the backside of the inner and outer halves. Two things to be careful with during installation: First, the upper cable and lower cables need to not be pinched between the lock and the door. Also, during installation of the lock, ensure the rubber gasket is seated between the lock and the door correctly.
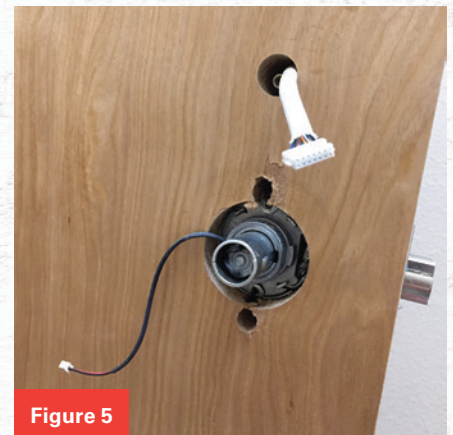
Figure 5

Figure 6

Figures 5 and 6. The solenoid cable needs to be routed through the spring cage assembly when mounting it to the lock.

Figure 7. The two cables need to be plugged into the inner housing, and the upper cable is routed or folded as directed according to the diagram on the back of the lock.

Figure 8. The upper thru-bolt screw is installed prior to installing the batteries.

Figure 9. In the completed lock shown here, the housing or lock just fit under the deadbolt.

Figure 10. The outside keypad does not display any numbers when idle.
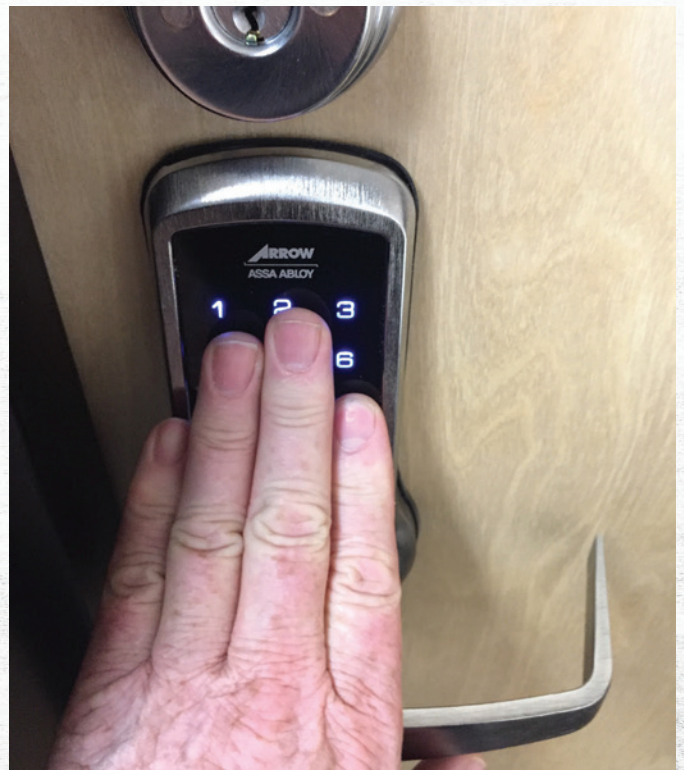
Figure 11. This touchpad keypad is powered up when touched with several fingers.

— press the pound key. The additional eight codes can be added by entering a PIN followed by the pound key for each additional code. Complete the process by pushing the I button.

These locks can be quickly changed to advanced mode with the flip of a switch next to the cable on the circuit board. If the lock is already installed on a door, it will require the inside assembly to be removed from the door to access the switch. This will reset everything back to factory programming. This could be handy if you wanted to clear the lock or didn't know the current codes; simply move the switch to advanced mode and then back to easy mode. The advanced mode can have up to 1,000 users by creating 20 supervisor groups, as each group contains up to 50 users. Programming is similar to operation in the easy mode.

This customer liked this lock so much that a couple months after this installation, he called back and wanted one installed on his teller line half door. I pointed out that anyone could reach over the top and open the door with the inside lever, but he wanted it anyway — and who am to argue with customers who want to give me money? ⌾

Greg Perry, CML, CPS, is a certified master locksmith and certified professional safe technician, working in all phases of locksmithing. He has taught various locksmith topics for 10 years. He currently works in the public sector as a locksmith. He has worked in the hardware industry since 1975 in wholesale, retail and institutional settings. He has written extensively for locksmith magazines and is a five-time *Keynotes* Author of the Year. *Any opinions expressed by Greg in his articles are his alone and do not reflect any official government position.*

Figure 12. The lock uses the common number keypad with 1 through 9 and then *, 0 and # for the bottom row.
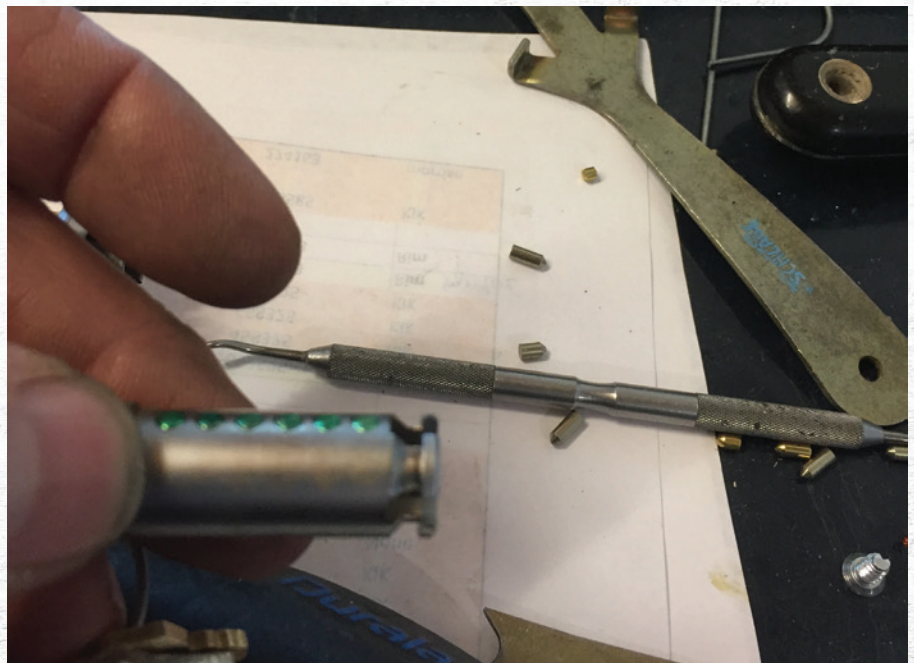
Figure 13. Probably the one thing the instructions do not mention about the lock is that the cylinder plug removal to rekey it has a catch. The back or clip end of it is smaller than the plug and has too big a gap between the plug and the back end. This allows the pins be trapped as you try to push the plug out to rekey. Not a big deal; it just means you need to use a shim to bridge the gap as the plug is pushed out, or the top pin will trap in the gap.

ACCESS CONTROL READERS & CREDENTIALS
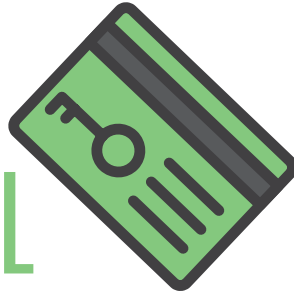
James K. Ashley, CPS, CPL, CEL, CAI, provides a bit of historical perspective on access control readers.
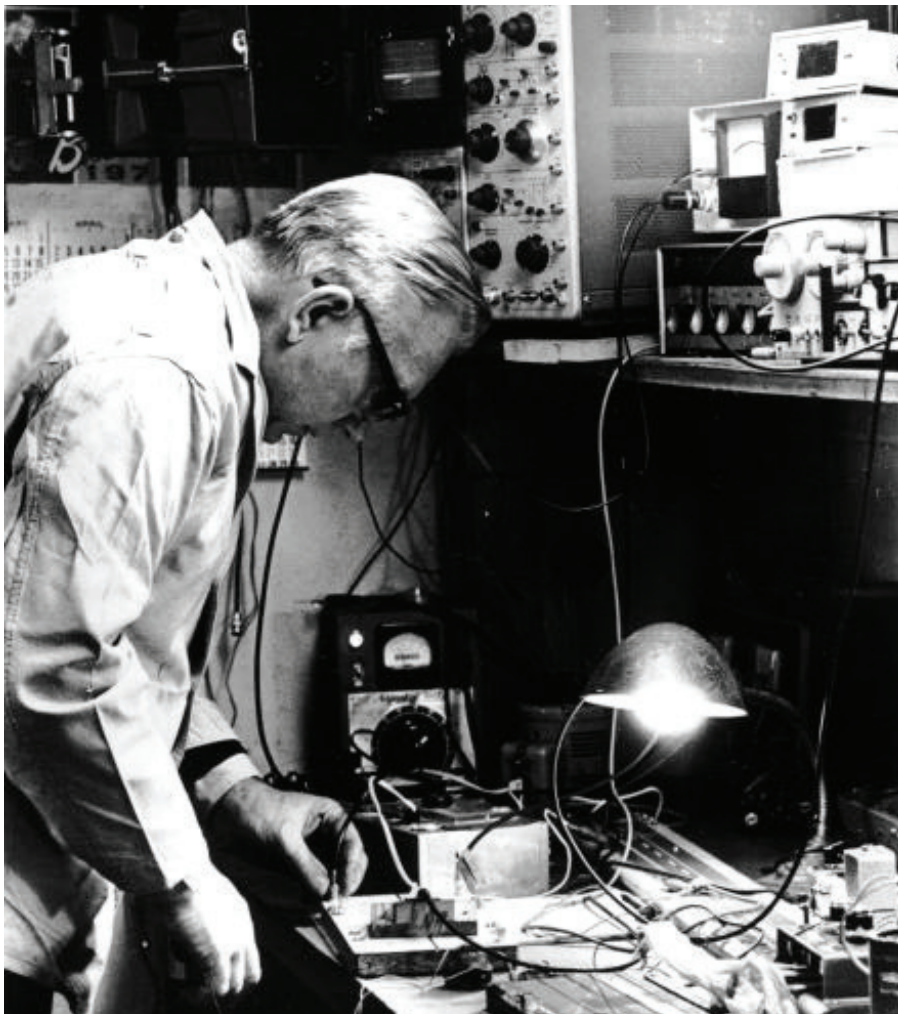
Figure 1. John Wiegand, inventor of the Wiegand wire, was actually a musician by training.

TRYING TO ACCOMMODATE ALL THE needs of your customers when it comes to security is a constant challenge. Even small businesses are looking for electronic assistance. A good facility manager can, and will, justify a capital expenditure for long-term financial justification. For example, a business owner hires you to remove a mechanical lock and install an electronic keypad lock. Initially, the electronic lock is much more expensive than a mere cylinder combination change, but if he can change the code himself, he saves money in the long run. The faster the employee turnover, the faster he recoups his investment.

Then there were additional needs — and the industry answered. How about a code for each individual user? Is there a record of who came in and when? Can I set up schedules? Can I control several doors at once? Do I have to get up and go to every door every time I want to make a change? How do I keep employees from sharing codes? How do I know that the person coming in is really the right person?

We've all seen the little boxes with LEDs mounted on walls/frames near a door. Ever consider the technology behind that little box?

This all began with cards with a magnetic stripe. This technology was invented in Denmark around 1900 for recording audio. In the 1960s, IBM used the magnetic tape idea to develop a reliable way of securing magnetic stripes to plastic cards, under a contract with the U.S. government for a security system.

In 1969, Forrest Parry, an IBM engineer, had the idea of securing a piece of magnetic tape — the predominant storage medium at the time — to a plastic card base. He became frustrated because every adhesive he tried produced unacceptable results. The tape strip either

wrapped, or its characteristics were affected by the adhesive, rendering the tape strip unusable. After a frustrating day in the laboratory trying to get the right adhesive, he came home with several pieces of magnetic tape and several plastic cards. As he walked in the door at home, his wife Dorothea was ironing clothing. When he explained the source of his frustration — an inability to get the tape to stick to the plastic in a way that would work — she suggested that he use the iron to melt the stripe on. He tried it, and it worked; the heat of the iron was just high enough to bond the tape to the card. This process of "hot-stamping" the magnetic tape to plastic cards has been the preferred procedure ever since.

No patents were ever filed on the original mag-stripe technology. IBM thought it would be a great idea to leave it as open architecture and would result in many more IBM computers sold.

The first access control project I installed involved mag-stripe readers. The system could read preprogrammed cards, credit cards, gift cards… you name it. It didn't decode any information from the customer's cards due to privacy concerns, but it only associated the 0s and 1s in whatever order it read them, with a name that was programmed in the database.

John Wiegand (*See Figure 1*) was the inventor of his namesake wire. What is interesting to note is that he was neither an engineer nor physicist, but a musician by training. The Wiegand effect, a phenomenon discovered in the 1970s, is the unusually useful behavior of magnetic fields in specially designed wire that outputs voltage. This Wiegand wire, as it's called, is magnetic iron-alloy wire treated so that it forms a hard outer shell around a soft inner core.

External fields easily magnetize the outer shell, which also resists demagnetization, even when external fields are


Figure 2. The Wiegand effect, a phenomenon discovered in the 1970s, is the unusually useful behavior of magnetic fields in specially designed wire that outputs voltage. This Wiegand wire, as it's called, is magnetic iron-alloy wire treated so that it forms a hard outer shell around a soft inner core.

removed — a characteristic called higher coercivity. The soft wire filling behaves differently: It's not magnetized until after the shell gets its fill of magnetization.

Herein lies the magic: At the very moment that the wire's shell becomes fully magnetized, and the core is finally allowed to collect its own portion of magnetization, poof: Both core and shell switch polarity. The switch generates significant voltage that can be harnessed for all kinds

of sensing and motion applications.

The Wiegand reader actually produces a magnetic field, and users swipe their Wiegand-wire cards through it. True Wiegand cards had wires arranged in two tracks: One track had the binary equivalent of "0," and the other had "1." This digital information was read by a sensor and sent to a host controller over two wires, which we know as "DATA0" (green wire) and "DATA1" (white wire).
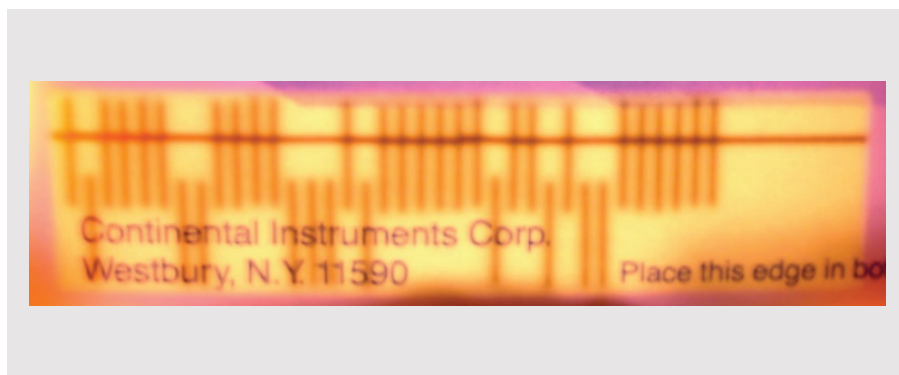
Figure 3. The original Wiegand format consisted of one parity bit, 8 bits of facility code, 16 bits of ID code and another parity bit for a total of 26 bits.

Proximity credentials contain a circuit that holds ID info read by an Access Card reader.

Figure 4. Prox cards, or "contactless smart cards," contain a chip and a coil of wire, which acts as an antenna.

When no data is being sent, both DATA0 and DATA1 are pulled up to the "high" voltage level — usually +5 VDC. When a 0 is sent, the DATA0 wire is pulled to a low voltage, while the DATA1 wire stays at a high voltage. When a 1 is sent, the DATA1 wire is pulled to a low voltage, while DATA0 stays at a high voltage.

The high signaling level of 5 VDC is used to accommodate long cable runs from card readers to the associated access control panel, typically located in a secure closet. The controller would then compare that information to a software database and determine whether to trigger a relay to electronically unlock the door.

Most card reader manufacturers publish a maximum allowable cable run of 500 feet (150m). An advantage of the Wiegand signaling format is that it allows very long cable runs — far longer than other interface standards of its day allowed.

The original Wiegand format consisted of one parity bit, 8 bits of facility code (think of "octet" in an IP address which allows for 0 – 255), 16 bits of ID code (0 – 65535) and another parity bit for a total of 26 bits. The physical size limitations of the card dictated that a maximum of 37 Wiegand wire filaments could be placed in a standard credit card before misreads would affect reliability. This explains why most Wiegand formats used in physical access control were less than 37 bits in length.

When we talk about common prox readers in use today, we still use the term Wiegand output. It isn't referring to the Wiegand wires embedded in the plastic card, but instead the transfer of data over the two data wires back to the controller. Prox cards, or "contactless smart cards," contain a chip and a coil of wire, which acts as an antenna (*Figure 4*). The chip is pre-programmed with numerical data in binary format. Just like the mag-stripe system, there is no user data or access privileges in the card data. The readers send out a pulsed signal, and the card responds with its data. These basic readers are "one-way," meaning the readers "read" the data and send the data to the controller.

Lately, there has been talk of the ability to compromise the "universal" technology of the 26-bit prox and the fear of duplication of credential codes. Because of this, many manufacturers have taken the base technology and added their own proprietary engineering to increase security, or at least the perception of it. Now, in addition to 125 kHz prox, we have MiFare and 13.56 MHz iClass, among others. These higher-frequency readers and cards engage in complex mathematical calculations that allow both the cards and readers to compare security keys with each other. This two-way process is called mutual authentication, and it is designed to make sure that any communication between the card and the reader cannot be duplicated.

For those of you who are involved in electronic access control, I would highly recommend looking into the higher-security version of cards and readers for applications that need true security. If you're only doing a pool gate at an apartment complex, there's obviously little need. But any facility that needs real protection deserves that consideration. ✆

James K. Ashley, CPS, CPL, CEL, CAI started in the security industry in 1986 while stationed at Lackland Air Force Base in San Antonio, TX, volunteering as an apprentice for B&P Lock Shop. James is an educational sponge, and being a musician is the only thing that can eclipse his love for electronics and technology… and boating. He started Ashley Safe & Security in 2001 in Indianapolis, IN, and is three-term president of Associated Locksmiths of Indiana. In addition to assisting in the development of the electronics program for ALOA, he is certified as a Microsoft Technology Associate, CompTIA A+ Certified, an ALOA Certified Instructor and part-time instructor for Electronic Security and Technology at MBA in Nicholasville, KY.

GETTING STARTED WITH
ELECTRONIC ACCESS

PART 1:

STAND ALONE-ACCESS

Wayne Winton gives an introduction to a few easy-to-install products.

LIKE IT OR NOT, WE ARE IN THE CYBER ERA, AND THAT MEANS THAT electronic access is more popular than ever — and it doesn't look like that will change anytime soon. So, I chose to embrace it and figure out how to make my business grow and adapt to make it work for me. Once you become familiar with it, electronic access is the same concept and requires mechanical parts to work. In all reality, this is actually good for the industry: More electronics will equal more failures and more things to repair. So, where to get started?

Well, learning the different systems available and understanding what they do and how they can benefit your customer is the key to being a security professional. What locks have what features, and how user friendly are they? It's a bit of a scary world out there for customers to do the research on their own, so it's up to you to guide them about what they need and, in doing so, gain the sales and the installation.

Residential-Grade Locks

Lets start out slow and easy: residential-grade starter locks. Decide if the customer wants a deadbolt (*See Figure 1*) or a lever/knob lock to start with. The Schlage with the key override is, in my opinion, the best choice for this job, as it's a more secure, reliable system. The non-keyed units are easily bypassed. I'm going to focus mostly on the deadbolt, as it's the more secure unit, and most people will want the security of a deadbolt lock.

This unit can be used as a stand-alone product (meaning no additional products are required for operation, such as wires or hubs linking it to the internet), so the customer can just use it as a keypad access. It holds up to 18 codes and is easy to program. Schlage also offers the Connect series and the Sense locks that connect the lock to wireless apps. The Schlage Connect is designed to work with any Z-Wave unit, such as a hub-based unit like Nexia (*Figure 3*) from Lowe's and IRIS (*Figure 4*).

Once connected to the Z-Wave hub, this lock can be locked and unlocked, codes can be changed and an audit trail can be recovered — all from a smartphone. The hub for Z-Wave will require a direct ethernet connection to the customer's router, so be prepared to inform them of the requirements.

The deadbolts also offer an auto lock feature. Please do yourself a favor and do not set up the auto lock feature for your customer; if you do, write out that you
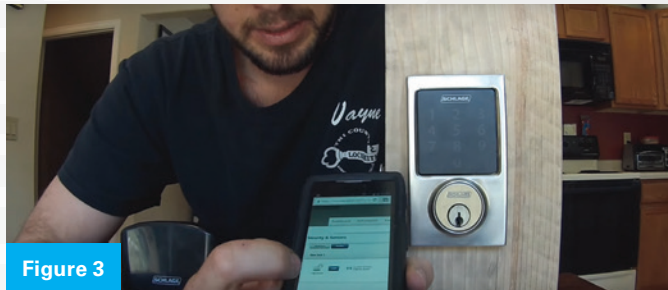

Figure 1. For residential-grade starter locks, the author thinks the Schlage with the key override is a good choice.
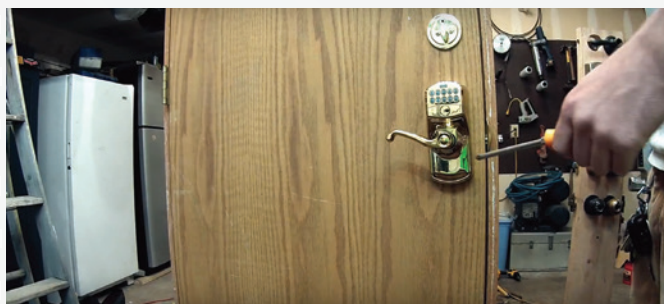
Figure 2. This image shows a Schlage residential-grade lever keypad electronic access with manual key override.

Figure 3

Figure 4

Figures 3-4. The Schlage Connect is designed to work with any Z-Wave unit, such as a hub-based unit like Nexia (*Figure 3*) and IRIS (*Figure 4*).

Figure 5. The baseline Alarm Lock model is the DL 2700.

Figure 6. The Alarm Lock DL 2800 has features such as an in-lock timer and calendar and 99 access codes.

will not warranty it. It's 100% guaranteed that the customer will leave the door open too long and the lock will throw the bolt. Then they will claim the door shut, and the bolt will be extended. You can tell how that will play out.

I have tried all the systems out there, and this has been the most reliable and user-friendly way to get started with residential access. The biggest thing is to pick a unit you like and stick with it. If all this internet hub business is making you want to shy away from this, then just offer the lock as the standalone option. It's pretty basic and easy to install on that platform; the other things are just options. As you get more adjusted to it, you will become more comfortable with more advanced options such as smoke alarms, door and window sensors, thermostats and many other things you can add on to a smart home system.

Commercial Products

For commercial access, you need to know the features the customer wants, and then you can begin to build a system using the most effective products for them. Being familiar with the terms will help you guide the customer to what they need.

Again, I will start out with standalone access, meaning a battery-powered lock that will work 100% on its own with no other parts required to make it operate. One of the staples in commercial standalone access is the Alarm Lock. Knowing what the different series do as far as functions go will help out. The baseline model is the DL 2700 (*Figure 5*). This lock can only be programmed from the keypad and will also need to be ordered in the weatherized version if it's going to be put on exterior door. All the other Alarm Locks series will already be weatherized, so no need to specify it when ordering. This will provide a heavy-duty grade 1 lock that will stand up to the punishment of the commercial environment.

The Alarm Lock DL 2800 (*Figure 6*) — identified by the black and red plug-in ports located just under the keypad — will come weatherized already and offer many more features. It can offer an in-lock timer and calendar so you can
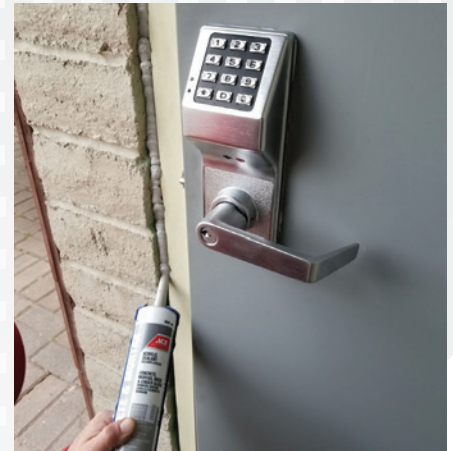
literally program it to open or go into passage mode at 8 a.m. and lockdown at 9 p.m. Monday through Friday. You can even program holidays and a 365-day calendar into it.

This lock has features such as 99 user codes, including 10 manager codes that will have limited access but can control up to 10 codes under them. It allows for passage mode, automatic lockdown and unlock at times and an audit trail for up to 40,000 transactions, putting a person code with a place and time. This can be ordered with just about any keyways, including high-security and IC. This is my go-to lock; it works well and holds up to abuse. Police stations, government buildings, hospitals and just about any other kind of building will work with an Alarm Lock. They have great tech support and the products are easy to program. This

Figure 7. The Alarm Lock PDL 3000 allows the use of prox cards or fobs to access the lock.
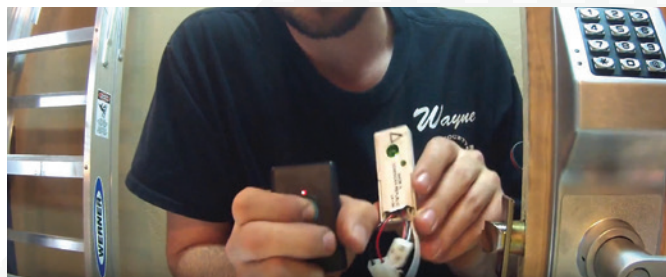
Figure 8. A useful option on all the Alarm Lock series is the remote release feature, which offers the ability for someone to "buzz in" a person from a remote location.
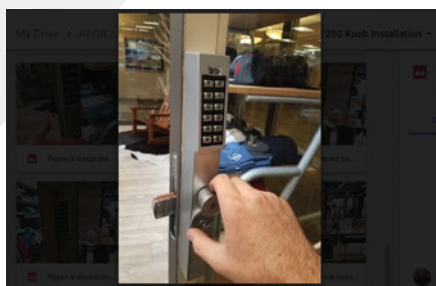
Figure 9. The Alarm Lock 1250 deadbolt lock works with Adams Rite deadbolt locks and is an easy unit to convert to keypad access.
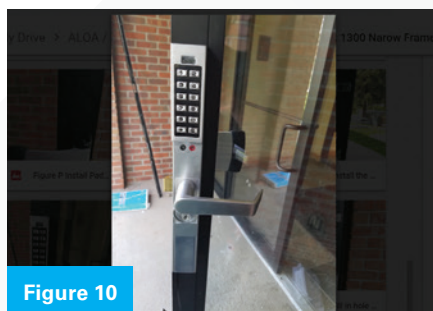
Figure 10

Figure 11

Figures 10-11. If the customer wants the lock to lock every time after the door closes, the Alarm Lock DL 1200 lock (*Figure 10*) is a good choice. The Adams Rite dead 4900 latch (*Figure 11*) will work well with this unit.

is the lock to start out with for stand-alone access.

The Alarm Lock PDL 3000 (*Figure 7*) adds the letter P for prox access, meaning you can use prox cards or fobs to access the lock. This is identified by the black and red access ports and the large black proximity fob reader located in between the keypad buttons and the lever.

It offers all the features of the DL 2800 and more with the encrypted fob access, which can be a flat card, made into a photo ID with printed information or a smaller fob that attaches to a key ring. All those options are available; it's just a matter of what your customer prefers.

For setting up this model, along with the DL 2800, it is recommended that you purchase a laptop connection kit that allows you to import programming to the computer. You can then transfer information to the lock at the black and red ports for more complicated systems and set-ups. All your timers, prox cards and

codes can be entered through the programming port for a time-saving option.

Another great option for all the Alarm Lock series is the remote release feature (*Figure 8*). The only locks it will not work with are the narrow-style locks I will cover later on in this article. This offers the ability for a receptionist to "buzz in" a person from a remote location, or perhaps for a teacher to let a student into the building. The feature easily plugs into the lock and offers many options, and the button can be fixed mounted or mobile.

I have set up many options, from the school application that lets teachers take the fob with them on a lanyard and open the door from up to a football field distance away. It can also be fixed to a desk for a person to allow access, such as in an office building. It really expands the options for the customer and is one of the few commercial-grade units that offers this application. It can be added later on as well, meaning that you can

upgrade existing units; customers are not forced to choose whether or not to have that feature during installation.

Products for Store-Front Door Styles

So far we have covered standard wood and metal door options; now we will explore the aluminum glass store-front door styles. Again, Alarm Lock makes things easy, offering a variety of stand-alone access options. Starting off with the most basic, the 1250 deadbolt lock works with Adams Rite deadbolt locks and is the most common and easy unit to convert to keypad access (*Figure 9*).

Easily identified by the knob on the exterior of the lock, this lock will operate the deadbolt version of Adams Rite locks. It will provide keypad access, but it has no automatic locking feature. So, the best example is if the owner wants a lock that allows the employee to enter a code in the morning to unlock the door

for the day (open for business) then enter a code at end of day to lock up. This is a great option for that scenario; that's what it's designed for.

If they want the lock to lock every time after the door closes, then you need the DL 1200 lock (*Figure 10*). This product is easily identified by the handle and the red and black plug-in ports under the keypad. Like the DL 2800, it will offer automatic programming open and lockdown options along with an audit trail. It will require a dead latch lock to operate. The Adams Rite dead 4900 latch (*Figure 11*) will work well with this unit. You can convert a deadbolt to a dead latch system; just plan on the extra parts and time to install them. You will need to redo the strike and add an exit push/pull paddle to make it operate. This will relock after each open, if desired, and also keep a 40,000-transaction audit trail that can be retrieved.

Prox access can be offered with the PDL1300 series lock, where a prox card or fob can open the lock and provide all the features of the 1200 series. The Alarm Lock narrow-frame series is a great option that offers lots of features and a reliable set-up that comes weatherized on all models. The only thing it will not do is offer the remote release that the other Alarm Locks offer.

So, there you have it: the easiest-to-install and most user-friendly locks for residential and commercial use, in my opinion. I hate doing warranty work, so these are my go-to units. In part two of this article series, I will cover hard-wired access and the options that go along with that.

I hope this helps you take the first step into the electronic access world and gives you an idea of what each lock does and why. Understanding the customer's needs is the number-one thing to understand; applying the right access is up to you. Full-length HD videos of installations of each of these locks — along with programming — are available at wayneslockshop.com. ✇
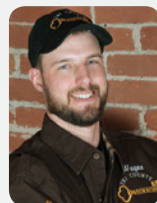
Wayne Winton is the owner of Tri County Locksmith Service in Glenwood Springs, CO. He specializes in safe and vault work along with commercial door and panic hardware. He is dedicated to learning every day, putting his skills to the test and sharing information with other industry professionals through vetted video education at wayneslockshop.com. Check it out to see him in action.

Saving Lives, Part 2: Anti-Ligature

As a follow-up to his January article on anti-ligature alarms, **Tony Wiersielis, CPL, CFDI,** gives a walk-through of Securitech SPSL lock installation.

N MY ARTICLE ABOUT SECURITECH anti-ligature alarms in the January issue, I included a picture of one of their SPSL mortise locks. This month, I want to show you these locks in more depth, including their installation, both mortise and cylindrical.

I've put in a lot of these in mental health facilities over the years, but I hadn't taken pictures of the installations to share with you. Because I've visited the Securitech factory numerous times, and they're fairly close to where I live (they're in

Queens, and I live in Staten Island, both boroughs of New York City), I decided to give them a call.

They graciously allowed me to borrow two of their mounted SPSL lock displays: one mortise and one cylindrical. I'm going to use these to show you the prep and installation for both types of locks.

You don't need special tools to install them, though you want to make sure you have both Allen and Torx security bits or drivers. I use a changeable bit security screwdriver (*See Figure 1*) made by Mega-Pro, which you can buy at Grangers.

These locks are primarily installed in mental institutions and areas where there is a risk of suicide by hanging. If you've never worked in a place like this, read my January article for tips on how to conduct yourself in this situation.
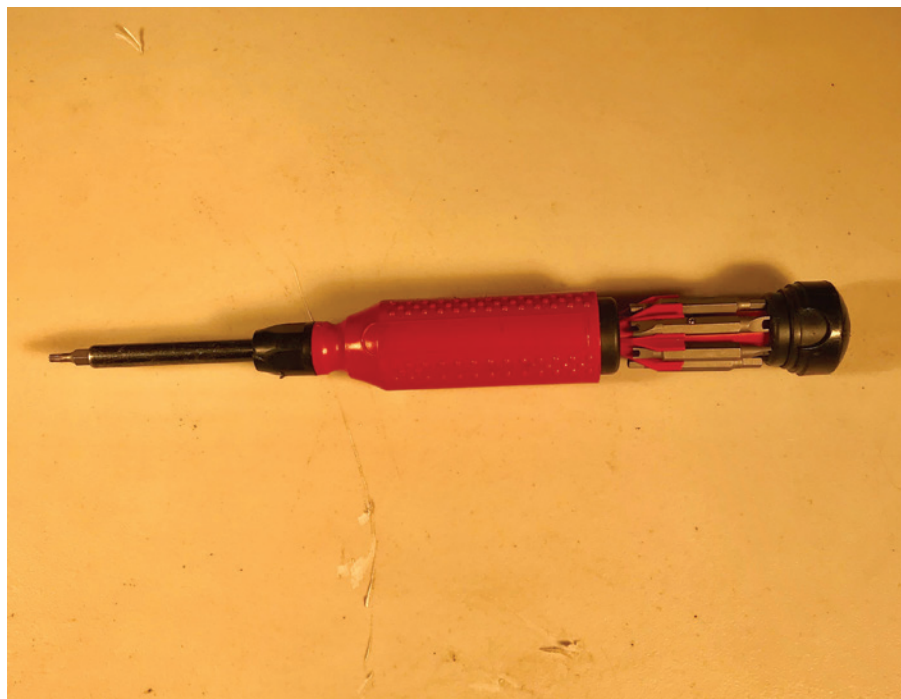
Mortise Lock

Figures 2, 3 and *4* are pictures of the mounted mortise lock from the outside, inside and edge of the door. You'll notice a beige-colored strip across the top of the display on the inside. That's a small anti-ligature alarm bar just like the one I installed in the January issue. This one actually sounds when you depress it, mimicking what you would hear at the nurse's station alarm panel during an actual suicide attempt.

This particular lock is a "storeroom" or "vestibule" function, which means the outside lever is always locked, and the inside lever is always unlocked. It can be opened from the outside with a key only.

On a normal storeroom function lock, the outside knob or lever would be rigid and never move. Because a knob would allow someone to loop something around it and attempt suicide, lever handles are used instead. But a rigid lever would also be an issue, because someone could still loop something around it.

The solution to this problem is levers that

Figure 1. For installation of Securitech SPSL mortise locks, the author uses a changeable bit security screwdriver made by Mega-Pro, which you can buy at Grangers.
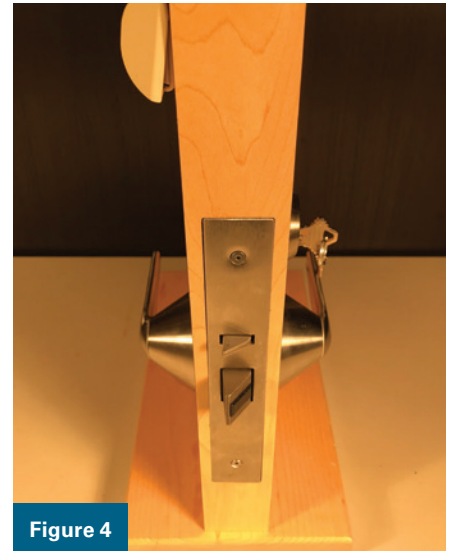
Figure 2

Figure 3

Figure 4

Figures 2-4. These are pictures of the mounted mortise lock from the outside, inside and edge of the door. The beige-colored strip across the top of the display on the inside is a small anti-ligature alarm bar.

Figure 5. The author is pushing down the outside lever; note that the latch did not retract.

Figure 6

Figure 7

Figures 6 and 7. *Figure 6* provides a close-up of the rosette. Notice the tapered design, which prevents the attachment of any type of ligature. If you tried to loop something around it, it would slide down the taper onto the lever, which would drop, causing the ligature to fall off. *Figure 7* is the cylinder ring, of similar construction for the same reason.

are freewheeling and never rigid. *Figure 5* shows me pushing down the outside lever; note that the latch did not retract. This is similar to some vandal-resistant levers, which "give" instead of breaking when hit.

Figure 6 shows a close-up of the rosette. Notice the tapered design, which prevents the attachment of any type of ligature. If you tried to loop something around it, it would slide down the taper onto the lever, which would drop, causing the ligature to fall off. *Figure 7* is the cylinder ring, of similar construction for the same reason.

I've also installed a lot of classroom function locks of this type. These are interesting in the way they are locked and unlocked. The spindle is mostly square, but part of it is round. When the door is locked, the round part of the spindle is within the hub, so the hub won't rotate and withdraw the latch. Turning the key to lock the door pushes the square part of the spring-loaded spindle into the hub, which turns to withdraw the latch. I've never seen anything quite like this before.

Figure 8. The prep for this lock is a typical mortise prep and is similar to, if not the same as, a Best 45H.

Figure 9. The parts are laid out on a table.

Figure 10. The cam on the cylinder is a standard Yale-type cam.
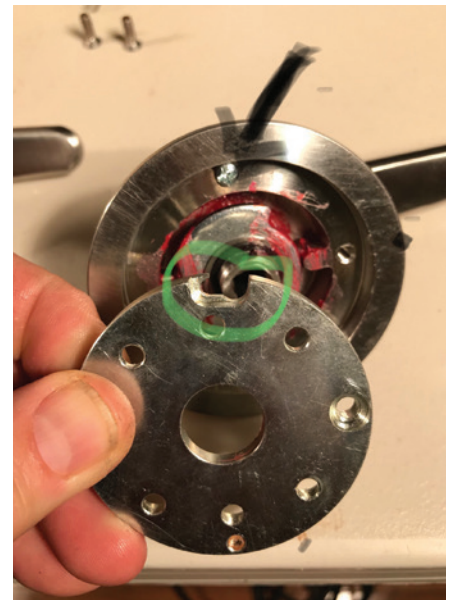

Figure 11

Figure 12

Figures 11 and 12. These photos show the outside and inside lever handles.

Figure 13. The black arrow points to a screw that the cutout, circled in green, fits over.

Prep, Parts and Installation

The prep, in *Figure 8*, is a typical mortise prep and is similar to, if not the same as, a Best 45H. If you were retrofitting this lock into another mortise prep, you might have to spot and drill new holes for rosette studs and screws and possibly enlarge the spindle hole — nothing overly complicated.

Figure 9 shows the parts laid out on a table. Almost everything except the cylinder is made of stainless steel, resulting in an extremely durable lock. You'll also notice that the cam on the cylinder is a standard Yale-type cam (*Figure 10*). You can also see only one spring-loaded spindle half with a roll pin driven through it.

Figures 11 and *12* are the outside and

inside lever handles. Notice the difference in that the inside looks like it was machined out. *Figure 13* shows the backplate that rests on the inside of the door and through which the screws that hold the outside lever on the door pass through. I'm holding it in front of the inside lever.

The black arrow points to a screw that the cutout, circled in green, fits over. If
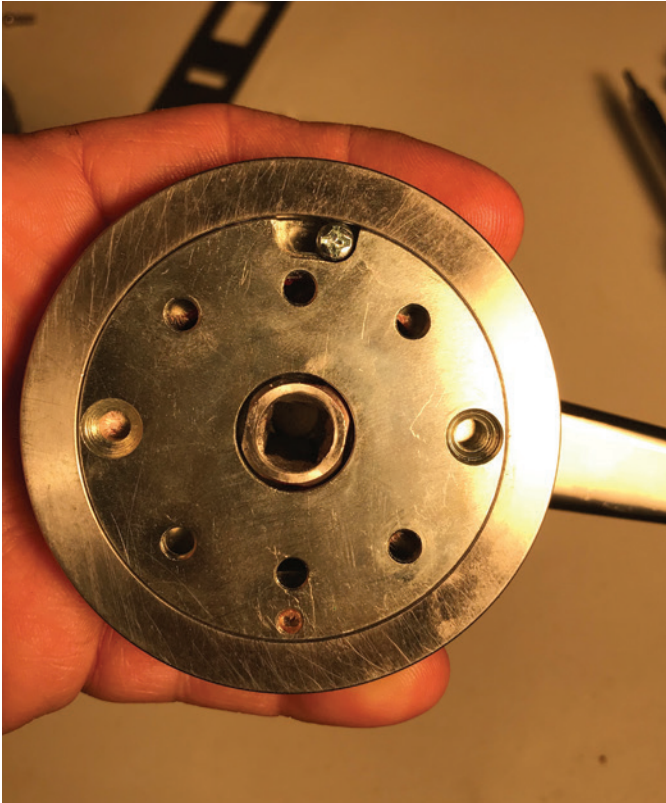
AVL

ACCESS VALUE LEARNING

ALOA2018

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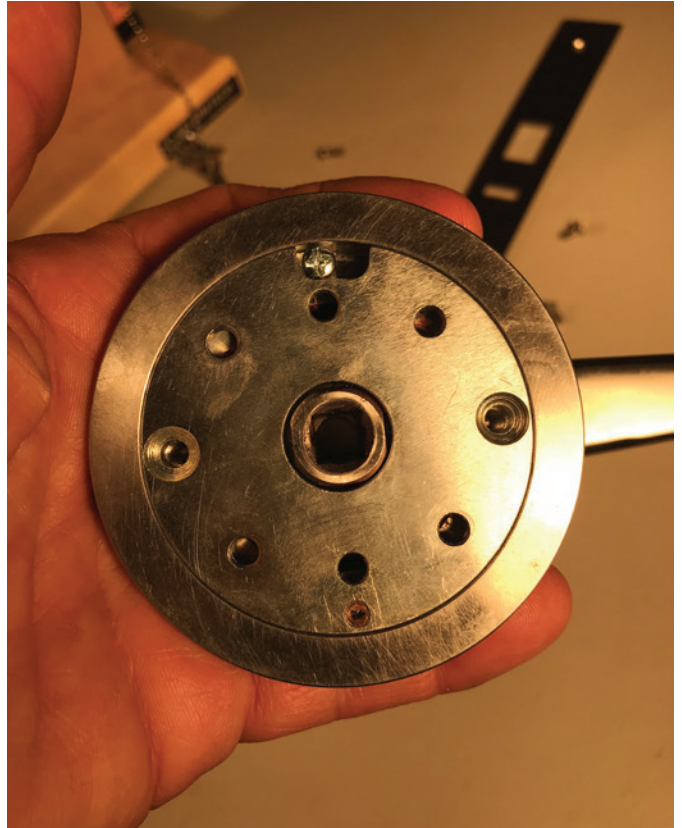National Harbor, MD (just south of D.C.)

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Figure 14. This photo shows how the lever would fit onto the backplate.

Figure 15. The screw is now on the left side.

Figure 16. The author is fitting the outside lever studs through the door and lock. Notice that you don't see a spindle.

Figure 17. The author is screwing the backplate into the studs on the outside lever.

Figure 18

Figure 19

Figures 18 and 19. The author is inserting the spring-loaded spindle and then fitting the inside lever over the backplate.

Figure 20

Figure 21

Figures 20 and 21. In *Figure 20*, the author is holding the lever on with his thumb; notice the lever is tilted down. I would normally immediately move to *Figure 21*, which causes the lever to rotate a little so the screw moves behind the step in the cutout.

Figure 22. The inside lever is in its finished position with the lever horizontal.

you look closely at the cutout, you can see a small step machined on the bottom left side of it. *Figure 14* shows how the lever would fit onto the backplate. Notice the position of the screw that's within the cutout; it's on the right side of it. Now compare that with *Figure 15*; the screw is now on the left side and over the step I mentioned above. This screw and another you'll see in a moment are what hold the inside lever on.

In *Figure 16*, I'm fitting the outside lever studs through the door and lock. Notice that you don't see a spindle. Because this is storeroom function and the lever will never retract the latch, it's not necessary. In *Figure 17*, I'm screwing the backplate into the studs on the outside lever. The cutout I showed you earlier is on the top.
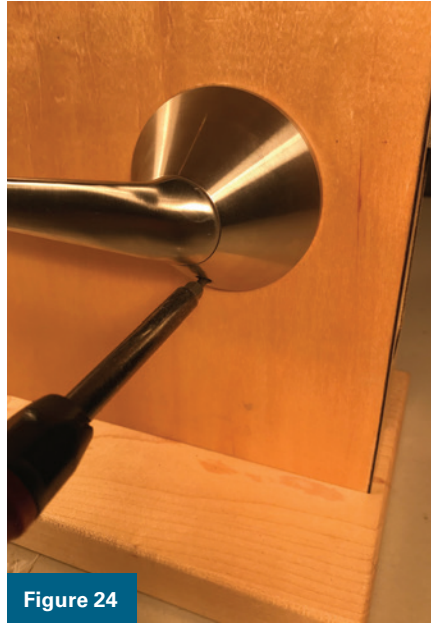
Figures 18 and *19* show me inserting the spring-loaded spindle and then fitting the inside lever over the backplate. In *Figure 20*, I'm holding it on with my

thumb; notice the lever is tilted down. I would normally immediately move to *Figure 21*, which causes the lever to rotate a little so the screw moves behind the step in the cutout. This is what I showed you in *Figures 14* and *15*. *Figure 22* shows the inside lever in its finished position with the lever horizontal.

You can also see a small hole at the bottom of the inside rosette in *Figure 22*. When I rotated the lever, I also lined this
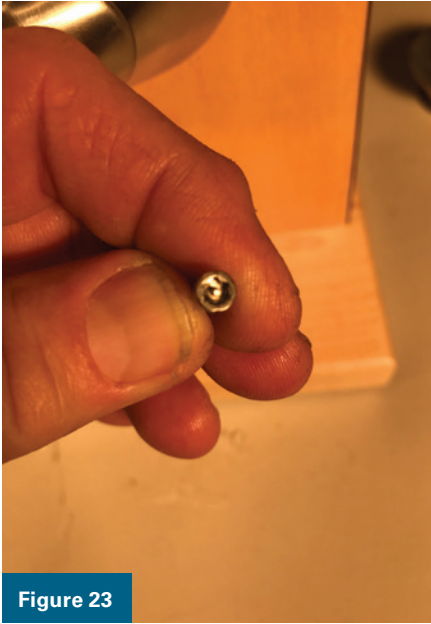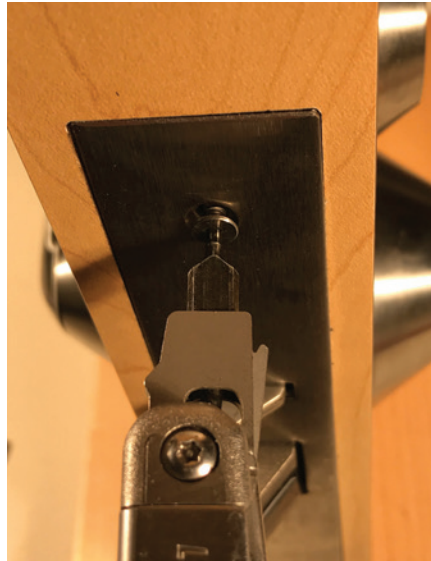
Figure 23

Figure 24

Figure 25. The author is turning the cylinder in using the key — pulled out slightly — to do it.

Figures 23 and 24. *Figure 23* shows a socket head screw with a T-15 Torx high security head, which the author is screwing in *Figure 24*.

Figure 26. This photo shows the cylinder setscrews.

Figure 27. The author is tightening the faceplate screws with a 5/64" standard Allen wrench.

hole up with a corresponding threaded hole in the backplate. *Figure 23* is a socket head screw with a T-15 Torx high security head, which I'm screwing in *Figure 24*.
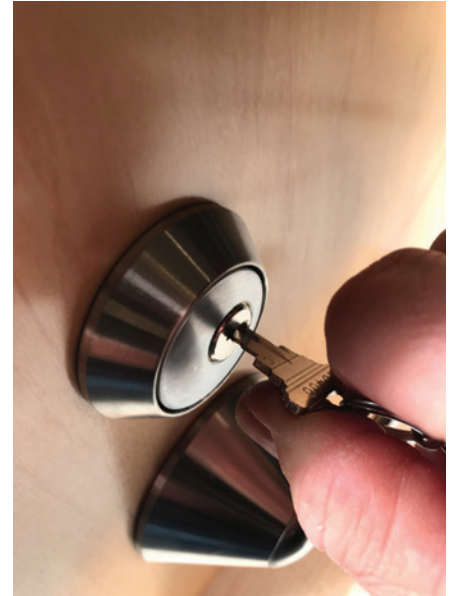
In *Figure 25*, I'm turning the cylinder in using the key — pulled out slightly — to do it. For the new guys, I'm doing it this way because I can't get a grip on the edges

of the cylinder face otherwise. If it was a Best IC cylinder, I could have used a Best cylinder wrench, but it isn't. Obviously, you don't want to bend the key by exerting too much torque while doing this.

Figure 26 shows the cylinder setscrews. Obviously you need to tighten them, but that's not why I'm showing them to you.

We once had a large, 150-plus-lock installation, and whoever looked at the job didn't notice the old mortise locks had cylinder holes on both sides of the door. The inside hole was unused and covered by the escutcheon, so they never knew it was there.

The new installation only required one cylinder, and we were left with an empty hole to fill. There is a plate made for this, but it hadn't been invented yet, so we used the one of the old cylinders, turned upside-down, with the appropriate cylinder ring to fix it. The second screw, in this case, was a godsend.

In *Figure 27*, I'm tightening the faceplate screws with a 5/64" standard Allen wrench. I'm using my Leatherman Surge for two reasons: The first is I didn't feel like going out to my truck, and the second is that this picture illustrates why you should have one of these tools.

The day I took these pictures, I was at a job in the Bronx where the parking lot was a quarter mile away. I needed scissors to cut a paper template and, bada-bing, I've got one on my Leatherman. This is

Figure 28

Figure 29

Figures 28 and 29. These photos show the inside and outside of a cylindrical SPSL lock in passage function.

Figure 30. This image shows the parts that make up a complete lock.

Figure 31. You can see the outside spindle between the grey spacers (yellow arrow). The red arrows point to the studs that the backplate screws into.

the single handiest tool I've ever owned. If you buy one, the tool only comes with a flat and Phillips insert. Order the accessory bits and the screwdriver extension; they all fit in the cordura pouch.

Back to the story. I'm not going to put in a picture of me checking the operation, as that should go without saying. If you do something as minor as tightening a loose faceplate screw, you should be in the habit of checking the operation of the lock, if practical. In the December issue, my article "You Touch It, You Marry It" is about this very thing.

In this case, tightening the screw is the "touching" part of that saying. Besides the fact that checking it is our trade's due diligence, you might discover a serious problem that the owner doesn't know about, and then you're a hero for 30 seconds.

Cylindrical Installation

Figures 28 and *29* are the inside and outside of a cylindrical SPSL lock in passage function. Notice the cool display it's on; the door opens and closes. On the inside is another working anti-ligature alarm at the top.

Figure 30 is a shot of the parts that make up a complete lock. It's a very sim-

ple install that is similar to the mortise install in some regards. Once the outside trim is fitted into the latch, as in any normal cylindrical install, the backplate (bottom left) screws into the studs on the outside trim. The inside trim is attached to the backplate the same way as on the mortise lock, but you don't need any holes other than a standard cylindrical prep. It's a really simple install.

Figure 31 is a close-up of the outside trim with the inside spindle (below right) in the picture. You can see the outside spindle between the grey spacers (yellow arrow). The red arrows point to the

studs that the backplate screws into. As you previously saw in *Figure 30*, the outside lever and chassis are all in one piece.

Once again, my thanks go out to Mark Berger and his crew at Securitech, especially Ajay and Maranda and the poor guy who helped me load the display case into my truck on a cold, windy day. Never did get his name. ✍

Parting Shot

Figure 32

Figure 33

Figures 32 and 33. I stopped at a truck stop for gas the other day and saw this truck — named "Wicked Intent" — fueling up next to me. I met the driver, who was a really nice guy, and he told me to look up Wicked Intent on YouTube to see more of the truck. Guess he's ready for the zombie apocalypse...

Tony Wiersielis, CPL, CFDI, has more than a quarter century of experience and has worked in most phases of the trade throughout the New York metropolitan area. He was named *Keynotes* Author of the Year for 2016.

ALOA

ALOA Security Professionals Association, Inc.

Membership Application

CANDIDATE PLEASE TYPE OR PRINT

Name: ❏ Mr. ❏ Mrs. ❏ Ms. First_____ Last_____ MI_____ Designation_____

Business Name _____

Mailing Address _____

City_____ State_____ Zip Code_____ Country _____

Work Phone_____ Home Phone_____ Fax _____

Email Address_____ Website _____

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

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

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

PROFESSIONAL INFORMATION

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

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

Are you licensed to perform Locksmith/Access Control work in your state? ❏ Yes ❏ 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 $242   ❑ I elect to Go Green $222
❑ International $260   ❑ I elect to Go Green $190

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

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❑ International $260   ❑ I elect to Go Green $190

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

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

DUES AND FEES

An application fee and the appropriate dues must accompany the application in order for processing to begin.
Application Fees Schedule:
US and US Territories $70
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Applicants from countries not listed must submit background check and report from local Law Enforcement with application.

FINAL CHECKLIST

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

METHOD OF PAYMENT

❑ Check   ❑ MasterCard   ❑ Visa   ❑ American Express   ❑ Discover

Card Number_____ Expiration Date_____ SEC _____

Print Name on Card_____

Signature_____ Date_____

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

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

_____
Signature   Date Signed

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www.don-jo.com

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Fax: 301-277-5080

Door Controls International
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Fax: 800-742-0410
www.doorcontrols.com

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Fax: 717-336-2106
www.dorma-usa.com

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Fax: 888-329-3846
www.dugmore.com

FireKing Security Group
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Fax: 708-371-3326
www.fireking.com

FJM Security Products
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Fax: 206-350-1186
www.fjmsecurity.com

Framon Manufacturing Company Inc.
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Fax: 989-354-4238
www.framon.com

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Guangdong Archie Hardware Co. Ltd
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Fax: 860-757-85589301
www.archie.com.cn

Hollon Safe
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Fax: 866-408-7303
www.hollonsafe.com

Hornady Security Products, Inc.
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HPC/Hudson Lock
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Fax: 978-562-9859
www.hudsonlock.com

HY-KO Products Co.
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Fax: 330-467-7442

Identicard Access Control
Phone: 717-295-8039

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Inkas Safe Mfg
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internationalkeysupply.com

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Fax: 718-257-0973
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Fax: 817-701-2365
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Fax: 252-446-4702
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Fax: 909-923-0024
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Keyline USA
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MBE Engineering Ltd.
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www.mbkeyprog.com

Medeco Security Locks
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Fax: 540-380-5010
www.medeco.com

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Fax: 973-778-4007
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Fax: 206-362-3569
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Optex
Phone: 800-966-7839

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Fax: 858-642-0454
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Premier Lock
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Punch Point Tools, LLC
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www.punchpoint.com

Retrolock Corp (Was Townsteel, Inc.)
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Fax: 626-965-8919
www.townsteel.com

Rolland Safe & Lock
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Fax: 214-845-6693

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Sargent & Greenleaf, Inc.
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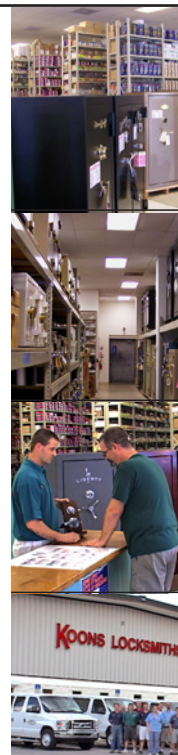
Classified Advertising Policy

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

Each ad will run for three consecutive issues. For blind boxes, there is a $10 charge for members and non-members. All ads must be submitted in a word document format and emailed 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	Web Site	Phone Number/Email
ALOA SPAI	page 49	www.aloa.org	(800) 532-2562
ASSA-Ruko/Technical Services	page 41	www.assatechnicalservicesinc.com	(724) 969-2595
Big Red	page 41	www.bigredsafelocks.com	(877) 423-8073
Bullseye S.D. Locks	page 41	www.bullseyesdlocks.com	(800) 364-4899
ClearStar Security Network	page 60	www.clearstar.com	(360) 379-2494
Detex	page 3	www.detex.com/training18	(800-729-3839)
HL Flake	inside back cover	www.hlflake.com	(800) 231-4105
Hayman Safe	page 54	www.haymansafe.com	(800) 444-5434
Hollon Safe	page 33	www.hollonsafe.com	(888) 455-2337
Jet Hardware Mfg. Co.	back cover	www.jetkeys.com	(718) 257-9600
John Koons Locksmiths	page 59	www.koonslocksmiths.com	(800) 282-8458
Key Craze	page 21	www.keycraze.com	(800) 490-7539
Kustom Key	page 45	www.kustomkey.com	(800) 537-5397
Security Lock Distributors	inside front cover, pages 29, 41	www.seclock.com	(800) 847-5625
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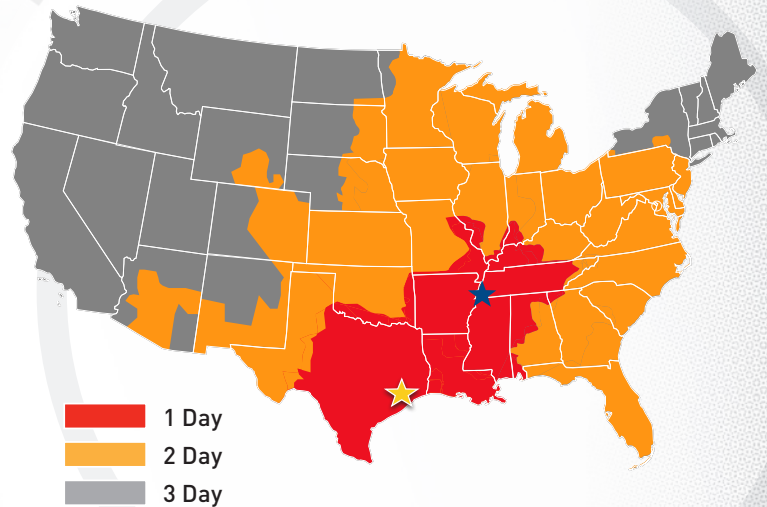
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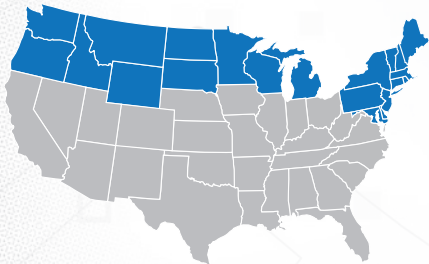
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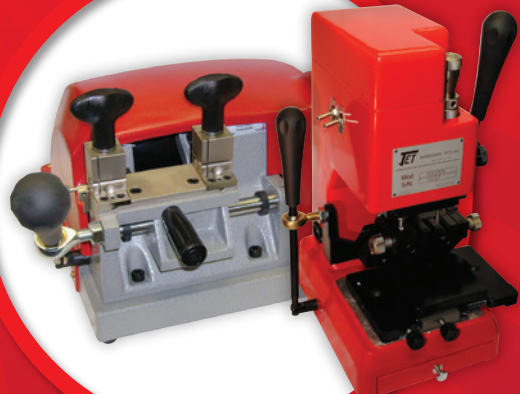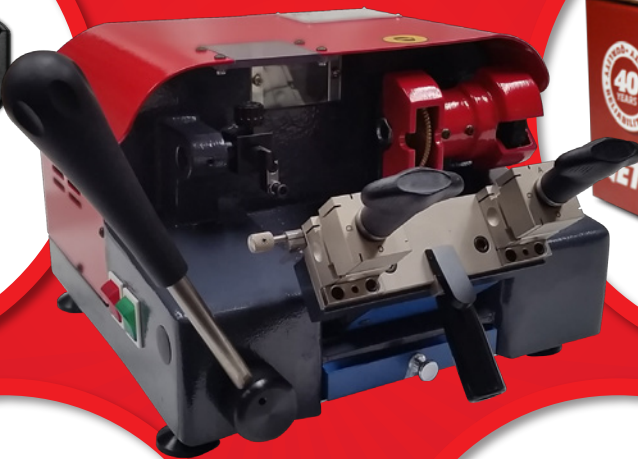
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