The official publication of ALOA SPAI, an international association of security professionals November 2018

# KEYNOTES

SECURING YOUR SUCCESS



# THE AUTOMOTIVE ISSUE

## Key-Making for Honda Scooters

## Picking the GM 10 Wafer Ignition

## Understanding Automotive Forensics

**PLUS**

## Making a Rabbeted Mortise Bit Key

Hotel Function Cylinders | KABA PowerPlex Assembly | IAIL Forensic Conference Recap


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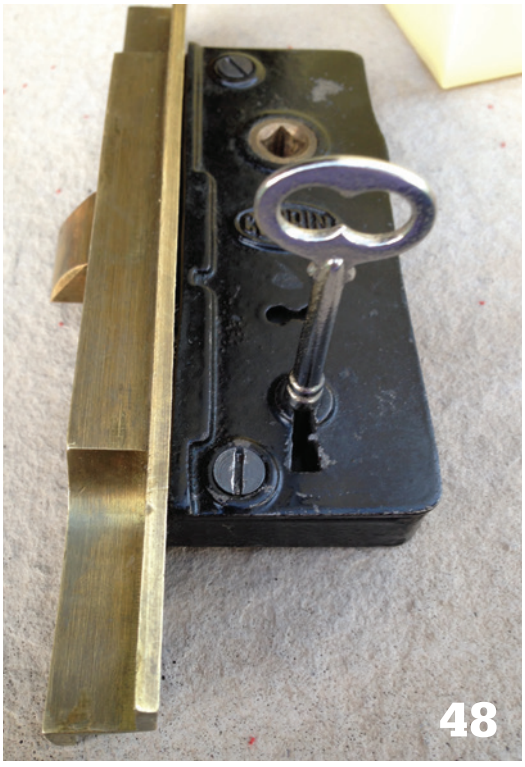


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# KEYNOTES

NOVEMBER 2018 | VOLUME 64, ISSUE 11




**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.




*Keynotes* (ISSN 0277 0792) is published monthly except for a combined July/August issue by ALOA Security Professionals Association, Inc., 3500 Easy St., Dallas, Texas 75247. Subscription rates are $25 per year for members. Periodical class postage paid at Dallas, Texas and additional offices.



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POSTMASTER:
Send address changes to:
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Dallas, Texas 75247-6416.

# Save the Date for ALOA 2019

I recently attended the Greater Philadelphia Locksmith Association's (GPLA) annual convention, and it was a fantastic event, as usual. This is one of the oldest and best-attended locksmith conventions in the nation, so it's a special event. It's always nice to have another event where we security professionals can get together, learn, network, share stories and just have fun.

During the awards banquet, Peter Field was given the prestigious Philadelphia Award, and then our own Yoshio Suzuki, who recently served as our International – Asia Director on the ALOA board, was honored with the Lee Rognon Award. This award is named for the first executive director of ALOA and honors its recipient for fostering cooperation between associations. Even more than that, though, the recipient is recognized for the same spirit of dedication and hard work that the award's namesake exemplified. Mr. Suzuki was incredibly surprised and totally caught off guard, which made the presentation even better. Congratulations to him. Well deserved (and if you didn't know, our own Executive Director Mary May was last year's recipient!).

This issue of *Keynotes* focuses on automotive locksmithing. This is truly a specialty unto its own. The field has seen so many changes over the past 15 to 20 years due to advances in technology. This is really no longer a field that security professionals can just superficially stick their toes in. Because of the changing technology, it's more important than ever to stay informed of new and advanced techniques. Receiving regular automotive education is more essential than ever.

ALOA has made a lot of efforts in recent years to revamp automotive education to make it more relevant to today's automotive locksmiths. We've added new courses and updated existing ones to reflect the latest technology. And our instructors, such as Mannie Natal, are top-notch. Our classes at the ALOA Convention and at the Aaron M. Fish Security Training Center in Dallas are truly some of the best places you can either begin your auto education or take your skills to the next level.

We've also revamped our Certified Automotive Locksmith (CAL) exam to focus more on today's technology and current models of vehicles. We've also added the new Certified Master AutomotiveLocksmith (CMAL) exam, which covers questions that only the truly seasoned or well experienced technician would know. For those who do forensic and expert witness work, we have the Certified Forensic Locksmith (CFL) Automotive specialty credential available to earn.

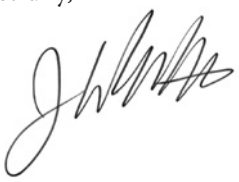
## Save the Date for ALOA 2019

Start saving the date now for the 2019 ALOA Convention & Security Expo in Las Vegas! Mark August 11-17 on your calendars so you won't miss out on the best week of education, networking and product access that you'll get all year. We'll be at the South Point Hotel and Casino, which gives you free transportation to and from the airport, and easy access via shuttle to the main strip area while getting a value rate of $80 per night Sunday through Thursday and $135 on Friday and Saturday nights. If you've never been to Las Vegas or haven't been in some time, it's a surprisingly family-friendly destination these days. Bring the family and make a little vacation out of it at the same time.

While we're on the subject of the convention, ALOA truly wants your feedback and ideas about it. Please send us your suggestions about what you'd like to see. Have ideas about new cities or venues? Specific classes or instructors you'd like to see? Changes to length or format? Tell us! You can always talk to us at conventions@aloa.org or membership@aloa.org. Please also feel free to contact me directly as well.

Finally, I'd like to wish you all a wonderful Thanksgiving and start to your holiday seasons. And thank you for being a part of ALOA.

Respectfully,



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

# Giving Thanks and Giving Back

It is the hope of ALOA that we all have a feeling of thankfulness — as individuals, as professionals and as members of this great association. At times, we may not feel that we have much to be thankful for, but just being a part of this great, diverse security industry has many rewards.

## Giving Thanks

Through our meetings, events and other interactions, we've developed life-long friendships with each other. Year after year, we come together and strengthen our bonds through shared experiences and social events. I'm personally thankful for all of you I've come to know and appreciate through ALOA.

We can also be thankful for the valuable professional skills that have allowed us to help so many. From keeping families safe and helping individuals make important appointments after a lockout to keeping government information secure, you've all, in your own ways small and large, made this world a better place. Not to mention the sense of accomplishment that we feel after conquering a job that some may have looked upon as impossible. Those are just a few of reasons why we should be thankful when it comes to our careers.

There is so much more I could mention when it comes to our families and personal livelihoods, but everyone is different. I hope that you will take a few moments after reading this perspective and reflect on what you have to be thankful for. After you start contemplating, your list may be much longer than you thought, and that's a wonderful feeling.

## Giving Back

When we are thankful for what we have, it's good to give back and help others get to the same place. Think about how we can give back to the industry that has been so good to each of us and our families. There are men and women entering the industry each day — why not be a mentor? Be to those coming up what someone was to you in your early years in the profession, and help guide and teach them.

Another way to give back is through your local ALOA chapter. Some ALOA chapters that were formed many years ago have not survived because of diminished assistance from persons in the industry to keep them afloat. Why not find out what it would take to get the chapter that was in your area going again, or start a new one? Or, perhaps simply get more involved in the established chapter or local association in your area. Attend more meetings, volunteer for a board position, or recruit new members. No assistance will go unnoticed.

There are available positions on the national ALOA SPAI board that need to be filled. Have you considered running? Member involvement is so important, as that's the only way we know what our members want. Come be a voice for your peers and give back to your industry.

The ALOA Board nomination form is available on the website at www.aloa.org, and it will also be published in the December 2018 issue of *Keynotes*, as it is each year.

In this season of thanksgiving, please consider giving your time to support your industry. Everyone who has come before you has helped to shape this industry and profession to be what it is today. Get involved and help shape the future. Be the mentor you would want to have.

We are grateful to have all of you as members, and thank you for another wonderful year with ALOA.

Mary A. May

Mary A. May
Executive Director
mary@aloa.org

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Part Number - LKM211

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List Price $55.00

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# Master Lock Introduces Vault Enterprise

Master Lock has unveiled Master Lock Vault Enterprise, which integrates a web platform and mobile app with Bluetooth-enabled security devices for access management. The product can grant and manage access to many locks and users in businesses of any size. Access to many different assets can be managed, including gates, equipment, doors and toolboxes.

Through the web interface, administrators can manage access to personnel based on time, date or group. Authorized personnel can then access the locks and lock boxes via the mobile app on their smartphones. To learn more, visit www.masterlock.com/solutions/vault.


Master Lock has released Vault Enterprise, which manages access to Bluetooth-enabled security devices through a mobile app and a web platform.

## ASSOCIATION/CHAPTER NEWS

### First AIL Chapter Established

National Capitol Area Locksmith Institute has been established as the first local chapter of the AIL division. The chapter meets every second Tuesday at 5 p.m. For more information, contact chapter vice president Conrad Shows at ncali.vp1@gmail.com. To get more information about establishing an AIL chapter, please contact division President John Truempy at Truempy@gmail.com.

### POLA Gets New President

Past president of the Penn-Ohio Locksmith Association Clay Hart, left, receives his gavel from new president Mark Echard.

## NEWS BRIEFS

**ABUS USA** has launched its next-day delivery program today, ABUS NEXT, available for its safety padlocks and devices. Any ABUS NEXT order placed by 6 p.m. EST will be delivered the next day. This nationwide service is for eligible products, including the ABUS 41 Series, 72 Series, 74 Series, and up to 100 stock keyed different and keyed alike padlocks or devices. Expedited shipping charges apply.

**Pacific Lock Company (PACLOCK)** has created a services partnership with the marketing firm Drucker Group to build marketing support programs for its distributors and locksmith dealer partners. The partnered team will also work to increase PACLOCK's distribution footprint.

## IN MEMORIAM

**Maurice Jones**, past SAVTA member from 1990 to 2012, has passed away. For many years, he answered the SAVTA tech hotline.

Member **Fred Becker** of Fredericksburg, VA, passed away in September. He had retired from the FBI as an Engineering Research Technician in March.

**Don OShall, CPL, CMIL, CMKS,** longtime ALOA member and revered institutional locksmithing expert, has passed away. He authored many books for locksmiths, including *Institutional Locksmith Shop Management*, *Locksmithing 101* and *Institutional Lock Shop Management*. He was an active teacher more than 40 years and ran a well-regarded institutional lock shop for more than 25 years. He received many awards over his career, including the ALOA Award in 2014.

## PRODUCT BRIEFS

**Paxton** has released its Paxton Connect Admin app to provide smartphone-based remote site management for Net2 System Engineers and Net2 Operators. Features include opening doors, user administration, roll call to mark users as safe or missing in an emergency, calling users directly from the app during emergencies and real-time reports on user locations.

**Ilco** has announced the availability of the EA and EB Schlage Everest keyways for the 1⅛" and 1¼" mortise, rim and the 1599 KIK cylinders. They are available in 6-pin only, and all cylinders in these two keyways are factory keyed to blade height (key blanks not included). There is no machining internally for OE finger pins. Ilco C123 and C145 key blanks are sold separately. Mortise and rim are only available in the cap finishes 26D, 03, 46,10B. The 1599 KIK cylinders are only available with the traditional 04 and 26D plug faces.

**ABUS** has introduced the LockPoint Mobile Safety Center. With its wheel-based feature, LockPoint can store lockout/tagout (LOTO) devices and documents in one location. It is made of heavy-gauge steel and can endure industrial settings where hazardous machinery is operated. It is OSHA 1910-147 LOTO compliant and includes the following accessories: two storage baskets, a storage basket divider, a padlock display bar, ten document holders and a document holder bracket.


**Securitech** has released the SAFEBOLT code-compliant barricade lock. It retrofits to existing cylindrical lever locks and provides instant classroom or office lockdown with the push of one button. It has a high-visibility indicator, meets all life safety codes, is ADA compliant, has in-swing and out-swing models available and a single motion retracts the bolt and latch from the inside at all times. Staff and first responders can always enter by key.

# NEW APPLICANTS

As of September 28, 2018

## ALABAMA

Prattville
- **Zachary K. Crosby**

## ARIZONA

Cave Creek
- **Wade S. Doan**

Green Valley
- **James I. Morse**
  Green Valley - Sahuraita Locksmiths LLC

Tucson
- **Mary L. Andersson**
  Roadrunner Lock & Safe
  *Sponsor: Scott L. Warren, CRL*

## CALIFORNIA

Palm Desert
- **Nahman D. Lecover, 2541581**
  24/7 Quick Locksmith

San Leandra
- **Seli Jacobowitz**
  All American Lock & Key, Inc.
  *Sponsor: Oleg Ivanov/Berger*

## FLORIDA

Fort Myers
- **Carlos Isaac**
  Complete Locksmith

Miami
- **Rafael Irizarry**

## GEORGIA

Covington
- **Deanne J. Lauricella**
  Precision Locksmith of Georgia LLC
  *Sponsor: James A. Barthelemy, CRL*

Holland
- **Donald B Mishoe**
  Holland Lock & Safe
  *Sponsor: William G. Kimball, CRL*

## MISSOURI

St. Louis
- **Mark H. Brown**
  The Flying Locksmiths - St. Louis
  *Sponsor: Barry L. McMenimon, CPL*

## MONTANA

Hannibal
- **Austin J. Carter**
  Precision Safety Lock & Security, LLC
  *Sponsor: James E. Baxter, CRL*

## NORTH CAROLINA

High Point
- **Joshua P. Brown**
  NC Lock and Key, Inc.

## NEVADA

Henderson
- **Wade J. Messerli**
  City of Henderson

Las Vegas
- **James Dillon**
  Nevada Safes

## OREGON

Portland
- **Oren Manor**
  Advantage Lock & Key LLC
  *Sponsor: Yair Frenkel*

## TEXAS

Addison
- **Duston A. Garcia**

Del Rio
- **Andrew J. Fritts**
  Del Rio Lock and Key Service
  *Sponsor: Jonathan R. Miller, CML*

Frisco
- **Musoud Tangestani**

## VIRGINIA

Charlottesville
- **Sean W. Megahan**
  Albemarle Lock & Safe
  *Sponsor: W. Scott Megahan, CRL*

Fairfax
- **Fareq Aslewa**
  Fairfax County Govt.
  *Sponsor: Jeffrey LeBlanc*

## JAPAN

Takamatsu, Kagawa
- **Chihiro Mimaya**
  Kagisyo Japan Service Ltd
  *Sponsor: Yoshio Suzuki, CRL*

## ALOA CERTIFICATIONS

AFL
- **Andrew F. Agius Sr., AFL**
  Alpena, MI
- **Andrew S. Alvarez, AFL**
  Chino, CA
- **Adam Bullock, AFL**
  Munford, TN
- **Brandon Chandler, AFL**
  Dallas, TX
- **Anton Muntean, AFL**
  Denver, CO
- **Roger Rippel, AFL**
  Brandon, FL

CLL
- **Zachary Engel, CLL**
  Gulf Shores, AL
- **Mario Flores, CLL**
  Houston, TX
- **Robert Lee Frost Jr., CLL**
  Calhoun, LA

CRL
- **Adrian V. Holley, CRL, LSFDI**
  Bozeman, MT
- **Shawn M. Gjestvang, CRL**
  Fargo, ND
- **Larry M. McCully, CRL**
  Stafford, VA
- **Adam Curry, CRL**
  Hanover, PA
- **Russell W. Beechly, II, CRL**
  Jacksonville, FL
- **Ben C. Moen, CRL**
  Fargo, ND

## 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.

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.

# CALENDAR

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

## NOVEMBER

**November 5-10**
**Safe Sessions Week**
ALOA Training Center
Dallas, TX
education@aloa.org or
(800) 532- 2562, ext. 101
See ALOA.org calendar
for reg. form.

**November 17**
**PRP at the NCLA Convention**
Durham, NC

## DECEMBER

**December 1-2**
**Electronic Lock Servicing & Defeat**
ALOA Training Center
Dallas, TX
education@aloa.org or
(800) 532- 2562, ext. 101

**December 3-8**
**Six-Day Basic Locksmithing**
ALOA Training Center
Dallas, TX
education@aloa.org or
(800) 532- 2562, ext. 101

## FEBRUARY

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

## MARCH 2019

**March 28-30**
**HL Flake Trade Show**
Education March 28-29;
Trade Show March 30
www.HLFlake.com

## APRIL 2019

**April 1-6**
**SAFETECH 2019**
Griffin Gate Marriott Resort & Spa
Lexington, KY
www.SAVTA.org

## AUGUST 2019

**August 11-17**
**ALOA Convention & Security Expo**
Las Vegas, NV
www.ALOA.org,
conventions@aloa.org

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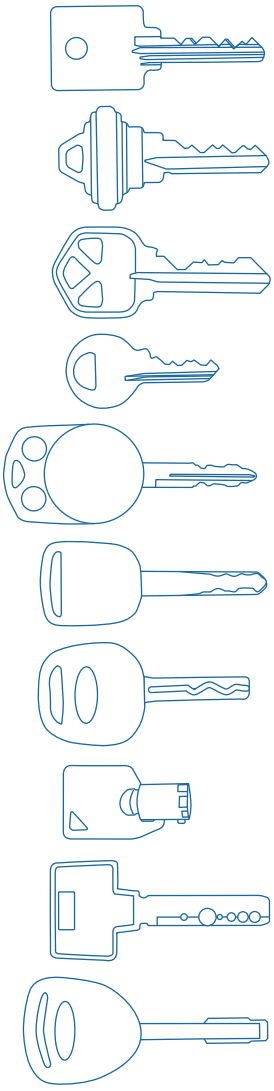

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# SAFETECH Lexington 2019

# Save the Dates!

## Plan now to attend the 2019 ALOA and SAFETECH conventions.

This year is wrapping up, and before you know it, it will be time to make travel plans to SAFETECH 2019 and the 2019 ALOA Convention & Security Expo.

### SAFETECH 2019

Save the dates of April 1-6 for SAFETECH 2019 in Lexington, KY, the heart of safe and vault country. Join us at the Griffin Gate Marriott Resort & Spa on the north side of the city, where you'll get a great rate of only $120 per night with free parking and WiFi. When you attend, not only will you receive the best training in the industry, but you'll enjoy all of your favorite SAFETECH events, from the Swap Meet and Friends of SAVTA Live Auction to the Kick-Off Party and manipulation contest.

Look for complete registration information in January, but you can make your hotel reservations now. Don't miss out! Call the Griffin Gate Marriott directly at (800) 228-9290 and mention group name "SAFETECH." The cutoff date for reservations under the group rate is March 9.

### ALOA Convention & Security Expo

Your key to professional winning is at ALOA 2019 in fabulous Las Vegas. Join us August 11-17 at the South Point Hotel & Casino for world-class education from the industry's best instructors, unsurpassed networking and the best access to the latest products.

Come join us in this surprisingly family-friendly city and enjoy a value hotel rate of $80 per night Sunday through Thursday and $135 on Friday and Saturday nights.

Want more information as it becomes available? Contact conventions@aloa.org or call (800) 532-2562.

# Learning and Networking at the IAIL Conference

IAIL President **Tom Demont** recaps the recent IAIL conference and gives division updates.

**"As we reorganize IAIL to better serve our members, I am always looking for suggestions for improvement."**

Thank you to those who attended the IAIL Forensic Conference at our training center in Dallas, TX. I'm sure you came away with an abundance of knowledge and direction toward your goal of offering your clients the most experienced expert witness possible in our chosen specialty! I feel that a lot of you are experts in your own right and would do a good job on the witness stand, so why not give yourself that additional training to make you a better expert witness? IAIL offers many courses such as the ones we just completed at our conference in Dallas and at the ALOA Convention and SAFETECH. This year, we had 21 students take their Certified Forensic Locksmith (CFL) exam in various specialties.

At this year's conference, IAIL member photo identification cards were issued to all attendees as part of the conference package. On Thursday evening, we had a wine and cheese reception hosted by Technical Services, Inc. All enjoyed the homemade wine selection offered. On Friday evening, enjoyed a presentation by Hans Mejlshede, a Danish locksmith and forensic investigator. On Saturday evening, we had an open forum on IAIL and our different specialties and the types of cases coming our way

At this year's conference, we were pleased to have John Abounader, executive director of International Association of Auto Thief Investigators (IAATI) discuss how our two associations can work more closely with education and training. Our board feels that aligning our association with IAATI will help our members gain valuable knowledge in the auto theft arena. Thank you, Brian VanDenburgh, for introducing IAATI to IAIL.

As we move into the holiday season, it is important to start planning and budgeting for next year's educational opportunities. We hold classes at the national tradeshows to serve our members who attend these shows. If you didn't attend this year's IAIL conference, plan to attend next year.

As we reorganize IAIL to better serve our members, I am always looking for suggestions for improvement. I would like to hear of any new classes you would like to have and if you are interested in serving on our board of directors. If you have any comments, suggestions or questions, please contact me 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!

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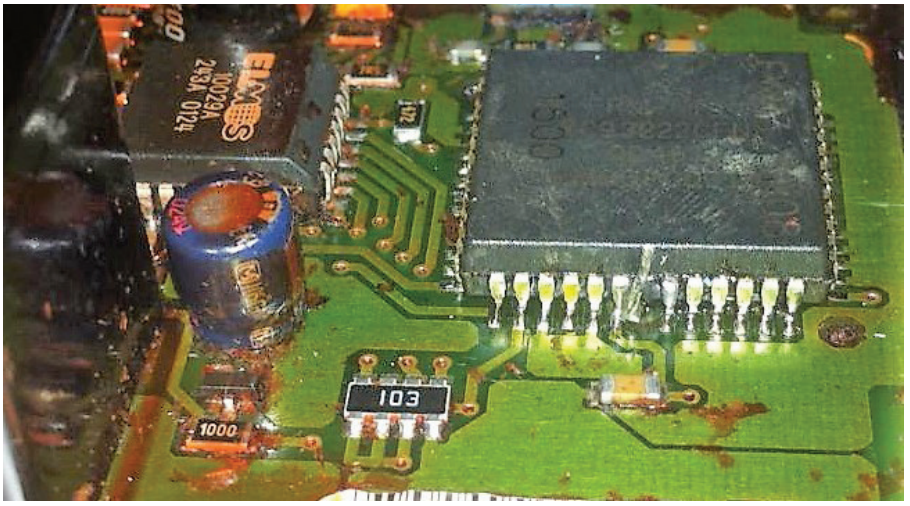


**Figure 1.** This is an example of a memory device on a BMW EWS 3 Module. Note the red-tinted conformal coating removed from the device. This is a common appearance when cleaned off for reading information or programming new keys. The key positions can be re-used by aftermarket equipment.

# Automotive Forensics: More Than a Keyway

## An understanding of electronic forensics is crucial to investigations.

**By Brian VanDenburgh CFL, CAL, CRL, CFAI**

Electronic forensics is a crucial step when conducting a forensic inspection on an automobile. It is imperative as an investigator to stay up on current trends in cloning and programming keys for cars. Knowing the industry and equipment can help you find signs of interrogation or manipulation of the vehicle's electronic immobilizer storage devices. Taking classes on the latest techniques and keeping up with latest publications and equipment is a never-ending task. Relying on opinions of dealer-certified mechanics is a mistake. Most dealer-certified mechanics only understand the approved dealer method and have no idea how their system actually works. Many times in the course of my career, I have made keys for vehicles, leaving dealer mechanics stunned. The circumstances that stick out are when the customers have called after being quoted thousands for new replacement modules and keys from a dealer only to have me show up and do the job for hundreds instead.

The concept is pretty simple. For a vehicle to start with a programmed key and for the vehicle to recognize the proper key, the key identification information must be stored somewhere in the car. Sometimes this information is accessed via the OBD (on-board diagnostic) port. Other times, modules are removed so the memory devices can be read. Some locations of memory devices are in factory-sealed units that will have signs of tampering if opened. Some memory devices have a protective conformal coating that must be removed to read the device. Other memory devices must be removed out of circuit to be read and then be re-soldered, leaving signs indicating possible tampering.

These electronic indicators are every bit as — if not more — important as looking at the physical locks and keys. Some keys will even store VIN and last-mileage-when-used information. Some devices not only store electronic key identification but also are capable of showing you the last key authorized to start the vehicle and number of key identifications programmed to the vehicle. This is important not only to gain knowledge on the vehicle and keys; you need to know that some of the old tests — such as starting the vehicle to prove the key is programmed — can forever alter evidence, causing a spoilage issue.

I recently investigated a vehicle case where the insured was denied a claim based on the fact he had the only known

> **"These electronic indicators are every bit as — if not more — important as looking at the physical locks and keys."**

Search | Graph Selections | Sh

| Name | Value |
|---|---|
| Key in Ignition / KIN in ACC/RUN | No |
| Key in Ignition / KIN in ACC/RUN | No |
| Valid Immobilizer Key | Default |
| Commanded Ignition Status | Ignition Lock |
| Ignition Position | LOCK Position |
| Number of Key/Fobs Programmed | 2 |
| Last RKE Fob ID Used | Key FOB 1 |
| Last RKE Fob Button Depressed | Lock |
| Authenticated FOB ID | 6F E2 4A 9E |
| Key 1 Position | Key pos. not checked |
| Key 1 Authentication State | Auth. state undefined |
| Key 2 Authentication State | Auth. state undefined |
| Odometer | 7310.1 |

**Figure 2.** This image gives an example of key data found via OBD using a Micro-pod II on a 2018 Dodge Charger proximity key model. The Authenticated FOB ID can be compared to recovered key ID once scanned.

key for a BMW and there was no apparent damage to theft system or lock. The vehicle was recovered miles away from where he last parked it. He turned in the key to the insurance company. They test-started the vehicle with that key, concluding he must have driven it there. The insurance company settled the case after my investigation revealed four keys were programmed to the vehicle, and a spoilage issue was brought up. When scanned, the BMW key shows VIN, key # and the mileage when the key was last used. The insurance company test altered that evidence (spoilage), by rewriting the mileage on the key during their test, denying the insured the ability to prove his case. A proper scan of the key and module by a dealer or with a low-cost AK90 would have prevented the spoilage.

I also recently conducted tests on a 2018 Dodge Charger using a dealer Micro-Pod II to see what information was stored in the vehicle's memory. This was a push-start proximity key vehicle. The only lock on the vehicle is the driver's side door lock. The key information was accessed via OBD. Useful information can be obtained if there has not been an interruption in power to the vehicle and the key has not been used in accessing or starting the vehicle since being recovered. Examples of the information: number of keys/fobs programmed, total number of keys programmed to the vehicle; last RKE fob ID used, key number is displayed; last RKE fob button depressed, shows what button pressed, unlock or lock; and authenticated fob ID meaning, digital ID of last key used to start vehicle. I could not find a way via OBD to see the digital ID of keys in different positions. The keys can be scanned with something like Miraclone, Tango or Zed-bull to reveal the key ID. This can be compared to the authenticated fob ID function to see if that was the last key used. If the power has been interrupted from a dead battery, the numbers default to zero for the last RKE key used and authenticated fob ID.

These are just a few examples of useful digital data. ALOA and IAIL can be an important part of the training and experience required to be a successful investigator If you couldn't make the IAIL Forensic Conference in October, attend the 2019 ALOA Convention for more classes. And quality equipment and references are a must.

**Brian VanDenburgh, CFL, CAL, CRL, CAI,** is the retired deputy chief of police in Schererville, IN. He also formerly worked as a special agent in the USAF Office of Special Investigations and is retired reserve USAF Security Forces. He received his bachelor's degree from Oakland City University and is the owner of Lockout Express LLC in Dyer, IN, which he established in 1993.

## Get Published!

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

# 2017 HONDA RUCKUS

**Robert Sieveking, RL, CAI,** explains how to make a key for the Honda Ruckus and other Honda scooters.

**"Follow the rules, and you should get a good reading. It's not magic."**

The 2017 Honda Ruckus is a delightful entry-level motorcycle. Its 50cc engine qualifies it as a "moped" and consequently allows license of the younger riders. It is a surprisingly peppy ride for such a small engine. Lost keys can be a troubling situation for owners. Key-making here is a walk in the park. There are only three depths and five positions on the key.

Removing the ignition cylinder or searching for the code is usually not a viable option. Locksmiths familiar with sight reading will make short work of these jobs. Read the cylinder, make the key and collect your fee. I hope you enjoy this article. Read 'em and reap.

## The Basics

Honda Ruckus scooters since, about 2003, have used the HON68BP/HON68RBP (Silca) or HOND-29DP/HOND-29RBP (JMA) keyways. The code series will determine the correct keyway. We'll study the keyway/code series relation later in this article.

The Ruckus has three lock cylinders on the bike. They are: the gas cap cylinder, the helmet lock cylinder and the ignition cylinder. Each cylinder will contain a full complement of five wafers.

This article will address the easiest key-making procedure for this motorcycle. No search was made for the codes, but the codes may be found on the ignition plastic housing and possibly the rear of the helmet lock. No aluminum code tag accompanies the original keys. The key code is stamped into the body of the original Honda keys.

The first step in any automotive or motorcycle key-making assignment is to find specific information for the vehicle. Search was made for the 2017 Honda Ruckus (NPS50). *Figure 1* shows a portion of the Fast Facts Motorcycle Index. We find two listings for the Ruckus scooter. This is not a Big Ruckus, PS250, which uses different codes and the X265+ or HD1114 (Jet) extended keyway.

Codes for the 03+ models are shown as: A/B 00-99 and C/D 00-99. The A/B series will use the HON68BP (Silca) left over right keyway. The C/D series will use the HON68RBP (Silca) right over left keyway. The keyways are identical but reversed. The "R" in the key manufacturer's designation indicates that the keyway is reversed. JMA equivalent keyways are listed in the Key Plate.

## From 2018 Fast Facts Key Plate HO2b, we find:

(Key Plate HO03b gives identical mechanical information, for the alternate code series and reverse keyway)

**Code Series:** A/B 00-99

(This is a very common code series, used over multiple keyways.)

**Published Codes:** TNL "CCodes" (Cycle Codes) page listing

Reed and Baxter Book/Page locations are also shown

InstaCode program also lists this series

| | |
|---|---|
| **Keys:** | HON68BP (Silca)<br>HOND-29P (JMA) |
| **Key is Gauged:** | Shoulder gauged |

| # Space | # Depth |
|---|---|
| 1- .098 | 1- .278 |
| 2- .196 | 2- .250 |
| 3- .295 | 3- .222 |
| 4- .393 | step increment is: .032 |
| 5- .493 | spacing is: .098 cut-to-cut |

**Gauge:** Shoulder

## Using a Framon #2?

**Fr: S-B-I**

(**F**ramon **S**pace-**B**lock-**I**ncrement)

(First cut, shown under S&D, is .098)

Framon Block: #5 (.0985 spacing)

Step Increment is .032

| | |
|---|---|
| **HPC 1200CM:** | Code Card MC37 is indicated |
| **ITL:** | #214 |
| **HPC DSD:** | 406 |
| **Tumbler Locations** | |
| **Ignition:** | **5 wafers**<br>**1** 2 3 4 5 |
| **Gas:** gas cap | **5 wafers**<br>**1** 2 3 4 5 |
| **Hel:** helmet/seat lock | **no cylinder** |

(Note: This Key Plate is also for the Metro, which has no seat/helmet lock)

## Index Listings: NPS50 Ruckus

| | | | | | |
|---|---|---|---|---|---|
| NPS50 Ruckus | 03+ | A/B 00-99 | 5 | HON68BP (Sil. only) | HO02b |
| (**NOT**! "Big Ruckus") | 03+ | C/D 00-99 | 5 | HON68RBP (Sil. only) | HO03b |

## Key Plates: HO02b & HO03b

**Honda — Metropolitan CF50 — 02-09 — HO02b**

1200 CM MC37 codes A/B 00-99
G-Keys FGK237 Baxter Bk 24 Pg 131
ITL# 214 DSD# 406 NL:HPC -
Gauge shldr Japan Reed 08-05-048
Curt 21307 other TNL CCodes Pg. 49

| Curt: | HD-4 | HD-4C | 15W-45 | S & D |
|---|---|---|---|---|
| Fr:S-B-I | .0985 | 5 | .032 | .098 |
| | | | | .196 |
| | | | | .295 |
| | | | | .393 |
| | | | | .493 |

2002-09 metropolitan scooter?
no sub found.
same codes as earlier keys, new deep ignition.
3 depths, Read gas/compartment lock

| | | |
|---|---|---|
| 0 | - | Ilco HON68BP Sil |
| 1 | .276 | EZ |
| 2 | .244 | Tay |
| 3 | .212 | B&S |
| 4 | | Bör |
| 5 | | Curt HOND-29P (JMA) |
| 6 | | SIL HON68BP |
| 7 | | PINS ign. 12345 |
| 8 | | gas 12345 |
| 9 | | hel. |

**Honda — Metropolitan CF50 — 02-09 — HO03b**

1200 CM MC37 codes C/D 00-99
G-Keys FGK237 Baxter Bk 24 Pg. 131
ITL# 214 DSD# 406 NL:HPC -
Gauge shldr Japan Reed 08-05-048
Curt 21307 other TNL CCodes Pg. 49

| Curt: | HD-4 | HD-4C | 15W-45 | S & D |
|---|---|---|---|---|
| Fr:S-B-I | .0985 | 5 | .032 | .098 |
| | | | | .196 |
| | | | | .295 |
| | | | | .393 |
| | | | | .493 |

2002-09 metropolitan scooter?
no sub found.
same codes as earlier keys, new deep ignition.
3 depths, Read gas/compartment lock

| | | |
|---|---|---|
| 0 | - | Ilco HON68RBP Sil |
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| 3 | .212 | B&S |
| 4 | | Bör |
| 5 | | Curt HOND-29DP (JMA) |
| 6 | | SIL HON68RBP |
| 7 | | PINS ign. 12345 |
| 8 | | gas 12345 |
| 9 | | hel. |

**Figure 1.** This image shows a portion of the Fast Facts Motorcycle Index.

**Key Making:** three depths, read gas/compartment lock.

Other important key-making information may be found on the Key Plate, but the above is the most important. Always read the important key-making suggestions/cautions in the lower left corner of the plate. The most important is: read gas/compartment lock.

Because there are two Key Plates listed for this bike, it is necessary to either have the code or look at and try the two indicated keys in a cylinder to determine the correct blank.

## The Gas Cap Cylinder

The gas cap will be found under a non-locking lift-up cover in the floorboard of the scooter, as you see in *Figure 2*. The cap is galvanized steel and is a screw-down style. Unlock and rotate the cap counter-clockwise to remove it. The cylinder is key retaining in the unlocked condition. Push down and rotate the cap clockwise to the stop. This will release the key.

The gas cap is detailed in *Figure 3*. The lock cylinder is enlarged in the keyway detail. There is no dust shutter on this cylinder, which makes sight reading the wafers much easier. In the keyway we

**Figure 2.** The gas cap is found under a non-locking lift-up cover in the floorboard of the scooter.


**Figure 3.** The gas cap is detailed.

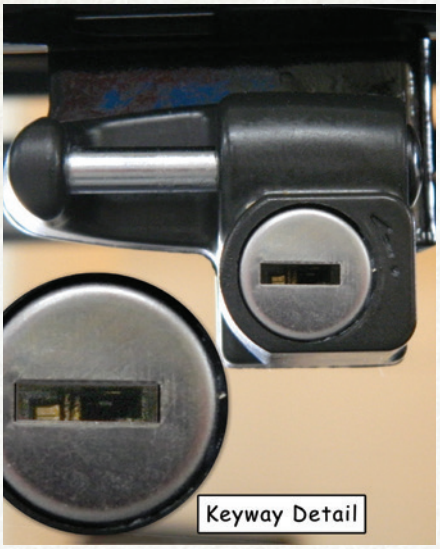


**Figure 4.** The helmet lock is detailed.

can see three wafers. The front-most wafer is a #1 depth. The next wafer visible in the keyway is a #2 depth wafer. The next wafer visible in the keyway is a #3 depth wafer. The next dimly visible wafer is a #3 depth, deep in the keyway. This cylinder is shoulder gauged. The shoulders of the key will contact the shoulders in the keyway. The bitting for this key will be: 1-2-3-2-3. In the photo, we already see four of the five bittings. This is without really trying. The gas cap cylinder is arguably the easiest cylinder to read on most bikes.

With no dust shutter, the keyway is open for reading. The Universal Wafer Lock Reader tool is ideal for this cylinder. The keyway detail in *Figure 3* shows the face of the gas cap cylinder.

Let's review "The Four Cardinal Rules of Wafer Lock Reading." They are:

1. Light the keyway from the opposite side of the keyway as the wafers being read. *This allows the light to illuminate the keyway all the way to the back, without being obstructed by the reader tool or front-most wafers.*
2. Read the wafers with your eye centered on the keyway. *This allows us to see if wafers are of the same height and avoids parallax error in reading the relative wafer heights.*
3. Read the lock in the key pull position. *If the cylinder is picked, the wafers will be blocked. You will not be able to pull down a high wafer to read a shorter wafer at the rear of the keyway.*
4. Read the wafers from front to back. This avoids accidentally picking a wafer as you depress it. If a wafer is picked or hangs at the shear line, it will not rise to its natural height. It will be read incorrectly. If the wafer is a #1 depth, it may be missed altogether.

Rotate the cylinder plug gently left and right to free any picked or hanging wafers and then read the wafers from front to back. The bittings were read 1-2-3-2-3. That makes five wafers and a complete key. Read the wafers a few times to be sure of your readings before committing to a key (cutting a blank). When you're confident of your readings, cut the key on one side only. This is your test key. Reserve the second side of the blank as insurance and for a second-chance test key.

Follow the rules, and you should get a good reading. It's not magic.

## The Helmet Lock

The Helmet Lock is detailed in *Figure 4*. The lock cylinder is enlarged in the keyway detail. There is no dust shutter on this cylinder, which should make sight reading the wafers very easy. This is a standard-depth cylinder, so the Universal Wafer Lock Reader will be used again to read this cylinder. Follow the same procedure as was outlined in reading the gas cap cylinder to find five wafers in the cylinder. The bitting is: 1-2-3-2-3. This should be the same bitting as we found in the gas cap.

## The Ignition Cylinder

The ignition cylinder is shown in *Figure 5*. The cylinder is mounted at the right side of the bike, below the handlebars. This cylinder contains wafers in positions 1-2-3-4-5. The ignition cylinder is shoulder gauged. It is convenience, which means that all wafers will be found on only one side of the keyway. All wafers were found at the bottom-right side of the cylinder shown in the photo. The ignition cylinder controls ignition functions and steering lock. Rotate the ignition to the right to enable the ignition (ON position). A handlebar rocker switch cranks the engine.

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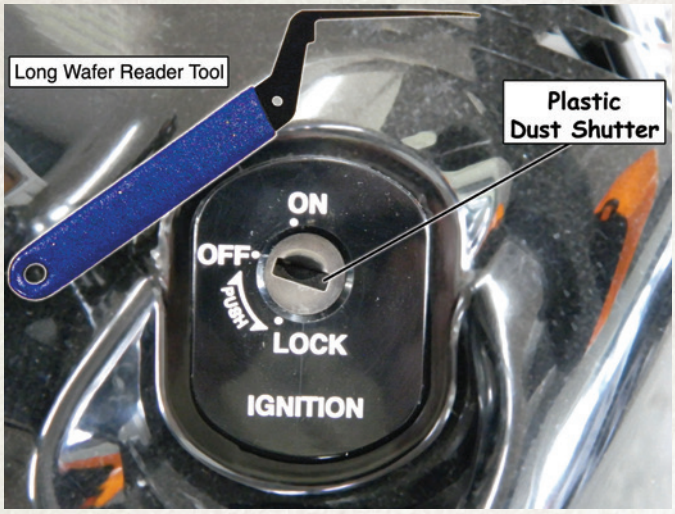


**Figure 5.** The ignition cylinder is shown.

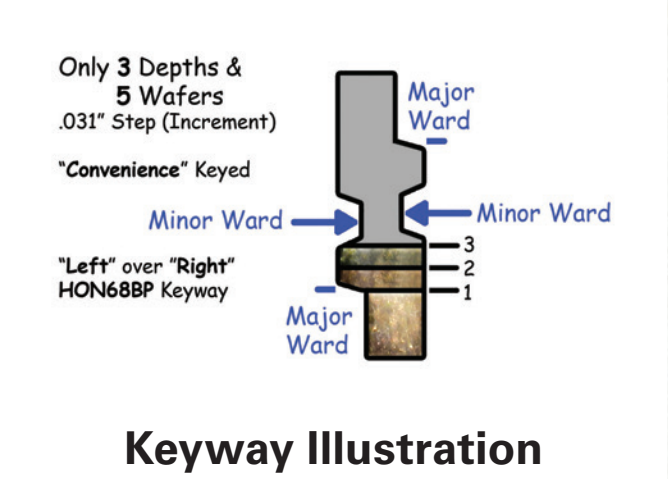


**Figure 6.** This image shows a graphic representation of the keyway.

Grip the left hand brake and depress the rocker switch to start the engine. To enable the steering lock, rotate the key to the OFF position, and then press down and rotate the key to the lock position.

This cylinder has the wafers deep in the keyway. To read the ignition, a long wafer reader tool is required. The tool shown in the photo was ideal for this purpose. Use the same sight reading procedure outlined above to read the wafer bittings in the ignition. The plastic dust shutter on this cylinder must be blocked open to view the wafers. Hold the shutter open with the reader tool as you read this cylinder. This cylinder is not difficult to read, but the dust shutter does complicate the reading.

*Figure 6* shows a graphic representation of the keyway. Major wards at the upper right and lower left define the key blade. This is a left over right configuration. This keyway shows two minor wards: at the left and right sides of the keyway. Minor wards further define the profile of the key blank. All of the wafers are on one side of this keyway, which makes it a convenience cylinder. It is basically a single-sided cylinder. The key is double-sided and reversible because the bitting is repeated on both sides of the blade.

**"Cut spacing can easily be determined by blacking the edge of the key with a Sharpie marker."**

The illustration shows the at-rest heights of the wafer bittings, with the cylinder in the key pull position. The cylinder is not picked.

1. A #1 depth wafer will be even with the top of a major ward.
2. A #2 depth wafer will be .032" higher than the top of the major ward.
3. A #3 depth wafer will be .032" higher than the #2 depth wafer bitting. (.064" higher than the major ward).

Use an otoscope or lighted magnifier to illuminate and view the wafer bittings in the keyway. There is nothing difficult about reading wafer lock cylinders. If you'll follow a few basic rules and techniques, the job is easier than you might think. It is a skill that requires some practice. The rewards are obvious. Peer into the keyway, study and read the various wafer bitting heights and make the key.

*Figure 7* shows the original factory key for this motorcycle. The bitting reads: 1-2-3-2-3 (bow to tip). There are five positions in this configuration. The spacing is defined as shoulder gauged in the code series. The cuts are listed bow to tip. Study the cut key to become familiar with sight reading the bitting on the key blade.

The dimensional height differences that we so easily observe on the key blade are exactly the same, as we will see as the bitting height differences on the keyway. That is the basic principle of sight reading all wafer lock cylinders. If you master this skill on this most basic 3-depth configuration, you will be ready to start reading 4-depth and 5-depth cylinders. The step dimension is less for these, but the principle remains the same.

**The above paragraph is golden. Read it again to make sure you grasp the concept. It is the key to all wafer lock reading.**

## Making the Key

If you will be making this key with a hand file, you will notice that the #3 depth cut very nearly touches the offset at the base


**Figure 7.** The original factory key for this motorcycle is shown in this photo.

of the bitting portion of the key blade. A #1 depth cut is the full width of the blank. A #2 depth cut is halfway between the #1 and #3 depth of cut. Hand cutting this key should not be difficult. Cut spacing can easily be determined by blacking the edge of the key with a Sharpie marker. Insert the blackened key into the cylinder and exercise the key (left and right rotation) in the keyway. This will mark the wafer positions. If you've read the wafers, you know the bitting depths. With the spacing defined and the bitting known, all that remains is to file the bitting onto the blank.

The original keys have the key code stamped into the blade of the key. This code was located in InstaCode and confirmed. InstaCode crosses B85 to the bitting: 1-2-3-2-3.

*Figure 8* shows a 1200CM code card that can be used to generate this key. In an abbreviated fashion, it also gives some of the information found in the Fast Facts Key Plate. Depths and spaces are given to check the finished key for dimensional accuracy. The Silca HON68BP key is given as the work key, and a representation of the keyway is shown. This is a reversible keyway, so the HON68RBP (Silca) key number is also given. Under the Code Series heading, the codes and appropriate key blanks are also repeated. The keyway illustration shows an approximation of the wafer bitting heights for reading purposes.

If you would like a copy of the 1200CM Card and Key Plates used in this article, drop me an email at bob@sievekingprodco.com. I'll be happy to send you a PDF copy for your personal use. Include your name, shop name and physical address. If locksmith licensing is required in your state, include your locksmith license

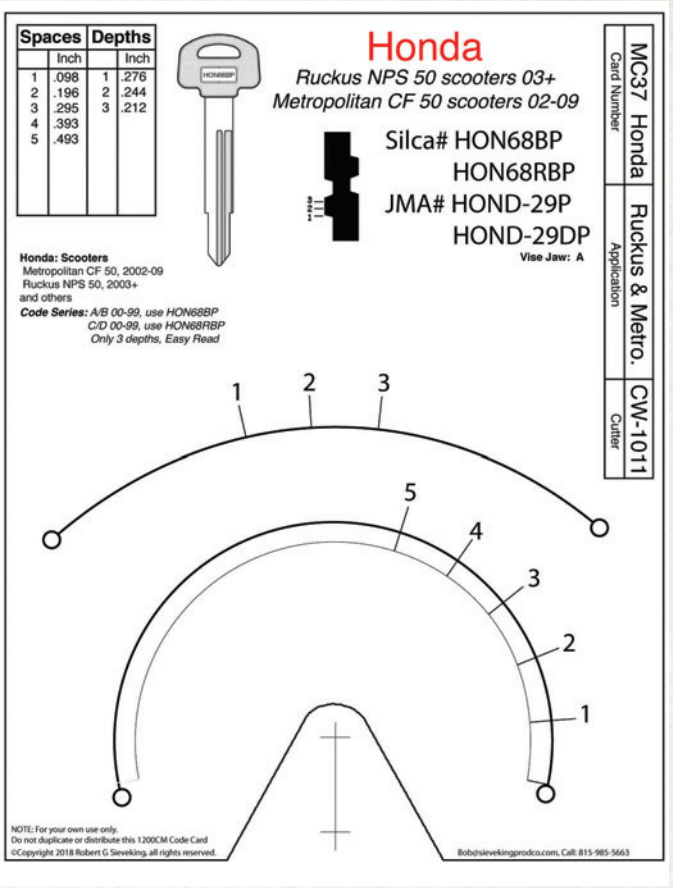


**Figure 8.** This illustration shows a 1200CM code card that can be used to generate this key.

number. Be sure to let me know if you found this article helpful.

This Honda Ruckus was a pleasure to service, and should pose no special challenges for the professional locksmith. Read 'em and reap.

With the right tools and the right training, they're all easy.

**Robert Sieveking** is an RL and ACE instructor. But he prefers the very simple title "locksmith." Formerly senior technical writer, technical editor and then contributing editor of *The National Locksmith*, Robert has authored many instructional books in the locksmith industry. He is the author of "Fast Facts," the encyclopedic reference to auto and motorcycle key making. "Fast Facts" was named the Best New Product in Print by ALOA in 1998. He began locksmithing in 1974 and continues to operate a full-time licensed professional locksmith business in Rockford, IL. He has invented many tools for the locksmith trade and continues to manufacture tools and books under the trade name Sieveking Products Company. You can reach him at bob@sievekingprodco.com or (815) 985-5663.

# PICKING THE GM 10 WAFER IGNITION

**Robert Sieveking, RL, ACE,** discusses the easiest key-making procedure for GM vehicles.

The year, make and model of this vehicle were completely random. It was chosen because it used a column-mounted GM 10-wafer ignition using a 75 GRV keyway. This is a recovered 2002 Chevrolet Trailblazer. The dealer key operated the door cylinder but would not operate the ignition. The previous owner, most likely changed the ignition, or possibly the entire column. A code search would be a waste of time and money. Destruction of the ignition cylinder is an option but is one that I did not contemplate. The most professional and cost-effective method to find an ignition key for this vehicle will be the topic of this article.

This article will address the easiest key-making procedure. No search was made for the codes. In a lost key situation, knowing that the ignition and door were keyed the same, we would sight-read the door to find cuts 3-9 and then use a code search to find the bittings for cuts 1 and 2 of the ignition. In the absence of a code search capability, a simple two position to four-depth progression would also find our missing bittings.

## Index Listing

| Make | Model | Year | Code Series | apl | #cut | Key | Plate |
|---|---|---|---|---|---|---|---|
| Chevrolet | Trailblazer,GMT360 | 2002-09. | S000-711A/K | A | 10 | B-102 | GM067 |
| Chevrolet | Trailblazer,GMT360(Fob) | 2002-09. | not required | R | -*- | Remote | GM084 |

## Key Plate: GM067

Cadillac Escalade (820C) 2002-06 GM067

Face caps ASP,AL,B&S
ign N/R *323226 (hoist)
dr 322144 (door)
tnk 3237209 (lift gate)
Keying kit ASP,AL,B&S
ign SK6400, 702767
dr+ SK6400, 702767
Gauge tip domestic
ITL #519 -flt3 -ins1
PAP G14- 90T
MAX DSD#259
TO SET 90
XpndrP -N/A-
Framon: FC-S-B-I .216 TL .092 3 .025
G-Keys GMC-3, AGK619 All
75 GRV. Strattec. pick/remove ign-code. read dr•tnk• progress ign. Framon? see: GM065
Astro Van? front drs=7w, rear=5w Trailblazer drs 5w;6-10 '02 Avalanch stow-comp=5w;6-10. '04 SSR? dr 6w;2-7 or 7w;3-9

codes S000-711A/K
valet -
Baxter BK 28 pg 129
NL:HPC TNL 7,8,9/99
Reed Vol. 15-S-01
Curt 21338 1200 CF215
GM-6 GM-6A ctr CW-1011
cutr 15W-45
tumbler location
ign 123456789•
dr ••3456789•
tnk lift gate 3-9
gb hoist-

space-•-depth

| | | |
|---|---|---|
| 1.034 | 1 | .315 |
| .942 | 2 | .290 |
| .850 | 3 | .265 |
| .758 | 4 | .240 |
| .666 | 5 | |
| .574 | 6 | |
| .481 | 7 | |
| .389 | 8 | |
| .297 | 9 | |
| .205 | 10 | |
| | 11 | |

10w, SB ign

Ilco P1113
EZ B102
Tay 598012 Olds
Strt 690683 Cad
Bör 598007 Chev
Curt B-102
SIL 691216 Hum
Jet B102 & PH
A1
Ilco -
EZ -
SIL -
Curt -
598006 Isuz
Sub. 598009 GMC

**Figure 1.** This chart shows a portion of the Fast Facts automotive index.

## "Key" Information

The first step in any automotive key making assignment is to find specific information for the vehicle, so I searched for the 2002 Chevrolet Trailblazer. *Figure 1* shows a portion of the Fast Facts automotive index. There are two listings for the Trailblazer. The first listing is for the mechanical key. The second listing shows a replacement remote fob. The Fast Facts for 2018 lists all of the available applications for the ILCO Smart4Car universal remotes, Flip Remotes and IKT remote head keys. We will not be programming a remote for this vehicle, but the listing offers the option.

The Trailblazer was manufactured from 2002 to 2009. It used key code series S000-711 A/K. It is a 10-position key. The B-102 key is indicated. (ILCO EZ or Curtis number) Fast Facts Key Plate GM067 will find complete key-making information.

## From 2018 Fast Facts Key Plate GM067, we find:

(Key Plate GM067 also applies to a number of other vehicles. This is the reason that the index *must* always be used to find the correct Key Plate.)

**Code Series:** S000-711 A/K (This is a very common code series.)

**Published Codes:** Baxter Codes: Book 28 Page 129
Reed: Volume 15 Section S Page 01
Published: TNL months 7-8-9 of 1999
InstaCode program also lists this series
Curtis Book: PN# 21338

**Keys:** P1113 (ILCO), B102 (EZ)
B-102 (Curtis)
B102 & B102PH (Jet)
598007 (Strattec) for Chev.

**Key is Gauged:** Tip Gauged

| # | Space | # | Depth |
|---|---|---|---|
| 1- | 1.034 | 1- | .315 |
| 2- | .942 | 2- | .290 |
| 3- | .850 | 3- | .265 |
| 4- | .758 | 4- | 240 |
| 5- | .666 | | |
| 6- | .574 | | |
| 7- | .481 | | |
| 8- | .389 | | |
| 9- | .297 | step increment is: .025 | |
| 10- | .205 | spacing is: .092 cut-to-cut | |

**Using a Framon #2?**
**Fr: S-B-I** (*Framon Space-Block-Increment*)
(First cut, shown under S&D, is 1.034)
Framon Block: #3 (.092 spacing)
Step Increment is .025

**HPC 1200CM:** Code Card CF215 is indicated
ITL: #519
HPC DSD: 259

**Tumbler Locations**
**Ignition:** **9 wafers** 1 2 3 4 5 6 7 8 9 •
**Door**: **7 wafers** • • 3 4 5 6 7 8 9 •
**Tnk:** Lift Gate **7 wafers** • • 3 4 5 6 7 8 9 • (**3-9**)
**Key Making:** "pick/remove ign-code. Read dr•tnk• progress ign."
(Note: This Key Plate covers many GM Vehicle models.)

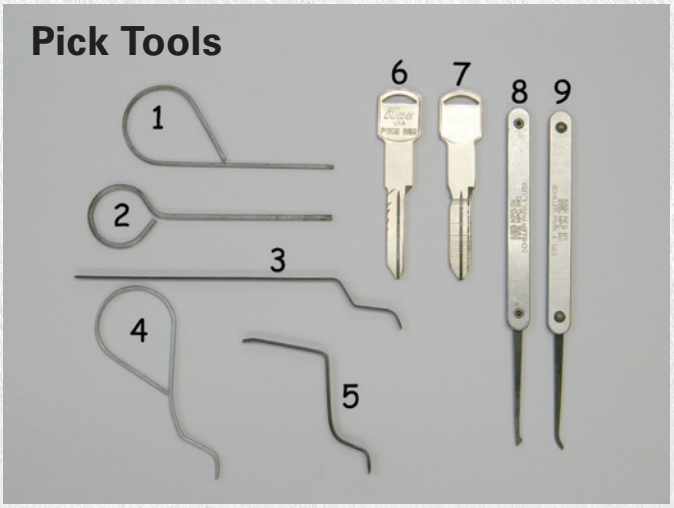


**Figure 2.** This image shows a collection of tools suggested for picking the GM 10-wafer sidebar ignitions.

Other important key-making information may be found on the Key Plate, but the above is the most important for our task. Always read the important key-making suggestions/cautions in the lower left corner of the plate. Most important is: pick/remove ign-code.

## Picking Tools

Our challenge is to pick the ignition for removal. This is the non-destructive method preferred by this shop.

*Figure 2* shows a collection of tools suggested for picking the GM 10-wafer sidebar ignitions. All are easily made or acquired in most locksmith shops. They are:

1. Poke tool from a Marks lockset
2. Poke tool from an unknown lockset
3. Tension tool (.125 x .024 flat spring stock), shop made
4. Tension tool (Marks poke tool), shop made
5. Tension tool (.125 x .040 flat spring stock), shop made
6. Cylinder removal key (cut to #4 depth overall), shop made
7. Cylinder set-up key (cut to a #1 1/2 depth overall), shop made
8. Standard diamond pick
9. Standard hook pick

The poke tools (1 and 2) are used to depress the cylinder-retaining spring bolt. The long tension tool (3) is a thin tool. It is seldom used because it hits the rear of the steering wheel hub. It should be shortened to make it more useful.

The wire tension tool (4) works well. It was made from a Marks poke tool because the wire is hardened. The tip is filed to decrease its thickness to .040", and the tip is tapered to enter

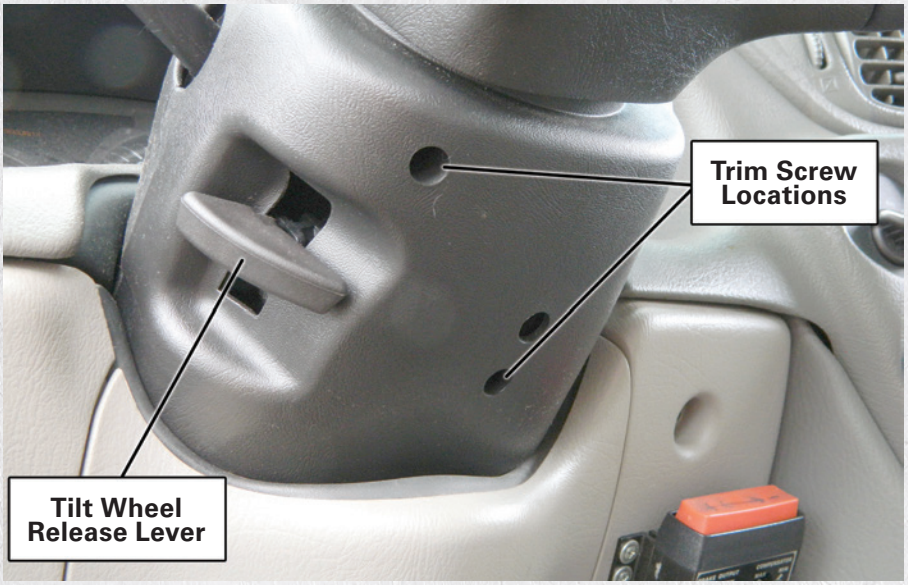


**Figure 3.** The column trim shell is detailed.

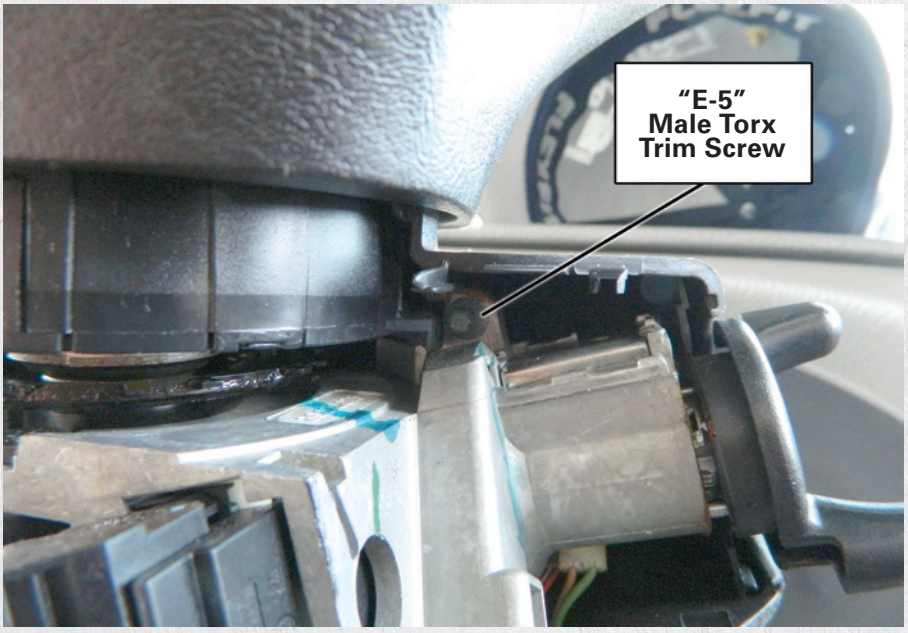


**Figure 4.** The upper trim shell half will be retained by an E-5 Torx trim screw, hidden under the shell as seen in this image.

the sidebar compartment without blocking on the sidebar. Pushing down on this tool while it is in the sidebar compartment will put compressing pressure on the sidebar.

The short heavy tension tool (5) is a flat piece of spring steel. It is inserted and rotated to place compressing pressure on the sidebar.

The cylinder removal key (6) is cut to a #4 depth over its length. This allows the key to be inserted into a picked cylinder without disturbing the picked wafers. When the sidebar has been picked, this key is inserted into the keyway to eject the plastic key alarm switch actuator. If the actuator is not ejected from the cylinder plug, it will be sheared off as the ignition is rotated to the on/run position. Use this key to prevent damage to the key alarm actuator and causing a number of electrical problems.

The set-up key (7) is used in the first step of picking the sidebar cylinder. It is cut to a 1½ cut depth over its length. Set the code machine to a 1½ cut depth and wipe the cut all the way off the tip of the blank.

Standard diamond and hook picks (8 and 9) complete the required pick tools. Note that we have not shown any rocker picks. Rocker picks will pick this cylinder, but they will be captured in the keyway. This would prevent us from ejecting the key alarm actuator before rotating the cylinder to the on/run position. The diamond and hook picks allow us to feel the tumblers individually during the picking process. The tension-tool will also give us feedback. It allows the sidebar to indicate when a wafer has been picked or is captured by the compression tension.

## The Picking Process

We will be removing the column trim shell detailed in *Figure 3*. The tilt wheel release lever is held in place by a plastic friction catch. Slip a screwdriver under the handle at its base to pry it up. It will come free without damage. Two Torx screws will retain the bottom trim shell half in most cases. This shell half was retained by plastic catches. Separate the bottom trim shell from the column and set it aside.

The upper trim shell half will be retained by an E-5 Torx trim screw, hidden under the shell as you see in *Figure 4*. Loosen and remove this screw with an E5 Torx socket driver. Some vehicles will have a second E5 Torx screw on the opposite side of the column. Remove these to free the upper trim half. Remove it and set it aside.

The ignition cylinder and column

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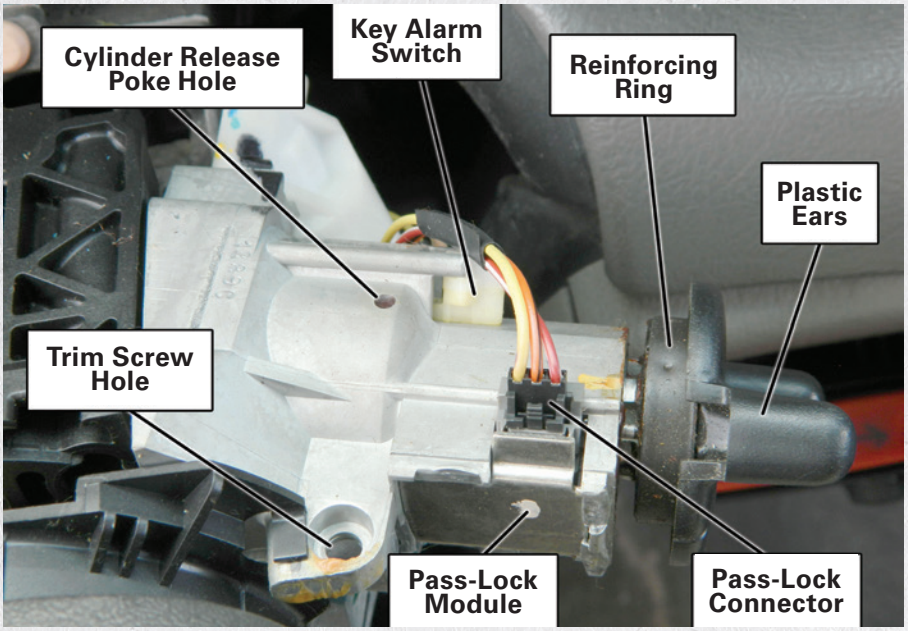


**Figure 5.** The ignition cylinder and column housing are shown.

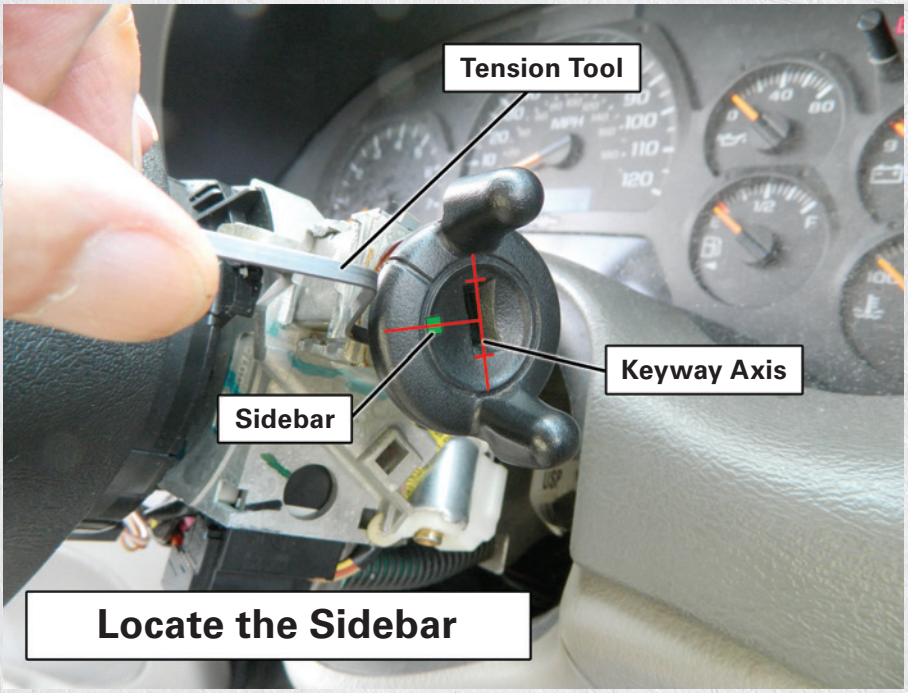


**Figure 6.** The sidebar is centered on the keyway at the left side of the ignition

housing are shown in *Figure 5*. The cylinder is mounted at the right side of the housing. The trim screw hole for the Torx fastener removed in the last step is shown at the front of the housing. The cylinder release hole is at the top of the housing. The key alarm switch is a plastic switch at the rear of the housing. It is not removable with the ignition cylinder installed. The GM Passlock module is mounted to the front of the housing. A three-wire Passlock connector allows the module to communicate with the ECM (not shown). A compression latch on this connector is compressed to release the connector from the module.

The plastic ears of the ignition cylinder are snapped onto the head of the ignition cylinder. A metallic reinforcing ring at the base of the plastic ears locks the ears in place. If the vehicle is equipped with transponder security, it will be necessary to remove the plastic ears. This will allow the transponder antenna-ring assembly to be separated from the housing. The antenna assembly may prevent access to the front of the sidebar compartment.

Carefully pry and slide the reinforcing ring away from the plastic ears. The ring will not be fully disengaged from the ears on the front edge. Pry up at the bottom rear of the ears to disengage the plastic from the head of the ignition cylinder. With careful coaxing, the ears will separate with minimal damage to the snap-on plastic socket. Most will be entirely reusable. Remove the antenna ring carefully. Allow it to hang by the wire harness, or disconnect it and set it aside.

*Figure 6* shows the location of the sidebar under the plastic ignition ears. The sidebar is centered on the keyway at the left side of the ignition. The front of the sidebar compartment is open. Once you've located it, inserting the tension tool is easy.

Tip the tension tool down to slip the tool into the front of the sidebar compartment, as you see in *Figure 7*. The tip of the tool is chamfered on the front side, to ride over the end of the sidebar. Do not force the tool into position. It will slide into position with very little effort. At this point, rotating the handle of the tool up or down will place compression tension on the sidebar. It is this compression that will capture the combinating wafers as they are picked.

*Figure 8* shows the position of the tension tool over the sidebar. Notice that it reaches to approximately the center of the


**Figure 7.** Tip the tension tool down to slip the tool into the front of the sidebar compartment.

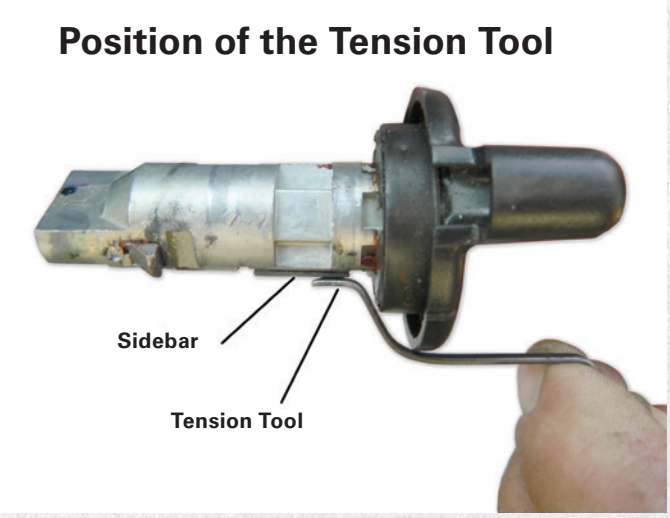


**Figure 8.** This image shows the position of the tension tool over the sidebar.

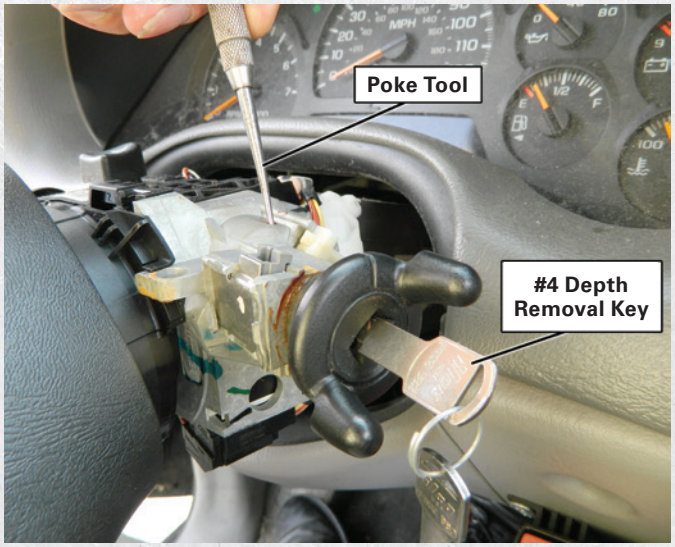


**Figure 9.** The ignition is rotated to the on/run position.

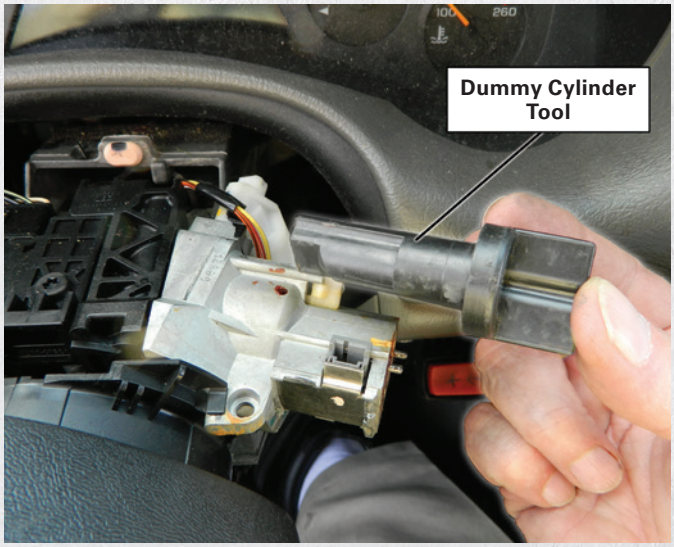


**Figure 10.** Shown is a dummy cylinder tool.

sidebar. This tool can be used by rotating it to apply compression pressure or by levering it downward to apply a prying tension to the sidebar. You have a lot of leverage with this little tool — easy does the trick, much like the turning tension needed to pick a pin tumbler cylinder. Too much tension will prevent the tumblers from being picked and may even damage the wafers.

Insert the set-up key and then apply pressure to the sidebar as you wiggle and remove the set-up key. Maintain the pressure as you individually lift the wafers in the keyway. You will feel them through the pick and through the tension tool. When a tumbler hangs at the sidebar, it will become more solid. When the tumbler picks, the tension tool will rotate suddenly as the sidebar is compressed into the cylinder. Immediately rotate the cylinder about a 1/8 turn clockwise. This will capture the sidebar in the picked condition. Do not shear the key-alarm actuator.

Insert the #4 depth cylinder removal key to eject the key alarm actuator and continue. Rotate the ignition to the on/run position, as you see in *Figure 9*.

With the ignition in the on/run position, place your foot on the brake pedal to prevent the vehicle from rolling. Slip the transmission down into the reverse or drive position. This will engage the neutral safety switch. The engine will not crank when the transmission is in gear.

Rotate the ignition clockwise to the

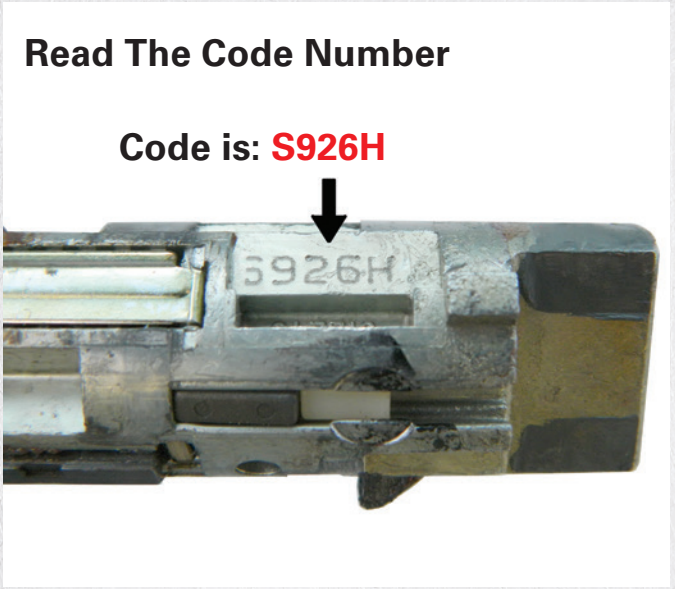


**Figure 11.** This photo shows the location of the code on the ignition cylinder.


**Figure 12.** The code-cut key is shown, and the correct bitting is: 2 4 2 3 3 2 3 1 2 2.

start position. This will bring the spring latch of the cylinder into position under the poke hole. Push the spring latch down as you pull the ignition outward. It should slide out easily.

*Figure 10* shows a dummy cylinder tool. This tool comes with a new housing. If you order a new ignition housing from GM, it will have this tool in the place of the ignition cylinder. It allows us to rotate and test the ignition housing and switch as it is being installed.

Put the transmission into park and insert the cylinder tool into the housing. Rotate the tool to the off/locked position to shut down the vehicle electrics. This saves the battery as we go about making the key. Replace the Passlock connector. It will save removing the column trim to replace it later because the vehicle won't crank or start. At this point, we can reassemble the column trim halves, install the tilt column lever and button up the job. The ignition will be installed after the key is made.

## Making the Key

*Figure 11* shows the location of the code on the ignition cylinder. The code is punched onto a flat at the rear of the cylinder by a dot matrix stamping machine. The Code is: S926H. Cross the code to find the correct bitting for this cylinder.

The code-cut key is shown in *Figure 12*. The code is from the GM S000-711 A/K series. The correct bitting is: 2 4 2 3 3 2 3 1 2 2. Read and study the bitting on the key blade. A #4 depth cut is below the base of the offset in the key blade. A #3 depth cut is a hair above the offset in the key blade. A #1 depth cut is very nearly "no cut." The MACS for this system is 2. In the case of a worn key or miscut key, you will be able to lay the key on the bench, read the bitting and immediately go to the code machine to produce a new key by your readings. This key is common enough that you should be able to make the key without using calipers or a slip gauge. It's good practice, and it impresses the customers. It also sharpens your eyes to discern the bittings and bitting differences in the keyway when sight reading the wafers.

If you liked this article, drop me an email at bob@sievekingprodco.com. Let me know if you found this article helpful.

This vehicle was a pleasure to service and should present no special problems for the professional locksmith.

**Robert Sieveking** is an RL and ACE instructor. But he prefers the very simple title "locksmith." Formerly senior technical writer, technical editor and then contributing editor of *The National Locksmith*, Robert has authored many instructional books in the locksmith industry. He is the author of "Fast Facts," the encyclopedic reference to auto and motorcycle key making. "Fast Facts" was named the Best New Product in Print by ALOA in 1998. He began locksmithing in 1974 and continues to operate a full-time licensed professional locksmith business in Rockford, IL. He has invented many tools for the locksmith trade and continues to manufacture tools and books under the trade name Sieveking Products Company. You can reach him at bob@sievekingprodco.com or (815) 985-5663.

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# KABA® POWERPLEX 2000 SERIES *Part 2*

After discussing pre-assembly in part one, **Sal Dulcamaro** discusses installation of these units.

In part 1, I discussed pre-assembly of the PowerPlex lock. When you take the lock components out of the box, the lock is non-handed, and the lever handle is not yet attached on the exterior unit. The return spring is not attached on the interior unit and isn't handed. The chassis containing the latch retractor unit is factory set to left hand but is quickly and easily converted to right hand. I pre-assembled many of these long before the lock was installed on the door.

When I got the first units, I did the pre-assembly, programming and installation. After a while, when we started installing them by the hundreds, I mostly did pre-assembly and programming and left the installation to the carpenters. Now, some carpenters will do most of the pre-assembly while leaving the programming and core installation to me. They will often install the handed lock on the door but lacking the core and with factory default code still functioning.

In my *TNL* article series, I started installation with a standard door prep. I will do that here also, but I will add some variations you have to deal with when retrofitting a KABA 1000 or L1000 where there are existing holes very close to the new holes required. I will also show the additional steps required for the privacy version of the PowerPlex lock, which requires an additional mounting hole.

One area that I didn't deal with in my previous article series is lock malfunctions and failures, which I discovered after my initial articles. I will cover those issues in another article.

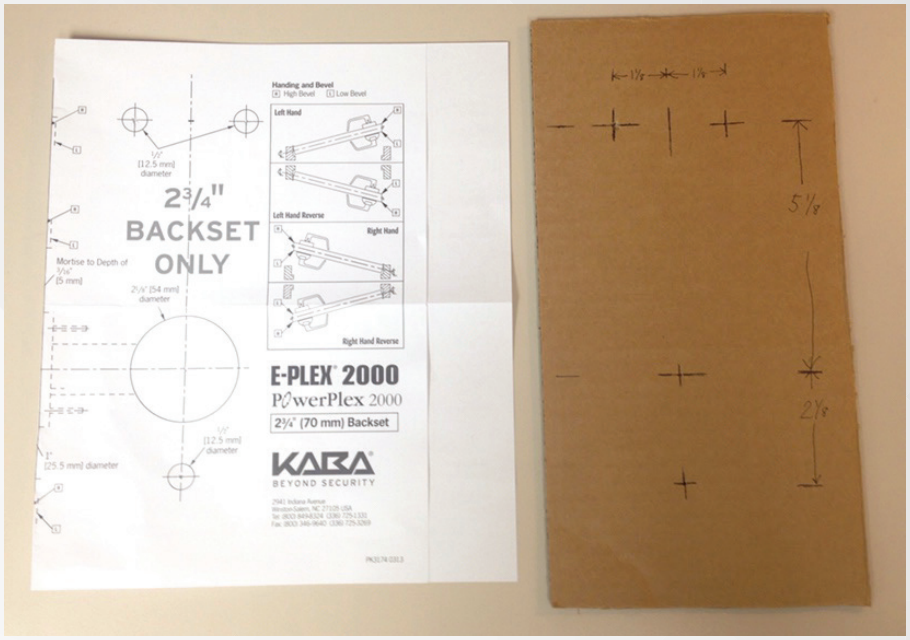



**Figure 1.** The included paper template shows the hole locations and sizes to install a PowerPlex lock on a door.

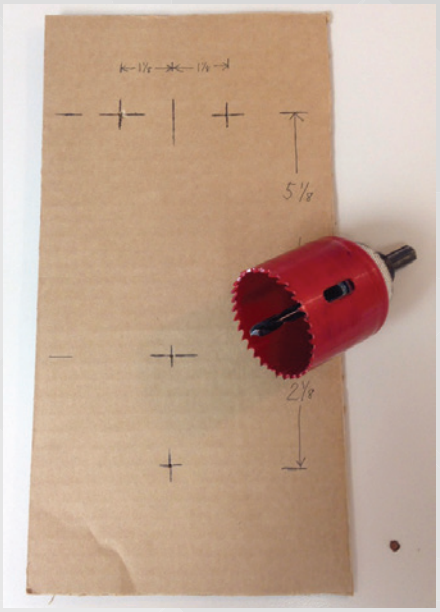



**Figure 2.** The author used a 2⅛" diameter hole saw to make his cardboard template more versatile.

## Lock Installation

I personally don't care much for paper templates. I use installation jigs and more sophisticated templates whenever I can. The included paper template (*see Figure 1*) shows the hole locations and sizes to install a PowerPlex lock on a door. You may notice that it also says E-PLEX 2000 (the battery-operated version) on the template. It installs virtually identically, and you drill the same-size holes in the same locations. Next to the included paper template, you will notice the first cardboard template I made of my own. In *Figure 2*, there is a 2⅛" diameter hole saw that I used to make my cardboard template a bit more versatile. I used it to make a hole in the template (*Figure 3*) to accept the plastic jig that was included with some of our grade 1 Best IC lever handle locks, to locate the two auxiliary holes needed when converting a regular knob prep to a lever handle lock prep. I don't use those guide holes when installing a PowerPlex lock. I just use the jig as a guide for my cardboard template.

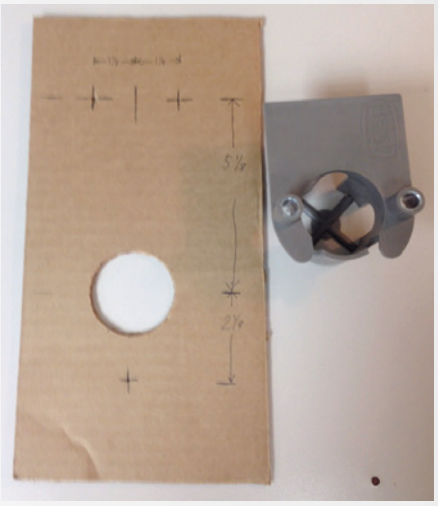



**Figure 3.** The author made a hole in the template to accept the plastic jig that was included with some of our grade 1 Best IC lever handle locks.

I positioned the jig in the 2⅛" diameter hole I cut into my cardboard template (*Figure 4*). A cardboard template is more durable than paper, but not particularly strong. I persuaded one of the carpenters to make me a Plexiglas® template (*Figure 5*) to hold up for potentially multitudes of installations (and he made more for others to use as well). You can see how the

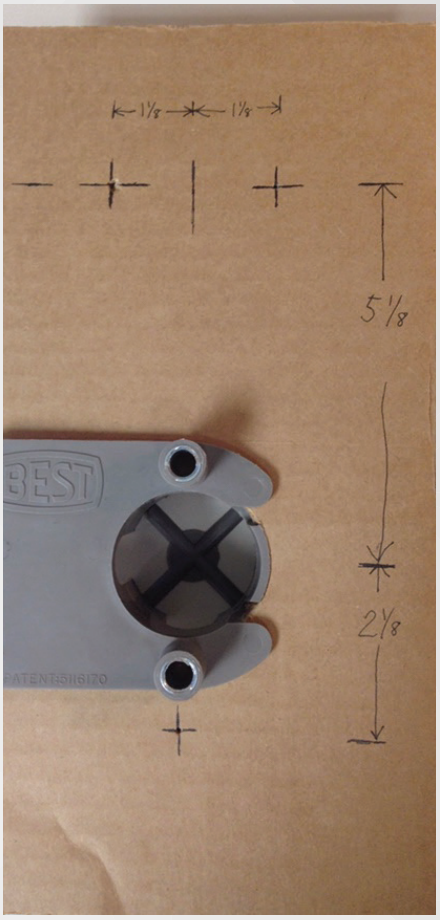



**Figure 4.** The jig is positioned in the 2⅛" diameter hole in the cardboard template.

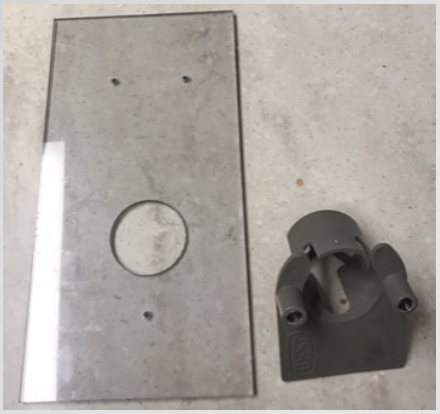


**Figure 5.** A Plexiglas template holds up better for multiple installations.

**Figure 6.** The plastic jig fits inside the Plexiglas template the same way it fit into the cardboard template.

**Figure 7.** The previously installed Best grade 1 cylindrical lever handle lockset has been removed.

**Figure 8.** The combination of Plexiglas template and plastic jig is held in place by the cross bore hole.

**Figure 9**

**Figure 10**

**Figures 9 and 10.** With the template in position, the author drilled the two top pilot holes (*Figure 9*) using a ⅛" diameter drill bit and the bottom pilot hole (*Figure 10*).

plastic jig fits inside the Plexiglas template (*Figure 6*) the way it fit into the cardboard template. The guide hole accepts the plastic jig, which positions the cross bore hole to match the appropriated backset. And the edge of the Plexiglas template should line up to the edge of the door.

## Preparing to Drill

If you will only be installing one or just a few of a kind of lock that requires additional mounting holes, the additional time and effort spent using a paper template can be justified. The time and effort for creating a more specialized installation template or jig might seem wasteful. If you think you will be installing numerous locks of a certain kind, streamlining and making the installation procedure more efficient with a Plexiglas template makes sense.

Most of our installations involve adding three additional mounting holes to a standard commercial cylindrical door lock prep. The previously installed Best grade 1 cylindrical lever handle lockset has been removed (*Figure 7*), leaving the 2⅛" diameter cross bore hole with the additional cutouts that you often see just above and below the main cross bore holes you find in most cylindrical lever handle lock preps. The combination of Plexiglas template and plastic jig (*Figure 8*) is held in place by the cross bore hole. That positions the guide holes for the proper lock backset.

With the template in position, I drill the two top pilot holes (*Figure 9*) using a ⅛" diameter drill bit and the bottom pilot hole (*Figure 10*). I drill only part way through and then switch the template

**Figure 11.** After removing the template, three ⅛" diameter holes are visible on the door.

Figure 12

Figure 13

**Figures 12 and 13.** Three additional mounting holes were required. The author drilled the top hole to the right (*Figure 12*) and was starting on the top hole to the left. Then he drilled the bottom hole (*Figure 13*).

to the opposite side of the door to drill all three pilot holes from that side until they connect with the holes drilled from the other side.

After removing the template, three ⅛" diameter holes are visible on the door (*Figure 11*). There will be matching holes on the opposite side. These are obviously not the correct-diameter holes for installation, but I can now finish drilling without the template in place.

I now use the three pilot holes on each side to drill the full-size, ½" diameter holes for the three additional mounting holes required. I drilled the top hole to the right (*Figure 12*) and am starting on the top hole to the left. Finally, I drilled the bottom hole (*Figure 13*). When I drill through wood, or even steel, I drill from both sides. I drill about halfway through the door when drilling through wood to avoid splintering the door from the opposite side. In steel, it is to avoid creating burrs in the steel. In both cases, I also do it to keep the hole straight. You can sometimes drill at a slight angle when drilling from one side of the door to the opposite side, which might alter the locations of your holes and make installation more difficult. You can see the three additional holes on the opposite side (*Figure 14*) with the holes completely through door so that you can now install the lock on the door.

In the next installment, I will continue installation instructions, starting with the exterior assembly.

**Sal Dulcamaro** started out in locksmithing in 1975 at age 17. He first practiced as a commercial locksmith before becoming an institutional locksmith in May 2014 for a large hospital. He has been a technical writer for more than 30 years, with more than 300 magazine articles published. He previously served as a contributing editor and a technical editor for *Reed's Security Reporter* magazine and a senior writer for *The National Locksmith*.

**Figure 14.** You can see the three additional holes on the opposite side, with the holes completely through door so that you can install the lock.

# HOTEL FUNCTION: *Not For Hotels Anymore!* Part 2

In this second and final installment, **William M. Lynk, CML, CPS, ICML, CMIL, M.Ed.,** continues explaining hotel function cylinders and their operation.

**In last month's installment, author William M. Lynk described hotel function cylinders and a few manufacturers' models. In this second article, he is covering the remaining manufacturers.**

## Sargent Hotel Function Collection

Within Sargent's fixed cylinder array, each of the following have hotel function in cylindrical form: 10 line, 7 line, 6500 line and 7500 (lever) line standard cylinders, 8 and 9 line (knobs), T-zone (11 line) cylinders, 6 line cylinders and 5 and the 5500 line cylinders. The 50 function indicates hotel function when ordering these cylinders.

However, the most popular hotel function cylinder Sargent offers is its hotel function mortise (non-IC). It operates similarly to the Corbin Old Style hotel function mortise.

## Sargent 50-42 Fixed Hotel Function Mortise

In this case, this is a 7-pin cylinder, though only the first six chambers are used for operating keys and master keying progressions (*see Figure 1*). As you can see in the exploded view, there is a special ring in the 7th position. In all cylinders, the 7th chamber is pinned with a #10 bottom pin and a #10 master pin. The EMK will be a 6-pin blank — usually cut to the TMK — with an undercut in the last position. This will lift the pin stack to the special ring tab shear line, allowing for full rotation, by-passing the small ward attached to the cam.

## Sargent Hotel Function IC Mortise

The Conventional Sargent 6300 hotel function LFIC cylinder housing was designed similarly to that of the Corbin Russwin hotel function housing (*Figures 2a and 2b*). In the rear of the housing, there lies a small compartment, closed off to the world via the circular throw member. There exists a small rectangular cutout in the throw member disk that will allow an extended (7-pin) key tip to enter. Once in, the bottom of the blade will push a small "shot pin" (like a small detent) that sticks out of the side of the inner area back inside the ring of the inner compartment and no longer blocks the continued rotation of the cam. If you look carefully into the bottom lobe of the housing in *Figure 2b*, you can see a small square — and can see just the tip of the shot pin sticking out. There are two of these shot pins, located at the 10 o'clock position and the 1 o'clock position.

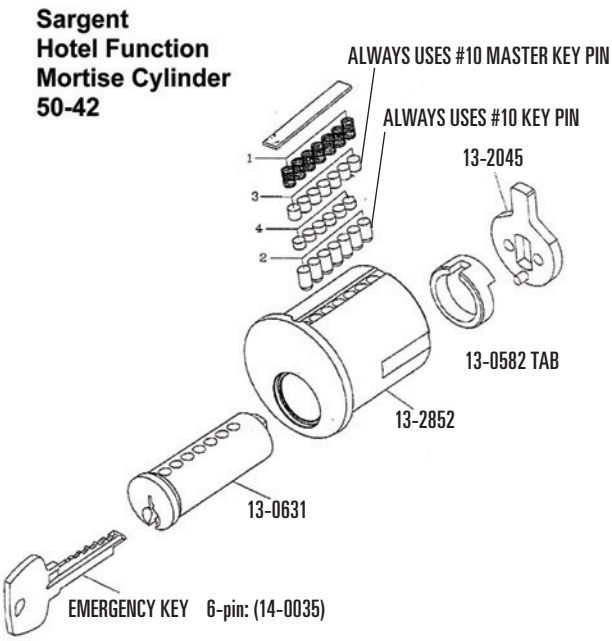
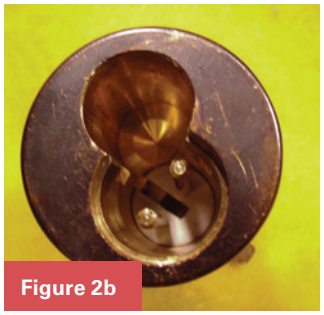



**Figure 1.** This illustration provides an exploded view if the Sargent hotel function mortise cylinder (non-IC) with EMK.


**Figures 2a and 2b.** Both of these pictures show the Sargent LFIC hotel function Housing. *Figure 2a* has no shot pins visible, and *Figure 2b* has only one shot pin visible.



**Figures 3a and 3b.** These two images illustrate an operating key inserted into the first core. *Figure 3b* shows an EMK with extended tip pushing farther outward.

*Figures 3a* and *3b* are two photographs of a conventional 6300 core. The first shows an operating key fully inserted. The second illustrates the EMK with the extra distance required to enter the rear compartment to keep the shot pins in the IC housing, allowing for a complete 360-degree key rotation.

It should become obvious that the functionality lies in the special IC housing, coupled with a 7-pin EMK. Any Sargent 6300 LFIC can be used. Again, this hotel function is no longer used in most hotel settings, but there are valuable applications for darkrooms, laboratories, restricted work areas where a closed environment is necessary or in restroom situations where privacy is more important than security.

## Corbin Russwin Hotel Function

Corbin Russwin also offers a variety of hotel function cylinders. The most common one used primarily in hotels was the hotel function mortise. Prior to 1969 — and only manufactured in the X Class — was the Old Style Corbin hotel function mortise. The hotel function IC mortise operated differently than either of these. And finally, less prominent in use are the hotel function cylindrical models. Each of these four types of hotel function cylinders is explained in more detail in the Corbin Russwin Cylinder Manual. We will take a cursory look at these cylinders.

## Hotel Function Mortise

These cylinders use six chambers for master keying purposes. Beyond the 6th chamber are two diagonal blocking pin chambers, each containing a small-diameter blocking pin, as can be seen in *Figure 4*. After a certain degree of rotation (either direction), the pins will block the keyway slot to prohibit further rotation. These cylinders are non-handed. The EMK is a 7-pin key blank usually cut to the TMK, preventing the blocking pins from entering the keyway and allowing for full 360-degree rotation.

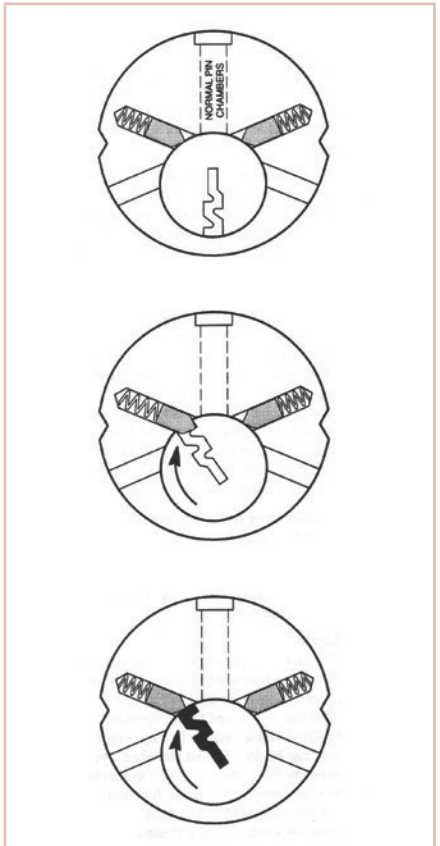



**Figure 4.** These three diagrams illustrate how the blocking chambers work with an operating key and an EMK.

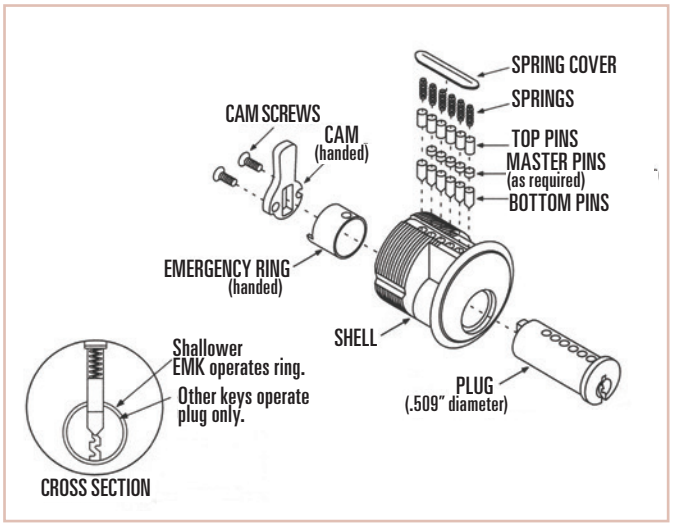



**Figure 5.** This illustration gives an exploded view of the Old Style Corbin hotel function mortise.

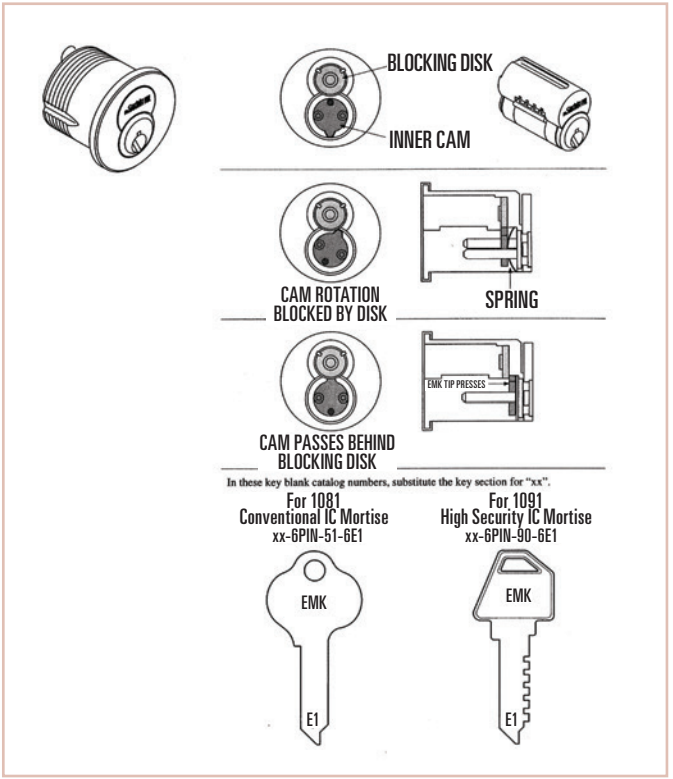



**Figure 6.** This image shows the Corbin Russwin hotel IC mortise. Notice how the blocking disk prevents full rotation without the EMK.

## Old Style Corbin Hotel Function Mortise

This was the Corbin cylinder used in hotels prior to 1969. Its design is different in that it used a secondary ring (similar to that of a master ring) that was handed and contained a tab limiting rotation to about 80 degrees (*Figure 5*). It was

**"Even though hotel function cylinders — whether cylindrical, mortise or interchangeable core style — are no longer used primarily in hotels, they still possess a viable place in the security world."**


**Figure 7.** The Corbin Russwin control key, change key and EMK for the IC mortise are shown.

located in the 6th chamber. All operating keys had a deep cut in that position permitting only plug rotation. The EMK was shallower by three increments in the 6th position, lifting the longer bottom pin up to the emergency ring shear line, allowing full 360-degree rotation.

## Corbin Russwin Hotel Function - IC Mortise

The hotel function LFIC mortise accepts either the standard or security 6-pin I-Core. The true functionality of this hotel function is in the LFIC mortise housing and key (*Figure 6*). It is similar in function to that of the Sargent LFIC hotel function housing, as we have seen.

Pinning and operation of the I-Core itself is no different than with any Corbin Russwin standard LFIC. The operating and master keys are also the same. However, the EMK functions in

accord with the I-Core mortise housing.

The EMK is a special key that is, in effect, a 7-pin creation with a pointed or extended tip (horizontal to the key blade) that extends through the rear of the core and into the special 1071 IC mortise housing. The key pushes against a thin inner cam at the back of the core, which then passes under the steel disk (which regular keys will hit and then stop). When the cam is pushed under and behind the steel disk, the plug is free to fully rotate 360 degrees in both directions to release the lock deadbolt. A comparative visual of the related keys can be seen in *Figure 7*.

Again, the functionality of this system exists primarily in the housing and not in the core. Let's take a look at the cylindrical counterpart of this hotel function.

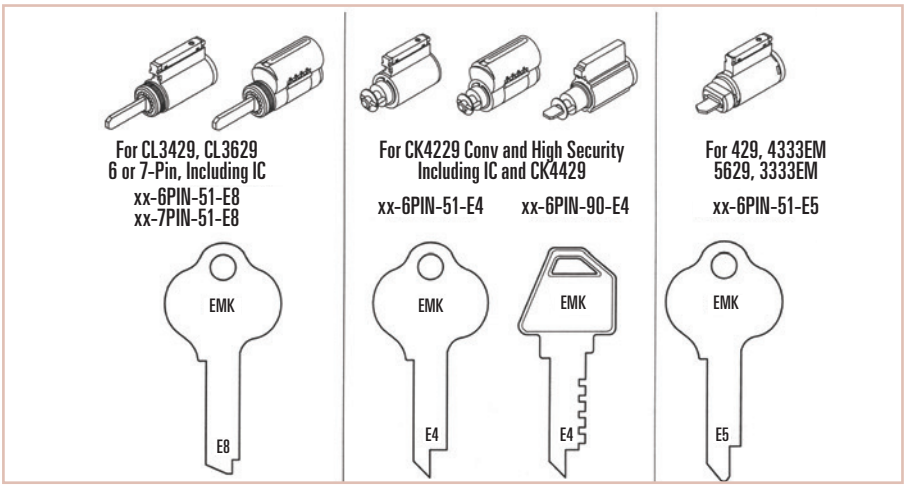



**Figure 8.** This illustration shows the Corbin Russwin hotel function cylindricals, including LFIC versions.

## Corbin Russwin Cylindrical Hotel Function

The Corbin Russwin fixed cylinder hotel function cylinders (*Figure 8*), including the IC, all operate in the same way: The outer knob or lever is always locked. When a guest presses the button on the inside, the lock is placed in shutout mode. Anytime the inside knob/lever is turned, the button pops back out. This is

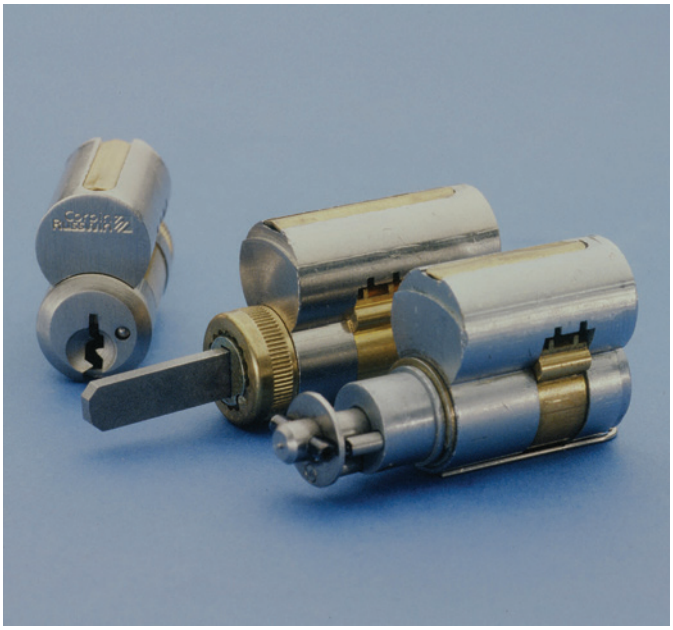


**Figure 9.** Three Corbin Russwin LFIC hotel function cylindricals are depicted.

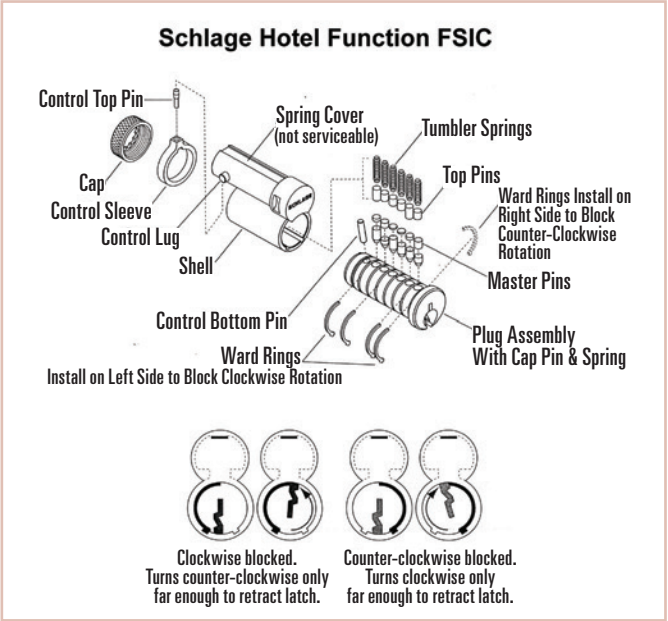



**Figure 10.** This illustration provides an exploded view of the Schlage Hotel Function FSIC.

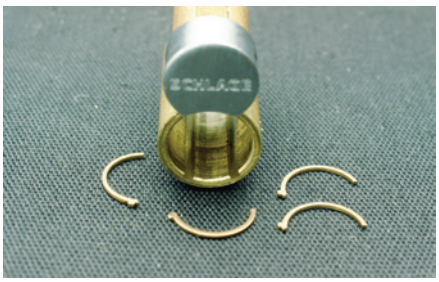


**Figure 11.** Four ward rings are pictured here adjacent to the empty shell. Note the grooves in the shell that limit rotation.

**Figure 12.** A side view of the Schlage Hotel EMK shows the undercuts to bypass the ward rings.

**Figure 13.** Notice that the ward cuts at the bottom of the blade are necessary on the control key and EMK.

to prevent guests from lockouts.

When the lock is in the shutout mode, the indicator pin extends outward from the plug face, and a projection enters the bottom rear of the keyway at the bottom. This projection blocks the guest's key, maid's key, display key and TMK, or any other traditional key in the system from completely entering the keyway. The EMK requires an undercut at the tip to bypass the keyway projection to gain access to the room by allowing for the full 360 rotation, even in shut out mode.

There is one caution: When testing keys in these cylinders, never allow the EMK to turn 180°. This is because the undercut can allow master pins in the last chamber to enter the keyway of the plug and the cylinder will "rekey" itself. This situation will only occur when the cylinder is removed from its housing.

As you may have noticed, the functionality of the cylindrical IC or fixed cylinder hotel function lies within the cylinder itself, not in the housing (*Figure 9*).

## Schlage Hotel Function

One of the more unique hotel function configurations is presented with the Schlage hotel function IC. Currently, it is available only in conventional and IC mortise cylinders and employs special ward rings to restrict rotation of the plug. It is a special core that resides in a standard IC mortise housing. Schlage refers to their LFIC as "FSIC" (full size interchangeable core), though it is a LFIC. *Figure 10* shows the exploded view.

The ward half-rings (also known as stop rings) are installed on the side of the plug at the time of combination (*Figure 11*). If clockwise rotation is to be blocked, the ward rings are placed on the left side of the plug. For blocking counterclockwise rotation, the rings are placed on the right side of the plug. Thus, the core's plug is free to rotate only one direction… just enough to retract the latch. Anywhere from one to

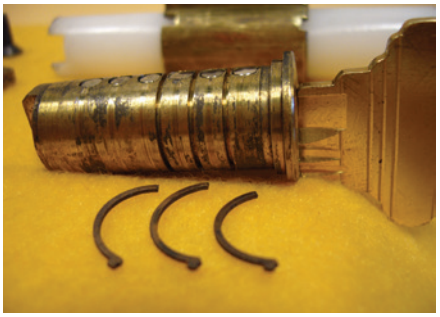
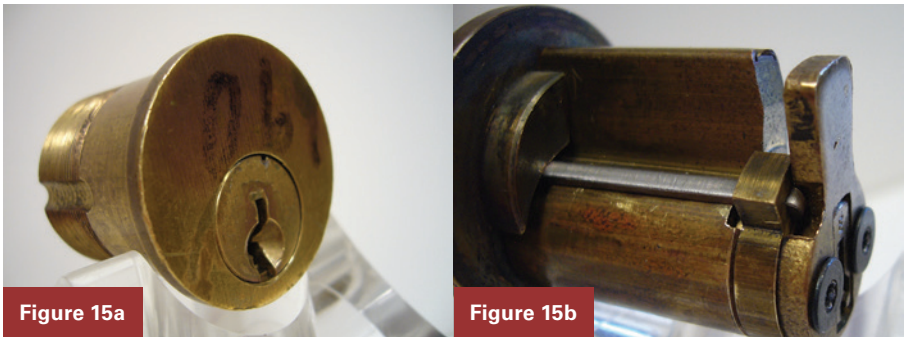


**Figure 14.** Three ward rings were used within this obsolete Schlage hotel function removable cylinder.




**Figures 15a and 15b.** The face and rear views are shown of the Schlage hotel function removable cylinder.

**Figure 16.** These components constitute the Schlage hotel function removable cylinder.

**Figure 17.** This is the side view of the unique ILCO hotel function bypass core.

six ward rings can be used.

The ward cutouts in the plug are located between the chambers. To bypass the rings, the hotel function bypass key (EMK) must contain ward cuts at the bottom of the key blade located between the top cuts (*Figure 12*).

This core is used today in handicapped restroom or darkroom applications where standard keys need to be temporarily blocked when the dead latch is thrown.

*Figure 13* illustrates the comparison of the operating key to the EMK and control key. Bottom ward cuts are required on not only the EMK to delimit rotation, but on the control key as well.

## Schlage (Obsolete) Hotel Function Removable Cylinder

This is a rare hotel function removable cylinder, not a removable core or interchangeable core. That is because it necessitates both a key and a tool to remove the cylinder from its housing. It predates the first Schlage G Lock removable core, as well as the first Schlage FSIC manufactured in the early 1980s.

This plug has limited rotation based on the handed ward rings that are located on the plug. In the sample pictured, the plug will rotate counterclockwise with the operating key, but not clockwise. The EMK is an operating key, presumably the TMK, with ward cuts under the blade to match the ward ring positions, allowing it to bypass them (*Figure 14*).

## Cylinder Removal

In *Figure 15a*, notice the small hole in the plug face at the one o'clock position. A downie pin (or hat pin) will be inserted after the EMK rotates the plug to the one o'clock position. The pin (tool) will push the small silver plate seen in *Figure 15b* at the top left side. The plate will then engage the control lug near the rear of the lock and allow the cylinder to be removed.

When the cylinder is returned to the housing and the key is removed, the silver plate is retracted by the motion of the plug and is locked into place, permitting the plug and attached cam to rotate as dictated by the operating or EMK. Figure 16 shows the components of this distinctive cylinder.

## ILCO Hotel Function Bypass Core

Perhaps one of the most unique hotel function ICs is the ILCO hotel function key bypass core, created by ILCO-Canada in 1992 for use only in Canadian hotel electronic locks, exclusively as a concealed mechanical key bypass (*Figure 17*). It is dimensionally similar to the Dominion

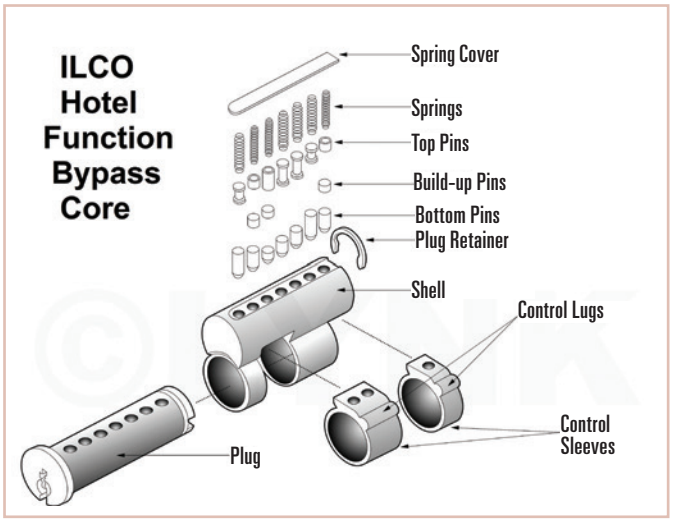



**Figure 18.** This drawing gives an exploded view of the ILCO hotel function bypass core.


**Figure 19.** Notice how the bow of the EMK must be shaved off to turn and bypass the bottom of the escutcheon.


**Figure 20.** These two prominent keyways are used with the ILCO hotel function bypass core.

**Figure 21.** This image shows the front view of the core with Lockwood and Schlage keyways.


**Figure 22.** Note the placement of the two separate control lugs. This is unusual for any core.

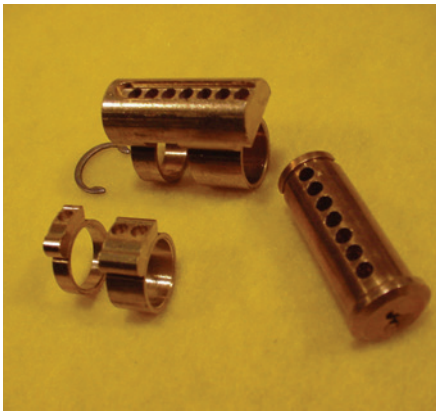


**Figure 23.** Shown are the components of the ILCO hotel function bypass core.


**Figure 24.** The Lockwood operating key is inserted into the ILCO bypass core, with control key steadfastly at its side.

| Lockwood Key Specifications (Key Class 1004 - .015" Increment) | | | |
|---|---|---|---|
| **Spacing:** | **Root Depth:** | **Bottom Pin:** | **Master Pin:** |
| 1 = .277" | 0 = .335" | 0 = .163" | 2 = .030" |
| 2 = .433" | 1 = .320" | 1 = .178" | 3 = .045" |
| 3 = .589" | 2 = .305" | 2 = .193" | 4 = .060" |
| 4 = .745" | 3 = .290" | 3 = .208" | 5 = .075" |
| 5 = .901" | 4 = .275" | 4 = .223" | 6 = .090" |
| 6 = 1.057" | 5 = .260" | 5 = .238" | 7 = .105" |
| 7 = 1.213" | 6 = .245" | 6 = .253" | 8 = .120" |
| | 7 = .230" | 7 = .268" | 9 = .135" |
| | 8 = .215" | 8 = .283" | 10 = .150" |
| | 9 = .200" | 9 = .298" | |

**Figure 25.** The Lockwood Key Specs for Key Class 1004 are delineated here.

core (ILCO-Canada), although constructed only as a 7-pin core with one added feature: two separate control lugs. This is the only type of core of this nature.

The two independent control lugs were developed to assure pick-resistance. They are located in chambers #2 and #3 (from the face of the core) and in chamber #7 as well (*Figure 18*).

The core is inserted into the bottom of the escutcheon on the electronic access unit. To access the core with its operating or control key, it is necessary to shave off a portion of the key's bow to have enough clearance next to the door to be able to turn the plug or remove the core (*Figure 19*).

## Keying and Keyways

Two keyways have been used. First used was the ILCO 1004ALR, which is the familiar Lockwood L1 keyway, but in reverse, 7-pin. This key blank is designated as restricted. Later, the Schlage D, the reverse of C was used. This key blank is also restricted.

The BEST long blade in the A keyway can be substituted. However, it should not be issued to the customers, as it contains no shoulder stop and may be difficult to operate (*Figure 20*).

These cores are not intended to be master keyed. The control key is two increments shallower than the operating key in the three control chambers. Use the operating key's bitting in chambers #1, #4 and #5 of the control key. The buildup pin will be a dimension of .135" *Figure 21* illustrates both cores with the two keyways. On the left is the Lockwood keyway, and to the right is the Schlage keyway.

*Figure 22* illustrates the location of the two control lugs. Notice that control lug #1 spans two chambers, while the other — control lug #2 at the rear of the core — only uses one chamber. *Figure 23* illustrates the five core components: plug, shell, two control lugs and retainer clip. Illustrated in *Figure 24* is the operating key (inside of the core) and the control key.

## Key Class for the ILCO Hotel Bypass Core

*Figure 25* shows the key class used with this hotel bypass core.

## Conclusion

Even though hotel function cylinders — whether cylindrical, mortise or interchangeable core style — are no longer used primarily in hotels, they still possess a viable place in the security world. Because these locks are still being used in special photographic darkrooms, industrial laboratories or handicapped restrooms, knowing about their construction, operation and bypass procedure are still necessary and important skills for locksmiths to master for servicing in today's modern world.

**William M. Lynk, CML, CPS, ICML, M.Ed.,** has been a locksmith since 1975 and is the owner of www.ICLSglobal.com. Bill is an IC specialist, an industry author, the subject matter expert on IC for ALOA, and an ALOA ACE instructor, teaching classes on interchangeable cores and master keying across the country. He has originated SFIC Technical Manuals for both national and international lock manufacturers, and maintains a working relationship with the major lock and security manufacturers throughout the world. In 2013 and 2015, he was named *Keynotes* Author of the Year.

# SIMPLEX L1000 *Part 3:* INSTALLATION

In the third installment of four, **Tyler J. Thomas, CJIL, CMKA, CRL,** covers the installation process for this hardware and troubleshooting tips.

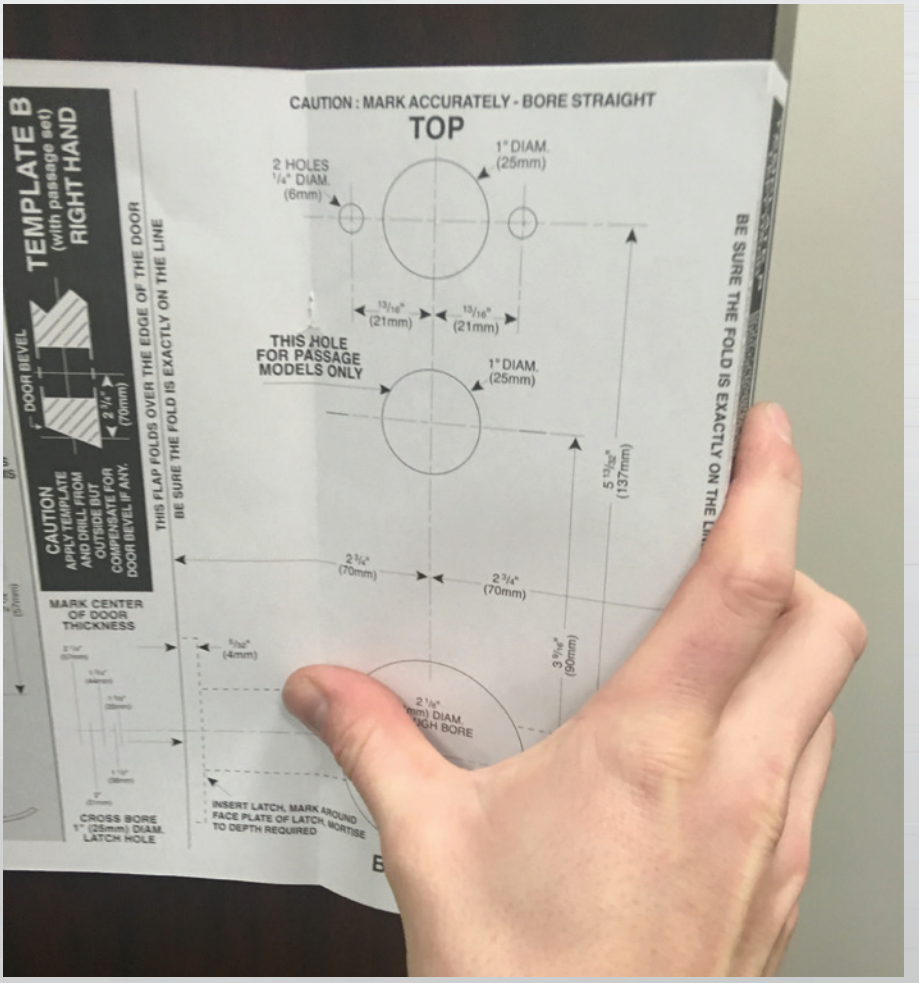



**Figure 1.** Step one is to mark for and drill holes.

New Simplex L1000s come with templates for all door handings and L1000 models. For a new installation of an L1000, you will need the following tools: variable-speed drill, center punch or similar marking tool, a 2⅛" hole saw, a 1" hole saw (metal doors) or spade/paddle bit (wood doors), a ¼" drill bit, a chisel, hammer or mallet, #2 Phillips-head screwdriver and a standard-head screwdriver. If you are installing a passage set model (103x or 104x), it will also require two pairs of pliers to break the tailpiece to the appropriate length.

As mentioned in the series overview article, the basis of the L1000 installation is either a 161 or 160 prep, which is a 2⅛" cross-bore at either a 2¾" (161) or 2⅜" (160) backset and a 1" edge-bore with a mortise 1⅛" wide and 2¼" high. If you are installing an L1000 on a door that already has a 160 or 161 prep in place, you can simply align the appropriate template with the cross-bore and edge of the door to mark for the remaining holes. Not counting cross-bore and edge-bore holes,

**Figure 2.** Step two is to install the latch.

**Figure 3.** The latch tailpiece must be properly integrated with the front lock housing assembly for proper operation.

**Figure 4.** Step four is to install the reinforcing plate.

all models except passage set models require three holes drilled into the door: one 1" hole for the combination change plug and two ¼" holes for the mounting screws. Passage set models require an additional 1" hole for the passage set assembly.

The L1000 is preassembled for doors 1 ⅝" to 1⅞" thick. For doors outside of this range, adjustments must be made to the front lock housing assembly. This process is beyond the scope of this series but is adequately covered in the installation instructions as well as online.

Installation instructions do not specify lock mounting height, however. The centerline of the lock strike must be between 38" and 42" from the bottom of the frame to be IBC and ADA compliant. For new installations, make sure you adhere to this requirement. For retrofit installations, check to make sure the door was prepped to this requirement before proceeding. This is perhaps one of the most important steps of new installations; get it right!

## Installation Process

1. Mark for and drill holes (*see Figure 1*). Use the included templates for doors that have 160 or 161 preps. For new installations, align the template so that the centerline of the lock strike falls within that 38" and 42" from the bottom of the frame range.
2. Install the latch (*Figure 2*). For new installations, mark for the latches' faceplate and mortise. Insert latch into edge-bore and secure to door with the two supplied ¾" screws.
3. Install the front lock housing assembly. The latch tailpiece must be properly integrated with the front lock housing assembly for proper operation (*Figure 3*).
4. Install the reinforcing plate (*Figure 4*). The plate is attached to the front lock housing assembly by two 8-32 x 2½" machine screws. Prior to fully tightening down the screws, make sure the reinforcing plate is parallel with the edge of the door and centered around the inside drive sleeve (*Figure 5*). Ensuring the reinforcing plate is centered around

**Figure 5.** Before fully tightening down the screws, make sure the reinforcing plate is parallel with the edge of the door and centered around the inside drive sleeve.

**Figure 6.** You can use a combination square to ensure the reinforcing plate is parallel with the edge of the door.

**Figure 7.** After placing the trim plate over the reinforcing plate, hand tighten the thread ring onto the inside drive sleeve.

**Figure 8.** Before using the spanner wrench to fully tighten down the thread ring, begin threading the combination change plug assembly and tighten it until snug.

the inside drive sleeve can be done by visual inspection alone. Ensuring it is parallel with the edge of the door can be handled with a combination square (*Figure 6*). If either step is not followed, you may not be able to install the thread ring and/or the L1000 will be crooked.

5. Install the inside trim plate, thread ring and combination change plug assembly. Place the trim plate over the reinforcing plate and begin hand tightening the thread ring onto the inside drive sleeve (*Figure 7*). Here is where I'm going to instruct you to do something that the instructions do not: Before using the spanner wrench to fully tighten down the thread ring, begin threading the combination change plug assembly and tighten it until snug (*Figure 8*). Do not over tighten the combination change plug assembly, or you risk breaking it.

   I have never understood why KABA instructs locksmiths to install the combination change plug assembly last, but they do. Tightening the thread ring fully can cause slight bending to the trim plate because the top half is able to be pulled away from the door — nothing is holding it to that part of the lock until the combination change plug assembly is installed. It can also cause seating issues and require more force to pull the upper half of the trim plate snug to the door's face when threading the combination change plug assembly. This also puts you at risk of breaking the combination change plug assembly.

   Once the thread ring and combination change plug assembly are snug against the trim plate, use the spanner wrench to fully tighten the thread ring (*Figure 9*). If necessary, tighten the combination change plug assembly further until snug.

6. Install the inside lever. Start by locating the poke hole. If the thread ring covers the poke hole, you will need to loosen the thread ring and align the hole in the thread ring with the hole in the collar. Once aligned, I have found that angling the tip of the spanner wrench away from you is the quickest way to depress the retaining clip and allow the insider level to slide in place (*Figure 10*).
7. Install the strike (*Figure 11*). This is straightforward if the frame is already prepped for an existing strike, assuming everything is aligned properly. If this is a new installation, such as for a wooden frame, special attention needs


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**Figure 9.** Use the spanner wrench to fully tighten the thread ring.

**Figure 10.** Angling the tip of the spanner wrench away from you is the quickest way to depress the retaining clip and allow the insider level to slide in place.

**Figure 11.** Step seven is to install the strike.

**Figure 12.** If the deadlock plunger enters the strike, use the provided rubber bumpers (shown) to push the door away from the strike and allow for proper latch/strike alignment.

to be given to the latch and strike relationship so that the deadlatch plunger properly engages with the strike.

8. Test for function. Test the function of the lock with the door open. Do not close the door until the lock has been checked and its function verified. This can eliminate a lot of work if something is wrong with either the installation, the lock or the door and frame itself.

Once you are satisfied with the lock's function, close the door and test for operation. Ensure that the latch interfaces with the strike correctly. The deadlock plunger should engage the strike, not enter it. If this occurs, use the provided rubber bumpers (*Figure 12*) to push the door away from the strike and allow for proper latch/strike alignment.

## Troubleshooting

There is not a lot that can go wrong in these installations. KABA only lists four troubleshooting scenarios in their manual. One relates to the over tightening of the combination change assembly, which can cause the threaded rod attached to it to break. If you're following KABA's instructions on these, you won't risk that because you'll know not to go beyond snug.

One other relates to the deadlatch falling into the strike completely and causing a binding condition. Again, we addressed a door that over travels by using the provided rubber bumpers.

The other two scenarios revolve around the code itself. If the lock opens without the code being entered, it is in "zero combination," and it simply needs to have a combination set. If the lock will not open after changing the combination, there is a good chance that one or more buttons were not fully depressed during the combination change process. Going back to the previous article, you will need to remove the combination chamber, decipher the code that was inadvertently set, and then either change the code with the combination chamber in hand or with the lock installed on the door.

**Tyler J. Thomas, CJIL, CMKA, CRL,** is a locksmith in Atlanta, GA. He helps maintain the website www.lockreference.com.

# Rabbeted Mortise Bit Key Lock, Part 2: The Key

**Tony Wiersielis, CPL, CFDI,** deals with side wards while making a key for an old lock.

I was looking through my *Keynotes* back issues the other day and had a "duh" moment. My September 2014 article, "The Rascally Rabbet Mortise Bit Key Lock," had a "to be continued" at the end of it. Trouble is, it wasn't continued, and that's my bad.

If you don't have that issue and want to read the article, email at aew59@juno.com and I'll send it to you [*Editor's Note: Previous* Keynotes *articles can be read for free by ALOA members on the ALOA Tech Link app. Log in at ALOATechLink.com with your email addressed registered with ALOA as your username and your member number as the password*].

**Figure 1.** The three files on the left are warding files, and *Figure 2* is a close-up of one of them. The four files to the right are two round files, often called "rat tail," and two "Pippin" files.

**Figure 2.** This photo gives a close-up view of one of the warding files.

In fact, I'd strongly recommend you read it so you know what's going on. That article was an introduction to an old lock I'd been asked to make a key for and an explanation on how it worked, and, obviously, serves as the lead-in to what you're reading now.

## Making the Key

Bear with me on this one. I made the key in a hotel room using a vise clamped on a table. I got enough pictures for you to get the idea of how to do it, but some of them are a little blurry.

What you need to do this kind of work are "warding" files. In *Figure 1*, you see a set made by Grobet, with the three files on the left being warding files, and *Figure 2* is a close-up of one of them. The four files to the right are two round files, often called "rat tail" and two "Pippin" files. Either of these can be used for impressioning work, as they make very fine cuts in brass blanks. I highly recommend you get yourself one of these sets. I got mine at Accredited Lock in NJ.

Warding files are machinist files predominantly used by locksmiths. They are so named because they are used to file keys in such a way as to bypass obstructions called wards that are built into the lock.

These files usually are smaller than what's displayed at the home center, in both length and thickness, because we're using them to cut narrow, straight slots/cuts, and not heavy removal of metal. We do this with the narrow cutting edge of the file and use the flat edge to widen the cut if we need to. You'll see what I mean shortly.

An example of a warded lock would be one of those laminated padlocks you'd see on school lockers. Their keys are straight and double-sided with slots cut perpendicular to the blade. The slots allow the key to bypass the wards and

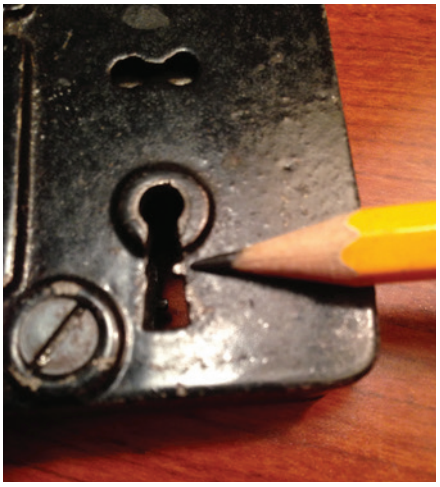


**Figure 3.** The pencil is pointing to a side ward.

**Figure 4.** The shown cut will allow the blank to bypass the side ward and go into the lock.

**Figure 5.** The author is checking to make sure the tip of the blank fits and turns in the top of the keyway.

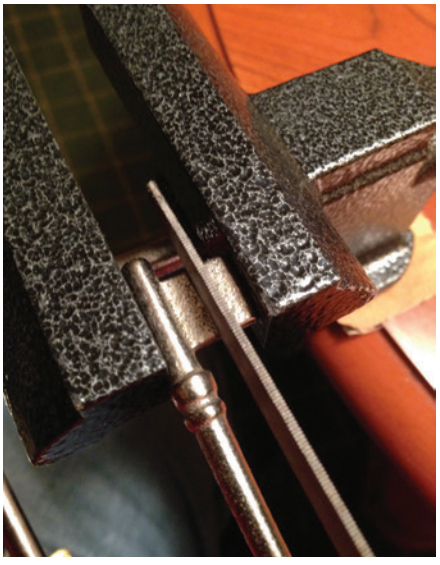


**Figure 6.** The author is filing the cut using the narrow edge of the file.

**Figure 7.** The goal was to make the cut flat at the bottom.

**Figure 8.** The blank was fitting in, but barely turning.

turn to release the shackle. Same idea, just somewhat different in execution, as you'll see in a moment.

## Dealing With a Side Ward

In *Figure 3* my pencil is pointing to a side ward, though I've also heard it called a keyway ward. This is the first nut we have to crack. I don't have a shot of the uncut blank, but if you look at *Figure 4*, you'll see the slot/cut I started to file in the side of the blade. This cut will allow the blank to bypass the side ward and go into the lock. The uncut blank wouldn't get past the ward.

*Figure 5* is where I started before I filed the blank. I'm checking to make sure the tip of the blank fits and turns in the top of the keyway and isn't sloppy. We want it to match the keyhole as closely as possible, which sometimes means the blade of our blank is a little larger and needs to be filed to fit. If the tip fits and turns well, we can modify the blade as we go.

To file the cut for the side ward, I needed to mark the blank. I did this by holding it in the keyway and marking the blade with a fine Sharpie on either side of the ward. *Figure 6* shows me filing the cut using the narrow edge of the file. The goal here is to make the cut flat at the bottom. This is a delicate process of trial and error, so take a few strokes, cutting on the push stroke only, and try it in the lock. When I was done, it looked like *Figure 7*.

The blank was fitting in, but barely turning (*Figure 8*). There are two reasons for this: the length of the blade and

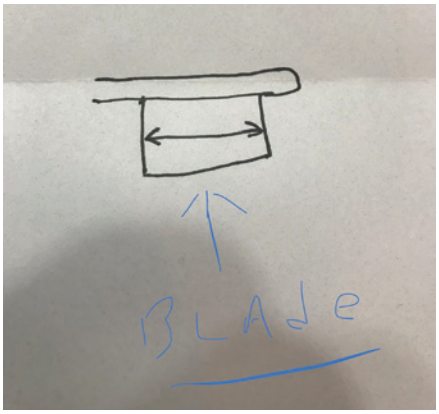



**Figure 9.** The distance between the arrows was wider than the inside of the lock case.

**Figure 10.** The author is filing the back of the blade to fit with the flat edge of the file.

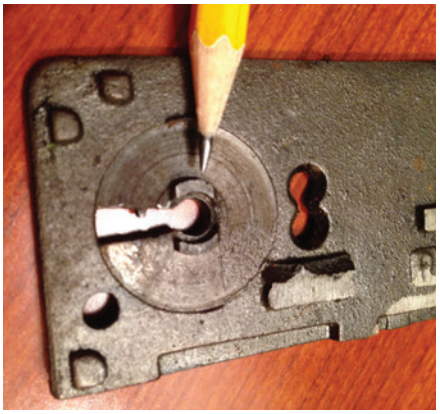


**Figure 11.** The pencil is pointing at a case ward.

**Figure 12.** The blade of the blank up against the case ward, and the author is about to mark it.

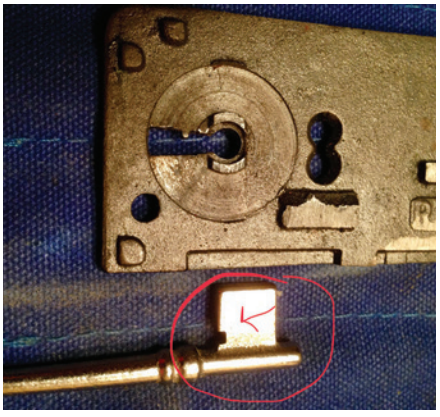


**Figure 13.** This image shows the completed cut on the back of the blade.

**Figure 14.** The author is using a candle to coat the blank with soot.

**Figure 15.** The soot is removed where the levers contacted the blank in three places.



**Figures 16 and 17.** These photos show the re-smoked blank and the soot removed by filing the cuts.

the "case wards." Look at *Figure 9*. The distance between the arrows in this crude drawing was wider than the inside of the lock case. *Figure 10* shows me filing the back of the blade to fit with the flat edge of the file.

Once I got the blank to turn slightly, it stopped against a case ward, which was actually on the inside of the cover. My pencil is pointing at it in *Figure 11*. In *Figure 12*, I have the blade of the blank up against the ward, and I'm about to mark it. I filed the cut, constantly checking for fit with the ward on the cover. *Figure 13* shows the completed cut on the back of the blade.

A couple things before we go on. First, the cuts you're filing to bypass the wards aren't held to the same tolerances as are inherent in a pin-tumbler cylinder; there's a bit more room for maneuvering. Just make sure you don't overdo it and wind up having to jiggle the finished key. However, when you're filing

the cuts for the lever tumblers, which you'll see shortly, you want to be as exact as possible.

Second, the cut you see in *Figure 13* is on the side of the blade closest to your hand — in this case, the outside of the room. This cut needs to be in the same place on the other side of the blade as well. Why? The case/cover wards are only on one side of this lock: the cover. To lock and unlock the door from the inside of the room, the ward cut must also be on the other side of the blade to bypass the ward. The side ward, however, is on the same side of the keyhole from either side, requiring a cut on only one side of the blade.

By the way, if you remember the cowboy movie hero sliding a newspaper under a locked door and pushing the key out to fall on the paper, you could do that with this lock. The guy pulled the paper and key under the door and opened it to save the damsel in distress.

**"Warding files are machinist files predominantly used by locksmiths."**

## Completing the Key

To complete the key, we must figure out the position of the levers within the lock and how deep to file the blade for the key to turn and throw/retract the bolt. In *Figure 14*, I'm using a candle to coat the blank with soot. This is known as smoking the blank. With a thin coating of soot on the blank, carefully insert it into the lock while avoiding disturbing the soot.

With the blank fully seated in the lock, turn it until it contacts the lever tumblers, turn it back and carefully pull it out. If you did it correctly, you should see marks, as in *Figure 15*, where the levers contacted the blank in three places and removed the soot.

Clamp the blank into your vise, center the warding file on each of the marks and start filing the cuts a little at a time. Continue to re-smoke the blank, turn it in the lock and file the cuts slightly deeper only where the soot has come off. *Figures 16* and *17* show the re-smoked blank and the soot removed by filing the cuts.


**Figure 18.** The arrow is pointing to the fence, which is on the right side of the eight.


**Figure 19.** The fence has been moved toward the center by the key.

This particular lock has a sight hole that looks like a sideways number 8 (*Figure 18*). You'll often find a hole like this in an antique lock such as this and even on some lever mailbox locks. This aids in filing the key by letting you see the bolt fence and sometimes part of the tumblers move as you get closer to the right depth of the cuts. The arrow is pointing to the fence, which is on the right side of the eight. In *Figure 19*, it has been moved toward the center by the key. *Figures 20-23* show front and back of the working key and the bolt thrown by the key and also retracted.

**"If the tip fits and turns well, we can modify the blade as we go."**

If you think you'd like to try working on these types of locks, you'll need to get several to practice on. If you retrofit one of these and the customer doesn't want the old lock, take it home and try making a key for it. You can also find these at flea markets from time to time. Other locksmiths in your area my not want to bother fitting keys to these locks, so make sure you charge a fair but decent price for your work.

**Tony Wiersielis, CPL, CFDI,** has more than a quarter- century of expe-rience 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.

Figure 20

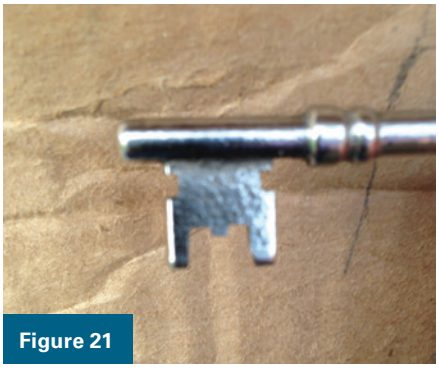
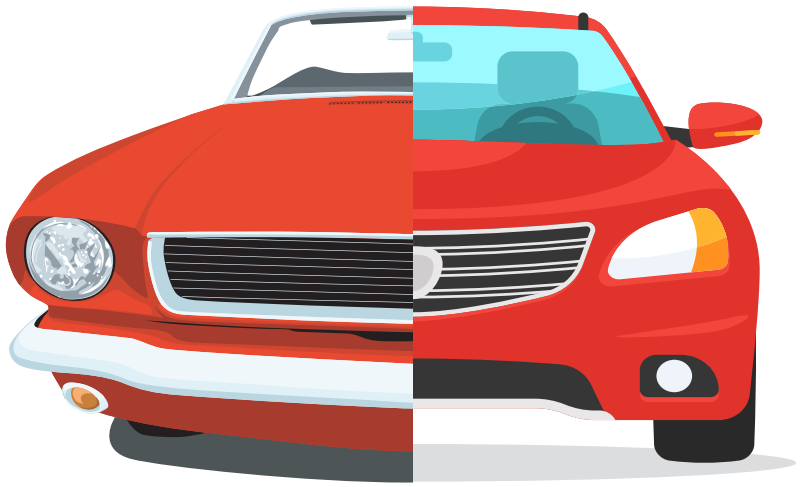


Figure 21

Figure 22

Figure 23

**Figures 20-23.** These images show the front and back of the working key and the bolt thrown by the key and also retracted.



# An Ever-Changing Field

ALOA Education Manager **Jim Hancock, CML, CMST**, discusses the changes in the automotive field — and how ALOA has kept up.

Whether it's a *Hot Rod Lincoln* or a *Rocket 88*, a *Little Deuce Coup* or a *G.T.O.*, the world of automotive locksmithing has changed so very rapidly over the past 15 to 20 years more than it did in probably the first 100 years of the auto's existence. The days of opening your fine *409* with a Slim Jim or impressioning a lost key for a *V-8 Ford* are pretty much long gone. When the Little Red Corvette rolled off the assembly line with the first-generation VATS system in place, locksmiths could no longer dabble in auto work. There had to be much more focus and emphasis put into keeping up with the technology of the locking and security systems being placed in the modern automobile. 2-Track, 4-Track, Tibbe, VATS, MATS, VATS II, Passkey, transponder, pin codes, EEPROMs and on and on. Makes some of us old-school locksmiths reminisce about the days when you jumped in your *Low Rider* and raced some *Little Old Lady from Pasadena* to *Deadman's Curve*.

Today, it is imperative for the locksmith who does some automotive work or the locksmith who specializes automotive work exclusively to stay up to date on the latest technology. ALOA has certainly recognized this and has enlisted some of the finest locksmith minds to help create a specialized track of learning geared to the automotive locksmith. These classes are updated frequently so the training remains cutting edge. And, much like the training, the certification testing (the Certified Automotive Locksmith CAL and the new Certified Master Automotive Locksmith CMAL) has changed as well. The CAL is geared more to today's automobiles and their technology. No more questions regarding a 1963 Alpha Romeo or Hurd keys. The CMAL is more inclusive and will indeed have questions regarding old technology and key systems as well as some of the newer systems.

So, whether you prefer to take a *Slow Ride* or you *Can't Drive 55*, jump into your *Pink Cadillac* or *Merecedes Benz*, *Roll On Down the Highway* and update your training with ALOA Automotive training at the ALOA 2019 Conference in Las Vegas or in Dallas, Texas, at the ALOA Training Center.

(*Gotta give props to the songs in the order they appear: Hot Rod Lincoln — Commander Cody, Rocket 88 — Jackie Brenston and the Delta Cat, Little Deuce Coupe — Beach Boys, G.T.O. — Ronny and the Daytonas, V-8 Ford — Buddy Moss, Little Red Corvette — Prince, Low Rider — War, Little Old Lady from Pasadena — Jan&Dean, Slow Ride — Foghat, Can't Drive 55 — Sammy Hagar, Pink Cadillac — Bruce Springsteen, Merecedes Benz — Janis Joplin, Roll On Down the Highway — Bachman Turner Overdrive*)

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

# ALOA

## ALOA Security Professionals Association, Inc.

# Membership Application

**CANDIDATE PLEASE TYPE OR PRINT**

Name: ❑ Mr. ❑ Mrs. ❑ Ms. First_____ Last_____ MI____Designation_____

Business Name _____

Mailing Address _____

City_____ State_____ Zip Code_____ Country _____

Work Phone_____ Home Phone_____ Fax _____

Email Address_____ Website _____

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

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

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

## PROFESSIONAL INFORMATION

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

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

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

Business License #_____ EIN # _____

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

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

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

_____

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 |

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

| | |
|---|---|
| ❑ US and US Territories | $50 |

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

| | | | |
|---|---|---|---|
| ❑ US and US Territories | $242 | ❑ I elect to Go Green | $222 |
| ❑ International | $260 | ❑ I elect to Go Green | $190 |

**Probationary Membership – No Sponsorship Required**
Persons undergoing training that are new to the industry and do not know any Active member for sponsorship. Probationary period extended from 90 days to one (1) year. Probationary status lifted if sponsor acquired within year. Must obtain license if residing in State requiring licensure. A second background check will be performed by ALOA after 2 years of the 3 year maximum term. Any violation of ALOA Code of Ethics during probationary period will result in immediate termination of membership.

| | | | |
|---|---|---|---|
| ❑ US and US Territories | $242 | ❑ I elect to Go Green | $222 |
| ❑ International | $260 | ❑ I elect to Go Green | $190 |

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

| | | | |
|---|---|---|---|
| ❑ US and US Territories | $242 | ❑ I elect to Go Green | $222 |
| ❑ International | $260 | ❑ I elect to Go Green | $190 |

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

## DUES AND FEES

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

US and US Territories ..... $70
Canada, Denmark, Ecuador, New Zealand ..... $160
Australia, Bahamas, Barbados, Belgium, Belize, Bermuda, China, France, Haiti, Philippines, UK ..... $210
Israel, Korea, Papua New Guinea, Saudi Arabia, United Arab Emirates ..... $360
Applicants from countries not listed must submit background check and report from local Law Enforcement with application.

## FINAL CHECKLIST

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

## METHOD OF PAYMENT

❑ Check ❑ MasterCard ❑ Visa ❑ American Express ❑ Discover

Card Number_____ Expiration Date_____ SEC _____

Print Name on Card_____

Signature_____ Date_____

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

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

_____

Signature Date Signed

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

**Return to:**
ALOA, 3500 Easy Street, Dallas, TX 75247
Fax (214) 819-9736 • Email: membership@aloa.org

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|---|---|---|
| Keynotes | 0 2 7 7 - 0 7 9 2 | 9/27/2018 |
| 4. Issue Frequency | 5. Number of Issues Published Annually | 6. Annual Subscription Price |
| Monthly (bi-monthly July and August) | 11 | Member benefit |

7. Complete Mailing Address of Known Office of Publication (Not printer) (Street, city, county, state, and ZIP+4®): 3500 Easy Street, Dallas, TX 75247 — Contact Person: Mary A. May; Telephone (Include area code): 214-819-9753

8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not printer): Same/secondary contact: Mario Medina, 817-908-2827

9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (Do not leave blank)

Publisher (Name and complete mailing address): ALOA Security Professionals Association, Inc., 3500 Easy Street, Dallas TX 75247

Editor (Name and complete mailing address): Mary A. May, ALOA Security Professionals Association, Inc., 3500 Easy Street, Dallas TX 75247

Managing Editor (Name and complete mailing address): Same

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13. Publication Title: Keynotes — 14. Issue Date for Circulation Data Below: October 2018

| 15. Extent and Nature of Circulation | | | Average No. Copies Each Issue During Preceding 12 Months | No. Copies of Single Issue Published Nearest to Filing Date |
|---|---|---|---|---|
| a. Total Number of Copies (Net press run) | | | 3563 | 3235 |
| b. Paid Circulation (By Mail and Outside the Mail) | (1) | Mailed Outside-County Paid Subscriptions Stated on PS Form 3541 (Include paid distribution above nominal rate, advertiser's proof copies, and exchange copies) | 3065 | 2712 |
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| a. Paid Electronic Copies | 1537 | 1542 |
| b. Total Paid Print Copies (Line 15c) + Paid Electronic Copies (Line 16a) | 4747 | 4471 |
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| **Bullseye S.D. Locks** | page 47 | www.bullseyesdlocks.com | (800) 364-4899 |
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