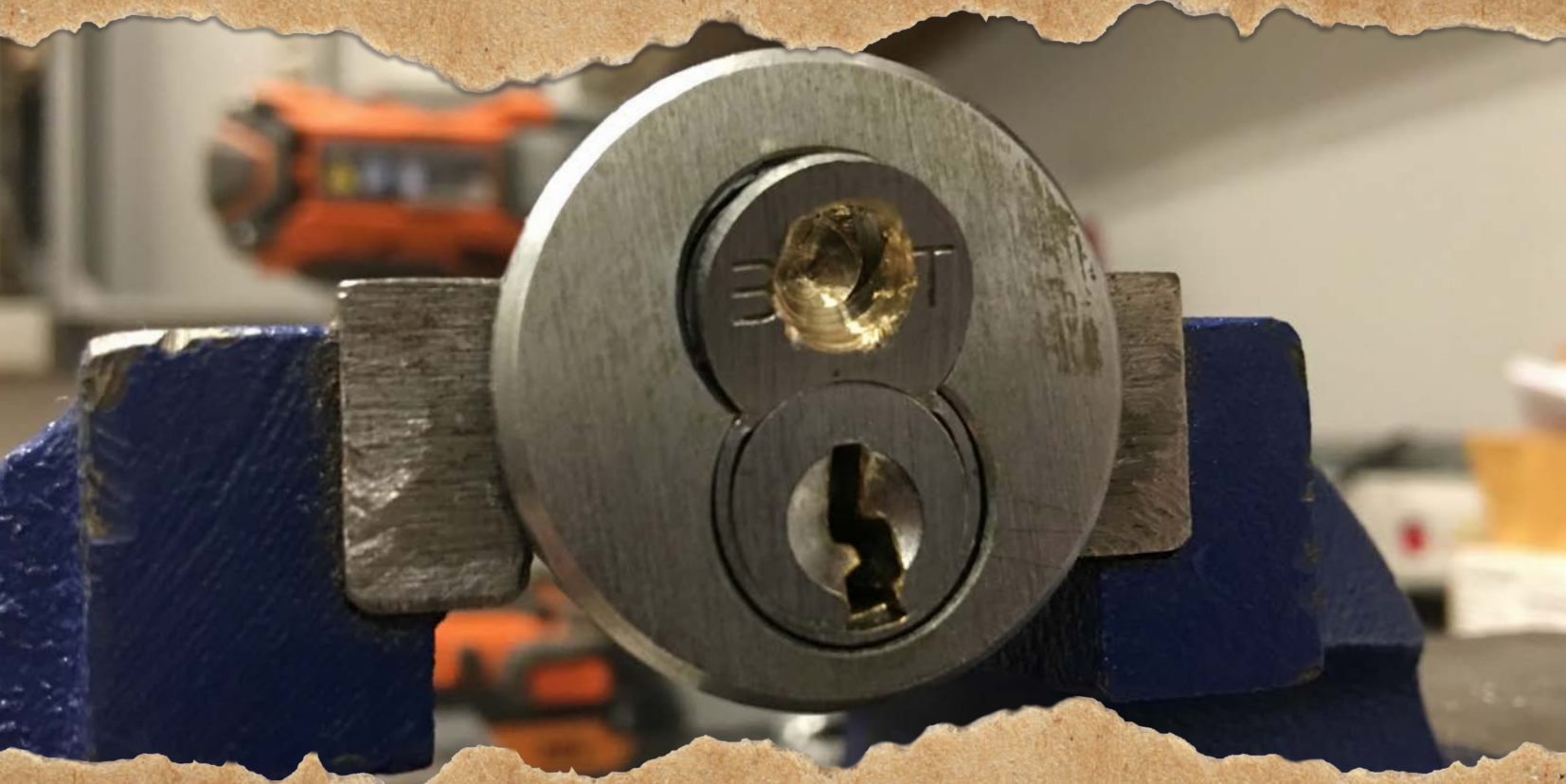
The official publication of ALOA SPAI, an international association of security professionals January 2017

KEYNOTES

SECURING YOUR SUCCESS

TOUGH TO THE CORE

SFIC extraction techniques explained



Pin Euphoria

A dazzling look at an array of pins and pin kits

PLUS

Making a One-Step Schlage Master Key System

IAIL Code Of Ethics | Goal Setting for the New Year | Process Changes for Large Jobs

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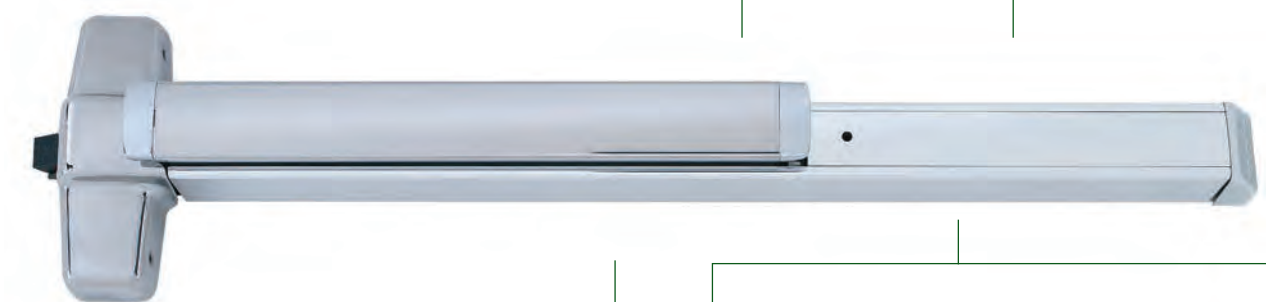

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KEYNOTES

JANUARY 2017 | VOLUME 63, ISSUE 1

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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Merry Christmas and Happy New Year!

I hope that Santa brought you everything you asked for and paid special attention to all of the little ones out there in the ALOA SPAI locksmith community. We're starting a new year, and I hope you all are as excited as I am to kick it off. There is unknown; we have a new U.S. president, and we're waiting to see what he'll be doing to either help us or make us worry about him. Either way, there's nothing we can do about either one; just keep on doing what we do to make a better life for our families.

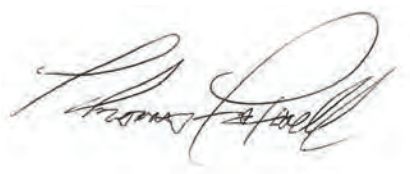
One of our strongest divisions is ALOA Institutional Locksmiths (AIL). This group has the greatest potential to increase membership in a very dramatic way, as there are so many facilities out there that hire their own locksmiths to do their lock work and control not only the master keying system but also their access control systems.

The main difference between the institutional locksmith and an ALOA commercial locksmith is that the ALOA commercial locksmith needs to be able to work on all brands of locks and exit devices. In comparison, the institutional locksmith is more brand-specific and only services the singular brand of locks and exit devices within his or her facility. This does make them very, very knowledgeable on those products, and manufacturers consistently ask institutional lockmiths questions about their products — or have them test some new products to get a full report if it is good, bad or "ugly."

I hope you have marked your calendars for this year's special events with ALOA. First is SAFETECH, SAVTA's convention and trade show in Albuquerque, NM, followed by the Security Leaders Business Conference directly afterwards at the same venue. If you want to learn how to run your business better and make it grow stronger, this is a must-attend event. You can make it a two-for and do both shows in one trip. Last, but not least, is the ALOA Convention and Security Expo and in Rosemont, IL (the Chicago area). This is a must, especially if you do automotive keying, as we'll have some very strong hands-on training.

"I hope you have marked your calendars for this year's special events with ALOA."

Best regards,



Tom Foxwell, RL, CAI, CFDI
President
ALOA Security Professionals Association, Inc.
president@aloa.org

ALOA: Benefitting You in 2017

Many of us have just spent the holiday season being thankful for what we have as well as for our family and friends. But maybe there were a few things you didn't know that you should be grateful for: your assortment of ALOA benefits. Now's a great time for a refresher on benefits you can take advantage of in the new year.

Professional Development

Education is the cornerstone of ALOA. From offering classes at the ALOA Convention, regional events, web-based training and year-round education at the Aaron M. Fish Security Training Center in Dallas, we have you covered. Our world-class Proficiency Registration Program (PRP) gives you a chance to earn credentials at nationwide testing centers to showcase your expertise to prospective clients in a variety of areas.

ALOA SPAI also offers add-on membership in specialized groups such as IAIL, AIL, SAVTA and ALOA Latino, serving Mexico and beyond. Through these groups you can enhance your professional development and make beneficial contacts in your areas of expertise.

Business Management & Marketing

ALOA provides you with a wide variety of benefits that help you run your business smoothly and progress you career. With your membership, you receive a $15,000 free industry bond, verified listing in FindALocksmith.com and you get to be a part of our online membership directory. You also can access the ALOA Job Center to find your next position or your next new employee.

A continued supply of industry information is vital to anyone's career. As a member, you receive our electronic Weekly Update as well as our monthly *Keynotes* magazine, where you can learn the latest industry news and about helpful new products.

And, of course, you have access to our annual Security Leaders Business Conference, where you can take classes on business management, marketing and a host of other topics that will help you advance in your career or move your business forward. Consider attending SAFETECH this year in Albuquerque and then staying on for this conference immediately following at the same venue.

Industry Partners and Affinity Programs

We have a variety of benefit programs through WorldWide Insurance Services Inc. that are useful to our members. Available plans include medical, dental, pharmacy, vision, life and accident benefits.

Federal Government Advocacy & Public Relations

We know that issues such as licensing and scammers are on the forefront of everyone's minds, so our legislative team works hard to get our industry's voices heard at the state and federal level. We can also provide some legal advice to our members on issues such as scammer-fighting tactics.

In addition to our legislative efforts, we also work to help educate consumers via public service announcements and working with government agencies such as the Federal Trade Commission.

Discounts

Who doesn't love a good discount? Via your membership, you have access to discounts in the ALOA Apparel and Security Store on professional apparel, pins, patches and decals to promote your association with ALOA. You can also purchase educational materials at a discount, such as safety manuals, textbooks, CDs and more.

While all of these benefits are important to our members — and we strive to give you the best value we can — the true value of ALOA is intangible. The connections you create and your part in elevating the industry and moving it forward are truly priceless. Consider getting more involved in ALOA this year, and see what benefits it brings back to you. You won't be disappointed.

As always, for questions regarding member benefits and programs, please contact us at membership@aloa.org or (800) 532-2562.

Mary A. May

Mary A. May
Executive Director
mary@aloa.org

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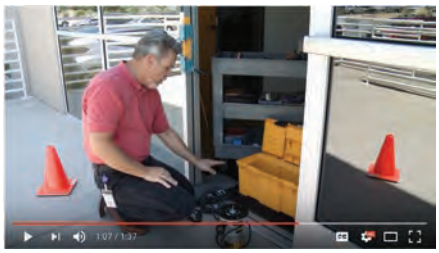
ASSA ABLOY Acquires Construction Specialties



ASSA ABLOY has purchased Construction Specialties, a direct sales company within the commercial sectional doors and docking products sector in the U.S. and Mexico. Construction Specialties, established in 1994, has 140 employees and is headquartered in Brownsville, TX, but has its main business in Mexico. "Construction Specialties has a strong team of well experienced people and a solid market position. It is another important step for our growth in North America," says Juan Vargues, executive vice president of ASSA ABLOY and head of Division Entrance Systems.

In other company news, the RITE Door team has introduced the RITE Door RITE Now Program pilot quick ship program, designed to get the most common RITE Door integrated doors installed in 10 days or less. The initial program roll-out includes California only.

Additionally, the website for Alarm Controls, an ASSA ABLOY company, has launched a distributor finder Click on the "Where to Buy" tab on the website to search for a distributor by city, ZIP code, category type or mileage. Distributor finders are also available on the websites for Alarm Controls, Adams Rite, HES and Securitron.

The company has also produced a short video on installing an electric strike in an aluminum frame. To view it, visit bit.ly/assaabloy.

IN MEMORIAM

Saint Louis Locksmith **Joseph Hults** of A-All Lock & Key Co. was murdered and found in his burning van. Police say he could be among the victims of George P. Bush after helping another of Bush's victims during a service call. Bush was later shot and killed by police officers.

Hults was a locksmith for nearly 40 years. To assist the family with funeral costs, please visit the GoFundMe site at www.gofundme.com/unexpected-funeral-costs.

William A. Sherman, RL, an ALOA member since 1983, passed away at the age of 77. He owned Sherman's Key Store in New Iberia, LA.

ALOA Chapter News

Fox Valley Chapter President "Retires"

Tom Ripp, who has served as chairman of the Fox Valley Chapter for five years, is stepping down and turning over the gavel to Mark Stevens. Thank you, Tom, for your many years of service!

In other Fox Valley Chapter news, the chapter website has been updated at http://wilocksmith.org/fox-valley-chapter, and the chapter's schedule has been released for 2017:

After serving as Fox Valley Chapter chairman for five years, Tom Ripp is stepping down.

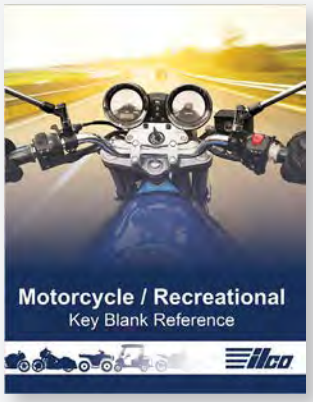
Chapter Meetings:
February 14, 2017
April 11, 2017
June 13, 2017
October 10, 2017
December 12, 2017

Factory Tour:
May 9, 2017 at 4:30 p.m. at Architectural Builders Hardware Mfg, 1222 Ardmore Ave., Itasca, IL

NEWS BRIEFS

Southern Lock & Supply has revamped "As the Lock Turns", its e-newsletter that delivers news of the latest specials, products, events and company anecdotes. To sign up to receive it, visit www.southernlock.com.

Ilco has released the updated Motorcycle and RV Key **Blank Reference,** which includes outboard motor, snowmobiles, golf carts and more. The reference can be downloaded from www.ilco.us under Literature/Support, Key Directory & References. Printed copies are also available from your Ilco distributor.



dormakaba has signed an agreement to acquire U.S.-based Mesker Openings Group, a leader in the commercial door and hardware industry in the United States. With the acquisition, dormakaba will expand its offerings in North American to include all essential door components as well as secure access to buildings and rooms from a single source.

The Security Industry Association (SIA) and the **University of Phoenix** have announced that they will award 10 scholarships covering full tuition for prospective students to complete an undergraduate or graduate degree program at the university. The scholarship is open to full-time employees of SIA member companies. Applicants, who must submit materials by Jan. 10, 2017, can complete and submit an online application at www.phoenix.edu/siascholar.

Farpointe Data has announced that its Pyramid P-640 proximity card reader with keypad, P-620 mullion style proximity card reader with keypad and Delta6.4 smart card reader with keypad meet the impending requirements for two-factor authentication as described by the National Institute of Standards and Technology (NIST) federal guideline. Two-factor authentication is achieved because the card is something you carry and the PIN (Personal Identification Number) is something you know.

The new NIST SP800-171 guideline requires federal contractors to "use multifactor authentication for local and network access to privileged accounts and for network access to non-privileged accounts" or risk losing their contracts. This is to ensure only authorized individuals may have physical and logical access to critical assets. Federal contractors must comply by December 31, 2017.

Bosch Security Systems and **Sony** have established a partnership for their video security business through technical collaboration. As part of the partnership, Sony's video security customers in all markets except Japan will be served and supported by the sales and marketing organization of Bosch Security Systems. Sony will continue to develop and manufacture its video security products under its brand.

dormakaba product data and customized specifications are now available through ARCOM's software platforms to architects, engineers and design professionals. The two organizations have worked together to create customized versions of the MasterSpec sections to specify dormakaba products. Along with these specification sections, dormakaba product catalog and data sheets are easily accessible to specifiers when working on their projects.

Business Tip of the Month

Taking a few minutes and linking to your Google Business and Yelp accounts in your emails can get you more reviews. But, you have to make it easy for the customer to access your business profile pages. If you have your information in your email footer, you're always inviting customers to review your business. Here's how to get your link and set it up.

1. Go to your Google business page while on your phone or tablet.
2. Click the share button.
3. Copy the link.
4. Email the link to yourself so that you'll always have the link to your Google business page on hand for the future.
5. Using the link, customize your email footer in whatever email program you use (contact your email service provider if you need help). Make your footer say something such as:

If you enjoyed your service, please take a few minutes to write us a review. Reviews are how small businesses reach their customers.

If you have Gmail account, leave a review here: https://g.co/kgs/hpbrEk (New Aspen Locksmith LLC. Location)

Yahoo and Yelp users, leave a review here: http://www.yourbusinesswebsite.com

I like to offer a Google and a Yelp or alternative reviewing option for people who don't have a Gmail or Google account. Within the first 30 days of doing this, I had three reviews posted. The easier you make it for your clients to review your business, the more often they will do so.

— Wayne Winton, owner of Tri County Locksmith Service in Glenwood Springs, CO

PRODUCT BRIEFS

Jet Hardware has released the Jet Model 7000, a heavy-duty, semi-automatic key duplicator that features four-way jaws, a chip collection drawer, spring-loaded carriage, a work light and a dial-adjustable key follower.

Paxton has introduced Paxton BLU, a cloud-based access control system that can be managed from any Internet-connected PC or smart device. Powered by Amazon Web services, the system doesn't require a local server or network and can be used where traditional access control isn't an option. The system offers the ability to secure thousands of sites and allows multiple users.

VIZpin has announced that that VIZpin LITE, an entry-level version of their managed access control solution, is now available at no charge. The product allows use of smartphones to send revocable keys to anyone with the VIZpin SMART app. Each VIZpin LITE account can have unlimited readers and includes five free keys, with additional keys available for purchase. VIZpin LITE accounts can be upgraded to the paid VIZpin PLUS for unlimited users/doors, schedules and audit trails.

The company has also released a new version of its VP1 Bluetooth reader-controller. It can use existing power and works with existing card readers, biometrics, keypads or any other Wiegand peripheral already installed. The VP1 uses your phone as your network, and cards or Android, iPhones, Blackberry or flip phones can be used as keys. The product has a 30-foot range.

In other news, the company has also recently expanded to Asia, providing sales and technical support from its Singapore office and through regional partners.

Adams Rite, an ASSA ABLOY company, has announced that the RITE Touch Digital Glass Door Lock will soon be available with your choice of the original thumbturn or a new ADA-compliant accessibility lever. The RITE Touch, which has touchscreen technology, can be used for single or double glass doors without modifying the glass.

DEWALT recently announced the release of the patented cordless FLEXVOLT power tool and battery system as well as FLEXVOLT High Efficiency Accessories. The tools feature more runtime than previous cordless tools and support the existing 20V MAX System as well as new 60V MAX and 120V MAX tools. The FLEXVOLT battery provides up to four times the runtime when used with DEWALT 20V MAX tools, and the 6.0 AH FLEXVOLT battery automatically changes voltage when you change tools. Available accessories include small- and large-diameter circular saw blades, reciprocating saw blades, hole saws and abrasives.

Yale Commercial, an ASSA ABLOY Group company, has expanded its 6000 Series exit devices with a range of electromechanical options, including electric latch retraction, electric dogging, alarm, and touchbar, trim and latchbolt monitoring. These features allow the 6000 Series exit device to integrate into existing alarm or access control systems.

Framon has introduced CardXpress, which allows users to generate a card for an HPC 1200 or Ilco Universal code machine quickly. Users can make cards by searching via key type and manufacturer as well as by browsing thousands of key blank numbers from popular manufacturers. The product can be purchased via downloaded for $99.95 or in CD/USB hard copy for $109.95 plus shipping. It must be installed on a computer that has internet access to activate the program.

PEMKO Manufacturing, an ASSA ABLOY Group company, has introduced the Markar Power over Ethernet (PoE) Continuous Hinge, which provides a means to pass Ethernet data and power through the door hinge to electrified PoE hardware. It's available as an option on most 3500, 600, 300, 200 and 100 Series Edge Mount Continuous Pin and Barrel Hinges. The hinge's ElectroLynx functionality allows connection to other ASSA ABLOY Group brand products, including access control hardware from Corbin Russwin and SARGENT and cables and harness assemblies from McKinney. The Electrical Transfer Access Prep (ETAP) is included. For more information, visit www.pemko.com

FJM Security Products has released the RFID New Combi-Cam Electronic locker lock, an addition to the Combi-Cam E-Series electronic cabinet locks. Features include 10-year battery life, master/manager code, one-time-use functionality and compact size. The lock can be programmed to either accept numerical input or RFID cards. With manager/master code functionality, the locks offer both surface and semi-flush mounting, suitable for lockers, mailboxes or cabinet doors and drawers. The lock can be switched back and forth from RFID card access to numerical code access and can convert to one-time-use (locker mode).

NEW APPLICANTS

As of November 21, 2016

ARIZONA

Phoenix
Nathan Brownstein

CALIFORNIA

Huntington Beach
Omar Hammud
Newark
Rodney Beliso
Sponsor: Paul J. Springsteen, RL
Palmdale
Michael J. Kesselring

COLORADO

Craig
Fred Shaffer
Sponsor: Curtis N. Anderson, RL

FLORIDA

Ocala
Tyler Woods
Sponsor: Karl J. Talsky

ILLINOIS

Macomb
Andrew M. Puccini
Sponsor: Edward R. Woods, CML, CPS, CAL

KENTUCKY

Elizabethtown
Michelle Hughes
Sponsor: Robert M. Booher, RL

MASSACHUSETTS

Fall River
Bryan T. Salva
Sponsor: William L. Mandlebaum, CML
Watertown
James J. Linehan
Sponsor: John P. Casey Jr., RL

MISSOURI

Kansas City
Adrian L. Hughes
Apprentice Member

NEW JERSEY

Madison
Juan Rodriquez
Sponsor: John K. Corbett

NEVADA

Las Vegas
Melissa Ishaki

PENNSYLVANIA

York
Thomas W. Brant III
Sponsor: John E. Trone Jr., CPL
Richard L. Mickley
Sponsor: John E. Trone Jr., CPL
Braxton G. Neff
Sponsor: John E. Trone Jr., CPL

TEXAS

Garland
Dick Michaud
San Antonio
Randal T. Gaither
Sponsor: John W. Gaither, RL

UTAH

Hurricane
Errick D. Donaldson
Institutional Locksmith

WASHINGTON

Port Angeles
Sheldon Koehler

WISCONSIN

Milwaukee
Christopher Conway
Institutional Locksmith

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

We Need Your Help

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

CALENDAR

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

FEBRUARY

Feb. 12
PRP Testing
Ramada Canton
4914 Everhard Road NW, Canton OH
education@aloa.org or (800) 532-2562

Feb. 20-25
Six-Day Basic Locksmithing
ALOA Training Center
Dallas, TX
education@aloa.org or (800) 532-2562

Feb. 26-28
Campus Fire Safety and Emergency Management Conference/Fire Protection Technology Exposition/ Fire Marshal and Code Enforcement Symposium
Hyatt Regency Hotel, Columbus, OH
www.firecodeexpo.com

MARCH

March 15-18
IDN-Hardware Sales 2017 Trade Show and Security Conference
Sheraton Detroit Novi Hotel
21111 Haggerty Road, Novi, MI 48375
Contact Ronald Weston, marketing manager at (734) 293-0082 or Bonnie Weston at (734) 293-0061

March 23-25
H.L. Flake 2017 Trade Show
Houston, TX
travis.howell@hlflake.com; (800) 231-4105, www.hlflake.com

MAY

May 1-6
SAFETECH
Crowne Plaza Albuquerque
Albuquerque, NM
www.savta.org or (800) 532-2562

May 6-9
Security Leaders Business Conference
Crowne Plaza Albuquerque
Albuquerque, NM
ALOA.org or (800) 532-2562

May 15-20
Six-Day Basic Locksmithing
ALOA Training Center
Dallas, TX
education@aloa.org or (800) 532-2562

JULY

July 16-22
ALOA Convention & Security Expo
Donald E. Stephens Convention Center
Rosemont, IL (Chicago area)
ALOA.org or (800) 532-2562

ALOA Events in 2017

Receive world-class education and unparalleled chances to network at ALOA 2017, SAFETECH and the Security Leaders Business Conference.

With the start of 2017, it's time to start planning your attendance at the association's exciting events for the year!

ALOA 2017
July 16-22, 2017

For 2017, we're returning to the Chicago area, with the convention, all meetings and the Security Expo taking place in one location at the Douglas E. Stephens Convention Center in Rosemont, IL. To serve our members, ALOA has negotiated rates at several nearby hotels so attendees can control expenditures and choose the location best suited for their needs.

There are several exciting new classes being offered this year, including enhanced offerings for automotive and electronic access control. Look for more information in the brochure packaged with this issue of *Keynotes.*

SAFETECH 2017
May 1-6, 2017

Join us in Albuquerque for world-class safe and vault training, networking and fun in the desert sun! Several new classes are being offered this year, including Vault Lock Servicing, Forensics for the Safe Technician and Electronic Safe Lock Servicing .

But classes aren't all that await you — Albuquerque is an amazing vacation destination. From outdoor hiking to arts and Native American culture, there's something for everyone. Take a train to Santa Fe for a day of touring chapels and missions, the Georgia O'Keeffe museum and more. Top all this off with an amazing $114 per night hotel rate, and you can't afford to miss SAFETECH this year.

To learn more or to register, see the brochure at SAVTA.org or included with your January/February issue of *Safe & Vault Technology.*

Security Leaders Business Conference, May 6-9, 2017

Get the biggest bang for your buck by remaining in Albuquerque after SAFETECH for the Security Leaders Business Conference, taking place at the same venue.

Not just for business owners, this conference offers something for everyone. Take seminars on increasing sales, handling human resource issues, making investments and other management issues. The conference also offers an unparalleled opportunity to meet one on one with manufacturers and distributors and network with other industry leaders.

Register now at ALOA.org via the Security Leaders Business Conference tab.

ALOA 2017: READY TO BOOK YOU STAY?
Select your hotel from one of these great choices.

Hyatt Regency O'Hare
(Attached to the Douglas E. Stephens Convention Center)
9300 Bryn Mawr Avenue
Rosemont, IL 60018
$150 (plus tax) per night
Cut-off date: June 29
Reservations: Online at https://aws.passkey.com/go/alo1 or call (888) 421-1442; Group code: ALOA

Crowne Plaza Chicago O'Hare
(Adjacent to the Douglas E. Stephens Convention Center)
5440 N. River Road
Rosemont, IL 60018
$129 (plus tax) per night
Cut-off Date: June 19
Reservations: Call (877) 337-5793; Group code: ALOA

Radisson Hotel Chicago O'Hare:
(Less than four miles from the Douglas E. Stephens Convention Center)
1450 E. Touhy Avenue, Des Plaines, IL 60018
$139 (plus tax) per night
Cut-off Date: July 6
Reservations: Visit www.radisson.com/aloasecurityprofessionalassociation or call (847) 296-866 or (800) 333-3333; Group code: ALOA

Hyatt Place Chicago O'Hare
(2.6 miles to the Douglas E. Stephens Convention Center)
6810 Mannheim Road
Rosemont, Illinois, USA, 60018
$110 (plus tax) per night
Cut-off Date: June 20
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IAIL Code of Ethics

IAIL President Tom Demont provides a bit of information about IAIL, its member code and available CFL certificates.

What is the IAIL? The International Association of Investigative Locksmiths was established to follow the principles of forensic science in lock investigation. It was founded in 1999 by James Glazier, Lieutenant, Montgomery County, MD, Police Department retired, and Don Shiles, chief instructor U.S. Army 902nd Military Intelligence School, Ft. Meade, MD.

Each member, by their acceptance of membership in the International Association of Investigative Locksmiths, shall subscribe to the following code of ethics:

1. To pursue their professional work in the spirit of fairness to their clients, with fidelity to security in conformance with appropriateness and with high ideals of personal honor.
2. To properly and impartially analyze and examine all material which is entrusted to their custody.
3. To conduct themselves in a dignified manner at all times; to avoid using any improper or questionable methods of soliciting professional work.
4. To refrain from associating themselves with or allowing the use of their name by any enterprise of questionable character, or in any manner countenancing misrepresentation.
5. To cooperate with other investigate locksmiths through the interchange of general information and experience.
6. To cooperate with local law enforcement officials and insurance investigators in all matters relating to the cases that they are working on and to diligently pursue the education of the consumer in relation to their security.
7. To encourage and promote loyalty for the investigative locksmith profession and interest themselves in public welfare, always ready to apply their special knowledge, skill and training to enhance the security of the public.
8. To consistently abide by all applicable licensing and business regulations.

All members of IAIL must also follow the ALOA SPAI code of ethics.

The Certified Forensic Locksmith (CFL) exams have been rewritten and are now available to be taken by qualified personnel. You can hold multiple CFL certificates. Now available are CFL – General and CFL – Safes and Vaults. Coming soon are CFL – Automotive and CFL – Architectural Hardware. There are two areas that attorneys look at for expert witnesses: credentials and certificates. More is better! Complete your ALOA PRP credentials and start on your CFL credential today. If you have any questions and/or concerns, please contact me directly.

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

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Goal Setting, Priorities and Balance for the New Year

Katelyn Radtke discusses the importance of not only making goals, but also changing operations so you can meet them.

I recently attended a business training session, and the host asked a room of 200 business leaders from all different industries, "Who in this room has a vision for their business?" Every hand in the room flew into the air. Then they asked, "Who in this room has that vision written down?" and more than half of the hands in the room dropped. Next, the host asked, "Now, those of you who have this vision written down, how many of you read it on a monthly basis?" At this point, there were only a dozen people left with their hands raised. The final question asked was, "Of those remaining, who reads their business vision on a daily basis?" There were only two people left out of 200 or so attendees with their hands raised. Both are top performers and credited their success in the past year to their consistency and commitment to their vision.

On the surface, locksmith companies can appear quite different from one another. For some, the business revolves around their own single truck and their individual ambitions. For others, the business encompasses a mobile fleet, an office staff, storefront(s) and more — and there are plenty of folks who land somewhere in between these two extremes. For any small business owner, it's expected for you to wear many different "hats" and do what it takes to make your business successful, especially at the beginning or during difficult times. Running any business comes with its challenges, but in industries that center around skilled trades, the day-to-day challenges are often compounded by a different, constant balancing act.

The Big Challenge

For locksmiths, this balancing act includes business-owner responsibilities on one hand and a passion and vast knowledge of the trade in the other. This means that our budget makers, business leaders and goal setters may easily be caught spending more time writing invoices than drafting business plans. It can be very difficult — and seemingly impossible at times — to focus on the operations of your business when you fit very well into one particular aspect of the business as a security specialist. Balance may not be easily achieved, and it looks different for each business owner, but there are few things more motivating than setting goals and moving through your routines with confidence in your and your team's daily efforts. Time moves quickly when your schedule is packed every day with appointments and, before you know it, six months or even a few years can pass when you realize that you haven't made any progress in managing the business itself. When goals are set in motion, time can fly by in a positive way, and efforts become second nature. Whether yours is a company of one or a company of 20-plus, there is much to be gained by working on your business and not just inside of it. When this time

is spent productively, it is an investment that returns to you ten fold.

The locksmith industry contains some of the hardest-working and most passionate folks I have ever encountered. It's home to craftsmen who dedicate themselves to values of honesty, security and safety. They are no strangers to early mornings, late nights and whatever it takes to get the job done. Locksmiths who provide mobile service often sacrifice time with friends and family to ensure their customers' urgent needs are met. It's simply par for the course in our world.

Many business owners in this industry began their path to ownership working as key cutters or field technicians at their respective companies, or as a security technician at another established company, working their way up to their current role. It's not uncommon for locksmith business owners to continue working as techs, full-time even, once they've taken on ownership responsibilities. This is, by no means, a thing, but it can create challenges for a growing business or a business that is adapting to any changes.

Make Your Presence Known and Your Efforts Count

If you continue to work in a position of direct contact with your customers, it's valuable to introduce yourself as the business owner when assisting customers, when appropriate. It's important to also note this in your company's branding by placing your title in your email signature, on your business card and on your website. Customers generally enjoy knowing whom they're dealing with, and when you're delivering quality, it's important to gain that recognition for your business. If you are already pretty visible within your organization in these ways, consider making some short videos for social media where you introduce yourself and share a promotion or boost a certain service your company offers.

Set Clear Expectations

A business is not unlike a child in that it requires your attention and nurturing. It's very easy to be disappointed when your goals are unclear or unknown. If a child isn't given very clear rules and expectations, chances are, the child will find themselves breaking rules they weren't even aware existed. Beyond rule setting, time and energy must be invested in the child for them to understand what you mean. This can be applied to your business when you replace "rules" with "goals." Your goals must be shared with your team, and you must commit to actions on a regular basis that are in alignment with those goals. This helps maintain progress, motivation and momentum. Goals can be achieving specific sales targets, a specific number of new clients or estimates each week or month or perfect staff attendance for a certain amount of time. Sometimes your goals may be personal or private, and that's understandable.

Keep a List of Your Goals

It is best to write down your goals and break them into smaller accomplishments. There's no such thing as a terrible goal! If you have certain projects or areas within your business where you'd like to have a greater impact, it can be really helpful to write down your goals. This can help set a great foundation for achievement. Be sure that you're dedicating time to reaching your goals, but also ensure the actions you're taking are having the desired impact. If you're not making the progress you'd like, it's always okay to reroute your efforts and try a new approach. Centering your daily efforts around your goals and coming up with incentives can be the difference between success and disappointment.

Work Where You Are Best and Hire the Rest

This philosophy applies differently to each business. The bottom line is that your business has needs that must be met, and so do you! If you're being pulled into the truck to meet customer demand, you must be sure that the fundamental needs of your business are not being neglected. These needs might include: payroll, bill paying, employee management, maintenance of vehicles/workplace and more. While it may not be feasible to outsource every need, you may be able to restructure your time and your business to make your life easier and to maximize your profits.

Work/Life Balance

At any time, the balance of working both in your business and on your business may change. It's important to reassess your habits and routines and make any necessary adjustments as needed. When your business is built around you, it's extra important to take good care of yourself. They call it "Key Man Insurance" for a reason. Make sure due diligence is paid to your own health, stress maintenance and life enjoyment. As time passes, you may want to set up a plan to help your business become independent and successful beyond your own daily or regular efforts.

Katelyn Lucas Radtke is a fourth-generation security professional based in the San Francisco Bay area. She is an expert contributor to *Blackhawk Living Magazine* and lead contributor to Give-A-Hoot.com, a website, blog and YouTube channel empowering communities by providing safety and security information, tips and education.

At first glance, the safe's turned handle was noticed.

AMSEC AmVault with LA GARD 4200M

An amplifier and spare lock help determine the problem with an angled safe handle. By Doug Bellinger

We got a referral from a friend and fellow locksmith and safe technician Mike Knudson of A-Best Security Lock & Safe in Phoenix. Under normal circumstances, Mike would've opened this safe himself, but since he wasn't able to do it this particular day, he referred the job to us. (Thanks, Mike, I appreciate the opportunity for this learning experience.)

The safe was an AMSEC AmVault at a fast food restaurant; the lock on the safe was a LA GARD swing bolt. When I arrived at the restaurant, I talked with the manager and he told me the safe had been having a problem for the past few days, and that it now would not open. I was told the lock had been installed about six months earlier. Mike, their regular locksmith, had confirmed this.

When I got to the safe, I saw that the handle was at a slight angle. It looked like someone thought that if they applied enough pressure, it would surely open — but that wasn't correct. I was given the combination and tried it. The lock gave two beeps, I went for the handle and it didn't open. I tried entering the combination and turning the handle a few more times with no success. The next thing I did was to apply some tape to the top of the handle and a piece on the door next to it. I then pulled the handle as far as it would turn and put a mark that went onto both pieces of tape. This way I would be able to tell if the handle turned any further after entering the code compared to not entering the code. I worked the lock a few more times, but the handle always stopped at the same location.

> **"It looked like someone thought that if they applied enough pressure, it would surely open."**

Decision Time

It was now time to make another decision: Is it a fired external relocker, a broken foot on the swing bolt or a fired internal trigger? I looked down the spindle hole to determine which lock it was and I determined that it was the 4200M. That eliminated the broken foot problem, because it didn't have one. I had done homework on this lock about a year and a half before, and had determined where I would drill when I ran into one of these locks. I had a lock like this in the van that I had taken apart to get my measurements, and I had also drilled where I thought was the best place on the lock to be able to open it without setting off the internal trigger.

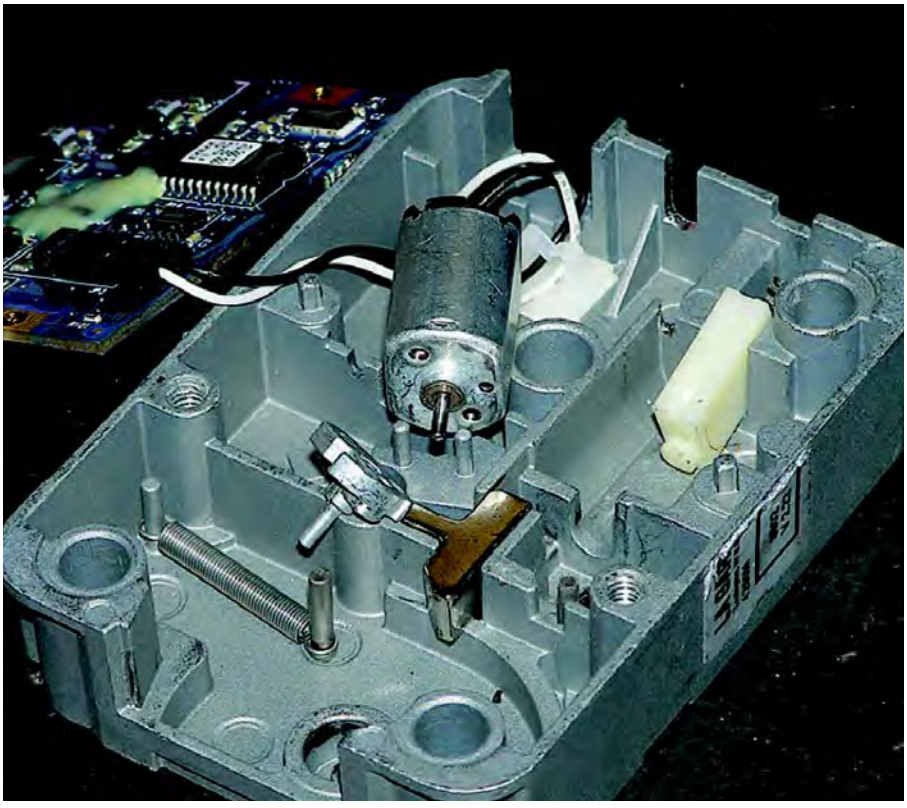
I had been carrying this lock in the van all this time for an experience with one like it. When I had talked to Mike, he told me he didn't feel it was one of the external relockers, because when he installed the lock he had used Loctite on the screws holding the relocker plate to the lock. What I have found to be fairly consistent is that if an external relocker is fired, the handle will turn just a little farther past where it hits the lock bolt, and in this case, there wasn't any difference in handle movement. At this point, I concluded that the external relocker had not fired and that I needed to determine if the slide wasn't moving or if the

The author is shown applying tape to the handle to help determine how far it would rotate.

The author is shown packing steel stick in to the hole to help hold the ball bearings.

Marvin finished our hole into the lock case with a hole saw.

This photo is of Mike Knudson, owner of A-Best Security Lock & Safe.



This image shows the cam off of the motor shaft.

internal trigger had been fired. I don't have any idea if the handle would move any farther depending on which one of those pieces was blocking it.

Time to Amplify

I went back to the van to get my amplifier so I could listen to the lock. When I put the amplifier on the safe door and worked the lock, I got a buzzing/grinding sound — that's the best I can describe it. Then I got a new lock from the van and put the amplifier on it: the sound was a quick metal click. My decision was made — I would drill to rotate the cam so I could turn the handle, which would move the slide out of the way. (I found out the next week while going over the lock with Mike that the new lock in my van was not a 4200M, but a 4200. I made my decision based on the complete wrong lock. I have got to learn to be more observant. Thank the Lord for watching over me again.) I

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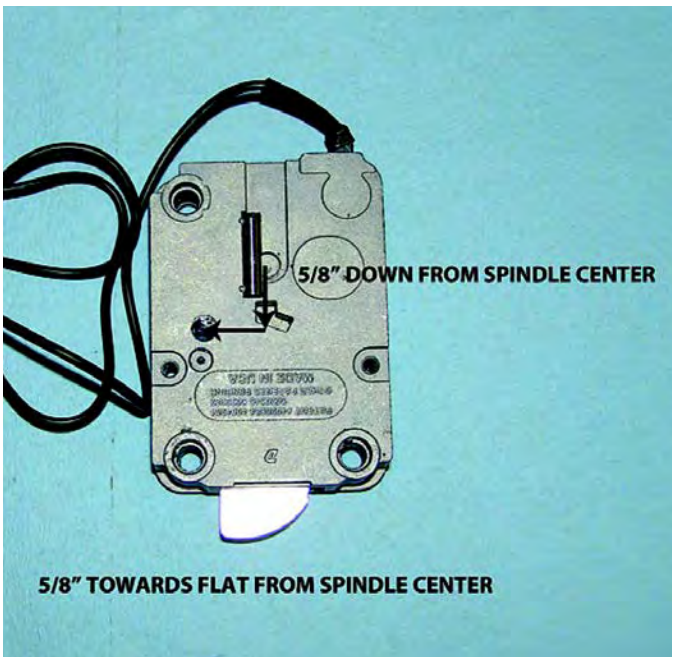
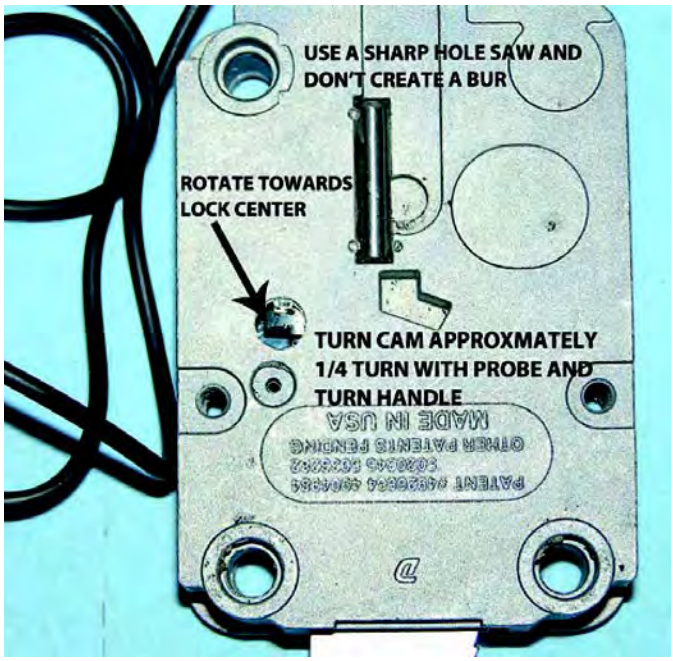
The author is measuring the face of the door to the center of the bolt.

The new lock was installed and the handle was straightened.



This image shows the sweet spot.



This cam needed to be rotated.

called Marvin at the shop and asked if he was interested in coming to the job site and helping on this one, since this was a lock that we had not had the opportunity to drill before. He said he was on his way.

I pulled the keypad off the door and started marking where I wanted to drill. For this lock, I marked 5/8-inch down from DC and 5/8-inch toward the flat of the lock bolt from DC. I normally have a template that I have pre-made to mount to the door, but I had not drilled one for this lock so I got out the adjustable template that I had purchased from Lockmasters. After mounting it to the door, I rotated it around so that one of the holes centered over my mark. I had the drill rig mounted and was just getting ready to drill when Marvin arrived.

Those Shifty Ball Bearings

This was an AMSEC AmVault with ball bearing hardplate. The distance from the face of the door to the lock is four inches, and drilling the first three inches goes quickly. That last inch takes up most of the time. The problem with drilling bearings is getting them to stay put. If they don't move, you can drill through them but even when you have drilled through them, if they turn they can lock up your bit. On the last AmVault Marvin and I drilled, we went through the four inches to the lock without hitting any bearings. That wasn't the case with this one; we ended up packing and drilling three or four times on this one.

We finally got through the four inches to the lock case, and because we didn't

want to create any more problems for ourselves, we switched to a hole saw to get as clean a hole as possible into the lock. This all went well, and when we looked in with the scope, we could see the cam, which we wanted to turn. We worked at turning the cam, but it didn't go as we had wished. We tried different probes and wire — but nothing was working. I took my long probe out to the van and ground a real sharp point on it. Once I got back with the sharp probe, it didn't take too long and the door was open.

We installed a new ESL10XL on the door, straightened the handle, put everything back together and tested it many times before saying it was done.

This all took place on a Friday evening. The next week I got with Mike and gave him the lock that we had taken out of the safe. Mike decided that rather than turning the lock back in for warranty, he would take it apart and find out what the problem was. Mike called me the next day and said he had found the problem, so I made arrangements to meet him at his shop and see what the problem was.

"I had been carrying this lock in the van all this time for an experience with one like it."

Mike showed me that the rotating cam had come loose from the motor shaft and had slid toward the lock bolt. This allowed the motor to spin freely. When he used his screwdriver to push the cam back toward the motor, the lock operated properly. I'm not sure what is supposed to hold the cam to the motor shaft, but it didn't work on this lock. Since the lock was mounted vertical down, no amount of vibration was going to make it go back toward the motor.

Doug Bellinger has been a building contractor, electrical contractor, and owned an RV service center for 34 years. He sold the business to his son, and after two days of retirement, decided that wasn't for him. In 2003 he attended classes at Lockmasters to learn about safes, and he was hooked. He was hired by SafeCo Security in Phoenix, AZ, in 2004.

TOUGH TO THE CORE

Tyler J. Thomas, CFDI, CIL, CRL, explains SFIC extraction techniques.

From time to time, any of us who work on small format interchangeable cores (SFIC) encounter situations where we need to remove the core from the housing. Maybe we need to decode the core's pins to produce a control key, or maybe there's a mortise cylinder with a core inside of it and you'd like to reuse the housing but no longer have its control key. Whatever the case, the core needs to be removed, and either the housing or core needs to be salvaged.

So, how do you do it? I'd like to think that we all have our preferred methods, but it never hurts to read about and learn how others do it. You might learn a new method, just as I did. With that said, let's go over a few simple, effective ways of extracting a small format interchangeable core, known hereafter simply as a core. Let's start by discussing methods that will preserve the core and allow it to be reused.

Picking

Picking to the control shear line is an option, but it does take a bit of practice and is greatly assisted with the right tools. It can be done with a standard tension wrench but there is, in my opinion, a lot of luck involved if you go that route. Peterson Manufacturing offers three tension wrenches — in different thicknesses for various keyways — that work by applying tension to the control lug via the ejector holes *(See Figure 1)*. Once the lock

Figure 1. Peterson Manufacturing offers three tension wrenches that work by applying tension to the control lug via the ejector holes.

Figure 2. Once the lock is picked you can then use the tension wrench itself to remove the core.

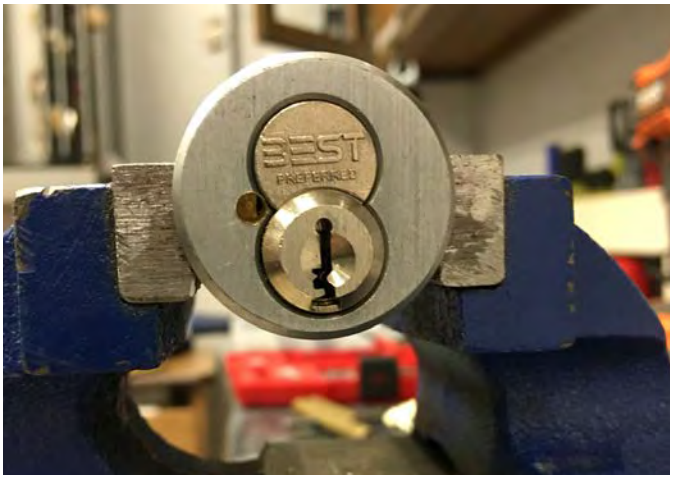


Figure 3. Here, the author is drilling a hole into the housing directly toward the control lug using a 9⁄64" bit.

Figure 4. After reaching the control lug, remove the cam from the housing, as shown here.

is picked *(Figure 2)*, you can then use the wrench itself to remove the core. These wrenches are also very helpful for core removal using other methods, such as drilling for the actual control shear line.

Drilling

There are a few ways to remove a core by drilling without damaging the core. First, you can drill to remove the portion of the housing that keeps the control lug within it. Your method may vary, but I do the following:

Drill a hole into the housing directly toward the control lug using a 9⁄64" bit *(Figure 3)*. Your drill point should be as close to the core as possible without touching it. I've done it enough to know I've reached the control lug by feel (it's a very, very slight bump), but you may choose to transfer the distance between the front of the housing and the front of the control lug to your drill bit. For STANLEY/BEST housings, that distance is ½". Drill as straight as possible to avoid drilling into the core.

After reaching the control lug, remove the cam from the housing *(Figure 4)*.

With the removal of the cam, you now have access to the backside of the core. Place a dowel, or similar object, into the hole and apply quick, hard hits to it until the core is out of the housing.

Figure 5 shows a core that has been removed with this method. There is a very slight marring to the front edge of the control lug. This is from forcing the core through the remaining brass holding the core inside. Regardless, it represents no loss of security or function to the core. Also, remember that there is a bit of "play" between the core and the

Figure 5. There is a very slight marring to the front edge of the control lug. This is from forcing the core through the remaining brass holding the core inside of the core.

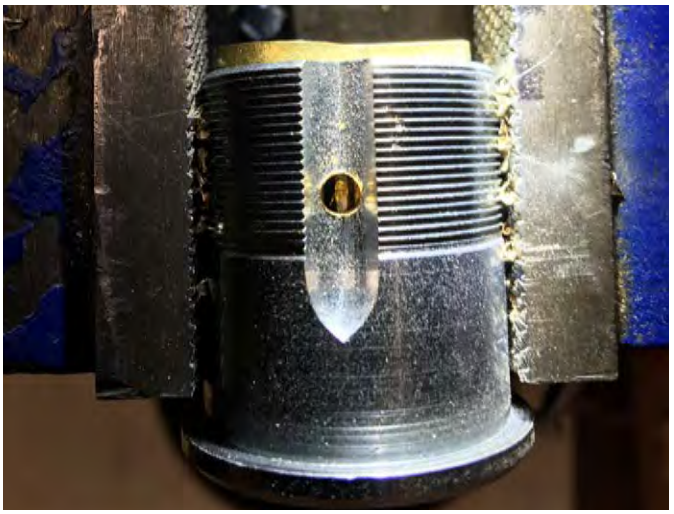


Figure 6. One method to remove a core without damaging it involves drilling a hole in the set screw channel closest to the control lug.

Figure 7. Once the hole in the set screw channel is created, you can then use a probe to apply pressure to the control lug and pick the core at the control shear line.

Figure 8. To drill the rear of the housing to shim the core, all that's needed is a ¼" hole placed directly above the hole used by the cam.

Figure 9

Figure 10

Figures 9-10. The drill point for the control shear line on BEST SFICs varies in relation to the BEST logo because the logo isn't the same or in the same spot on all of the brand's cores *(Figure 9).* What doesn't vary, however, is the distance between the control shear line and the operating key shear line *(Figure 10).*

housing. Before drilling, press the face of the core to ensure that it is seated as far back as possible. The amount of play is very small, but every bit helps to reduce the chances of hitting the control lug with your drill bit.

The second method is one that I learned from "The Core of the Matter" by A.J. Hoffman and Billy B. Edwards Jr. While this method can allow you to salvage both the core and the housing, I included it in the "preserving the core" section of this article because the housing is altered, albeit slightly, using this method. This method involves drilling a hole in the set screw channel closest to the control lug *(Figure 6)*. The authors did not specify a drill bit size, but I use a 7⁄64" drill bit. If you intend to reuse the housing, I would advise you to place your drill point where it won't be near the set screw itself. This is easy if the housing is in the lock because a quick visual can determine the best spot. If it's not in a lock and you don't know what hardware it will be used with, aim for the front of the core's lug. Remember, you can always pull the housing away from the lock using collars. This will mean that the set screw will rest further toward the back of the housing and you can reduce the chances the screw comes anywhere close to the new hole.

"Picking to the control shear line is an option, but it does take a bit of practice and is greatly assisted with the right tools."

Once this hole is created, you can then use a probe — which functions as a tension wrench — to apply pressure to the control lug *(Figure 7)* and pick the core at the control shear line. The great part about the design of an SFIC housing is that the center of the set screw channel is nearly perfectly center, vertically speaking, on the control lug. Avoid drilling any more than necessary.

You can also drill the rear of the housing to shim the core *(Figure 8)*. All that's needed is a ¼" hole placed directly above

Figure 11. It's possible to drill to shim the core from the front by removing the core's scalp.

Figure 12. For Kaba/BEST cores, the scalp is held on by two posts: one post to the left and one post to the right of the stack containing the Peaks pins.

the hole used by the cam. You'll need to remove the portion of the cam that covers this area or the cam altogether prior to drilling. And, as with the previous two methods, avoid drilling any more than necessary or you risk marring the core at the control shear line. This marring can make shimming next to impossible because the shim won't be able to enter the core.

Preserving the Housing

But what if the core's fate is not a factor and we need to preserve the housing? Fortunately, we have multiple options in this case as well. Picking, which we have previously seen, preserves both the housing and the core, so there's no need to cover it again.

Drilling

You can drill for the control shear line. I was once asked in an interview if I knew what the drill point was for the control shear line on BEST SFICs. I knew the an-

swer he was looking for (between the E and S on the BEST logo), but I also knew it was wrong because BEST's logo is not the same or in the same spot on all of its cores *(Figure 9)*. What hasn't changed, however, is the distance between the control shear line and the operating key shear line. Its distance is the same as the as the 10 top pin: 0.125, or ⅛" *(Figure 10)*.

To prevent drawing the ire of other locksmiths, I will say that any drill bit larger than ⅛" will handle this job. Some prefer larger (it's really up to you) but keep in mind the distance between the shear line when selecting a drill bit. You don't want to drill both shear lines at once. I use a 9⁄64" drill bit.

After drilling, it's important to clear loose pins and/or springs still obstructing the control shear line. I use a standard hook pick for this process. You don't want to remove everything from the core — just items that might obstruct the control shear line. Some locksmiths prefer to vacuum the pins and springs out. This makes sense; there's cleanup involved in this process, after all. Regardless, once the control shear line is free, insert a flat or standard screwdriver tip into the top of the keyway and turn clockwise to retract the control lug.

"Avoid drilling any more than necessary or you risk marring the core at the control shear line."

You can also drill to shim the core from the front *(Figure 11)* by removing the core's scalp. For BEST cores, the thickness of front is right around 3⁄32". A ¼" drill bit in the very center of the top circle hits the tab. For Kaba/BEST cores, the scalp is actually held on by two posts: one post to the left and one post to the right of the stack containing the Peaks pins *(Figure 12)*. The same drill point as above will work; you can use the Peaks chamber to pry the scalp away from each post.

Tyler J. Thomas, CFDI, CIL, CRL is a mobile locksmith in Atlanta, GA.

1 ONE-STEP SCHLAGE

Tom Gillespie CML, CIL, CCL, provides a blast from the past in explaining his one-step Schlage master key system and how it came about.

In 1978, I was a locksmith sitting in my shop in Newport Beach, CA, with a real problem. My biggest and best commercial customer wanted one single huge Schlage master key system for dozens of his office and retail buildings in Orange County.

Two of the most popular brands of lock hardware in use are Schlage and Kwikset. When a master key system is generated for each of these brands, there's one specific difference: The potential size of a system is much greater with Kwikset than Schlage. Ironically, Schlage is used more often in commercial environments than Kwikset but has a much smaller system size limitation. The reason is that Schlage uses a two-step progression system, and Kwikset is based on a one-step system. Standard Schlage pinning has always used the two-step system. If both brands have the same number of chambers (5-pin or 6-pin), the added expansion in a one-step system is amazing. Corbin/Russwin has used both one-step and two-step systems, and various other manufacturers have used them, but not Schlage.

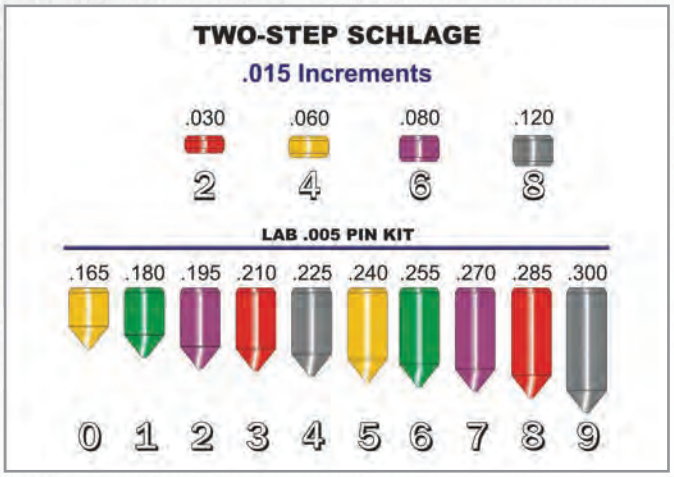
Because of the limitations of the Schlage two-step system design, a maximum number of 4,096 cuts could be written in a fully progressed 6-pin system. MACS rules would further reduce the field of available cuts. My customer needed almost 6,000 cuts. It simply couldn't be done.

If only there was a way to write a master key system for Schlage using the one-step method... there actually is, and it's nearly 40 years old.

In the late 1970s, I developed an easy way to do it. I'm probably not the only person to have ever developed this idea, but I may have been one of the first. There were two new products that had been introduced to our profession that made it possible: the LAB .003 universal pin system and the LA GARD code machine. To provide my customer with a greatly expanded system size, I decided to use these new products. This provided substantial additional expansion and solved my problem. I would follow some of the Schlage rules and simply bend the others, allowing a way to generate a master key system almost four times as large as the factory system allowed.

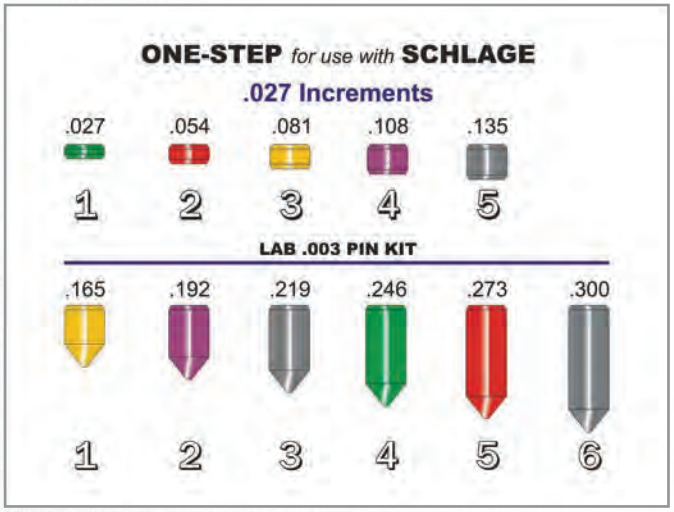
Around this time, I showed my one-step Schlage "invention" to an old friend whom many of you knew, Bill DeForrest Sr. A true locksmith's locksmith, Bill owned Major Lock Supply in Anaheim, CA, and was a favorite of any locksmith who ever met him. He was unbelievably knowledgeable and would share that knowledge with an industry veteran or a raw apprentice anywhere and any time he could. He was a tireless inventor of tools and products to benefit the locksmith and asked if he could "play with the idea." I told him to go ahead, not knowing what to expect. (More on that later)

Today, you can accomplish what you read here and put it into action using your computer to generate the cuts and keys or print out a code card, but back in 1977 it was all done by hand. This article will attempt to explain what was done and why and how you might be able to benefit from it. It also has the added benefit of confusing your competitors.



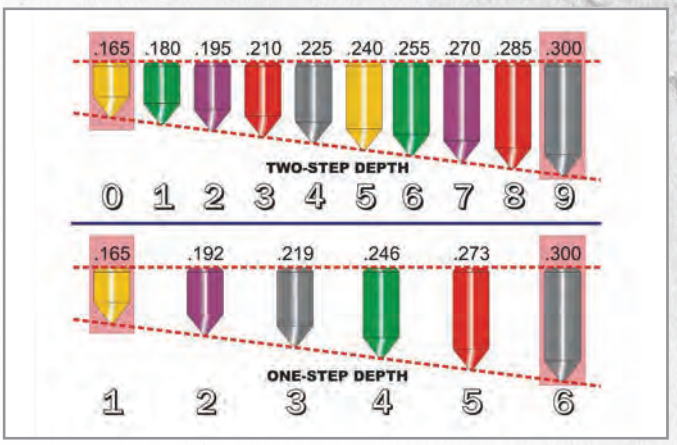
Two-Step Illustration

Figure 1. The Schlage two-step system has 10 cut depths. The variation between each depth (step) is .015. A #1 master pin of .015 is so thin it can't be used. It's prone to wearing quickly and jamming or bending in use, potentially rendering the lock inoperable. With a multiple of 15, the next choice is 30, so two "steps" equaling .030 between cuts is acceptable and is the Schlage factory recommended value. Therefore, in a MK system, only five of those 10 cut depths can be used in a given chamber. You either use all odd-numbered cuts or all even numbers in a chamber, so you never have a cut difference value of 1 requiring the use of a #1 master pin.



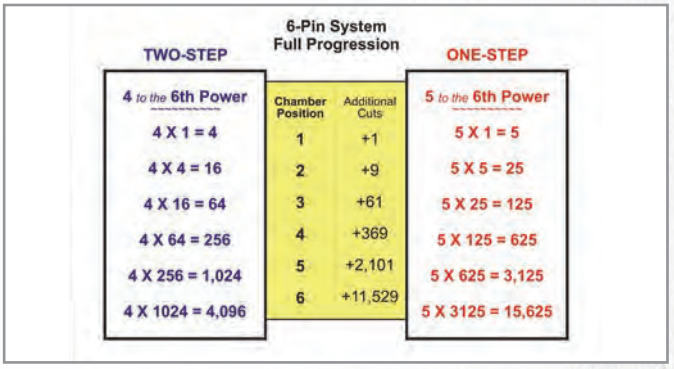
One-Step Illustration

Figure 2. The one-step system for Schlage has a total of six cut depths. In a MK system, all six of those depths can be used in a given chamber. Because the #1 master pin is thicker, it can be used. The variation between each depth is .027, nearly equal to the Schlage factory recommended value of .030 between two cuts. This cut difference value of 1 allows the use of odd- and even-numbered cuts in any chamber. The introduction of the Lab U-99 .003 kit allowed for an expanded yet even distribution of cuts. The difference between any two cuts is divisible by 27 or .027. This can't be accomplished with a .005 pin kit.



Pin Comparison Display

Figure 3. This comparison shows one important parameter. In both systems, the shallowest pin depth and the deepest pin depth match the Schlage factory specifications. A #0 in Schlage two-step is the same .165 pin used as a #1 in the one-step keying. Likewise, the #9 in Schlage two-step is the same .300 pin used as a #6 in the one-step keying. Using a blank key with the shallowest cut (0 or 1) and a .165 pin achieves the shear line. A cut key with the deepest cut (9 or 6) and a .300 pin also achieves the shear line. Because no rules have been violated (yet), the lock should work just fine. It's just sliced up into thicker slices in between those two factory cut values.



Exponential Comparison Chart

Figure 4. The additional cuts gained from a one-step master key system are evident in this chart. In a two-step system you have five out of 10 cuts available for your key bitting array (KBA). Of those five cuts, one is reserved for the master key cut, leaving four to progress in each chamber. In a 6-pin system, that progression of four in each chamber multiplies upon itself as an exponential number. Four in the first chamber (4X1, or 4 to the first power) gives four available cuts, multiplied by four in the second chamber (4X4, or 4 to the second power) boosts it to 16 available cuts and so on. Therefore four to the sixth power creates 4,096 mathematical cuts in a 6-pin two-step system. The yellow center field shows how many additional cuts are available at each stage. In a one-step system, you have all six cuts available for your KBA. Of those six cuts, one is reserved for the master key cut, leaving five to progress in each chamber. With one additional available number to progress, 5 to the 6th power creates 15,625 mathematical cuts in a 6-pin one-step system, almost four times as many.

THE SCHLAGE RULES: Follow or Bend?			
	Two Step	One Step	Results
Masterkeying Steps:	2	1	Bend
Shallowest Cut:	0	1	Bend
Deepest Cut:	9	6	Bend
Shoulder to First Cut:	.231	.231	Follow
Center-to-Center Cuts:	.150	.150	Follow
Number of Depths:	10	6	Bend
Cutter:	CW14MC	CW20FM	Bend
Degree Angle:	.100	.076	Bend
Flat:	.046	.0635	Bend
MACS:	7	5	Bend
*MACS Violation Cuts:	12%+	0%	Bend
Full System Progression Cuts:	4,096	15,625	Bend

Schlage "Rules" List

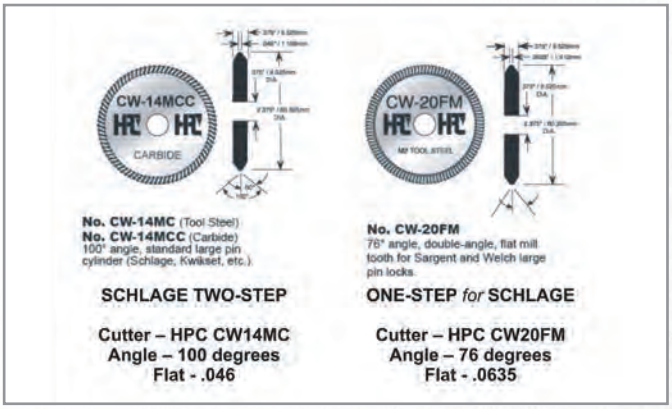
Figure 5. Whenever you start messing with the rules, you chance making a given situation worse. My venture actually made it better. This illustration shows 12 "rules" to be followed when designing or laying out a Schlage master key system. Of these 12 rules, two were followed and 10 were bent (broken). The first rule was bent by making the system one-step instead of two. The mathematical values of the shallowest and deepest cuts were followed, but the shallow 0 cut was called 1 and the deep cut was called 6 instead of 9. The spacing maintained factory specifications of .231 from the shoulder to the center of the first cut. Center-to-center alignment of each cut stayed at .150. Bending again, depth choices were dropped from 10 to 6. The recommended CW14MC cutter was ignored in favor of the CW20FM cutter used on Sargent keys. The factory degree angle was switched from 100 degrees to a more severe 76 degrees. The alternate cutter also increased the flat area of each cut. MACS violations can reduce the usable cut field by 12% or more in a system. Instead of a MACS of 7 out of 10, it dropped to 5 out of 6. This meant every mathematical combination would produce a working key.

"Common sense reminds us that just because a key can be generated, it doesn't mean it's a good key to put into use."

System Specifications & Variations		
	Two Step	One Step
System Depths:	10	6
Usable Cuts in KBA Column:	5	6
Progressed from MK:	4	5
Cuts in Each Block:	4	5
Cuts in Each Column:	16	25
Cuts on Each Page:	64	125
Pages in Small Page Group:	4	5
Cuts in Small Page Group:	256	625
Pages in Large Page Group:	16	25
Cuts in Large Page Group:	1,024	3,125
Pages in Fully Progressed System:	64	125
Cuts in Fully Progressed System:	4,096	15,625

Specifications and Variations

Figure 6. In a standard fully progressed two-step system, there are multiples of four. There are four cuts in a block, 16 cuts in a column and four columns on a page. Since 4x16 = 64, each basic page has 64 cuts. For simplicity, I've used the term "Small Page Group and Large Page Group" for the interim pages below a fully progressed system. With 64 cuts to a page, it multiplies again by four with four pages of 64 cuts in a small group (256) and 16 pages in a large group (1024). Multiplying by four once more produces four large groups of 16 pages to complete the 64 pages of 64 cuts in a fully progressed two-step system. One-step systems have five cuts in a block, 25 in a column, 125 on a page, five pages of 125, etc. Ultimately, 125 pages of 125 cuts each results in 15,625 cuts.



Cutters and Cuts

Figure 7. The effect the cutter design has is very important when cutting keys. With the alternate CW20FM cutter and the pin values assigned in this one-step system, no cut combination would violate the MACS. All 15,625 cuts could generate a working key. Common sense reminds us that just because a key can be generated, it doesn't mean it's a good key to put into use. In a fully progressed one-step Schlage system, keys such as 1-1-1-1-1-1 or 1-2-3-4-5-6 should be excluded. Although not technically a MACS violation, the number of undesirable key cuts would be substantially reduced when compared to a two-step setup.

What About the Keys?

Figure 8. Both keys in this photo were cut on the same older HPC 1200CM machine. The top key was cut 9-0-9-0-9-0 with the standard HPC CW14MC cutter. The "0" cuts in addition to coming to a sharp point have lost .030 of height. A "0" pin of .165 drops substantially below the shear line. To meet the shear line in that position, a #2 pin of .195 must be used, so this key is totally unusable. The lower key was cut to a 6-1-6-1-6-1 with the HPC CW20FM cutter. Although it's severe in appearance, it works smoothly and the flat area is valid. Put a CW20FM cutter on your 1200 machine, grab the Schlage card and cut a 9-0-9-0-9-0 like the one pictured, then set up a cylinder with .165 and .300 pins to match. You might be surprised at how smoothly it works.

LAB .003 Kit

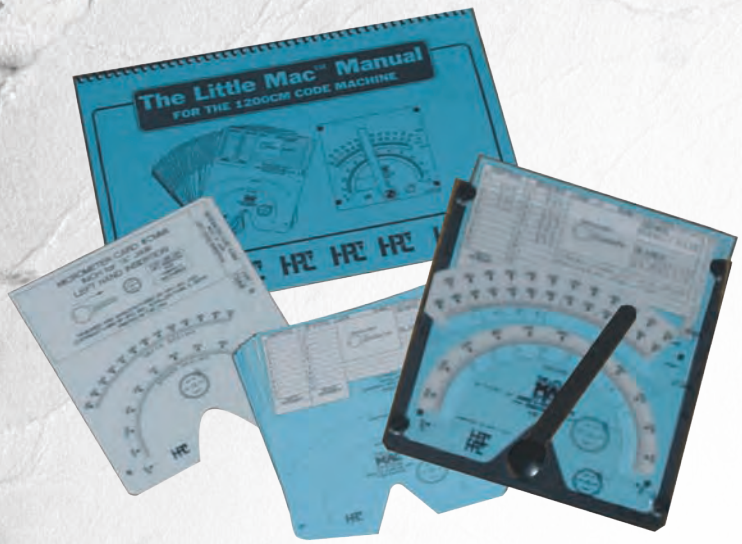
Figure 9. In 1974, Robert Labbe revolutionized the lock pin industry when he created the single-level .005 leak-proof universal pin kit. Many lock manufacturers other than Schlage use specifications for their locks that don't end in .005 increments. Then, in 1977 Labbe developed the revolutionary .003 Universal Pin System. The factory specs could now be met with a universal kit. Previously you either had to use individual factory pin kits or get "close enough" with a .005 kit. The new kit came complete with 99 pin sizes in .003 increments and made a locksmith's life easier. A label showing 24 lock manufacturers' pin length information charts was attached to the lid. While many locksmiths prefer dedicated pin kits for each manufacturer, the ability to meet them with a universal kit was also very attractive and economical. Shown here is a current LAB Classic Pro #LPK003 kit and a 36 year-old April 1980 Keynotes ad. The U-99 Mobile Pin Kit had an introductory price of only $75! I purchased one as soon as they were in stock at my supplier.

LA GARD 1200

Figure 10. Nick (Klaus) Gartner founded LA GARD Incorporated in Torrance, CA, in 1975. One of his first products changed key cutting in the locksmith industry forever. Long before he got into inventing electronic safe locks, Nick was the genius inventor behind the LA GARD code machine. Gartner's patent on this product was issued in 1978, but in 1977 I bought one of the first "patent pending" machines. It came with 76 blue code cards and a set of blank make-your-own cards. The original LA GARD machine shown on the left here was sold as the CODE-A-KEY LG-1200. On the right is a rarely seen KEY CODER Model 1200 version sold by hardware supplier W.H. Steele Company in Southern California. The WHS Key Coder is not only private-labeled, but it's also older than the LA GARD Code-A-Key pictured. The early machines were identifiable by the recessed disc label in the front of the housing. While both of these units have that label, the giveaway is the "square" motor used on the initial production of machines, which was accompanied by a rheostat/variable-speed switch. Of course, in our shop, everybody just cranked it up to full speed when cutting a key. Shortly thereafter, all machines came with a simple on/off toggle switch.

HPC1200CM

Figure 11. The machine gained popularity and HPC, one of the world's largest locksmith supply manufacturers, became involved. They sold the LA GARD machines under their private label as the HPC CODE-A-KEY – manufactured by LA GARD Inc. As LA GARD became focused on safe locks and the emerging ATM industry, the machine and tooling was sold to HPC. On the left is the cover plate on one of the earlier private-labeled HPC Code-A-Key units, and on the right is a current HPC 1200CMB Blitz with modified components to generate keys more quickly. Better known today simply as the 1200CM (in various configurations), it remains one of the most popular models in the history of key code machines. It has been so popular that competitor Ilco released a nearly identical Universal II code card key machine shown on the bottom left of the photo.



Blank Cards and Jig

Figure 12. Included in the supplied blue card deck of 76 lock manufacturers were white micrometer cards for space and depth alignment. The original LA GARD code machine came with a small aluminum fixture with a clear plastic face plate and 20 blank cards. This photo shows an HPC version called The Little Mac Kit. One of the micrometer cards — in either inches or millimeters — was inserted to gauge space and depth positions. A movable guide arm allowed the user to locate and transfer the information to make their own unique code cards from the blanks supplied. Custom cards could be produced for just about any lock for which you had the depth and space measurements. Once the math for the one-step Schlage system was determined, a code card was made for each one of our service trucks. Small plastic parts boxes were used to make a one-step Schlage pin kit for each truck that didn't have a LAB .003 full pin kit.

"Because of the limitations of the Schlage two-step system design, a maximum number of 4,096 cuts could be written in a fully progressed 6-pin system."

Major Lock LAB Kit

Figure 13. As I'd indicated earlier, while having lunch with Bill Deforrest Sr. one day in 1979, I demonstrated and explained my Schlage one-step system. He told me he was interested in developing this system as a useful product and selling it as a new tool for locksmiths. Bill Sr. made a few minor tweaks to differentiate his system from mine. He then had LAB make some small Major Lock Supply pin kits. He also had Continental Micro print special-pinning or "SP" code cards. He then sold them as a kit. After he passed away, Major Lock Supply closed its doors, and the one-step Schlage system was forgotten. My good friend Bill DeForrest Jr. carries on the locksmith tool-inventor tradition today with Major Manufacturing Inc. out of the same building. I contacted Bill Jr., who searched the dusty archives and leftover remnants of Major Lock Supply to find this last remaining original kit. He quickly agreed to loan it to me for this article.

Confusing Your Competition

The primary reason for implementing this idea was to greatly expand the size of a Schlage master key system for my biggest customer. A compatible master key system generating 15,625 potential keys without a MACS violation gives expansion beyond what most would ever need.

The added benefit was when we realized that by using something that most locksmiths have never encountered, no one knew the math we used. While many locksmiths worried about their competition decoding their master key system when working on a

customer's lock, we didn't. We began using this one-step for any Schlage we initiated. We used it for single keys or master key systems of any size for this reason.

When our competitors tried to read a key or measure a pin from our system, they were confused. Even a simple rekey would frustrate the locksmith trying to decide which pin to use to make our key work smoothly. A key with the shallowest or deepest cut (or the related pin) would read as a valid 0 or a 9. Other than those two cuts, nothing matched Schlage values. The poor guys measure our #3 cut as .219, but Schlage uses a .210 for a #3 or a .225 for a #4. Is it a deep 3 or a shallow 4? Maybe my gauge is worn? The next cut is our #5 and it's a .273. Gosh, a .273 must really be a Schlage #7 which is .270... right? I'd better check my micrometer.

So now you know the story of the 40 year-old one-step system for Schlage. If you never use it for a customer master key system, at least cut a few keys and give them to one of your techs or an apprentice to decode with a Schlage decoder plate (or a micrometer), and set up a cylinder. That's what I did, 'cause that's the kind of guy I am.

Did you ever do some trick with a lock or figure out a unique way to solve a security problem when others said it couldn't be done? Tell your colleagues your story using photos, graphs or illustrations and get paid for it. The pages of *Keynotes* and *Safe & Vault Technology* are the perfect place to share that information. To find out how, contact: wendya@madisonmilesmedia.com

Note: A special thanks to Randy Main of Main's Lock Supply, John Soderland CML, CMST, CJIL of Professional Safe & Lock Service Inc. and Terry Henderson of Al's Lock Shop for providing some of the 1200 key machine photos used in this article.

Tom Gillespie, CML, CIL, CCL, is a 46-year veteran of the security industry. Since 1969, he has worked in the retail, manufacturing and distribution segments of the industry. Tom has taught educational seminars for ALOA and dozens of locksmith associations throughout the U.S. and Canada and has authored numerous books, newsletters, articles and columns for a variety of security industry publications.

PIN EUPHORIA

William M Lynk, CML, CPS, ICML, M.Ed., provides a look at the dazzling array of pins and pin kits within the field.

Every locksmith undoubtedly owns a quantity of pin kits, all filled with sparkly, tiny pins that shimmer daintily under the luminescent shop lights, especially when spilled on the floor. And, these diminutive gems that perchance find their way into the "lock of the day" begin their harrowing journey as sentries of security — miniature bastions of safety that valiantly block or allow all kinds of goings-on throughout the world. It's to this ubiquitous but vital tumbler device that this article is dedicated.

The scope of our pin festivity will be limited to pins and pin kits used primarily for mechanical pin tumbler cylinders, excluding automotive and wafer. However, out of a respect for nostalgia, the often-forgotten Schlage wafer will be invited to the party.

Pin Diameter	Pin Manufacturer & Product	Pin Waist Size
.095"	Russwin, Old Small Pin; .397 diameter plug	petite
.101"	Yale Cabinet & Padlock; .400" diameter plug	extra small
.108"	Small Format IC; .435" diameter plug	small
.128"	Yale, Special	medium
.115"	Conventional Cylinders	large
.135"	Medeco Original, Sargent Degree	extra large
.156"	Mogul Cylinder; .875" diameter plug	XXL

Figure 1. Pins come in a wide variety of shapes and sizes, just like people.

Coming to Terms with the Terms

To get us fully into the spirit of this adventure, I have included seven related definitions for your review:

- **Pin** - v. to install pin tumblers into a cylinder and/or cylinder plug; see also "pin tumbler"
- **Pin Tumbler** - n. usually a cylindrical shaped tumbler, normally using bottom pins, master pins and top pins
- **Pin Fever** - n. the ecstatic feeling one acquires and generates when working with charming pin tumblers and their cozy pin kit homes
- **Tumbler** - n. a movable obstruction of varying size and configuration in a lock or cylinder which makes direct contact with the key or another tumbler and prevents an incorrect key or torque device from activating the lock or other mechanism
- **Pin Kit** - n. a type of keying kit for a pin tumbler mechanism
- **Chamfer** - n. a transitional edge between two vertices of an object. It can also be known as a bevel but connotes

more often cutting and more often 45°. It is a term commonly used in mechanical and manufacturing engineering

- **Bevel** - n. a slope from the horizontal or vertical in carpentry, stonework or engineering; a sloping surface or edge

Even though those definitions were somewhat refreshing (as a warm drink in the desert sun), they do tell us something. What, you ask? They tell us that we don't know what types of pins are out and about within the pin world. So, let's venture a foray down that special pin path and take a wistful look at some of the types of pins that exist amongst us.

Pinning Down Types

Pin types invited to the party (may be on the guest list but might not all attend) are: bottom pins, master pins, control/buildup pins, driver/top pins, spool pins, mushroom pins, serrated pins, angled and rotating pins, interlocking pins, square pins (yes, square pins), ball pins, magnetic pins and colored pins. We'll also take a look at the wide variety of interesting features that make up their moral fiber. These pins each have a character — a persona, if you will — that makes them unique and sometimes fascinating. Pin architecture can be an amazing study. From the relatively flat bottom and top of a Kwikset bottom pin to the unusually rounded, almost oval shape of a Sargent bottom pin, one never knows what one will find in this proverbial "box of chocolates."

Don't forget that these little guys have a wide variety of shapes and sizes just like people do. Some of your friends have slim waists, whereas others have large guts. That can be similar to a pin's diameter. Take for instance, this mixture of pin waist sizes in *Figure 1*.

Hopefully you'll measure only with an extremely accurate tape measure. And there are an almost infinite number of pin lengths. Whether you are 4'10" or 6'3", a pin's length depends on the applicable increment system from whence it came — similar to a person's ancestry.

But even more interesting are the subtle differences that make a pin what it is. Whether hair color, dimples, freckles or 11 fingers, whether you like someone because of an outgoing personality or in spite of it, pins will be pins. During our journey, we'll take a brief voyeuristic glimpse at nine pin types to investigate their characteristics and exactly what makes them tick.

- **Interlocking Pins**: clingy; pretentious; protective (Aquarius)
- **Angled and Rotating Pins**: exhibitionists; ostentatious; caring; these guys will dance at the drop if a hat! (Leo)
- **Spool Pins**: sedentary; staid; humorous (Capricorn)
- **Mushroom Pins**: introverted; unpredictable; fun-loving (Libra)
- **Serrated Pins**: intelligent; deceitful; hard-working (Scorpion)
- **Bottom Pins**: hyperactive; need for attention; resilient (Aries)
- **Wafer Pins:** (masters, build-up, drivers/top pins) steadfast; dull; workhorses (Taurus)
- **Square Pins**: old-fashioned; dependent; dim-witted (Pisces)
- **Ball Pins**: frenetic; tough; tireless (Gemini)

The Way They Were

Oftentimes, we're muddled down by the past. But, we should use the past to teach us what we need to do now — and perhaps in the future. Because pin kits were not once as "available" as they are now, locksmiths often saved pins for reuse. Not a great idea, especially with the deterioration of bottom pins through use. Also, if there was no pin kit, how would they be stored? In small jars – hundreds of them? Mixing and matching is OK for clothing, but not for lock pins.

Figures 2 and 3. Pictured in *Figures 2 and 3* (courtesy of John Hubel, CML) is the original Zipco .005" Universal colored pin

Figures 4 and 5. These photos show the Zipco SFIC (14" x 5.5" x 1.5"), circa 1960s.

Then there was the unsavory practice of filing down pins to fit the job. Ouch! With the abundance and availability of pin kits today, hopefully this practice will be outlawed and relegated to the days of long past.

Pin kits, as a sort of collective for like-minded pins, did not always exist. They are still not as common in Europe as they are in the United States. Let's add some color to our journey, and that will happen courtesy of Bill Zipf.

Zip-A-Dee-Doo-Dah — The Zipf Colored Pin Kit and Key Decoder Dial

Unbeknownst to many, Master Lock Company first created the color-coded pin tumbler, and Bill Zipf (Zipf Lock Company, Columbus, OH) initially licensed them from Master Lock, according to locksmithing expert Jerome V. Andrews, CML. Incidentally, colored pins are now manufactured by LAB Pins and others. Jerry Roraback, executive vice president of LAB, recently reminisced about the brilliance of the color finish on the Zipco pins. He said, "*The original Zipco colored pins had a vividness in color and sheen that is unmatched at present, even by us. Bill Zipf Sr. had created his own special paint that is still a secret to this day. Even though the chemical components may not meet today's EPA and OSHA standards, back in the 1950s and '60s, they still shimmered like gems!*"

Pictured in *Figures 2 and 3* (courtesy of John Hubel, CML) is the original Zipco .005" Universal colored pin. Notice it is formatted in two drawers. *Figures 4 and 5* show the Zipco SFIC (14" x 5.5" x 1.5"), circa 1960s. They are truly collector's items.

The vintage dial pictured in *Figure 6*, an oldie but goodie, was also manufactured by Zipf Lock Company to measure key depths, but it also worked well for deciphering pin depths. As you can see from the picture a tumbler pin (red .187" wafer pin in this example) can be placed between the upper bars and the dial and it will indicate its depth by marked increments of .005". At the bottom of the dial, the extended pin can be pushed upward until it meets flush with the root of the key cut. Two rings of increments can denote the key cut depth or the pin depth. There is also a turn button that will allow for calibration adjustments. It is held by a sturdy iron base and the dial can also swivel to any desired angle.

Let's go back even further to the Egyptian era when it appears that locks and pins may have first been invented.

> "THE REMAINS OF PERHAPS THE FIRST LOCKING DEVICE WERE FOUND IN THE RUINS OF A PALACE IN EGYPT DATED ABOUT 4,000 YEARS AGO."

Historical Perspective

As amazing as it may sound, the remains of perhaps the first locking device were found in the ruins of a palace in Egypt dated about 4,000 years ago. This type of lock is classified as a pin tumbler lock. It had floating wooden top pins and was operated by a large paddle-shaped key with wooden prongs extended. Fast forward to the 19th century, and it was Linus Yale Jr. who gave us what we know today as the modern pin tumbler mortise cylinder, highlighted in his patent of 1865.

We must thank our lucky pin tumbler stars that in 1956 Bob Labbe, a 24-year old toolmaker in Hartford, CT, had a vision. Bob decided to plan and construct a high-speed screw machine *(Figure 7)* that he dreamed could produce pin tumblers 20 times faster than current machines of that era. Even though people told him it couldn't be done, he did it. Within one year, it was a reality, and thus the birth of LAB, today the largest manufacturer of quality pin tumblers in the world.

In the 1970s, Bob Labbe revolutionized the pin kit design by introducing the "leak-proof" pin kit *(Figure 8)*. It could be turned over or dropped on the floor (closed of course), and the pins would still remain in their individual compartments. Soon to follow in 1977 was the .003" Universal Pin System, still popular and in wide use today. Because of constant machine upgrades, these pins were the smoothest-operating and the most accurate universal pins being manufactured.

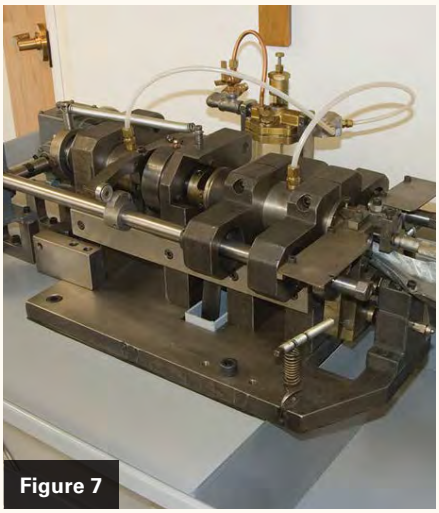
LAB's corporate headquarters *(Figure 9)* were moved to Bristol, CT, in 1994 and their manufacturing facility resides there to this day, offering the highest-quality pin tumblers to locksmiths and the major lock manufactures throughout the world.

With the long-time help of Executive Vice President Jerry Roraback — and because of his true dedication to the profession with his vast technical and marketing expertise — LAB has become the hands-down favorite pin and pin kit source for locksmiths and lock manufacturers nationwide. Bob, Jerry and the LAB staff have all helped this pin manufacturing giant become and remain the gold standard for the entire industry, both here and abroad.

Corbin Russwin

One of the leading lock manufactures, Corbin Russwin, has a history steeped in

Figure 6. This vintage dial was manufactured by Zipf Lock Company to measure key depths, but it also worked well for deciphering pin depths.



Figures 7 and 8. In 1956, Bob Labbe founded LAB, now the largest manufacturer of quality pin tumblers in the world. *Figure 7* shows his first high-speed screw machine that could very quickly produce pin tumblers, and *Figure 8* shows the first prototype Lab pin kit.

Figure 9. LAB's corporate headquarters were moved to Bristol, CT, in 1994.

Figure 10 shows the Corbin Russwin System 70 Pinning Kit, and **Figure 11** is the Instructional Kit for Corbin Russwin LFICs.

prestige. It all started in New England in the 19th century. We begin here because their pins and pin kits became a major issue in the 20th century.

Corby and Rusty

Just like two old college friends meeting up in a bar to reminisce about their business successes and then deciding to join forces, so too did Corbin Lock Company (since 1852) and Russwin Lock (since 1886) merge their expertise in May 1993. Though they did not jot down their agreement on a cocktail napkin, their heartfelt consolidation shaped both a necessary simplicity with a technical confusion that still affects locksmiths to this day.

The Consolidation

The consolidation of Corbin and Russwin in 1993 was crucial because there was conflicting nomenclature from the two manufacturers with numerous key classes, depth systems, blade widths, keyways and plug diameters to contend with. After all of this was carefully reviewed and analyzed, pin consolidation became the answer to help sort out the confusion.

With a difference of 1/1000" from pin to pin, it would be economically unfeasible to create a pin kit with every pin necessary to combinate all of the existing Corbin and Russwin locks to exact specifications. So, a compromise was made. Let's say, for example, if a .160" pin was required for a job, a .161" for a second and perhaps a .162" for a third, the .161" as the average would be produced and used for all three jobs, thus eliminating the other two. This still left the tolerance well within range and eliminated several pins from the manufacturing list. However, nothing changed regarding the .509" and .552" plugs or the architecture of the keys themselves — only a pin quantity reduction.

Corbin Russwin Pin Kits

Current	
PK-70-HS	DH and Z; System 70; .552" plugs; all HS cylinders; Brink, blockout, IC
PK-70-N	N; System 70; .509" and .552" plugs
PK-70-X	X; System 70; .509" and .552" plugs
PK-70-ZDH	DH and Z; System 70; .509" and .552" plugs
PK-1070	Deluxe kit for all non-HS cylinders
LRCK6	LAB Full Kit; Standard, IC and Master Ring (similar to PK-1070)
LIKCR	LAB DH and Z; System 70; .509" and .552" plugs; .028" increment
LMDCR	LAB Mini DUR-X; DH and Z; .509" plugs; System 70; LFIC
PK-20-HS	Pyramid High Security Pin Kit - Standard and IC High Security Cylinders
PK-20-PS	Pyramid Security Pin Kit - Standard and IC Cylinders
PK-30-AP	Access 3 AP Fixed and LFIC Cylinders Pin Kit
PK-30-Master	Access 3 AP, AS and AHS Fixed and LFIC Cylinders Master Pin Kit

Obsolete	
03-1/2	1967-75; MPs, BUPs and TPs only
53	1967-75; BPs and MPs
53-MR	1967-75; MPs, BUPs and TPs only
A	1955-66; Master, regular and ball bearing BPs
B	1955-66; Ball bearing BPs only
C	1967-75; BPs and MPs; wrong N class BPs
C-1	1976-91; No BUPs longer than +2
C-2	1976-91; IC and MR (except X Class .509" plug)
C-3	1976-91; MR; Missing 7 sizes
C-4	1976-91; Complete set MPs and BUPs only; no BPs
C-6	1986-92; Deluxe kit for all Corbin; chart shows wrong X Pre-70 .552" BUP
C-10	1976-91; No IC or MR; includes spare cylinder parts
E-8	1971-75; For IC N Class, but all BPs are too short
E-10	1971-75; Includes spare cylinder parts; wrong N Class BPs
F-8	1971-75; For IC, but has no BUPs longer than +2
K-1	1955-66; BPs and springs only
K-4	1957-66; Corbin small pin residential knob locks
K-51	1961-66; BPs and springs only
L-2	1976-85; IC and MR, except X Class .509" plug
L-3	1976-85; MR; missing 7 sizes
L-4	1976-85; Complete set of MPs and BUPs only; no BPs
L-5	1976-85; For CCL small pin cabinet locks
MK-2	1955-66; BPs, MPs and ball bearing BPs
MK-52	1961-66; BPs, MPs and ball bearing BPs
MR-D	1967-75; MPs, BUPs and TPs only
P-82	1971-75; For IC; missing BUPs beyond +1
P-85	1971-75; For IC; missing BUPs beyond +1
R-1	1971-75; For IC; missing BUPs beyond +2; wrong N Class BPs
R-2	1971-75; For IC and MR; missing +4 BUP for .509" plug
R-3	1976-91; For MR; missing #5 MP and #5 BUP
R-6	1986-93; Deluxe Russwin Kit; wrong N Class BPs until late 1992
UB	1956-66; Russwin small pin residential knob locks
W70-8	1979-92; HS, including IC; wrong BUPs until mid 1990
W70-A	1976-91; HS only; no conventional pins for IC, blockout or Brink

Figure 12. These charts shows all of the current and obsolete kits from Corbin Russwin.

"THESE PINS EACH HAVE A CHARACTER — A PERSONA, IF YOU WILL — THAT MAKES THEM UNIQUE AND SOMETIMES FASCINATING."

Figure 13. LAB's LCRK6 pin kit can be used for all bitting classes, depth systems and both plug diameters.

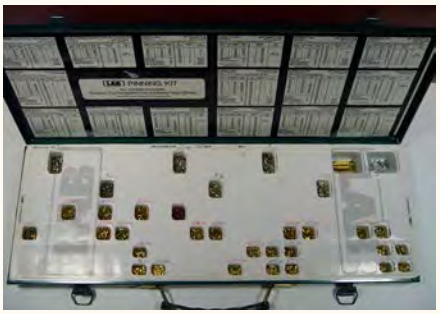


Figure 14. At one time, LAB provided a perforated insert that allowed the locksmith to punch out only those compartments needed for a particular job. It has been discontinued.

Pin Kits Galore

Even with more than 30 separate dedicated pin kits produced by both Corbin and Russwin from the 1950s to1993, they still did not contain every pin that might be needed for exact cylinder combinations. To add insult to injury, some of the N Class kits contained the wrong bottom pins. Kits designed specifically for interchangeable cores and master rings omitted some of the build-up pins. Because of these particulars and the fact that most of these now-obsolete kits were designed to accommodate only one key class, one depth system and one plug diameter, pinning cylinders outside of this limited range was often unsuccessful. Even though these vintage kits are often sought after by the lock collector, and many locksmiths still choose to use them, they come with the previously stated caveats. *Figure 12* shows all of the current and obsolete kits from Corbin Russwin.

Corbin Russwin PK-1070

The final result was the creation of the large Corbin Russwin PK-1070 kit, which can be used for all bitting classes, depth systems and both plug diameters. LAB has produced this pin kit LCRK6 (metal box, 21.63" x 7.88" x 1.63"), shown in *Figure 13.* Because the Corbin Russwin Z and DH Class, System 70 is the most-used, LAB crafted both the LIKCR for this key class and depth system for both diameter plugs, as well as the LMDCR (metal, 11.13" x 8.25" x 3.25"/2"), which is used mainly in teaching environments and is limited to the .509" diameter plug, used with LFICs.

One of the nice features provided by LAB was the perforated insert *(Figure 14).* It allowed the locksmith to punch out only those compartments needed for a particular job, reducing distraction and the possibility of using an incorrect pin. It supported speed and accuracy. Too bad it was discontinued.

Corbin Russwin now offers not only the three PK-70 kits for standard and high security cylinders, but also for the Pyramid line and for the new Access[3] products.

Corbin 53MR (Obsolete)

Still popular today is the Corbin 53MR pin kit (8.75" x 7.25" x 1"), used for servicing Corbin master ring cylinders *(Figures 15-16).* It was manufactured from the late 1960s to 1975 and contained master, build-up and top pins only (no bottom pins). It was used with X and Z bitting classes (Pre-System 70) and only for the .552" diameter plug. Master pins were used only in the master ring — never in the plug unless cross keying was necessary.

Corbin 53 (Obsolete)

The Corbin 53 pin kit (8.75" x 7.25" x 1") was the answer to bottom pins needed (with master pins) for the Corbin master ring cylinders, as well as some conventional cylinders *(Figures 17-18).* It

Figure 15

Figure 16

Figures 15-16. The Corbin 53MR pin kit is still popular today.

Figure 17

Figure 18

Figures 17-18. The Corbin 53 pin kit was the answer to bottom pins needed (with master pins) for the Corbin master ring cylinders, as well as some conventional cylinders.

Figure 19


Figure 20

Figures 19-20. Although it was plagued with errors, this Russwin pin kit designed and manufactured from 1971-1975 has an attractive case.

covered the X and Z classes (pre-System 70), more specifically X plugs with a .509" diameter and Z plugs with a .552" diameter.

Russwin R-1 (Obsolete)

Plagued with errors, this Russwin pin kit (12.5" x 8" x 1") was originally designed and manufactured from 1971-1975. It allegedly serviced the N, D, H and 981 keyways, Pre-System 70 for the .509" diameter plug. Unfortunately, it did not include build-up pins beyond +2 and had the wrong N Class bottom pins. The case, however, is quite attractive *(Figures 19-20).*

Emhart High Security

Emhart purchased both Corbin and Russwin lock companies in 1964, but they both continued operations as separate entities. In 1989, Emhart sold them to the Black & Decker Corporation. It was in 1978 that Emhart patented their famous interlocking pins *(Figure 21).* The Corbin Russwin High Security cylinders (and IC) operated using these pins.

The Emhart Pin Kit (PK-70-HS, 14" x 8" x 2") provides all of these high security pins *(Figures 22-23).* At this time, there is no aftermarket kit of this type.

When combinating, these pins are assembled as a unit then dropped (carefully) into the chambers. They offer excellent pick resistance.

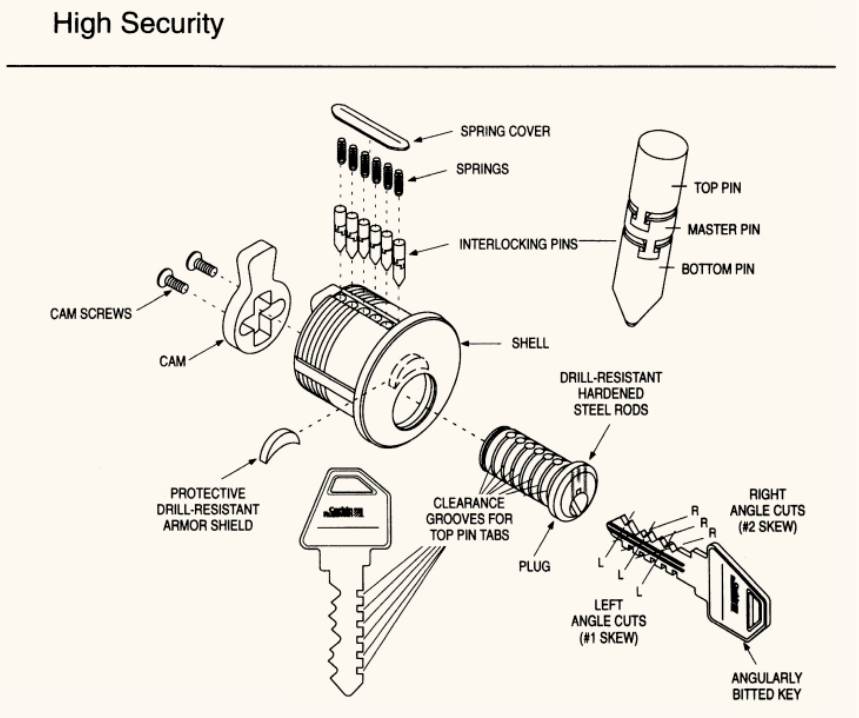


Figure 21. In 1978, Emhart patented their famous interlocking pins.

Figure 22


Figure 23

Figures 22-23. The Emhart Pin Kit provides an assortment of high security pins.

Medeco

Of all of the lock manufacturers, none exemplifies the "breaking of paradigms" quite like Medeco. Let's see why this invention of Roy Spain still turns heads (and pins) today.

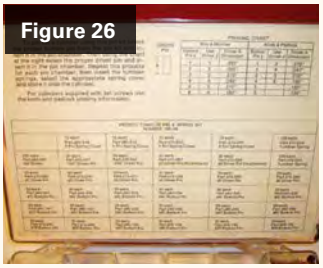
Medeco Twists and Turns

Now here are pins that like to dance! The concept of angled cuts that could be elevated and rotated — working in conjunction with a sidebar — was finally born. In 1968, Medeco was formed as a derivation from the first two letters of

Figure 24: Medeco Pin Kits

Part No. (new):	Part No. (old):	Description/Contents
K-1001	166-36	10-50 Series Locks: original product (mini version of K-1002); full step; L-R-C BPs, drivers (straight/mushroom), springs, covers, set screws
K-1002	K-1	10-50 Series Locks: full step pins; L-R-C BPs, drivers (straight/mushroom), springs, covers, set screws; 3x more pins than K-1001
K-1003	P-155	Full Step; master key discs (5); original door hardware pins, plastic box, 100 ea. of master pins #1 - #5 only
K-1004	K-10	10-50 Series locks: half step pins and master wafers; L-R-C BPs, drivers (straight/mushroom), master wafers, springs, spring covers, set screws
K-1005	----------	Original door hardware pins, small metal box, 10 ea. of bottom, master and top pins
K-1006	----------	Original door hardware pins, half step, large metal box, 100 ea. of bottom, master and top pins
K-1099	P-818	10 and 20 Series locks: tailpieces, cams, screws
K-4001	----------	Medeco KM and X4 Pin Kit for SFIC; large wood kit, 100 ea. of bottom and master/top pins. Springs, caps, spring covers, set screws, pinning fixture, capping punch, pin ejector and key gauge included
K-4002	----------	Medeco KM and X4 mini pin kit for SFIC; small metal pin kit, 30 ea. bottom pins, 60 ea. master/top pins. Spring, caps and spring covers included
K-4006	----------	X4 pin kit for conventional cylinders (.511 plug), bottom pins for .511 plug only, not SFIC. Springs, caps, spring covers, set screws, pinning fixture, capping punch, pin ejector and key gauge also included
K-5002	----------	Biaxial pin kit; two boxes; 10-50 Series locks; BPs (6 depths, 6 orientations B, K, D, M, Q, S), master wafers, drivers, springs, set screws and spring covers
K-5005	----------	Biaxial 10 through 50 Series broached and milled pin combination (door hardware), large metal box, 30 ea. of bottom, master and top pins
K-5006	----------	Biaxial 10 through 50 Series (door hardware), large metal box, 100 ea. of bottom, master and top pins
K-5007	----------	Biaxial 10 through 50 Series (door hardware), small metal box, 10 ea. of bottom, master and top pins
K-5011	----------	Biaxial pin kit with 30 ea. 53 Series (broached) pins for Biaxial cylinders with sidebars manufactured prior to 2/2003
K-5012	----------	Biaxial pin kit with 100 ea. 53 Series (broached) pins for Biaxial cylinders with sidebars manufactured prior to 2/2003
K-5010	----------	Biaxial pin kit for 32 Series LFIC cylinders. 4, 5, and 6 pins only with 50 each 53 Series pins
K-6001	K-5	60 Series locks: original cam and switch type pins; full step; R-L-C, springs, covers; plastic box, 100 ea. of bottom pins (top pins not used)
K-6002	K-6	60 Series locks: original cam and switch style pins; full step pins for master keying; 21 combination pins, springs, spring covers; plastic box, 100 ea. of master pins (top pins not used)
K-6003	K-9	60 Series locks: half step pins; 15 pins for R-L-C; springs and cover
K-6004	K-7	60 Series locks: half step pins; 21 pins for R-L-C; springs and cover
K-6005	K-8	60 Series locks: half step pins for master keying; 53 combination pins
K-6099	K-60-XX8	Cam lock assortment: 5 sub-assembled cam locks, washers, nuts, tailcams
K-7501	K-71	Full step pins for padlocks: R-L-C pins, retainer balls, covers, screws, locking balls, shackle and actuator springs, caps
K-7502	K-72	Half step pins for padlocks: R-L-C pins, retainer balls, covers, screws, locking balls, shackle and actuator springs, caps
K-7503	K-73	Full step master pins for padlocks: 45 combination pins, springs, spring covers
K-9001	----------	Biaxial 60 Series (cam and switch locks), 100 ea. of bottom pins (top pins not used)
K-9003	----------	Biaxial 60 Series (cam and switch locks), small metal box, 10 ea. of bottom pins (top pins not used)
KJ-1501	----------	BiLevel pin kit (100 ea. BiLevel top and bottom pins)
KW-5401	----------	Biaxial/Medeco3 pin kit for Medeco3 Logic
KW-9003	----------	Biaxial cam, switch and 55 Series padlock pins; 22 combination pins; springs and spring covers

Figure 24. Medeco has produced more than 30 pin kits for a multitude of products.



Figures 25-26. The Medeco Original kit 166-36 contained bottom pins in three angles, accommodating six depths and 18 different bottom pins.

Figure 27. The Medeco Biaxial Kit K-5002 is separated into two black plastic containers

Figures 28-29. The first kit contains 36 compartments only for the six bottom pin orientations at the six increment depths *(Figure 28)*. The second holds the drivers, masters, springs and spring covers *(Figure 29)*.

the new corporation name: **M**echanical **D**evelopment **Co**mpany. Originally, there were only three angles (**L**eft-**C**enter-**R**ight), but that changed with the delivery of Biaxial. Then each original angle had borne a brother and sister angle: **K**-(L)-**M**, **B**-(C)-**D**, Q-(R)-**S**.

As can be likened to Athena being born out of Zeus's head in ancient Greek mythology, so too, from the genius minds at Medeco sprang out more than 30 pin kits for a multitude of products, as can be seen in *Figure 24.* Original and Biaxial pin kits can be used to service most Medeco products. However, with the advent of KeyMark, the SFIC kit was also introduced. A few of these kits are highlighted below.

Medeco Original Product Kit K-1001

This Original kit 166-36 (10" x 7" x 1.75") was offered in a clear plastic container *(Figures 25-26)*. It contained bottom pins in three angles, accommodating six depths and 18 different bottom pins. Six top pins were used, calculated by matching the total of pins in the plug (bottom plus master, if any).

Figure 30. These special pins are used for 60 Series locks, which are considered cam and switch type pins.

Figure 31

Figure 32

Figures 31-32. This petite kit contains Original Product for first generation door hardware.

Figure 33. This kit is special in that it only uses a special bottom pin, similar to that found in the K-6001 kit.

Kaba ILCO Pin Kits

Part No.	Description/Contents
4700-00-5318	Gemini Regular pin kit (non-patented cylinders)
4730-30-5318	Gemini Gold Seal pin kit (patented and non-patented)
4700-00-5324	Gemini key-in-knob/lever parts
4701-00-5324	Gemini mortise and rim parts kit
3650-00-0000	Kaba 8 and Kaba 14 pin kit (BPs, edge and top pins, master pins, springs, covers, tailpieces, screws and spacers)
7200-00-5012	L10 pin kit (all parts in plastic case including conventional pins, disks and springs)
5400-00-5426	Global Peaks Deluxe parts kit
5400-00-5425	Global Peaks parts kit
3400-00-5012	Peaks Universal A2 System pin kit
3400-00-5004	Peaks Universal A4 System pin kit
6440-00-5002	Peaks-Schlage A2 System pin kit
LMDLWD	Lockwood: LAB Mini DUR-X pin kit (11 BPs, 4 TPs, 8 MPs, springs)

Figure 34. Kaba ILCO makes a variety of pin kits.

Medeco Biaxial Kit K-5002

This kit (10" x 7" x 2", plastic) is actually separated into two black plastic containers *(Figure 27)*. The first contains 36 compartments only for the six bottom pin orientations at the six increment depths *(Figure 28)*. The second holds the drivers, masters, springs and spring covers *(Figure 29)*.

Medeco K-6001

These special pins are used for 60 Series locks, which are considered cam and switch type pins *(Figure 30)*. They are full step and have orientations of right, center and left (Original Product), and are arranged in a plastic box of 100 each (8.25" x 4.25" x 1.5"). There are no separate top pins used, as this type of lock works in similar fashion to that of Bi-Lock. The sidebar is activated when the proper key lifts the pins to the correct height, allowing the sidebar to shift and the plug to turn.

Medeco K-1005

This ravishingly beautiful petite kit (8.5" x 6" x 0.75") contains Original Product for first generation door hardware *(Figures 31-32)*. It is filled with bottom pins (L-C-R), top pins, master wafers, springs, spring covers, sidebars, sidebar springs, mushroom top pins and set screws. The increment is .030".

Medeco Biaxial KW-9003

Here we have a meager assortment of pins for cam, switch and 55 Series padlocks. The kit (8.5" x 6" x 0.75") only houses depths #4, #5, #6 and #7 (yes, a special depth) in the six bottom pin orientations, and depth #4 in only four orientations *(Figure 33)*. It also contains two sizes of springs and two types of 5-pin spring covers. In addition, the kit only uses a special bottom pin, similar to that found in the K-6001 kit. Quite special.

Figure 35. Kaba Gemini is a dimple-based lock and key system.

Kaba ILCO

The Kaba story does not begin in Connecticut, nor does it start in New England. We must travel overseas to Switzerland and go back to the year 1862 when a locksmith shop and cash register factory was established on a street in Zurich. The owner and creator was named Franz Bauer (1839-1908) and would be the "key" factor in a company that is now world-renown and a major player in the field of high security locking devices. Franz developed his skill in safe building and called his company Kassa Bauer — or, translated into English, Bauer Safe. Today, the name Kaba is a contraction of this legendary beginning: **Ka**ssa **Ba**uer. Their locks — and more apropos, their pins and kits — still remain legendary.

Who's a Gemini?

Kaba Gemini is a dimple-based lock and key system *(Figure 35).* It was intended to be field serviceable and leans toward high security applications. One must comprehend positional master keying to effectively create, maintain and expand its systems. Pins are systematically placed in some chambers and not in others. Dimples are placed on both sides of the key and MOCS (maximum opposing cut specification) must be considered.

L10, Anyone?

Kaba (when in Southington, CT) created a keying system known as L10. Its spacing was .156" and could incorporate all

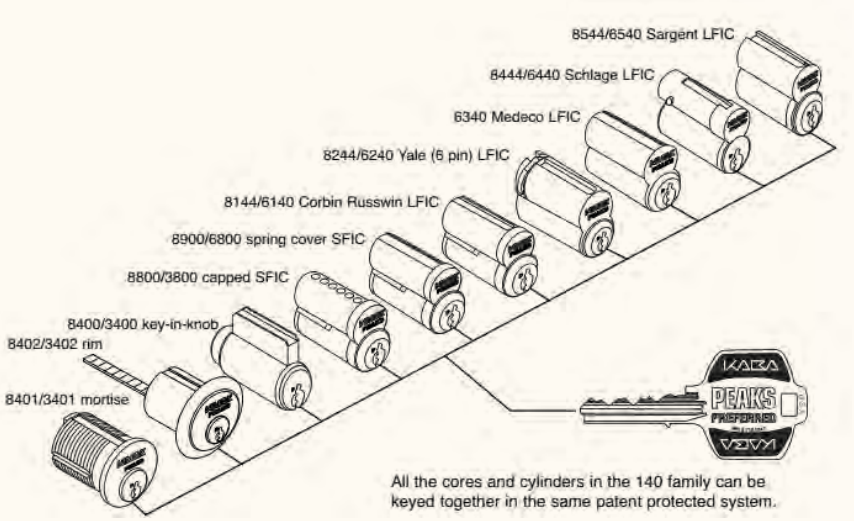
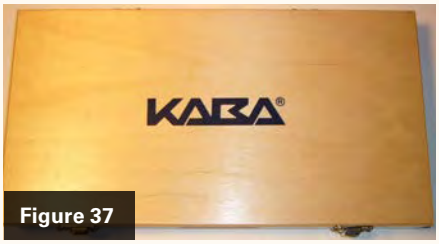


Figure 36. The Kaba Peaks 140 Family of Cylinders can all be operated by the same key.



Figures 37-38. The Kaba Peaks Pin Kit has five basic sections*:* 1.) Master and top pins (top center, blue border), 2.) bottom pins for the .432" diameter plug (bottom right, red border), 3.) Bottom Pins for the .494" diameter plug (bottom left, yellow border), 4.) Misc. .432" diameter plug items (top right) and 5.) Misc. .494" diameter plug items (top left).

cylinders, including SFIC, into a single master keyed system — the predecessor to Kaba Peaks. It was on June 8, 1990 that the patent was filed for Kaba Peaks. On February 15, 2001, the one millionth Peaks cylinder was manufactured.

Reaching for the Peak

Classic Peaks was the initial product launch by Kaba *(Figure 36).* It contained a patented smaller pin stack located behind the scalp of the core that was operated by the patented key. It was the key that contained two small "peaks" near the bow that interacted with the special pin stack, allowing the plug to turn if the remainder of the key combination was correct. Subsequently, the Peaks Global line was introduced, which incorporated nodes on the key that matched the placement of small disks inside the lock. The Global line was superseded by Peaks Preferred, a redevelopment of the patented bottom pin and matching key peak that extended its patent into 2028.

Peaks Pin Kit Organization

The Kaba Peaks Pin Kit #3400-00-5012 (15" x 8" x 2") is organized into 51 compartments composed of five basic sections *(Figures 37-38):*

1. Master and top pins (top center, blue border)
2. Bottom pins for the .432" diameter plug (bottom right, red border)
3. Bottom Pins for the .494" diameter plug (bottom left, yellow border)
4. Misc. .432" diameter plug items (top right)
5. Misc. .494" diameter plug items (top left)

Figure 39 shows an image of the kit layout.

Lockwood Lives

Even though many locksmiths think Lockwood, once owned by ILCO, is an obsolete keying system and only existing systems are serviced or replaced, it's alive and well in Australia! For those requiring the most common Lockwood key class here at home, LAB manufactures it as a Mini DUR-X kit (LMDLWD), which uses a .015" increment. It contains 11 bottom pins, 4 top pins, 8 master pins and cylinder springs to thoroughly enhance your vintage experience *(Figure 40).*

SARGENT

Since its beginnings in 1864, SARGENT Manufacturing Company has been producing quality hardware and continues to be one of the world's foremost manufacturers of architectural hardware and locking devices for the com-

Figure 39. This image shows the Kaba Peaks pin kit layout.

Figure 40. For those requiring the most common Lockwood key class here at home, LAB manufactures it as a Mini DUR-X kit (LMDLWD), which uses a .015" increment.

Part No.	Description/Contents
437C	The SARGENT Conventional pin kit includes the brass pins, springs and tools needed to rekey SARGENT conventional, XC cylinders (except SFIC) and interchangeable cores master keyed after January 2009. This heavy-duty steel kit prevents pins from mixing. The kit includes 100 each of top springs 13-0265,100 each 13-1769 springs used with standard drivers in the (10-) 6300 cores and 100 each of bottom and master/driver pins used in the following multi-family keyways: LA, RA, HA, CA, AA, BA, GA, KA, NA and VA.
437S	The SARGENT Signature pin kit is used to service SARGENT Signature cylinders. It includes all of the same components as the 437C plus: 100 blocking bar springs, 13-0986; 10 each blocking bars, 13-1109; 1 each field service tool, 13-3916. NOTE: When repinning 10-6300 Signature large format interchangeable (removable) core cylinders made before January 2009, they contained special hollow drivers, so the 437RC/UL supplemental pinning kit is required.
437RC/UL	The SARGENT 437RC/UL pin kit is used with the 437C or 437S kit. It includes additional pins to repin SARGENT 6300 and 10-6300 large format interchangeable (removable) core cylinders that have been pinned using the hollow drivers. The kit includes special hollow top pins and springs which were used in the 3rd and 4th chambers of master keyed cores prior to January 2009. These pins are in the same increments as standard pins. Each kit includes: 100 each hollow top pin springs, 13-0487; 50 each cylinder retainers, 01-0660; 50 each (hollow top pins).
437BR	The SARGENT 437BR pin kit is used to convert existing cylinders into bump-resistant cylinders. Simply replace the drivers and springs in all chambers. Each kit includes 300 pins for use in mortise/rim cylinders, 300 pins for use in KIK/KIL cylinders and 600 springs.
437DG1	The SARGENT Degree 437 DG1 pin kit is used to pin DG1 fixed and LFIC cylinders The heavy-duty steel kit prevents pins from mixing. The kit includes: 100 each of bump-resistant drivers sizes 1-6, 100 each of standard drivers sizes 1-5, 100 each of master wafers sizes 1-6, 100 each of conical bottom pins sizes 1-6, 100 springs part number DG-0017, 100 KIK/KIL spring cover part number 13-1341, 100 each mortise/rim, LFIC spring cover DG-0040, tweezers, Degree key gauge.
437DGM	The SARGENT Degree 437 DGM "master kit" includes all pins needed to re-pin DG1, DG2 and DG3 cylinders. Kit includes all the same components as in the 437 DG1 kit, with the additional parts to service DG2 and DG3 cylinders: 10 each side bar part number DG 2818, 25 each side bar spring part number DG 0059, 25 each slider spring part number DG 0060, 100 each of left, center and right "chisel bottom pins" sizes 1 thru 6.
437V	SARGENT-ASSA V-10 Pin Kit; 9 BPs, 7 MPs, 4 drivers, sidespins, sidepin springs, sidebars, sidebar springs, cam screws, chamber slides and top spring.
SGT115	LAB SARGENT rekeying kit (metal); 10 BPs, 5 TPs, 8 MPs and springs.
LMDSGT	LAB SARGENT Mini DUR-X rekeying kit (plastic); 10 BPs, 5 TPs, 8 MPs and springs.

Figure 41. SARGENT's pins and pin kits span many years from the creation of the Conventional 437C pin kit to the innovative 437DGM Pin Kit for the SARGENT Degree Key System.

mercial, construction, institutional and industrial markets. It was Joseph Bradford Sargent, entering into this world in 1822, who formed the beginnings of SARGENT as we know it today, way back in 1884.

A SARGENT Salute

SARGENT's pins and pin kits are numerous. They span many years from the creation of the Conventional 437C pin kit to the innovative 437DGM Pin Kit for the SARGENT Degree Key System. *Figure 41* shows these pin kits.

Square Pin in a Round Hole?

No, not exactly, but it's one of the more novel pin types out there. It is known as the SARGENT square pin, circa early 1900s. It does sound counterintuitive to have a functional "square pin" in a locking device, but it worked! The pins are stepped in a similar way to master wafers in a cam lock. It was invented to eliminate the use of split pin masters, making it more pick resistant. This was accomplished by having two steps in each pin with a right hand blade change key and a left hand blade master key. Per Billy Edwards, CML, they were used in churches in New England (allegedly only Roman Catholic ones).

As you can see from *Figure 42* (courtesy of Arnold Saintnicholas), the five chamber holes are square, as are the pins. However, the 5-pin key appears to have only "traditional" wear. Who would have thunk it?

SARGENT Signature 437S Pin Kit

The 437S is the preferred kit (11" x 8.25" x 2") for those also pinning SARGENT conventional cylinders, as well as the SARGENT Signature and the SARGENT XC line. Consider it a 3-in-1 pin kit *(Figures 43-44).*

Figure 42. As you can see here, the five chamber holes are square, as are the pins.

SARGENT Degree DGM

This is the premiere SARGENT Degree master kit (quite large at 16" x 12.5" x 2") for those pinning not only the Degree DG1 cylinders and cores, but also the security DG2 and high security DG3 (rotating/angled pins, similar to Biaxial Original) cylinders. Plenty to play with in this kit *(Figures 45-46).*

SARGENT Mini DUR-X LMDSGT

We mustn't forget the smaller SARGENT kit for those who may only pin an occasional SARGENT conventional cylinder from time to time. Ten bottom pins, 8 master pins, and 5 drivers reside in this quaint home alongside the snuggled cylinder springs *(Figure 47).*

Tubular

Yep, it's the lock cylinder that's designed with the pin tumblers in a circle, not in a straight line. The patent was established in 1935 for the first ACE tubular lock, the pattern for most of those that followed (*Figure 48).* Usually, seven pins are arranged in a circular pattern, and the corresponding key is also tubular or cylindrical in shape. It wasn't until 1985 that the ACE II was created, and it's still in use today.

Figure 43

Figure 44

Figures 43-44. The 437S is the preferred kit for those also pinning SARGENT conventional cylinders, as well as the SARGENT Signature and the SARGENT XC line.

Figure 45

Figure 46

Figures 45-46. The SARGENT Degree DGM is the premiere SARGENT Degree master kit for those pinning not only the Degree DG1 cylinders and cores, but the security DG2 and high security DG3 (rotating/angled pins, similar to Biaxial Original) cylinders.

Figure 47. This smaller SARGENT kit is perfect for those who may only pin an occasional SARGENT conventional cylinder from time to time.

Figure 48. This lock cylinder is designed with the pin tumblers in a circle, not in a straight line. The patent was established in 1935 for the first ACE tubular lock, the pattern for most of those that followed.

Figures 49-50. The CompX-Chicago ACE II Tumbler Service Kit (D9630) is a good buy (about $130 list) if you are pinning and repinning large quantities of ACE locks *(Figure 49)*. If you only run into them occasionally and need a smaller kit, LAB offers the LMDACE kit with quantities of 25 each pin *(Figure 50)*.

Let's Get Tubular!

ACE-type locks, manufactured by CompX-Chicago, are oftentimes found in coin-operated laundromats, gaming machines, vending machines, computer locks, RVs, boats, motor homes, bicycle locks, elevators and money boxes. Tubular locks can be picked by a special tubular lock pick and can be defeated by drilling. Standard tubular-lock drill bit diameters are 0.375" (9.5 mm) and 0.394" (10.0 mm). To prevent drilling, many tubular locks have a middle pin made from hardened steel or contain a ball bearing in the center.

CompX/Chicago Lock Co.

CompX manufactures the ACE II tubular lock that we use today, often called Chicago ACE. There are others, such as Fort Apex, Fort Gematic, Medeco, Abloy, Mul-T-Lock, AM Lock, Greenwald, Dominion, Dynalock, Unican, Segal and Pundra and others. Don't forget about the user-changeable Chicago Flex ACE tubular lock. Some of these use standard Chicago ACE dimensions for their own private-label tubular locks.

The most common pin kit *(Figure 49)* is the CompX-Chicago ACE II Tumbler Service Kit (D9630). It contains 200 pieces each of: seven top pins, three bottom pins and two tumbler springs. Also included is one assembly pin and one depth key, all in a plastic box. The pin diameter for an original Chicago ACE pin is .078", with an increment drop of .155". Most other pin tumbler diameters range from .077" to .079" for similar types.

This CompX kit is a good buy (about $130 list) if you are pinning and repinning large quantities of ACE locks. If you only run into them occasionally and need a smaller kit, LAB offers the LMDACE kit with quantities of 25 each pin (Figure 50).

In part two of this article, the author will continue to explore manufacturers' pin kits, including BEST, Schlage, Master Lock and Yale.

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.

ALOA

ALOA Security Professionals Association, Inc.

Membership Application

CANDIDATE PLEASE TYPE OR PRINT

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

Business Name _____

Mailing Address _____

City_____ State_____ Zip Code_____ Country _____

Work Phone_____ Home Phone_____ Fax _____

Email Address_____ Website _____

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

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

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

PROFESSIONAL INFORMATION

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

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

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

Business License #_____ EIN # _____

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

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

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

_____

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.

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Check only one box from the categories listed below:

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

❑ US and US Territories	$235	❑ I elect to Go Green	$215
❑ International	$255	❑ I elect to Go Green	$185

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

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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	$235	❑ I elect to Go Green	$215
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Note: Your application will be processed with a 90 day waiting period.
Any institutional locksmith not using his/her work address must submit a letter from employer stating that you are an institutional locksmith.

DUES AND FEES

An application fee and the appropriate dues must accompany the application in order for processing to begin. The dues amount for residents of the US and US Territories include a $30 Legislative Assessment Fee ($205 Dues and $30 Legislative Assessment Fee=$235). Application Fees Schedule:

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❑ Application Fee _____
Total Amount Due _____

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Signature_____ Date_____

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

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Signature Date Signed

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Revised 11/10/16

Small Changes for a Large-Scale Job

Tony Wiersielis, CPL, CFDI, explains how some of his processes change when completing work on large jobs.

This month, I want to tell you about a big job we recently completed in New England. This was a training facility with buildings spread out across a large campus, including numerous dormitories, both occupied and unoccupied. It took two weeks to complete, with four of us working the first week and three the second week.

Because this was a large-scale job, I did a few things differently than I would on a small job. This information is what I want to pass on to you, should you ever find yourself in the same situation.

The Story

The issue was that someone lost a grand master key, which opened nearly every door on the campus. Naturally, panic ensued. We were told that there were about 600 cores spread out over the campus. It turned out to be closer to 750. These were a mixture of Best and Arrow interchangeable cores.

We were told that all the cores were the same keyway, but it turned out to be three different keyways. One of these keyways had two different systems under it. Once we had all this information, we were able to calculate the recombination of one chamber, the first, in each core. We did this for each system until we had four separate combinations: one for each variation.

Dumping and repinning the first chamber to our new combination removed the old GM from the system without affecting the existing operating keys. The facilities locksmith issued new GMs to whoever had the old one.

In case you're wondering why all the cores weren't replaced instead, it was because of money, or rather, the lack of it. The customer wanted the least expensive way out of the problem. You might also wonder why the facility locksmith didn't do this job himself. He was "self taught" in the trade and maintaining an IC system installed years before he got the job. This project was a bit too much for him to handle by himself.

We had several issues going forward. One was that we could only be in the occupied dorms when the students were in class, and they usually came back at 4 p.m. While we were there, we had a facilities guy with us as an escort and to help us find various locks.

Having to leave a building by 4 p.m. made for a short day for us. We were all far from home, and we'd normally try to work longer days to get the job done quicker. In this case, we decided to move to either a training building, now empty of students, or an unoccupied dorm, at 4 p.m. The facility was fine with that.

The other issue was the discovery that about 10 to 15 percent of the cores didn't want to come out no matter what we did. These had to be bypassed and noted so we could come back and drill them out. We then needed to build new cores for replacement.

The Plan

We decided to bring our pinning equipment to each building and set up there. I would dump, recombinate and test the cores while one or two others would pull them and bring them to me in batches. We had another one of our guys at the campus lock shop. When we found cores that couldn't be pulled, we'd call him with the core marks and he would build new cores to replace them.

For the new guys, some cores have a core number stamped on the face of the core above the plug. This is what I mean by "core mark." This number usually corresponds to a list of key numbers and key cuts supplied with an IC system. If you can read the core mark on a core, you can look up that mark on the list and see the key cuts of the individual key that operates that core.

Not all cores are face stamped; some are stamped on the side of the core and aren't visible until you get the core out. Some don't have any core mark at all, usually because the customer doesn't want anyone finding a stamped key and finding the stamped core that it will open.

Also on this list you'll find the GM, submaster and control key bittings (key cuts). With this information, you can calculate the pins needed to combinate a core to work with all the keys that need to operate it, as we did on this job.

You'll also find core marks on hardware schedules. A line on the schedule will have a door number/room number, what hardware goes on that door and what core mark

is used for that particular lock, among other things. This way, there's no guessing about what core goes where during installation.

The Setup

I have both Best and Lab A2 pinning kits, and also a Best A4 kit. For this job, I used the Lab kit because it's more compact and I knew I would be moving around a lot. I can lift the pin tray out and store a small hammer and some pin tweezers under it.

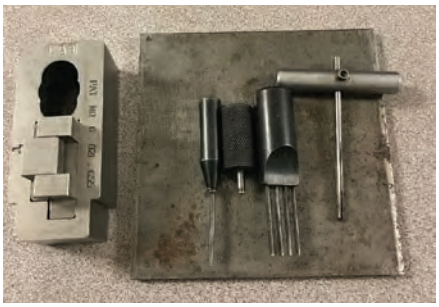

Figure 1. This photo shows most of the tools I use for working on cores. To the left of the metal plate is a LAB Annex. On the plate, from left to right, are a pin ejector for removing pins, a capping punch for the Annex, another ejector that does four chambers at a time and a homemade pin chamber reamer. The steel plate is used as a base for capping cores with the Annex so as not to damage whatever surface I'm working on. You'll see it in use shortly.

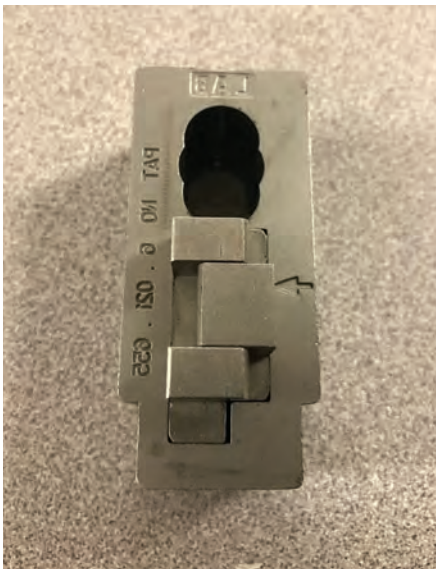

Figure 2. This is a close-up of the Annex.

Figure 3. Here is the Annex with the "code book" removed. The code book allows you to eject pins out of the core and into it without mixing them up. They will stay in the same order as they were inside the core. You'll see what I mean in the following pictures.

Figure 4. Here, I'm sliding the core into the Annex; note that it's upside down.

Figure 5

Figure 6

Figures 5-6. In *Figure 5*, I'm about to strike the ejector with a small hammer. After carefully sliding out the "code book" and opening it, we get what we see in *Figure 6*. What you see is the pins and spring as they appear in the core, except that the spring is crushed beyond repair; don't try to reuse it. One of the great features of the Annex is the ability to save the pin stack like this. I'll explain why in *Figure 7*.

Figure 7. Here, I'm pointing at the top pin. If you can determine what size that pin is and subtract that number from 13, you'll have the control key cut for that chamber. If you did that for all chambers in the core, you'd be able to cut an operating control key for that system. This is *golden* if you need to remove a lot of cores where the control key is lost. Even better, you can reload the core with the old pins and new springs and caps and still use it. I've found it best to use a dial caliper to measure. You can also place a new pin next to the old to compare, but it's not foolproof. I highly recommend you search online to find Bill Lynk's great article from the April 2008 issue of *Keynotes*. (Google "decoding an SFIC system" to find it.) Read it. I doubt you'll find a better explanation of the subject anywhere else.

Figure 8. This is how I was using the Annex without the "code book" in place. I needed only to eject the pins in the first chamber and not decode them. Because I would have to remove the code book to dump the pins each time, I decided to save a step and leave it out. This is why you see me doing it in that modified cardboard box — to catch the pins as they ejected.

Figure 9. This photo shows another use I found for the code book: holding springs. One of the bigger time wasters on a large job such as this is having to untangle springs as you use them. I take a moment to set them up as you see here, and slide them out as I need them.

Figure 10. I used both the Annex and a capping press to recap the cores. I prefer to use the press, but it's kind of heavy to carry around and really ought to be screwed down. If there are a small number of cores to be done in a building, I usually used the Annex. You'll see both in use.

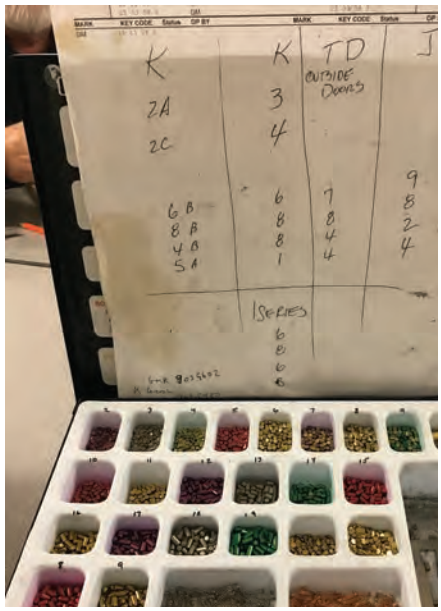

Figure 11. This photo shows the pin kit I used. The sheet of paper on the back is a handwritten list of the pin stacks used with each series. Take note of the small numbers above each of the pins. I do this as a quick reference so I don't have to look at the diagram on the lid of the kit to know what pin is where.

Figure 12. This image depicts an unusual situation, but it gives you an idea of how I might set this up. The capping press is to the right, out of the picture. The building was going to be empty all winter and was about to be winterized. The heat was off, and somebody left a toaster oven behind, so I used it to provide a little warmth.

The Sequence

If I'm going to pin a lot of cores, I usually use disposable gloves, at least on my left hand, especially if there's an over abundance of old graphite in the cores.

Figure 13. I start by ejecting the first chamber on five or six cores and then use the reamer on that chamber, as shown here. Just insert it and twist it back and forth. I do this because sometimes when you cap a chamber, however you do it, the core moves slightly. This can cause the punch or press to peen over the hole slightly. This can make it difficult to get the pins into the chamber, but the reamer cleans that up. It also removes any crud that might have accumulated.

Figure 14. This photo shows how I get a lot of cores done in the least amount of time. Remember that the core pullers are bringing me batches of cores at a time, and I need to keep up. In this picture, I'm holding five cores, but I've done seven at a time in the past. What I'm doing is dropping the bottom pins into the first chamber of each core, moving from right to left. When I get to the last core, I drop the second pin in each going left to right. I continue in this fashion until all the pins are inserted.

Figure 15. Sometimes, number 4 top pins tend to rotate and get stuck as I try to get them into the chamber. Here, I'm tapping the pin with the back of my tweezers to free it up.

Figure 16. I'm using the pin ejector to make sure that pin isn't stuck. Take note of the lousy capping job on the other chambers. It looks like someone didn't have the right tools for the job.

Figure 17

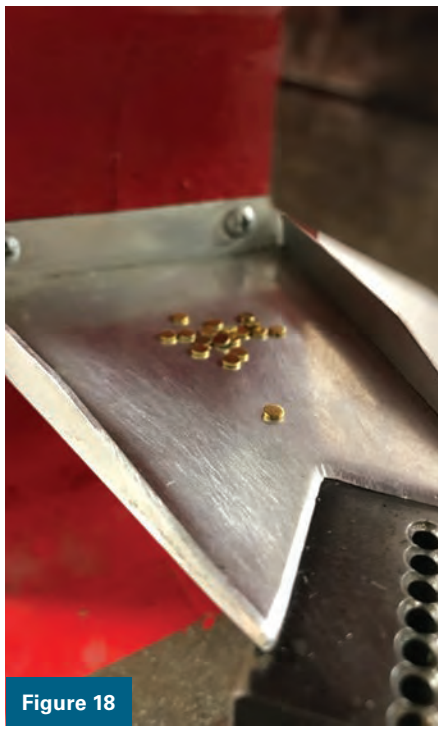

Figure 18

Figures 17-18. When the pins are in, I line up the cores against my pin kit as in *Figure 17*. You'll notice the code book with the springs is between the cores and the capping press, and the caps are on the tray on the press in *Figure 18*.

Figure 19

Figure 20

Figures 19-20. I insert a core into the press and slide a spring out and insert it into the chamber.

Figure 21

Figure 22

Figure 23

Figures 21-23. I slide a cap into the capping block and pull the handle down, seating the cap in *Figures 21 and 22*. If the cap isn't seated, the core won't pull out easily. If there's any resistance, pull the handle down again; it should seat itself. *Figure 23* shows the cap on the first chamber as compared with the other chambers.

Figure 24. I do this with all five cores, and I'm almost done. I use a synthetic lubricant that goes on wet but dries quickly.

Figure 25

Figures 25-28. I try the GM and the Control key immediately to allow the lube to spread through the core, as in *Figures 25 and 26*. If I use the Annex to cap, the only real difference is shown in *Figures 27 and 28*: inserting the capping punch and whacking it with a hammer.

There are two important things to note here. First, if you're going to pin cores like I do here, you need to have your concentration game on, especially if you're pinning all the chambers. Don't let anybody distract you while you're doing it; you'll only have to correct your own mistakes. I try to have music playing so as not to be distracted. Do whatever works for you. The second item to note is demonstrated in *Figure 29*.

Figure 26


Figure 28

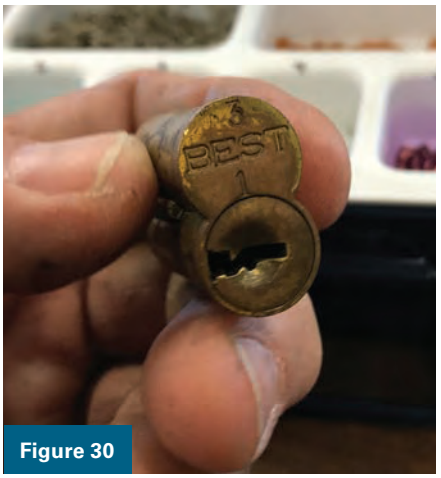

Figure 30

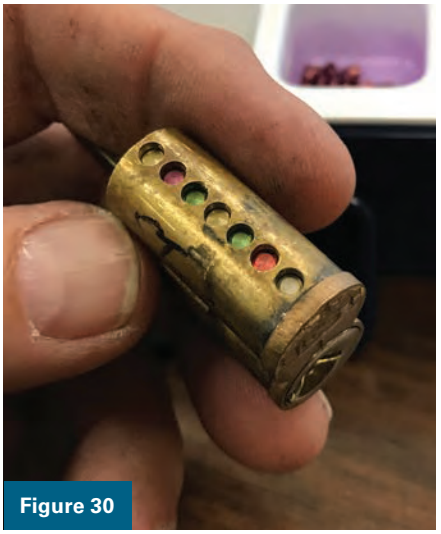
Figure 30


Figure 27

Figure 29. Second, you'll notice I'm not using graphite here. It's filthy to work with and difficult to clean up. A little of it goes a long way, but try telling that to a customer. This photo shows a buildup of graphite that's been mixed with other lubricants (such as WD-40) and caked up. It doesn't drip out the other side of the core if you overdo it, does it? The silicone and dry lubricants of today do a better job than graphite, in my humble opinion.

Figures 30-31. A last tip: If you're going to pin all the chambers in a new core, try turning the plug like I did in *Figure 30*. Make sure the locking dog is in the locked position and then pin the core. When you're done, it will look like *Figure 31*, where there's no doubt that all the pin stacks are the same height. If one isn't, you'll know where you made a mistake before you cap the core. Make sure you turn the plug to the 12 o'clock position before you try to cap it.

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

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www.codelocks.us

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www.cal-royal.com

Cap Popper
Phone: 321-806-0415
www.cappopper.com

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Fax: 208-534-7595

CompX Security Products
Phone: 864-297-6655
Fax: 864-297-9987
www.compx.com

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www.crlaurence.com

Dakota Alert Inc
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DETEX Corp
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Fax: 830-620-6711
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Fax: 888-580-8078

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Fax: 978-422-3467
www.don-jo.com

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Fax: 800-742-0410
www.doorcontrols.com

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www.ikeyless.com

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Fax: 516-225-6136
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www.mbkeyprog.com

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Classified advertising space is provided free of charge to ALOA members and for a fee of $2 per word, with a $40 minimum for nonmembers. Classified ads may be used to advertise used merchandise and overstocked items for sale,"wanted to buy" items, business opportunities, employment opportunities/positions wanted and the like. Members or nonmembers wishing to advertise services or new merchandise for sale may purchase a "Commercial Classified Ad" for a fee of $4 per word with a minimum of $100.

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

Advertiser	Ad Location	Web Site	Phone Number/Email
ALOA SPAI	pages 25, 26, 27	www.aloa.org	(800) 532-2562
ASSA-Ruko/Technical Services	page 42	www.assatechnicalservicesinc.com	(724) 969-2595
Big Red	page 42	www.bigredsafelocks.com	(877) 423-8073
Brockhage (Logic America)	page 42	www.lockpicks.com	(800) KEY-BLANK
Bullseye S.D. Locks	page 42	www.bullseyesdlocks.com	(800) 364-4899
Capitol Industries	page 33	www.capitolindustriesinc.com	(800) 567-0451
Cards and Keyfobs	page 42	www.cardsandkeyfobs.com	(855) 431-KEYS
ClearStar Security Network	page 60	www.clearstar.com	(360) 379-2494
Detex	page 7	www.detex.com/training	(800) 729-3839
Hayman Safe Company	pages 42, 43	www.haymansafe.com	(800) 444-5434
H. L. Flake Co.	inside back cover	www.hlflake.com	(800) 231-4105
Jet Hardware Mfg. Co.	back cover	www.jetkeys.com	(718) 257-9600
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North American Bancard	page 3	www.nyab.com	(866) 481-4604
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Salsbury Industries	page 19	www.lockers.com	(800) LOCKERS
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