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

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The Value of Learning

HERE WE ARE ABOUT A month away from SAFETECH. Have you registered yet? If you haven't, there's still time — and you should really consider going. SAFETECH has classes for everyone, from newbies to seasoned professionals. If you've ever thought about branching out into safe and vault or safety deposit box work, this is your opportunity to learn about these new areas. Think about your local competition and the services they offer, and see how you can position yourself against them with more offerings. If you can't attend yourself, why not send one of your employees to learn?

The value of education is truly intangible. It lets you advance in your skills, see new ways of doing things and learn new areas of this wonderful profession. If we're doing things right, we are all learning every day and becoming better security professionals, and attending conventions just helps speed that process up a bit. Plus, you get to meet your fellow locksmiths and safe techs from all over the world and have a fun while you're at it. If you're thinking, "Oh, I can't take time off," or "It's just too far," take a look at the Education column in this issue. ALOA Education Manager Jim Hancock lays out some reasons why the value of attending ALOA 2019 and SAFETECH in Lexington outweigh many of the concerns you might have.

ALOA 2019

While you're thinking about learning and conventions, ALOA 2019 is on the horizon. And we'll be in Las Vegas! What a great location for a convention. We've picked a venue that you pretty much never have to leave — there's that much on site for you to do — and you'll still get a really great rate on your room.

We've added some new classes this year, with topics such as ADA, school safety and even digital marketing for locksmiths. In today's business environment, that's an essential skill that we all need to have and apply to our businesses. If you've wondered how to best combat scammers, we need to be able to beat them at their own game and have a better digital presence. And if you can't make it to SAFETECH, ALOA will have an introductory class where you can learn the basics of safe drilling.

Registration isn't yet open for ALOA 2019, but look for more information to be included in the April issue of *Keynotes*, and there soon will be more information online on the Convention tab of ALOA.org.

ALOA Scholarship Foundation

If you want to attend the ALOA Convention & Security Expo but don't have the means, consider applying for a scholarship. The ALOA Scholarship Foundation (ASF) gives out several scholarships each



year for each convention, allowing professionals who otherwise couldn't attend to receive valuable education to advance their careers. Look for the application in this issue.

And if you're not applying for a scholarship, I urge you to make a donation to ASF. This is a great way to give back to your community of security professionals and help others advance, particularly those in the early years of learning. ASF relies on donations from both companies and individuals to be able to award these scholarships, and every dollar they receive helps more students get assistance. Even if you can only give \$10, your donations are so appreciated.

So get those donations, applications and registrations in, and I'll see you in Lexington!

Respectfully,

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

See You at SAFETECH

SAFETECH IS FAST approaching, and we can't wait to be back in Lexington! I hope you've already registered, but if you haven't, there's still time. The early registration discount deadline is March 1, but you can still register throughout the month. If you want to take the PRP, you *must* register for that before March 1. The conventions are always a great time to take your certification exams; the class material is fresh on your mind, and you have the time for it built into your week. Consider adding a credential to your name!

This year, SAFETECH is on the north side of Lexington at the Griffin Gate Marriott, and we think you're really going to like this venue. You're still close to downtown, and you have easy access to the activities in the countryside, such as horse racing and the bourbon distilleries. The resort itself is also quite convenient, with so much on site: a golf course, spa, restaurants and a Starbucks. You can learn a bit more about area activities and registering in the Main Event column on page 14.

Scholarships Up for Grabs

Every year, the ALOA Scholarship Foundation grants scholarships to those in the industry looking to gain education through classes with ALOA, SAVTA and other worthy professional organizations. These scholarships can be used for classes at the Aaron M. Fish Security Training Center and at regional conferences, but you can often get the most out of the scholarship opportunity by applying for one for SAFETECH and the ALOA Convention & Security Expo.

“ALOA SPAI elections are coming up, and we're still looking for members to run for the open volunteer positions on the board.”

The deadline for SAFETECH scholarships has passed (applications must be submitted at least 75 days prior to the first day of the event), but there's still plenty of time to get your applications in for ALOA 2019 in Las Vegas. Deserving applicants with a financial need might also be granted some travel expenses as well, depending on availability of funds. If you'd like to attend the ALOA Convention or classes at the ALOA Training Center but can't afford it, why not apply for a scholarship? To learn more about the ALOA Scholarship Foundation, read pages 23-24 in this issue of *Keynotes*.

Run for the ALOA Board

ALOA SPAI elections are coming up, and we're still looking for members to run for the open volunteer positions on the board. The stated deadline for candidate forms is March 1, but we will accept eligible candidate forms through March 15.



This is a wonderful opportunity to get more involved in the industry, network and give input into the direction of the association. There are candidate forms in the December issue of *Keynotes*, and you can also contact membership@aloea.org to have one sent to you.

If you can't commit to the time needed to serve on the ALOA Board, there are other opportunities to get more involved in your association. Send feedback to the board, start a local chapter or attend local chapter meetings. Recruit new members, attend the conventions and get to know your fellow members. Your ALOA membership is what you make of it, and the opportunities for camaraderie and networking grow exponentially when you connect more to the association.

Thanks for being a member, and see you at SAFETECH!

Mary A. May

Mary A. May
Executive Director
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SARGENT AND GREENLEAF®

SARGENT AND GREENLEAF HAS ANNOUNCED THAT OPENGATE CAPITAL, a global private equity firm, has entered into an agreement to acquire S&G from Stanley Black & Decker. The transaction is anticipated to be completed in the first quarter of 2019.

Sargent and Greenleaf will transition into a stand-alone business under the ownership of OpenGate Capital.

“Sargent and Greenleaf is enthusiastic about the many exciting opportunities that lay ahead,” said Keith Deaton, COO at Sargent and Greenleaf. “During the acquisition, we will continue operating to bring our customers high-quality products. With

the support from OpenGate Capital, we will develop and release innovative locking solutions for safes, vaults, ATMS and highly sensitive environments, while building even stronger customer relationships.”

For more information, please visit www.sargentandgreenleaf.com or call (859) 885-9411.

PACLOCK Expands Powder-Coated Padlock Capabilities



PACLOCK HAS ANNOUNCED IT WILL BEGIN OFFERING POWDER-COATED finishing as an option with its aluminum-bodied padlocks. Production of powder-coated versions of each lock series will be based on customer demand.

According to Lance Endsley, PACLOCK’s national sales leader, expected lead times will be less than two weeks initially, with any variety of color available. Short runs of custom

colors such as pink, beige or others will be available as well, with lead times of two to three weeks. To find out more information about PACLOCK’s expanded capabilities, please contact the sales department at 661-294-3707 or email sales@paclock.com.

PRODUCT BRIEF

» **Schlage** has announced its newest smart lock, Schlage Encode Smart WiFi Deadbolt. It will initially be integrated to work with the Amazon Key app to provide homeowners with an access management solution that can be used without a camera or hub and connect to in-home WiFi networks. Customers can choose to add an Amazon Cloud Cam to their Key Smart Lock Kit to monitor entries and deliveries. Additionally, Ring customers will soon be able to lock and unlock their Schlage Encode directly from the live feed of their Ring doorbell or camera in the Ring app. Users can also enable the Key skill within their Alexa app to have voice control of their lock.



ASSOCIATION/CHAPTER NEWS

Scholarships Available for 2019 ALOA Convention

WANT TO ATTEND ALOA 2019 IN LAS VEGAS, BUT YOU'RE limited on funds? Apply for a scholarship through the ALOA Scholarship Foundation! Scholarships are available to deserving recipients to pay for a full education package, and some travel and lodging costs could be awarded as well, depending on availability.

For more information, see pages 23-24 in this issue of *Keynotes*, contact ASF@aloe.org or go to the ASF tab on ALOA.org.



Apply for one of several scholarships up for grabs this year from the ALOA Scholarship Foundation. The above professionals used their scholarships to attend the 2016 ALOA Convention.

NEWS BRIEFS

» Lance (LBR) Berger, CRL, ACCS has joined the sales team at **Technical Services, Inc.** as the territory and technical manager covering Texas, Oklahoma, Louisiana and Arkansas. He is a U.S. Navy veteran with more than 45 years' experience in the locksmith profession. He began his career as a commercial locksmith and then moved to Evergreen State University before joining ASSA High Security Locks as their training manager. He spent more than 20 years at ASSA, serving in roles such as master key manager, technical manager, customer service manager and finally western regional sales manager. He can be reached at Lance@assatechnicalservicesinc.com or (801) 300-0213.



» **ASSA ABLOY** has signed an agreement to acquire **KEYper Systems**, a supplier of electronic and mechanical key management systems in the U.S. **KEYper Systems**, established in 1993, is located in Harrisburg, North Carolina, and has 25 employees. The acquisition is expected to close during the first quarter of 2019.

» Registration is open for IDN-Hardware's 2019 Security Conference and Trade Show, March 20-23 at the Sheraton Detroit Novi Hotel in Novi, MI. For more information about this event, contact Lori Poole at lpoole@idnhardware.com.

» **IDN-Armstrong's** has announced the release of the 16th Edition Product Catalog, which includes a glossary and has an increased font size compared to previous editions. Hundreds of items have been added to the catalog, including: electrified deadlatches and strikes, pushbutton locks, locksmith tools, door closers, electronic access control, high security products, Lite Kits and more. New brands include Activar, Bauer, Bekey, Fire Door Solutions, Keyscan, Locknetics and Trimco. Information can also be found in the online catalog at www.idn-inc.com.



» The 37th annual edition of the **Ilco** North American Auto/Truck Key Blank Reference is now available on www.ilco.us. It can be found under Literature & Support, Key Directory & References. Printed copies of this free reference will be available from Ilco distributors starting in early March.



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Ovilla

- ▶ **Lauro Pulido**
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The Colony

- ▶ **Glen Sorge**
Glens Lock Service

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Area Safe & Lock
- ▶ **Brhanu Degu**
All USA Locksmith
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- ▶ **Rashed Al Shemeili**
ARROW
- ▶ **Mohammed Al Ali**
ARROW

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London

- ▶ **Mark Storer**
Metropolitan Police Service

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Australia
- ▶ **James L. Hancock, CML, CMST,
CAL, CHI, CAI, CFL**
Dallas, TX
- ▶ **Thomas E. Ware, CML, CFL, CPS**
Haledon, NJ

MARCH

March 6-8

IML Security Expo

Hilton Los Angeles Universal City
Universal City, CA
www.imlss.com
(800) 453-5386

March 15-17

**Alabama Locksmith Association
Technical Show**

Pelham Civic Center
Pelham, AL
www.locksmithhala.org

March 21-23

IDN-Hardware Sales Trade Show

Novi, MI
www.idn-inc.com
(734) 591-1150

March 28-30

HL Flake Trade Show

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

APRIL

April 1-6

SAFETECH 2019

Griffin Gate Marriott Resort & Spa
Lexington, KY
www.SAVTA.org

April 9

Fox Valley Chapter Meeting

LaSure's, 3125 S. Washburn St.,
Oshkosh, WI
6:15 p.m. dinner, 7 p.m. presentation
waunakey@yahoo.com

MAY

May 20-25

Six-Day Basic Locksmithing

ALOA Training Center, Dallas, TX
education@aloea.org or
(800) 532- 2562, ext. 101

JUNE

June 11

Fox Valley Chapter Meeting

LaSure's, 3125 S. Washburn St.,
Oshkosh, WI
6:15 p.m. dinner, 7 p.m. presentation
waunakey@yahoo.com

June 21

IML Security Expo

Sheraton West Sports Authority Field
Denver, CO
www.imlss.com
(800) 453-5386

AUGUST

August 11-17

ALOA Convention & Security Expo

Las Vegas, NV
www.ALOA.org, conventions@aloea.org

August 23

IML Security Expo

J.W. Marriott Resort and Spa
San Antonio, TX
www.imlss.com
(800) 453-5386

OCTOBER

October 7-12

Six-Day Basic Locksmithing

ALOA Training Center, Dallas, TX
education@aloea.org or
(800) 532- 2562, ext. 101

October 8

Fox Valley Chapter Meeting

LaSure's, 3125 S. Washburn St.,
Oshkosh, WI
6:15 p.m. dinner, 7 p.m. presentation
waunakey@yahoo.com

DECEMBER

December 10

Fox Valley Chapter Meeting

LaSure's, 3125 S. Washburn St.,
Oshkosh, WI
6:15 p.m. dinner, 7 p.m. presentation
waunakey@yahoo.com

We Need Your Help

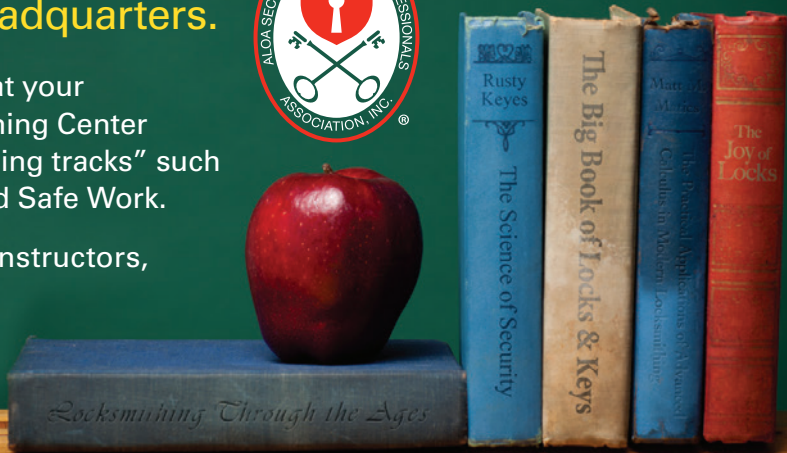
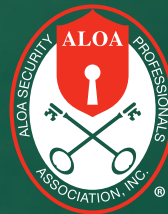
Attention, ALOA Members: Help us eliminate the industry scammer problem by screening these applicants, who are scheduled for clearance as ALOA members, to ensure they meet the standards of ALOA's Code of Ethics. Protests, if any, must be made within 30 days of this *Keynotes* issue date, addressed to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

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For more information, call (800) 532-2562, ext. 101; email education@aloea.org; or visit www.aloea.org/education.



Get Your CFL at SAFETECH

Division President **Tom Demont** explains why he's looking forward to SAFETECH — and why you should be too.

BY THE TIME YOU READ THIS PAGE, I HOPE YOU'LL BE PREPARING TO go to SAFETECH in Lexington, KY. I arrive on Wednesday, April 3, and my forensic class is scheduled for Thursday and Friday. SAFETECH is always so much fun for me. Maybe because it is a smaller group and everyone knows each other, or safe techs are just warm and friendly people. No matter what the reason, it's a nice place to be. If you've never been there, come and sign up for some quality education and great events like the Friends of SAVTA Live Auction or the Kick-Off Party — not to mention tours of the local safe lock manufacturers and distributors.

If you are thinking of taking your CFL examination at SAFETECH, you must preregister and sign up by March 16. IAIL offers four categories in forensics investigation to choose from: General Forensics; Automotive; Architectural Hardware, Doors, Frames and Codes; and Safes and Vaults. You can hold more than one CFL certificate. When attorneys are looking for an expert witness, they want to see on your CV (curriculum vita) that you have the qualifications to help them build or settle a case.

IAIL allows you to take the examination for your CFL while you are working on the requirements to qualify to become a CFL. If you pass the exam and have not met your requirements, you have one year to complete those requirements to be awarded your CFL certificate. With that said, you have many chances to complete the required classes either at ALOA 2019 in Las Vegas this August or at our Forensic Conference this October in Dallas, TX.

A Recent Case

I just had a safe case in Florida. The dispute was between the insurance company and the insured because \$25,000 in money and jewels was stolen from the safe. The insurance company was not paying because they stated the safe wasn't considered appropriate for that amount of protection. The case settled because of my write-up. It

was an imported record box safe designed for papers only, with no forced entry protection. My attorney client was for the insured, and once they read my report, settling was their only option. That is why they hire experts! As an expert witness, we only deal in facts, and the fact is that the safe was a piece of crap and shouldn't have had valuables stored in it.

Expert witnesses must always have the latest knowledge of their expert subject field so that opposing expert can't prove them wrong. Education is vital to this goal, as is walking the show floor and becoming knowledgeable about the new hardware entering the marketplace. Just how in my recent case I was familiar with the safe because I had read the specifications on its use and was able to use that in my write-up.

If you would like more information on becoming a Certified Forensic Locksmith or attending our conference, e-mail me at IAILPresident@aloe.org. I will send the requirements to test for your new career and a sign-up sheet for the forensic conference. 📧



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

IAILPresident@aloe.org

Get Published!

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



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Hilton Los Angeles
Universal City

555 Universal Hollywood Dr.
Universal City, California 91608

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**Security Show:
March 8th**

**Colorado,
Denver**

Sheraton West
Sports Authority Field

Lakewood, Colorado
Denver, Colorado

Training Courses:
June 19th and 20th

**Security Show:
June 21st**

**Texas,
San Antonio**

JW Marriott Resort
And Spa

23808 Resort Parkway
San Antonio, Texas 78261

Training Courses:
August 21st and 22nd

**Security Show:
August 23rd**

**Nevada,
Las Vegas**

The Orleans Hotel
And Casino

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Las Vegas, Nevada 89103

Training Courses:
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**Security Show:
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The Path to Greener Pastures SAFETECH *Lexington* 2019

Get Ready for SAFETECH!

Don't miss out on your chance to get the early-bird registration rate.

SAFETECH WILL BE HERE BEFORE YOU KNOW IT (APRIL 1-6), AND WE can't wait for you to enjoy the best week you'll have all year in the safe and vault industry! If you haven't yet registered, there's still time. Read on to find out more about what's in store for you in Lexington as you put your career on a path to greener pastures.

Education and Events

The early registration discount deadline is March 1, so hurry to get your classes chosen and your registration forms in! Online registration is conveniently offered on SAVTA.org under the Convention tab. For assistance, contact conventions@aloea.org.

Classes are filling up, so if you haven't registered yet, don't wait. SAFETECH has several new classes this year in a few tracks, from manipulation to safe deposit boxes. To learn more about all of the classes, download the convention brochure located under the Convention tab on SAVTA.org. Don't miss your chance to learn new skills and add new service areas to your business!

Along with all of the usual favorite events such as the Friends of SAVTA Live Auction and the Kick-Off Party, there will be a special open house at Lockmasters on Thursday, April 4. There, you can tour their new education center, eat Lexington barbecue and have a bourbon drink or two. The annual Swap Meet will also be held there in conjunction so you can grab some bargains while you network.

Transportation to Lockmasters and back to the host hotel will be provided, but

you must RSVP on the registration form. Don't miss out on this fun event!

Location and Activities

This year, SAFETECH takes attendees to the picturesque north side of the city, where the rolling green hills and horse country await you. Our venue is the Griffin Gate Marriott Resort & Spa, where you'll get complimentary self-parking and wireless Internet for a rate of only \$120 per night. If you haven't already, make your reservation today, as the cutoff date for the discounted group rate is March 9! To reserve your room, call (800) 228-9290 or (859) 231-5100 and reference group name "SAVTA" or "SAFETECH." You can also book your room online via the link on the Convention page on SAVTA.org.

On site at the hotel, take in a round of golf, visit the spa or take a swim in the expansive pool complex. A full fitness center is available as well. For off-site fun, the Griffin Gate Marriott is close to the Kentucky Horse Park and the Keeneland Race Track, and many bourbon distilleries are at your fingertips as well. The sights of downtown Lexington are just minutes away, where you can visit museums, art galleries and historic homes.



Between the classes, events and the tradeshow, you won't want to miss SAFETECH 2019 in Lexington.

For dining on site, there's a casual lounge for a quick bite or a drink as well as JW's Steakhouse (open for breakfast, lunch and dinner) for a more upscale dining experience. There's also a Starbucks for all your caffeine needs.

Outside the hotel, the world's your oyster! Lexington has a vibrant dining scene, with locally owned restaurants catering to nearly every cuisine, from barbecue and burgers to Southern fare and farm-to-table.

ALOA 2019 in Las Vegas

While SAFETECH is on your mind, don't forget about ALOA 2019 in fabulous Las Vegas August 11-17! This is another must-attend event to take you to the next step in your career.

This year's convention will have classes and the Security Expo in one convenient location, the South Point Hotel and Casino on the South Strip. Here you'll enjoy a value room rate of only \$69 per night through Thursday, and \$109 per night Friday and Saturday. This location has it ALL! On site, you'll enjoy a movie theater, bowling alley, night club, 24-hour room service, free high-speed internet, free airport transportation and more.

While you can't yet register for ALOA, save the date and also book your room now! Visit the Travel tab on the Convention section of ALOA.org for more information, or call (877) 491-0468 and reference group name "ALOA."

Look for more information in next month's issue of *Keynotes!* @

SAFETECH 2019

April 1-6, 2019

Griffin Gate Marriott
Resort & Spa
1800 Newtown Pike
Lexington, KY 40511

Early Registration Deadline:
March 1

Hotel Rate: \$120 plus tax

Hotel Reservation Deadline:
March 9

Reserve your room by calling
(800) 228-9290 or (859) 231-5100
and using the group name SAVTA
or SAFETECH.

2009 Chevy Malibu Ignition Removal

Stacy Hetchler illustrates how to find and remove the ignition on this model.

THIS CAR HAS AN IN-DASH B109 KEYWAY. THERE DOESN'T APPEAR TO be any easy way to get the ignition out once you have a working key — that's because there isn't! You do have to remove some parts, such as the radio, heater controls, etc. But the good news is that it isn't too difficult to do so. So, here we go.

First off, this ignition can be impressed. The marks it makes on the key are not like you are used to seeing if you have done a lot of impressing on autos. The wafers make a mark similar to a shadow on the side of the key. It almost

gives you an indication of the depths. So, that is where you can begin. The easiest way is to use the Determinator BRT Reader DeCoder King for a door key. Then take off the face cover of the ignition and impression the first two cuts. Once the key turns, you are ready for the harder stuff.



Figure 1



Figure 2

Figures 1 and 2. Once you have a key turning, you can then remove all the trim and radio components.



Figure 3



Figure 4

Figures 3 and 4. The first piece is above the radio, and it pops out. The pieces fit very tightly, and you must be careful to not snap the plastic. Work it slowly.



Figure 5. The plastic around the shift control will pop up so that you can turn it sideways to give you more room.



Figure 6. Once that is done, it will reveal two screws to take off.



Figure 7. Next, you work the trim off from around the outside of the radio and heater controls. This trim is very tight, so be patient and work slowly.



Figure 8. Once you get the trim around the radio and heater controls off, you will find six more screws to remove: two for the heater control and four for the radio.



Figure 9. Then, remove the radio and the heater assembly to reveal the access hole to the retainer. See where the wires are coming out just above the radio? That is where you need to look for the access to the retainer.



Figure 10. You will have to take a bent screwdriver or something similar, as you have a little bit of a bend to reach the retainer. But if you watch as you align it, you can find where the access point is. It helps to turn the key slightly back and forth so you will know by feel that you are in the correct place. The square hole here is where you go into the ignition. 🗝️



Figure 11. Fish around a bit, and you will feel it depress. You can then pull the cylinder out, and it will have a key code on it.



Stacy Hetchler, CAL, has been a locksmith since 1995 in south central Texas, focusing primarily on the automotive segment. In his limited personal time, he plays soccer and paintball, and flies helicopters while he enjoys music. He teaches locksmithing for various associations, including ALOA.

He adds, "All proceeds from my work go to my sweet daughter, Khoal, and my little man, Greisun — and of course my great and supporting wife, Candee."

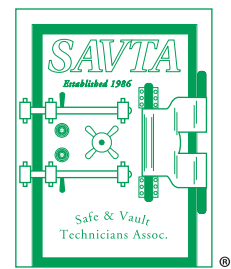


Figure 1. Once the author received this photo from the client, he began his quest for information.

Getting Into the Pentagon

Opening a Pentagon gun safe proves easier than expected, and the savings are passed on to an old friend's son.

By Bob DeWeese, CML, CPS, CJS, CAI

THE PHONE RANG. THERE WAS A VOICE ON THE OTHER END THAT sounded familiar, but I just couldn't place it. He began speaking like he'd known me forever. I didn't want to ask, "Who is this?" and feel foolish for not recognizing the voice, so I just proceeded with the conversation.

A Familiar Voice

He told me that his son, Kevin (you'd think that would ring a bell, but it didn't), had acquired a Pentagon gun safe, and he needed it opened. I asked the usual questions. "What's the problem with it? Where's it located? Can you email me a picture?" etc. He said that the safe had been abandoned at a property, and there were no keys or combination. It had been moved to a warehouse where it sat, waiting to be opened.

At that point, curiosity got the best of me and I finally asked, "Who is this?"

"It's Tom McFalls!" he replied.

"Ohhhh!" I explained that I recognized the voice but couldn't figure out whose it was. It had been a few years since the last time we spoke, back when he needed to gain entry and have the locks changed on one of his rental properties. Tom gave me my first "real job" as a pump jockey, auto mechanic and tow truck driver at a service station back in the mid '70s. And it's because of him that I wound up in the locksmith industry! The locksmith company I started out with used to park their trucks on the lot at night, and I eventually ended up getting a job with them. The rest, as they say, is history.

There isn't a lot of information out there on Pentagon safes, so I asked him to have Kevin (his son, whom I remembered from when he was just a little kid) send me some pictures. I would see what I could come up with, and work up a good price for him.

I really like Tom. And even though we go years without talking, I remember him fondly. I have a lot of respect for the man and a lot of appreciation for him giving a 17-year-old high school kid a chance all those years ago. As I said, if it wasn't for him, I would not be doing something I



Figure 2. The measurement from the top of the safe to the center of the dial showed that the author's scopes were not long enough.

truly love today. So it was pretty much a given that his son was going to get a heck of a deal on this opening.

Digging for Answers

I got the pictures and started my quest for information on the safe (see *Figure 1*). I'd heard of Pentagon, but going through my own database, I came up with nothing. Nothing on it in Dave McOmie's gun safe book either (but it's a pretty old book, so I wasn't too hopeful of finding it there anyway).

Next stop: ClearStar! I did a search of the archives and still wasn't coming up with much, so I posted a picture and waited. I got a good amount of input, but no definitive answers as to what I would be dealing with.

What I did know was that it had a combination lock and a LA GARD 2200 (2270, technically) key lock, most likely mounted VD. I had no idea what kind of hardplate I'd be dealing with or what the door thickness was, but the door thickness would be pretty easy to determine once on site, by just sticking something down the keyhole. Still, before I could begin to give him a price (especially a "sweetheart of a deal"), I really wanted to



Figure 3



Figure 4

Figures 3 and 4. After a malfunctioning flex scope kept him from using the hole he had drilled in the side, the author ended up front drilling it and scoping the fence.

find out about the hardplate and if there was the possibility of any glass-activated relocker(s). (It was doubtful, but I've been unpleasantly surprised before!)

My next stop was the manufacturer's website. I found the most similar looking model I could and checked the specs. Then I called the 800 number on the website and spoke to someone there. After explaining who I was and giving him enough technical jargon about what I knew so far and how I planned to approach the opening, he was comfortable enough to try to fill in the blanks for me.

He told me that there was 1" of layered Rockwell 60 hardplate. I asked about carbide and glass, and he told me there was none. I wish all manufacturers' staff were that knowledgeable about their own products — not to mention, that willing to take time to help a tech out with that kind of information.

A Sweetheart of a Deal

Not looking forward to drilling through an inch of hardplate (TWICE!), I started leaning toward top drilling and scoping

the change keyholes on both locks. My longest rigid scope is only a 19" Stortz. I have been (and still am) looking for a 36" rigid 90, but I have yet to locate a used one. I emailed Kevin and asked him to take a measurement from the top of the safe to the center of the dial (*Figure 2*). Not even close! The 19" scope wouldn't reach the locks, but I do have a 36" flexible scope, and I have used that in the past to scope a change keyhole. It wasn't the greatest, but it did the job.

I emailed Kevin back, telling him I would normally quote \$850 plus repairs for that opening and explaining my options for opening it (frontal attack vs. a top drill, just in case). But I said I would quote it for him at somewhere between \$525 and \$675, depending on how it went, plus repairs. I added that if I was able to get it open by top drilling, I wouldn't charge for the repair, just the price of a new set of keys for the key lock. I also told him that, if he wanted, we could also go over prices for swapping out the key lock for an electronic lock while I was there. He okayed the price, and we set up a day and time.



Figure 5. The author demonstrates multitasking in action.



Figure 6



Figure 7

Figures 6 and 7. The locks are mounted side by side with only the lock on the right (from the outside) having a relocker.



Figure 8. The hole at the top was “professionally” plugged.



Figure 9. How did the bolt get cut off by just the two holes to the left of the bolt?

When I got there, I got one of the best parking spots I have ever had for a safe opening, outside of pulling right up to an island ATM. I was about 10 feet away from the warehouse where the safe was located.

What Goes Around...

I first attempted a side drill for both locks using a piece of tubing over the scope, figuring I could nail both change keyholes with one shot. But come to find out, something was wrong with my flex scope and I couldn't get it to focus. I have no idea why.

(As of this writing, I still haven't looked it over to see if it's anything I can fix before sending it in for service.) Needless to say, my hole in the side was for nothing, so I ended up front drilling it and scoping the fence (Figures 3 and 4).

I started off with a StrongArm carbide bit and was through the hardplate before I knew it. Next thing I know, I see lock case material spiraling out of the hole! I turned to Kevin and said, “Well, the price just came way down.” Turns out, this was an older model and there was only ¼" of

hardplate, so I passed that good fortune on to Kevin. (“What goes around ...,” ya know?)

I had the S&G 6730 open within minutes. Then it was time to move on to the LG 2200. I removed the escutcheon and mounted my MiniRig template to scope the fence into the gates using my Phil Shearer 2200 pick to turn the wheels (a lot quicker than picking it).

Jigsaw Puzzle

I know that the lock is key retaining, so since no key was in it, it had to be locked. But all of a sudden, before I finished setting up my MiniRig, for some reason, a voice in my head said, “Try the handle.” I did, and it turned! (Hunh!) I swung the door (scratching my head), and the safe was open!

After removing the ⅛" sheet metal back panel — while simultaneously setting up another job for when I finished... who says I can't multi-task? (Figure 5) — I got down to making my repairs, and figuring out why the key lock was apparently unlocked with no key in it. The locks are mounted side by side with only the lock on the right (from the outside) having a relocker (Figures 6 and 7).

As far as the 2200 appearing to be unlocked, it apparently had been opened

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FB-2013	27"	20"	20½"	21¼"	14¼"	13"	3523	312	2
FB-2714*	33½"	20"	20¾"	27½"	15¼"	15¼"	5982	412	2
CAB2-0-0	15¾"	13¾"	12¼"	2 Drawer Insert		Retail List \$299	28		
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Figure 10



Figure 11

Figures 10 and 11. Reviewing his photos on a larger screen led the author to the answer: It had been jigsawed!



Figure 12



Figure 13

Figures 12 and 13. The door was not thick, especially given how intimidating the safe looked.

previously, and whoever did it cut the lock bolt off! How he managed it, judging by where the holes were on the inside, was beyond me. But don't look a gift horse in the mouth! My guess is that he first thought the lock was VU. Hence the "professionally" plugged hole at the top (Figure 8). Then he went for the bottom. But I still couldn't figure out how the bolt got cut off by just the two holes to the left of the bolt (Figure 9).

Then, once I got home and had a better chance to examine all of my pictures (Figures 10 and 11) on a large computer

screen (the lighting in the place wasn't the greatest), it dawned on me: He jigsawed it! I suppose you could call that thinking outside the box (quite literally in this instance). But come on, really?! Sigh. The door wasn't very thick at all (Figures 12 and 13), especially for as intimidating as this thing looked, so I guess with a long enough jigsaw blade...

I ended up replacing the dial and ring on the 6730 with another key locking dial. Kevin decided to just use the combination lock and leave the key lock as is for now. I charged him \$450 for the whole

job — a sweetheart of a deal for the son of the man who, in essence, facilitated the beginning of my almost 35-year career in this industry. 🙏



Bob DeWeese, CML, CPS, CJS, CAI, has been in the locksmith industry since 1980. He began specializing in safe opening and servicing in the late '90s. "Bobby"

lives in Baltimore, MD, where he and his wife, Theresa, own and operate Bear Lock & Safe Service, which they started in 1988.



ALO Scholarship Foundation, Inc.

Purpose

The ALO Scholarship Foundation (ASF) is an independent, educational, non-profit 501(c) (3), Tax-exempt Corporation established in 1993 to:

- Encourage and provide for educational services, programs and materials concerning locksmithing and security devices and procedures.
- Develop scholarship and assistance programs for persons interested in pursuing a career in the security and locksmithing field.
- Solicit funds necessary to implement the purposes of the Foundation.
- Perform and do any and all such other acts as are necessary, convenient and proper for the attainment of these objectives.

What are the Scholarships for?

The ALO Scholarship Foundation can be an important source for educational funding. We support all locksmith efforts to seek education via technical training and business management from all educational providers. Scholarships are not limited to ALO educational programs. While ALO does have an impressive history in locksmith training and testing, *the independent ALO Scholarship Foundation encourages locksmiths to apply for funding for any of the following industry related training:*

- A full ALOA convention package which includes: four or five full-day classes and lab fees with lunch, two evening seminars, two half-day classes and two days of exhibits
- A full SAFETECH convention package which includes: four full-day classes and lab fees with lunch, one day of exhibits and a Kick-Off party ticket
- All courses offered at the **Aaron M. Fish Security Training Center** and ALOA Certified Education classes, presentations and seminars offered at regional conventions and other facilities
- Industry-related education via technical training and business management programs offered by other institutions that meet the educational criteria of the ASF board

Limited travel and lodging to the above events may be awarded depending on individual need and funds available.

Selection Criteria

The ALO Scholarship Foundation awards scholarships for locksmith education based on several criteria, which include:

- Individual applicants' financial needs
- Written statement discussing how they will benefit from the scholarship and attesting to the desire, willingness and ability to use such training to further themselves within the industry

- Demonstration of commitment to the locksmith industry
- Industry experience; those applicants applying without industry experience must submit a detailed strategic plan on how they intend to achieve their goal of building a career in the locksmith industry
- Three letters of recommendation from individuals who have personal knowledge of the applicant's background, character and work ethic. One recommendation must be from within the locksmith industry
- Availability to attend the event for which the award is given

Application forms for Scholarships are available from the ALOA website, in *Keynotes* magazine, at ALOA and SAVTA booths at local shows and from the ALOA office by request.

Scholarship applications for ALOA or SAFETECH conventions must be submitted at least **75 days** prior to the first day of the event for which the scholarship is being requested. Scholarships for other educational events must be submitted at least **40 days** prior to the event being requested, in order to be given adequate consideration.

The ALO Scholarship Foundation Board of Directors awards all scholarships within **30 days after the event deadline** for submission of applications.



ALOA Scholarship Foundation, Inc.

An educational, non-profit 501 (c) (3) tax-exempt corporation – Federal Tax Id# 75-2478220

Headquarters Office • 3500 Easy Street • Dallas, Texas 75247-6416 • 214-819-9733 • FAX 214-819-9736

asf@ALOA.org

SCHOLARSHIP APPLICATION

Name _____ PRP/STPRP Level _____ ALOA/SAVTA# _____

Home Address _____ City _____ State _____ Zip _____

Home Phone _____ Work Phone _____ D.O.B. _____ / _____ / _____

Fax _____ Email _____

Employer _____ Supervisor's Name _____

Work Address _____ City _____ State _____ Zip _____

Position _____ Full Time Part Time Take Home Pay _____ per _____

Educational Level _____ (years) Degree/Certification (if any) _____

Previous Recipient? No Yes Date _____ Location _____

Length of Time in Locksmithing _____ (years) Membership in Trade Associations (list by name) _____

Marital Status _____ Number of Dependents _____ Annual Household Adjusted Gross Income _____

Classes Desired _____ Date of Classes _____

Organization Sponsoring Classes: ALOA SAVTA Other _____ Location _____

If granted an ALOA Scholarship, will you be able to pay for your own air travel/transportation and hotel accommodations? Yes No

If no, please explain (use another sheet if necessary): _____

ALOA Scholarships are granted to selected individuals desirous of entering the locksmithing field or to selected individuals already in the locksmithing field who wish to improve their professional skills through education. The ASF Selection Committee on an objective and nondiscriminatory basis will review applications. The Selection Committee shall hold all materials and information pertaining to the applicant's financial status and background in strict confidence. Applications for non-convention classes must be received 40 days prior to the date of the non-convention class desired and will be reviewed as they are submitted. Applications for classes at the SAVTA or ALOA convention must be received 75 days prior to the event. All scholarships will be awarded within 30 days after the event deadline for submission of application.

Please include with this form your most recent Federal Tax Return and a letter stating: your financial situation, your reason for applying for a scholarship, what you plan to do with the knowledge you obtain and any other information you feel may be helpful to the Scholarship Board in making its decision. In addition, attach three letters of reference from individuals who have personal knowledge of your background and character. The letters should contain their names, addresses and phone numbers. One reference must be from a locksmith or someone in the locksmith industry, and it is helpful if the person is an ALOA or SAVTA member. All scholarship recipients will be required to provide a 3" x 5" photograph.

APPLICATION CHECKLIST

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SARGENT KESO

POSITIONAL MASTER KEYING

UNVEILED

William M. Lynk, CML, CPS, M.Ed.,
covers the history, operation and master
keying details for the Keso System.



Figure 1. The Keso 2000S is a European dimple key with profile cylinders.

TO CONTINUE OUR CURRENT luxurious two-part foray into positional master keying, we now visit the inimitable Sargent Keso System. For those who have not quite gotten the gist of MIWA magnetic EC as far as positional master keying is concerned, fear not! Sargent Keso (pronounced “Kay-So”) can be considered more straightforward. Again, we are rotating active chambers with inactive/empty ones or, more precisely in this case, phantom chambers! Don’t get scared; it is not like Friday the 13th. Trust me, it will all be unmasked.

Keso History

The Keso brand doesn’t begin in the USA. Rather, it was started in Switzerland back in the early 1950s by Ernst Keller. Keso AG was officially founded in 1963 in Richterswil, Switzerland. Oddly enough, it was being developed concurrently with what we now know as KABA Gemini! Keso is a melding of European names: Keller & Son (KE-SO) (See Figure 1).

From 1970 to 2000, the Keso company expanded rapidly, opening up a number of international offices. In 2001, ASSA



Figure 2



Figure 3



Figure 4

Figure 2-4. Shown here are three versions of the Keso European profile cylinders.



Figure 5. The Sargent Keso F1 cylinder has a change key partially inserted.

ABLOY purchased Keso, and the brand is now partnered with two other ASSA ABLOY firms. In Europe, Keso has a variety of cylinders in production at this time (Figures 2-4). Check out the 219-page ASSA ABLOY Keso Mechanical Product Catalogue on the LSA website for in-depth product information: <http://bit.ly/KesoMechanical>.

The specific Keso brand for Sargent was licensed to Kaba Security Systems (Connecticut) in 1967. Sargent Keso still produces high security cylinders used widely in the North American market. This article only covers Sargent KESO, as offered here in the United States.

Keso Production Security

I find it extremely interesting that all of the Keso keys and cylinders are manufactured within a totally closed-off and specially enclosed area within the Sargent plant. This area is off limits to all except authorized personnel. All orders for Keso products are handled on a special basis. Only orders bearing authorized, authenticated owner signatures are honored. Keying records are only accessible to authorized executives of Sargent.

According to Sargent documentation, every Keso System has its own unique combination of pins and positions within the cylinder (Figure 5). The “scrambled”



Figure 6. A mortise cylinder for the Sargent Keso F1 with key is shown.

sets of positions are monitored by the factory via advanced computer programs. There is not a chance of one keying system duplicating another. This is because every Sargent Keso System is proprietary and monitored.

Keso Patents and F1

The Sargent Keso original utility patent (#3,303,677) was first issued in December 1966. The most recent patent (#6,973,814) granted December 2005 is known as the F1 Keso (Figures 6-8). It contains no mechanical differences from the original Keso, but a milled slot is placed in the face of the plug, allowing for multiple keyways.

The F1 Keso is backward compatible with the original Keso. Both are symmetrical, key reversible and have a removable core version available.

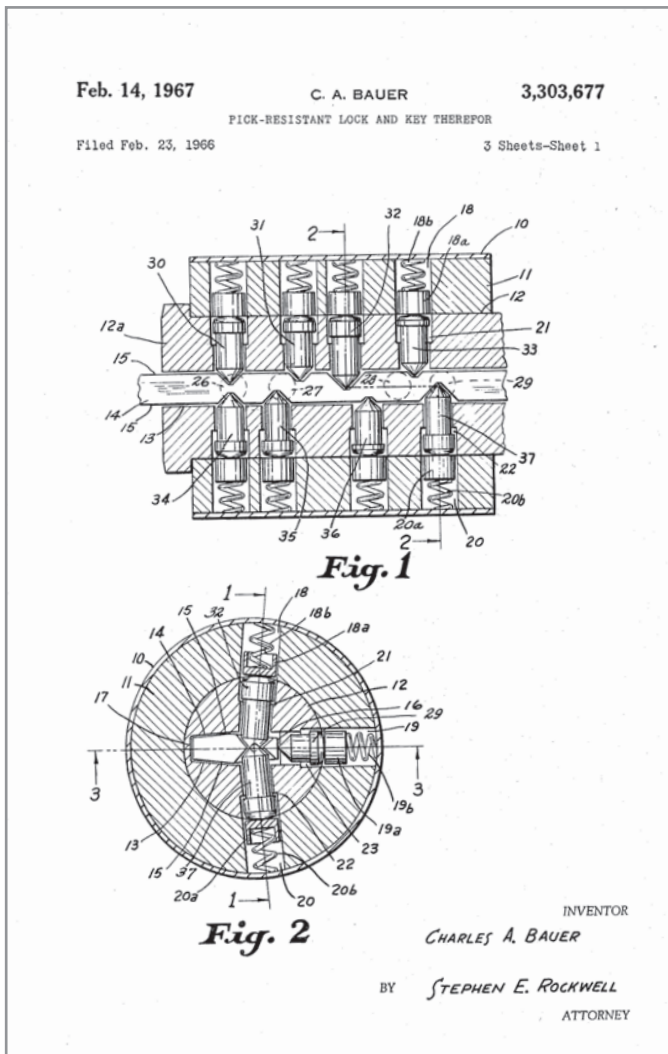


Figure 7. This 1967 patent drawing for Keso illustrates the opposing chambers and the three axes.

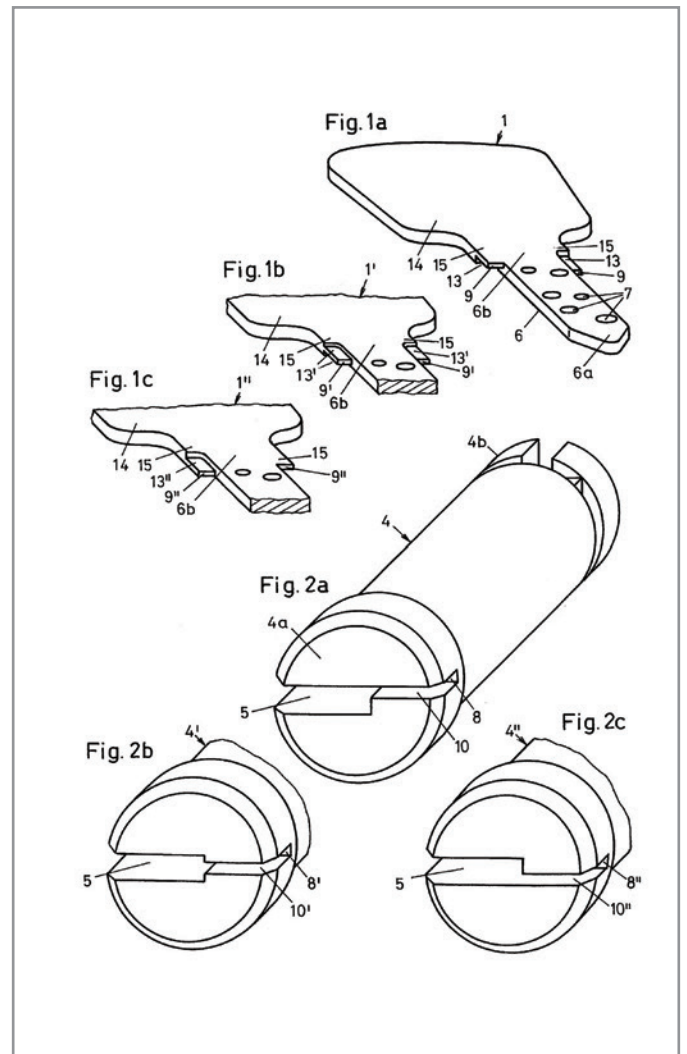


Figure 8. Keso patent drawings show the various Keso F1 keyway faces and how they correlate to the key.

“The cylinder contains 10 possible positions on each side.”

The Keso Key

What about duplication of keys? A no-go (Figures 9 and 10). First, Sargent Keso keys cannot be duplicated on most locksmith key machines. The blank is unique and has never been sold outside of Sargent. Regardless, this is not a field-serviceable product, so offsite key duplication is not available. The Sargent factory in Connecticut — where they have special key-cutting equipment — is where



Figure 9. Eight side dimple cuts are illustrated on the Keso F1 key.



Figure 10. Pictured is an actual Sargent Keso change key with the eight dimple cuts shown on one side. Notice the depth differences.

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Figure 11. Shown is a cutaway drawing of the Keso F1 mortise cylinder, reinforcing the placement 12 chambers on three axes.

all keys are originated and supplied to end users. More on the key stats and codes later.

Keso Cylinder Variations

Now, let's get down to the nitty-gritty. The Sargent Keso Security System cylinder contains 12 key pins (bottom pins) that match the key (*Figure 11*). Pins within the cylinder are located in three rows on three intersecting axes, making it extremely difficult to gain access through manipulation. The Keso System is especially recommended for high-abuse situations (detention centers, psychiatric wards, police stations, colleges, etc.) and where strict key control is required. The dimpled key is not warded or cut away, thereby allowing for a much thicker and stronger key as compared to conventional keys.

Let's take a closer look into the construction and operation of this unique cylinder.

Construction and Operation

As was stated earlier, there are 12 bottom pins located in three rows within three intersecting axes. The positions of the pin chambers in each row — as well as the length of the key pins — will vary. A graduated top pin allows for uniform pin stack height within the cylinder.

Within any one cylinder, there are 28 possible (theoretical) positions for the pin

“It would not be advantageous for the locksmith to spend time attempting to reverse engineer a Keso System to expand it or to decode for the TMK.”

chambers to be drilled. These are called drilling patterns. The positions of the pin chambers in each row vary (as well as the pin depths) because 12 will be active chambers. This accounts for the 24,500 combinations available to the end user in any one Sargent Keso installation.

The catch is that not all 28 chambers are drilled in every cylinder! This may sound like an unusual setup, as each and every cylinder in a system must be drilled individually for the specific pattern of the 12 chambers — thus, with no empty chambers in a cylinder. This may seem labor intensive, but there is a good reason for this necessity.

Because each adjacent chamber is so close in proximity to each other, if a neighboring chamber was drilled, the wall of the cylinder would break through. This only allows every other chamber to be drilled, limiting the placement of chambers within any one axis. However, key cuts can have adjacent dimples on them.

There exists a potential of 10 possible chamber positions into which the four active can be rotated, yielding 35 possible combinations per each side. Usually three pins are rotated on the edge within chamber positions, yielding 20 possible combinations on the edge. There is also a guard pin in the 10th position that does not require a cut and is not used within the progression. Under any TMK one can have 24,500 useable change keys, as shown mathematically under the Master Keying section.

Now it should be quite evident why the Keso cylinders are not field serviceable. Additionally, all keys matching the cylinders are originated at the factory.

Keso Pins

On each of the side axes, the chambers will contain key pins (bottom pins) that have one of three depths, as seen in Pin Chart in *Figure 12*. There are no master pins, but there are graduated top pins to establish a uniform pin stack height in each chamber.

The edge chambers will usually use the standard .150" key pin within the progression. The guard pin will be located in the 10th position and is a no-cut. When using the removable core version, the control pin is .245" in depth.

Master Keying the Sargent Keso

The cylinder contains 10 possible positions on each side. There are two sides, or rows, that have four key pins on each that are rotated among the positions. Remember that two chambers can never be adjacent because the close proximity of the chamber walls would cause the drilling to break through them. Thus, only every other chamber can be used. Each row can yield 35 possible combination patterns.

The third row corresponds to the edge of the key. The edge also cannot have two

adjacent rows but can rotate three positions of the eight that are usable (#9 and #10 are not used in the progression). The edge can yield 20 possible combination patterns.

Mathematically, we could have 24,500 change keys under one TMK, as follows: $35 \times 35 \times 20 = 24,500$.

Figures 15 and 16 show the possible combining/key patterns used to make up the 24,500 usable combinations within a system. Remember that #10 side position is a no-cut and is not usually included within system progressions. Additionally, positions #9 and #10 on the edge are not usually used within system progressions.

The differentiating master keying feature of the Sargent Keso System is that it uses positional master keying. Unlike split-pin master keying that relies on master pins and various pin depths in a chamber, we must think binary: Either there is a key pin in a chamber, or there isn't! Just like a computer is essentially made of 0s or 1s, or a light switch that is either on or off, or a parent's response to a child is yes or no... we could go on and on. What we are doing is systematically rotating filled chambers with empty ones. Again, the uniqueness here is that an "empty" chamber is not really there — it is filled with brass, never drilled, never existed. But, we are still rotating the possible positions within all of our cylinders in the system, even though they are not physically present in every cylinder.

The TMK

So, just as we did with MIWA EC, the top master key is established with a particular dimple depth in all 28 positions on the TMK. Any position used in every cylinder must match the established depth coinciding with the TMK depth when it is actually used (drilled and pinned). Otherwise, the TMK will not

Keso Key Pin Chart

Side Pins	Edge Pins
#1 = .205"	Standard = .150"
#2 = .220"	Guard = .170"
#3 = .225"	Control = .245"

Figure 12. Key pin depths are given for both side pins and edge pins.

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B47 - S1098K	IN18 - X1054F	SC10 - A1145F
B48 - P1098A	IN28 - 1054FN	SC22 - 1307W
B49 - S1098B	IN29 - 1054UN	SE1 - 1022
B50 - P1098C	IN33 - 1054MT	SE8 - 1022AB
B51 - S1098D	IN35 - 1054DL	SK1 - R1001EN
B52 - 1098X	K2 - 1079B	T3 - 1141E
BN1 - K1122D	KW1 - 1176	T7 - 1141GE
B01 - R1003M	L1 - 1004	WE1 - 1123
CG1 - 1041G	L4 - 1004A	WK2 - 1175N
CG2 - 1041GA	M1 - 1092	WR3 - 1054WB
CG4 - 1041GR	M2 - 1092B	WR4 - A1054WB
CG16 - 1041T	M10 - 1092N	WR5 - N1054WB
C01 - 1000	M11 - 1092H	XL7 - 1180S
C03 - 1001EB	NA12 - 1069LA	Y1 - 999
C07 - 1001EN	NA24 - 1069LC	Y1E - 999N
C010 - 1000G	NA25 - R1064E	Y2 - 999A
C026 - 1000V	NH1 - 1177N	Y3 - C999
C068 - S1000V	RA3 - S1970AM	Y6 - 997X
C087 - 1001EH	RA4 - 1970AM	Y11 - 01122
C088/C066 - A1001EH	RO1 - 1096	Y12 - 01122A
C089 - A1001AMB	RU16 - A1011P	Y13 - 01122R
C091 - A1001AH	RU45 - 1011D1	Y14 - 01122AR
C097 - 1001GH	RU46 - A1011D1	Y52 - 997E
C0106 - 1003M	S1 - 1009	Y103 - 01122B
DE6 - D1054K	S3 - 1010	Y149 - S1770U
EA1 - 1014	S4 - 1010U	Y152 - P1770U
EA27 - X1014F	S16 - N1007KMB	Y220 - 999B

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H72PT	\$4.50 ea.
H73PT, H86PT	\$6.50 ea.
H92PT (5913441)	\$15.00 ea.
H94PT	\$13.00 ea.
Chrysler	
Y160PT, Y164PT & Y170PT	\$7.50 ea.



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Figure 13. The Keso blind code on this key can be easily deciphered.

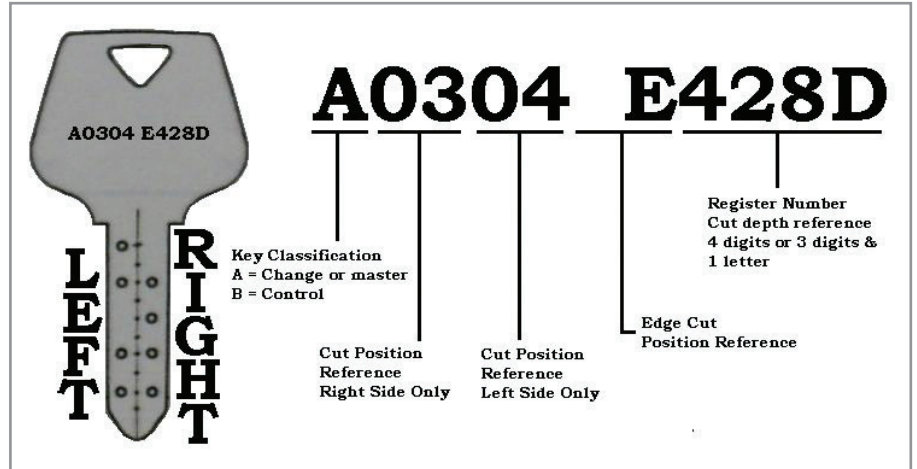


Figure 14. This simple visual explains how to decipher the Keso key codes.

operate correctly. In other words, if there is a dimple present on a change key, it will be the same in that position throughout the system.

Keso Keys: MOCS vs. MACS

We have stated that the Keso keys are reversible, making it easier to work the cylinder for the end user. The same is true of the keys for the removable core. However, the control key is not reversible.

Most locksmiths tend to be familiar with the concept of MACS (Maximum Adjacent Cut Specification). The LIST Council defines it as:

MACS (Maximum Adjacent Cut Specification) - n. the maximum allowable difference between adjacent cut depths.

This is of significance when working with cut depths on keys, especially within split-pin master keying systems. However, one crucial consideration for any dimpled key is the principle of MOCS, which the LIST Council defines as:

MOCS (Maximum Opposing Cut Specification) - n. the maximum allowable depths to which opposing cuts can be made without breaking through the key

blade. This is typically a consideration with dimple keys.

In this scenario, we must be concerned with dimple cuts on each side, in the same position on the key that might go deeper than halfway. Actually, in this case, we really needn't be because all keys are designed and originated at the factory. One less thing for us to worry about.

Blind Codes and Markings

There is a somewhat easy and systematic way to interpret the blind codes on Sargent Keso keys. Take a gander at the matrix below. It shows how to interpret a blind Keso key code.

x ¹	xx ²	xx ³	x ⁴	xxxx ⁵
----------------	-----------------	-----------------	----------------	-------------------

x¹ - A is Change Key or Master Key; B is Control Key

xx² - Right Side Code Cut Positions (from chart)

xx³ - Left Side Code Cut Positions (from chart)

x⁴ - Edge Code Cut Positions (from chart)

xxxx⁵ - System Register Information

Figure 13 shows a legitimate Keso change key. Can you identify the bitting from the code on the bow? Reference the

two code bitting charts in Figures 15 and 16 to decode.

Answer:

A	21	01	B	2631
---	----	----	---	------

A visual of the process, using another key code of A0304 E428D, is shown in Figure 14.

Decoding the Keso System

It would not be advantageous for the locksmith to spend time attempting to reverse engineer a Keso System to expand it or to decode for the TMK. Additionally, there would really be no reason to do so. Cylinders are not field serviceable, the blanks are restricted and not available, and keys are all originated at the factory. But I am sure some will try.

In most split-pin systems, the system footprint can often be deciphered from a small number of cylinders — sometimes only one. Keeping in mind that every Keso cylinder is drilled separately, no system information can be garnered from disassembling one cylinder and decoding its pins and depths. The same is essentially true by decoding a single change key. Although the dimple depths can be recorded, it would take a volume of dif-

SARGENT KESO Blind Key Codes	Side Key Cut Positions									
	1	2	3	4	5	6	7	8	9	10
Key Code Pattern #01	•	•	•	•	•					
Key Code Pattern #02	•	•			•				•	
Key Code Pattern #03		•		•			•		•	
Key Code Pattern #04	•	•					•			
Key Code Pattern #05	•	•	•						•	
Key Code Pattern #06	•			•		•				•
Key Code Pattern #07	•	•			•					•
Key Code Pattern #08		•		•		•				•
Key Code Pattern #09	•	•			•					•
Key Code Pattern #10	•			•		•			•	
Key Code Pattern #11	•	•	•							•
Key Code Pattern #12	•			•		•			•	
Key Code Pattern #13	•	•					•		•	
Key Code Pattern #14		•	•				•		•	
Key Code Pattern #15	•			•			•			•
Key Code Pattern #16		•			•		•		•	
Key Code Pattern #17	•	•	•				•			
Key Code Pattern #18			•		•		•			•
Key Code Pattern #19		•	•		•		•			
Key Code Pattern #20		•			•		•			•
Key Code Pattern #21	•	•	•		•				•	
Key Code Pattern #22		•	•			•			•	
Key Code Pattern #23		•		•		•				•
Key Code Pattern #24	•	•	•				•			•
Key Code Pattern #25		•	•				•			•
Key Code Pattern #26	•		•			•			•	
Key Code Pattern #27		•	•			•				•
Key Code Pattern #28		•	•		•				•	
Key Code Pattern #29	•		•			•				•
Key Code Pattern #30		•		•		•			•	
Key Code Pattern #31	•		•		•					•
Key Code Pattern #32		•	•		•					•
Key Code Pattern #33	•	•	•		•		•			
Key Code Pattern #34	•	•		•		•				
Key Code Pattern #35		•		•		•				•

Figure 15. This chart shows the 35 Keso side key dimple patterns possible in the various 10 side key cut positions, a hallmark of positional master keying.

ferent keys to begin developing the TMK pattern. This is why the factory does use “false dimples” on change keys to thwart those trying to crack a system by recording for the TMK. Still want surreptitious entry? Even though no spool pins are used in Keso cylinders, picking at three axes is quite an arduous task, but definitely not impossible.

Keso Construction Cores

Temporary Keso construction cores (not fixed cylinders) are available in the original Keso. They are not manufactured for Keso F1. When the construction is completed, the cores are returned and the F1-83 removable Keso cores can be installed. They can be used with mortise, rim and 8 Line and 9 Line locks.

SARGENT KESO Blind Key Codes	Edge Key Cut Positions							
	1	2	3	4	5	6	7	8
Key Code Pattern #A-01	•	•	•					
Key Code Pattern #B-02	•	•					•	
Key Code Pattern #C-03	•			•			•	
Key Code Pattern #D-04	•	•			•			
Key Code Pattern #E-05	•	•						•
Key Code Pattern #F-06	•				•			•
Key Code Pattern #G-07	•			•				•
Key Code Pattern #H-08	•		•				•	
Key Code Pattern #J-09	•		•					•
Key Code Pattern #K-10	•		•		•			
Key Code Pattern #P-11		•		•			•	
Key Code Pattern #Q-12		•	•					•
Key Code Pattern #R-13		•		•				•
Key Code Pattern #S-14			•	•			•	
Key Code Pattern #T-15			•	•				•
Key Code Pattern #V-16			•		•			•
Key Code Pattern #W-17		•			•			•
Key Code Pattern #X-18		•	•		•			
Key Code Pattern #Y-19		•	•				•	
Key Code Pattern #Z-20			•		•			•

Figure 16. This chart shows the 20 Keso edge key dimple patterns possible in the various eight edge key cut positions, emphasizing the tenants of positional master keying.

One can quickly identify the removable core as a construction core by the split finish on the face of the core: The plug face is a different finish from the surrounding area. Also, a shallow blind hole is drilled on the plug face on the upper-right side to further distinguish it as a construction core. All keys are stamped CONST and are keyed alike. The order prefix is 84.

UL 437

The Keso cylinder already falls into the category of ‘high security’ without the UL 437 listing. The LIST Council defines high security cylinder as:

high security cylinder - n. a cylinder which offers a greater degree of resistance to any two or more of the following: picking, impressioning, key duplication, drilling or other forms of forcible entry.

However, for those facilities with a heightened high security requirement (and the budget), Keso F1 UL 437 is available in mortise and rim cylinders as well as in utility and switch locks. This provides a maximum level of pick and drill resistance. It is used when strict key control and resistance to vandalism are important factors (Figure 17).



Figure 17. The UL437 listed Keso Cylinder is shown.

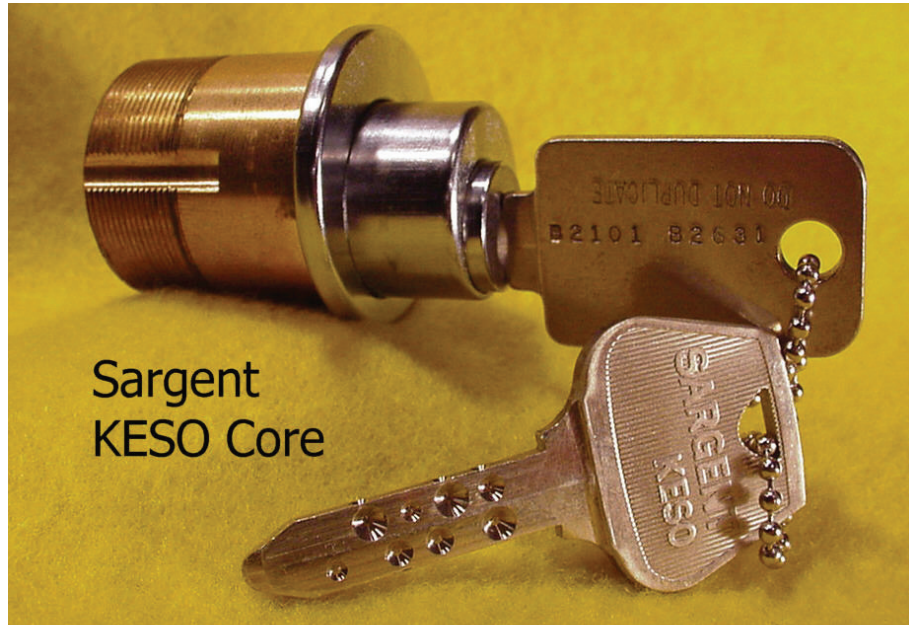


Figure 18: The Keso core is partially removed from the housing by the control key, highlighting the non-figure-eight design.

The Sargent Keso UL 437 contains additional hardened steel pins, although the basic construction of the cylinder is the same as a non-UL 437 Keso cylinder. These should be ordered at system inception, as they are not intended to integrate within an existing Keso System using non-UL 437 cylinders.

The Keso Removable Core

Many would call this an interchangeable core (IC), but that is not technically correct. Because there are seven variations of the core based on the specific housing — which could be key-in-knob, mortise or rim — the term removable core is more precise (*Figure 18*).

Within the Keso removable core, there exists a 13th pin in the back of the plug called a control pin. A longer key with an extended tip pushes the mechanism to allow core withdrawal (*Figure 19*). Incidentally, the control key is not reversible.

Unlike most interchangeable and removable cores that have the figure-eight appearance with two lobes, the Keso core is round. This is similar in looks to the

“Every Keso System has its own unique combination of pins and positions within the cylinder.”

Kaba Gemini interchangeable core. *Figure 20* shows a close-up view of the attached cam, making this a true removable core.

There remains the issue of hotel function availability. In a word: no. There exists no Keso removable core in hotel function. However, within the fixed cylinder range, Keso mortise (50 function) and 8 Line and 9 Line cylinders for key-in-knob locks do offer hotel function as well.

Maintenance

Because the Keso product is not a field-serviceable product, only simple cleaning and lubrication is necessary to maintain its upkeep. Sargent stresses that the only lubricant that should be used is powdered graphite, a dry film lubricant. It is introduced through the keyway and into the chambers once per year. High-trafficked and weather-affected cylinders should be cleaned and lubricated every two months. Never use any oil or grease-type lubricants.

Conclusion

In the previous articles, we have examined how Schlage Wafer uses positional master keying. MIWA EC does so as well, but with the twist of magnets attracting and repelling. We looked into Kaba Gemini and now how Sargent Keso rotates invisible chambers to achieve positional master keying. None of these systems use master pins.

More precisely, Sargent Keso uniquely uses positional master keying by rotating positions within a cylinder that may not actually exist, at least not all at once. Unlike a conventional cylinder that has all

possible chambers already drilled, Sargent Keso requires each Keso cylinder drilled to match a specific change key. It is this systematic chamber rotation that allows for a secure method of master keying without the use of any master pins.

It is hoped that the reader now has a fundamental command of the basic tenants of positional master keying. If, perchance, a fellow locksmith were to ask you: "Say, what is the difference between regular master keying and positional master keying?" your simple response might be: "Regular or split-pin master keying relies on master pins to achieve the result, whereas positional master keying is based on a systematic progression of empty and filled chambers to effectively master key." Now, from that reply, it is quite obvious that *you* are now the master!

Thanks are extended to Billy B. Edwards, CML (master keying expert), John Hubel, CML, ICML, M.Ed. (master locksmith/educator), Rob Shanley (Sargent Tech Services), Claudia Berger (Sargent Marketing) and Dave Steele (Sargent Cylinders, retired) for their assistance in preparing for this article. ☺



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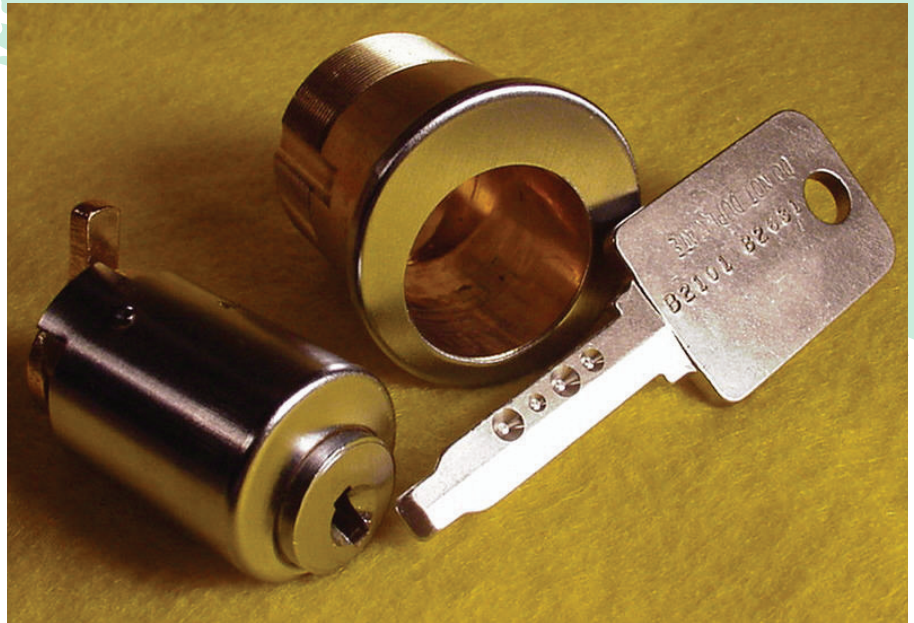
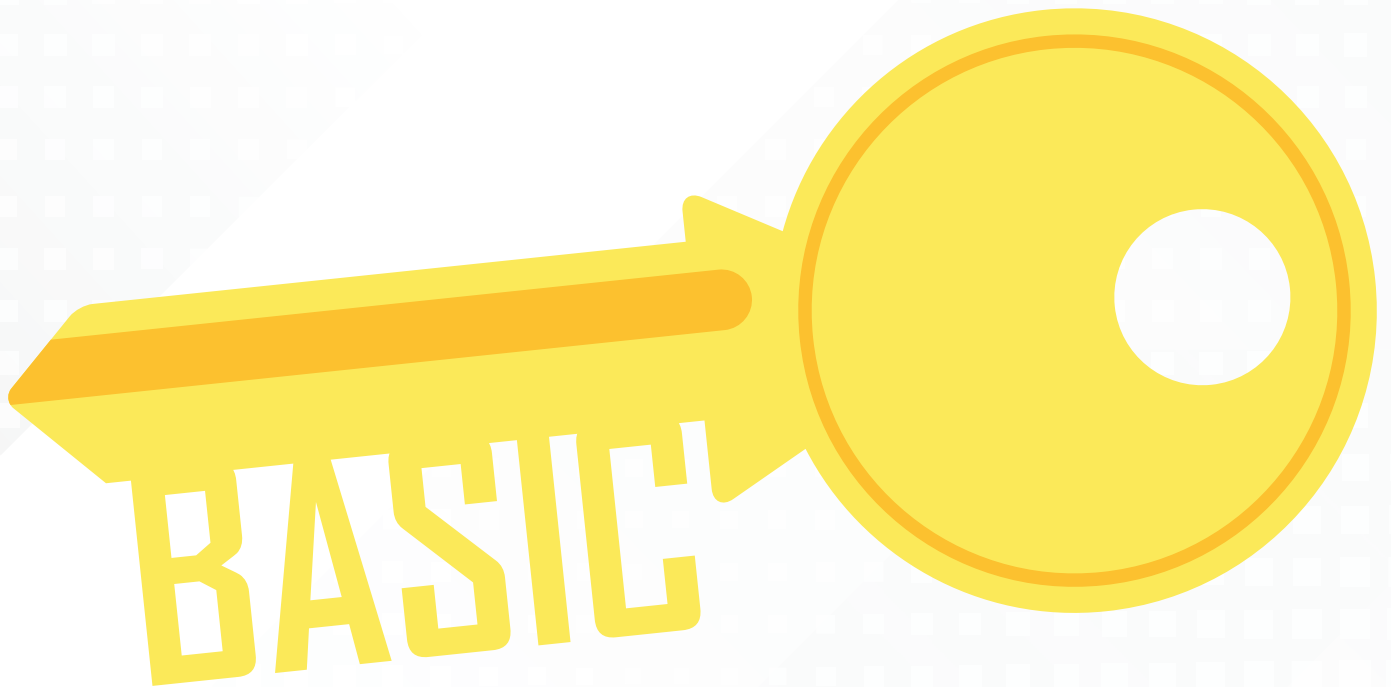


Figure 19: The Keso removable core, housing and control key are shown. Notice the attached cam at the rear of the core.



Figure 20: This image provides a close-up view of the attached cam on the back of the removable core.



IMPRESSIONING

Robert Sieveking provides step-by-step instructions for this technique.

THIS ARTICLE IS AN ANSWER TO A REQUEST FOR INFORMATION ON impressioning. The impression principle is not new. Most locksmiths will use it on a daily basis for generating keys to a locked padlock, accurizing a miscut key that “works hard,” opening a locked door that defies our best efforts at picking or simply making a key to disassemble a lockset that requires the cylinder to be rotated to release the knob or lever. Any of these pin tumbler challenges will be quickly overcome by impressioning the key. Add to these challenges the creation of a working key for wafer cylinders, and you find applications for cam locks, automotive and motorcycle cylinders. Impressioning is certainly a valuable skill for the working locksmith. This article will outline the basic tools, methods and practice found most effective for pin tumbler cylinders.

The Principle

The principle of key impressioning is really quite simple. Those parts of the locking mechanism that block or bind — to prevent the mechanism from being cycled — are caused to mark a full-size (blank or zero bitted) key. The key is filed at the indicated points of binding until the binding ceases. When all points of binding have been reduced to the correct dimension (bitting depth), the mechanism will be free to cycle (rotate). The impression method will only work on mechanisms that have components, which can be made to directly bind on and mark the key.

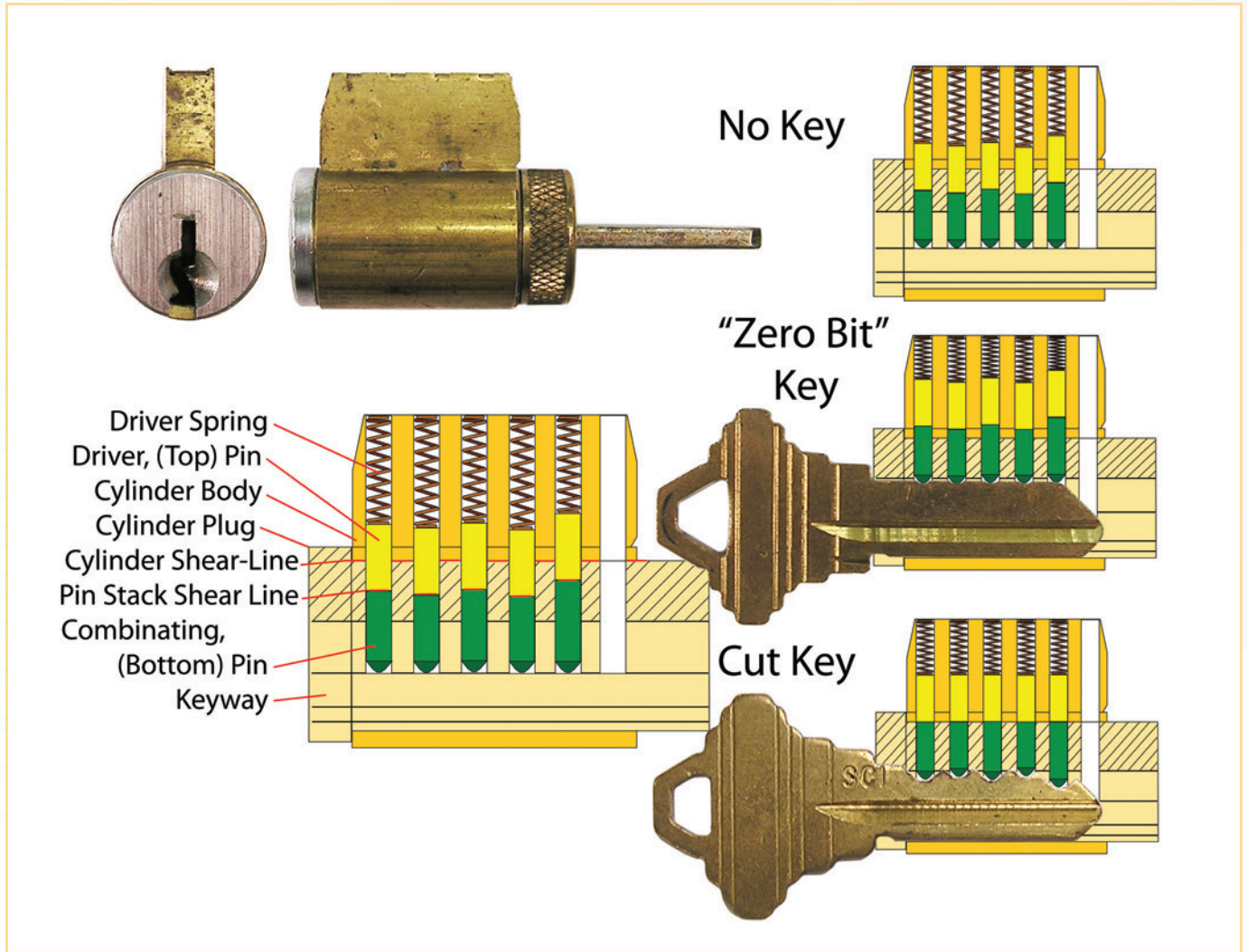


Figure 1. This image shows the three possible positions of the combining pins in a common Schlage cylinder (or any pin-tumbler cylinder).

Figure 1 shows the three possible positions of the combining pins in a common Schlage cylinder (or any pin-tumbler cylinder):

1. With no key in the plug, the combining pins will fall to the limit of their travel, by the action of the cylinder springs. The shear line of each pin stack will be below the cylinder shear line. The driver pins prevent the plug from turning in the cylinder body.
2. With a “zero bit” key inserted into the plug, the combining pins will be raised by the key blade, against the pressure of the driver springs, to the

limit of their upward travel. The shear lines of the individual pin stacks will be raised above the cylinder shear line (unless there is a zero depth combining pin in a pin stack). The combining pins prevent the plug from turning in the cylinder body

3. A properly cut key is inserted into the cylinder plug. The combining pins will be raised to their proper heights against the pressure of the driver springs. The individual pin stack shear lines will align with the cylinder shear line, and the plug is free to be rotated in the cylinder body.

If we place rotational tension (torque) on the key when the shear lines are out of position, the pins will “bind” at the shear line. The impressions are made on the key blade by the combining pins being bound at the shear line while the key is moved up and down. The tip of any bound pin will make an impression mark on the key blade to indicate that the pin is binding. Cuts in the key blade that are too shallow will mark. Cuts that have been made too deep will also mark. It is especially important to read and follow the marks as the key is developed to avoid making a cut too deep. We can always

Professional Impressioning Tool Model "A"



Figure 2. Two common tools used to hold keys for impressioning are the Jiffy Model A Professional Impressioning Tool and a common pair of Vise-Grip pliers.

make the cut deeper. We cannot easily recover from cuts made too deep. More on reading the marks will be discussed later. The positions of the marks will keep our cuts centered under the pins. File the key only where you see a mark. Never oil or lubricate a cylinder you will be impressioning. A dry cylinder impressions best.

The Tools

There are only two basic tools required to impression a lock cylinder: a means of holding the key securely while making the impressions, and a file.

Figure 2 shows two common tools used to hold keys for impressioning: the Jiffy

Model A Professional Impressioning Tool and a common pair of Vise-Grip pliers. These tools are easily available and afford the locksmith a convenient and secure method of holding keys to be impressioned and hand filed. The impressioning tool holds the key in a serrated jaw, using two setscrews to clamp the key. It is a bit better than the Vise-Grip pliers in that it does not slip and minimizes damage to the key head. The raised boss on the side of the tool identifies the position of the key in the jaws, which helps to position the key with the same side up each time it is inserted into the lock cylinder. This is particularly

important when impressioning double-sided keys for automotive and motorcycle cylinders. It also improves the hand grip. We don't want to place too much force on the key as it is being impressioned, but you need a large, comfortable handle for repeated impression cycles. The hex key for tightening the setscrews is carried in the handle of the tool.

Figure 2 shows a pair of 4" Vise-Grip locking pliers. These will serve the same purpose as the impressioning tool and are a bit easier to find. The grip area of the pliers is about ¼" square, so the ability to grip a key without slipping will not be as good, but they are entirely satisfactory.

“Save those 12" Vise-Grip pliers for loosening the lug nuts on your truck. You won't need them here.”

When gripping the key bow (head), insert the key into the pliers to allow the wire-cutter section of the jaws — behind the grip teeth — to bite into the head of the key slightly. This will prevent the key from pivoting in the jaws as it is moved up and down in the impression process. If you're using these pliers to impression keys, don't use them for anything else. Keep the serrations of the jaws sharp. The 4" size pliers is shown, and you don't need any larger. It is finesse, not force, that is required here. Fingertip force is all that will be needed. Save those 12" Vise-Grip pliers for loosening the lug nuts on your truck. You won't need them here.

Figure 2 also shows the most common of locksmith tools: the Nicholson brand Pippin file. It is an 8" #2-XF Swiss pattern file. The term Pippin refers to the profile of the file, and it shaped like an apple seed or teardrop. The file has a sharp side and a round side. It is used primarily in the locksmith trade to cut and shape the pin seats of keys. The file portion is approximately 6" long and tapers to a fine point. This is a #2-XF Swiss Pattern file, which means it is a #2 cut, extra fine and cut on a Swiss Pattern (double cut). This is the choice of this shop. In nearly 45 years of locksmithing, I have had (for my personal use) two of

Zero Bitted Key

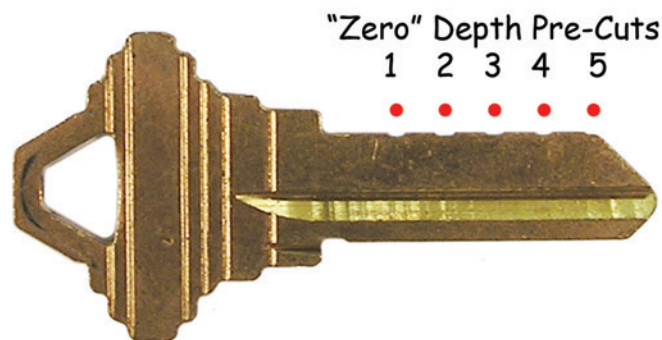


Figure 3. A Schlage SC-1 plain brass blank is shown.

these files. The first had the tip broken off by an employee. Pictured is the one I use every day. If you treat it right, it will serve you well. You will not come by this file by accident. They are a bit expensive, but worth every cent.

The Impression Method

Every impression job must begin with choosing the proper key blade and preparing the blank to accept the impressions. Choice of the blank may or may not be an option, but the best blanks to use for impression are plain brass blanks. Steel blanks are harder than the pins you are asking to mark it. Nickel silver blanks are harder than brass blanks. They will work, but not as well as the softer brass blanks. Red brass is softer than white brass, because it has more copper in the mix. Opt for the softer brass blanks for impressioning. Original Schlage and most other OEM blanks (Corbin, Russwin, Sargent, Yale, etc.) are white brass or nickel silver. Use an aftermarket blank to impression the key, and then duplicate the finished key over an original blank for your customer.

Automotive blanks are plated soft brass, in most cases. They will work fine.

Figure 3 shows a Schlage SC-1 plain brass blank. Location of the cut positions is simplified by cutting all zero cuts into the blank on a code machine. Whenever possible, locate the cut positions by cutting the key to the manufacturer's spacing, as you see, with all shallowest depths. For an automotive key, these would all be #1 depth cuts. If you don't have the luxury of using the code machine, you can just as easily locate the cuts in the first steps of the impression process with a Sharpie marker. But this method simplifies the process and guarantees that you will be looking for marks only where the actual impression marks will be found. It eliminates filing in the wrong places, because you thought you saw a mark.

Preparing the Blank

We have chosen a blank and located the position of the cuts on the bitting portion of the key. To open the finish of the key and prepare the blank to receive the impression cuts, we will make a light cut over the length of the blank to create

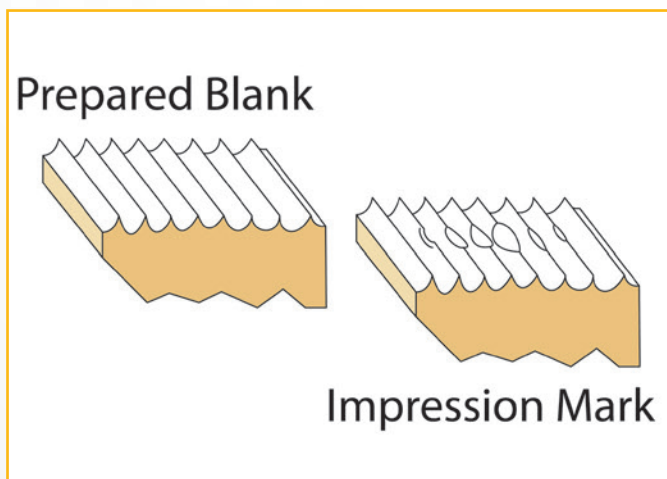


Figure 4. The light stroke of the file will create the pattern you see here.

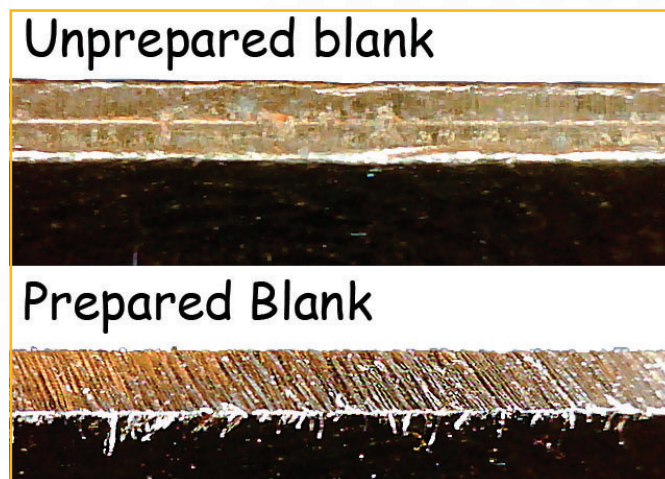


Figure 5. This image illustrates the difference between the unprepared and the prepared blank.

a filed pattern in the edge of the uncut blade. If the zero cuts are present, it is only necessary to file at these positions. The light stroke of the file will create the pattern you see in *Figure 4*. A blank key blade or the cut made by the code machine will be a fine machined or polished surface. The machined or polished (burnished) surface does not impression to show the impression marks as easily as the filed finish we are creating in this step. I like to call this the “freshly plowed field.” As the teeth of the file cut into the key, they leave an open and fragile field of sharp ridges. This is the prepared blank. When a pin is bound and caused to press into the filed surface, it will easily deform the ridges and create a mark. This is the mark we’re looking for. It identifies the bound pin. This is our impression mark.

Prepared Versus Unprepared Blanks

Figure 5 illustrates the difference between the unprepared and the prepared blank. The unprepared blank shows an edge that has been burnished to produce a smooth, shiny surface. The combining pins produced the line running the length of the biting surface as they dragged across the key as it was inserted and removed from

the cylinder. The key was inserted and removed from the cylinder a number of times. Key edges are rounded. This surface is certainly not suitable to receive impression marks.

The prepared blank shown in *Figure 5* shows the striations created by the file as it was passed over the blank. The surface of the key is a series of sharp ridges that are very fragile. The slightest pressure will deform the ridges to create a mark. The filed surface diffuses the light. A mark will present itself as a more reflective surface. It will reflect light in a different way, creating a bright or dark reflection, depending on the angle of the light source to the surface. Tilting the key back and forth in the light will change the reflection of the impression marks on the surface.

The optimum light source is a point source. Fluorescent lamps produce a diffused soft, even light. Unfrosted incandescent lights produce a hard, bright point of light. Have you ever wondered why jewelry looks so sparkly in the jewelry store? Look at the lights above the jewelry counter. They use unfrosted, high-intensity bulbs. Every facet of those stones will reflect the light brilliantly, and the cheapest stones look as brilliant as the real diamonds. The

same principle applies here. If you want to see those marks, use a point source light; the sun is the ideal source. A small, high-intensity lamp on your bench is as good a substitute as you’ll find.

The Impressioning Sequence

Figure 6 speaks to the action of the key in the keyway. Insert the key and apply binding torque (turning tension) to bind the pins in the cylinder. The amount of binding torque is not enough to distort the key, but sufficient to cause the individual pins to be bound at the shear line. Take it easy on the torque. Too much torque will stress the key blade, and it will crack or break before you complete the key. There is no need to twist off the key in the keyway. Finesse is the key. You can’t force the key to work. Impressioning is coaxing the cylinder to give up its secret. Impressioning is “questioning” the pins by asking them to mark the key blade when they bind. Binding torque could be compared to the amount of tension required to pick a cylinder. Too much or too little spells defeat. Relax, and be about your business. Patience and perseverance wins this race. Quiet confidence is the mark of a professional. We’re in no hurry.

The up-and-down movement of the key in the keyway while the pins are bound at the shear line is what will produce the impression marks. As you lift, the key will try to lift the front-most pins. The front-most pins in positions 1, 2 and 3 will mark. As you move the key downward, the key will try to lift the rearmost pins in positions 3, 4 and 5. This will cause the rear pins to mark.

The impressing sequence is this:

1. Insert the key into the keyway, without binding torque.
2. Bind the pins by applying binding torque.
3. Lift the key in short, jerking motions to mark the front pins. Repeat the upward jerking motion three times.
4. Relax the turning torque to allow the pins to again settle on the key.
5. Bind the pins by again applying turning torque.
6. Push the key downward in short, jerking motions to mark the rear pins. Repeat the downward jerking motion three times.

The impression sequence could be repeated as Bind, Up, Up, Up, Relax, Bind, Down, Down, Down, Relax turning pressure, and then repeat.

The sequence I have adopted is further described as repeating three evolutions of Bind, Up, Up, Up and then doing three sequences of Bind, Down, Down, Down, binding the pins in the clockwise turning direction, followed by the same “three Up and three Down” sequences, binding the pins in the counterclockwise direction. After you follow this sequence a few times, it becomes a natural rhythm.

Remove and inspect the bitting surface for impression marks. The prepared blank is inserted into the cylinder *one time* to be marked. Once removed, it is inspected and filed where the marks appear. Repeated insertion and removal of the key will cause the pins to mark as lines

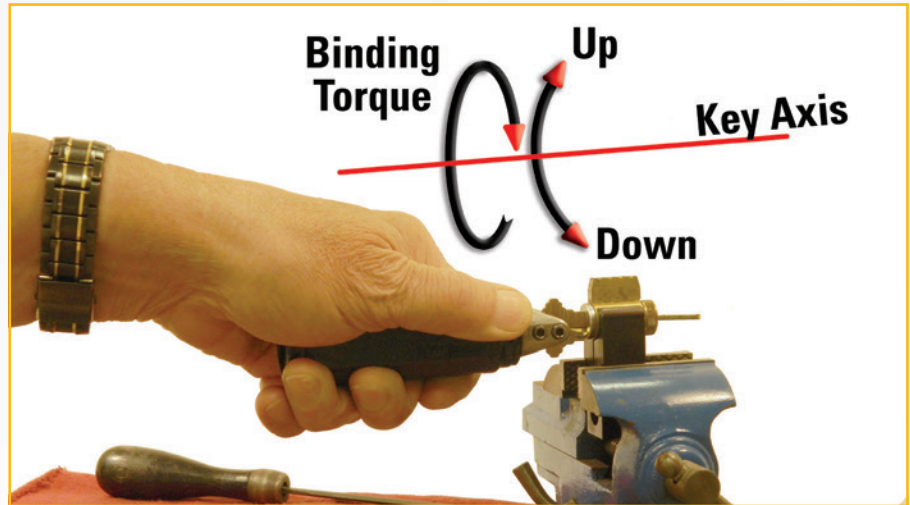


Figure 6. The action of the key in the keyway is shown.

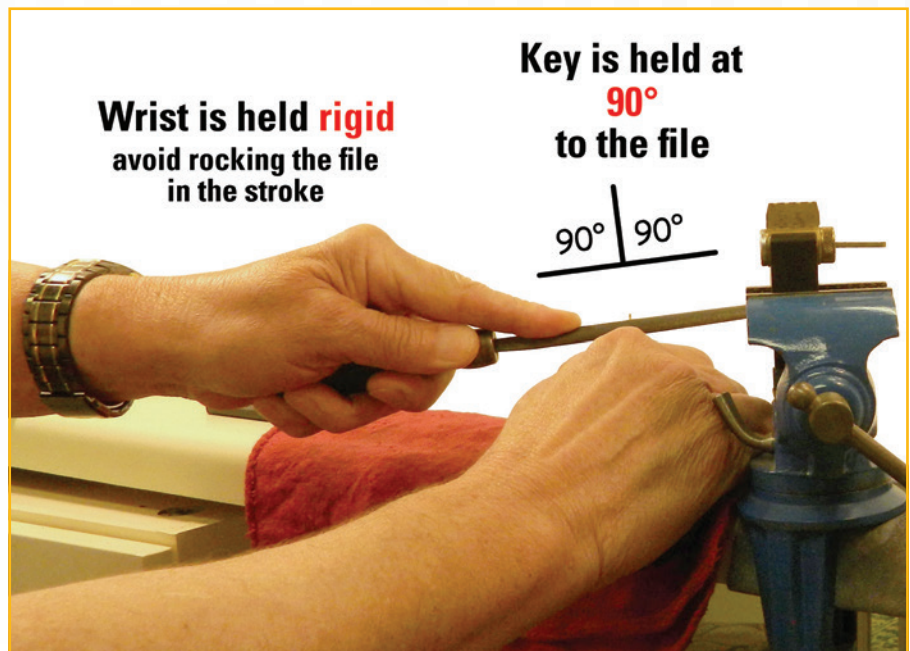


Figure 7. This photo shows a view of the key-filing process.

on the key blade, obscuring any marks you might get in the impression sequence. After filing to remove the impression marks, insert the key and repeat the three up sequences and three down sequences in the clockwise direction, then repeat in the counterclockwise direction. The whole marking evolution should only take about 10 seconds. Remove the key, inspect and file the marks to begin again. This process is followed until the key

turns in the cylinder. If the key turns but binds, remove it and file the marks, as we have done throughout the process. The cylinder is binding because one cut or multiple cuts are not deep enough.

The Key-Filing Process

Figure 7 shows a view of the key-filing process. The key is held rigid and rests on a stable surface. The file

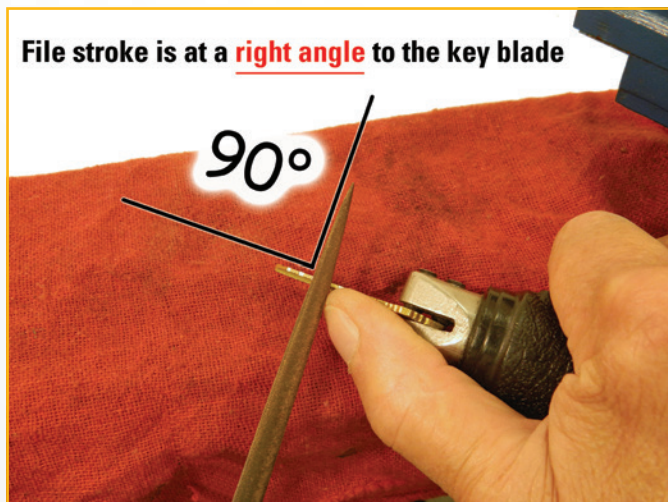


Figure 8. This image provides a top view of the key-filing process.

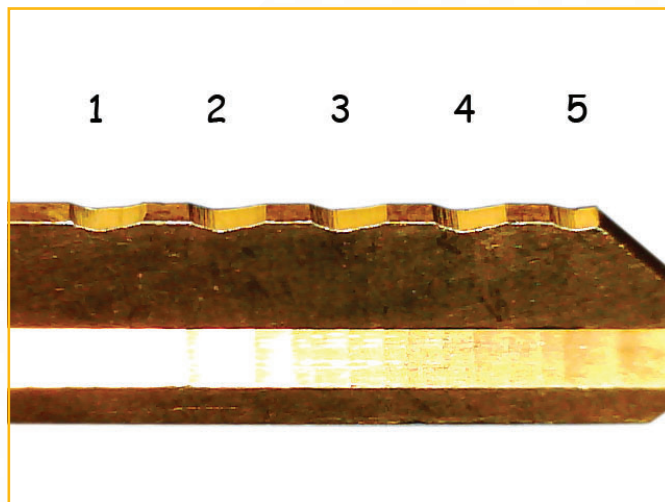


Figure 9. The prepared key is shown.

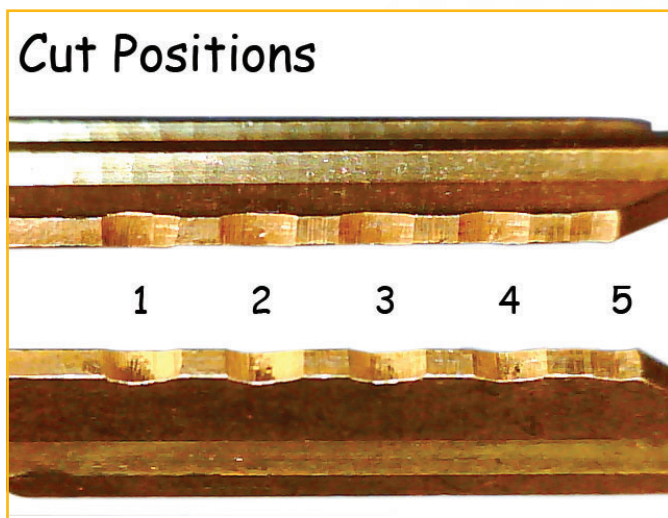


Figure 10. This photo shows the first pass of the impression sequence.

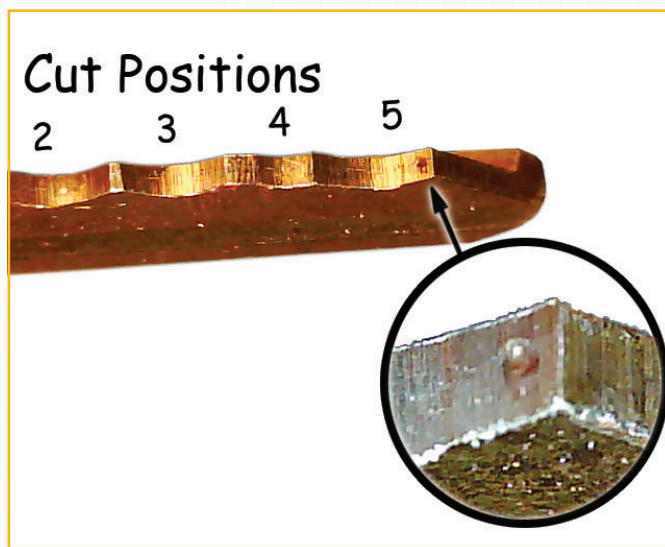


Figure 11. You can see the mark at the tip of the key.

is positioned in the cut, and the file is stroked forward in a single short, fluid motion. The wrist is held rigid during the forward stroke to avoid rocking in the stroke. The intention is to produce a flat-bottomed, even cut in the key blade. The file is designed to cut in the forward motion only. Lift the file after the forward stroke and return to make a second stroke. Don't saw the key with the file. Maintain the 90° relationship of the file to the key through the file stroke. Avoid rolling the key as you make the stroke.

Figure 8 shows a top view of the key filing process. The file is stroked at a 90° angle to the key blade. Maintain the squareness of the cuts to produce a key that, in all appearances, could have been made on a machine. The shop towel on the bench is used to brush the key, removing any chips or debris that appear on the biting surface. Brush the key on the towel before reading the marks. It is easy to mistake a piece of debris from the lock for a mark. Clean and inspect the key. Have you removed all of the impression marks that were found? File only where you see a mark.

Making a Key to a Standard Schlage Knob/ Lever Lock Cylinder

Figure 9 shows the prepared key. Each cut position has been lightly filed to establish a fragile surface to accept the impression marks. The cuts are laid down a bit toward the tip of the key. Notice that the cuts are true and square with the blade of the key. Hold your wrist stiff as you make the cut, and only cut with the tip third of the file body. At this point, you don't want to widen the cut center.

“The prepared blank is inserted into the cylinder one time to be marked.”

Figure 10 shows the first pass of the impression sequence. Marks can be seen in positions 1, 2, 3, 4 and 5. Here, we have tipped the key back and forth to illustrate the visibility of the marks at different angles. A single firm stroke of the file will remove about .008" of material. Your mileage may vary, depending on the age and make of your impression file. This also means that you will be bringing down the cut depths in approximately half steps (Schlage depth step dimension is .015"). So, go easy on the filing as not to make a cut too deep.

Figure 11 calls out the mark at the tip of the key. Positions 2 and 4 also marked, but the mark at position 5 is of particular interest. As you see, the mark has migrated up the ramp toward the tip of the key blade. This indicates that I have drifted away from the true cut center. The cut must be moved toward the tip of the key to keep the pin centered over the cut. When filing this cut, the ramp will be cut without deepening this position of the key. The pin (impression mark) has indicated that the cut is straying away from cut center. Follow the mark.

Figure 12 shows a good mark at position 2. Positions 1 and 3 show a light mark. The marks are well centered. File lightly at positions 1 and 3. File a good stroke at position 2. The light marks get a light cut. Those positions that have a

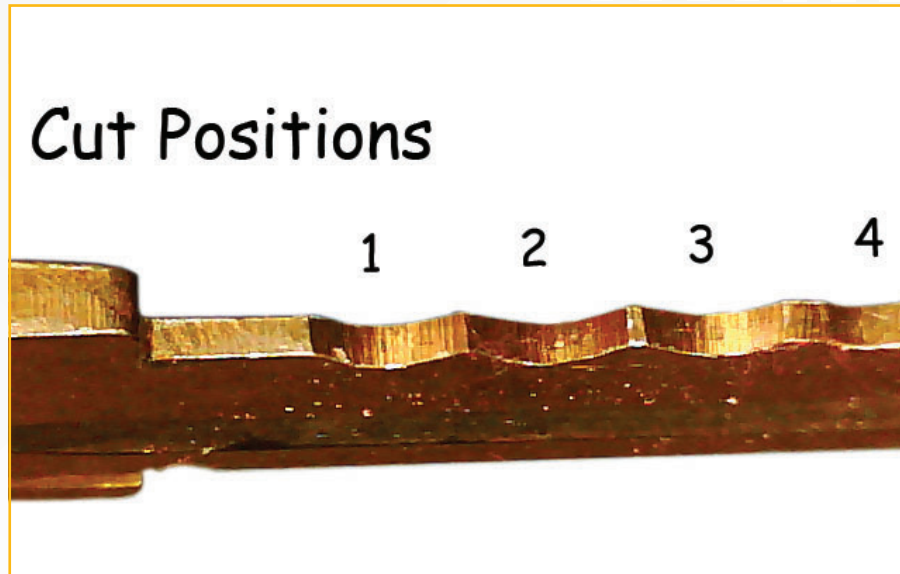


Figure 12. There is a good mark at position 2.

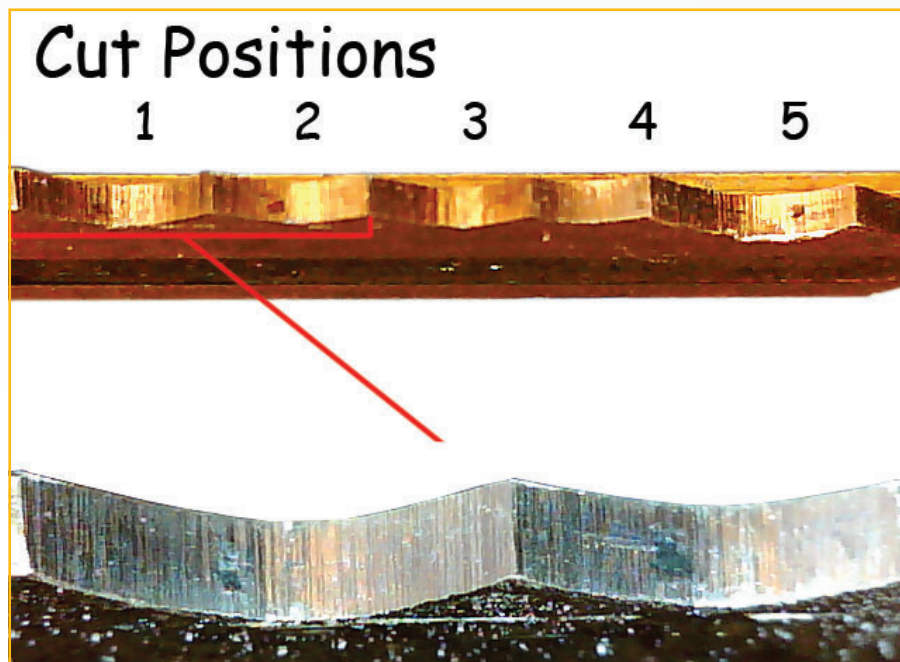


Figure 13. Notice in the detail that the marks are a clear rub in the filed finish of the pin seat.

healthy mark will get a healthy stroke of the file. Only file where marks are found, and gauge the cuts by the quality of the marks. Lay the ramps of the cuts down by tilting the Pippin file left and right. Pressure on the file to lay down the ramps and shape the cut is lighter, as you are not trying to deepen the cut.

Figure 13 details the marks in positions 1 and 2. Notice in the detail that the marks are a clear rub in the filed finish of the pin seat. Positions 3 and 4 are not marking here. Position 5 suggests that the cut is again drifting to the left. The cut will be filed a bit toward the tip to correct the drift.

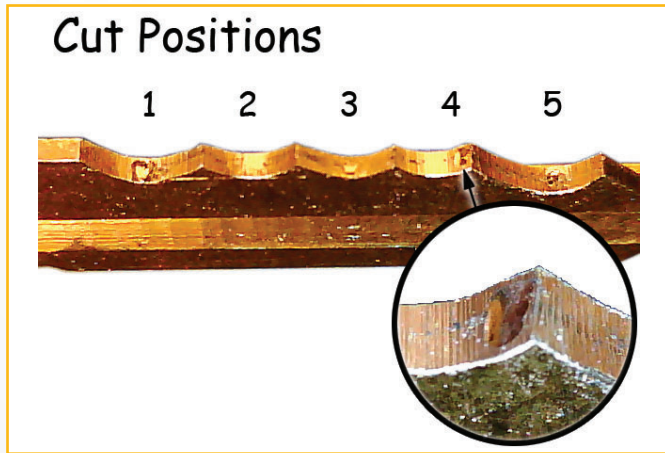


Figure 14. Look closely at the marks in positions 1, 3 and 5. The marks indicate that the cuts are centered under the combining pins.

This key is nearing completion. *Figure 14* shows some “famous” marks in positions 1, 3 and 5. The cylinder turned ever so slightly, and the up-and-down motions of the key during the impression process were restricted by the pins locking the blade down as turning torque was applied. The marks indicate that the cuts are centered under the combining pins. Position 4 shows that this cut is drifting left. This cut will be moved in the filing process toward the tip of the key blade. File to remove the marks only. Correct the drift and progress to another impression cycle.

The Completed Key

Three or four more impression cycles were needed to complete this key. Once the cylinder turned freely, it was rotated out of position and away from the key pull position. The impression up-and-down motion was used to find any cut positions that were slightly high. The key was filed to remove all impression marks.

Figure 15 shows the completed key and a vertical detail of the biting area. Notice that the cuts are all true and square with the key blade. The cut seats are flat-bottomed, and the ramps or leads

between the cuts are symmetrical, easy slopes. Except for the scars from the impression tool set screws, this key is entirely presentable. Notice that the key blade at the shoulder is not twisted or stress cracked. Excessive turning torque is not required to get good marks.

The cylinder used in this article was simply pulled out of the spare cylinders bin because it had no key. It took about 15 minutes to make the key by the impression method.

Practice makes the novice a journeyman. Practice makes the journeyman better. More practice brings better speed and more confidence. For those Sargent lever sets that defy your best picking efforts, simply shift gears and impression a key to open or disassemble them. Certainly charge for the increased difficulty, but leave that drill in the truck. Where are you going to find one of those obscure lettered keyway cylinders anyway? Impression is the professional answer.

If you found this article interesting, you will also find further instruction in the art of impression on the pages of *The Locksmith Guide to Picking and Impressioning*, which is available at www.sievekingprodco.com. It is one of the most popular books found there.

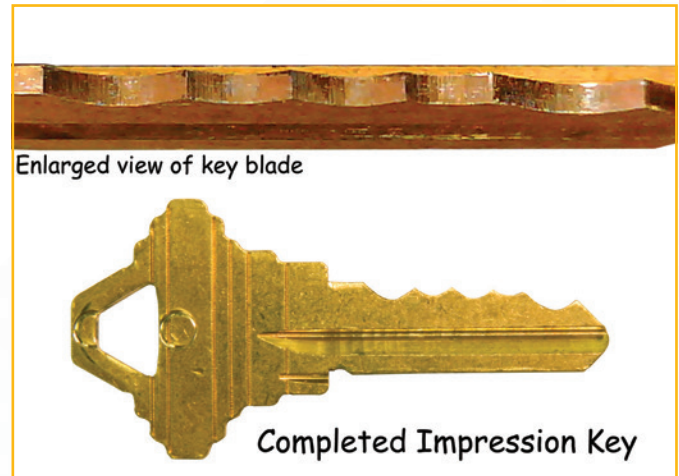


Figure 15. The key is complete. Notice the vertical detail of the biting area.

This article answers a request for information on impressioning, and this article should shed some light on this very popular topic. I sincerely hope you enjoyed it. If you have any questions, comments or projects that you feel should be addressed by this author, please forward them to Bob@sievekingprodco.com. 📧



Robert Sieveking is an RL and ACE instructor. But he prefers the very simple title “locksmith.” Formerly senior technical writer, technical editor

and then contributing editor of *The National Locksmith*, Robert has authored many instructional books in the locksmith industry. He is the author of “Fast Facts,” the encyclopedic reference to auto and motorcycle keymaking. “Fast Facts” was named the Best New Product in Print by ALOA in 1998. He began locksmithing in 1974 and continues to operate a full-time licensed professional locksmith business in Rockford, IL. He has invented many tools for the locksmith trade and continues to manufacture tools and books under the trade name Sieveking Products Company. You can reach him at bob@sievekingprodco.com or (815) 985-5663.

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Figure 1. Shown is the door from inside the room.

The Door Job

A door that wouldn't close had several issues — some caused by others' mistakes. **By Tony Wiersielis, CPL, CFDI**

THIS MONTH'S ARTICLE WAS SUPPOSED TO BE A CONTINUATION OF the February article on door closers. I decided to save that for the April issue. As I was in the middle of writing it, I did a job that was the perfect example of the mixture of repairs we are called upon to do in this field. In this case, there was door work, closer work, lock work and repairing someone else's mistakes, all in one.

“The lock work on this job was pretty simple, but it is often forgotten or ignored by the non-locksmith.”

It started with a call about a door leading to a “graduate reading room” at the university at which I work two days a week. The issue was that the door wouldn't close properly, and people other than graduate students were getting in at all hours.

I'd love to show you what the door looked like when I got there, but the idea for an article didn't occur to me until halfway through the job. *Figure 1*, however is a shot of the door from inside the room, so you'll know what I was working on.

The Problem

Figure 2 is the reason the door wouldn't close; those are marks on the door are from it rubbing against the frame at the top lock edge. *Figure 3* is what caused this to happen. The black arrows point to the way the door leaf of the hinge looks twisted. The left side is below the door surface, and the right side of the leaf is above it. Compare that side with the red arrows on the frame leaf, which is flat and even with the surface of the frame.

The hinge isn't really twisted. What happened is the bracket inside the door — which the hinge is screwed into — is what's twisted. This bracket is usually spot-welded into place, though I've seen them screwed in on occasion. In this case, the bracket is close to popping its welds.



Figure 2

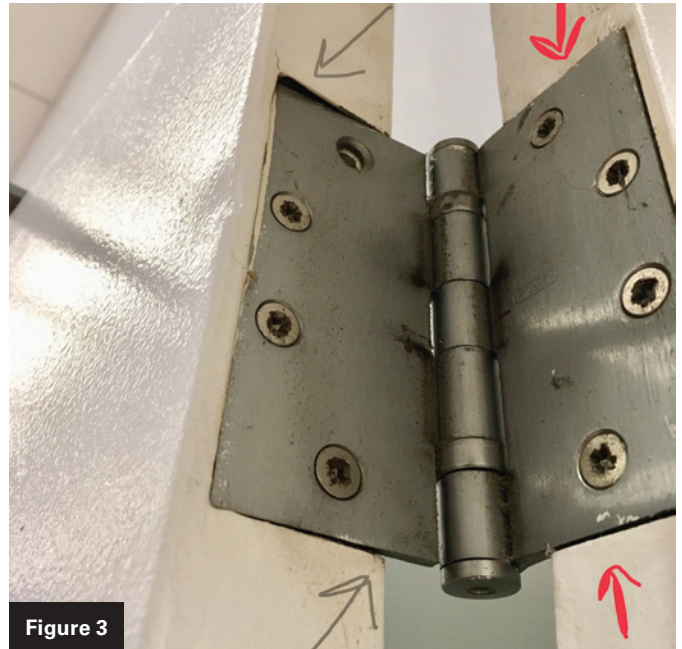


Figure 3

Figures 2 and 3. *Figure 2* shows the reason the door wouldn't close, and *Figure 3* is what caused this to happen.



Figure 4. The indentation within the red circle was caused by a broomstick or wedge propping the door open.

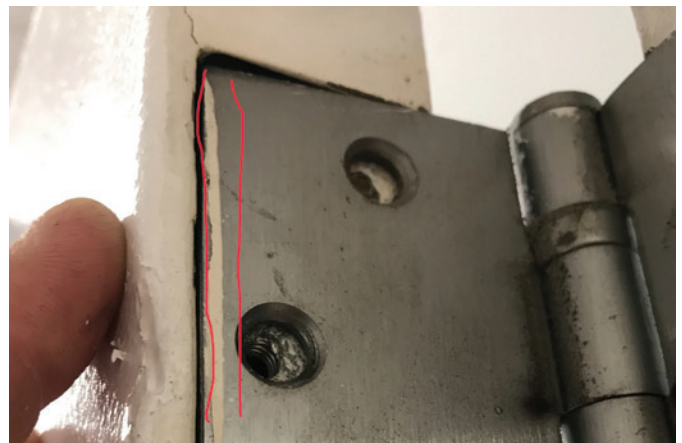


Figure 5. The two red lines show approximately where the shim is going to be, from top to bottom of the hinge.

What would cause something like this?

Figure 4 is the reason why. That indentation within the red circle is caused by a broomstick or wedge that's been stuck there by janitors to keep the door open. Last month, I mentioned how the door and hinges are similar to a lever and fulcrum; there's a great deal of pressure at the point where they love to stick that broom. Besides bending the top of the door, that pressure eventually begins twisting the hinge bracket.

Every time I see something like this, I point it out, but I wonder if it ever does any good. Sometimes the person who calls me is only concerned with fixing the immediate problem and doesn't care what happens after that. The problem that needs to be corrected is ignorance and/or laziness on the part of the cleaning crew.

The proper thing to do in this instance would be to use a half-surface continuous hinge or a pair and a half of regular half-surface hinges, or replacing the door.

That's not part of my job at this place; someone else does door repair or replacement. My job is to get the door to close until they do something about it.

Getting Started

To do this, I decided to shim the top hinge. In *Figure 5*, the two red lines show about where the shim is going to be, from top to bottom of the hinge. As you'll soon see, this will push the hinge out flush to the door surface, thereby pulling the door



Figure 6. The top screw on the door leaf was broken off.



Figure 7. The author used needle-nose pliers to back out the screw.



Figure 8. The hinge leaf is flush with the door.



Figure 9. Shown is the point where the door was rubbing.



Figure 10. The arrow is pointing to the arm attached to the frame. This arm — and not the other — should be perpendicular to the closer body.

back toward the hinge side of the frame and away from the lock edge.

Before I do that, I have to deal with another issue. In a previous picture, you might have noticed the top screw on the door leaf was missing. Actually, it was broken off (*Figure 6*). I needed all four screws, so this had to come out. With needle-nose pliers, I was able to back it out

enough (*Figure 7*) to turn it with my fingers.

Once I applied the shims and tightened the screws, the hinge leaf became flush with the door (*Figure 8*). *Figure 9* is a shot of the door and frame at the point where the door was rubbing. The gap returned to normal, and the door swings freely in the frame. So much for the door work part of this job.

One thing before I go on: It's fairly common to use cardboard shims for shimming hinges. Stanley packs a set in each box of hinges, and you ought to save these when you can. However, you can't use cardboard shims on fire doors; they need to be metal. Don-Jo and justdoortoolz.com have them, and it's a good idea to keep some around.

Dealing With the Closer and Someone Else's Mistake

I now found that the door wouldn't close and latch. This is the closer part of the job, but in the process, you're going to see the "somebody else's mistake" part as well. That would be someone installing an electrified mortise lock and removing the old electric strike but not covering the resulting hole in the frame, as you'll see in a moment. The wires visible through the hole go to the prox reader on the frame.

Figure 10 is the issue with the closer. The arrow is pointing to the arm attached to the frame. This arm — and not the other — should be perpendicular to the closer body. The fact that it's not indicates that the closer is not "preloaded." This means that the arm is in a position in which there is some spring tension on the door at all times.

Without preloading, the door might rest against the stop or not. The idea is that preloading pushes the door against the stop molding and holds it closed. Think of a school bathroom with no latch. The closer holds the door closed because, in effect, the closer is pushing the door past the stop.

What happened in our case was the door didn't have enough push to close and latch. Because of the hole in the frame, we can see what happens with the door and latch before I moved the arm and after.

Figure 11 shows the door not quite closed; you don't see the latch engaging the strike. Figure 12 shows the door fully closed and the latch engaged in the strike, as it should be.

The "Vito Test"

I had to increase the spring power and adjust the main speed, latch speed and backcheck on the closer to get everything opening and closing properly. One of the things I always do is what I call the "Vito test," and it's my final check on closer operation. The guy who taught me the

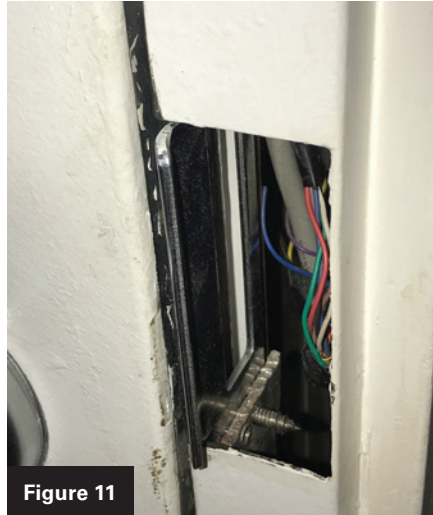


Figure 11 and 12. In Figure 11, you don't see the latch engaging the strike. Figure 12 shows the door fully closed and the latch engaged in the strike, as it should be.

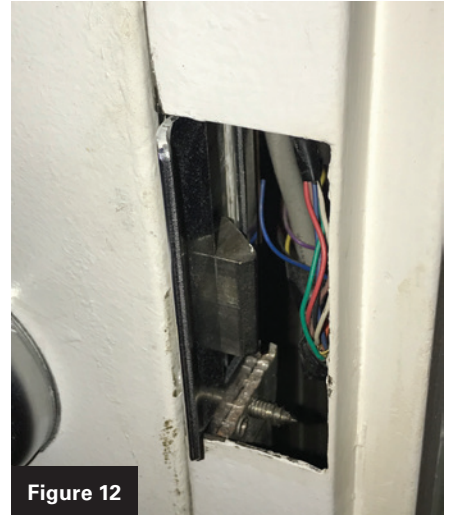


Figure 13. The closer should be adjusted so that it will close and latch the door positively even when it's barely open.

business, Vito Monaco, showed me this method, so I named it after him.

Here's how it works: Imagine I just turned the lever on my way out the door and you called out to me. The latch is as you see it in Figure 13, but I let go and walk back toward you. The closer should be adjusted so that it will close and latch the door positively even when it's barely open.

The point here is not to do what the layman does: rely on the speed and swing of the door that was fully opened. No. The



Figure 14. The black arrow points to the paint removed by the movement of the rosette. The red arrow points to what Best refers to as the "rose ring."

closer is supposed to control the swing of the door at all times through the opening and closing cycle. This test proves whether or not it's doing what it's supposed to do: latch the door. That's pretty much the closer part of the job.

The Lock Work

The lock work on this job was pretty simple, but it is often forgotten or ignored by the non-locksmith. In Figure 14, you can see the black arrow pointing to the paint



Figure 15. The spanner wrench is shown.



Figure 16. The author is lifting his finger so you can see the wrench hole isn't there anymore. Therein lies the problem.



Figure 17



Figure 18

Figures 17 and 18. The rose ring is shown before and after tightening. Note the gap between the lever and the rose ring.

removed by the movement of the rosette. The red arrow is pointing to what Best refers to as the “rose ring.” Note the hole for the spanner wrench (Figure 15). If it looks like a Schlage wrench to you, that’s because the Best version is nearly identical to the Schlage version.

The reason the rosette was moving around enough to mar the paint was that it was loose. It was loose because the rose ring was loose as well, and this is what holds it tight against the door and the spring cage under it.

You can see me gripping the ring with

“The hinge isn’t really twisted. What happened is the bracket inside the door — which the hinge is screwed into — is what’s twisted.”

my fingers in Figure 14. I turned it by hand. In Figure 16, I lifted my finger so you can see the wrench hole isn't there anymore. Therein lies the problem. Almost all of the time, non-locksmiths don't have the spanner wrench or even know about it, so they hand tighten it and walk away. Adjustable soft-jaw pliers or regular pliers with copious amounts of tape on the jaws would get it past “hand tight” enough to get by, but you really need the wrench. By the way, a Unican wrench works as well as the original for this.

If the rose ring isn't tight, you can get what you saw in Figure 15 with the paint. The other lousy thing that happens is the rose rings back off in use and starts to bind against the levers, causing them to droop. If this happens after a new installation done by the amateurs, there's a panic call and the veiled accusation that “your product sucks.” Nope. It's an installation problem. If I go to one of these panic calls, I leave a wrench behind so they can walk around the building and fix every instance.

Figures 17 and 18 show the rose ring before and after tightening. Note the gap between the lever and the rose ring. This appears because now that everything is where it's supposed to be, there's space there. I always reset the lever onto the



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A night-time photograph of the Las Vegas skyline, featuring the Flamingo Las Vegas, the New York-New York Wheel, and the Flamingo Las Vegas Tower, all illuminated against a dark, starry sky.

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A daytime photograph of a rural landscape. In the foreground, a black wooden fence runs across a green field. In the background, there are trees and a clear blue sky.

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Figure 19. This image shows the indentation in the spindle made by the point of the set screw.



Figure 20. The author turned the spindle out a quarter turn to an unmarred surface before reinstalling the lever.

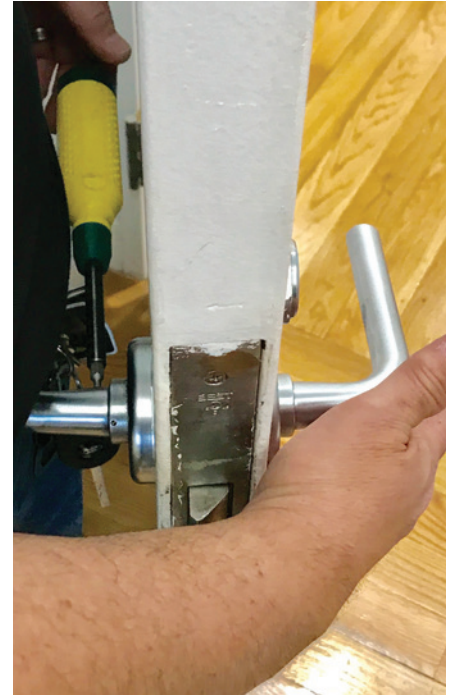


Figure 21. This photo shows how the author tightens set screws.

spindle because I don't want it sliding in and out as the lock is used. But I don't just loosen the set screw and slide the inside lever in.

Figure 19 shows the indentation in the spindle made by the point of the set screw. I turn the spindle out a quarter turn (Figure 20) to an unmarred surface before I reinstall the lever. I do this because the set screw can sometimes follow the old indentation back to where the lever started out. That won't happen on a new surface.

This is a good time to check that the spindle was tightened and then backed off a full turn as it was supposed to be, something building maintenance crews are often unaware of. Figure 21 was a difficult picture to take, but it shows how I tighten the set screw. I hold in one of the levers with my hand while exerting gentle pressure with my body against the other lever. This ensures that the outside lever didn't move while I tightened the set screw and leave a gap.

I had to order the Don-Jo filler for the electric strike prep, so I'll include a picture of the finished product in my next article. ☺



Tony Wiersielis, CPL, CFDI, has more than 30 years of experience and has worked in most phases of the trade throughout the New York metropolitan area. He was named *Keynotes* Author of the Year for 2016.

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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)

- | | | |
|--|--|---|
| <input type="checkbox"/> Locksmith Owner | <input type="checkbox"/> Automotive | <input type="checkbox"/> Employee Technician |
| <input type="checkbox"/> Electronic Security | <input type="checkbox"/> Security Professional | <input type="checkbox"/> Mechanical Door Locks & Hardware |
| <input type="checkbox"/> Institutional | <input type="checkbox"/> Safes | <input type="checkbox"/> Investigative |
| <input type="checkbox"/> 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.

TYPES OF MEMBERSHIP AND REQUIREMENTS

Check only one box from the categories listed below:

Active Membership

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

- US and US Territories \$250 I elect to Go Green \$225
- International \$265 I elect to Go Green \$195

International Association of Investigative Locksmiths Membership

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

- US and US Territories \$50

Probationary Membership

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

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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.

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Allied Membership

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

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

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Israel, Korea, Papua New Guinea, Saudi Arabia, United Arab Emirates	\$360

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

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

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

Signature _____ Date Signed _____

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“To grow, you have to offer a service your competition doesn’t or do it better than they do.”

What Is Your Investment Worth?

ALOA Education Manager **Jim Hancock, CML, CMST**, addresses the value of attending SAFETECH and ALOA 2019.

EVERY YEAR, ALOA AND SAVTA STRIVE TO PUT TOGETHER SOME OF the finest educational programs available to the industry. Classes are offered at the annual conferences as well as in the training center in Dallas and around the country at local association shows and vendor shows. Generally, ALOA will put out a survey yearly asking members if they attended the conference and, if so, if they attended classes. If the answer is no to either, the survey then asks why classes were not attended. The reasons given are pretty varied, but there are some that seem to be given every year: too far away, can’t afford time away from business, classes too expensive, hotel too expensive and no new classes. With SAFETECH 2019 just around the corner and ALOA 2019 approaching quickly, I wanted to address these responses.

“Too Far Away”

Or, translated as: Travel costs are expensive. This is absolutely a legitimate issue. If you live in Maine and the conference is in Nevada, unless you are flying, you are looking at a couple of days on the road minimum with hotel accommodations along the way, plus fuel and meals. Flying may save on the latter two, but the airfare can add up to about the same or more once you add in airport parking or Uber to the airport and baggage fees. So, let’s take the worst-case scenario of driving from Bangor to Las Vegas. With fuel (using \$2.50 a gallon, approximately \$800 round trip), two nights of hotel on the trip both ways (\$500) and meals (\$200), you have spent approximately \$1,500 just to get there and get home. Keep this figure in mind.

“Hotel Too Expensive”

This would be the lodging at the venue, meals and miscellaneous money spent while on site. Assuming you take the five-day package and stay for the show one day, depending on the venue, the rooms can be upwards of \$169 a night. ALOA puts out invitations to bid when a city is chosen, and the hotel that gives the best pricing and includes the best perks such as free breakfast or reduced parking fees and such is who we use. These room rates are based on the number of sleeping

rooms the conference will use nightly for the duration of the conference, so this becomes a major catch-22. So, let's use an average of \$149 nightly for six nights (\$900 +/-), meals (\$300) and miscellaneous (\$300) so, again, we are looking at \$1500+/- . Keep this in mind.

“Classes Too Expensive”

This one is the easiest to quantify. A five-day package of classes is generally less than \$1,400 at either conference. Unlike some classes offered at continuing education venues or online, our classes are mostly hands-on. You get to see, feel and work with the items you are learning about with a live instructor to explain why you are doing what you are doing or tell you why what you did was not right. There is no guessing and waiting for feedback or getting none because you are watching a video. If you take a five-day package, you are getting 40 hours of training. Actually, possibly a little more because you are able to ask the instructor questions during breaks and lunch, thereby getting years and years of knowledge.

Also, if you put this to the college cost test, what does a college class cost you for a semester hour? These classes on the five-day package equal \$35 per hour... \$35. How much is your hourly labor charge? Plus, if you are taking classes, lunch is provided, saving some of the meal money you would ordinarily be spending.

So, let's stay with \$1,400 and remember that figure.

“No New Classes”

Over the past five years, both SAFETECH and ALOA have featured at least two or three and as many as five new subjects at each conference. Every survey we do will have someone say, “You need to do XYZ class.” What you will see in many cases is that the topic in question was offered that same year or the year prior and was

“You will learn a new skill or enhance a skill that can make you tenfold what you spent.”

poorly attended. Adding new topics is the easy part, but finding qualified subject matter experts is the difficult part. ALOA will not knowingly offer a topic with an instructor that is not up to the ACE standard.

“Can't Afford Time Away From Business”

Thank goodness this is a legitimate concern. When business is good and we are busy, it's tough to break away if we operate as a single person or small shop. The potential “loss” of business when you are not there to answer the phone is hard to measure. It can be hundreds to thousands of dollars for the week you are gone. So, even though every shop size and business loss will differ, let's put a figure of \$1,000 per day on the time off. That's \$6,000 if you have no one else to assist you.

Loss Versus Investment

So, with worst-case scenarios, you are at loss of \$4,400+/- plus the business lost. This is not something to sneeze at, for sure. However, instead of looking at it as a loss, think of it as out-of-pocket expenses toward your future. First, almost every dime is a tax deduction for your business. Second, with ALOA's new rewards program, you are in line to get free classes, travel, lodging and such. But here is the real win in this situation: You will learn a new skill or enhance a skill that can make

you tenfold what you spent.

Let's take for example you ALOA members who are wizards with locks and keys but do no electronic access control or safe work. Those skill sets can add tens of thousands of dollars to your income. While you spend all day rekeying locks and making car keys for \$1,000-\$1,500 for the day, that can be made in a couple of hours doing access control systems. You change safe combinations but don't attempt openings by drilling or manipulation, when either method could easily equal \$750 to \$1,500 or more for one job. And how about you safe technicians who do little to no traditional locksmith work. What if you took a few classes in interchangeable cores or master keying or access controls or alarms... can it be as lucrative on a per-job basis as what you do now? Absolutely.

Obviously, all of these figures are arbitrary. If you live closer to the conference, take fewer class days, drive something that gets 60 miles per gallon or stow away in the luggage compartment of an airplane, expenses go down. If you have tons of competition in your area for a new service or you live in a small town where access control or master keying is not a huge need, your income from new skills will be lower. But, the idea is the same. The old adage applies: You have to spend money to make money. To grow, you have to offer a service your competition doesn't or do it better than they do.

I hope to see a lot of new ALOA members at SAFETECH in April and SAVTA members at ALOA in August. ☺



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

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Framon Manufacturing Company Inc.

Phone: 989-354-5623
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 www.framon.com

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Phone: 86 152 2033 2799
 www.gtl.tw

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 www.ickproduct.com

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 www.ikeyless.com

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 Fax: 540-380-1768
 www.medeco.com

National Auto Lock Service Inc.

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 Fax: 650-875-0123
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OBSTAR Technology Company, Ltd

Phone: 86-755-86707161
 www.obdstar.com

Olympus Lock Inc.

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 Fax: 206-362-3569
 www.olympus-lock.com

Pacific Lock Company

Phone: 888-562-5565
 Fax: 661-294-3097
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Philadelphia Hardware Group

Phone: 858-642-0450
 Fax: 858-642-0454
 philhardware.com

Premier Lock

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 Fax: 877-600-4747
 www.griptighttools.com

Sargent & Greenleaf, Inc.

Phone: 859-885-9411
 Fax: 859-885-3063
 www.sargentandgreenleaf.com

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 Fax: 949-261-7326
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 www.securamsys.com

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 Fax: 514-447-1024
 www.secure-t.ca

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Security Door Controls

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 Fax: 414-247-3564
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 www.thediagnosticbox.com

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Job Description Summary

Knowledge and skill to complete all tasks that relate to keying a building, paperwork associated with rekeys, key meetings, pinning cores, cutting keys, installation of hardware. Will check and re-check work of others considering accuracy with respect to standards and code compliance.

Position will maintain on-call status; will be responsible for continuing education and license renewal requirements. Will perform and complete special assignments in a timely manner as assigned by supervisor.

Mandatory on-call service rotation will be required to provide after-hours emergency service when paged.

Responsibilities

Position requires Journey level industry experience for service, repair and installation of all door hardware, including fire rated exit devices, closers, mortise, and cylindrical locking hardware; understanding and knowledge of hardware manufacturer installation specifications and guidelines; knowledge of NFPA 101 and NFPA 80 life safety and fire codes, and the ability to locate and research needed materials associated with job from vendor source. Monitor and track all orders for timely completion. Handle project management tasks, and have a working knowledge of processes and time lines. Communicate with customer scope of work needed. Will have skills to provide cost estimate for work proposed.

Qualifications

High school diploma or equivalency; or demonstrated possession of the competencies necessary to perform the work.

Knowledge and skill to complete all tasks that relate to keying a building; paperwork associated with rekeys; key meetings, pinning cores, cutting keys, installation of hardware.

Must be able to lift up to 30 pounds frequently, with or without reasonable accommodations.

Current locksmith license. Valid driver's license. - Valid NC DL within 60 days of hire. Must be maintained.

Preferred Experience, Skills

Prefer 3+ years locksmith experience. Proficient in Microsoft Office products, i.e., Word, Excel. Experience in AiM work order system is preferable, but not contingent for position. Prefer Institutional Locksmith Association and/or Associated Institutional Locksmith Association membership. Certified Journey Level Certification and/or Fire Door Inspector Certification, but not contingent for position.

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Call Felix @602-242-5429 for more information or email me directly at fgarza1948@yahoo.com, send resume, salary based on your experience in the field.12450 N 35Th Ave. Ste. 30, Phoenix, AZ 85029. <05/19>

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Business for Sale

Yuba Lock & Safe Inc 27 years in business for sale. California mountains Grass Valley, Nevada City Area. Great place to raise children. Full service lock store well established, included 2011 Ford Transit fully equipped service van , all inventory and equipment. Priced at \$ 200,000.00, 30% down owner carry bal 5 years. Contact Broker Ron Nevis 530-277-1043 or 530-477-6077. <03/19>

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Classified Advertising Policy

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

Each ad will run for three consecutive issues. For blind boxes, there is a \$10 charge for members and nonmembers. All ads must be submitted in a word document format and emails to adsales@aloe.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
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ASSA-Ruko/Technical Services	page 45	www.assatechnicalservicesinc.com	(724) 969-2595
Big Red	page 45	www.bigredsafelocks.com	(877) 423-8073
Bullseye S.D. Locks	page 45	www.bullseyesdlocks.com	(800) 364-4899
ClearStar Security Network	page 60	www.clearstar.com	(360) 379-2494
Framon Manufacturing	page 29	www.framon.com	(989) 354-5623
Gardall Safe	page 21	www.gardall.com	(800) 722-7233
H.L. Flake	inside back cover	www.hlflake.com	(800) 231-4105
Hollon Safe	page 3	www.hollonsafe.com	(888) 455-2337
Intermountain Lock & Security Supply	page 13	www.implss.com	
Jet Hardware Mfg. Co.	back cover	www.jetkeys.com	(718) 257-9600
John Koons Locksmiths	page 60	www.koonslocksmiths.com	(800) 282-8458
Key Sales & Supply	page 31	www.keysalesandsupply.com	(800) 445-KEYS
Security Lock Distributors	inside front cover, page 45	www.seclock.com	(800) 847-5625
STRATTEC	page 7	www.aftermarket.strattec.com	
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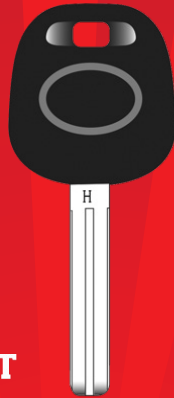
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