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# The National Locksmith®

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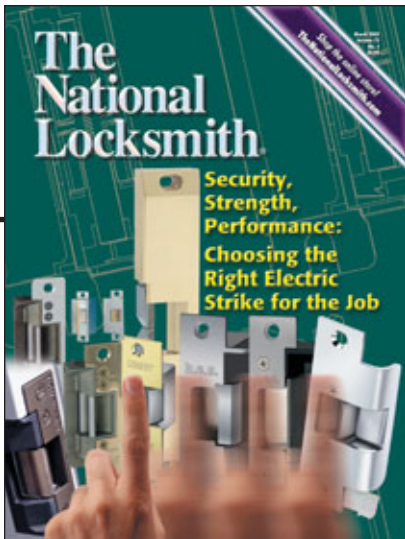
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**Security,  
Strength,  
Performance:  
Choosing the  
Right Electric  
Strike for the Job**





**On The Cover...**



With manufacturers like; Adams Rite, Securitron, Trine, Von Duprin and Rofu, supplying a broader range of electric strikes than ever, options for selecting the right one for the given application are greater than ever.

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# COMMENTARY



## The Multi-Brand Transponder Key Programmer

Every once in a while a major change affects locksmithing in a radical way. I remember when the VATS key came into being. Many locksmiths complained about the higher cost of the blanks and the decoder needed to make the keys. I argued that the extra technology and expertise required would raise the value of the cut key to the consumer, and that this would translate into income opportunities for the locksmith. In that case, I was correct.

When transponders came into the automotive market it represented a mixed bag of opportunity, challenge and roadblocks for the locksmith. While you could generate high and profitable fees for programming some keys, depending on the brand, you would either need expensive equipment, and, in some cases, be unable to program the key at all.

Perhaps the biggest problem facing the locksmith was the incompatibility of the various transponder brands being used among different car manufacturers. There was no single programming machine that would allow you to work on differing brands. Thus, you would have to purchase several machines, which seemed like a duplication of expense and raised the cost for you to be able to complete the work.

An answer to this problem had been developed in Europe a couple of years ago. A programming machine was brought onto the market, allowing European locksmiths to use one machine to program various brands of transponders. Yet this machine did not feature the software that would be needed to make the programmer very useful in The United States for American locksmiths.

Until now.

The **TCL-1 Multi-Brand Transponder Key Programmer** has now been outfitted with software for the American market place, and *The*

*National Locksmith* has made this device available to you through this magazine, and through our web site at [www.TheNationalLocksmith.com](http://www.TheNationalLocksmith.com), in the web store.

While the price of \$3,995.00 is not cheap, the machine does program a variety of car brands and consolidates your programmer needs into one. You can read more about the TCL-1 by seeing our ad on page 21, and you can read more information online in the store at our web site.

The TCL-1 offers locksmiths the ability to make some real money on transponder key programming with a single equipment investment. As a side note, I do think this is a huge benefit to the consumer as well. Imagine you've purchased an expensive new car, lost the keys, and have to have your car towed to the nearest dealer for key programming. That costs hundreds of dollars, to say nothing of the needless delays involved.

If you'd like more information about the technical functions of the machine, you can call the phone line which has been established to support the TCL-1. Just call the Technical Support Line at (650) 616-1941. Tell them you saw it in *The National Locksmith*.



*Marc Goldberg*

**Marc Goldberg**  
Publisher

Have questions? Want free technical help?  
Free Locksmith Forums!

[www.TheNationalLocksmith.com](http://www.TheNationalLocksmith.com)



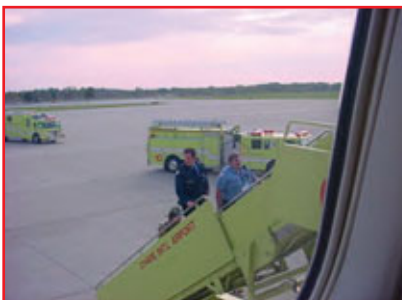
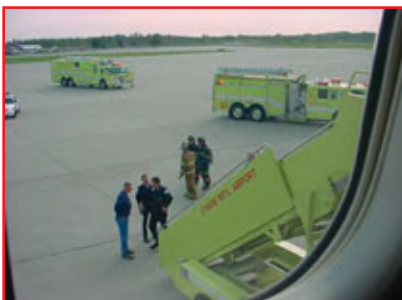
# Mango's Message

**W**hat a frightening experience! Can you imagine being on a commercial airliner soon after the September 11, attack on the World Trade Center, when the country is still in a high state of alert, and a man breaks out into a rage and storms towards the cockpit of the plane? If that wouldn't scare the tar out of you and put a lump in your throat, you need to join the Sky Marshalls. They need a few good individuals with nerves of steel. For most mere mortals like myself, however, who doesn't have ice running through his veins, I believe I would need a change of clothing.

This actual event happened while locksmith Bill Neff and his wife Barbara were aboard American Airlines flight 1238, on October 8, 2001. Remember that date, because I'll come back to it later.

Bill is president of NEFF'S Safe, Lock & Security, Inc., in Lancaster, Pennsylvania and is also President and long-standing member of The Greater Philadelphia Locksmith Association. His wife Barbara is Vice President of the company.

Bill and Barbara were both on the return leg of a



## Terror on American Airlines Flight 1238

glorious 17-day trip to New Zealand and Australia. Bill was sitting in seat 3A and Barbara was in seat 3B in the first class section of the plane. They were to touch down at Chicago O'Hare airport for a layover and then continue on to their home state of Pennsylvania. On its initial descent about 25-minutes from Chicago O'Hare, on what was until then an uneventful flight, they suddenly heard a gallop of people running down the aisles from the cabin behind them. They were on a Boeing 767, which is a wide body jet with two aisles, and people were running down both sides.

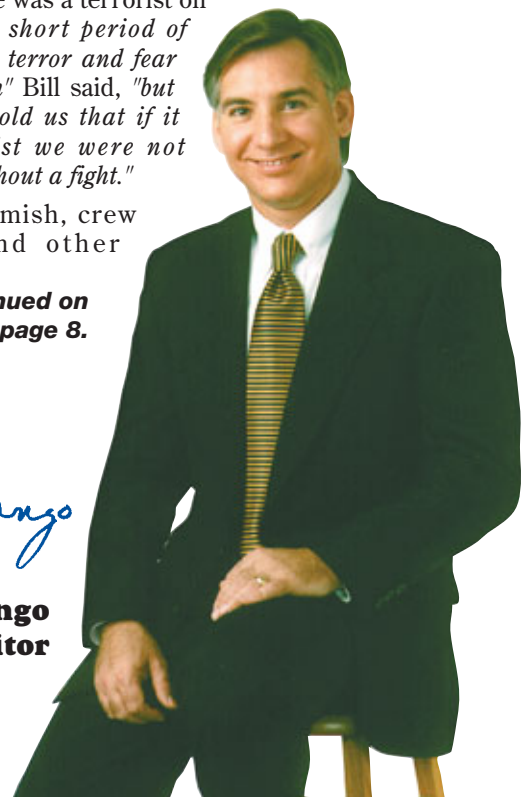
As soon as they arrived at the first class section, Bill saw that they were charging towards the cockpit door. Bill instantly leaped toward the cockpit with the others to prevent the stampede from progressing any further. When he saw the cockpit door fly open, Bill said to himself, "Lord help us." Bill said he responded like others who charged forward toward the cockpit, not actually knowing what was happening at the time, or if there was a terrorist on board. "For a short period of time there was terror and fear of the unknown" Bill said, "but our instincts told us that if it was a terrorist we were not going down without a fight."

In the skirmish, crew members and other

**Continued on  
page 8.**

*Greg Mango*

**Greg Mango  
Editor**





# Mango's Message

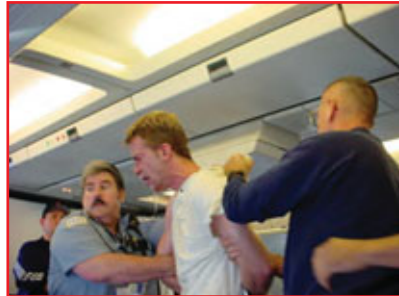
Continued from page 6

passengers overpowered Edward Coburn before he could attack the pilots or reach the flight controls. Mr. Coburn was not a terrorist on a mission to control the aircraft, as was initially thought. He was a mentally disturbed man aboard AA flight 1238 from Los Angeles to Chicago with his father, Stephen Coburn. According to reports by Stephen Coburn, he said he warned flight attendants twice about his son's undisclosed mental condition before the outburst. The flight attendants prepared for any strange activity by Coburn by placing an off-duty pilot in a seat near Coburn to watch him. Stephen Coburn said that on medical advice, his son was not on any medication at the time for his mental disorder. I wonder just how sound that medical judgement was?

Because Edward Coburn was not on his prescribed medication, during the flight he became increasingly agitated and disturbed. He started shouting uncontrollably and then burst into a rage and charged towards the cockpit. In a panic, crew members and other passengers chased after him as horror and images of the World Trade Center attacks flashed through everyone's mind.

During the commotion the pilots sent an emergency distress signal and two F-16 fighter jets were notified and immediately sent to its aid. There were a few tense moments as Bill could see the F-16's from his window, hover alongside the aircraft. At the time the Department of Defense had given strict orders to patrol and protect sensitive major city airspace and to shoot down any aircraft that appeared to be a threat to skyscrapers, such as the Sears Tower or the John Hancock building in Chicago, or other government buildings. This country was in a very high state of alert at the time and any perceived threat (be it verbal or physical) was being taken very seriously.

Apprehended before he could reach the cockpit, Mr. Coburn was stopped and the seat belt used by the flight attendants in their pre-flight preparatory demonstration was used to restrain him. Not knowing what Mr. Coburn's intent was, the F-16's escorted flight 1238 into Chicago O'Hare airport



until it safely landed and was surrounded by security personnel. When it did, Bill grabbed his digital camera from the overhead storage compartment and shot the photographs you see here of the Chicago police, fire rescue personnel and emergency medical technicians removing Mr. Coburn from the aircraft. Mr. Coburn was actually frothing at the mouth as he was being escorted off the aircraft.

This story and Bill Neff's photographs made the national news, and there was quite a bit of debate as to whether Stephen Coburn should be held accountable for his 31 year old son's actions.

In an interview following the event, Stephen Coburn said, *"No words can erase the stress and inconvenience that we caused the passengers, we're really grateful to the passengers and crew that were able to resolve the issue without any serious injury."* There were 153 passengers and 8 crew members on the airline.

In closing, Bill said, *"I am glad that God answers prayers. I know he did on that flight."*

Some of you may recall that in November of 2001, I wrote an editorial titled *"Eyewitness to Devastation!"* which was a first hand account of the World Trade Center attacks by Seth Pehr. The ironic twist is in the middle of writing that editorial, which was on October 8, 2001, I mentioned that: *"A thundering sound and huge vibration rumbled our building. It shook the rafters so hard that we all thought the rood would fall. I just about jumped out of my pants and everyone in our office complex ran outside to see if it was an explosion or what the cause was. We soon learned that two F-16 fighter jets were in pursuit of a low flying commercial airliner headed towards O'Hare airport in Chicago. In doing so, the F-16's broke the sound barrier and the concussion of the sonic boom was heard and felt for miles."*

Guess what airliner those F-16's were chasing? That's right! American Airlines flight 1238. **TNL**



MARCH 2002

# Letters

*The National Locksmith* is interested in your view. We do reserve the right to edit for clarity and length.

## Handy Tool Modification

In this month's Technitip column, Dennis Harmon sent in a tip on a handy tool modification. Along with his tip, he also had a cartoon his son Ken Harmon drew after the World Trade Center attacks. I think Ken expressed the American spirit exceptionally well. Great job Ken, thanks for sharing your work.

Jake Jakubowski  
Technical Editor

A Mind Full by Ken Harmon



## What a Great Tool

I just wanted to share a few thoughts with you on the topic of "The value of *The National Locksmith* magazine." I have spoken with quite a few people about this very topic. I wonder, (as well as do others), if readers understand the value of what they have in this great magazine? Have you ever considered what a great tool *The National Locksmith* magazine really is? My goodness, where else can you get such a wide variety of information on different aspects of the locksmith trade? Commercial and residential hardware, automotive service, safe work and access control, to name a few, is covered on a regular basis. Where else can you get a chance to tag-along, and "look over a locksmith's shoulder" to see how a certain device is installed, serviced and used? Where else can you see all the new toys and techno-gadgets that help to keep us on the cutting edge of this trade?

Why, they even go as far as covering basic carpentry, basic electronics, basic mechanics, and even some of the basic tools used for each. And there's even a section to show tips, which help make our jobs run smoother and sometimes less expensively. Where else can someone get the information that is contained therein on a monthly basis? Nowhere! Because no other publication does it like *The National Locksmith* does it.

Just recently, Bob Sieveking did a fantastic series of articles on tubular locks. And I honestly do not know of any other source anywhere at any time that gave as much information as those series of articles. With *The National Locksmith* magazine, the writers



keep their fingers on the pulse of the locksmithing industry. They are continually on the "cutting edge" of this trade.

This is not a magazine which you simply take to the "throne room" and glean through. No, no, no! This is a fantastic tool that can help you progress to be the best locksmith that you, (or your employees), can possibly be.

This is a tool folks. A T-O-O-L! And truthfully, I still continue to cut out certain articles and store them in protective sheets. The way I see it, if you have been a subscriber for a while, you can cut out articles pertaining to a favorite topic and have a top of the line reference manual.

There's no way that anyone can honestly look within themselves and say "I know it all and I never learn anything from *The National Locksmith* that I didn't already know!"

Does this sound like an advertisement for this magazine? It sure is, and a well deserved one at that.

Raymond M.  
California

The National Locksmith  
1533 Burgundy Parkway  
Streamwood, IL 60107  
Attn: Editor



# Security Café

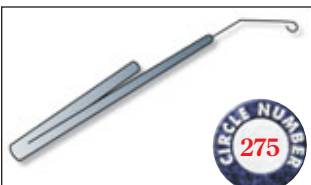
**DROP IN FOR  
 TOOLS, TECHNOLOGY  
 & EQUIPMENT**

## Marks USA "Override Guard"



All Marks USA Protector Series mortise locksets feature an "Override Guard", which is designed to result in spindle failure when torque of over 550 foot lbs. is applied. Lockset remains locked and when spindle is replaced, lockset is fully operational. Protector Series locksets have a lifetime mechanical warranty, meet or exceed all operational and security tests of ANSI A156.13-1994, Grade 1 and are UL listed for 3-hour fire rating.

## Pro- Lok Window Wiper



Have you ever tried to look into the door cavity while trying to unlock a car? Sometimes all you can see is the reflection off of the dust that has accumulated below the weather-stripping. This amazing new tool solves the problem quickly and easily. Simply insert the tool under the window glass and wipe the glass clean on both sides at the same time. The cloth cover is removable and washable.

## Key Profits to Red Cross



Kaba Ilco is offering a special assortment of key blanks made up of the Ilco Personal-Key USA Flag keys. The assortment contains 20 each KW1 and 20 each SC1, display board and backer. Kaba Ilco will be donating a portion of the profits from the sale of the assortments to the American Red Cross Disaster Relief Fund. To support the re-orders, Kaba Ilco is still offering KW1, KW10, SC1 and WR5 packed 10/poly bag and 50/box.

## Medeco® Embassy™ Electrified Locksets



## Jensen HotRod™ Professional Safety Screwdriver

New to the market, this safety screwdriver detects the presence of voltage and indicates it with a flashing red LED lamp in the handle. The double-insulated blade provides circuit protection in electrical work. It is voltage-protected for use up to 600 volts and features a 6 x 1/4" cabinet blade. The screwdriver comes with two "AAA" batteries. The HotRod comes with a five-year manufacturer's warranty and is made in the USA. NOTE: Ensure power is turned off before working on equipment. Insulated tools are intended to protect against accidental contact with live circuits.



Featuring all the high-security strength of the heavy-duty Embassy locksets, the Embassy Electrified Locksets offer the added benefit of remote electrical control. A UL listed solenoid, built into the lockset mechanism, controls the lock function from a remote switch or access control system.

The Embassy Electrified Locksets can utilize both mechanical and electronic access control credentials, but a mechanical key is not required. Compatible with any EAC system, the locksets give end-users the option of using their existing EAC systems or installing Medeco SiteLine™ Access Control products.

## Klein Tools New Premium Pliers for Professionals

Klein Tools is introducing



its new Journeyman™ line of premium pliers for trade professionals. The line of pliers offers contoured, cushioned handles and high-quality design details.

Two handle materials combine to give the user a better, more comfortable grip, as well as handle strength and durability. The soft outer handle material feels more comfortable in the hand and provides a sure grip. The tough inner material and handle ends provide ruggedness and durability. The pliers also feature a contoured thumb

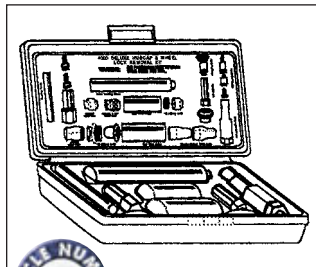
**Continued on page 14**



**Continued from page 12** area and a flared thumb rest, further improving the feel and grip of the tool.

The Journeyman Series pliers are currently available in 13 different styles and carry a lifetime warranty.

### Hubcap and Wheel Lock Removal Kit



The LT-4000 Deluxe Hubcap and Wheel Lock Removal Kit from Lock Technology, now includes the LT-4200A dual sided twist socket lug nut remover. The LT-4000 also safely removes and replaces GM, Ford and Chrysler wire wheel hubcap locks on most 1978 and up vehicles. The tool also removes factory and most aftermarket mag wheel locking nuts. The kit includes instructions and is packaged in a custom carrying case.

The kit is one of dozens of automotive specialty tools available from Lock Technology, ranging from pick sets to lockout kits, inflatable wedges, flexible lights and more.

Lock Technology has an awards and royalty program for new hand tool ideas.

### Corbin Russwin 600 Series Key-in-Lever Trim



This trim is based on the same locking platform as the BHMA Grade 1 CL3300 Series Lockset, including a stronger, more robust spring cassette. It also offers design continuum by utilizing the same roses and lever handles as the CL3300.

The 600 Series trim easily replaces the 500 Series trim, as they fit the same door prep. It is available with the following features: Armstrong, Newport, and Princeton Lever designs; Passage, Dummy, Classroom, Night latch, and Storeroom functions; Available in 605, 606, 611, 612, 613, 625, and 626; All cylinder options available, including Pyramid™. The standard cylinder is 2000-033.

The new 600 Series trim has a 1-year warranty and may be used on the ED8200 (B)(A) rim and ED8400 (A) surface vertical rod devices.

### Panic Bar End Cap Guard



The Panic Bar End Cap Guard from Door Electronic Works, is designed to protect the panic bar from damage, which may occur during normal use in a commercial, institutional or hospital settings. No field cutting of the panic bar is necessary for installation, and each end guard comes complete with fasteners for wood or metal doors. End guards come in satin silver, or paint grade brass with clear coating.

### Laptop/PDA Security Fixture

Kenstan Lock, has a



new Lockdown Plate that secures Laptop computers and PDA devices in place. The contemporary design allows the computer to be showcased without interference from the lock.

The base plate is bolted to the countertop using the mounting holes provided. The adjustable position lock includes a tamper proof, pick resistant Medeco core. Turning the key and lifting the block easily remove the lock.

The Kenstan Lockdown Plate offers low profile security for easy access to the computer. It easily installs to most countertops with mounting bolts. The plates are adjustable to accommodate most popular configurations including DVD players and other electronic devices.

Kenstan Lock manufactures a complete line of showcase and cabinet locks for commercial, retail and industrial applications.

### Kaba Ilco Universal Combination Cylinders



The 1599 Universal Combination Cylinders by Kaba Ilco takes flexibility to the max! A tailpiece assortment is included standard with every 1599 cylinder and enables this knob/converta cylinder to be used as a key in knob, key in lever, single deadbolt or double deadbolt cylinder. The screw-on cap

plug/tailpiece retainer insures ease of tailpiece installation and durability.

The versatile 1599 cylinders are available in over thirty of the most popular keyways and fit many different applications. All 1599 cylinders feature the strongest, best designed tailpieces in the replacement cylinder market able to withstand up to 70 inch pounds of force. These high quality cylinders are Master Key and Grand Master Key compatible into OEM Systems.

### Paktek, Inc. Introduces the New ToolPak II



The best just got better. ToolPak, the world's first patented backpack for tools has done it again. They have added heavy ergonomic shoulder straps to make carrying those really big loads easier. They have also padded the top handles and added an extra layer of foam to the back panel for more comfortable carrying. For longer life we have increased the size of the zippers on the main tool compartments and stiffened up the tool panels with a new combination of materials to make getting in and out a snap.

**TNL**

# HIES

*Security · Strength · Performance*

Selecting the right electric strike to complement the total opening solution can be challenging. However, it is greatly simplified when you begin by placing emphasis on the levels of performance and durability each component in the opening provides. Performance grades have been established by several industry organizations. However, in addition to grade selection, security objectives, door and frame construction and lockset requirements will also help determine the right type of electric strike to use.

## Important Performance Standards

Performance tests have been established to ensure safety, security, and stability to which the public is entitled. These performance and durability levels are governed by industry standards established by organizations such as the American National Standards Institute (ANSI), Builder's Hardware Manufacturers Association (BHMA) and the Steel Door Institute (SDI). These written descriptions and criteria precisely define the appropriate operation, performance characteristics, physical properties, test values, usage parameters, safety criteria, and other factors of specific types of builder's hardware products.

BHMA is the only U.S. organization accredited by the American National Standards Institute (ANSI) to develop

and maintain performance standards for builder's hardware. At present there are 26 ANSI/BHMA standards, with several more in development.

Many ANSI/BHMA standards set forth different product grades for a particular hardware item. Progressive levels of performance benchmarks in each applicable ANSI/BHMA standard define product Grades 1, 2, or 3 – with Grade 1 being the highest (*see illustration A*).

## Operational Tests for Electric Strikes

**Cycle Test:** The test door is operated at a rate not to exceed 30 cycles per minute. The electric strike is cycled with compatible hardware.

**Dynamic Strength Test:** The moving force against the door measured in foot-pounds (*see photograph 1*).

**Static Strength Test:** Continuous pressure on the door measured in foot-pounds (*see photograph 2*).

## Lockset Requirements

Locksets are graded based on the holding strength of the latch in relationship to the strike plate. The levers of knob assemblies are graded based on the amount of torque they can withstand prior to failing (*see photograph 3*). Grading criteria is described in the BHMA/ANSI

### Grade 1

500,000 Cycles  
1500 lbf  
70 Ft lbf

### Grade 2

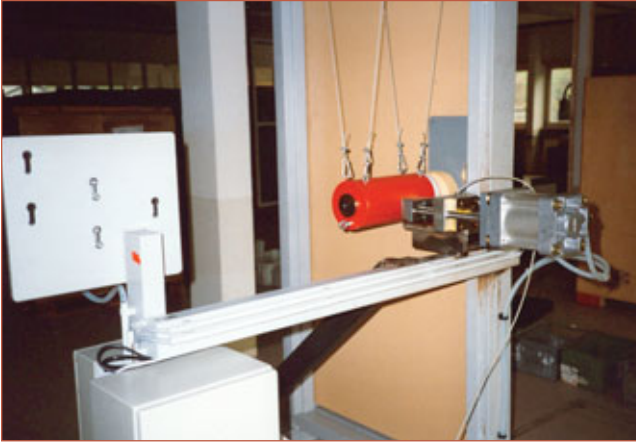
300,000 Cycles  
1000 lbf  
50 Ft lbf

### Grade 3

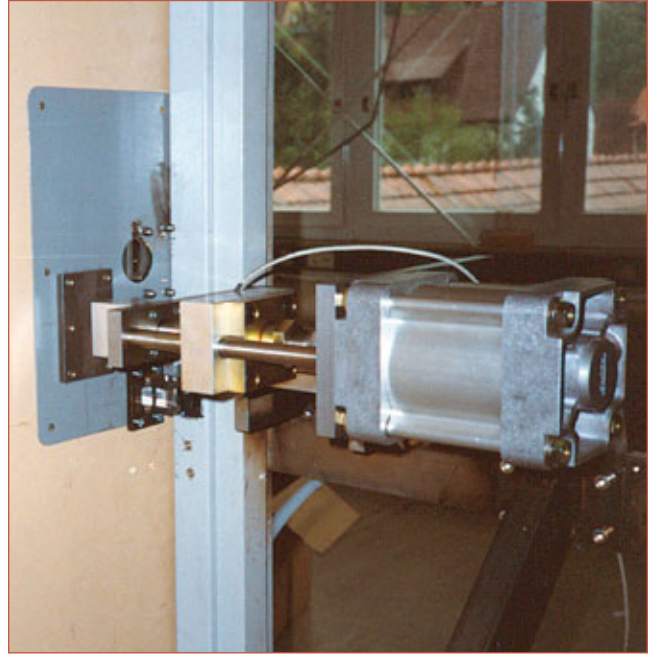
100,000 Cycles  
500 lbf  
35 Ft lbf

A. BHMA/ANSI Grading criteria.





1. The Dynamic Strength Test.



2. The Static Strength Test.



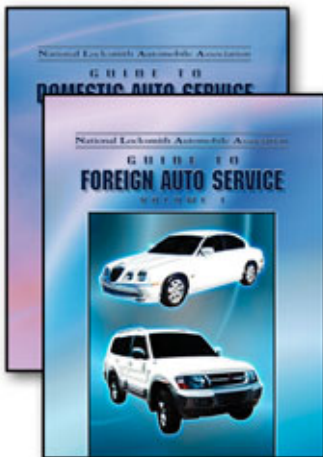
3. Graded on the amount of torque they can withstand.

standards manual section A156.2 – “Bored and Preassembled Locks and Latches.”

An understanding of the basic relationship between the lock and electric strike is essential in determining what type of electric strike to use. With existing door hardware, choose an electric strike that will perform the same function as the strike plate supplied with the lock.

## NLAA Guide to Domestic Auto Service

## NLAA Guide to Foreign Auto Service



You get car opening, lock removal and service, column service, key and code series information, and many views of the doors, panels and locks.

[CLICK HERE TO LEARN MORE](#)



For example:

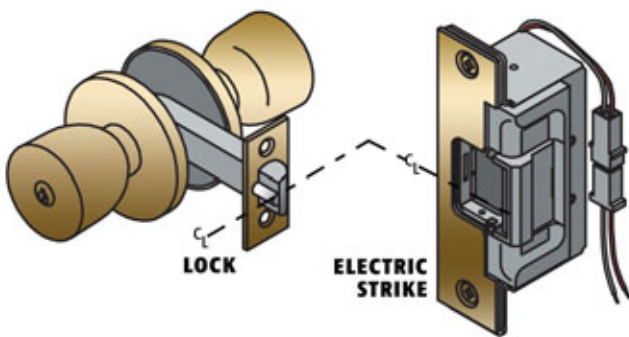
- Placement of an electric strike with a cylindrical lock (*see illustration B*). Note the horizontal centerline of electric strike in reference to the horizontal centerline of the cylindrical lockset (*see illustration C*).
- Placement of an electric strike with a mortise lock (*see illustration D*). Note the horizontal centerline of electric strike in reference to the horizontal centerline of the mortise lockset (*see illustration E*).
- Schematic of typical access control system (*see illustration F*).

For more information about the type of locks an electric strike will interface with, download “A Complete Guide to Electric Strikes” at [www.hesinnovations.com](http://www.hesinnovations.com)

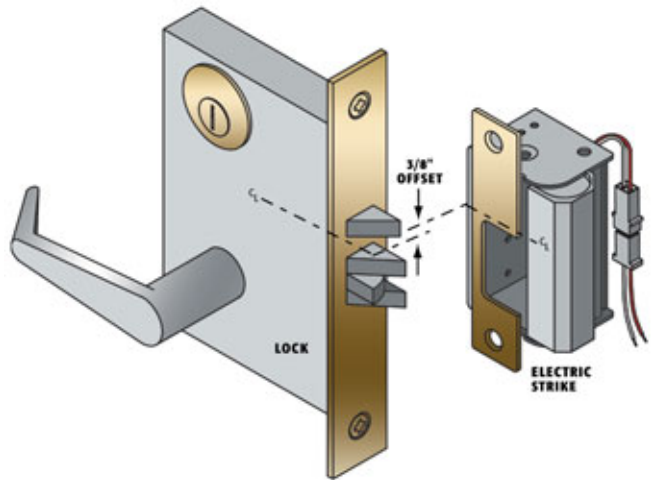
### Door and Frame Construction

The grading criteria for steel and wood doors and frames are completely different than that of the hardware that goes on them. The quality of the building materials and construction of the door is critical. Steel doors must be tested and meet the requirements of the Steel Door Institute (SDI) in conjunction with BHMA/ANSI standards manual section A250.4, “Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcing.”

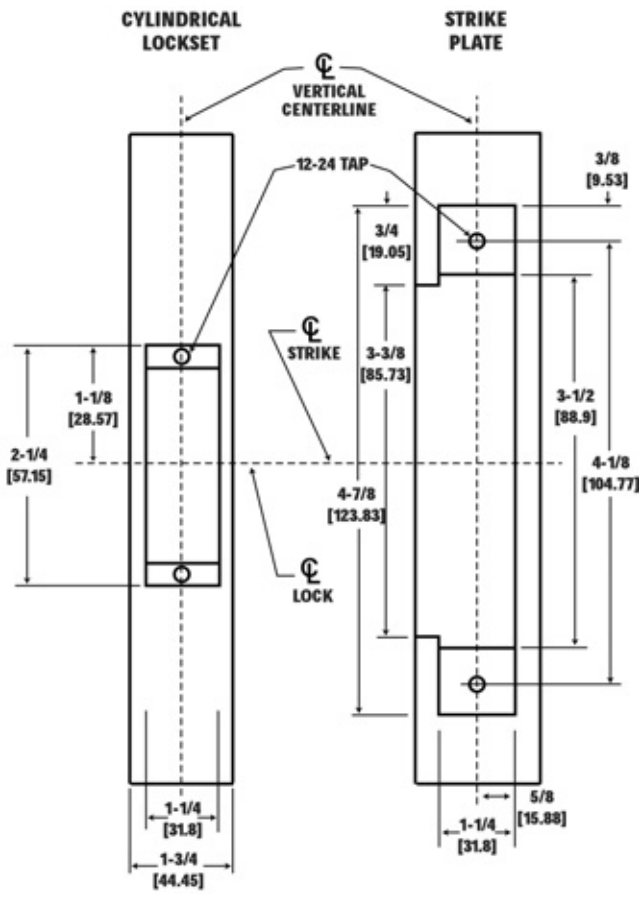
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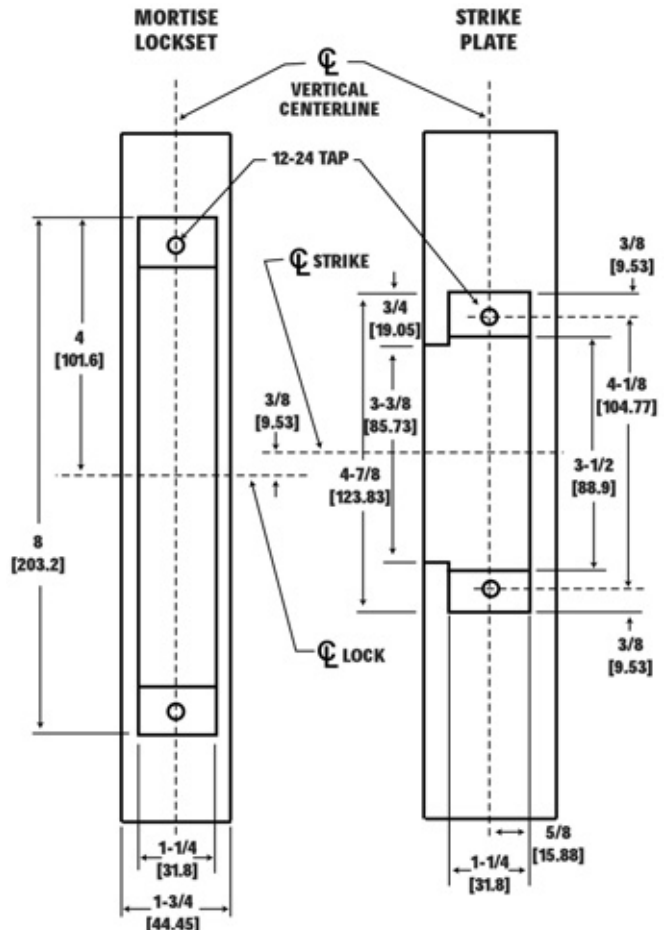
B. An electric strike with a cylindrical lock.



D. An electric strike with a mortise lock.



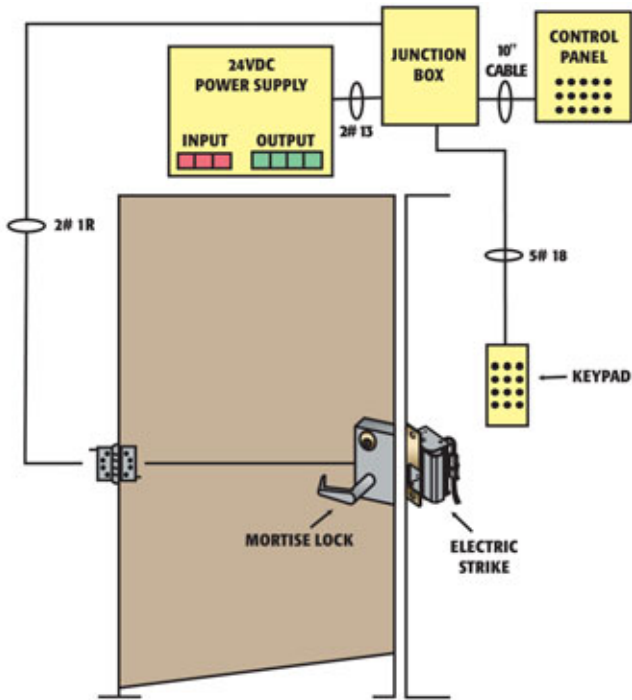
C. Note the horizontal centerlines.



E. Note the horizontal centerlines.



Continued from page 18



**F. Schematic of typical access control system.**

Requirements are:

- Level A Doors – 500,000 cycles
- Level B Doors – 500,000 cycles
- Level C Doors – 250,000 cycles

The purpose of this procedure is to test the performance of a steel door in as close to normal field operating conditions as possible and provide data that can be used to measure projected performance.

Typically wood doors are installed in areas where architectural design is the priority. Steel doors and frames are more often selected for commercial, industrial and institutional applications (see photograph 4).

### Meeting Today's Rigorous Demands for Higher Security

If the electric strike is intended as the primary electric locking device in the access control system, it is best to select a Grade 1 unit with superior strength and proven performance, not one that merely meets minimum requirements for the opening. A lower-grade electric strike diminishes the security of the total opening and the installer risks additional costs for repair or replacement.

In other words, don't let price be the determining factor (prices range from \$30-\$300). Assess your customer's requirements and choose a unit that will best compliment the access control system. And remember if the unit fails soon after installation, it's your reputation on the line.

### Electric Strike Installation

Most manufacturers provide templates to aid in the installation of their electric strikes. By investing a little time before you begin cutting the door jamb, you can avoid many hidden surprises.

1. Remove the existing strike plate (see photograph 5).
2. Use the manufacturer's template to mark the correct



**4. Steel doors and frames.**



**5. Remove strike plate.**



**6. Mark the correct dimensions.**



**7. Use masking tape to protect the jamb.**



**8. Cutout the required section.**



**9. An ANSI dust box portion will need to be removed.**



**10. The HES 5000.**

dimensions on the jamb (see photograph 6).

3. Use masking tape to protect the jamb surface from scratching during cutting (see photograph 7).

4. Carefully cutout the required section of the frame as noted in the manufacturer's instructions (see photograph 8).

5. Typically a section of the ANSI dust box will need to

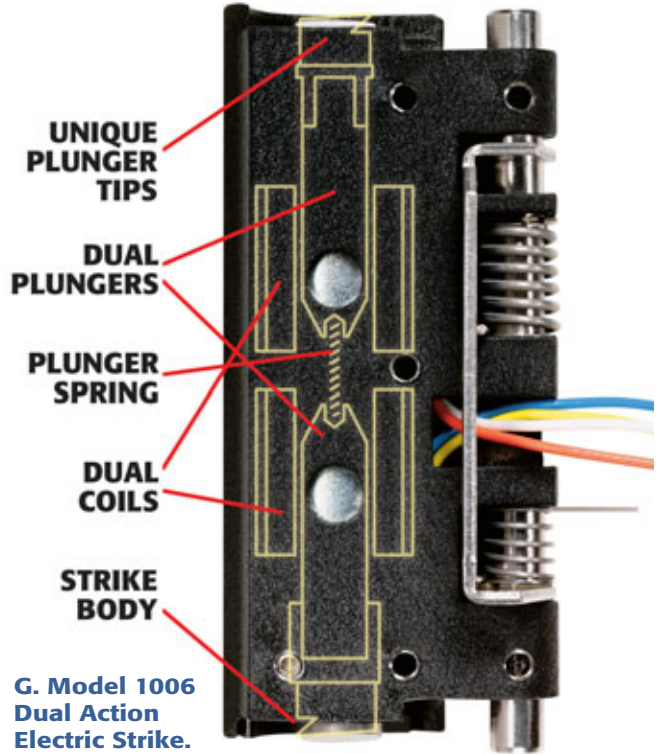
be removed to allow enough room to install the electric strike (see photograph 9).

6. Select an electric strike with an internally mounted solenoid for easier installation such as the HES 5000 shown here (see photograph 10).

**Continued on page 26**



**11. The HES 1006.**



**G. Model 1006  
 Dual Action  
 Electric Strike.**

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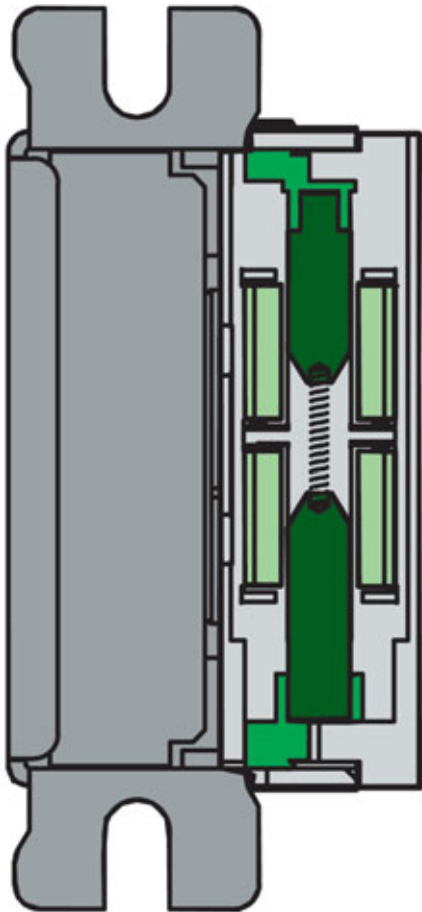
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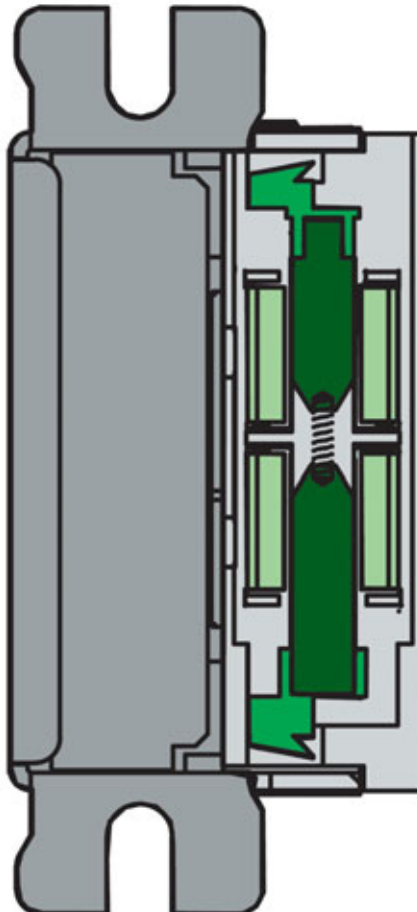


Continued from page 23

H. Force placed against the keeper only enhances the engagement.



I. The dual coil retracts both plungers inward.



#### With The Jamb Prepped Then:

1. Install mounting tabs using #10 x 32 screws (when applicable). Do not tighten.
2. Unplug wire pigtail from electric strike.
3. Connect wires coming from the low voltage power source to the electric strike pigtail.
4. Re-connect the pigtail to the electric strike.

**NOTE:** It is important to allow enough space behind the electric strike in the jamb cutout for the wires. Bunching the wires inside the electric strike body may cause the unit to operate improperly.

5. Install electric strike and faceplate to jamb, using 12–24 machine screws or wood screws provided.
6. Secure 10 x 32 screws holding mounting tabs (when applicable).

Use only the mounting screws and hardware supplied with the product. Do not substitute. HES offers a Metal Template Kit to simplify the installation procedure.

#### The 1006 Series Dual Action Electric Strike

The complete door opening assembly, including the frame, door and locking hardware, is a physical barrier intended to protect and secure both contents and people within a structure. This barrier should be specified to provide the building owner and facility manager with the maximum amount of protection their access control system will allow.

With a unique design, the HES 1006 Series sets a new

standard for higher security (see photograph 11). No longer just another electric strike, the innovative dual action solenoid and sophisticated tamper resistance features transform these units into highly secure access control devices. Independently tested to withstand a forcing strength in excess of 3,000 pounds, more than double the requirements for a Commercial Grade 1 mortise or cylindrical lockset, the 1006 is simply the strongest electric strike in its class.

Unlike its distinguished predecessor the 1003, the 1006 incorporates a dual action solenoid that employs dual coils and opposing plungers for maximum strength and durability. Its operation is based upon the interaction of the five major components that make up its tamper resistant design.

On the Model 1006 Dual Action electric strike, the plunger spring provides continuous pressure on the dual plungers engaging the dual plunger tips with the strike body (see illustration G). Any force placed against the keeper only enhances this engagement by interlocking the plunger tips with the strike body providing optimum tamper resistance (see illustration H).

When energized the dual coil retracts both plungers inward until they reach their point of maximum travel. This action allows the keeper to release the latchbolt providing entry through the door opening (see illustration I).

#### 1006 Specifications

The 1006 was factory tested to exceed 3,000 lbs. static strength and over 2,000,000 cycles of operation, twice the cycle life of the 1003 series and its strongest competitor.

Continued from page 26

**Specifications:**

- Stainless steel construction - corrosion resistance, strong, durable
- Dual action solenoid for added security
- Tamper resistant interlocking design
- Strongest electric strike in its class
- Internally mounted solenoid
- Non-handed
- Continuous duty operation
- Fail secure - unlocked when energized
- Strike depth 1-11/16"
- Plug-in connectors
- Dual voltage – field selectable, 12 VDC or 24 VDC



**12. Heavy-duty, Grade 1 electric strikes and accessories.**



**14. The Heavy Duty 7500 Series.**



**13. The Low Profile 5000 Series.**



**15. The Surface Mounted 9600 Genesis.**



Continued from page 28

**J. The HES product ratings chart.**

HES PRODUCT RATINGS		Fire Rating	Burglary Rating	Static Strength	Dynamic Strength	Cycles Operation	ANSI	BHMA 501	NFPA	Other
5000	U. L. Rating		1034	1500 lbs.	70 ft.	250,000	A156.5	Grade 1		
	Independent U. L. Tests			2400 lbs.		500,000				
7500	U. L. Rating	10 C 3 hr. A	1034	1500 lbs.	70 ft.	250,000	A156.5	Grade 1	252	
	Independent U. L. Tests			1900 lbs.		500,000				
9600	Factory Tested			1500 lbs.		500,000	A156.5	Grade 1		

**Heavy Duty Grade 1 Electric Strikes and Accessories from HES**

HES offers security professionals a variety of heavy-duty, Grade 1 electric strikes and accessories that are easy to install in both new or retrofit projects and take all the guess work out of selecting high quality, reliable products (see photograph 12). All HES “Power Products” are covered by the HES Hassle Free Guarantee

**The Low Profile 5000 Series**

The 500 Series is strong, compact and truly easy to install (see photograph 13). It is ideal for openings where there is limited space behind the jamb. This includes narrow style aluminum jambs and jambs with glass inside. The unit is well suited for high usage, cylindrical lockset applications

**The Heavy Duty 7500 Series**

The 7500 is the best choice for fire door applications where a smoke seal may bind or load the door (up to 30 lbs. of door resistance, fail secure only). The unit accommodates cylindrical locksets and enables the installer to easily change from fail secure to fail safe in the field (see photograph 14).

**The Surface Mounted 9600 Genesis**

The 9600 Genesis is a tamper resistant, heavy-duty electric strike designed to accommodate rim mounted panic exit devices in metal or wood jambs (see photograph 15). Two stainless steel locking mechanisms operate independently to provide strength and added security

The HES product ratings chart for the 5000, 7500 and 9600 strikes is a quick comparison reference to determine the best strike for the application (see illustration J).

**The Model 2505 Power Punch**

The 2505 Power Punch is the only power supply designed to actually improve the performance and extend the life of electric strikes (see photograph 16).

A unique “low hold” feature utilizes patented Smart-Pac™ technology to extend the life of the electric strike’s solenoid. After the initial “power punch,” the holding voltage is reduced to approximately 75% of the electric strike’s nominal voltage, without hindering with the electric strike’s strength or performance. This allows the locking unit to remain energized continuously for extended periods without heat build up, which is the main cause of electrical failures in electric strikes.



**16. The Model 2505 Power Punch.**

- Field Selectable-12VDC or 24VDC
- Individually Fused Outputs
- Self Resetting Fuses
- Battery Charging Circuit
- Fire Control Disabling Protection
- HES Hassle Free Guarantee

1 Year “No Questions Asked” Warranty – Includes all HES electric strikes, electric locks, security controls, power supplies and electrical components.

3-5 Year Limited Warranty – Mechanical Components: 3-5 Years; (Electrical Components: 90 days)

Extended Warranty on Electrical Components (Registration Required) – The Smart-Pac™ extends the 90-day warranty on electrical components (solenoid) to the full 3-5 year warranty of the electric strike.

6-10 Year Limited Warranty (Registration Required). Any HES electric strike used in conjunction with the Model 2505 Power Punch is warranted to twice its original mechanical & electrical warranty.

For more information on HES products call: (800) 626-7590, (623) 582-4626; Fax: (623) 582-4641; E-mail: service@hesinnovations.com; Web: www.hesinnovations.com. Circle 286 on Rapid Reply.

## *Adams Rite Introduces New 7300 Series Compact Strikes*



Adams Rite Manufacturing Company has recently augmented its line of modular electric strikes with the addition of the new 7300 Series. These compact strikes are tailor-made for very narrow fitting jamb sections as shallow as 1-1/16".

Adams Rite has long produced modular strikes, with interchangeable bodies and faceplates. The new 7300 Series extends that range of modular compatibility, with the bodies designed to accept any of the faceplates for their 7100 Series of strikes. This simplifies ordering, stocking and installation for all Adams Rite strikes.

The 7300 Series features a zinc-aluminum alloy case, with a stainless steel bolt retainer jaw. All 7300 Series strikes are non-handed and can be converted in the field from fail-secure to fail-safe operation. All Adams Rite strikes are compatible with latches from virtually all-top manufacturers, adding flexibility to a fast installation.

The 7300 Series of compact strikes is available with accessories such as lip extensions, rectifiers, transformers and a piezo horn for an audible alarm. They can be ordered in 12 or 24 Volt DC Continuous or DC Intermittent operation. Like their other electric strikes, the experts in door hardware design the 7300 Series for durable, trouble-free service.

## *Securitron Presents the Mortise UnLatch*

Securitron is proud to present the Mortise UnLatch® universal electronic strike, sister product to our original UnLatch®. All the amazing benefits of the UnLatch® are retained and a dramatic new one is added. The Mortise UnLatch® includes field adjustability for latch and dead latch positions, so that one model works with all North American Mortise Locks. This eliminates the considerable hassle of matching up the electric strike model with the mortise lock type. You only need to determine whether the door has a cylindrical or mortise type lock, to pick the correct UnLatch® for the job!

# Electric Strikes





**The  
Mortise  
UnLatch**

- Field adjustable means one version will operate any North American mortise-type lock
- Fully concealed installation
- Continuous duty operation
- Includes latch status monitoring output as standard feature
- Covered by MagnaCare Lifetime Replacement Warranty
- Sargent 7800 and 8200 require tab kit model #STK-1 for retrofit installations. Tab kit not required for new construction, assuming correctly prepared frame. To prepare the frame, the vertical alignment of the UnLatch to the mortise lock, is centerline to centerline.

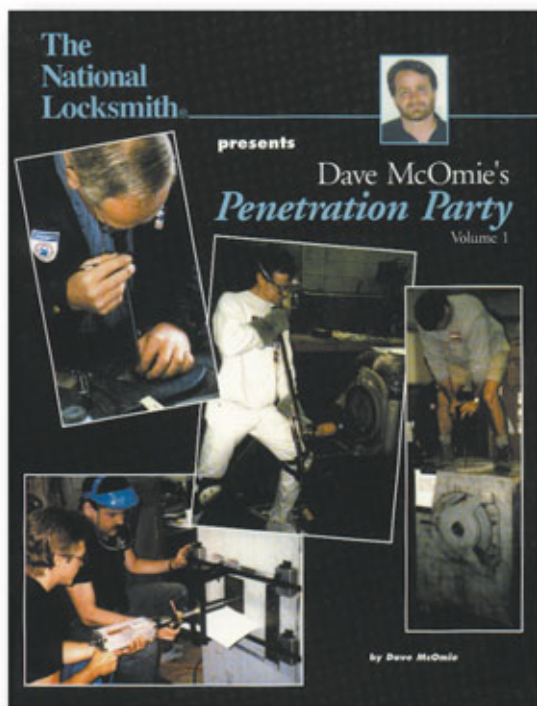
The Mortise UnLatch is perfect for both new construction and retrofit installations. With it, you have the ability to electrify any mortise lock, without running power to or through a door. This represents a significant savings in both hardware requirements and installation time. Another important consideration, is the fact that the UnLatch® family of products includes integral SPDT latch status sensing. It reports to the access control or alarm system ONLY when the latch is fully seated. This contrast with most electric strike installations, which make use of separate door contacts, to report when the door is closed, but not necessarily secure.

### *Trine Access Technology*

Trine launched the 3000 series in March 2001, by introducing the smallest electric strike in the world, the 3234, ANSI (A115.3), 2-3/4" x 1-1/8" preparation. The overall mechanism dimension is only 1-11/16" x 1-1/16" x 1", making it appropriate for applications where other strikes will not fit. An example of this is where narrow style frames, with glass pockets and limited frame depth, impose space constraint. The 3000 series mechanism has a total overall backset with a 3-3/4" x 1-3/16" faceplate, is suitable for wood frame installation.

Trine has now added the 3478, ANSI (A115.5), 4-7/8" x 1-1/4" faceplate. The 3478 have the same overall mechanism dimensions as the 3234. It is therefore ideal for 4-7/8" standard frame preparation in masonry filled frames. Its use reduces the need to remove most of the concrete from the frame preparation area. The standard ANSI electric strike requires the smallest frame retrofit

**Continued on page 36**



# Penetration Party

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- The Action!
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Continued from page 33



**TRINE 3000 Series**

(modification) for installation of any 4-7/8" electric strike with an auxiliary ramp. All models have a latch cavity dimension of Width 5/8", Height 1-1/8" and Depth 1/2". These models also meet BHMA A 156.5-1992, Grade 2.

The unique faceplate design of the 3478 utilizes a full lip extension whose reverse auxiliary beveled lip wraps around the edge of a doorframe. The frame needs to be modified only for the 1-1/4" flange, which acts like a channel. This provides a clear path for the lock set latch

bolt to engage the strike cavity. A stainless steel dust shield is provided to act as a guard, preventing frame filler material from entering the latch bolt path.

In the next few months, Trine will be adding to its 3000 series. The new models will be designed utilizing a one-piece constructed faceplate with extension lip for 4" and 6" aluminum frames with center hung doors.

The latest 3000 series electric strike models are available in 12 VDC or 24 VDC, intermittent duty. In late spring, the series will have the added ability to operate on an all in one voltage. They will also include continuous duty, at 12 to 24 volts, on either AC or DC current.

**Von Duprin's  
5100 Electric Strike**

The new Von Duprin 5100 Electric Strike is designed and manufactured to meet the needs of locksmiths and security professionals. This easy-to-install electric strike controls traffic flow in medium-duty applications, including interior and exterior openings in retail and commercial settings.

Each electric strike kit includes three faceplates, for hollow metal, wood and aluminum frames, as well as an internal 12/24 dual-voltage solenoid and an adjustable keeper. It also has fail-safe/fail-secure select ability.

The new 5100 Electric Strike is designed and built to Von Duprin's high standards, with heavy-duty construction, 1300 lbs holding strength, and tamper-resistant design. It has been tested to over one million cycles.



# Picking & Impressioning

Here is the most complete book ever published on picking and impressioning locks! You will have everything you need to know about how to open almost every kind of lock that can be picked.

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#PI





**Von Duprin's 5100 Electric Strike.**

The Von Duprin 5100 Electric Strike's job site versatility saves time, money and labor. Its solenoid has four wires, so the strike can be configured at the job site for either 12 or 24-volt DC applications. It is easily

changed between fail-safe and fail-secure in the field without additional parts. Its 1/8" horizontally adjustable keeper lets the installer adjust the strike where a door and frame are not properly aligned or where weather-stripping is causing too much pressure on the strike. Having the right parts in the box reduces return trips to the job site and cuts labor expense, and the job gets done right the first time.

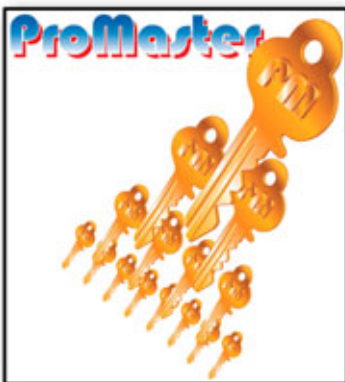
**ROFU 1800 Series  
Electric Strike**

Of recent years, door manufacturers have been making considerable changes to the dimension of the door jambs by reducing the depth of the jambs. With this change in the market, it has become more difficult for the installer to prep the jambs for an electric strike while still maintaining the structural integrity of the jamb.

ROFU International is meeting this challenge by introducing the new 1800 series electric strike which takes the ever-popular features of the 1700 and incorporates them to meet the challenges which the door manufacturing industry has brought to us.

The incorporation of the special feature of a .65" lip prep depth not only allows for ease of jamb preparation by the installer, but can also retrofit other manufacturers' jamb preps which have already been established. In other words, the newly designed lip bracket can retrofit the most popular strike prep in the industry. This new design, along with the other features and options, gives this strike more versatility than any other strike in the market.

# ProMaster



ProMaster 5 is without a doubt, the most comprehensive and easy to use master-key system management tool available anywhere in the world.

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#PM - 5

# Pocket InstaCode



Pocket InstaCode has all the important features of the InstaCode program, packed into a program small enough to run on a Pocket PC.

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#PCODE-03



- Anodized Aluminum ANSI size Faceplate
- Frame Type - Hollow Metal, Aluminum or Wood
- Tamper Strength Test - 1,000 lbs. (454kg)
- Cycle Test 500,000 cycles
- Keeper Depth - 1/2" Maximum Latch Projection possible with 1/8" Door/Frame Clearance - 5/8"

- Fail-Secure (Non Fail-Safe)
- Strike Depth 1.50" Overall
- Reversible - Non-handed
- Adjustable Keeper (FAFIX)
- Limited Warranty - 36 Months

Available in the following Voltages:

- 01 = 8-16VAC/3-6VDC (Intermittent Duty)
- 04 = 12VAC/12VDC (Intermittent Duty)
- 05 = 12VDC (Continuous Duty)
- 07 = 24VAC/24VDC (Intermittent Duty)
- 08 = 24VDC (Continuous Duty)

Now that you have reviewed the features, options and price of this product, you will see that ROFU is definitely meeting the challenges of today's market and the needs of the installer by not only giving them the most versatile product, but also at the best buy in the industry.

**Rofu 1800 Series**

The standard features of this product are as follows:

- New .65" depth on lip prep



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#SDBS - 1



# Quick Entry

## UPDATE



by  
Steve  
Young

TECH TRAIN PRODUCTIONS

## 2000 JAGUAR S-TYPE

The Jaguar S-Type (*see photograph 1*) and the newly introduced X-Type both use the traditional Jaguar 8-cut Tibbe lock system, which uses rotating tumblers called "Rotors." These locks have much more in common with Abloy locks than with any other automotive lock system. Originating keys for these locks usually require the removal and decoding of one of the locks. Fortunately, both the door and trunk locks contain all eight rotors and a complete key can be made from any of these locks.

The transponder system that is now standard equipment on these vehicles is not particularly "locksmith friendly," but with the right equipment it can be serviced by locksmiths in the field. Programming a new key into the system, when all of the keys have been lost or stolen, requires the use of a very pricey Jaguar diagnostic computer. Duplicate keys however, can easily be "cloned" using the Ilco/Silca RW-2 or Jet ETD-1 or ETD-2 if at least one working key is available.

Unlocking the Jaguar is complicated by the cable operated latch mechanism that is used (*see photograph 2*). This latch is virtually identical to the latch found on the new Lincoln LS, Ford Escape and Mazda Tribute. A single cable is used to lock and unlock the door as well as to release the latch when the door is opened (*see photograph 3*). Both ends of the cable are very well shielded and cannot be effectively attacked with traditional inside-the-door tools. In addition, a large bundle of wires is connected to the latch near the attachment point for the cable. These wires could very easily be damaged in a futile attempt to attack the linkage cable.



1. 2000 Jaguar S-Type



2. The latch and the attachment point for the single cable is totally shielded.

3. A bicycle-style cable connects the inside handle to the latch mechanism.



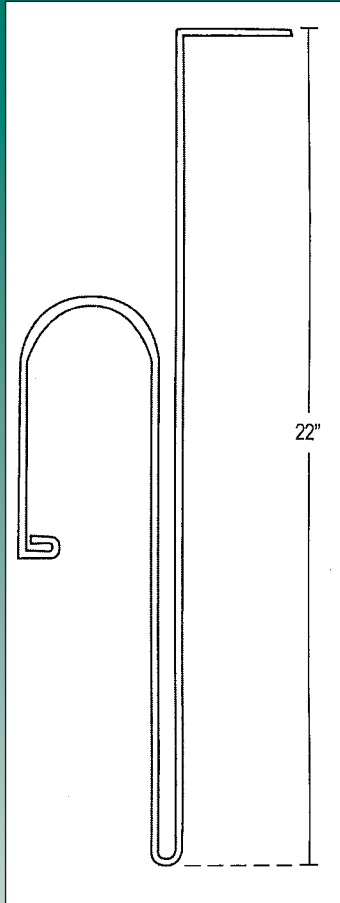


Illustration A.



4. Pull the tool up until the tip is free of the weather-stripping.



5. Lever the handle out to unlock the door.

#### Quick Reference Guide

**VEHICLES:**

Jaguar S-Type 2000 - 2001

**DIRECTION OF TURN**

(driver's side): Counter  
Clockwise

**TOOL:**

TT-1015

**LOCK SYSTEM:**

8 - Cut Tibbe System

**BITTING:**

Ignition, door and trunk 1 - 8

**SECURITY SYSTEM:**

Transponder system  
standard equipment

**CODE SERIES:**

Direct digit code series  
with "T" prefix

**CODE LOCATION:**

No codes on vehicle

**KEY BLANK:**

Ilco TBE1T5 (for cloning  
use only)

Fortunately, the TT-1015 "Under-Window Tool" can be used to manipulate the lock mechanism from inside the vehicle (see illustration A). The inside lock control rocker is shaped in such a way that the tip of the tool will slip off very easily. Because of the single cable construction of the latch system, however, pulling the inside door handle with the tool will unlock the door easily. This will only work on the front door because the child-safety mechanism on the rear door prevents the handle from overriding the lock system.

Unlocking the Jaguar S-Type with the TT-1015 tool can be tricky and requires patience. Begin by wedging open the base of the window forward of the inside door handle on the front door. Insert the tool into the door with the tip of the tool pointed toward the front of the vehicle. Once the upper bend of the tool is below the bottom of the window glass, flex and lift the tool so that the upper bend slides up the inner surface of the window glass. This

can be tricky because of the curvature of the glass and the placement of the window regulator mechanism. I found that bending the tool slightly to match the curve of the glass helped a great deal. In addition, the exclusive flattened top edge of the TT-1015 tool helps to guide the tool into the proper position to slide past the weatherstripping. The tool can also be lubricated with a silicone lubricant or dishwashing liquid to help with the insertion.

As you insert the tool, be very careful that you do not allow the tool to move to the rear of the inside door handle. There is a cable that is a part of the window regulator mechanism that can easily entangle the tool.

As soon as you are sure that the tool is in position to be pulled up on the inside of the door, stop and remove the wedges from the door. It is very important to remove the wedges prior to pulling the tool up on the inside of the door. Failure to remove the wedges can result in breaking the window

glass. Pull the tool up until the tip of the tool pops free of the weatherstripping inside the passenger compartment of the car (see photograph 4). Next, manipulate the tip of the tool until you can slip it between the inside edge of the door handle and the trim around the handle (see photograph 5). Carefully levering the handle toward the inside of the vehicle will unlock the door.

I do not recommend the use of the Jiffy-Jak Vehicle Entry System or other door wedging tools for this vehicle because of the weatherstripping attached to the inside edge of the door. The weatherstripping consists of a thick spongy pad that is glued directly to the outer lip of the door. Attempting to use a wedging tool may pinch or tear the weatherstripping.

For more information on Tech-Train products call: 800-356-0136;  
Fax: (850) 476-7410; E-mail:  
Techtrain@techtrainproductions.com;  
Web: www.techtrainproductions.com.  
Circle 288 on Rapid Reply.





1970



PART ONE  
BY  
MICHAEL  
HYDE



# MERCEDES-BENZ

250



**1.** This is not a new car, but not all of us were locksmiths 30-years ago when these cars were new. This Mercedes uses a 10-cut double-sided key with bi-directional tumblers. The locks were made by the Neiman Lock Company. Codes are found on all locks, even the glove box. Those were the good old days.



## Ignition Lock



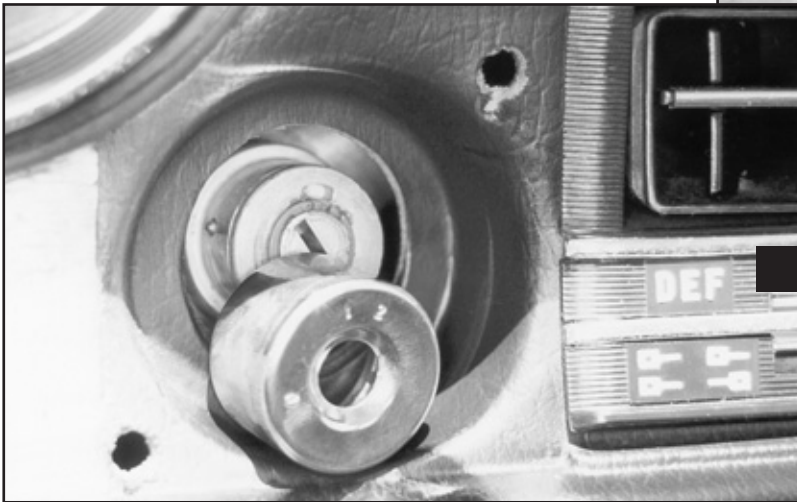
**2.** The ignition lock is an in-dash type.



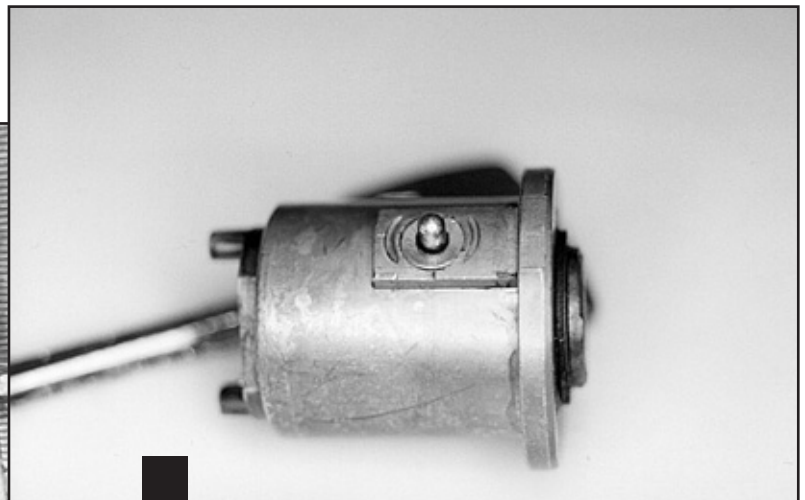
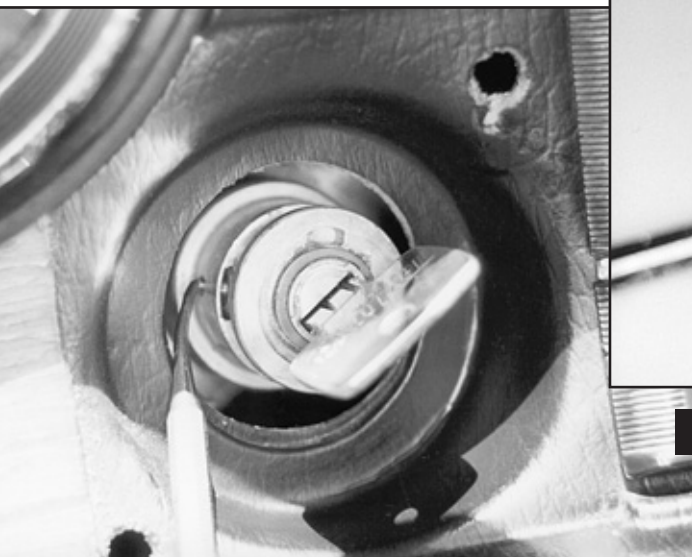
**3.** The first thing to do to service this lock cylinder is remove the plastic and rubber trim ring from the dash.



**4.** Next remove the plastic trim plate in front of the lock cylinder. It is not always necessary to remove this plate, but for this article it was easier to explain the process.



**5.** The ignition lock has a chrome security trim cover on the front of the lock housing. To remove the cover you must turn the lock cylinder to the "ON" position by using a key or picking the lock. Sometimes the cover is a little tight to get off and you must use a small screwdriver to help it off.

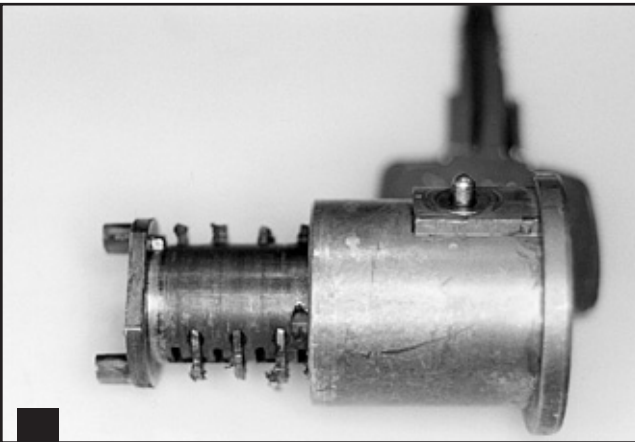


**6.** The ignition lock uses an active retainer. An active retainer ignition lock means that usually a key must be present to turn the lock to a certain position to release the lock cylinder or plug. In this case the active retainer is at the 9-o'clock position.

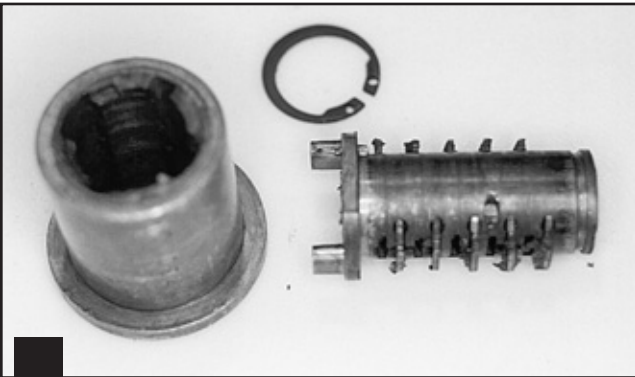




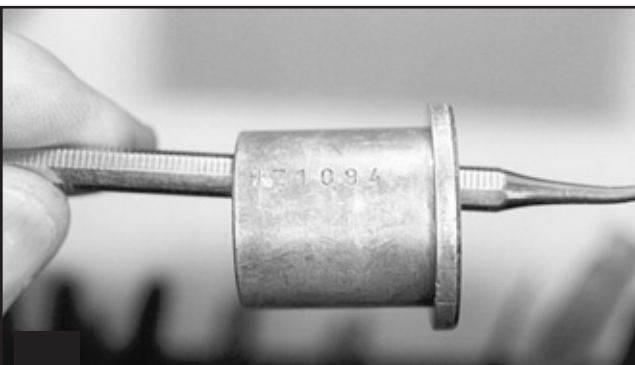
**7.** The front of the ignition lock cylinder has a "tru-arc" ring that encircles the cylinder plug that must be removed.



**8.** The ignition lock cylinder plug will now slide out the rear of the housing.



**9.** Here is a look at the lock cylinder disassembled. There are 10-tumblers in the ignition lock and they are bi-directional.



**10.** There is a code stamped on the ignition lock cylinder housing. The code series for this car is HZ 001-HZ 1200.

# Safe Opening Articles

The National Locksmith.

*Safe Opening Articles*

*Volume II*

1987 \* 1988 \* 1989 \* 1990

By Dave Mc Omie

Dave McOmie's original articles from when he first started writing for The National Locksmith are reprinted in this book.

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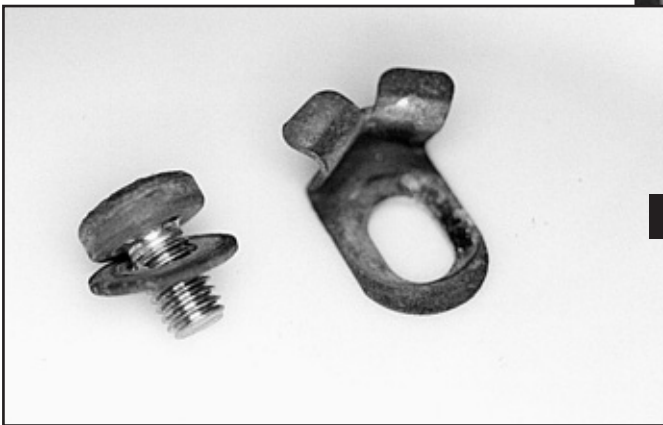
## Door Lock



**11.** The door lock cylinder is built into the outside door handle push release button.



**12.** The handle removes quite easily. Remove the #3 Phillips head bolt on the edge of the door that holds the handle in place. Also grab the bolt bracket so you don't lose it.



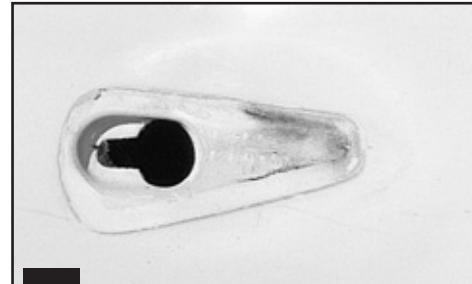
**13.** Next, don't pull out on the handle, slide it towards the front of the car and then you can remove it.



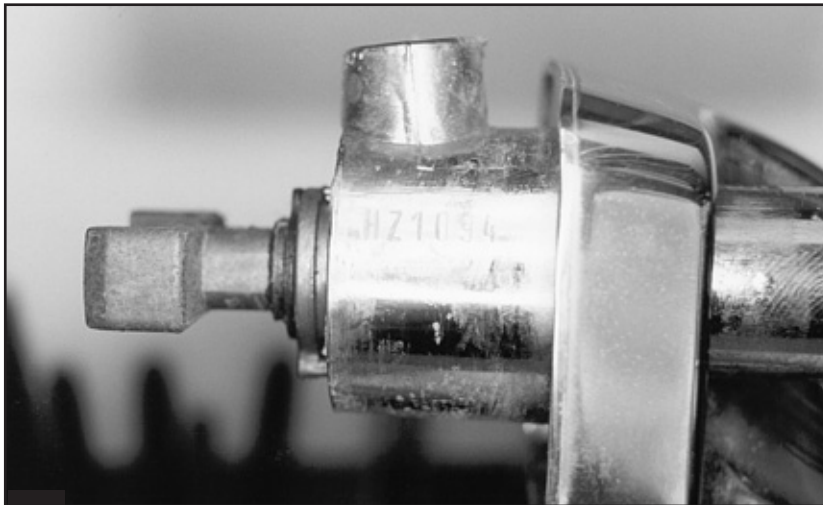




**14.** The front part of the handle has a Phillips head bolt in it that is preset from the factory at a certain depth.



**15.** On the door you can see the cut-out for the forward handle bolt and the groove the bolt slides in. You can always tell when the door has been apart because of an accident or broken window. The service technician will tighten that bolt up. They usually won't know that bolt is preset from the factory to a certain depth that allows the easy removal of the handle without having to pull the door panel.



**16.** There is a code stamped on the side of the door handle housing. The code series for this car is HZ 001-HZ 1200.

## Safe Opening Volumes 1, 2, 5



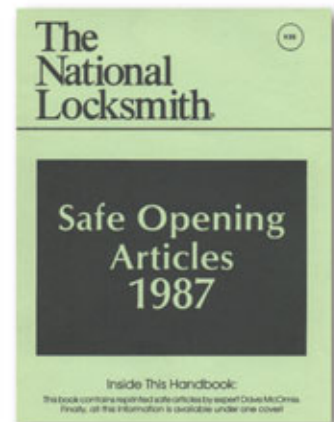
These are the classic safe books you will need to open most any safe easily and professionally.

- Volume 1 - Modern Safes
- Volume 2 - Modern Safes
- Volume 5 - Very Recent Safes

CLICK HERE TO LEARN MORE



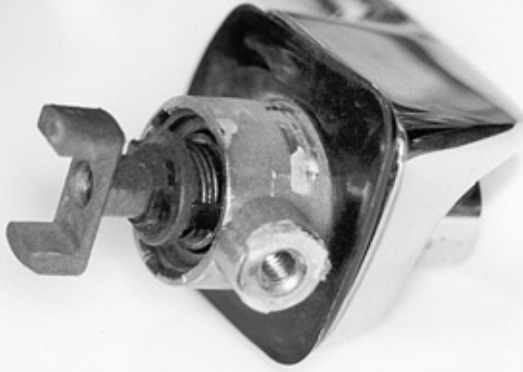
## Safe Opening Articles 1987



CLICK HERE TO LEARN MORE



#SA - 1



**17.** The tailpiece for the lock cylinder has a unique shape.



**18.** The tailpiece is set to a particular position so it can interact with the latch mechanism in the door. To remove the tailpiece you will need to turn the stud bolt in the center of the tailpiece. Turn the stud bolt counter-clockwise. This is the important part: count exactly how many turns you make when unscrewing the stud bolt. If you don't put the tailpiece back in the same position it will not line up with the latch correctly and will have to be reset.



**19.** The plug and plug spring are held in place by a "tru-arc" ring that must be removed.



**20.** The cylinder plug will now slide out the front of the handle.



**21.** The door lock cylinder plug contains 10-tumblers and they are bi-directional.

Next month we conclude with the trunk lock, glove box lock and specifications.

TNL



ISC

# West Product Showcase

## DoorKing's Slide Gate Operator

CIRCLE NUMBER  
301



DoorKing's new model 9300 is a full feature slide gate operator that is rated for Class I, II and III applications, complies with the requirements of the UL 325 Standard for safety, and is listed. The 9300 features a direct driven 15:1 worm gear reducer. Direct driving the gear reducer eliminates drive sprockets and V-belts and creates a clean, low maintenance drive system. It also allows for fail-safe operation should a power failure or other access system malfunction occur. Fail-safe operation allows the gate to be simply pushed open during a power outage or if the operator shuts down because of an entrapment condition without the need of any keys, cranks or other mechanical devices. If an attempt is made to force the gate open during normal operation, DoorKing's patented solenoid lock system will engage to prevent the gate from being moved.

Electronically, the system is

driven by the DoorKing's new 4402 control board. This new microprocessor system controls all functions of the gate operator and provides many advanced features not found on other gate operator products. The 9300 includes such features as Gate Tracker™ reporting, anti-tailgating loop functions, a self-monitoring current sensor reversing system and built-in operator diagnostics. Separate inputs are provided for both open and close photocells and edge sensors to meet the UL 325 Safety Standard requirements. The 9300 also features built-in power switches, alarm and operator reset switches, two convenience outlets and can be ordered with an optional built-in battery backup system.

## Barking Dog Alarm Rex Plus

CIRCLE NUMBER  
302



Now called Rex Plus, the new 2002 model of this famed electronic watchdog, featured on National TV, has a series of new tricks. You now have a choice of four settings. Primarily, of course, Rex Plus emits the super realistic sounds of an angry protective dog at the approach of an intruder. But he can also alert you with the sounds of both the angry dog and a siren. Or let you know of a visitor's arrival. Lastly, he

can soothe you with the continuous tranquil sounds of a rain forest.

Rex Plus can "see" through doors, walls or glass. Once you plug his cord into any 110-VAC outlet, he'll stay on duty around the clock. It's ideal for homes, apartments, stores, hotel rooms—just about every kind of public and private building.

## SDC Electric Locksets Meet Code Requirements



SDC HiTower electric mortise and cylindrical locksets provide locking and latching features required for fire rated doors, to meet security needs and fire life safety code requirements. With access control capability the door stays latched even when unlocked, maintaining fire door integrity. Failsafe or failsecure HiTower locks are ANSI Grade 1 Heavy-Duty with monitoring capability. Door applications include high-rise stairwell doors, elevator lobby doors, perimeter doors and office doors. Facility use includes airports, museums, hospitals, and universities, commercial and industrial facilities.

Continued on page 54

Continued from page 52

## Kaba Ilco's Key-In-Lever and Mortise 4000 Series



The new Key-In-Lever (KIL) feature offers quick and easy integration with existing master key systems. The lock ships with a standard key-in-lever "C" keyway cylinder, which can be replaced with a Lori cylinder, as well as Corbin/Russwin, Yale, Schlage and Sargent cylinders.

Historically, the 4000 is an ideal basic system to help you restrict access to specific areas such as research laboratories or design departments. It operates with a combination code using a numeric keypad, eliminating the need for keys, cards and computers. There are 1 million possible combinations and a programmable tamper shutdown mode for a high level of security. The 4000 Series features field-reversible handling, robust construction and an attractive design. Its memory holds up to 19 different access codes, with three security levels. The lock is easy to program, and has many user-friendly features including American with Disabilities Act (ADA) compliant lever handles, a familiar and high quality keypad, and dual sensory feedback (both audible and visible). Using a mechanical key override will provide emergency access if necessary.

## Videx Announces the High-Security CyberLock™

CyberLock is an intelligent lock cylinder designed to covert existing mechanical locks, into full-functioning access control systems,



### Cyberlock™

without hardwiring. CyberLock permits access for authorized users, at specific times, on pre-selected days, and provides a comprehensive audit report of all entries. The CyberLock system consists of the pickproof CyberLock cylinder, and the CyberKey™ that cannot be duplicated. The CyberLock cylinder, which contains a microprocessor and memory, is designed to the exact dimensional standards of mechanical cylinders, making conversion easy in the field. Each cylinder can be installed, usually in less than 10 minutes, in tubular knob sets, lever locks, rim locks, and mortise locks in doors; as well as locks in cabinets, drawers, storage containers, and padlocks. Since the CyberLock cylinder contains no battery, it is ideal for indoor and outdoor applications, even in the harshest environments.

The access privileges and battery power are located in the CyberKey. Each time a CyberKey opens a CyberLock; a record of the user ID, date, and time is stored in both the key and the cylinder, creating a lock history and a key history. A CyberKey records up to 1150 events and the CyberLock cylinder records the last 1100 events. The CyberKey can be programmed to allow users to open the locks on specific days, and only during specified times on those days. In addition, the CyberKey can be set with a date to begin operation, as well as an expiration date.

## The Jensen Waterproof Tool Kit

Jensen Tools announced the recent development and release of the JTK-87WP Field Engineers' Tool Kit, featuring a unique waterproof case that provides the ultimate protection for tools and equipment. Not only is the case airtight, it will float even with a full complement of over 100 tools. Its tough cyclocac resin construction won't dent, crack



### Jensen Tool Kit

or corrode. And more than 50 of the kit's tools are Jensen name brand with a lifetime guarantee.

Inside case dimensions are 17.75 x 12.75 x 6.50" and, fully loaded, the kit weighs 23 pounds (the empty case with pallets weighs 11.25 pounds). It is padlock able for extra security.

## Fire King Image Vaults Decrease Shrinkage



Bigfoot Food Stores is going to keep a closer eye on things with the help of 140 new Image Vaults digital video recorders (DVRs). Image Vault, made by Fire King will be used throughout Bigfoot's chain of 225 food-and-gas stores in Indiana, Illinois and Kentucky.

Image Vault is a multifunctional DVR known industry-wide as being ideal for retail operations because of its powerful point of sale (POS) features, exception reporting capabilities and ease of use. Image Vault's POS features tie into a store's cash register(s), allowing the DVR to be programmed to record a number of situations. For example, at the end of the day, Image Vault can show what happened at the cash register everytime the "no sale" key was hit. Was there really a "no sale," or did

Continued on page 56



**Continued from page 54**

the clerk simply not ring up the purchase and pocket the money? This is just one of a number of ways Image Vault can help management control shrinkage.

Hundreds of alarm situations can be programmed into Image Vault allowing management to instantly view what happened during a particular situation. There's no wading through hours and hours of tape. And the images are crystal clear.

**Sargent  
 Manufacturing's  
 Low Profile Access  
 Control Products**

Sargent introduces a new line of low profile access control devices. These electromechanical locks combine innovative design with keypad only, proximity only or keypad and proximity for the highest level of security and flexibility. They are available for bored-in locks, mortise locks and exit devices, in nine architectural finishes and several lever designs. The full-feature electronics package offers:



**Sargent**

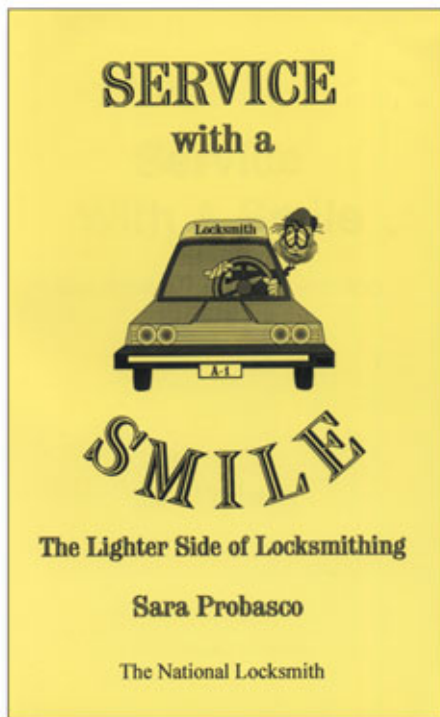
500 users, 1,000 transaction audit trail, real time and date. The full-feature electronics require the new SofLink Plus™ Software to program real time and date, auto relock and other features. HID technology is incorporated for proximity card or fob usage.

**AGS Automatic  
 Gate Supply**



Automatic Gate Supply Company (AGS) has developed a new residential swing gate operator - the AGS 104. The AGS 104 uses a permanently lubricated continuous duty gear motor, that allows for silent and continuous operation. Its PBC bronze final drive gear with hardened and ground worm gear enables handling gates up to 13 feet in width and weighing up to 300 pounds. The operator securely closes the gate in both the open and closed positions, and includes the full-systems capable circuit board. This circuit board has an auto-close timer adjustable from 1 to 45 seconds, adjustable obstruction sensing in both the opening and closing directions, troubleshooting indicator lights, and accepts all accessory controls.

The AGS 104 is available in a standard 110-volt version, low-voltage battery run version, and a solar version. The battery run is available in both the 200 and 400



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#SWS

cycle configurations, for continuous operation after power to the operator goes out. The solar option typically allows up to 24 cycles of operation per day under sunny conditions, and is also available with a larger solar capacity upon request.

## Rofu Wireless CCTV



Rofu's wireless CCTV observation system is completely "plug and play," negating the need to pull wires or cable. Camera signals transmit up to 300 feet away from the receiver outside and 180 feet when installed inside. An optional line booster can triple transmission distance. The basic one-camera system is upgradeable to four cameras, with

views rotating every one to nine seconds. All events can be recorded. A kit consists of a case, one camera and lens, two transformers, one 4-foot cable set with RCA plugs, one camera mounting bracket, one receiver and an antenna for the camera and receiver. Compact color or black and white monitors are available. Because the Rofu CCTV system is portable, the operator can elect to easily switch locations. Cameras can be set up to monitor different areas, or the monitoring area can be moved. Portability also means that if the owner of the system moves, he can take the system with him. Hard-wired systems generally are sold with a property as attached fixtures.

## A-1 KeyMark for Mean Green Machine

A-1 Security Manufacturing has announced the addition of two new vise assemblies for the Mean Green Machine, A-1's key combinator for small format interchangeable core.

By special arrangement with Medeco, A-1 will now offer accessory vises for KeyMark's 7 and

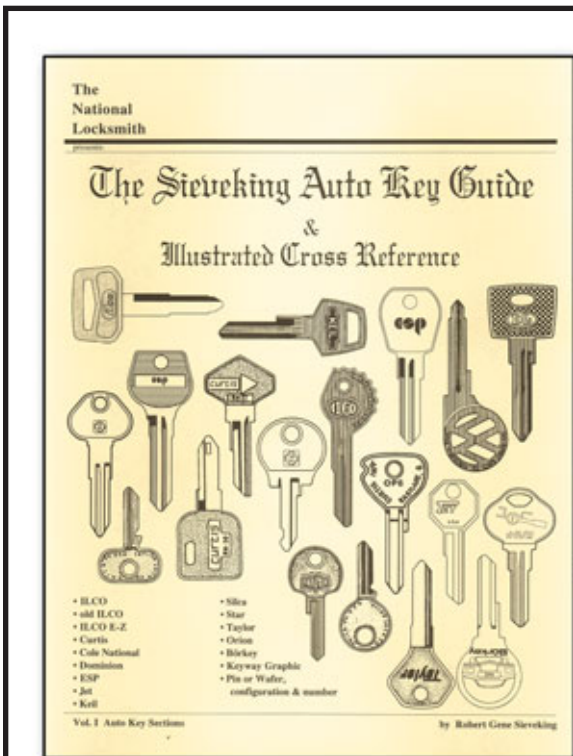


### A-1 KeyMark

14 degree keyways. These and other specialty vises, are designed to interchange with the standard vise that is included with original equipment. Changeover takes about one minute and no other adjustments are required.

A-1's Mean Green Machine is a heavy duty industrial quality code cutting punch designed to hold the extremely tight tolerances demanded by Small Format Interchangeable Core. Vises are interchangeable, spacing is self-advancing and a large depth knob is located on the side of the machine to allow for speed and accuracy of cut.

**TRN**



# Sieveking Auto Key Guide

The Sieveking Auto Key Guide lists over 2,600 automotive and motorcycle keyways, covering makes from Acura to Zundapp, and listing fourteen popular key manufacturer numbers.

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# Everest Primus Debuts



by Sal  
 Dulcamaro

When I started locksmithing more than 26 years ago, I just knew the basics. I lacked knowledge of the variations in lock hardware by brand; what was most reliable or easily serviced. I soon took a liking to Schlage commercial hardware, primarily because it was smartly designed and easy to service. At the time, Schlage didn't have its own high security cylinder. If you wanted to sell high security to your

customer, you could sell them Schlage's hardware, but you had to put somebody else's cylinder inside.

Now Schlage has just introduced its new Everest Primus high security line, but I'd like to backtrack first to the two previous product lines (one being high security) that combined to make Everest Primus what it is. Over 10 years ago, Schlage introduced Primus. Primus was Schlage's entrance into the high security market. It was a hybrid pin tumbler cylinder. Primus cylinders had the typical configuration of a conventional pin tumbler cylinder, but it added a sidebar. That sidebar had its own separate set of tumblers in the plug, and it required an additional set of cuts on the key.

There were other high security cylinders on the market, but Schlage's Primus was designed to integrate with its conventional cylinders to do things that other product lines couldn't. *Photograph 1*, shows two Schlage key-in-knob/lever style lock cylinders. The one at the left is Schlage's standard security cylinder, and at the right is a Primus lock cylinder. Below them you can see the conventional style key to the left and the Primus high

security key on the right. Comparing the cylinder plugs, you might notice a slight variation in the broaching pattern. There are obstructions in the Primus keyway that won't allow the standard security key to enter. In reverse, though, the thinner milled Primus key will enter the standard keyway. Primus plugs and keys bear the Primus logo.

The physical and mechanical differences are much more apparent in *photograph 2*. Although standard Schlage lock cylinders were available in both 5-pin chamber and 6-pin chamber configuration, the high security Primus cylinders always had 6 conventional pin chambers. Added to that was a set of 5 "finger pins." At the left in *photograph 2*, I'm holding the Primus plug. The bottoms of the five finger pins are visible at the bottom of the plug, just to the right side of the inserted key. The Primus key blank, just below the Primus plug, is blank only where the conventional pin tumbler cuts would be located. The milled cuts for the finger pins are factory cut only, and no Primus blank is shipped to a locksmith without the milled side cut bittings already in place.

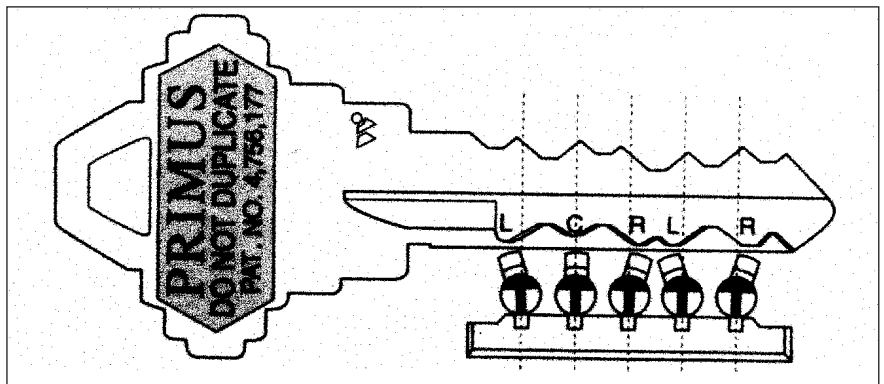
*Figure A*, shows the mechanical interaction between the finger pins and the milled side cuts of a Primus key. The five finger pin chambers are positioned in the middle between the six conventional pin chambers. The actual milled side cuts are not typically also centered in the exact middle of the conventional key cuts. The finger pins are designed to rotate to the left or right. Depending on the specific finger pin in a chamber, it may need to rotate one direction or the other (or even remain centered) in order to mesh with the slot in the sidebar for its



1. Schlage key-in-knob/lever style lock cylinders.



2. The high security Primus cylinders always had 6 conventional pin chambers.



A. Interaction between the finger pins and the milled side cuts.



**3. A Schlage Primus pin kit.**

space position. The key manages to properly rotate a pin by having the side-milling shift in the direction needed for proper rotation. So unless we are dealing with a finger pin that requires “center rotation,” the specific milled side cuts will be slightly off center in relation to the conventional key cuts. You may notice that the illustration indicates direction of rotation with the labels “L” (for left), “C” (for center) and “R” (for right). These labels tell us the direction that the finger pin is rotated or the direction that the milled key cut is shifted. The actual method of finger pin and side cut identification is different, which I will explain in more detail later.

The conventional Schlage plug (just below and to the right of the Primus plug) is capable of accepting the Primus key, but the opposite isn't possible. That characteristic allows a multi-security level master key system. It also gives Schlage a certain advantage over other high security cylinders. If a facility requires high security locks in certain areas but not in others, it is possible to use conventional cylinders (which cost less) and high security cylinders together within the same master key system. The standard keys would enter and operate only the standard cylinders, while the Primus keys could enter and operate all the cylinders.

The Primus keyways are connected with the standard non-high security keyways and are similarly labeled. Where conventional lettered keyways may be: C, CE, E, EF, F or FG; the physically modified Primus keyways would be identified with a “P” suffix added to make them: CP, CEP, EP, EFP, FP or FGP. The matching lettered Primus or non-Primus blank or cut keys would be mated: C with CP, CE with CEP, E with EP, etc.. You could not make a CP Primus key go



**4. A special plug holder.**

into an EP Primus keyway broaching or a non-Primus E keyway broaching. For that matter, it wouldn't go into any other Primus or non-Primus keyways beyond the C and CP mated set.

Even within the Primus cylinder line, there are lower priced options. There is a UL437 rated cylinder that is not only pick resistant, but also drill resistant. That cylinder version uses strategically placed hardened pins to deter drilling of the sidebar or shear line. If a customer is not concerned about drilling, a non-UL437 rated Primus cylinder is available at a lower cost. It is still pick resistant, but it lacks the hardened steel anti-drill pins that would help deter drilling. Since it would still have a Primus keyway, it would also prevent a non-Primus key from entering.

The flexibility and cost differences could be of importance when bidding for a commercial job. In areas where high security or drill resistance isn't necessary, most other brands do not provide a lower priced option for those points of entry that would still all operate on the high security master key. Consequently, proposing a bid that included the full lineup of Schlage cylinders (not limited to UL437 cylinders only), you may have an advantage over other locksmiths at winning the bid.

### Cylinder Pinning

*Photograph 3*, shows a Schlage Primus pin kit. It might seem unusually small, except for the fact that these are only parts to service the add-on high security component of the Primus cylinder. Once the finger pins and sidebar are accounted for, Primus lock servicing is nearly identical (and as easy) as servicing a conventional cylinder.

The finger pin biting pattern is licensed to specific security dealers



**5. The fifth finger pin is coming out of the Primus plug.**

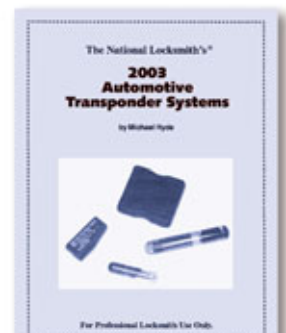


**6. A Schlage Everest cylinder and keys.**



**7. An Everest key holding the check pin inward.**

## 2003 Automotive Transponder Systems

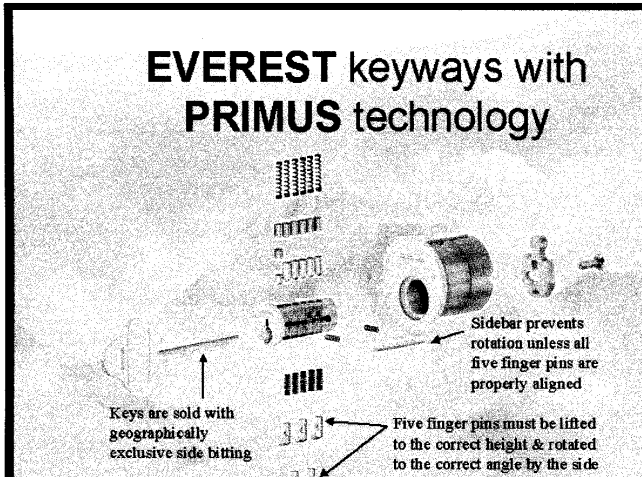


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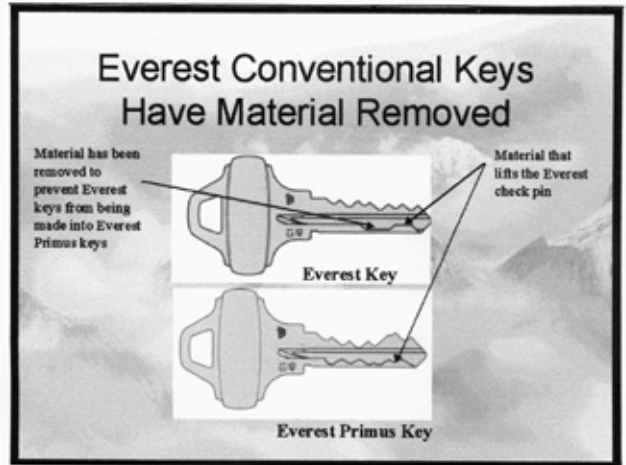


#TS - 2003





**B. The physical layout of the new Everest Primus keys and cylinders.**



**D. Only the Everest Primus has the side cut biting pattern.**

**2 Distinct Key Systems**

	Ideal for New Installations	Ideal for Existing Installations
	<b>EVEREST</b> Key System	<b>Classic</b> Key System
<b>Restriction Levels</b>	<b>High Security</b> Maximum Key Control Patented Tight Duplication Restrictions <b>EVEREST PRIMUS</b> Commercial Keyways with Exclusive Side Bit Milling	<b>PRIMUS</b> Commercial Keyways with Exclusive Side Bit Milling
	<b>Restricted Security</b> Enhanced Key Control Patented Higher Duplication Restrictions <b>EVEREST Restricted</b> Commercial Keyways with Unique ID	n/a
	<b>Standard Security</b> Limited Key Control Patented Minor Duplication Restrictions <b>EVEREST Open</b> Commercial Keyways Only	n/a
	<b>Basic Security</b> Not Patented No Key Control No Duplication Restrictions	n/a

**C. A chart that identifies the categories.**

or end users, with nearly the same effect as a physical keyway or broaching. At various key control levels, locksmiths have specially milled Primus key blanks that are not accessible by other locksmiths, to restrict key duplication.

A Primus plug is held in a special plug holder in *photograph 4*. This holder allows you to remove the Primus key without losing the finger pins. *Photograph 5*, shows what happens when you try to remove a key when the plug is not contained in either the shell or the plug holder. The fifth (last) finger pin is coming out of the Primus plug. To avoid losing finger pins, it might be best to only remove keys when the plug is in the holder. Many dealers make up a Primus set-up key that has all #9 depths, that allows all bottom and

master pins to be loaded and also retains the finger pins.

After accounting for the finger pins, a Primus cylinder is pinned the way you would pin a standard Schlage cylinder. You would use your standard Schlage bottom, master and top pins to code the lock to the six conventional key cuts. I will return to the subject of the finger pins and milled side cuts later, since there have been a few changes or modifications in the Everest Primus version.

### Everest- Standard Security Key Control

Primus had a patented key that allowed you to sell your customers key control. Sometimes only key control is needed, but not necessarily the high security component. Schlage did not have a standard

security restricted key system, and that put Schlage at a price disadvantage when competing against a lock brand that did. Just in the last year or so, Schlage introduced the Everest key system to remedy that situation.

A Schlage Everest cylinder and keys are shown in *photograph 6*. The patented Everest key uses a special undercut groove in the key to lift a check pin. In small format cylinders, the check pin is located toward the face end of the cylinder. In the large format cylinder shown, the check pin is toward the back of the cylinder. A hole in the shell allows the spring loaded check pin to protrude through and secure the plug even when the conventional pin tumblers are unlocked at the shear line. *Photograph 7*, shows the Everest

plug with an Everest key holding the check pin inward.

### Everest Keyways with Primus Technology

Schlage finally had key control products in both standard security and high security versions. The only problem now was that the two key control systems were not compatible with each other. That would soon be remedied when Schlage finally made a version of Primus that was compatible with the pre-existing Everest system. *Figure B*, shows the physical layout of the new Everest Primus keys and cylinders. It is basically the original Primus system using the special undercut groove of Everest. It now allows standard security and high security integration within the Everest key system.

Schlage will now have two distinct key systems. *Figure C*, shows a chart that identifies the categories within those systems. Borrowing some marketing concepts from Coca-Cola, Schlage refers to the old system as the "Classic" key system. Standard and high security integration can be accomplished within each system, but not across key system lines. A



**8. A standard security Everest cylinder on the left and a high security Everest Primus cylinder on the right.**

Classic Primus key cannot work with an Everest cylinder, and so on.

*Photograph 8*, shows a standard security Everest cylinder on the left and a high security Everest Primus cylinder on the right. The standard Everest keys are set just below the cylinders, while I am holding the Everest Primus keys to the right. Whereas Everest keys and plugs bear the Everest logo/insignia, the new Everest Primus contains both the Everest and Primus logos on both the plugs and keys.

Even though Everest Primus is now being introduced, it was both anticipated and planned when standard security Everest was

introduced. In the original integration of standard and high security with the Classic key system, high security keys could enter the standard security keyways but not vice versa. In Everest, both standard and high security keys will fit into either keyway. As a consequence, the original Everest keys were introduced with material removed where the Primus side cuts would be ultimately located. *Figure D*, shows how it works. Both keys have the undercut groove, but only the Everest Primus has the side cut biting pattern.

Lacking material in the middle of the key, a standard security Everest key cannot be converted to operate Everest Primus. That means that even though that key will physically enter the high security cylinder keyways, it cannot move the finger pins to a position that unlocks the sidebar.

*Next month we conclude the Everest Primus overview.*

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#TIPS - 2

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# TUBULAR KEY MACHINES

## PART 2



by Bob Sieveking

Last time in our series on tubular key machines we covered the HPC Pocket Cut-Up™ and A-1 Security Manufacturing Corp. Herty Gerty™. This month we continue covering the HPC Scotsman™ 747XU Tubular Duplicode™ and ILCO/SILCA Crown Tubular Key Duplicator.

### HPC Scotsman™ 747XU Tubular Duplicode™

The HPC Scotsman™ 747XU Duplicode™ is designed to duplicate tubular keys with the same simplicity of set-up and operation as the original 747E (see *photograph 1*). It will also decode keys and code cut keys with similar ease.

The HPC Scotsman™ 747XU Duplicode™ is powered by a 115 Volt - 1.2 Amp AC/DC brush type motor. The motor develops 1/15 horsepower at 5000 RPM. It is also available with a 220-Volt motor if required. The motor drives a three-sixteenths inch (.1875") six fluted carbide end mill. The base measures sixteen inches (16") wide by four inches (4") deep, and is four and one half inches (4-1/2") high. The Duplicode™ weighs seven (7) pounds.

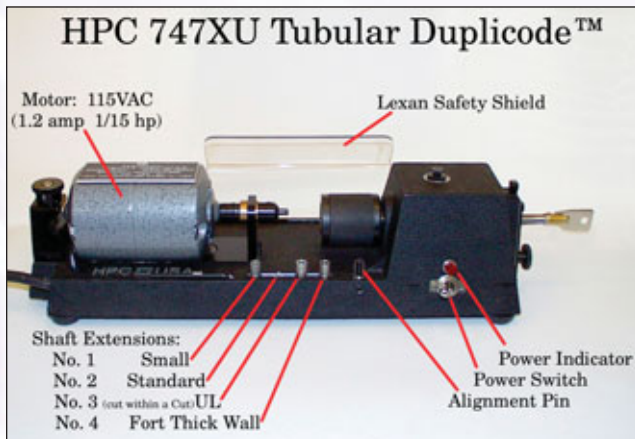
The hinged Lexan Safety Shield operates a safety switch, at the rear of the machine. The safety switch prevents the motor from being started without the safety shield is in place. The Power Switch is enabled when the safety shield is properly positioned over the cutter. The

red Power Indicator lamp indicates that the power switch is in the ON/RUN position. The shield safety switch absolutely prevents the motor from being started accidentally, while loading or removing a key.

Interchangeable Shaft Extensions, stored on the machine base, allow us to modify the main shaft to accept a variety of different tubular key configurations for duplication. The Number 1 extension fits small diameter (.365" O.D. x .300" I.D.) tubular keys. The Number 2 extension accommodates the most common, standard 137 (.375" O.D. x .312" I.D.) tubular keys. The Number 3 extension fits oversize UL (.400" O.D. x .330" I.D.) keys. The Number 4 extension accommodates the Fort Lock™ thick wall (.285" I.D.) tubular keys. The Allen wrench, also stored on the machine base, is used to remove and install the interchangeable shaft extensions. They are secured to the machine base and/or on the Main Shaft by socket head cap screws. This feature eliminates the necessity of keeping small parts separate from the machine, and running the risk of loss.

The Alignment Pin, located with the shaft extensions at the front of the machine, is used to align the cutter with the Main Shaft. Cutter adjustment (web thickness adjustment) and alignment (cutter to shaft) procedures are fully explained in the users manual.

Because the Duplicode™ must accommodate a wider variety of tubular key diameters, the Key Chuck, shown in *photograph 2*, is a little more complex than the 747E. The Key Chuck uses a modified eight (8) element floating collet design. The modified collet design allows the key



1. The HPC Scotsman™ 747XU Duplicode™.



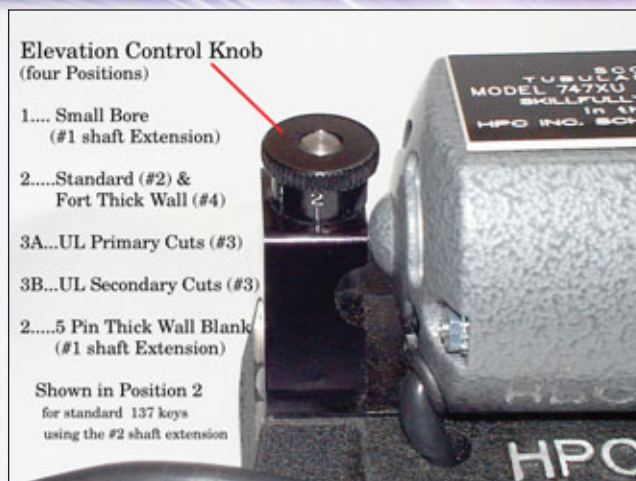
2. The Key Chuck.



head (bow) and the external portion of the locating key to enter between the segments of the collet. The tubular key is gripped only on the round portion of the key bit. Counter-clockwise rotation of the knurled portion of the Key Chuck closes the collet. Clockwise rotation opens the chuck, to release the key.

The Position Stop Pin shown in *photograph 2*, is a knurled thumb-screw. In the photograph, the thumb-screw has been backed out. This allows the main shaft to be rotated freely in the cutting portion of its travel. A cut can be made “anywhere” on the key. This feature is necessary for duplicating keys that have cuts in positions “other than” the sixteen standard rotational locations. When the Position Stop Pin is screwed down, or engaged, The 747XU will only allow the key to be cut in the standard positions. This means that the key cuts will be controlled to positions that can be defined by 22-1/2° or 45° increments. These would include: 7-pin Centered, 7-pin Left, 7-pin Right, 8-pin, and all between-pin dead pin positions. The Position Stop function insures accurate placement of cuts in all of the standard positions around the key. Do not disengage this function unless you are sure that the key you are making is non-standard.

At the far left side of the Duplicode™ machine is the Elevation Control. The Elevation Control Knob, shown in *photograph 3*, adjusts the elevation of the cutter, and by this regulates the web dimension of the cut key. If we were to cut a small diameter key with the machine adjusted for a large diameter key, the cutter would only slightly touch the blank. In the reverse, if the machine were to be adjusted to the small diameter blank, the cutter would break through into the center diameter of



**3. The Elevation Control Knob.**

the larger diameter key. For this reason, elevation of the cutter needs to be adjustable, and regulated according to the diameter of the key bit. In the case of cut-within-a-cut (UL) type tubular keys, the primary cuts are made at a lower elevation than the secondary (inside) cuts.

The Elevation Control Knob has four calibrated positions. Position one (1) sets the cutter at the correct height for small bore keys (.365” O.D. x .300” I.D.). Small bore keys will use the number one (#1) shaft extension. Position number two (2) sets the cutter at the correct height to cut standard 137 (.375” O.D. x .312” I.D.) keys using the number two (#2) shaft extension and Fort Lock™ Thick wall keys (.285” I.D.) using the number four

## Wafer Lock Reading

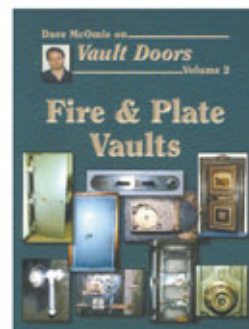
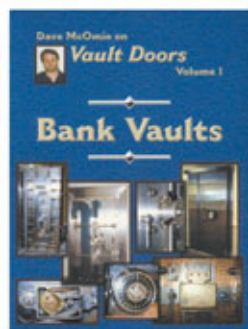


Easy to learn.  
 No Codes  
 needed.

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#WLR - 1

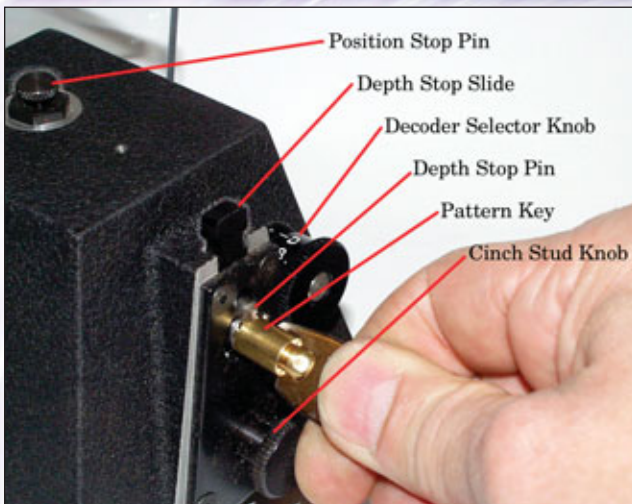
## Dave McOmie on Vault Doors Vol. 1 & 2



These openings can be a nightmare, but not when you bring Dave McOmie along with you on the job.

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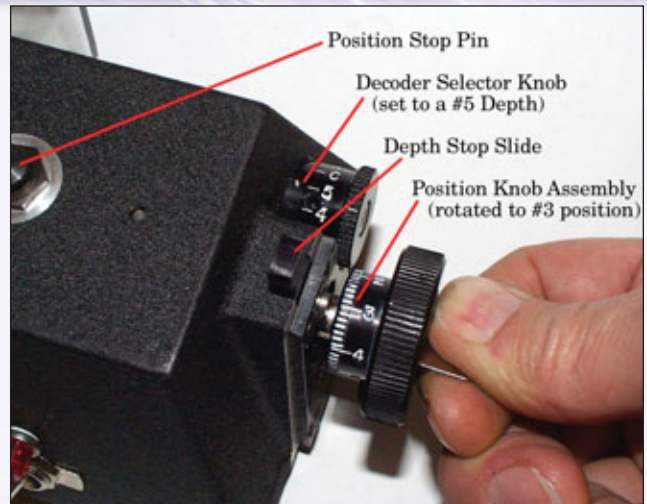
4. Duplicating a 7-pin centered configuration key.

(#4) shaft extension. Position number two is also used when cutting 5-pin thick wall blanks, using the number one (#1) shaft extension. Positions three "A" (3A) and three "B" (3B) are used when cutting the primary and secondary cuts in large diameter UL (.400" O.D. x .330" I.D.) keys. When changing the elevation control to make the secondary cuts in a UL large diameter key, it is suggested that the key be re-gauged to the Depth Stop Pin at the new elevation setting. Changes in the elevation control will cause a small change in the cut depth. Gauge the key a second time, then make the secondary cuts.

Duplicating a 7-pin centered configuration key is illustrated in *photograph 4*. The Position Stop Pin is engaged (screwed all the way in) to insure that cuts are accurately positioned on the cut key. Slip the pattern key over the shaft extension (#2 shaft extension is correct for the 137 key). Push the Pattern Key toward the Decoder Stop Pin, selecting one of the deeper cuts, push the Depth Stop Slide downward to engage the Depth Stop Pin into the key cut. Tighten the Cinch Stud Knob to fix the Depth Stop Slide in position. The Depth Stop Slide is spring loaded to lift it away from the key. Adjust the Depth Stop Slide to allow the Stop Pin to slide easily into the cut of the key. The Decoder Selector Knob is set to "D" on the scale, for the Duplicate function.

Load a blank key into the Key Chuck, and lightly tighten the chuck. Counter-clockwise rotation tightens the chuck. Orient the Cutter to bring one of the cutting edges vertical. This will insure that the key contacts the cutter squarely during the gauging operation. Push the Pattern Key forward to touch the Depth Stop Pin at the uncut portion of the key under the key locating tab. The uncut key will be forced into the collet chuck, to register with the Pattern key and Stop Pin. Allow the key to move away from the Depth Stop Pin, and re-tighten the Key Chuck. The keys are now gauged properly, and we're ready to duplicate a key.

Turn on the power and push the Pattern Key Forward, centering on the first cut in the key. As you move the key forward, you will feel the Position Stop mechanism center the key at the selected cut position. Push the key forward to complete the cut. Move the key away from the Depth Stop Pin, and rotate the key to the next position. Complete the cuts in all remaining positions. After you have duplicated the cuts in all positions, move the Pattern



5. Generating a key by code.

Key away from the Depth Stop Pin and turn off the power. Loosen the Key Chuck and remove the completed key. Deburr the key on a flat piece of emery cloth.

Generating a key by code as in *photograph 5*, is very nearly the same as making a duplicate. When making a key by code, we will not use the Depth Stop Pin. Rotate the Cinch Stud Knob counter-clockwise to release the Depth Stop Slide. It is spring loaded and will pop up, moving the Depth Stop Pin away from the main shaft. Since we are making code key and not a duplicate, we will register our uncut blank using the depth gauge in the Key Decoder. Rotate the Decoder Selector Knob to zero ("0") on the dial. This is zero or no-cut.

The Position Knob Assembly tool is a standard 137 steel tubular blank with a calibrated knurled collar. It simplifies locating the positions for cuts to be made in the key. It is calibrated one (1) to seven (7), indicating the cut positions for a standard 7-pin centered configuration key in whole numbers. Positions for the offset and 8-pin keys take a little more thought. The positions are in the minor increments of the dial. The Position Stop Pin is engaged to insure cuts are placed accurately onto the key (positions).

Load an uncut key into the Key Chuck as before. Orient the cutter to present a vertical cutting edge to the uncut key. With the Decoder Selector Knob set to zero ("0"), push the Position Knob Assembly toward the Depth Stop Pin. The tip of the key (knob assembly) should bypass the Depth Stop Pin. As the key is pressed toward the zero depth stop, the uncut key will be forced (pushed) into the key chuck. As the zero depth stop is reached, the uncut key will be registered with the Decoder Selector at the no-cut or zero stop position. Move the Position Knob Assembly away from the machine and re-tighten the key chuck. The tip of the uncut key is now registered with the zero stop of the key decoding mechanism.

The HPC™ Scotsman 747XU Duplicode™ is calibrated using Chicago™ Depths. A number one (#1) depth is sixteen thousandths (.016") deep. Adjust accordingly if you are using Fort Lock™ codes (Fort #1 depth is .032").

In *photograph 5*, we are making a five (5) depth cut in position number three (3). Using the Decoder Selector Knob to determine the cut depth and the Position Knob Assembly to select the proper cut position, complete the key.



A Chicago ACE™ key was duplicated, using the HPC Scotsman™ 747XU key machine. The duplicate key operated the test cylinder perfectly. The same Chicago ACE™ key was decoded, and a key made to code, using the procedure outlined above. The code cut key operated the cylinder perfectly.

### ILCO/SILCA Crown Tubular Key Duplicator

The ILCO/Silca Crown tubular key duplicator shown in photograph 6, is a very well made heavy-duty duplicating machine. The T10 synchronous self-centering device is designed to accommodate key diameters from .375" O.D. to .416" O.D. This allows the Crown tubular key machine to duplicate all Chicago™ 7 and 8 cut keys, Fort Lock™, National 9 cut, Keyset, Century 5 cut, and Sidleen 10 cut keys. Vertical calibrated movement of the T10 synchronous self-centering device allows the machine to make "step cuts" (cut within a cut) and enlarged (Master) cuts.

This machine is powered by a single-phase 115 Volt 150 watt motor. The motor turns at 2800 RPM. It is 9.4 inches wide, 18.36 inches deep, and stands 7.35 inches high. The machine, with the T10 tubular key device, weighs approximately 36.2 lb..

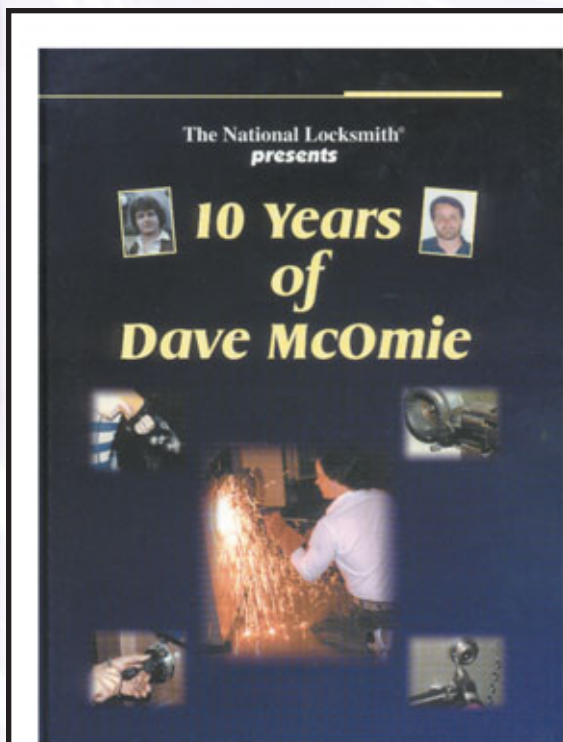
Primary controls for the Crown™ tubular key machine are called out in *photograph 6*. The Power Switch is located on the right front corner of the motor housing. The Carriage Advance Lever is pushed forward to advance the carriage toward the cutter. The Carriage slides on an Adjustable Gibb Dovetail Slide. The pattern

key and key to be cut are clamped and positioned in the T10 Device. The T10 Device is only one of a number of special key holding fixtures manufactured to operate with the Crown™ machine.

The Device Clamp Knob is screwed onto a fixed stud, and secures the T10 Device to the Crown™ machine Carriage. If we remove the Device Clamp Knob, the complete T10 Device can be easily disassembled from the carriage. Elevation of the device is adjusted using the Device Elevation Control. Loosen the Device Elevation Locking knob to adjust the elevation control. Rotation of the elevation control knob positions a wedge under the T10 device, to raise or lower it with reference to the cutter



6. The ILCO/Silca Crown tubular key duplicator.



## 10 Years of Dave McOmie

Every single National Locksmith article by Dave McOmie from August 1986 through August 1996 under one cover!

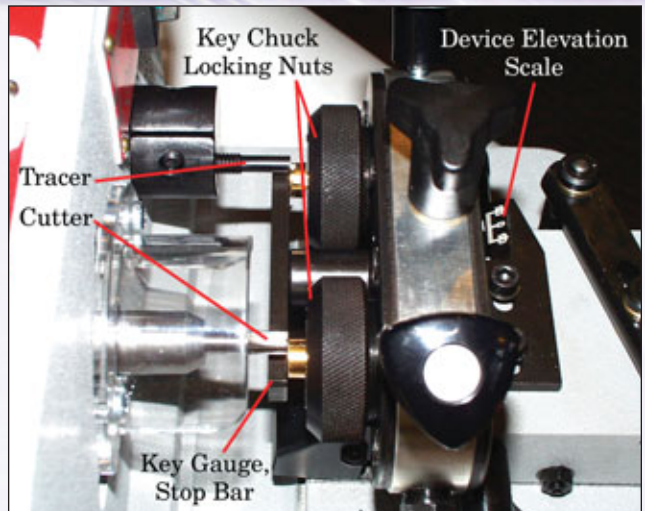
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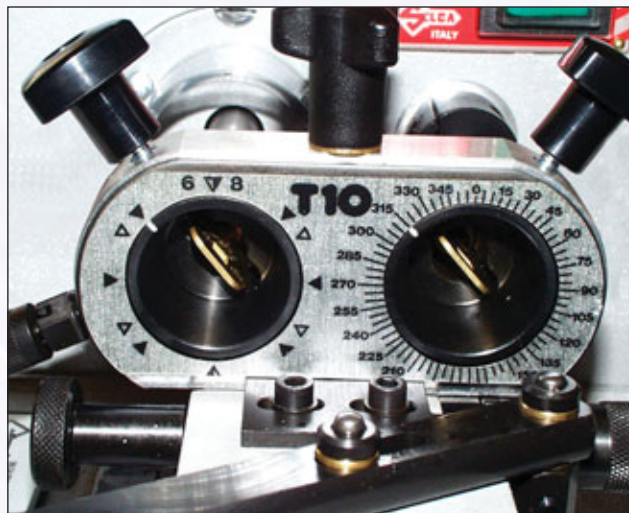


**7. The T10 Synchronous Key Holding Fixture.**



**8. The Device Elevation Scale.**

and follower. One complete rotation (360°) of the elevation control knob translates to a .004" (.1 mm.) change in elevation. The Device Elevation Scale, shown in photograph 8, indicates the position of the elevating wedge, and adjusted height of the T10 Device. The T10 is normally set to zero ("0") on the scale, when adjusted to duplicate standard 137 diameter keys. For smaller diameter keys, the wedge is extended under the T10 (moved to the left of zero) to raise the elevation, bringing the cutter closer to the centerline of the key chucks. For larger diameter keys, the wedge is withdrawn, (moved to the right of zero) lowering the elevation and moving the centerline of the key chucks away from the cutter.



**9. The Fixed Position Detent Selector.**

The T10 Synchronous Key Holding Fixture is detailed in *photograph 7*. The device is called synchronous, because any rotation of one key chuck is translated to the other. If we rotate the right chuck 45° right, the left key chuck will rotate the same amount. The left and right key chucks rotate in a synchronous manner. There are two Rotation Locking Handles. Each locks its own key chuck. When chucking keys into the key chucks, lock both handles. This saves wear on the synchronous gear train. When cutting keys, only the left locking handle is used to lock its key chuck. This prevents the key from moving out of position as the cutter mills the key.

The fixed Position Detent Selector is a spring-loaded pin. When the selector is down as you see in photograph 7, it acts on a detent ring in the left side of the device. As the key chucks are rotated, the detent drops into notches in the detent ring, to locate the key chuck at positions indicated on the face of the device. The Detent positions the key chuck and the key to be cut, at regular forty-five degree (45°) and sixty degree (60°) increments. The forty-five degree (45°) increments, indicated by a filled

triangle, correspond to the standard placement of cuts on a 7-pin centered configuration key. The sixty degree (60°) increments would be used for a five pin configuration, which I am not familiar with. To disengage the detent, lift the Detent Selector against the spring tension, and rotate the knob ninety degrees (90°). The detent will be positioned away from the internal detent ring, and the key chucks will be in "free rotate" mode.

The right side of the T10 is calibrated in five degree (5°) increments. The scale, from zero ("0") to three hundred

sixty ("360") indicates the radial position of the key chuck. The scribed and filled Key Index, on the face of the rotating chuck ring, is used with the scale, to determine the position of the keys. The keys are held in hardened steel two element "serrated" V-block type chucks. When the key is clamped in the chuck, it is automatically centered.

*Photograph 8*, shows the machine ready to duplicate. Hand tighten the Rotation Locking Handles to prevent the key chucks from rotating. Insert the pattern key into the right chuck, pushing the key through the chuck to contact the Key Gauge or Stop Bar. The key gauge appears to be rather massive, as key gauges go. Right rotation of the knurled Key Chuck Locking Nut closes the chuck on the key. Hand tighten the Key Chuck Locking Nut. Insert, gauge, and tighten an uncut key in the left key vise. In the photograph, we have moved the Carriage Advance Lever forward, to check the key placement, with reference to the Tracer and cutter. The Crown™ machine uses a four fluted end mill to generate the key cuts. Release the right and left Rotation Locking Handles, to allow the chucks to be rotated.

In *photograph 9*, the Fixed Position Detent Selector has been engaged, allowing the detent to position our key at



45° increments. Rotate the key chucks left, by turning the knurled Key Chuck Lock Nut. The Key Chucks will snap into place as you see in the photograph, at the first detent. The key being duplicated is a 7-pin centered configuration. The filled triangles on the T10 face indicate the detent positions for each cut. Tighten the left Rotation Locking Handle to secure rotation of the cutting side Key Chuck. It is not necessary to tighten the chuck on the pattern side.

Turn on the power, and carefully advance the key into the cutter. The Tracer will stop the carriage at the correct depth. Withdraw the carriage, loosen the Rotation Locking Handle, and rotate the key chuck to the next "filled triangle" detent position. Re-tighten the Rotation Locking Handle and make the next cut in the key. Repeat these operations until all cuts have been made. Be a little careful when advancing the Carriage with the Carriage Advance Lever. I think you could force the pattern key to move in the key chuck if you were to push too hard on the handle. Remove and deburr the completed key.

A Chicago ACE™ key was duplicated, using the ILCO/SILCA Crown™ key machine. The duplicate key operated the test cylinder perfectly. Some adjustment was made with the elevation control, to change the web dimension of the cut key. The machine is shipped with the T10 Device separate from the Crown™. I believe this is a normal user adjustment. This is a serious "heavy-duty" tubular key machine.

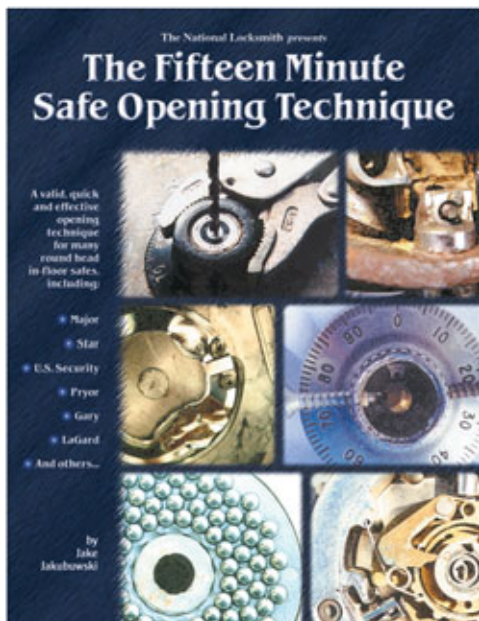
In our next installment on tubular key machines we will conclude this series by covering the Framon TKM-100 Tubular machine.

Since I inadvertently omitted the contact information for A-1 and HPC last installment, here it is along with the Silca contact info.

*A-1 Security Manufacturing Corp.*  
3001 West Monroe St  
Richmond, VA 23230  
Phone: 877-725-2121, (804) 359-9003  
Fax: (804) 359-9415  
E-mail: [fncc@demanda1.com](mailto:fncc@demanda1.com)  
Web: [www.demanda1.com](http://www.demanda1.com)  
Circle 300 on Rapid Reply.

*HPC Inc.*  
3999 N. 25th Ave.  
Schiller Park, IL 60176  
Phone: 800-323-3295, (847) 671-6343  
Fax: (847) 671-6343  
E-mail: [hpc@hpcworld.com](mailto:hpc@hpcworld.com)  
Web: [www.hpcworld.com](http://www.hpcworld.com)  
Circle 301 on Rapid Reply.

*Silca (Kaba Ilco Corp.)*  
400 Jeffreys Rd  
Rocky Mountain, NC 27804  
Phone: 800-334-1381, (252) 446-3321  
Fax: (252) 446-4702  
E-mail: [info@irm.kaba.com](mailto:info@irm.kaba.com)  
Web: [www.kaba-ilco.com](http://www.kaba-ilco.com)  
Circle 302 on Rapid Reply.



## 15 Minute Safe Opening

This book deals exclusively with round head lift out doors. Shows five ways to open a Major; three ways to find the Dog Pin on a Major; four ways to open a Star; four ways to open a LaGard style round head.

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# The Desktop Dispatcher

**W**hat is The Desktop Dispatcher? The Desktop Dispatcher is a Windows based program that creates, tracks, sorts and prints service calls, appointments and customer lists.

How does it work? Before I walk you through entering a call, lets take a look at the components that make up the program. The basic program is made up of four databases, or files, that store information. Those files are called "Dispatch," "Custlist" (Customer List), "Cleared Calls" and "Calendar." Some of these files have several layouts or ways to view the information.

The program opens in the Dispatch screen (see photograph 1). This is where the work order is created and stored until completed. One of the layouts lets you view all your calls as a list, where it's easy to see what you have to deal with and where everyone is. Another layout lets you print out an abbreviated list of calls for your technicians. It has all the who, what, where and when information that a technician would need to get to a call.

The work orders that are created in the Dispatch screen gets some of its information from the Customer List (see photograph 2). This is the file that stores all the contact information on each customer, plus it has fields that let you track any notes on that customer's equipment. Need a combo, or a key code? That's where you'll find it. You can even store photographs and audio notes that you record in your own voice about the customer's equipment (see photograph 3). You can also predefine the payment methods, labor rates, trip charges and other information for each customer. When a call is created for that customer, all that information will be entered for you.

The Cleared Call file is where the calls are kept when they are completed. Once there, the call will be stored where it will be used to add to the customer's service history and build reports on any statistic you could want. Want to know how much work a particular technician did for a particular customer in a particular month? No problem, it's already done. The

Cleared Call file makes it possible to see your customer's service history right on the screen as you enter a new call. If you have done work at a particular address before, you will be shown a brief description of the call right on the work order in the Dispatch screen (see photograph 4). A link next to the description allows you to view the whole record in the Cleared Call file.

The Calendar allows you to view appointments for the next two weeks (see photograph 5). Each cell



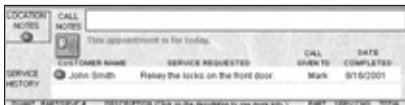
1. The Dispatch screen.



2. The Customer List.



3. You can even store photographs and audio notes.



**4. A brief description of a call in the Dispatch screen.**

shows you who the call was assigned to, what time the appointment is for, and the customer's name. There is a link button that takes you to the work order so you can view all the information on the call. You can set appointments for any time you want, but they will not show on the calendar until they are within the two-week window. The Calendar automatically reminds you of a previous day's appointments that were set and not completed. If a call was overlooked, the program will flag it for you, show it to you, and reschedule it for today's date. The user can even create a new call from the Calendar screen without having to switch back and forth between screens. That's handy if you want to "squeeze" someone in.

Now lets look at entering a call. Through its use of on screen buttons and keyboard shortcuts, the user can enter a new call in seconds with very little typing. When the New Call button is clicked, the user is prompted to enter the caller's phone number. If the number entered matches one that is stored in the program's customer list, that customer's name and address will be entered into the billing address area of the work order. If this is a new customer, a new record will be created for that customer in the Customer List the first time you enter the information on the work order. The job address can be entered the same way, or the user has a choice of looking up the address from the customer list. If the job address is the same as the billing address, the user can click on a button that puts the same address into the job address area.

The user can now tab through the rest of the work order entering the relevant information. The use of pop up menus (user defined) helps speed up the process of entering a call allowing the user to simply point and click on their choice of technician, appointment time, payment methods etc.

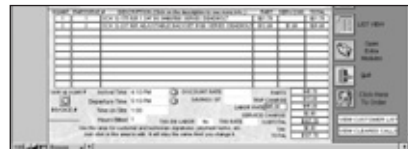


**5. The calendar.**

When the call is completed, the user has the option to track the parts used and time spent on the call by completing the lower part of the work order (see photograph 6). Next, the user simply clicks on the Clear Call button to remove the call from the Dispatch screen and store it in the Cleared Calls file.

When the call is cleared, the user is given the option of creating an invoice for the call. Additional purchase is required for this feature. The invoicing module uses the information already entered on the work order to create an invoice with the click of a button.

The Desktop Dispatcher also offers an additional Caller ID module



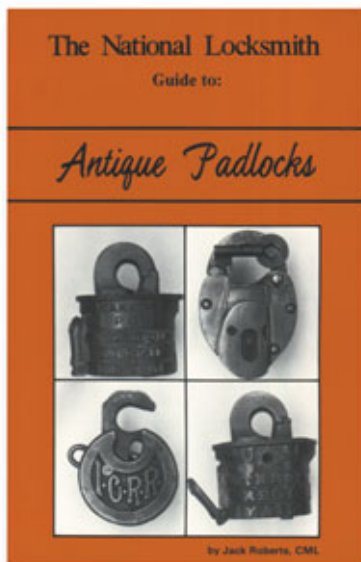
**6. The option to track the parts used and time spent.**

with the program. It acts as both a message board and as a tool to speed up new call entry. When the phone rings, a window pops up showing the caller's phone number and name if it is an existing customer. The user then has the option of taking a message or creating a new call without having to type in the phone number or asking the caller for their number. Of course, Caller ID service and a compatible modem are required to make this module work.

The Desktop Dispatcher was created by Mark Fleming Ent., of Florida. Mark is a veteran locksmith with 10 years of experience, who originally created the program to track his own customers.

For more information, visit [www.DesktopDispatcher.com](http://www.DesktopDispatcher.com). Circle 287 on Rapid Reply. 

# Antique Padlocks



Finally there is a book to give you all the information you need about old interesting locks.

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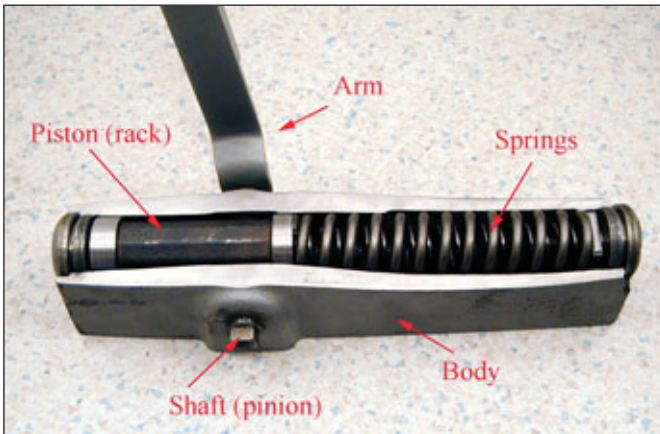
#PAD - 1





# Inside the LCN Quest 1371

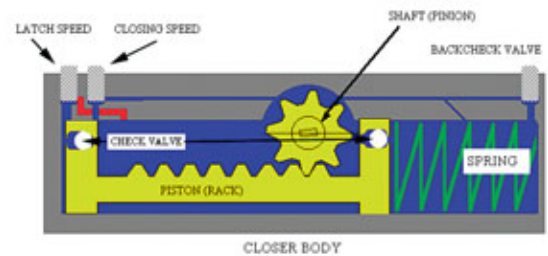
by Richard  
 Allen Dickey



1. A cutaway view of the LCN Quest 1371 door closer in a normal position.



2. The same closer with the shaft rotated 90 degrees.



A. A drawing of a door closer in its normal position.

My experience with door closers was limited to two things for quite a long time: How to install them and how to make them work properly. I was never sure about the inner workings of a door closer. Why is one closer stronger than another? What happens when you turn one of the adjusting screws? Why are some closers adjustable in reference to its closing power? Well, now I have answers for those questions and a whole lot more. Before I get into how they work, let me mention a few things about the closer I will be using in the examples below.

I will be using the LCN Quest series closer. LCN closers are designed to have an operating life of 15 to 20 years. They use a special formula hydraulic fluid that acts as an insulator to keep closer components working smoothly in temperatures ranging from +120°F to -30°F.

Some of the benefits of the Quest series include:

- Cast iron construction
- Forged steel components
- No measure mounting template for accurate installation
- Significant reduction in installation time

- Unique Rapidor mounting bracket for easy installation
- Easy to use, step-by-step mounting instructions
- Uniform finish on all components
- Single arm punch for accurate preloading
- Adjustable ANSI Size 1-5. Reduces inventory.
- Meets ADA requirements
- Custom powder coat finish
- SRI primer for installation in corrosive conditions
- 10 year warranty

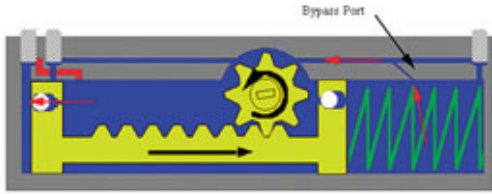
I guess the best place to start is to take a look at a door closer that I have cut open for easy viewing. The main components of the closer are the body, springs, arm, piston (rack) and the shaft (pinion gear) (see photograph 1).

When the shaft is rotated by moving the arm, the piston is forced against the springs (see photograph 2). At the same time that the spring is compressed, hydraulic fluid is allowed to fill the area between the end of the piston and the housing. When you let go of the arm, the

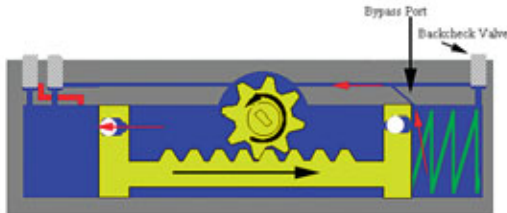
spring pushes the piston back to its original position and the hydraulic fluid shifts back to the opposite end of the housing.

Did you get all of that? It probably just raises more questions like, how does the hydraulic fluid get from one end to the other? Or how can you change the speed from slow to fast? You probably have a few other questions like when are you going to get to the point? Patients grasshopper! You must walk the road of knowledge before you achieve understanding. So lets start walking!

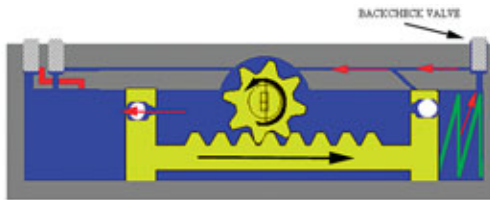
The drawing looks a little different than the actual closer, but all of the parts are still there (see illustration A). The shaft, spring and piston are seen in their normal position. The closing speed valve and latch speed valves are on the same end as the piston. The backcheck valve is on the same end as the spring.



**B. As the shaft is rotated by the arm, the piston moves in the direction of the spring.**



**C. As the piston continues to compress the spring, fluid is moving to the opposite end of the body.**



**D. After the piston passes the bypass port, the only way for fluid to escape is through the backcheck valve.**

If you look closely you can see two check valves, one at each end of the piston. These are one way valves and are intended to allow fluid to flow smoothly without resistance in one direction while blocking fluid in the opposite direction.

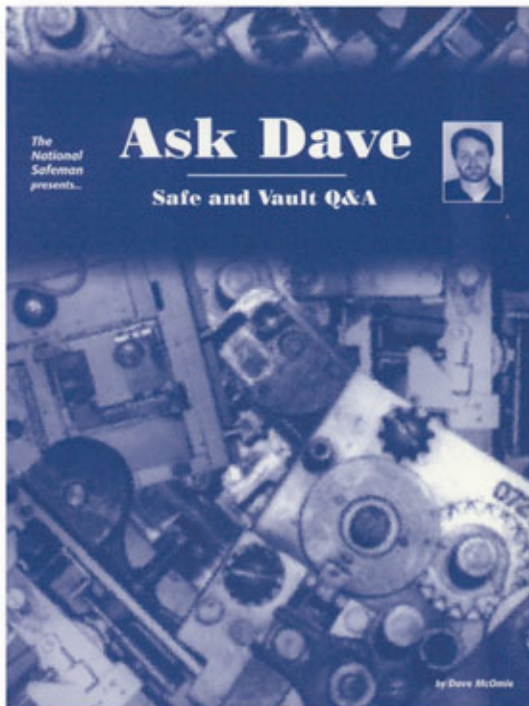
The lines between the backcheck, latch and speed valves are passages for the hydraulic fluid to flow. It is the fluid in these lines that is used to control how the closer operates.

When a door starts to open, the shaft will rotate, causing the piston to move in the direction of the spring (see illustration B). A couple of things are happening at this point: The spring is compressing; Hydraulic fluid is being blocked by the check valve that is nearest the spring; Hydraulic fluid is forced into the bypass port and allowed to travel to the opposite end of the closer unhindered.

As the door continues to open, the end of the piston approaches the bypass port (see illustration C). Until the piston passes the bypass port, everything will continue to operate just as it did a moment ago. The big change happens when the piston passes the bypass port.

When the piston passes the bypass port, the only place for the fluid to go is past the backcheck valve (see illustration D). The purpose of the backcheck is to slow the speed of the opening door just before the door reaches its wide open point. This causes less stress to the door and the door frame in abusive situations. The backcheck is fully adjustable.

When the door starts to close, a few other things happen. First the spring pushes the piston which rotates the shaft (see illustration E). The job of the two check valves is reversed. The check valve nearest the spring allows fluid to flow freely while the other blocks fluid. This time there is no bypass port, so the fluid has to pass through the closing speed valve. The closing speed valve regulates the amount of fluid that passes, which in turn controls the speed that the spring is able to move the piston.



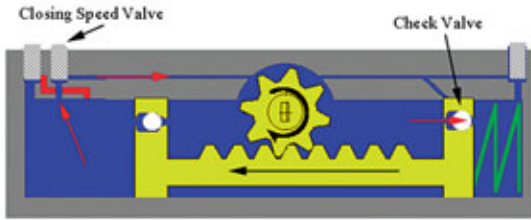
# Ask Dave

You asked. He answered.  
This is safe and vault Q&A  
with an attitude.

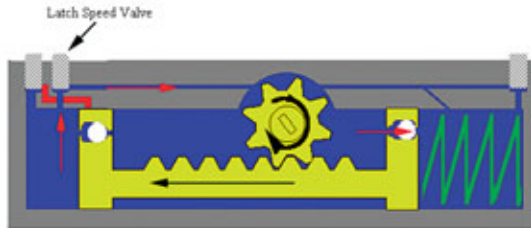
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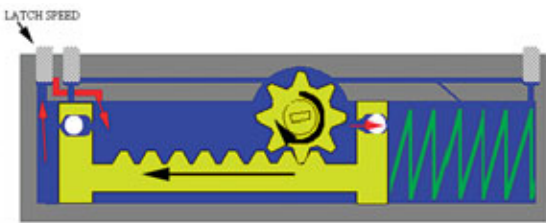




**E. When the closer starts to move back to its normal position, the spring is what makes it happen.**



**F. All hydraulic fluid flows through the speed control valve until it is blocked by the piston.**



**G. The latch speed valve is what allows you to adjust for that little extra speed to ensure the door latches properly.**

In illustration F, you can see that the piston is continuing to move under the force of the spring. As it approaches a fluid passage that goes to the latch valve, everything still works the same. Fluid is passing the closing speed valve and traveling to the other end of the housing.

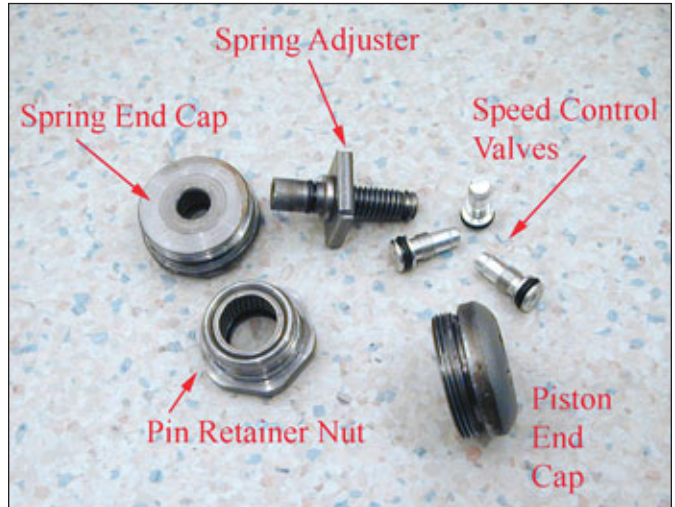
As the piston approaches the end of its travel, it passes the fluid passage that goes to the latch valve (see illustration G). At this point the latch valve comes into play. The idea is to adjust the latch speed so that the door will close faster during the last few inches. This will ensure that the door closes hard enough to latch properly. That is all there is to the basic operation of a door closer. Now let me show you a few shots of the inside of a real door closer and go through the power adjustment that many models have.

The first thing I have to tell you is that it is unlikely that you will be rebuilding one of these closers. The first reason is that they just seem to last for ever. The second reason is

that the end caps are locked in position with a sealant. What kind? I don't know what kind, but I do know that it works real good! I had a heck of a time getting it apart and I had the right tools!

There are about a dozen pieces that make up the Quest 1371 door closer. All of the small parts screw onto the body of the closer (see photograph 3). They include the end caps, regulating valves, spring adjuster and shaft retainer.

There are two springs, one inside the other, used in the 1371 (see photograph 4). Why two springs instead of one big one? By using two springs, LCN is able to design a closer that will open with less force while still having strong closing strength.



**3. Some of the small parts that attach to the body of the closer.**



**4. Two springs are used with some closers.**

The piston and shaft or “rack and pinion” as some will refer to them (see photograph 5), are the two parts of the closer that convert the rotary movement of the arm to spring compressing force by the piston (see photograph 6). This conversion of force is the key factor that makes door closers work so well.

An end view of the closer shows the piston in the cylinder as well as a good view of one check valve (see photograph 7). The check valve is that one way valve I described earlier.





**5. The piston and shaft or "rack and pinion" are the two parts used to convert the rotary movement of the arm to the spring compressing force of the piston.**

**6. The piston and shaft are mated in the closer body.**

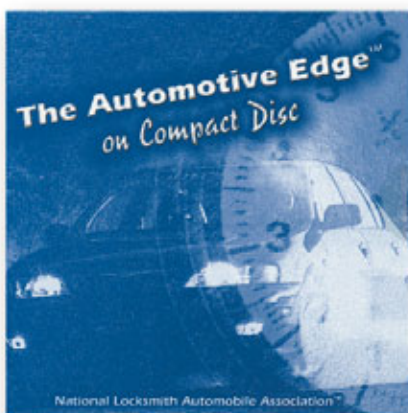
The main speed control valve and latch speed control valve is located on the same end of the body as the piston. They control the amount of fluid flow through their associated ports (see photograph 8). It is this fluid flow that controls how fast the door will close and how fast it will latch.

At the opposite end of the closer body, you will find the spring adjustment. This adjustment is intended to increase or decrease the strength of the closer. This is actually where many make their mistake when adjusting a closer that has a variable strength.

The factory reports that 80% of the

closers returned have been adjusted improperly. Here is what happens. After installing a new closer, the installer may find that the door does not latch consistently. The installer typically adjusts the latch closing speed so it will slam harder. If this does not solve the problem, it is adjusted to slam a little harder still.

# AutoEdge

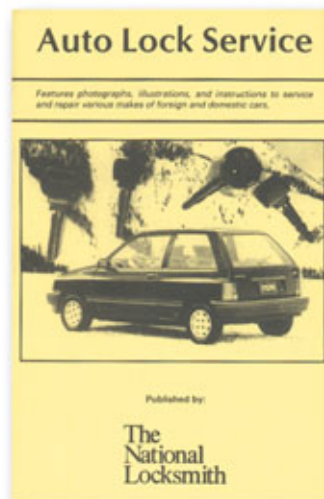


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# Auto Lock Service

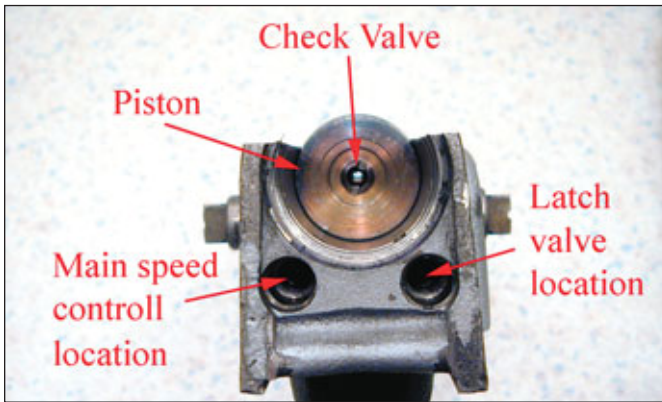


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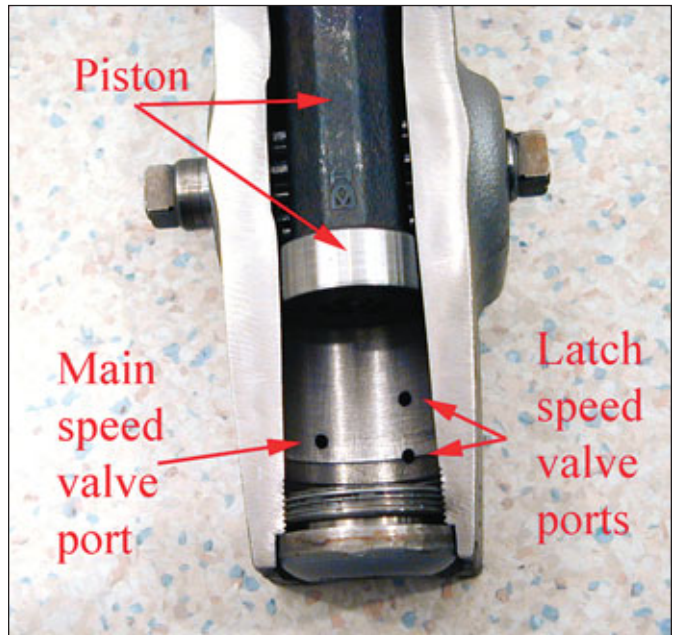
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#ALS - 1





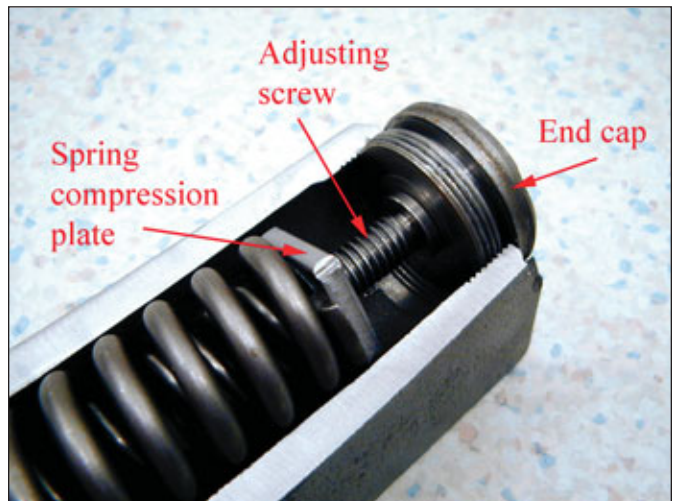
**7. The piston in the cylinder with a check valve showing.**



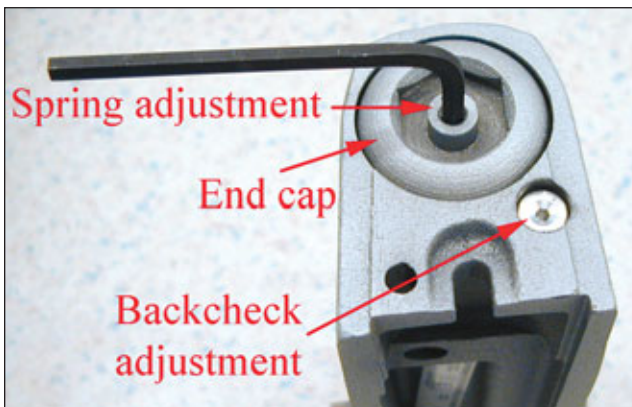
**8. The latch speed ports and the main speed port.**



**9. The spring adjuster set to provide the least amount of power.**



**10. The spring adjuster is adjusted for maximum strength.**



**11. The spring adjuster is adjusted with an Allen wrench.**

The installer will typically continue to do this until the adjusting valve screw comes out and blows hydraulic fluid everywhere. Now with a loss of fluid, it really doesn't work properly.

According to LCN, the main closing speed and latch speed should not be the first thing that is adjusted if a door is not latching properly. The first adjustment should be the spring adjustment. Why? The spring provides the strength to close the

spring tension.

In *photograph 9*, you can see the spring adjusted to its lightest closing tension. In *photograph 10*, the spring is adjusted to its strongest tension. These are considered a #1 and a #5 strength adjustment respectively. The adjusting screw is located in the center of the end cap and is adjusted with an Allen wrench (see *photograph 11*). Remember, spring power equals

door while the hydraulic fluid controls the speed of the closing. If the door is closing at what would be an appropriate speed, don't mess with the speed controls. Instead adjust the

strength while hydraulics equals control.

To understand how something works, it helps me when I have to deal with a new product. I hope that this inside operational overview of a door closer has helped some of you.

*For more information about the Quest series or any other closers from LCN, contact: LCN Division Ingersoll-Rand Company P.O. Box 100 Princeton, IL 61356-0100. Phone: 800/526-2400; Fax: 800/248-1460. In Canada contact: Ingersoll-Rand Architectural Hardware 1076 Lakeshore Rd. East Mississauga, Ontario L5E-1E4. Phone: 905/278-6128; Fax: 905/278-1413. On the Internet go to [www.lcnclosers.com](http://www.lcnclosers.com).*

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# MULTIMETERS

An  
In-Depth  
Overview

## PART 2

by Richard Allen Dickey

In the last installment I covered the basic difference between an analogue multimeter and a digital multimeter. I also went over voltage measurements as well as what not to do when measuring resistance. This month I will tell you how to test resistance and how to overcome the most common problems new users of a multimeter have.

The first thing I want to remind you of is to never take a resistance measurement if there is a voltage on the circuit. Don't forget the smoke issue. If you are not sure, test the circuit for both AC and DC voltage before doing a resistance check.

There are two basic conditions that you need to check to make sure your multimeter is working properly before testing for resistance. First, turn the multimeter on to any position that will allow you to test resistance. (See *photograph 1.*) Make sure the test leads are not touching and read the display. (See *photograph 2.*)

Your meter should give some kind of an infinite reading. This is called an "open" condition. Different manufacturers use different indicators for infinite. Some use a flashing display while others may be as simple as a "1" on the far left side of the display.

What is an infinite reading? Its definition is: INFINITE (1) Extend-

ing indefinitely, endless; (2) Boundless, having no limits; (3) An incalculable number. Infinite is the reading you will get if the test leads are not touching together and the meter is working properly.

Next you need to touch the test leads together and see what is on the display. (See *photograph 3.*) As you can see, there is a reading of ".5" Ohms. Depending on what scale the multimeter is set, you should read anything from 0 to 2 Ohms of resistance.

If you short (or touch) the test leads together, why would there be any resistance at all? This is one of those things that is often overlooked. The test leads themselves have some resistance in them. In this case they have a half (.5) Ohm of resistance. Is this important? It can be and I will show you why a little later.

Now that the multimeter has been tested and is working properly, it is time to actually take a resistance reading. Let's start with something simple. There are times when you need three or four hands to hold everything that you must hold to do a test. I don't know about you, but I only have two hands. A friend of mine only has one.

To overcome this oversight in the human design, man invented the alligator clip. The alligator clip is just like the name indicates. (See *photograph 4.*) It has a long skinny jaw that is held shut by spring pressure. The jaws have teeth to help hold them in place when it is attached to something.



1. Before you can start measuring stuff, you need to test your multimeter.



2. An infinite indication on the display is what you should get if the test leads are not touching.



3. Something in the area of 0 to 2 ohms is OK when the test leads are touching. Here we have .5 ohms.



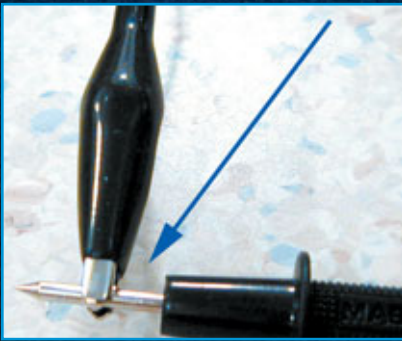
4. To compensate for the lack of extra hands, man made alligator clips.



It is a very common practice to use alligator clips to help connect the multimeter test leads to whatever it is that is being tested. However, it is a good idea to test the alligator clips before using them to test a circuit. To do this, one end of the alligator clip is connected to one test lead and the other end is connected to the other test lead. (See photograph 5.)

The first test reads 4.5 ohms. (See photograph 6.) This is not a very good reading. Remember that we had .5 ohms in just the test leads. Now we have 4.5 ohms of resistance in the test leads and the one set of alligator clips. This means that when we take the 4.5 ohms of total resistance and subtract the .5 ohms we found in the test leads, we are left with 4 ohms of resistance in the pair of alligator clips. This indicates a problem.

I tested my second pair of alligator clips and found they were even worse.



5. To test the alligator clips, connect one end to one test lead and the other end to the other test lead.



8. The alligator clips had bad crimped connections from the factory.

They had a resistance of 47 ohms. This is very bad. (See photograph 7.)

I am glad this problem came up because it is exactly what can happen in the field when people are watching. The cause of my problems were bad connections between the factory wire and the alligator clips. (See photograph 8.) Luckily this was an easy fix. I just crimped the wire a little tighter. (See photograph 9.) To accomplish this task I used a crimp tool designed just for this purpose. (See photograph 10.)

After re-crimping the alligator clips, I re-tested them to see if there was an improvement. As I expected, the bad connection was in the crimp. (See photograph 11.) While testing



6. This pair of alligator clips is not in very good condition. They read 4.5 ohms.



9. Re-crimping the connections should fix the problem.

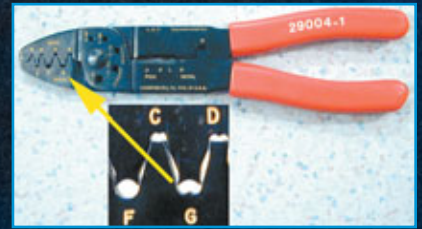
two sets of alligator clips at the same time, I only had .4 ohms of resistance. Does that raise another question? Think about it for a second.

Earlier we had .5 ohms of resistance with just the test leads. How can the resistance go down when we added more wire and stuff to the circuit? Have you guessed it yet? When I tested the test leads, they were only held together with pressure. When the alligator clips were added, they made their connection with their teeth. Even though there is some resistance in the extra wire and alligator clips, the better connection made by the alligator clips more than made up the difference.

After all of this we are finally ready to do a resistance test on something other than the test leads and alligator clips. Hopefully you have learned something about test equipment. If the things you are using to perform your test are bad, it will make what you are testing look



7. These are even worse. They have a resistance of 47 ohms.



10. A special tool is used to re-crimp the connectors.

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11. While testing two pairs of alligator clips at the same time, they have a resistance of only .4 ohms.



12. There are several scales to choose from when checking resistance. This multimeter has five different scales.



13. The 200 ohm scale is used first. We get 85.7 ohms.

14. Doing the same test but on the 2000 ohm scale we get 86 ohms of resistance.



15. Things make a big change when using the 20K scale. The reading has to be multiplied by 1000. The .08 is the same as 80 ohms.



16. The 82 ohms is too small to see when using the 200K scale. The display reads 0 ohms.

17. When measuring 12,000 ohms while in the 200 scale, the display shows infinite.



18. Infinite is also displayed in the 2000 scale.



19. On the 20K scale, we get a reading of 11.86 which when multiplied by 1000 is equal to 11,860.

bad, even if it is not. Always check your multimeter, test leads and anything else you will use before performing your test.

Now lets get down to business. There are several scales that can be used on this particular multimeter when measuring resistance. (See photograph 12.) Each scale will make the reading look different. The 200 and 2000 are for 200 ohms or less and 2000 ohms or less respectively.

The "K" after a number means it is to be referred to as thousands. The settings for 20K, 200K and 2000K mean that these scales are for 20,000 ohms or less, 200,000 ohms or less and 2,000,000 ohms or less respectively. By adding the "K" they can put three less zeroes on any

number. It is an internationally understood way that saves room. I am sure you have heard of it. It's called the metric system.

Lets start with an 82 Ohm resistor. What's a resistor? That's another story for another time. Just trust me that for the purposes of this test it is a thing that has a resistance of 82 Ohms. Why use a resistor? Well, for training purposes it is easier to use than a large roll of wire, but we will see the same type of results.

With the multimeter set to the 200 ohm scale, the resistor has a reading of 85.7 ohms. (See photograph 13.) There are two reasons that the reading is not exactly 82 ohms. The first is that the

test leads are included in the reading. The second is that the reported value of some things are allowed a tolerance. An average tolerance might be plus or minus 10%. Some things have a tolerance of as much as plus or minus 20% while others may have a tolerance of only 1%. This reading is off by 3.3 ohms, or 4% of what it is designed to be. Don't sweat the small stuff.

If we take the exact same setup, but use the 2000 ohm scale, we get a reading of 86 ohms. (See photograph 14.) Notice that the new reading is rounded off to an even number. We still have basically the same reading that we had with the 200 ohm scale. Now lets look at the 20K scale.

This is where things can start to get confusing. A reading of 0.08 is displayed. (See photograph 15.) Does it mean 0.08 ohms? No, since we are



20. The 200K scale shows a reading of 11.8 which converts to 11,800.



21. The largest scale is the least accurate when measuring a small amount. The 2000K is meant to measure 2,000,000 ohms or less.



in a "K" range on the multimeter, everything has to be multiplied by one thousand. Don't worry, it really is simple to do. Nobody goes through all of that multiplying nonsense. You just move the decimal place to the right three positions and you will get 0080. ohms. The two zeroes on the left don't mean anything so you have 80. Ohms of resistance. This reading is not as accurate as the previous two, but it worked out well to show how to read something in the higher scales of the multimeter.

There is one more scale that I want to show you. When reading something that only has a resistance of 82 ohms while in the 200K scale, we end up with a "0" reading on the display. (See photograph 16.) This is because 200K is the same as 200,000. A small number like 82 in a scale of 200,000 is too small to show.

Reading resistance in different scales can be confusing at times, so I want to go through it again using a different resistance value. This time instead of 82 ohms, we will use 12,000 ohms.

12,000 ohms or 12K ohms as it is commonly referred to, will make the multimeter react a little differently. Using the 200 scale the display shows infinite. (See photograph 17.) The 2000 scale shows the same thing. (See photograph 18.) Do you remember why?

The highest resistance that you can see in the 200 scale is 200 ohms or less than 200 ohms. The highest resistance you can see in the 2000 ohm scale is 2000 ohms or less than 2000 ohms. In this case we are trying to look at 12,000 ohms. The multimeter can not read 12,000 ohms while in the lower scales.

The 20K scale is a different story. The 20K scale shows a reading of 11.86 K or 11,860 ohms. (See photograph 19.) Why not 12,000 ohms? Its that tolerance thing again.

The 200K scale shows 11.8 K which translates to 11,800 ohms. (See photograph 20.) There is only 60 ohms difference between the two readings. I wouldn't be afraid to use either scale when reading something of this value.

The last scale on the multimeter is the 2000K scale. As you can see, the display shows 11K. (See photograph 21) This reading is not as close to the real value of the resistor as the other readings. This is because the multimeter is designed to read a really large value when in the 2000K scale.

The easiest way to get the most reliable reading is to choose the proper scale when testing. Which scale should you use when testing resistance? I like to start with the smallest scale. If I get an infinite reading, I go to the next higher scale. When I get to a scale that displays a value, I use that scale.

I often look at the value of a multimeter and ask myself why more people don't have them laying all over their shops because they are so inexpensive. Hold on, this is going to blow your socks off. The digital multimeter I used in this article was purchased for under \$7.00 at a local tool store. I also picked up an analog multimeter for under \$5.00 at the same store.

The cost of these useful tools has come down to incredibly low levels over the last twenty years. They are so cheap now and so useful that I have several of them in my shop and my home. This may sound a little ridiculous to some, but if you have an electrical problem, it will be the best five bucks you ever spend.

Next month I will cover how to read and understand the display on an analogue multimeter. It's not as tough as it looks. Or is it? **TNL**

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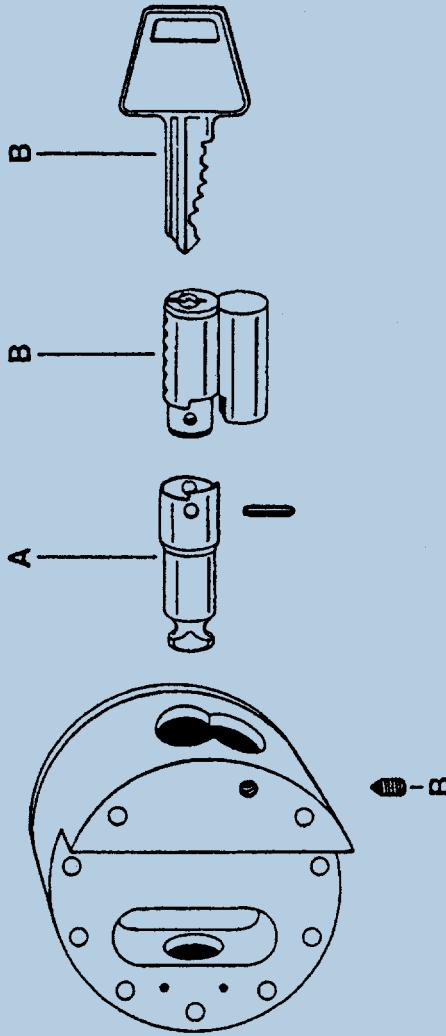
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#ASA - 2002



Professional 2000 Series



(A) Retainer Assemblies and Parts

<u>Model #</u>	<u>Description</u>	<u>Model Applications</u>
2081100	Retainer (Locking Bolt)	2000

(B) Cylinders, Pins and Key Blanks

<u>Model #</u>	<u>Description</u>	<u>Model Applications</u>
PT2000	6-Pin Cylinder	2000
PT2000U	6-Pin Cylinder-Uncoded	2000
4754010	Cylinder Retaining Screw	2000, Z2000

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## ***American Professional 2000 Series***

Rekeying instructions for an American Lock Co. Series 2000 padlock

### **Disassembly (Removing Cylinder)**

1. Remove putty or sticker from backside of lockbody that is covering cylinder-retaining screw.
2. Remove screw with 3/32" Allen wrench.
3. Insert key and turn 90 degrees to open position.
4. Pull cylinder out of lockbody.

### **Rekeying The Cylinder**

1. Remove key from cylinder assembly.
2. Remove tension pin that is securing retainer to cylinder.
3. Remove retainer from cylinder.
4. The pins may now be removed by:
  - a. Rotating key and plug 180 degrees, remove key and drop old pins through bottom of cylinder. Insert new key and the correct pins.
  - b. Rotating key and plug, push out plug with a follower tool. Remove old pins and replace with new pins that correspond to new key.
5. Return plug and key to neutral position and remove key.
6. Place retainer on end of cylinder and replace tension pin.

### **Assembly (replacing Cylinder)**

1. Insert key and turn key and plug 90 degrees clockwise.
2. Insert cylinder assembly in lockbody and turn key 90 degrees counterclockwise to locked position.
3. Re-insert screw and tighten until it bottoms out and then loosen 1/2 to 1 revolution.

# The Lighter Side

*Never a Dull Moment*



by Sara Probasco

**“W**hat is this piece of junk?” I asked Don, holding up a strange contraption that I’d found in a box on the back shelf of our back-room work area while straightening up, one day.

“Now don’t you be messing with my ‘widget,” he replied. “That’s good junk, and you can put it right back where you found it.”

“But what is it for?”

“Well, I haven’t exactly figured that out, yet, but I’m not about to part with it.”

Looking about the area, all I could do was shake my head in amazement at all the stuff we’d accumulated since the last clean-out session. Such treasures as a locking file cabinet drawer without a cabinet, a safe head left ages ago with no tag of ownership on it, a box full of old-fashioned locks that needed custom-keys manufactured from scratch, a used panic bar, a wall-unit of gym lockers. That was in addition to the usual lock boxes, padlocks, entry locks, and the like. We seem to attract small auto parts – gas caps, glove box doors, hub cap locks – and occasionally, something on a bit larger scale, like a motorcycle somebody will wheel into the shop or a boat and trailer or RV they’ll leave in the parking lot to have keys made, but those are never left to gather dust, needless to say.

A lot of people drive old cars in our neck of the woods, and replacement of an old steering column with a not-so-old one from the local used parts yard is common practice. Apparently, these never come with keys, so it’s not at all unusual to find one propped in a corner or lying on the floor of our shop, awaiting the locksmith’s attention.

One morning a man called to inquire about the cost of a key for his vehicle. He was planning to cross the border into Mexico that evening, and had lost the key to his trunk. That meant he would have no way to open it for inspection by the Border Patrol. We’d all heard tales

about how the Border Patrol managed to open locked trunks when there was no key, and most of them were true.

I told him what we would charge to come out and make his key. Then I added, as I always do, “But if you’ll bring the vehicle to our shop, you can save the cost of a service call. In fact, if the same key fits the door locks, you can just bring one of those in, if you know how to remove it. That’ll save you a labor charge.”

That lowest price seemed to appeal to him, and he said he’d bring it to us later in the afternoon.

“What time do you close?” he asked.

“Five o’clock,” I replied.

Late that afternoon, I noticed a vehicle parked across the lot from our shop. For a long time, two men seemed to be working on the door, but I couldn’t tell exactly what they were doing. Finally, five minutes before closing time, here they came, carrying something between them. Apparently, they had misunderstood me. Rather than removing the door lock, they had managed to take the entire door off its hinges and were bringing it into the shop to have the key made.

Sometimes the keys brought in – or the stories behind them – can be as interesting as the locks. Like one presented to us a couple of years back.

“Can you make me another key? I can’t get this one to go in the lock, any more,” the woman said. With a trembling hand, she handed me an automotive ignition key. It was blackened, and the brass lands were melted and fused at the tip. I looked up at her, puzzled.

“It’s been burned,” she replied to my unspoken question.

I wondered how anyone could burn a key so thoroughly.

“My little girl did it,” she continued, patting the head of a diminutive, thumb-sucking youngster who clung to her skirt. “She stuck it in an electric plug.” The woman eyes

suddenly filled with tears as she rolled them skyward. “¡Sabe Dios! I thought she was gone.”

Shaking my head, I looked at the mutilated key. The fact that the little girl had emerged unscathed seemed miraculous, despite her rubber-soled sneakers.

“There was this crackle, and a flash of fire, and then a big puff of smoke,” her mother continued. “At first, I thought the whole house would catch fire.”

The neighbor who had driven the pair to our shop seemed more shaken by the incident than the little girl. “Can you believe she did that, and she’s not even hurt? Her Mama is in worse shape than she is,” he said.

From the appearance of the woman, I had to agree.

“I think I should go to the hospital,” she said. “My heart is still pounding.” She put her shaking hands to her chest.

“Why don’t you sit down for a minute, while I see what I can do about making you a new key,” I offered. When I had completed the duplication, I said to her, “Would you mind if I keep the burned one? It will be of no use to you, and I’d like to show it to my husband, when he returns to the shop.”

Her eyes grew wide. “Oh, no! It doesn’t belong to me. The car was just borrowed. I’ll have to return that key to the owner.”

The following week, Don and I were enjoying dinner at one of our local restaurants when a man we know entered with his family. He stopped table-side to chat for a moment. As often happens, the talk turned to business.

“The funniest thing happened, last week,” he said. “Did a woman bring a melted key into your shop?”

I acknowledged that she had.

“I couldn’t imagine what was going on, that day,” he continued. “I’d been trying to sell my wife’s old car, and the woman took it out for a



test drive. She'd been gone so long, I was beginning to be a bit concerned when she finally called."

"I just wanted to tell you not to worry," she said. "Of course, that made me wonder if there might be something to worry about.' He laughed half-heartedly. "She said she'd had to take care of something, and she would have the car back to me in a little while. Well, what could I say? I told her to come on back as soon as she could."

"A few minutes later, my wife called. Just before she hung up, she said, 'By the way, Honey, don't let anybody drive that car, yet. I don't think our insurance will cover it, if anything should happen.'

"I thought, 'Oh, great! That's all we need, somebody having an accident in my car with no insurance coverage!' Then I really did begin to worry.

"About an hour later, the woman called again. 'I'll be there in a few minutes,' she said. Of course, by this time, I was chewing my fingernails. She'd been gone in my uninsured vehicle for almost five hours. My mind went crazy. By this time, people could be dead, their vehicles crumpled beyond recognition, their relatives already meeting with attorneys to file suit against me."

"Then I got to thinking, I didn't even know this woman. What if she was involved in something illegal, like drug trafficking. We're not but an hour from Mexico. By this time, she could've made two or three drug runs across the border in my car. Maybe she was taking so long because she was trying to elude the border patrol. Maybe she'd already been caught, and they'd impounded my car. Five hours is a long time, especially when your mind is running wild."

He laughed again. "What really happened was so different from what I'd imagined, I wasn't even upset when I found out. I was just glad nobody was hurt. That little girl sure was lucky."

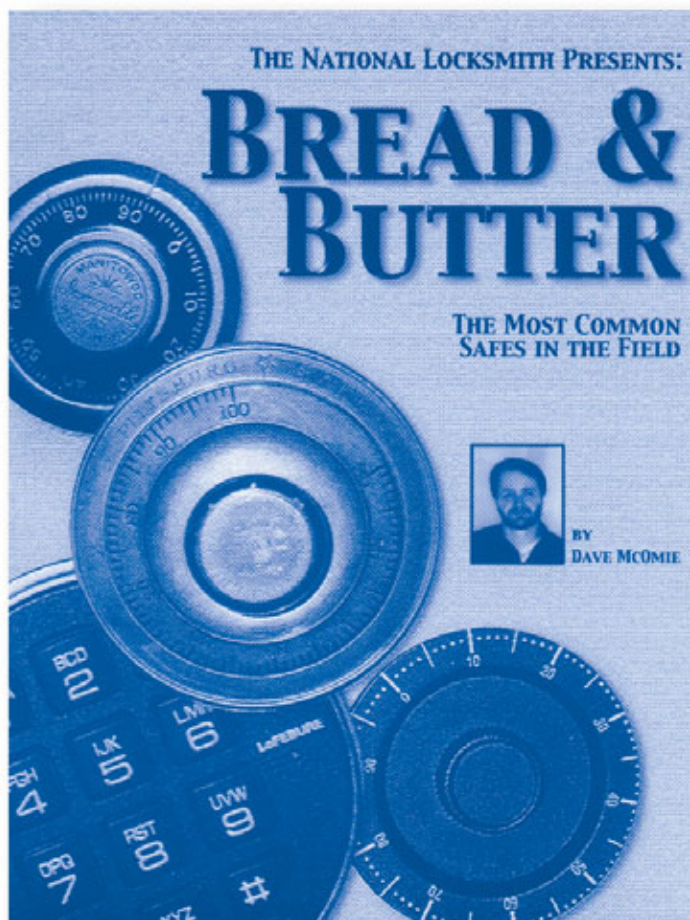
He looked at Don. "I just gotta ask you something."

"What's that?"

"Do you always attract such interesting business to your store?"

"Well," Don replied, a wry smile curving his lips, "let's just say it's never dull. **NL**

# Bread & Butter



Now here is one amazing value!

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#BB - 01

AMVAULT

*the easy way*

As we progress and get better at our trade, the easier the safe opening is, there is less to show and tell. If I manipulated every safe open, there would be nothing to show but a picture of the locked safe, and then a picture of the opened safe. Boring, boring, boring.

I was recently called on to work on an AMSEC AMVAULT High Security Safe. In *photograph 1*, we see the label on the upper left hand corner of the partially open door. Next to the label are two magnetic contacts for one of the three alarms on the safe. A new



by Dale W. Libby, CMS

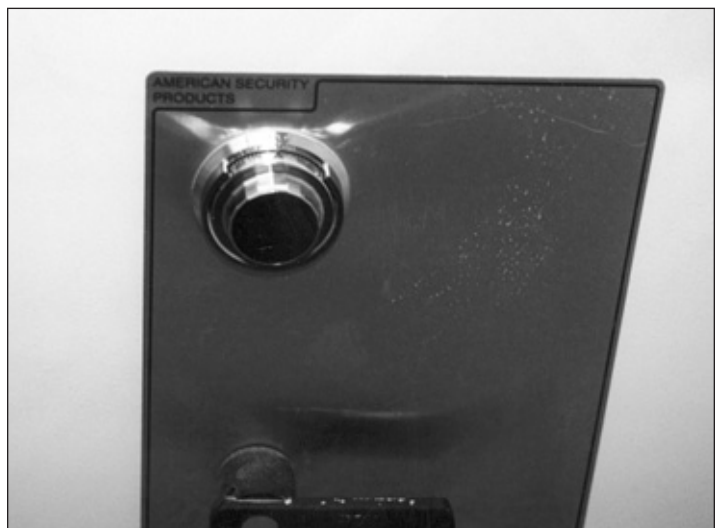
Sears location had inherited this unit from a defunct Montgomery Wards store that occupied the same location and went into bankruptcy.

The call came from a new acquaintance that worked for another lock and safe company. He had been trying to manipulate the S&G lock open for a day or two with bad results. I did find that he had located at least one of the numbers of the wheels correctly, but had got no further indications. I tried a straight number speed manipulation through all 100 numbers by two number increments. I did not get any great readings. I



1. AMVAULT High Security Safe label and two alarm contacts.

2. Dial over handle configuration of this unit. Note the marks on the edge of the door. These marks were made when the door was slammed shut with the bolts already extended.



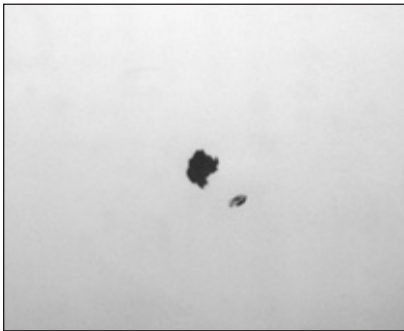


**3. Piano hinge on the inside access door with screws removed to allow access.**



unit, but there still was a 3/8" hardplate to contend with.

If you look closely, one can see two scratch marks on the edge of the door where the bolts have hit the door in *photograph 2*. Slamming the door with the bolts in the locked position caused this. This door has a positive detent system, but the handle must be fully thrown to lock the bolts in the closed position. The safe door can be opened without fully engaging the detent mechanism. After opening the door, I made an adjustment to help alleviate this.



**4. Ground down repair spot before touch-up paint and a label is used to cover this flush repair.**

spend about 15 minutes before I get the drilling paraphernalia.

Where should I drill? By looking at the front of the safe as seen in *photograph 2*, and having worked on these units before, I knew the lock was mounted vertical down. The lock was a Sergeant & Greenleaf 3-wheel Group II combination lock. On some of these units there is a glass plate below the combination lock area, so front drilling is out of the question. In fact, however, the glass plate option was not used on this

Servicing these safes after opening the door, is user/technician friendly. The large door has a piano hinge along the hinge side of the door. This can be seen in *photograph 3*. Just remove about 6 screws to give you access to work on the interior mechanism. Also seen on the back of this unit was the UL label. This safe is a B/F unit, which means it has Burglary and Fire resistance. The Fire rating on this large unit was for 2 hours, and the tool resistance was TL-15, or 15 minutes against tool attack.

The  
National  
Locksmith.

The Best Of  
Dale Libby



This book contains a specially selected collection of new and reprinted articles from author and safecracker, Dale Libby. Topics include: Safe opening, service, and tools; Car opening; Alarms; Locks; and Much More!

## The Best of Dale Libby

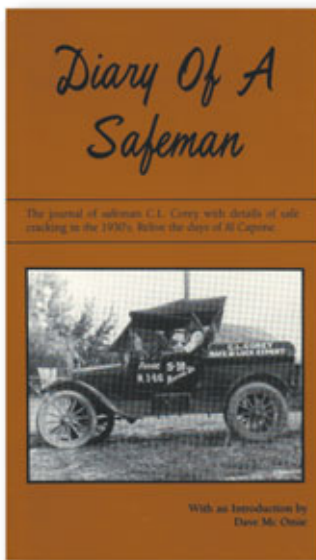
These are the articles that started the safe opening revolution.

CLICK HERE TO LEARN MORE



#DALE

## Diary Of A Safeman

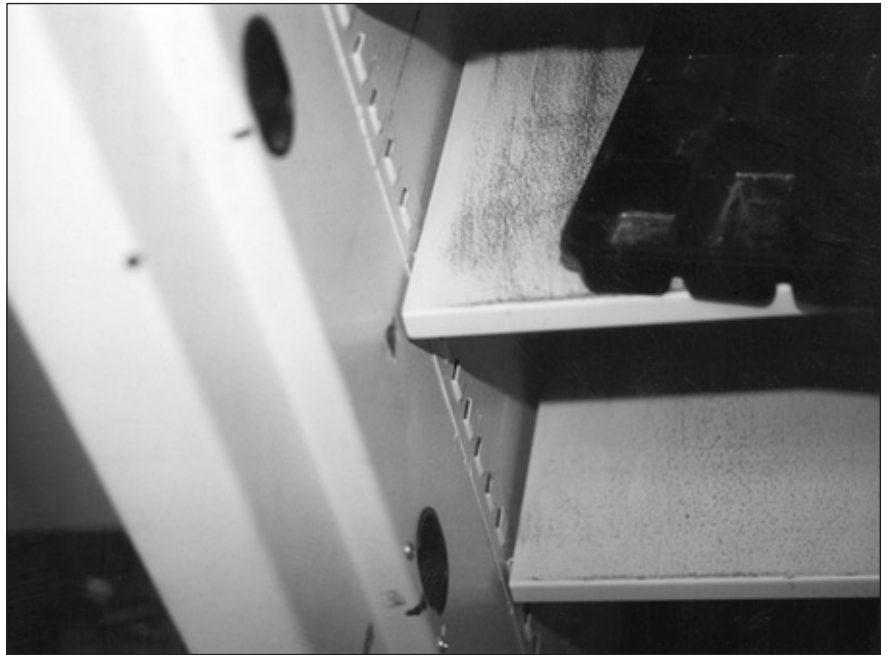


This book is a real gem...the private safe diary of old time safecracker C.L. Corey.

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#DIARY

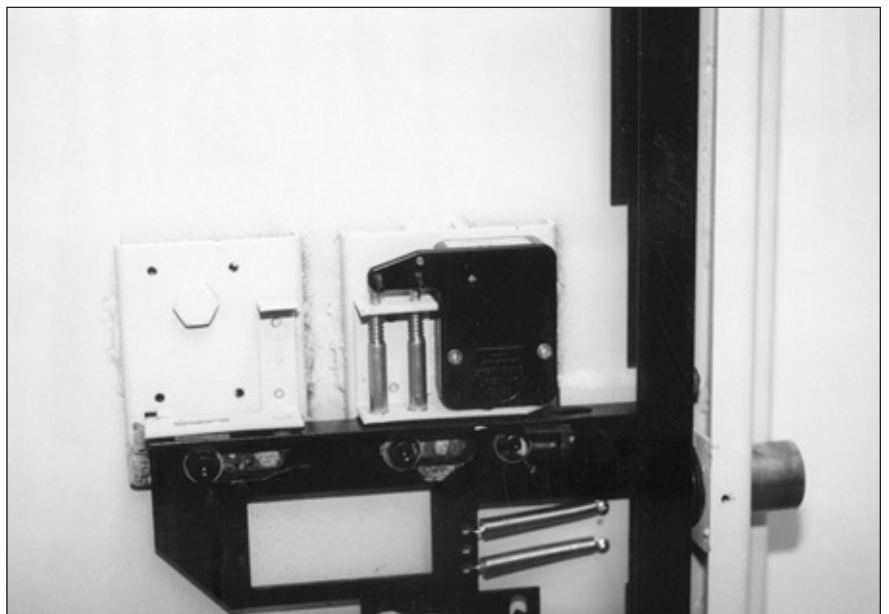


**5. The inside hole came out between the two bolt holes at the edge of the middle shelf.**

The TL-30 version of this unit uses two more active bolts. This unit had only 3 locking bolts, but a place where two more could have been added in the vertical up and vertical down position. This would provide three locking bolts on the opening side of the door and one extra bolt for locking the top and bottom of the door. When you drill to read the combination, most of the time the safe rating does not matter, because usually only the door is rated. When the label has the "X 6" rating, then all 6 sides of the safe are protected with some sort of barrier material.

*Photograph 4*, shows the repair site before putting on a little touch-up paint and a label to cover the repair. I ground down a large taper pin that went through the thick walls of the side of the unit. Another glimpse of the inside service door of the safe can also be seen. It is to the right of the repaired hole and it also has a hole in it. If you could see the original picture, you would notice some scratch marks around the combination change access hole.

Knowing that these doors are 5-7/8" thick, I drilled in exactly 6" back from the face of the door in line



**6. There is no glass, but two relocking triggers are ready to fire if the dial spindle or bolt is punched.**



with the center of the combination dial and a 1/4" up. The 1/4" was for the alignment of the change keyhole. It was a perfect hole, except for the fact that the factory silver label was still over the combination change hole. When I looked at the shiny label I could only see a reflection of the end of my Hawkeye Borescope.

Out of a long piece of welding rod I made a scraper and attacked the sticky label with gusto. It took about 10 minutes before I moved the label enough to let me see into the hole. This hole was approximately 1" above the combination lock. This made the change keyhole smaller than I wanted and harder to see the wheels. Not impossible, but much harder than a standard view close up to the back case of the lock and change key hole area.

The rest of the time was spent peeking through the change keyhole looking for hubs, gates, balance holes, and rivets. You have to develop a technique to find these markers and use them to quickly open the lock. Generally, LaGard locks are easier to scope than S&G locks, but they will both fall to

persistent dialing. It is hard to tell someone how to do this, for not everyone has the same eyesight, the same scopes, or the same exact circumstances to deal with. Side drilling is now where it is. The repair is easier and does not pose a large security risk to would be burglars.

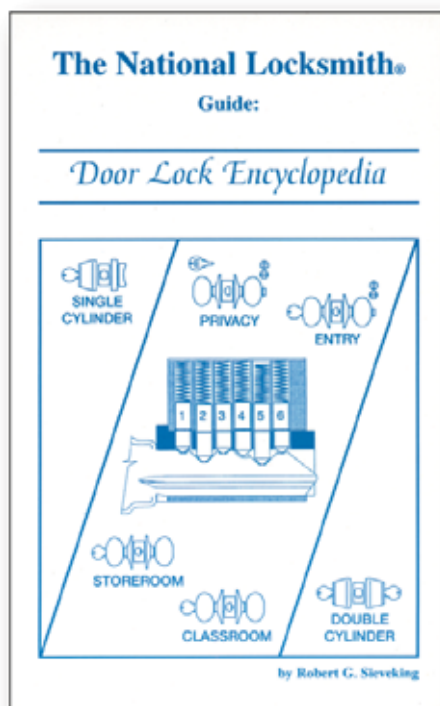
The inside of the safe door edge is shown in *photograph 5*. Just between the two bolt receptacles next to the middle shelf is the inside hole. A little further back and I would have drilled the shelf. Sometimes luck is with the safecracker and sometimes its not. I was lucky this time.

The last picture, the one you have been waiting for, is *photograph 6*. This is the inside picture of the AMVAULT door. The 6730 combination lock has a special cover with an extension for two relock triggers. This is why it is important to carry both S&G and LaGard locks in your inventory. If the cover is still unbroken, you can use a new lock with the old cover per the specific lock, and thus you have not diminished the relock security of the B/F unit. The two springs below the

bar are part of the detent mechanism. When the door is closed, a lever releases the bolts and these springs throw the bolts into the locked (extended) position.

The setup for the key lock can be easily seen. There is also a relock trigger holder already on the safe door. There is a large bolt into the back plate where a keyed lock would be installed. I have not had to deal with any keyed locks yet. If there was a glass plate, then only the combination lock would be protected. There is a large cavity below the combination lock that holds the hardplate and the glass plate if used.

Hmmm. What have we learned? To open higher rated safes, we must start to side drill. This safe unit was almost 5" thick on the side. You must have the proper tools and scopes to accomplish this. Plus, the most important items are confidence and patience. People who watch me work for hours are really impressed with my patience. Is it patience, or just the fact that I am older and slowing down? I'll never tell. Open, take your time, and prosper. **TNL**



# Door Lock Encyclopedia

The ability to remove a lock from a door, disassemble the mechanism, and remove the lock cylinder for service is not always a simple straightforward task.

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The 2001

# HONDA CBR1100XX



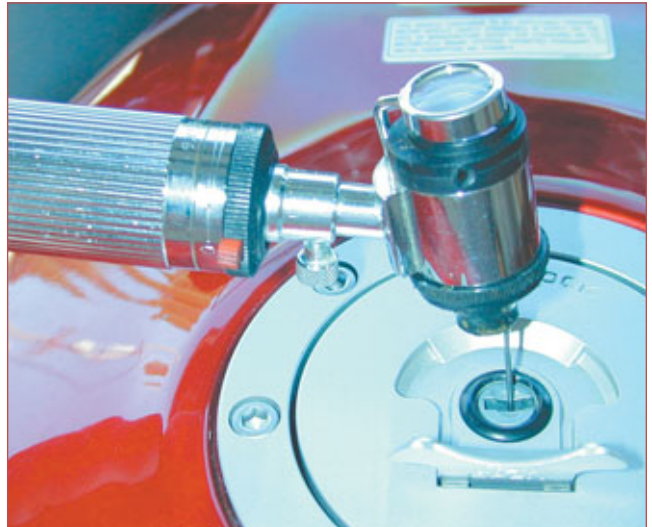
by  
John Blankenship

Part 1

**1. The CBR1100XX is a very powerful, fast, and good handling sport bike. It is not difficult to originate a key for it.**



**2. This view from the drivers seat shows two of the three locks available. The gas cap is in the bottom/center of the photograph and the ignition/steering lock is in the top/center.**



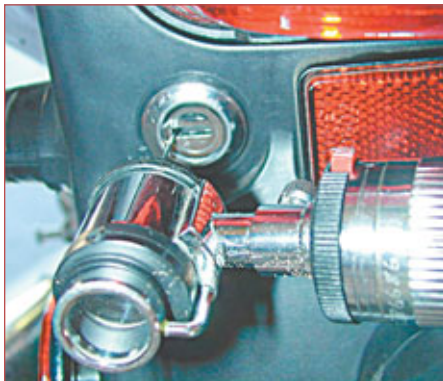
**3. The quickest way to originate a key for this bike is to use an otoscope with a wafer reading attachment to read the height of the wafers. The gas cap has a dust cover that flips up to give you an unobstructed view of the wafers. It contains five wafer tumblers in spaces 4-8. There are only three depths so it is easy to distinguish between them.**



**A**lso, the #2 depth wafers are silver in color while the #1 & #3 depth wafers are bronze in color. The silver wafers are easy to distinguish if they are at the entrance to the keyway, but the light from the otoscope will reflect the bronze color from the bronze wafers onto the silver wafers that are deep in the keyway. There is still a subtle color difference if you look carefully. Lubing the lock with a spray lubricant and then raking the wafers helps to free the wafers and it also cleans them so they are easier to read.

I easily determined that the cuts for spaces 4-8 was 2 3 3 1 2. I cut those depths onto an X265 blank and checked to see that it turned the gas cap lock smoothly; it did.

**4. The seat lock is located on the back of the rear fender by the taillight. It contains five wafer tumblers in spaces 2-6.**



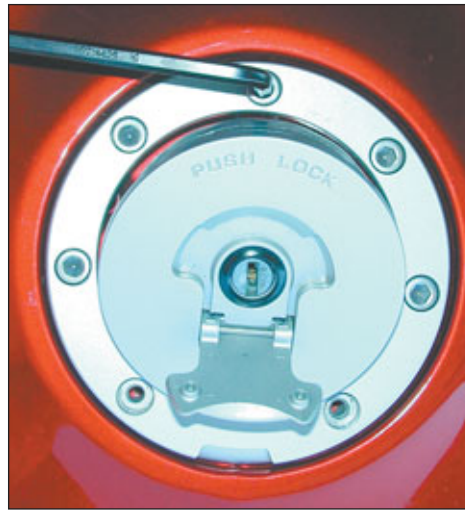
**5. Use the otoscope to read the wafers in the seat lock.**

You already know the depths for spaces 4-6 from the gas cap and they will help you read the height of the wafers in spaces 2-3 because you can compare the relative heights of the wafers. I determined that the cuts for spaces 2-3 was 1 3. The cut for the first space is always a #1 depth in this code series, so the cuts for this key are 1 1 3 2 3 3 1 2, which is code L23.

**6. The original key is on the left with the duplicate on the right. A code cut X265 key blank with cuts of 1 1 3 2 3 3 1 2 operates all three locks on this motorcycle.**



## Gas Cap Lock



**7. The easiest lock to remove and disassemble is the gas cap lock.**

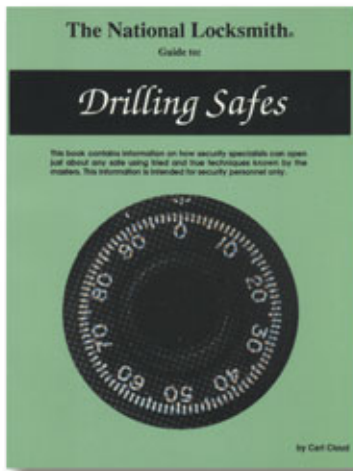
The photograph shows the lock after it has been picked 90 degrees clockwise and the cap opened. This lock usually picks easy with a rake and lubing the lock helps. Have a small screwdriver ready to finish turning the lock as you are picking against spring pressure. The plug will stay in the unlocked position and it is best to leave it that way during disassembly. If you need to lock it so you can remove a key, push down on both sides of the gasket at the same time. Only three of the seven bolts in the mounting ring need to be removed. The two on the bottom have already been removed and a 5mm hex key is shown removing the top one. Then you can take the gas cap assembly to a bench.



**8. Remove the gasket backing ring using two small screw-drivers as shown in the photograph. It is similar to removing a bicycle tire from its rim. It is tricky to replace the ring behind the gasket during reassembly but it can be done. There is a cutout on the inside of the backing ring that is visible in the photograph at the 5 o'clock position. The purpose of this cutout is to allow the ring to slide over the locking bolt if the bolt is extended in the locked position.**

*Continued on page 112*

# Drilling Safes



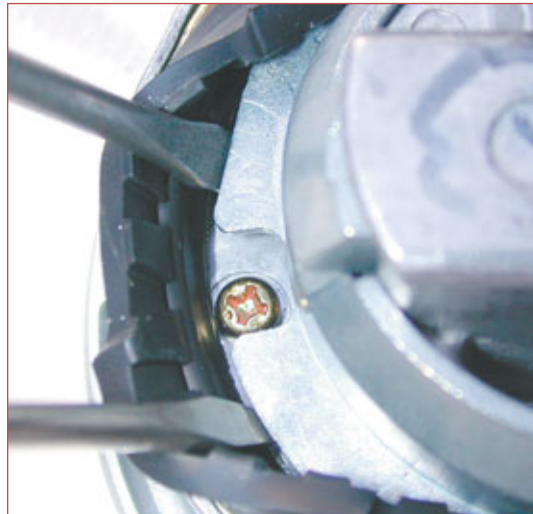
One of the most expert safemen in the country, Carl Cloud has written a very important book on safe opening.

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#DS - 1

Continued from page 110



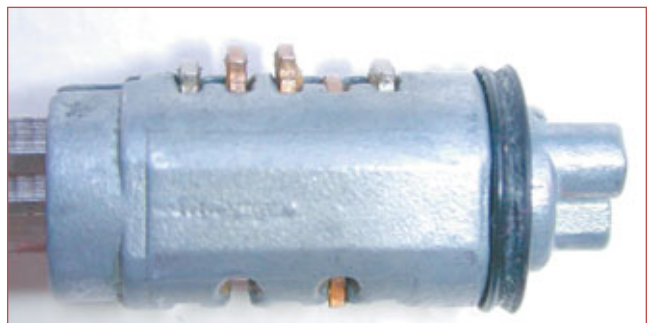
**9.** After the gasket backing ring has been removed, pry up the gasket and look for the three small Phillips screws that are hidden under it. Unfasten the screws and leave them; the gasket will hold them in place. Now the lock assembly can be removed from the cover plate.

**10.** The lock assembly has been removed from the cover plate and turned over.



**11.** Pull the plug out of the cylinder while making sure the wafers do not spring out of the plug due to it being in the unlocked position. It is best to leave it in the unlocked position because the bolts are locked in place. If you remove the plug while in the locked position the bolts will spring out slightly and the plug is difficult to put back in. The best thing to do in that case is to squeeze the locking bolts in with your fingers until they click into the unlocked position.

**12.** The gas cap plug contains wafer tumblers in spaces 4-8.





An X265 blank inserted into the plug shows that the cuts are 2 3 3 1 2. A search using key code software revealed that there are only 6 codes that use those cuts in the last five spaces. It is easy to progression the missing cuts in spaces 1-3 because the first space is always a #1 depth (no cut) so you really don't have to be concerned about it; you only need to progression spaces 2-3. There are only three depths so there are only nine possible combinations to try.

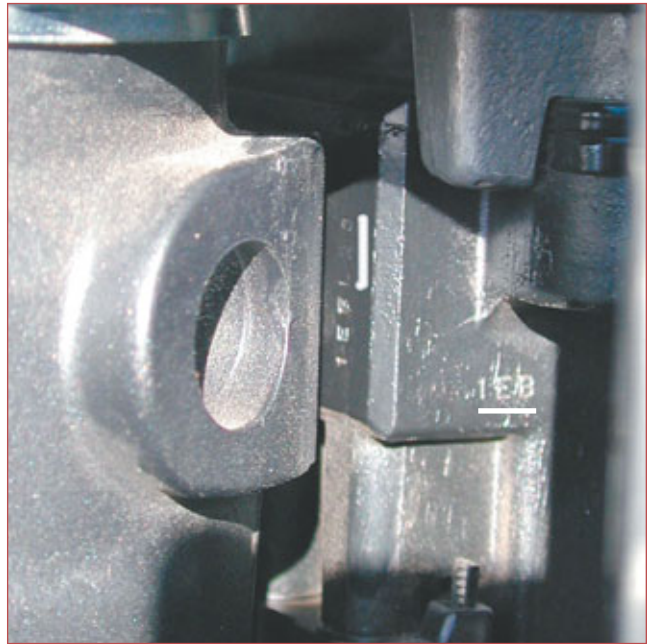
- 1st try: 11, 12, 13, 23, 33
- 2nd try: 21, 31, 32
- 3rd try: 22

Use the seat lock for progressing these cuts and you can use one side of a blank for each try, since all of the tumblers are on the same side of the keyway in the seat lock.

### Ignition/Steering Lock



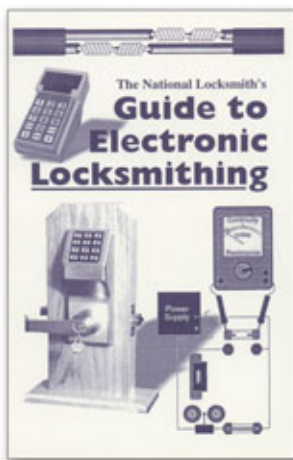
**13. The ignition/steering lock is shown in the OFF position and it is necessary to push the plug in to lock and unlock the steering. The handlebars have to be turned to the far left or right to align the locking bolt with the hole in the frame before the steering will lock.**



**14. We are looking at the right side of the ignition lock with the steering turned all the way to the left. There are six characters stamped into the lock with the last three characters being the code.**

The code is underlined in the photograph. The code in this case is very faintly stamped to the point of being unreadable, so it does us no good. I looked at four new 2001 Honda motorcycles on the showroom floor that also use this lock. Three out of four of the codes were very faintly stamped or missing entirely, so you cannot count on using the code to make the key. Even when the code is well stamped, it is difficult to read because the characters are so small. I have had success in pushing Silly Putty against the code and reading the impression, but it is usually faster to read the height of the wafers in the gas cap and seat locks.

*Continued on page 115*



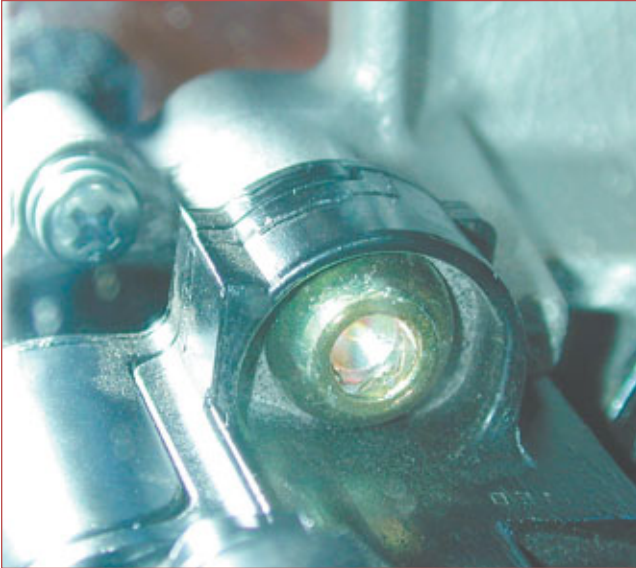
## Electronic Locksmithing

Everyone knows there's big money in selling, installing and servicing electronic security such as mag locks, electronic strikes, and simple access control.

[CLICK HERE TO LEARN MORE](#)



Continued from page 113



**15. I used a mirror to photograph one of the security bolts that secure the ignition lock. It has a round recess in the head that is not deep enough for a broken bolt extractor. The Honda mechanics drill the head off the bolt and after the lock is removed there is enough of the bolt extending to grab with vice grips and remove it; they then replace the bolts with new ones. Other possibilities are to use a spring-loaded center punch on the edges to work it out or to use a Dremel to cut slots on both sides for a large screwdriver. One of the Phillips screws that secure the plastic bezel is also visible, but you do not have to remove the bezel in order to remove the lock. I did not attempt to remove the ignition lock.**



**16. This is how the lock is disassembled once it is removed from the motorcycle. The switch has been removed from the back of the lock. Four T-10 tamper resistant Torx screws secured it. A spring fits into the cup around the tailpiece to maintain forward pressure on the plug.**

# Flat Rate Manual

The  
National  
Locksmith.

Flat Rate Manual  
For Locksmiths

Safe Work • Car Opening • Key Cutting • Rekeying • Installations • Domestic Autos • Code Keys • Duplicate Keys • Masterkey Systems • Conversions • Key-In-Knob Locksets • Imported Autos • Lockouts • Safe Work • Car Opening • Key Cutting • Rekeying • Installations • Domestic Autos • Code Keys • Duplicate Keys • Masterkey Systems • Conversions • Key-In-Knob Locksets • Imported Autos • Lockouts • Safe Work • Car Opening • Key Cutting • Rekeying • Installations • Domestic Autos • Code Keys • Duplicate Keys • Masterkey Systems • Conversions • Key-In-Knob Locksets • Imported Autos • Lockouts • Safe Work • Car Opening • Key Cutting • Rekeying • Installations • Domestic Autos • Code Keys • Duplicate Keys • Masterkey Systems

By Jarlos C. Pels, CPL

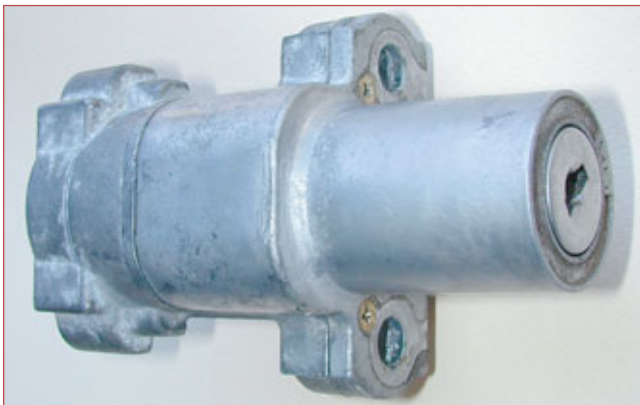
Now you can easily  
“Price for Profit!”

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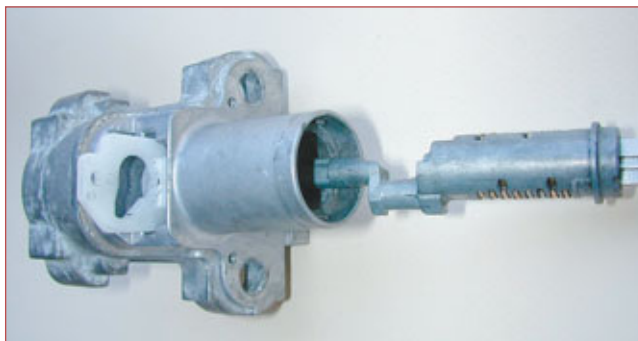
#FRM - 1





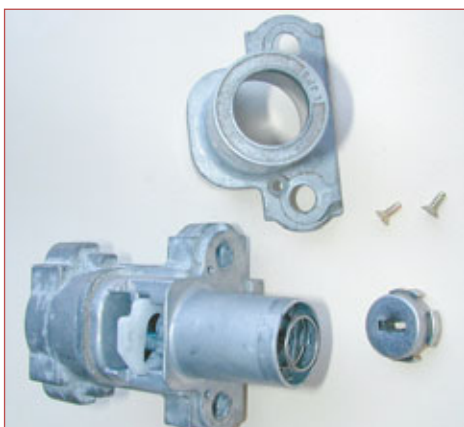
**17. Remove the two Phillips screws to disassemble the lock.**

The face piece is designed to be pushed in during a screwdriver attack. It will then interlock with the inside of the cylinder to prevent it from turning. It will also spin around while trying to pick the lock. It would be necessary to use an extra long tension wrench that will reach through the faceplate and into the keyway of the plug. This is a difficult lock to defeat.



**19. The plug has to be in the OFF position before it will slide out.**

**18. Remove the cover, hardened faceplate, and the spring behind it.**

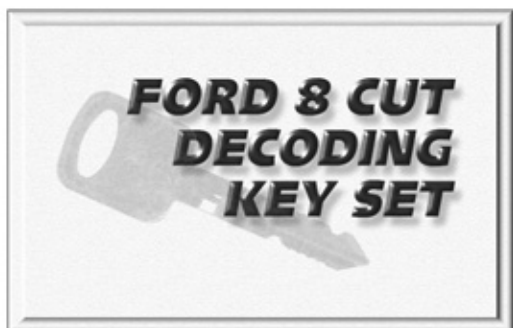


The offset tailpiece aligns with the slot in the steering lock bolt activator and the groove in the cylinder. You do not need the key to slide it out if it is in the OFF position.



**20. The ignition lock contains all 8 wafer tumblers staggered in pairs.**

## Ford 8 Cut Decoding Key Set



[CLICK HERE TO LEARN MORE](#)



#FD - 8



**21. From left to right are ignition lock wafers with depths of 1, 2 & 3. These are unique wafers and I am unable to find a keying kit for them. The gas cap and seat locks use the ASP A-19-101 keying kit, which is also used on Honda automobile door and trunk locks throughout the 80's.**

Next month we will cover the seat lock and specifications.

TNL

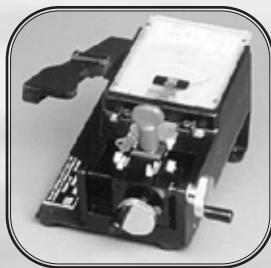
# TECHNTIPS

## YEAR-END PRIZES



**Grand Prize**

Silca Bravo Duplicator



**1st Prize**

HPC's 1200PCH  
Punch Machine



**2nd Prize**

Mas Hamilton's  
PowerLever 2000



**3rd Prize**

Curtis 2200 Duplicator



**4th Prize**

SDC Magnetic Lock,  
Keypad and Exit Switch



**5th Prize**

Securitron 12-Volt Unlatch Plug in  
Trans & Touchpad Retail Value \$650



**6th Prize**

LaGard "SmartGard"



**7th Prize**

Detex Advantex



**8th Prize**

Arrow 400 Series Alarmed  
Exit Device & S-75 Mounting  
Plate Kit for Narrow Stile  
Aluminum Doors



**9th Prize**

\$500 in BWD Products



**10th Prize**

\$500 in ASP Auto Locks



**11th Prize**

\$500 in Strattec Auto Products



**12th Prize**

Tech-Train "Jiffy Jack"



**13th Prize**

Sargent & Greenleaf 6120  
Electronic Safe Lock



**14th Prize**

High Tech Tools  
2000 Pro Set



**15th Prize**

Slide Lock's Master "Z" Tool Set





**16th Prize**  
 ESP Products Sampler



**17th Prize**  
 Major Manufacturing's  
 HIT-111 Drill Guide



**18th Prize**  
 Abus Padlock's Marine  
 Padlock Display (\$120 Retail)



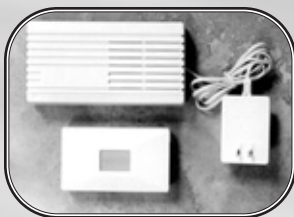
**19th Prize**  
 MBA USA, Inc.  
 Falle Pick Set



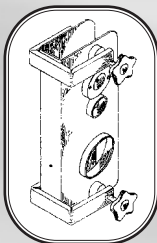
**20th Prize**  
 Baxter JV-1 & JV-5  
 Code Books



**21st Prize**  
 Sieveking Products  
 Squeeze Play



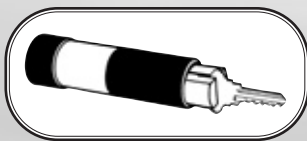
**22nd Prize**  
 Rodann's RV500 Wireless  
 Door Annunciator System



**23rd Prize**  
 A-1 Security Manufacturing  
 Installation Jig



**24th Prize**  
 Keedex Sampler



**25th Prize**  
 Framon  
 Impressioning  
 Handle



**26th Prize**  
 Gator Tool Multi-Purpose  
 Facecap Tool

## These Prizes Awarded Each Month!

- **BWD Automotive Ford or GM KwiKit**
- **Wedgeco™ Key Extractor Kit**
- **Strattac Racing Jacket**
- **HPC Air Wedge™**
- **Sargent And Greenleaf 4400 Series Safe Deposit Box Lock**
- **A-1 Security Products**
- **ILCO Key Blanks (100 Blanks)**
- **Keedex "SPIN OUT"**
- **Screwdriver**
- **Tech Train Training Video**
- **Sieveking Products Gm E-Z Wheel Puller**
- **Major Manufacturing Products**
- **Slide Lock's "Z" Tool Opening Set**
- **The Sieveking Auto Key Guide**
- **Jet Key Blanks (100 Blanks)**
- **High Tech Tools**
- **LaGard Combo Guard**

### Send in your tips, and win!

#### How To Enter

Send a tip on how to do any aspect of locksmithing. Certainly, you have a favorite way of doing something that you would like to share with other locksmiths. Write your tip down and send it to:

Jake Jakubowski, Technitips Editor,  
 The National Locksmith  
 1533 Burgundy Parkway  
 Streamwood, IL 60107-1861

Or send your tips via  
 E-mail to: [Natllock@aol.com](mailto:Natllock@aol.com)

#### Rules & Regulations

Each tip submitted must include your full name, street address (no P.O. Box numbers), city, state, zip code, phone number, fax number and e-mail address. **When sending tips via e-mail make sure to include complete address and phone.**

#### Every Tip Published Wins

If your tip is published you will win one of the monthly prizes listed. At the end of the year, we choose winners from all the monthly tips published, that will be awarded one of the fabulous year end prizes. All you have to do to win is enter.

Prizes are arranged according to suggested retail price value.

**Tips Start  
 on Next Page** →



**BWD KWIKIT  
WINNER:  
Aging Tibbe Keys**

This tip is for the Locksmith that is just starting to cut high security keys. Keys like the Jaguar Tibbe keys (S32FJ-P and S33FJ-P).

When the word got out that I had the capability to cut Jaguar keys, I had customers lined up to get the keys made. Everything was going smoothly, as most of the cars were older models with, I assume, worn locks and the keys worked great.

Then a woman came in with a Jaguar, that according to her, had been in storage since it was nearly new. It had only a few thousand miles on it. She wanted two copies of her key. I made the keys, she paid me and gave me a hug! She said the dealer wanted \$100.00 each for new keys and would have to send them off to be copied while her car remained at the dealership. The dealer told her it would take a couple of weeks to get her keys back.

She was very happy with the dupes that I made her until she got home and the new key wouldn't come out of the lock. When she returned the car to me, she wasn't exactly in a mood to give me another hug!

After examining the stuck key and the lock, I gave the keyway a couple shots of Houdini and the key slid right out with no harm done. To keep this from happening again (and in the hopes of ensuring future hugs) I now use a smooth file to round off the corners of each cut on the key.

Up to this point, it seems to have prevented any re-occurrences of the same problem.

*Paul McCrider  
South Carolina*



**WEDGEKO KEY  
EXTRACTOR WINNER:  
Handy Tool Modification**

I'm always looking for new and handier tools to get me through my day a little easier. The two screwdrivers shown in *photograph 1*, I found at a Checker's auto parts store for \$.99! After looking them over, I ground down the slotted blade to a size that would easily fit and remove Adams Rite retainer screws and ground down one of the Torx drivers to make a handy poke tool.

Now I have a compact multiple

## A Few Words From Jake...



**by Jake  
Jakubowski**

This is not necessarily momentous news but-last month, I began my ninth year as the Technitips (and Technical) Editor for The National Locksmith!

When the past managing editor of The National Locksmith, Tom Seroogy, first called me about taking the job and editing the Technitips Column, I agreed to do it only on the proviso that I could quit anytime I felt that the job was too much for me, or I felt unable to provide a viable column each month.

I've got to admit to each of you, that I didn't think I would be doing the column for more than a couple of months!

What started out as a column with about nine tips a month and eight or ten year-end prizes, has grown to 12 - 16 tips a month and nearly thirty year-end prizes!

Talking about being in the right place at the right time! The prize contributors that have joined our prize pool and the tipsters that have sent in the tips that I print each month have really made me look good!

The fascinating thing about this job is the incredible amount of stuff I have learned from those who contribute! I mean, I have learned from the novice, the experienced locksmith and the "experts" as well. Like many of you, I have carried a lot away from this column that has helped me in my day-to-day locksmithing endeavors. I'm sure other readers have done the same.

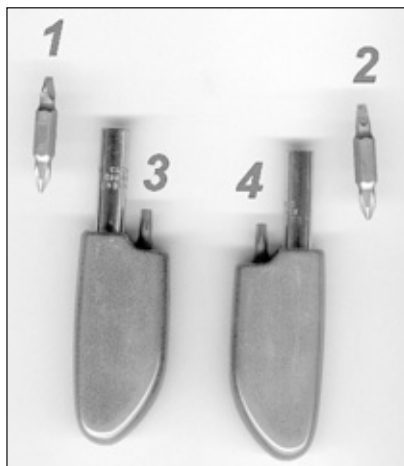
I want to thank each of you (both those that are reading the column for the first time and those of you that have been following along on a regular basis) for your loyalty and support.

Speaking of learning from this column, I am now holding "Tips, Tricks and Stuff" Seminars for various associations and groups around the country. In January, I held one for the South Carolina Locksmiths Association and I'm scheduled to do one April in Wisconsin. A couple of other associations and groups are thinking about sponsoring one of these seminars; so more will be coming down the pike.

If your group would like to sponsor one email me at [Jake@johnnylatch.com](mailto:Jake@johnnylatch.com) and I'll be happy to talk to you about it. The seminars are fun, freewheeling and informative, so if you have a chance to attend one, please do so.

To see where my next seminar is going to be held, go to <http://www.johnnylatch.com> and click on the "EVENTS" button for a schedule of seminars, etc. While you're there, check out Johnny Latch by Jake, the world's first, universal, retrofitable toilet stall latch!

See y'all next month.



**Photograph 1.**

bitted screwdriver that will allow me to accomplish a number of things.

I can remove cam screws (slotted or straight), I can loosen Adams Rite retainer screws, I have a usable sized Torx bit and a handy poke tool all-in-one. It's easy to carry, easy to use and cost under a buck and a little bit of time to grind down the two bits.

*Dennis Harmon  
Colorado*



**STRATTEC WINNER:  
Panic Exit Device  
Opening**

I encountered a storeroom door that



could not be opened with the operating key. When I tried the key, the cylinder spun a full 360°, in either direction without activating the locking mechanism.

From the outside trim (a rim cylinder and thumb latch) I surmised that it was a panic device and after talking to the customer, felt that the chances were fairly good that it was a Von Duprin device.

I explained to the client that I would have to drill the plug of the cylinder and then activate the latch mechanism to open the door. He agreed to the program and I drilled the plug. Once the plug was out, I could look into the hole and see that the actuator in the back of the device was not only badly chewed up, but was actually falling out of the device. There was no practical way to insert a tool into the area and activate the latch.

Recognizing that the rim cylinder was located at almost dead center of the actuator body of the Von Duprin, and that the thumb latch would lift up the actuator (after it had been unlocked by the key)-I decided to

drill a 5/16" hole about 8" from the latch edge of the door and 48" up from the bottom.

I then used a long, "L" shaped car opening tool to reach through the hole, catch over the push bar of the device and pull it back until the door opened.

After that it was simply a matter of repairing the hole, installing a new device and rim cylinder keyed to the customer's key.

This trick should also work on devices like Arrow, Taco and other rim-mounted devices. The only difference would be to note the location of the cylinder, measure in about 8" or so from the edge of the

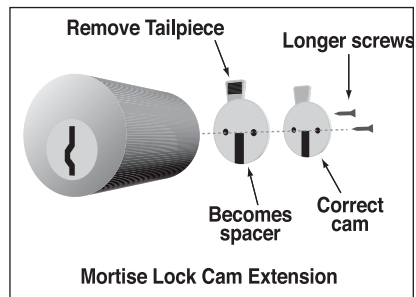


Illustration A.

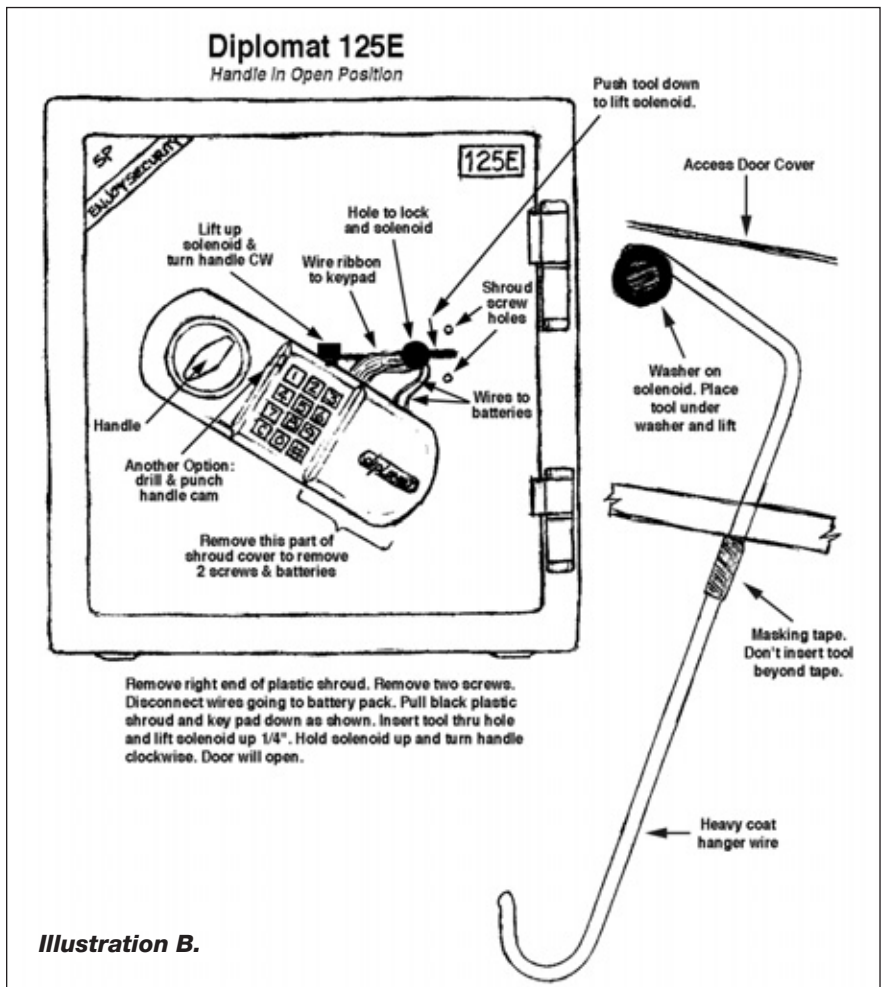
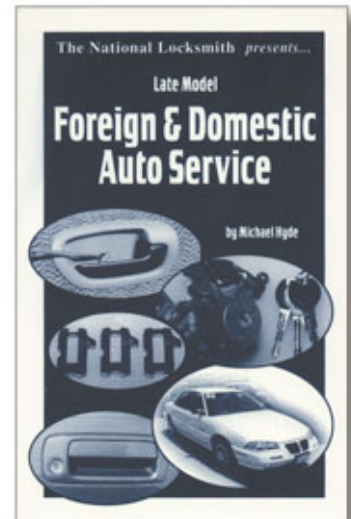


Illustration B.

# Foreign & Domestic Auto Service



This book represents the best work of Automotive Locksmithing guru Michael Hyde, author of the famous AutoSmart.

CLICK HERE TO LEARN MORE



#FDAS - 1

door and drill a hole three to four inches above or below the cylinder centerline and insert an "L" shaped tool and pull.

*Fred Spencer  
 Pennsylvania*



**HPC WINNER:  
 Mortise Cylinder  
 Extension Trick**

The home was a customer built home of over 3,000 square feet and eighteen lock cylinders all keyed differently. The builder had used Titan almost exclusively, so there was no problem keying the locks alike-except:

The two entry doors (one on either end of the house) were custom made arched doors with full mortise locksets in them, and the cylinder keyways were incompatible with the Titan keyways.

After rooting around in my van, I was patting myself on the back for having two 1-1/4" mortise cylinders, in a compatible keyway and finish on the van. I keyed them to the rest of the cylinders and when I tried to install them, I found that the cylinders were just a bit (by a thread or two) shy of being long enough to operate the locks.

There were no spacers on the door for me to remove to gain the extra length that I needed and it seemed that I was going to have to special order something to finish the re-key which would mean another trip.

Not wanting to go through all that I decided to get creative and find a solution to my problem there and then and not make a second trip.

I determined that a standard Adams Rite cam would make an excellent spacer if I trimmed the tailpiece off (see illustration A). After modifying the cam, I used longer screws to attach the Adams Rite cam to the plug under the normal cam on the cylinder. That gave me the length I needed for the cam to easily engage the lock's actuator to operate the lock/unlock function smoothly.

*Wayne Ferrin  
 California*



**SARGENT &  
 GREENLEAF WINNER:  
 Opening A Diplomat  
 125E**

Normally, I would open this Diplomat safe by turning the safe upside down and bouncing it to retract the solenoid. Since I was by myself and couldn't bounce the safe and turn the handle at the same time, I came up with this method of opening the safe.

As you can see in illustration B, I simply removed the two screws holding the plastic shroud to the door. Then I tilted the right end of the shroud down to expose the spindle hole into the safe.

Using the tool I made, I gently pushed the wires to the side of the spindle hole and inserted the tool as shown. Once the tool is properly positioned, I just lift up on the tool about 1/4", which will allow you to turn the handle and unlock the door. The handle turns clockwise.

The tool shown in the illustration is made from a coat hanger and bent to the shape shown.

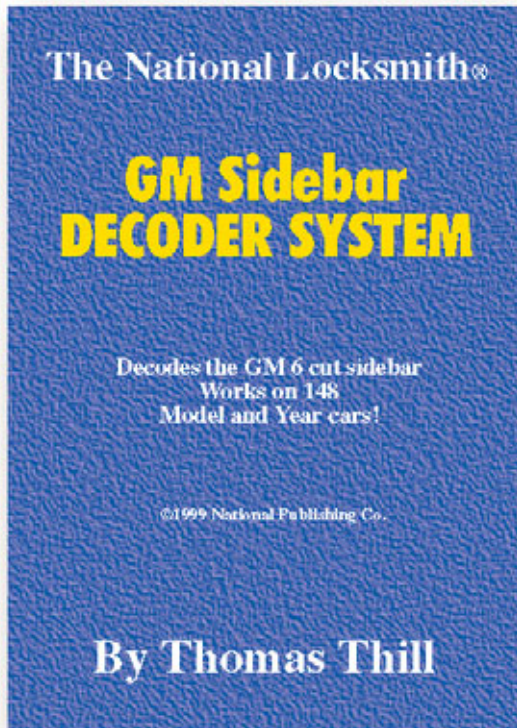
This method will also work well when the safe is bolted to the floor and cannot be "lifted" and bounced to snap the solenoid back.

*Gerald Bertonneau  
 California*



**A-1 SECURITY  
 PRODUCTS WINNER:  
 Don't Forget To Floss!**

# GM Sidebar Lock Decoder System



Tom Thill, the author of a new book, has invented an amazing new way to make keys for six cut GM Sidebar Locks.

**CLICK HERE TO LEARN MORE**



#TT - 1



A special item that I keep in my box of lockout tools is waxed dental floss. It is as important to me as are my wedges.

I was called to open a 1991 Buick Regal. No power windows and no power locks, but there was a small problem... the owner had dark tint on his windows and did not want me to use the under-the-window (Caddy Killer) because he was concerned about the tint being scratched.

I took out my HPC power wedge and my reach across tool, got everything in place but the lock button was too hard to move (even by hand it was hard to operate with the door open). Getting out my handy-dandy economy size package of waxed dental floss, I cut off a piece about 4-5 foot long, and tied it on the tip of my reach across tool.

I use the waxed type and re-inserted my tool back to the lock button, and then pulled the floss over until it was right above the lock button. Then I pulled up on the floss and the extra pulling force was enough to lift the lock button and unlock the door.

I also use floss when I use my under-the-window tool. I tie a loop that stays on the inside turn of the tool. When I go to remove the tool, I just lower the tool into the door cavity and pull the floss up. This pulls the top bend to my side of the glass and then pull the tool up to remove it. I use to have a hard time with the tool not wanting to come out once I got it on the other side of the window.

*Frank Kitchen  
Indiana*

 **ILCO KEY BLANKS  
WINNER:  
Filling The Void**

Don't throw out the shavings that you get from your key cutting!

Brush them off into a small bottle or other container and use them to fill stripped thread holes in metal surfaces.

Simply mix the filings with JB WELD or any High Density epoxy, force the mixture into the hole, let set and then drill and tap as necessary. You can finish the surface off with your Dremel Tool or a piece of sandpaper, or file.

*Thomas B. Sudduth  
Washington*



**KEEDEX WINNER:  
Gun Case Tool Kit**

Some flexible car-opening tools are slightly too long for the cases they come in, although the tools can be bent to fit. By forcing the tools to conform to the smaller cases, the tools may "train" themselves to that bent profile which can be a nuisance during the opening. It would be better to store them straight.

Using low cost hard-shell gun cases with foam inserts, allows such tools to lay flat without bending them. The case doesn't need to be fancy.

Those in the \$10 to \$15 range are more than adequate. They come in different lengths, widths and price ranges, but I found the single gun unit, about 48 inches long, to be ideal for tools like the Keedex K-22 lever opening tool and other push, pull and long reach tools.

*Ralph Iden  
Michigan*



**TECH-TRAIN  
TRAINING VIDEO  
WINNER:  
Retainer Spring  
Substitute**

## GM Steering Column Course



Comes complete with take-home test so you can become certified on GM steering column service! Authoritative training on every domestic GM column from 1967 to 1995.

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#GM - 2

I have lost many of the retainer/stop pin springs that hold the pin in place after the cap is tightened down. You know, on knoblocks and other cylinders like Schlage, Arrow and many imports, that have a knurled retainer holding the tailpiece in place.

After much frustration, I finally turned to my American padlock pinning kit and found that the driver springs are a perfect match (you can use the Master pinning kit springs as well) and provide just the right amount of tension to hold that pin in position.

Glenn F. Schoch  
Kentucky

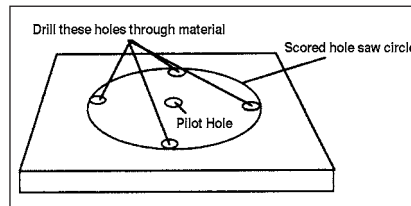


SIEVEKING  
PRODUCTS GM E-Z  
WHEEL PULLER  
WINNER:

**Hole Saw Tip**

I install a fair number of locks on metal doors and frequently have to cut the preps in those doors. I have found a way to cut the holes that not only makes the hole saw last longer, but cuts way down on "chatter" and "drifting" of the hole saw. I think it gives me a cleaner and faster hole.

What I do is locate the hole's center and drill a 1/4" hole all the way through the door. This is my guide hole for the pilot bit. Then I insert the pilot bit and hole saw and after placing the saw lightly against the face of the door, I turn the drill on and let the hole saw mark the circumference of the hole (see illustration C.)



**Illustration C.**

Next, as you can see from the illustration, I drill several 1/4" inch holes around the "groove" (always to the inside of the outer line) all the way through the door. These holes accomplish two things. One, they remove material from the door which means the hole saw does not have to work as hard and will last longer. And two, the openings create spaces around the circumference of the hole for the hole saw to get rid of shavings

and debris that might normally slow the cutting down. Also, those holes allow the saw to run cooler.

I find that this trick works well on many types of metal hole cutting and would seriously suggest that you use it anytime your drilling steel. Particularly when the steel is 1/8" thick or thicker. It makes the job go much smoother.

Pete Gamble  
North Carolina

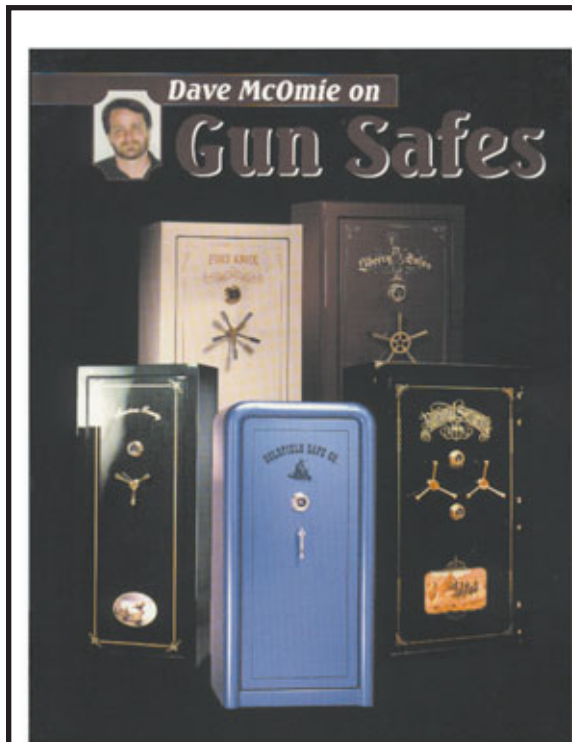


MAJOR  
MANUFACTURING  
PRODUCTS WINNER:  
**Kwikset Plug  
Removal Tool**

Like many locksmiths, I enjoy making many of my own tools. Here's my version of a tool for removing the cylinders from a Kwikset key-in-knob. To make this tool, you do need a bench vise and a grinder.

I used a piece of round 1/8" diameter spring steel rod, 14-1/2" long.

Next I located the center of the rod and bent a 90° angle 1/2" from the center to the left and another from the center to the right of the tool. I made additional bends as you



# Gun Safes

Need a drill point or  
relocker drill point on  
a gun safe?

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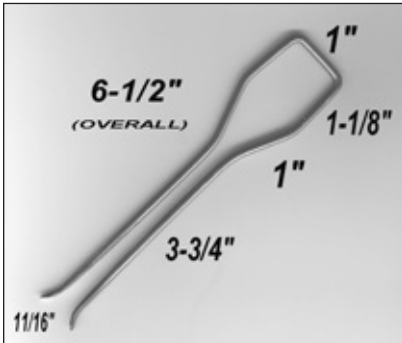


#GS - 1



can see in *illustration D*, to taper the legs of the tool and flare out the tips. Note that the measurement from tip-to-tip is 11/16".

I used a grinder to shape the tips as you see in the illustration.



**Illustration D..**

Using the tool is fairly straightforward. Remove the round spindle from the lock housing, compress the prongs of the tool and insert the tips until they are firmly against the retainer springs, then twist. The cylinder should drop right into your hands.

*Dick W. Tilton  
 Tennessee*

**Editor's Note:** Dick sent me one of his Kwikset tools and I had several chances to use it. It works just as well as he said in his tip. Another good Kwikset tool is the A-1 Quick Pull. It eliminates the need for disassembling the lock.



**SLIDELOCK'S "Z" TOOL OPENING SET WINNER: Faster Screwdriver Tip**

The Stanley-Yankee Screwdriver (#130-B) is probably the fastest screwdriver you'll ever use. It has a 5" stroke and can be used with one hand, while holding your lock, strike plate or whatever with the other.

Just aim and push and your bolt or screw is on its way.

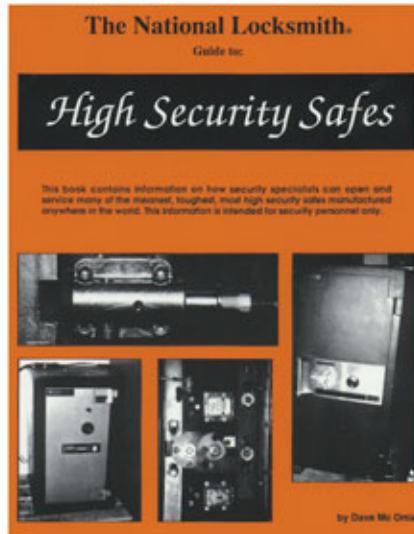
I've owned one for fifty years now and have just replaced the original one recently. I have a companion to the Yankee, which is the Yankee Handyman Punch Drill. It works on the same principle as the screwdriver.

These two tools make short work of lock installs and other tasks. If you buy them, you will not regret the investment.

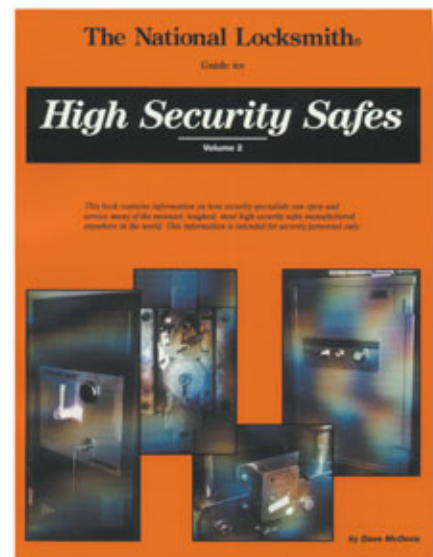
*Lowell Franklin King  
 California*



# High Security Safes Volumes 1 & 2



These are the world's toughest safes! Contains many FULL PAGE photos! Learn to open High Security Safes now!



Volume 2 is packed with great information and photos of high security safes. Included are many opening tips designed to make your life easier.

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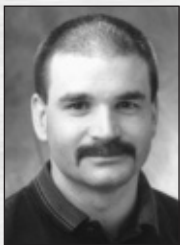


#HSS, HSS - 1

# TROUBLESHOOTING

## Electronic Access Controls

### PART 2



by  
**William C.  
Deutsch**

Welcome back, detectives. In my last article, I introduced you to the four basic steps for investigating and solving EAC problems. To review, they are:

1. Be prepared
2. Stay Calm
3. Get the facts
4. Eliminate the possibilities

Let's begin this lesson by looking more closely at that last step.

When you start to eliminate the possible causes of trouble on any EAC system, you immediately come to a fork in the road; am I dealing with a hardware or software problem? How you answer that question will determine your approach to identifying and fixing the problem at hand.

By software I am referring to the actual programming of the system. Whether you use a PC, a PDA, a keypad, or any other programming device, you must tell the system who gets in and who doesn't. You have also got to tell it whether to close down on holidays, how long to hold doors open, etc. By hardware, I mean the physical elements of the system - the reader, the electric strike, the controller board, the wiring, etc. Hardware reads the credential, software decides whether or not its owner is authorized to enter the door, and then instructs the hardware how to react. The

reaction may be sending power to an electric strike, or it may be beeping twice to let the keyholder know he's been denied access.

#### **Normal Problems and Weird Problems**

Knowing the difference between hardware and software, how do you decide which one is bedeviling you at the moment?

Software problems are usually "normal." In other words, the system is doing something that you could program it to do; denying access, for example. We want our systems to deny access to keys at certain times. But we don't want them to lock the boss out at 8 a.m. in the driving rain. As much as it may seem like systems perversely decide to pull these pranks, they really only do what we tell them to.

Hardware issues, on the other hand, are weird. This is when the EAC system starts acting like HAL, that computer from 2001, *A Space Odyssey*. (Hmmm. HAL is three letters, EAC is three letters. Coincidence?) If the hardware is at fault, the system will often begin to do things that you didn't or couldn't tell it to do.

Here's an example: You insert a credential into an access control reader. The LED turns green, indicating that the key has been read and accepted. So far, so good. But then the door does not unlock. Through his LED's, HAL told you he was going to unlock the pod door. But then he didn't. Sorry, Dave.

Can you tell an EAC system to act that way? No. This, therefore, is a hardware problem.

#### **Solving Hardware Problems**

How would you approach the problem I've just described? To begin with, don't even think of trying to solve this or any hardware problem without a multimeter. You might as well be picking a lock with a toothbrush. The way to zero in on a problem is to track the flow of current through a system. Unless your eyes are good enough to watch electrons flow through wire, you'll need a meter.

Back to the problem. You know that this is a hardware issue because you can't tell a system to act this way. It's gone mad, I tell you, mad.

Could the problem be in the reader? Not likely. You already know that the reader is seeing a valid key and passing that information along to the controller. It is also receiving information back from the controller and turning its green LED on. Therefore the reader and the associated circuitry on the controller are probably ok. The problem must be in the strike or in the components that send it power.

#### **Getting warmer.**

Now you need to start breaking the circuit into little pieces and discover which piece causes the problem. At this point, you are faced with three possibilities: 1. The controller is not supplying voltage to the strike. 2. The Strike is getting the proper voltage, but not opening. 3. There is a fault in the wire that prevents current from reaching the strike.

Since you are standing at the door, start by removing the strike. Set your meter for DC volts, have someone present a key to the reader



and read the voltage right at the strike. Hmmm. No voltage.

### *Getting warmer.*

Now before you point an accusing finger at the controller, disconnect one wire from the strike. With one wire disconnected, the strike is no longer part of the circuit. Now check voltage at the end of the wire with the strike disconnected. Still nothing? Now you can be pretty sure that the problem is NOT in the strike. Had you read approximately 12 VDC at the wire with no strike, you would have known that the strike was loading the circuit down and causing the problem. This does not conclusively prove that the strike is healthy. But for now it is safe to scratch it off the list.

### *Nice work, Sherlock. You have eliminated one possibility.*

Now head over to the controller. Disconnect one wire from the strike output so that the wire and strike are out of the circuit. Insert a key and measure the strike output. 12 Volts, DC!

Now you're getting hot! The controller is operating normally, so two out of three possibilities are gone. This seems to be a wiring problem.

When I trouble shoot a wire, I always start with a visual inspection. About 80% of wire related problems occur at connectors, so let's start there. As your eye travels the length of the wire from the controller, to just where it disappears into the doorjamb, you notice two twist-on connectors. Suspicious. As you inspect the splice, you can see that the wire inside one of the twist on connectors has become brittle and cracked over time.

### *Problem found.*

At this point, a hack would twist the connector back on and go home. But not you. You take a few extra minutes to solder the connections and leave the scene with the intense satisfaction that — not only have you solved the problem - but also you've left the system just a little better than you found it.

### *Now to summarize, How did you zero in on this problem?*

First, you recognized this as a

hardware problem because of the system's behavior. Second you identified the particular part of the system that was malfunctioning - in this case, the electric strike circuit. At that point, it was a simple matter of breaking the circuit into convenient pieces and testing each one.

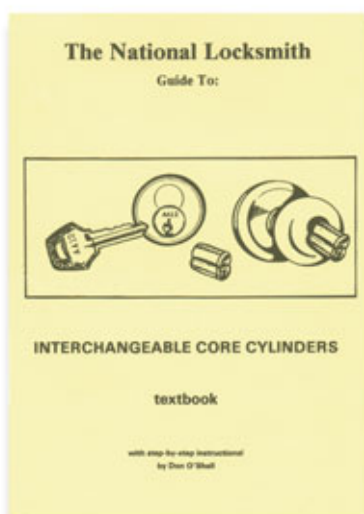
A further note: Suppose you discovered that the controller was not supplying the proper 12 VDC and you wanted to replace the controller. Fine. But do not hook up the new controller to the strike until you first test the wiring and the electric strike. Check the wire for shorts, and touch a 12-Volt battery to the strike to verify that it opens smoothly. The controller may have malfunctioned on its own, or the problem may have been caused by something outside, such as a short circuit. If that were the case, the new controller would probably be destroyed as soon as you activated the strike. The moral of this story is: when you find a problem - especially problems like blown fuses or burned out circuit boards - try to get at the root cause or your repairs may be temporary at best.

This is the same approach you would follow for virtually any hardware problem. However, in some cases, it will be easier to swap in a known good part than it would be to test with a meter.

For example, suppose that you inserted an electronic key into a reader and there was no response. This is an obvious hardware problem and, again, the problem could be in one of three places: reader, wiring harness, or the controller's reader circuit. In this case, however, the fastest test would be to swap out the reader with a known good unit. (You keep a good supply of service parts on your truck, right?) If the problem persists you know that the wiring harness or controller is causing it. But if the problem clears up, you have made a diagnosis and a repair at the same time.

Well, that's all for now. Next time around, we will complete this crash course in troubleshooting with some hints on getting to the root of programming problems. In lieu of a diploma, I will also present you with a simplified flow chart for troubleshooting EAC problems. **TNL**

## Interchangeable Core Cylinders



Covers all this...

- Best/Falcon/Arrow/Eagle/(A2)
- Best A3
- Best A4
- Corbin X Removable Core
- Corbin Z Removable Core
- Russwin Removable Core
- Emhart System 70 Removable Core
- Sargent Removable Core
- Schlage, Yale, Lockwood
- Medeco Removable Core

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#ICB - 1



# BUSINESS BRIEFS

## **TimeMaster Relocates to Kentucky**

Separating the distributing arm from the manufacturing side, Dan Graffeo has formed a partnership with Tim Abner, formerly with Sargent & Greenleaf. Abner will take the reins of TimeMaster as President, while Graffeo will head up TMI.

First on Tim's agenda has been relocating TimeMaster, Inc. to Lexington, Kentucky, where he and wife Susan will continue to offer the same great service and quality products as before. In addition, TimeMaster will continue to offer technical assistance and specialty products to meet the unique needs of the safe and vault dealers and technicians.

The second point on Tim's agenda is to inform the safe and vault industry that TimeMaster is now open for business at: 157 Venture Court, Suite 9, Lexington, Kentucky 40511. Phone: (888) 798-8464, Fax: (800) 798-8463, E-mail: Sales@time-master.com, Web: www.time-master.com.

## **Ground Broken for New G-U Headquarters**

Construction has begun on the new headquarters, distribution center and assembly facility for G-U Hardware, Inc., of Newport News, Virginia.

The new facility, located in Patrick Henry Commerce Center, will nearly double the workspace and is expected to be occupied by summer 2002.

G-U is a direct subsidiary of Gretschnitas of Germany,

manufacturer of quality window and door systems for more than ninety years.

*For additional information, call G-U Hardware, Inc., at: (800) 927-1097 or visit [www.g-u.com](http://www.g-u.com).*

## **Aable Opens Web Site**

Aable Locksmiths has debuted its new web site, [www.aable.interwit.com](http://www.aable.interwit.com). The site features the full selection of Aable's locksmith tools, which have been designed and patented by Frank Markisello. The company also has a new phone number, (718) 848-8000.

## **New President for Medeco and Training Schedule**

Robert C. Cook has been appointed President and CEO of Medeco High Security Locks in Salem, Virginia, succeeding Bernd D. Wempen. For the past 20 years Cook has been President of Securitron Magnalock Corporation, located in Sparks, Nevada. Securitron is a market leader in electronic locks and accessories used with access control systems.

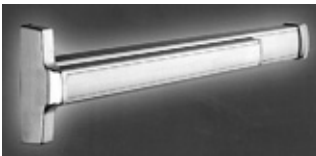
The 2002 schedule includes more than 20 opportunities for an individual to receive factory certification on Medeco's Biaxial®, Keymark®, or SiteLine® product lines. Additional technical classes and MBA Business Development seminars may also be scheduled in the future. Most of the technical classes currently scheduled will take place at Medeco University at Medeco's Salem, Virginia factory and will cost approximately \$110 per student. Travel and accommodations are not included. Locksmiths and other security professionals

who complete classes will receive factory certification from Medeco.

Professionals from Medeco will lead the MBA Business Development classes. Additional classes will be scheduled in Salem and elsewhere around the U.S. later in 2002. Each seminar is approximately \$95 per day with travel and accommodations extra.

Individuals interested in attending training classes may call, (800) 675-7558 and speak with Rhonda Lloyd for information about technical training or Barbara Elmore for information about MBA classes.

## **Access Hardware Supply Offers Jackson's Electric Latch Retraction Exit Device**



The Electric Latch Retraction Exit Device offers remote activation of the latch, for added security and access control. The latch retraction feature is available on Jackson's 20 Series Exit Device.

A solenoid mounted in the crossbar retracts the latch, with an external power supply that has two delay outputs. This enables the exit device to be operated in coordination with automatic door operators.

The Electric Latch Retraction Exit Device is UL Listed Panic Hardware with fail-secure operation. In the event of a power loss, the door will remain locked. The "Soft Touch" push pad

results in smooth, quiet operation. All 20 Series Exit Devices utilize durable components, inside and out, for long-lasting and dependable service.

The Electric Latch Retraction Exit Device is also quick and easy to install, with concealed fasteners for added security and a clean appearance. The device also has a concealed dogging system that is simple to use or it can be ordered with cylinder dogging.

*Circle xx on Rapid Reply.*

## **New Security Professional's Web Site**

SecurityProJobs.com, is a group of mature security professionals from all segments of the electronic and physical security trades. There was a need for a professional site that provides employers and employees alike, with a high tech forum, offering employment skills and job opportunities, from across North America and around the Globe.

The site is free of cost, to any skilled security technician or related job candidate, who would like to register and post a resume. Employers can also register for free, but will require a paid membership package in order to post job openings, contact resume holders, or be seen by security personnel who are using the site. Prices are reasonable and you can find this information on our intro page. The SecurityProJobs.com web site is URL, on a secure (encrypted) server, to protect information.





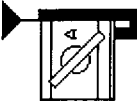
# FREE Code Cards!

from The National Locksmith®

COLLECT 'EM ALL!!

Spaces		Depths		Cutter: CW-1011		IC #: 903	
mm	Inch	mm	Inch	Jaw: A	Series	Original	
1	2150	846	2	855	50000-69999		
2	2010	791	1	820			
3	1800	709	3	690			
4	1660	654	4	625			
5	1450	571					
6	1310	516					
7	1100	433					
8	960	378					
9	750	295					
10	610	240					

Align: Black horse shoe tip stop

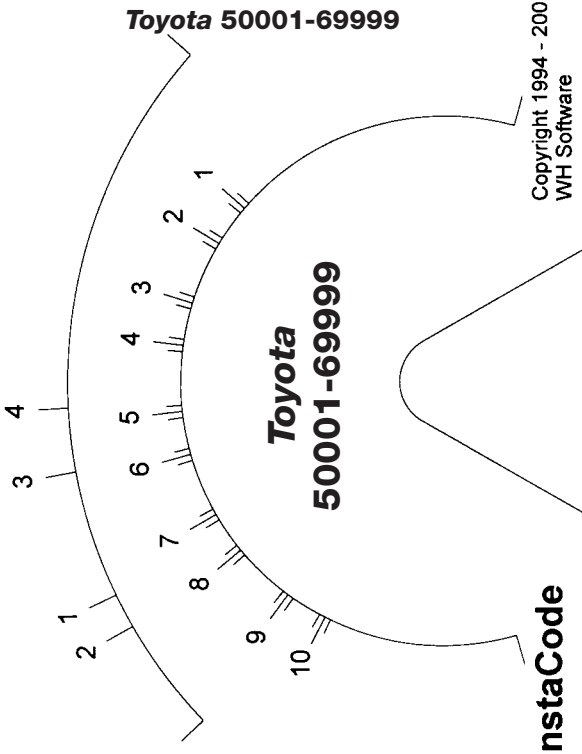


Key Blank Mfr: Silca  
Blank #: TOY43AT4

The National Locksmith®

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Toyota 50001-69999



InstaCode

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✂ Cut Along Outside of Card and Laminate To Use ✂

Spaces		Depths		Punch		IC #: P903	
mm	Inch	mm	Inch	Jaw: A	Series	Original	
1	2150	846	2	855	50000-69999		
2	2010	791	1	820			
3	1800	709	3	690			
4	1660	654	4	625			
5	1450	571					
6	1310	516					
7	1100	433					
8	960	378					
9	750	295					
10	610	240					

Align: Tip stop (Left Insertion)

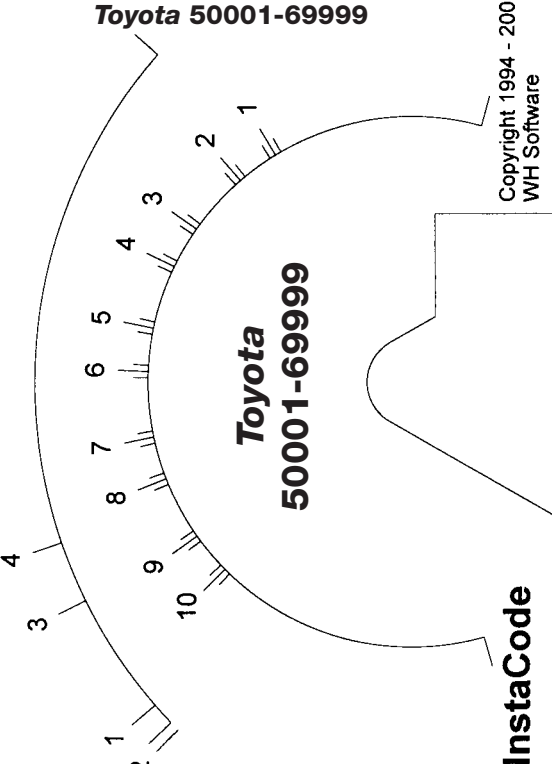
Insert key such that that face of jaw meets key profile

Key Blank Mfr: Silca  
Blank #: TOY43AT4

The National Locksmith®

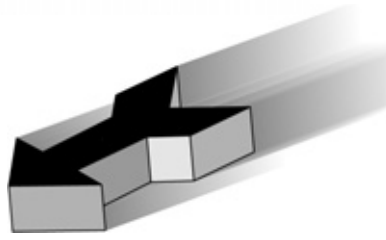
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Toyota 50001-69999



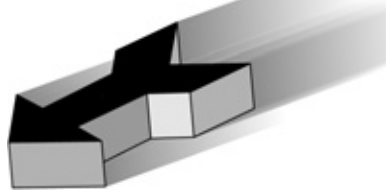
InstaCode

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**BONUS Code Card**  
For the 1200CMB™

Flip 'em over for Silca, Curtis, Framon, A-1 and ITL specs!



**Code Card**  
For the 1200PCH™

Courtesy of INSTA-CODE 2002™ from The National Locksmith

**Toyota 50001-69999**

**HPC 1200CMB™**

HPC: N/A      Cutter: CW-1011  
 Vice: A

**Silca Unocode**

UnoCode Card No.: 1420  
 Vice/Adapter V100 Standard

**HPC Codemax™**

DSD: N/A  
 Jaw: A  
 Cutter: 1011

**Curtis**

Carn Set: N/A  
 Carriage: N/A  
 Clipper: N/A

**Framon**

Cuts Start At: 404      Cutter: N/A  
 Spacing: .0551 / .0826 Alternating  
 Block #: N/A      Depth Increment: .0255  
 Key Clamping: Key aligned using left side of vice

**A-1 Pak-A-Punch™**

Quick Change Kit: N/A  
 Punch And Die: N/A

**ITL**

ITL Manufacturer ID: N/A

**Toyota 50001-69999**

**HPC 1200PCH™**

HPC: N/A      Punch: N/A  
 Jaw: N/A

**Silca Unocode**

UnoCode Card No.: 1420  
 Vice/Adapter V100 Standard

**HPC Codemax™**

DSD: N/A  
 Jaw: A  
 Cutter: 1011

**Curtis**

Carn Set: N/A  
 Carriage: N/A  
 Clipper: N/A

**Framon**

Cuts Start At: 404      Cutter: N/A  
 Spacing: .0551 / .0826 Alternating  
 Block #: N/A      Depth Increment: .0255  
 Key Clamping: Key aligned using left side of vice

**A-1 Pak-A-Punch™**

Quick Change Kit: N/A  
 Punch And Die: N/A

**ITL**

ITL Manufacturer ID: N/A



# KEY CODES

## Toyota, Part 2 50001-69999

**Manufacturer:** Toyota  
**Code Series:** 50001 - 69999

**Key Blanks:**  
**Silca:** TOY43AT4

**Number of Cuts:** 10

**M.A.C.S.:** 2

**Key Gauged:** Tip

**Cut to Cut Spacings:**

.0551/.0826 Alternating

**Cut Depth Increments:** .0255

**Spacings (Framon):**

1 - .404

2 - .459

3 - .541

4 - .596

5 - .679

6 - .734

7 - .816

8 - .871

9 - .954

10 - 1.009

**Depths:**

1 = .325

2 = .299

3 = .274

4 = .248

**HPC 1200CMB**

**Code Card:** N/A

**Jaw:** A

**Cutter:** CW-1011

**Gauge From:** Tip

**HPC 1200PCH (Punch):**

**PCH Card:** N/A

**Punch:** N/A

**Jaw:** A

**Silca UnoCode**

Card Number: 1420

**HPC CodeMax**

**DSD #:** N/A

**Jaw:** A

**Cutter:** CW-1011

**Curtis No. 15 Code Cutter**

**Cam-Set:** N/A

**Carriage:** N/A

**Framon #2**

**Cuts Start at:** .404

**Cut to Cut Spacing:**

.0551/.0826 Alternating

**Block #:** N/A

**Depth Increments:** .0255

**Cutter:** N/A

**Key Clamping Info:** Key aligned

using left side of vise/spacing

clip.

**A-1 Pack-A-Punch**

**Quick Change Kit:** N/A

**Punch:** N/A

**Die:** N/A

**ITL 9000 & 950**

**Manufacturer ID:** N/A

**ECM 200**

N/A



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# IC Cores: Small Format



Everything you ever need to know  
 about how to sell, service,  
 install and troubleshoot  
 interchangeable cores!

**CLICK HERE TO LEARN MORE**



## Toyota, Part 2 50001-69999

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# Toyota, Part 2

## 50001-69999

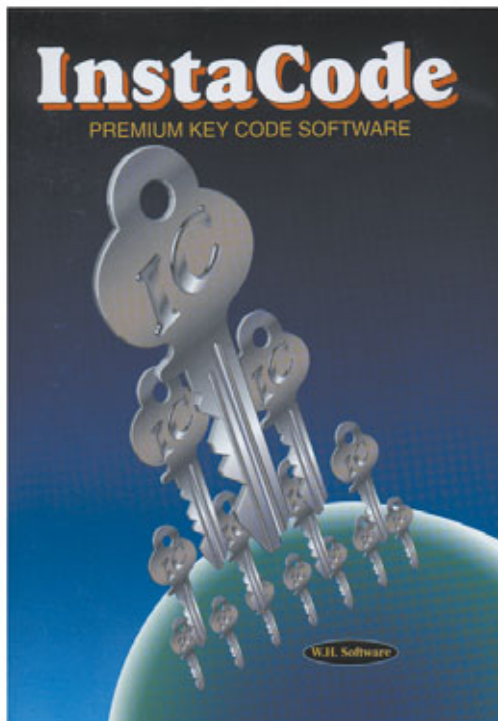
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52014	1134334423	52088	1234232234	52162	1134213423	52236	1233232311	52310	4333122332	52384	3232442221
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# Toyota, Part 2

## 50001-69999

52425	3232432321	52439	3232431244	52453	3232343244	52467	4332332312	52481	2132324334	52555	3332213434
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								52554	3432213444	52628	1123442311

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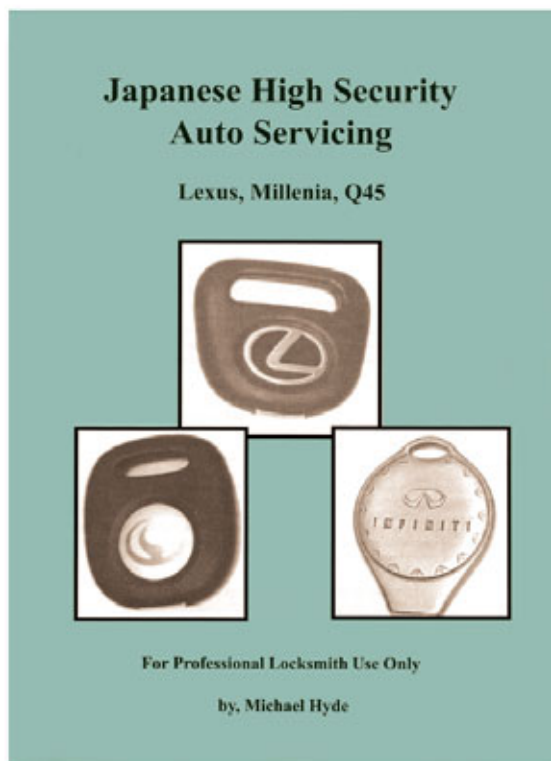


# Toyota, Part 2

## 50001-69999

52629	4323442134	52703	4323234344	52777	1223212334	52791	1123124432	52805	1223123434	52819	4323123223
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52638	3223433422	52712	2123233443	52786	3223211234	52800	3323124321	52814	3323123311	52828	3323122311
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52640	2123433344	52714	3423233423	52788	2223211132	52802	2323124311	52816	2323123243	52830	2123122243
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52651	3223431132	52725	3223233212								
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52653	2123344343	52727	2123233244								
52654	1223344312	52728	1123232343								
52655	4323343434	52729	3423232332								
52656	3223343423	52730	2323232321								
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52680	2123323434	52754	3223223423								
52681	1123323423	52755	3423223421								
52682	3423323421	52756	3223223344								
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52695	1123322132	52769	2123213423								
52696	3423321243	52770	1123213422								
52697	3323321132	52771	4323213344								
52698	3223234443	52772	3423213312								
52699	2323234434	52773	3323213244								
52700	2223234432	52774	3223213243								
52701	2123234423	52775	2323213232								
52702	1123234422	52776	2123212344								

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52833	2123122133	52907	3222433432	52981	2322323343	53055	3221344323	53129	3321332311	53203	3221233423
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52838	2323121232	52912	1222433321	52986	3322322312	53060	1121343444	53134	4321332134	53208	4321233243
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52840	1223121132	52914	3322433244	52988	3322322234	53062	3421343432	53136	3221332132	53210	3221232312
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52843	3423113432	52917	3422433232	52991	4322321132	53065	2321343421	53139	1221332121	53213	1121232134
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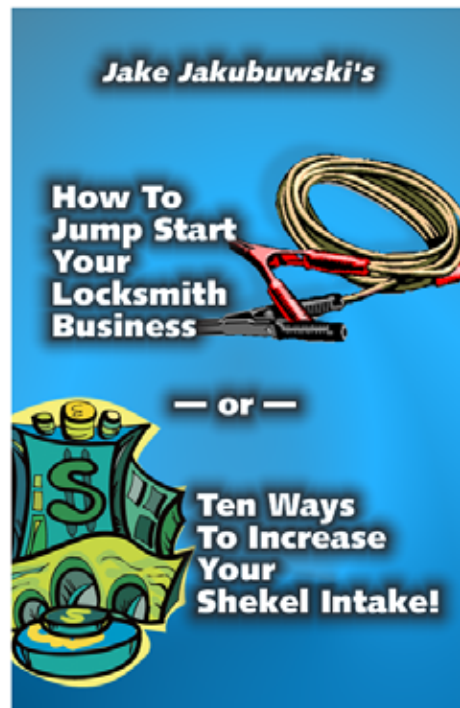


# Toyota, Part 2

## 50001-69999

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# Toyota, Part 2

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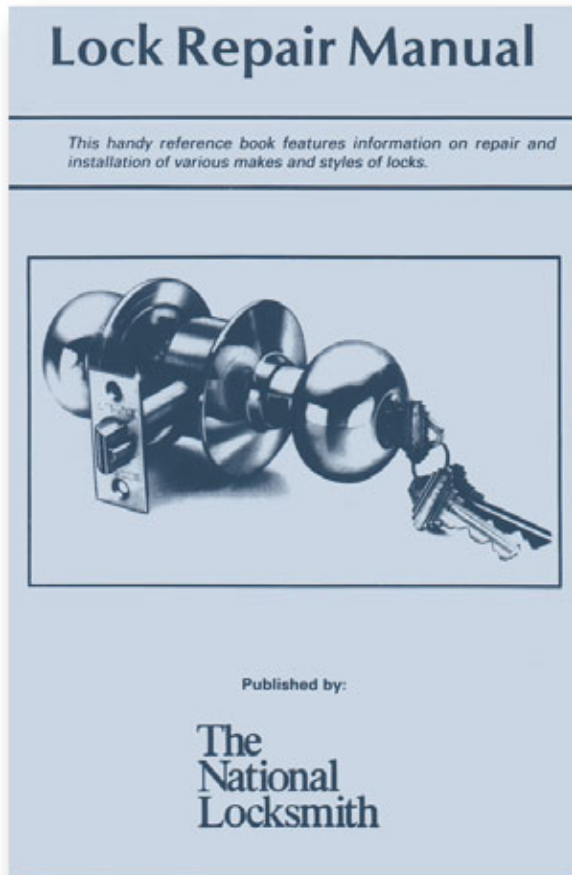
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## Toyota, Part 2 50001-69999

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54001	3234342311	54075	1134233232
54002	2334342244	54076	3434233222

# Lock Repair Manual



Here, under one cover you have a tremendous amount of lock servicing information. Next time you run into a problem chances are you'll find the answer in the Lock Repair Manual.

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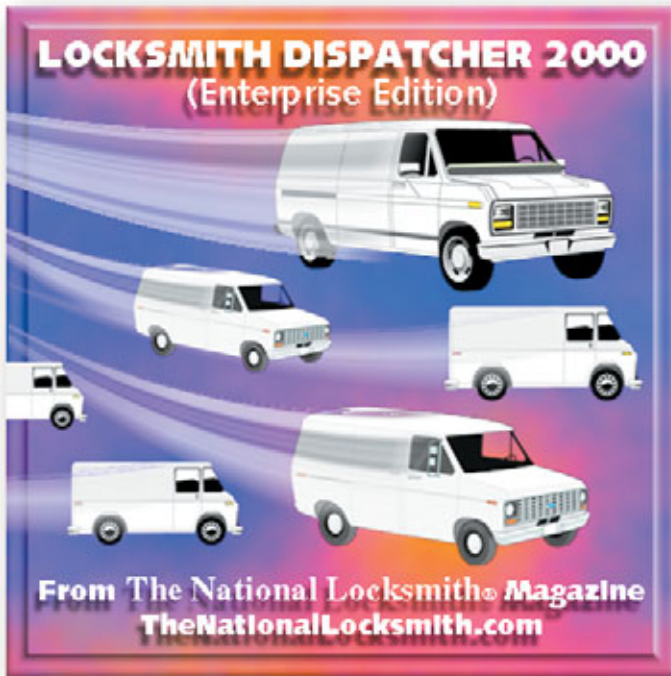
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# Toyota, Part 2

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## Locksmith Dispatcher 2000



Controlled Service dispatching software  
specifically for the locksmith!

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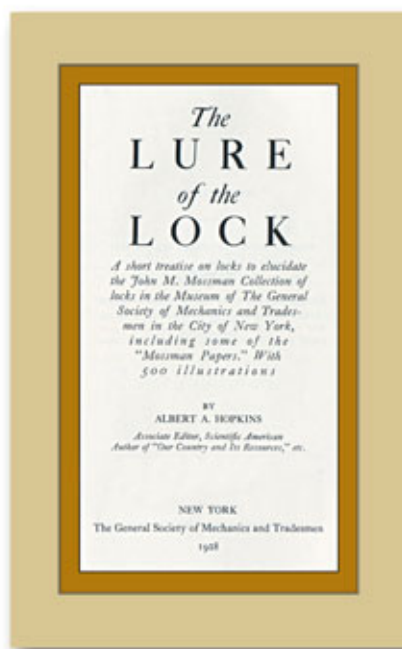


# Toyota, Part 2

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# The Lure of the Lock



This hardcover book, compiled in 1928, features dozens and dozens of beautiful photographs on ancient through modern locks.

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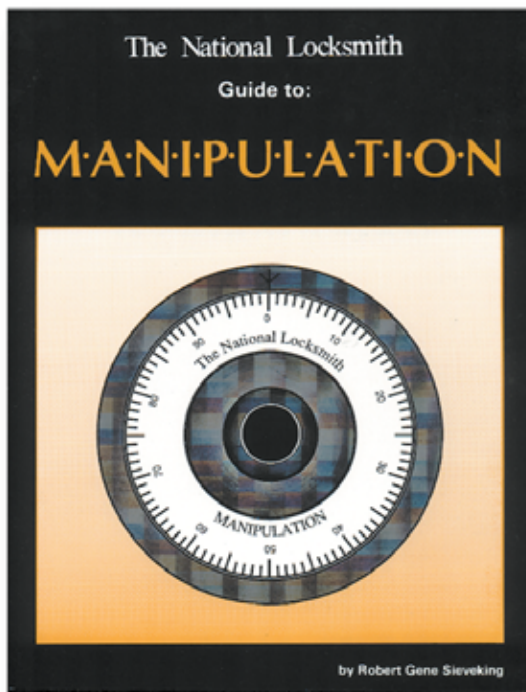
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# Toyota, Part 2

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## Manipulation Home Study Course



Our home study course guides you on step-by-step process, teaching you everything there is to know about manipulation.

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## WEB REVIEW

### Adrian Steel

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Adrian Steel is a manufacturer of truck organizing systems that should really fascinate most locksmiths. You can customize your van so there is a place for everything you can imagine and some things you can't!

From modules, to tool boxes to shelving and racking, it's all online here along with a complete product catalog. You can see lots of sample layouts, and get a ton of ideas for your own designs. Plus you can easily request a complete product catalog and find the closest distribution point.

One of the best things about this site is the complete set of photographs of the entire and very deep product line. You get to see how every thing looks, and imagine it in your own van.

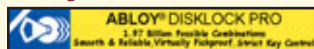


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#### Abloy® DiskLock Pro



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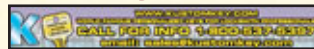
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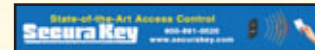
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Call Jeff Adair (ext. 15) or Debbie Schertzing (ext. 16) for details. (630) 837-2044





# TEST DRIVE!

The quality of gun locks and their ability to provide real protection to consumers have been placed in real question. This is made evident by the recalls of over 1 million gun locks and the failure to 30 out of 32 gun locks tested by the U.S. Consumer Product Safety Commission in recent years. The quality and protection shortfalls of gun locks have prompted many States to consider adopting their own standards that gun locks must meet. California has adopted the toughest and most stringent testing standards in the country.

## PRODUCT:

To date, the PRO-LOK® GUNLOK™ is the only gun lock to pass the test. California's proposed standards include testing that is intended to prevent unauthorized access to firearms as opposed to just accidental discharge. A summary of the tests passed includes:

**Picking/Manipulation:** Picking the cylinder with paper clips, screwdrivers, etc.

**Forced Removal:** Removing the lock by the partial destruction of the firearm.

**Strength Test:** Applying 225 lbs. of pulling force to remove the lock.

**Shock Test:** Drop a 2.2 lb. weight a total of 10 times on the lock.

**Shackle/Cable Cutting:** Cut the cable with a specified amount of force.

**Plug Pulling:** Drill the cylinder 3/4" deep, insert a self-tapping screw and pull the plug with 225 lbs. of force.

# GUNLOK™

by PRO-LOK®



**Plug Torque:** Insert a 10" screwdriver in the key cylinder and apply 89 lbs. of force to turn the plug.

**Sawing:** Use a hacksaw with 10 lbs. of weight and 20 cycles to cut the lock off.

**Drop Test:** Drop the firearm 6 different ways onto a concrete slab.

## OPTIONS:

There are four GUNLOK™ models available: the GL500, GL550, GL 600 and GL650. The GL500 GUNLOK™ features a key lock that can only be removed in the locked position. An all steel adjustable locking post with a ratcheting deadlocking design can easily be adjusted to the thickness of most firearms by simply threading it up or down. The face of the lock is also milled with random holes and is supplied with eight rubber coated steel dowel pins. With the GUNLOK™ secured and the dowel pins properly positioned around the firearm trigger, the trigger cannot be depressed.

The GUNLOK™ 550 offers the same features as the GL500 and also includes an 18" accidental discharge cable. The cable is threaded through the chamber and secured, providing an extra layer of protection.

The GL600 GUNLOK™ is the flagship product that offers all the features of the GL500 with a unique special feature: Instant Access. By

using a special sequence, the lock can be opened in seconds, allowing the user immediate possession and control of the firearm.

The GL650 GUNLOK™ has all the same features of the GL600 with the addition of the 18" accidental discharge cable.

## CONSTRUCTION:

The primary locking post is of a patent pending deadbolt design made from hardened steel, and not a die cast material like so many others. The locking post is also adjustable for a proper fit on a variety of firearms.

## FEATURES:

The extra protection added by using the supplied rubber coated steel pins for a custom fit is offered on no other gun lock. When properly installed, the dowel pins make it virtually impossible to move the trigger. The instant access feature is also unique that no other gun lock offers.

## PRICE:

Depending on the model, suggested retail price is \$10.95 - \$13.95.

## COMMENTS:

The GUNLOK™ is probably the finest firearm trigger locking device available. The construction is excellent and the instant access is a clever feature for those needing a level of protection while still allowing split second access and use of the firearm should the need arise.

If your serious about offering premium firearm trigger security for child safety and theft protection, look no further.

For more information on the GUNLOK™ by PRO-LOK® call: (714) 633-0681; Fax: (714) 633-0470; E-mail: [mail@pro-lok.com](mailto:mail@pro-lok.com); Web: [www.pro-lok.com](http://www.pro-lok.com)

Circle 312 on Rapid Reply.



## IN SUMMARY:

**DESCRIPTION:** The GUNLOK™ is a trigger blocking gun lock.

**PRICE:** \$10.95 - \$13.95

**COMMENTS:** Excellent construction, features, and security offerings.

**TEST DRIVE RESULTS:** For firearm trigger security, look no further..