



FORCIBLE ENTRY MANUAL

SAN FRANCISCO FIRE DEPARTMENT

BLANK PAGE

FORCIBLE ENTRY MANUAL

Created August 29, 2005

San Francisco Fire Department
698 Second Street
San Francisco, CA 94107
415-558-3200

Published by:
Division of Training
Assistant Deputy Chief Thomas Siragusa
Director of Training

2310 Folsom Street
San Francisco, CA 94110

Phone: (415) 970-2000

Author: Battalion Chief Ted Corporandy

Chief of Department: Joanne Hayes-White

This manual is the sole property of the San Francisco Fire Department

TABLE OF CONTENTS

Acknowledgement	9
Introduction	10
Conventional Forcible Entry	13
Inward Opening Doors	14
The Fork Technique	14
The Fork Technique on Steel Doors	16
The Adze Technique	16
The Point Technique	17
Outward Opening Doors	19
The Fork Technique	19
The Adze Technique	20
Tools	21
Through-The-Lock Forcible Entry	23
Mortise Locks	24
Rim Locks	29
Tubular Deadbolts	33
Knob Locks	35
Key Tools	37
Padlocks	38
Heavy Security Padlocks	41
Metal Roll-Down Doors	45
References	49
Appendix A	50

BLANK PAGE

FOREWORD

The goal of this manual is to establish standard operating practices as authorized by the Chief of Department and implemented by the Division of Training.

The purpose of this manual is to provide all members with the essential information necessary to fulfill the duties of their positions and to provide a standard text whereby company officers can:

- Enforce standard drill procedures authorized as a basis of operation for all companies.
- Align company drills to standards as adopted by the Division of Training.
- Maintain a high degree of proficiency, both personally and among their subordinates.

All manuals shall be kept up to date so that all officers may use the material contained in the various manuals to meet the requirements of their responsibility.

Conditions will develop in fire fighting situations where standard methods of operation will not be applicable. Therefore, nothing contained in these manuals shall be interpreted as an obstacle to the experience, initiative, and ingenuity of officers in overcoming the complexities that exist under actual fire ground conditions.

To maintain the intent of standard procedures and practices, no correction, modification, expansion, or other revision of this manual shall be made unless authorized by the Division of Training. Suggestions for correction, modification or expansion of this manual shall be submitted to the Division of Training. Suggestions will be given due consideration, and if adopted, notice of their adoption and copies of the changes made will be made available to all members by the Division of Training.

BLANK PAGE

ACKNOWLEDGEMENT

Forcible entry is a key function of truck companies but until recently did not get the attention it deserved. While there have been a number of innovators who have taken the initiative to develop methods of forcing entry it was Chief Tom Brennan who introduced modern forcible entry techniques to the fire service. Chief Brennan is a 25 year veteran of FDNY and former chief of the Waterbury (Conn.) Fire Department. As former editor of Fire Engineering Magazine he was able to share his knowledge and experience through the magazine. He is a nationally recognized authority on fire service operations and continues to write for Fire Engineering Magazine and is a key contributor to Firenuggets.com. Chief Brennan was the major influencing factor in the production of this manual.

INTRODUCTION

In the past the accepted means of forcing entry to a structure often meant the complete destruction of a door assembly resulting in a considerable amount of damage. The property owner said little because it was the nature of our business. Times have changed, and as one of the largest users of tax dollars, today's fire service is under constant public and government scrutiny to provide the most efficient, cost effective service possible. The useless destruction of public property, no matter how well intentioned, is no longer accepted. The modern Fire Service now focuses on a more proficient means of forcible entry. The process requires more thought placed on the act of gaining entry to a structure and a better understanding of door and lock assemblies. The end result is less damage, a happier customer (citizen) and a more professional Fire Department.

Forcible Entry is defined as “*the techniques used to get into buildings or other areas of confinement when normal means of entry are locked or blocked*”.¹

One responsibility of truck companies is to provide access to secured buildings using force if needed. Truck companies carry the tools necessary for accomplishing this task. Some of those tools should be designed specifically for forcible entry. The method of entry chosen and the amount of force required, if any, will be determined by the situation encountered and the degree of urgency. Gaining entry allows engine companies to lead lines to the seat of the fire and enables truck and rescue companies the ability to conduct a primary search for victims.

When confronted with circumstances requiring forcible entry, first size up the situation then choose the most appropriate method. Protecting life or cutting off a rapidly extending fire should be the primary considerations. There are doors and locks that may require a particular method of forcing. In some cases there may only be one way to force a specific door. Regardless of the type of door encountered, or the method chosen to attempt entry, a few basic rules should always apply.²

RULE 1

Try before you pry. It is a waste of time and resources to go through the forcible entry process only to find that the door was unlocked. Furthermore, arson investigators will want to know the status of the lock upon your arrival.

RULE 2

Don't ignore the obvious. Look for the easiest way to get in. Don't become so wrapped up in the forcible entry process that you get “tunnel vision”.

RULE 3

If possible, use the door that the occupants normally use to enter or exit the premises. It will put you into the most likely exit paths to begin your search. If upon arrival of a fire or other emergency companies have already gained access via the primary entry or exit path, consider opening the secondary means of egress. This will not only allow a primary search of that area but it may provide the only exit path for occupants and firefighters should their primary means of egress become untenable or cut off. This rule serves as the basis for opening penthouse doors on occupancies with flat roofs. Often landlords lock penthouse doors in an effort to keep the criminal element out. Unfortunately, in a fire, occupants attempting to escape become trapped at this location.

¹ Forcible Entry, 7th Edition, International Fire Service Training Association

² Fire Officer's Handbook of Tactics, John Norman, Penwell Publications

RULE 4

Maintain the integrity of the door. Keep the door intact. Failing to do so removes any control you had over the oxygen supply to the fire. It may provide a pathway for fire extension. Firefighters must resist the temptation to kick in doors while conducting a primary search, particularly in rundown transient hotels. All too often the panels on these flimsy doors are destroyed to the point where they lose their integrity. The openings created provide an opportunity for fire to extend. It is particularly important to leave the door to a fire area intact since this may be all that is preventing fire from blowing up the stairway or other means of escape. Even if a charged hose line is in place and a door is removed, should the line suddenly burst, as from broken glass, or pressure is suddenly lost, there will be no means of controlling oxygen supply or fire extension by simply closing the door

As with fire size-up, forcible entry size up begins with pre-fire plans, building inspections, and area orientation. Observing and noting the various types of occupancies and the methods used for securing them will give you the edge when an emergency arises. The time of day will indicate the need for forcible entry. For example, businesses open to the public will require less forcible entry than the same premises after closing. The type of occupancy can also tell you which way the door opens. Ninety nine percent of residential doors open into the occupancy, while the exact opposite is true of commercial establishments and places of assembly.³

When responding to a fire and the building comes into view, determine the location of the fire, any visible victims, and the door to be used for entry. If there is fire behind or in close proximity to the door prepare for the worst. What type of door is it? Does it open inward or outward? In residential occupancies such as apartment buildings, outward opening doors indicate the presence of elevator shafts, electrical equipment rooms or janitor closets. If you are operating in a smoke filled hallway and about to force an outward opening door be sure you are not about to crawl head first into an elevator shaft.⁴ How is the jamb constructed? What types of locks are present? These are just a few of the questions that need to be answered.

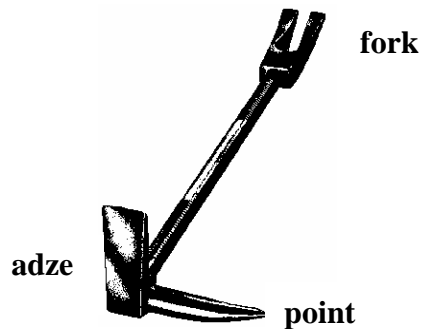
³ Ibid.

⁴ Ibid.

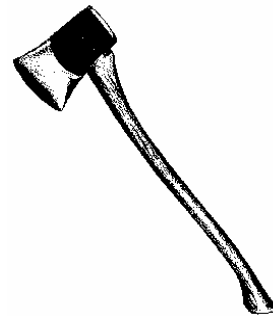
CONVENTIONAL FORCIBLE ENTRY

Conventional Forcible Entry is defined as entry to a structure by the use of prying and striking tools coupled with force alone. The most commonly used tools associated with conventional forcible entry are the Halligan tool and a flat head ax. This combination of a prying tool and striking tool is sometimes called “the irons”.

HALLIGAN TOOL



FLAT HEAD AXE



Once at the door, and *before* you begin entry, consider the following:

- **In which direction does the door swing?**
 - If the hinges are visible it swings outward
 - If the hinges are not visible it swings inward
 - If the door frame is flush with the wall it swings outward
 - If the door frame is recessed it swings inward

Once you have determined which way the door swings you need to judge how difficult the door will be to force. Consider the following:

1. The strength of the door and assembly
2. The lock
3. The door frame and wall that holds it

Is the door weak and flimsy? Are there glass or panel assemblies you can take advantage of? How many locks are on it? Usually, the newest and therefore the toughest are located highest on the door. There are times when the wall holding the door and frame are of lighter and cheaper materials. It may be easier to breach the wall and reach in to open the door.

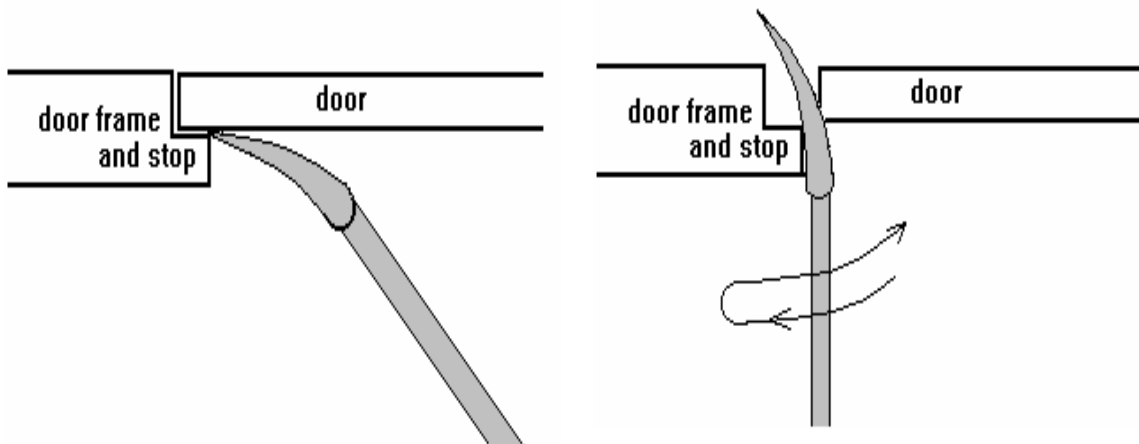
There are four ways to force a door using conventional forcible entry techniques.

1. You can spread the door far enough from the jamb to separate the lock throw from its strike.
2. You can break the integrity of the lock with a prying or shearing force.
3. You can separate the door from its hinges by removing the hinge pins. This is nearly impossible with newer doors.
4. You can pry the hinge assemblies from the door or frame.

INWARD OPENING DOORS

The Fork Technique

When using the fork to force inward opening doors, the objective is to drive the fork between the door and the jamb until the fork is one to two inches inside the doorjamb. Once in place, a prying motion uses the inside wall as a fulcrum and will cause the lock assembly to fail. Start by placing the bevel side of the tool close to and parallel to the door, with the fork between the door and the doorstop, six to eight inches above or below the cylinder. Upon the command from the irons person the ax person gives the Halligan tool a light tap to get the fork behind the doorstop. Pry the tool away from the door directing the ax person to strike an additional blow. Pry the tool out further, more and more perpendicular, directing added ax blows until the fork is at least an inch or two past the door. To force the door open push the adze end towards the direction of the door. When using this technique the most common error is failure to drive the fork past the door sufficiently then prying the tool too soon.





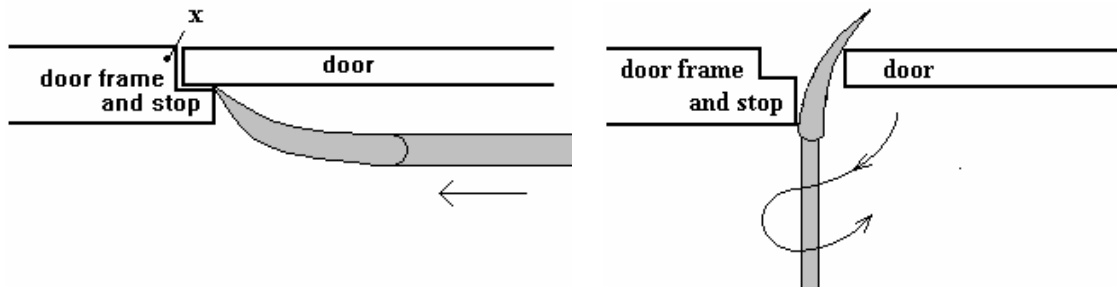
Forcible entry team using the fork end of the Halligan tool to force an inward opening door. The photo on the right shows the proper striking position of the tools. This provides for a sound striking surface and minimizes the chance of the ax glancing off of the Halligan as may occur using the incorrect position in the photo below.





Once the Halligan is in this position, with the fork between the door and jamb, drive the fork until it is at least 1 or 2 inches past the door. Next, push the Halligan towards the door. This action will cause the deadbolt and lock to fail and sufficiently separate the door from the jamb to cause it to open

The Fork Technique on Steel Doors



There is very little give with steel doors. If the door is forced with the bevel side (outside curve) of the Halligan towards the door, the tip of the fork may not be able to get past the area of the door frame marked “x”. Turning the Halligan tool over, with the bevel side outward, allows the fork to get past the frame. Once the fork is one or two inches past the door and frame, push the tool towards the door. Many times this will not be sufficient to force the door. Continue the operation by turning the fork over again (as in a wood framed door), this time with the bevel towards the door and finish the job.

The **fork end technique** works best under these two conditions:

1. You must be able to stand and see what you are doing.
2. The entry team must be experienced. That means the ax person and the irons person must both know exactly what each must do.

The Adze Technique

The adze technique is not as efficient as the fork technique but is good when smoke severely limits visibility, or when heat forces you to work close to the floor.

When using the adze end to force inward opening doors, the objective is to drive the adze into the jamb at the location of the lock cylinder. Bury it deep into the doorframe and push the fork end toward the door. The lever action will exert a strong perpendicular force on the lock mechanism causing it to fail. This technique does not work well with steel framed doors because the adze cannot penetrate the steel.



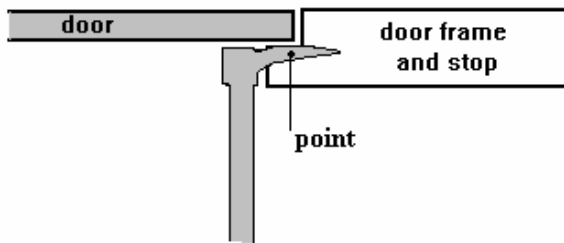
Forcible entry team using the adze end of the Halligan tool to force an inward opening door. Once the adze is driven deep into the door frame, the bar is pushed toward the door. This action will exert a strong perpendicular force on the locking mechanism causing it to fail.

The Point Technique

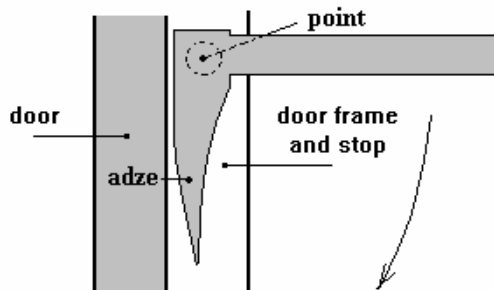
Encountering a steel door set in a steel frame may seem like a formidable challenge to the forcible entry team however, entry may be achieved by driving the point into the jamb near the lock(s) a couple of inches then pull the shaft of the Halligan towards the door. The action exerts a force few deadbolts can resist.



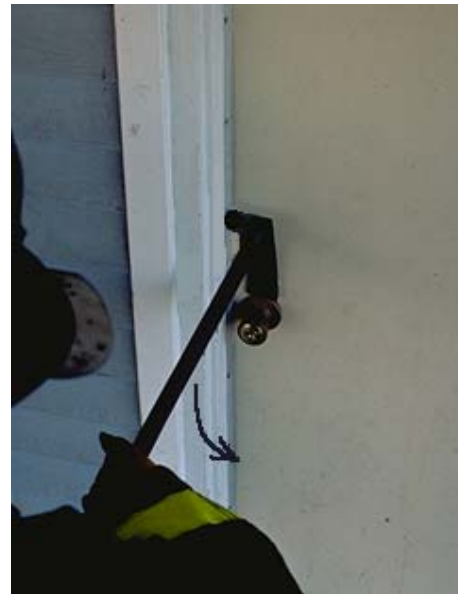
The point technique may also be used when operating alone or without a driving tool such as the flat head ax. The technique, however, may not provide enough force to open doors with substantial locking mechanisms. This technique works well on relatively flimsy doors like those found in transient hotels and interior residential doors.



Drive the point deep into the frame



Using the point as a pivot drive adz into door



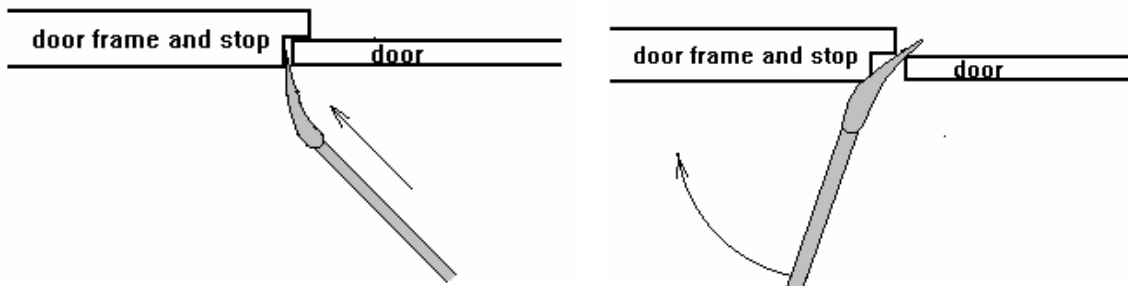
If working alone swing the tool hard enough to drive the point deep into the door jamb just above or below the lock. With the point as a pivot, the tool is pushed towards the door either upward or downward to force the adze into the door. Pushing the shaft inward toward the door rather than pivoting on the point also works well.

OUTWARD OPENING DOORS

Fork Technique

When forcing outward opening doors, use the following procedure:

- Place the fork six to eight inches above the lock, bevel towards the door frame
- Drive the fork one to two inches past the door
- Use the shaft as a lever and pry the door outward



Drive the fork one or two inches past the door. Pull the tool away from the door to open it.

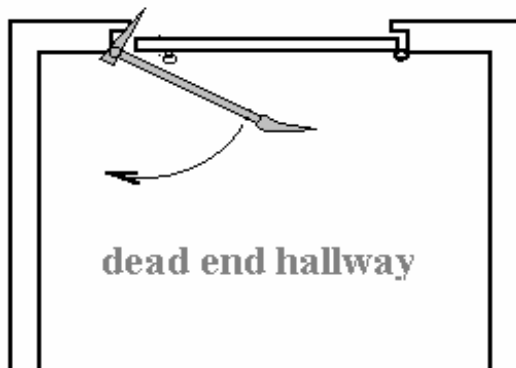
Adze Technique

The adze technique for outward opening doors should be used when smoke limits visibility or when heat forces you to work close to the floor. While this method is easier than the fork method, the relatively short length of the adze does not allow it to be driven as deep as the fork.



Place the adze near the lock assembly and drive it deep into the frame. The Halligan Tool or Chicago Door Opener is then pulled away from the door causing it to open.

When forcing outward opening doors in dead end hallways, deep recessed doors, or when space is restricted, use the adze end. The arc that the tool will follow when the door is opened will be shorter than if the fork was used. With this shorter arc, the door will open before the tool comes in contact with the wall.



Tools

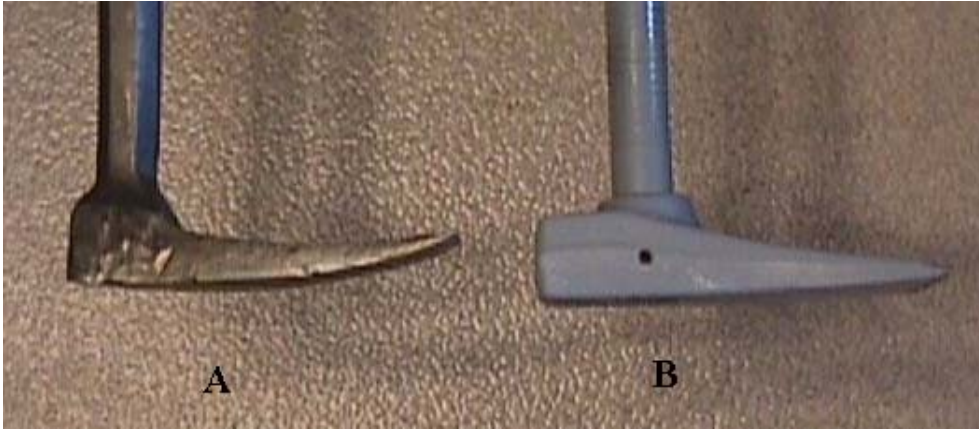
Performing the job of forcible entry takes skill, knowledge, and the proper tools. There are tools in circulation which, quite frankly, should not. They are so poorly designed they will fail to work in the simplest of forcible entry situations. A good Halligan Tool or Chicago Door Opener has a gently tapered fork and adze that allows for easy placement between the door and frame or jamb. The fork and adze should also have a slight curve.



This Chicago Door Opener is poorly designed. The adze and fork are too thick and do not have a gentle curve. The fork and adze are secured to the shaft by set pins making for a weak connection.



Fork A in the photo has a narrow taper and gentle curve. Fork B is too thick and lacks a curve to it. The Halligan or Chicago Door Opener should be one piece and forged, not cast. Fork B is secured to the shaft with a pin. This design makes for a weak connection increasing the chance for tool breakage.



Adze A has a narrow taper and gentle curve. Adze B is too thick and lacks a curve. Adze B is secured to the shaft by a pin increasing the chance of breakage.



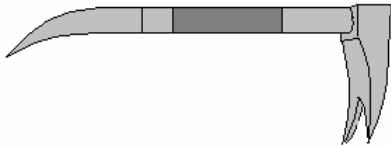
It will take a Herculean effort to drive the fork past the door. Even if it was possible, the design of the fork does not allow for easy opening of the door. The design of the adze is not much better.

The flat head ax used to drive the Halligan tool or Chicago Door Opener should be an 8 pounder. Six pound axes are too light and do not provide the punch necessary to get the job done. Nupla® or plastic handles are almost indestructible and are superior to wood. While a sledgehammer or maul will function well as a driving tool, having an 8-pound ax gives the added advantage of a cutting tool. With this in mind, a Halligan tool and flat head ax are the ideal tools to take to a roof. Not only will these tools be necessary to force the penthouse door, but they can be used to open the roof as well. It is important to note that firefighters carrying the flat-head axe and Halligan tool do not need to take a

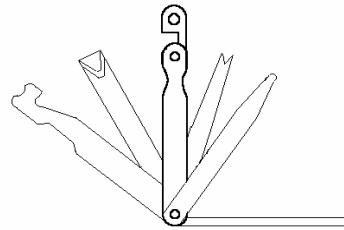
pick-head axe. There is nothing you can do with a pick-head axe that you cannot do with the combination of the flat-head axe and Halligan tool. Bottom line...don't carry the extra weight.

THROUGH-THE-LOCK FORCIBLE ENTRY

Through-the-lock Forcible Entry centers around duplicating the actions of the key in a lock. First the lock cylinder is pulled from the door using an “A” Tool. A **key tool** is then inserted into the lock mechanism where the cylinder was and turns or slides the bolt away from the strike. Looking or feeling the back of the cylinder identifies the correct key tool shape.



“A” TOOL



KEY TOOL

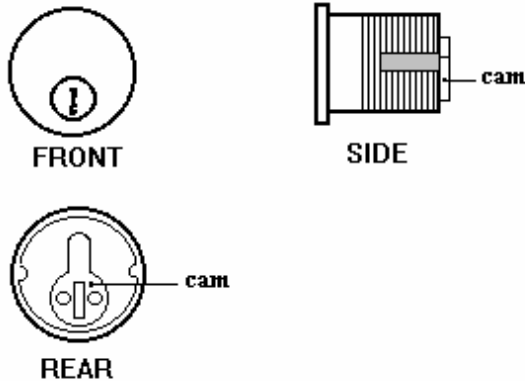
Through-the-lock forcible entry is normally called for under the following circumstances:

- Non-emergency situations (e.g., lockout, well being check)
- Light fire conditions (e.g., burnt food, check an exposure for extension)
- Specific types of locks (e.g., mortised with swinging deadbolt)
- Specific types of doors (e.g., glass with aluminum frame)
- When limiting damage is an issue

The two most common types of door locks are the mortise lock and the rim lock.

Mortise Locks

If the lock is built into the stile (door frame) from a cutout made by the manufacturer it is a mortise lock. The cylinder is threaded and screwed into the lock itself. The operating mechanism on the rear of the mortise lock cylinder is a small off center cam. As the key turns it moves the cam that operates the bolt.



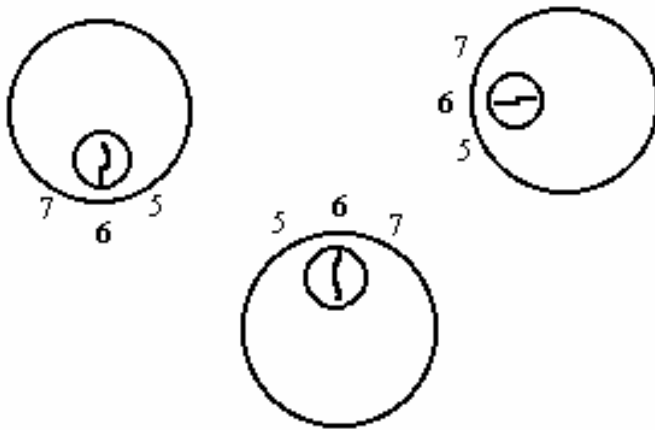
**Mortise
lock
cylinder**

When a cylinder is pulled, and you can see or feel a cam on the rear, it will tell you the lock is of the mortise type. It will also indicate which key tool to use.



**Key tool for use on
mortise locks**

Before the cylinder on a mortise lock is pulled, make a mental note of the position of the keyway. Consider this position to be “6 o’clock” regardless of its position on the cylinder face.



The actual work of opening the locking mechanism will be accomplished between 5 and 7 o'clock.

Pull the cylinder by driving the tool behind it, taking a bite into the brass barrel of the cylinder. With an upward prying motion pull the cylinder out of the door. The key tool is then inserted into the opening created by the removal of the cylinder. The release mechanism is then engaged. If the mechanism is found at the 7 o'clock position, move it to the 5 o'clock position. If it is found at the 5 o'clock position, move it to the 7 o'clock position.

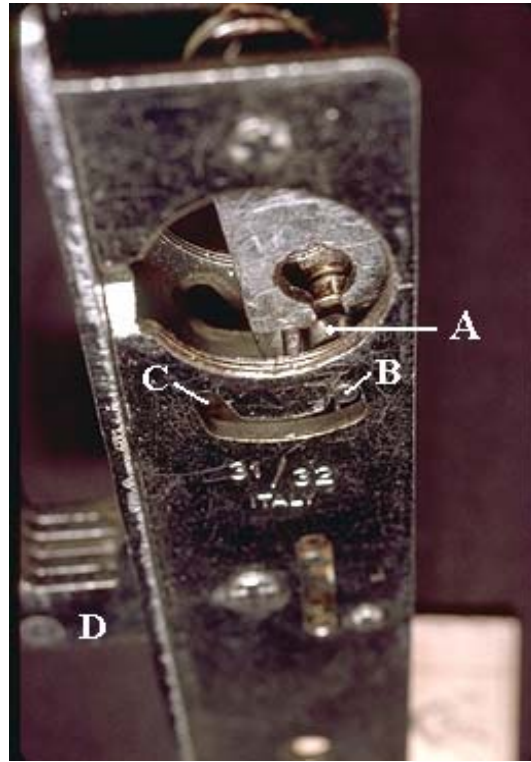


The “A” tool is driven behind the cylinder until it bites into the brass cylinder. The cylinder is removed by pulling the tool in an upward motion. Once removed the locking mechanism is easily accessible with a key tool.

On some locks the release button must be pushed down with the point or tip of the key tool. The “bent end” of the key tool works best on these locks

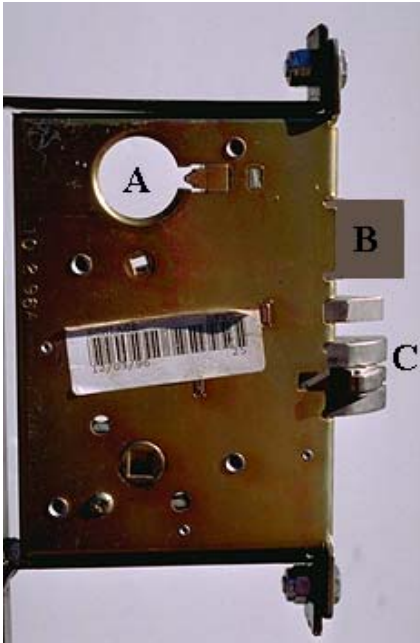


Mortise lock cylinder removed. Once the cylinder is removed, reach in with the bent key tool and move the locking mechanism. If the mechanism is found at the 5 o'clock position move it to the 7 o'clock position. If it is found at the 7 o'clock position move it to the 5 o'clock position.

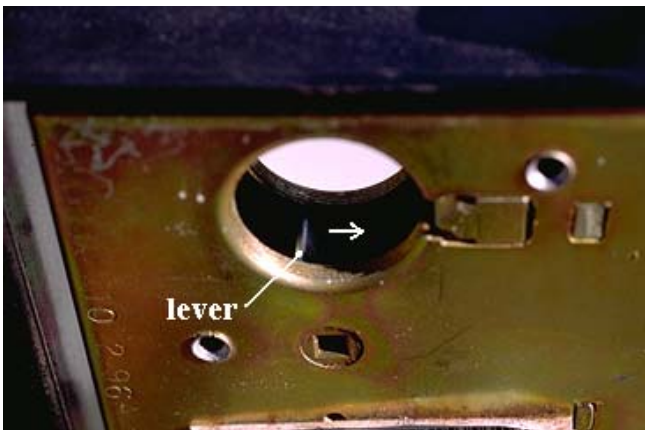


Mortise lock removed from a door to give a better view. The locking mechanism is a small roller (A) which is depressed by the bent tip key tool. It is then moved from the 5 o'clock position (B in this case) and moved to the 7 o'clock position (C). When the mechanism is moved to the unlocked position, the bolt (D) will retract into the door

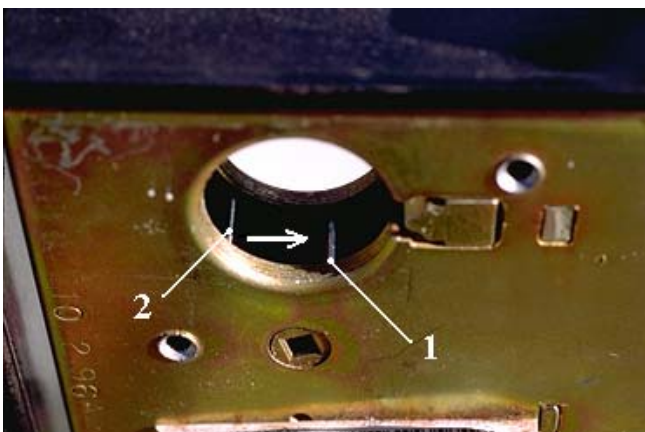
Some high security mortise locks have both a deadbolt and latchbolt with which to contend. The action of removing the cylinder is the same but once removed there will be two levers to move to open the lock



Some high security mortise locks have a deadbolt (B) and a latchbolt (C) which will require moving two levers in order to retract the deadbolt and latchbolt. Once the cylinder is removed (A), reach in with the bent tip key tool to activate the two levers.



Once the cylinder has been removed, a lever will come into view. Moving the lever towards the deadbolt (in the direction of the arrow), will retract it into the lock body.



With the deadbolt retracted into the lock body, the second lever will move slightly, giving you better access with the key tool. Move it in the same direction as the first lever. The latchbolt will retract and the door will open. #1 is the lever that retracted the deadbolt. #2 will retract the latchbolt.

Rim Locks

Rim locks, unlike mortise locks, are mounted on the doors edge. A rim cylinder appears almost identical to a mortise cylinder when it is mounted on a door. A rim cylinder, however, is anchored to the door by two bolts that protrude from a back plate on the backside of the door, while a mortise cylinder is threaded into place within a lock casing.⁵

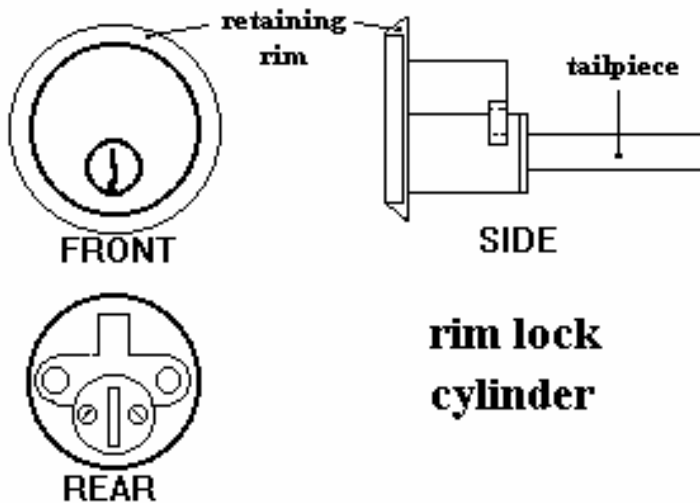
These locks have a retaining rim, which prevent the cylinder from passing through the door.



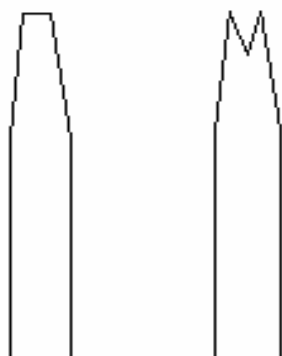
The photo on the left shows a typical rim lock application. The cylinder, with its telltale rim, is located on the outside of the door above the knob. The photo on the right shows this lock mounted on the inside face of the door.

⁵Forcible Entry, International Fire Service Training Association, 7th Edition

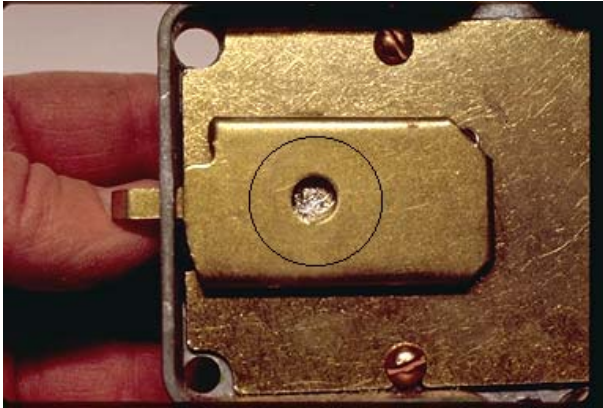
A rim lock cylinder has a flat blade tailpiece that extends through the door and into the lock mechanism mounted on the backside of the door.



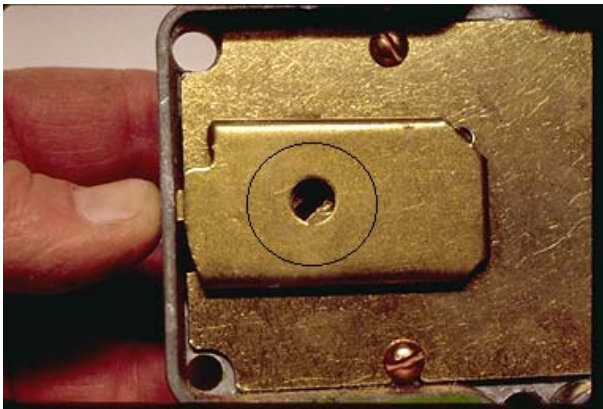
Once the cylinder is removed, use the proper key tool to manipulate the lock. Turn the key tool in either direction. Some higher security rim locks contain a spring-loaded security shutter or guillotine. When the cylinder is removed the shutter automatically closes off key tool access to the locking mechanism. Using the double pointed key tool, the shutter or guillotine can be “walked” or manipulated, allowing access to the mechanism.



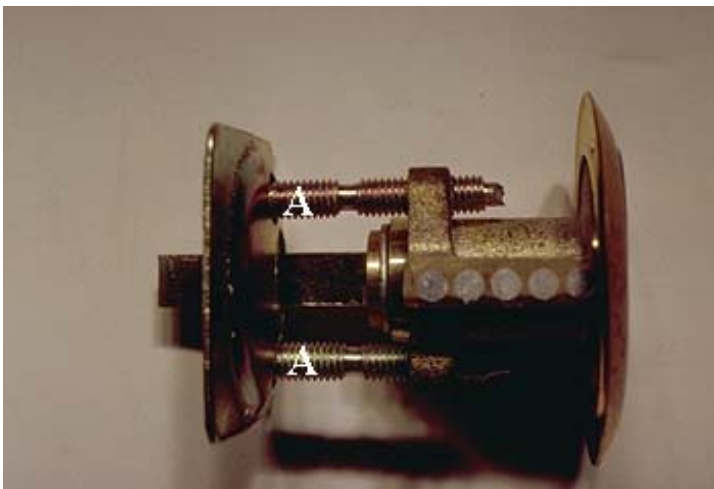
**KEY TOOLS FOR
USE WITH
RIM LOCKS**



This is a look at the backside of a rim lock with security shutter. The area within the circle is the approximate area that would be visible through a door when the cylinder is removed. Once the cylinder is removed, a spring-loaded shutter or guillotine closes off access to any tool that may be used to unlock it (top photo). Using the double pointed key tool, the shutter is “walked” back exposing the keyway. The bottom photo shows the exposed keyway. Once the double pointed key tool walks the shutter back, the key tool will easily enter the keyway enabling easy opening.



There are times when difficulty removing the cylinder will be encountered. The two bolts that secure the cylinder to the door are often case hardened. They may be almost impossible to break. If you are unable to remove the cylinder, the lock must be driven off of the door.



A rim lock cylinders is secured to a door by two bolts, (A), which are often case hardened. There may be occasions where the bolts will not break thus leaving the cylinder intact. In this case the cylinder should be driven through the door. This action will force the lock off the door.



If the cylinder cannot be removed follow these procedures.

- Remove the retaining rim using the “A” tool
- Place the shaft end of the “A” tool or point of the Halligan directly on the face of the cylinder
- With a flat head ax drive the cylinder through the door. This will tear the lock from the backside of the door.

In some instances, after the key tool has been inserted into the back of the lock, the tool will not turn. This is an indication the rim lock has a night latch feature. When the thumb latch on the inside of the door has been activated there is no tool that will release the locking mechanism. The only alternative is to drive the lock off the face of the door. Place the shaft end of the “A” tool into the cylinder hole and drive the lock off the door using a flat head ax.



Rim lock with night latch feature. When the thumb latch is activated a key tool will be ineffective. Your only alternative is to drive the lock off of the door.

Tubular Deadbolts

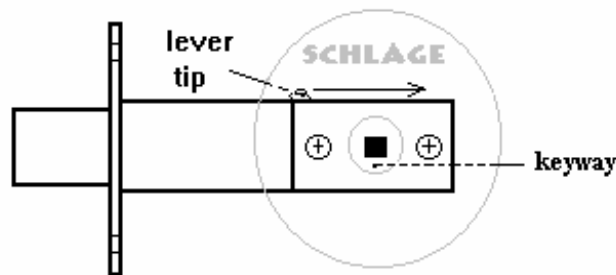
A characteristically large lock cylinder, usually mounted four to six inches above the original door knob-lock, identifies tubular deadbolts. Lock cylinder assemblies for tubular deadbolts typically measure two to three inches in diameter and project out from the door. The cylinder is held on the surface of the door by two bolts that connect to another cylinder or thumbturn on the other side of the door. These two mounting bolts, which thread into the back of the cylinder mounted on the outside of the door, in effect squeeze the door between the two cylinders. Obviously, the two cylinders must be larger in diameter than the hole in the door; otherwise, the mounting bolts would pull the cylinders together into the hole.

The lock cylinders or interior thumbturn actuates the deadbolt that slides out of a tubular housing recessed into the edge of the door-hence the name “tubular”. The lock cylinder is connected to the deadbolt mechanism by a tailpiece that transfers the turning action of a key to a lever at the end of the tubular housing that extends and retracts the deadbolt. You can see the tip of this lever on most deadbolts. It is visible behind the deadbolt, recessed into a notch at the top of the tube. This lever has a range of motion of roughly 10 to 2 o’clock or 2 to 10 o’clock as it slides the bolt in and out of its strike in the doorjamb.⁶



The tubular deadbolt is a common “add-on” lock because it is relatively inexpensive and easy to install. In the photo on the left it is located above the knob. Its projection from the door helps identify it.

⁶Forcing the Tubular Deadbolt, by Bill Gustin, Fire Engineering, January 1996 issue



Tubular Deadbolt

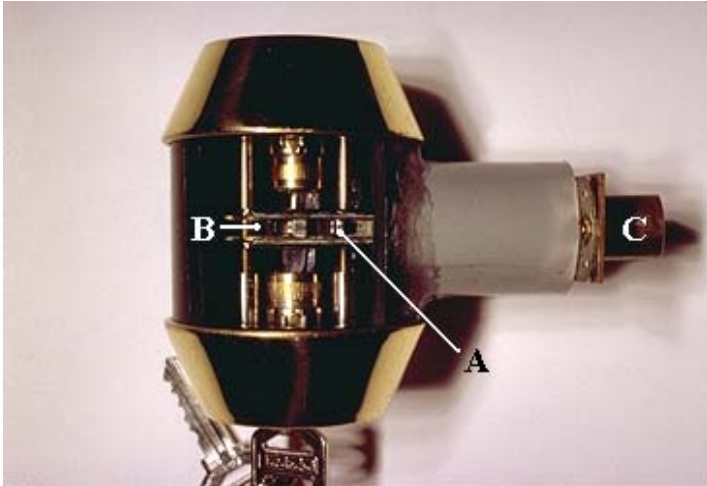
To remove a tubular deadbolt cylinder, drive an “A” tool or adz of the Halligan tool or Chicago Door Opener behind the cylinder. The pulling force exerted by the tool may break the mounting bolts holding the cylinder in place or pull them out of their threads in the back of the cylinder. If this is successful, the cylinder pops smartly off the door. Insert the key tool with the straight tapered blade (or screwdriver) and unlock the door. Strong, high quality deadbolts manufactured in the United States often use large, case hardened bolts to secure their cylinders to a door. These mounting bolts are designed specifically to resist the efforts of anyone attempting to forcibly remove the lock cylinder.⁷

If the lock does not yield to your efforts follow these procedures:

- Pry the top of the cylinder until the hole bored in the door appears as a crescent shaped opening. The objective here is not to remove the cylinder but to create an opening just large enough to insert the key tool
- Insert the key tool and lift the tip of the lever
- Move the lever backward, away from the edge of the door. This will throw the deadbolt to its unlocked position.

When following this procedure, care should be taken not to pull the cylinder too much as this will misalign or damage the lock mechanism to a point at which it will not operate.

⁷Ibid.



Exposed view of a tubular deadbolt. If the cylinder cannot be removed follow the procedures described above. With the bent tip key tool, move the lever tip “A” to the “B” position which will retract the deadbolt, “C”, from the door frame.



Sometimes tubular deadbolts are completely encased in metal to thwart the efforts of burglars. Pulling the cylinder will be almost impossible. If the cylinder cannot be pulled you will not be able to access the lever tip with a key tool. Look for another way in or go through the door conventionally.

Knob Locks

Knob locks are those with the keyway inside the knob. Because of the relatively short length of the latch they are one of the most vulnerable to prying operations. If the door and frame are pried far enough apart, the latch clears the strike and allows the door to swing open.⁸ If this is not successful or feasible placing the “A” tool behind the knob or driving it behind the flange located behind the knob and prying the knob off can remove the knob. The knob may also be driven off with a sharp blow from the back of the ax. Once the knob is removed insert the key tool with the straight tapered blade (or screwdriver) and turn it.

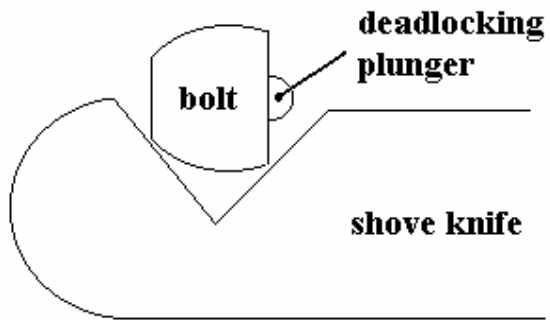
⁸Forcible Entry, International Fire Service Training Association, 7th Edition



Knob locks are identified by the keyway located within the doorknob. Most knob locks used for residential applications are easily removed using the “A” tool.



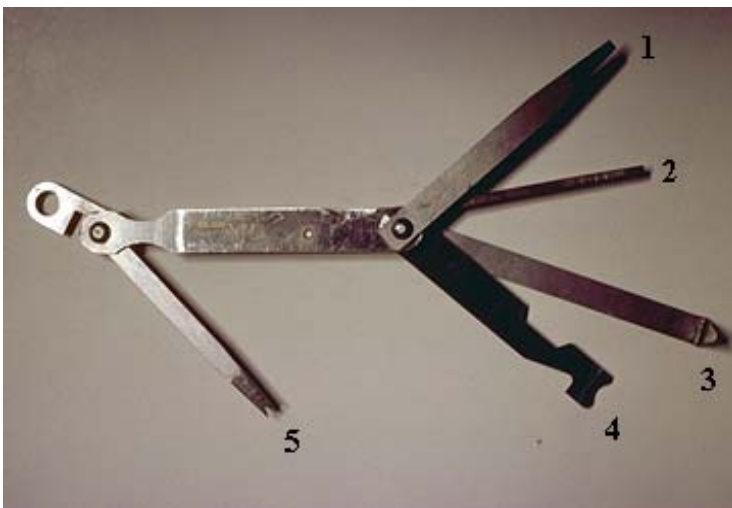
Sometimes a shove knife is sufficient in opening a knob lock mounted on an outward opening door. The shove knife is placed behind the bolt and worked towards you. The bolt will retract into the door and the door will open. This shove knife was made from a putty knife.



The bolt of a knob lock is spring loaded and will retract in some cases if it is approached from the rear. A mistake often made is to retract the deadlocking plunger with the thought of then retracting the bolt. When the deadlocking plunger is retracted it automatically freezes the bolt and it will not retract. It is essential that you attack the bolt from the rear.

Key Tools

The key tool that duplicates the action of a key in the lock does not have to be something fancy. You can make your own using a pair of Channellock® Pliers.



Several manufacturers offer this key tool set. #1 is a straight tapered blade used for most rim locks, knob locks, and tubular deadbolts. #2 is square shaped and used for Fox and Police locks which are found on the East Coast. It is unlikely you will use this tool. #3 is the bent tip, tapered blade used for mortise locks and occasionally tubular deadbolts. #4 is a shove knife used for knob locks. #5 is a twin pointed, tapered blade used to “walk” the security shutter in rim locks which have this feature.



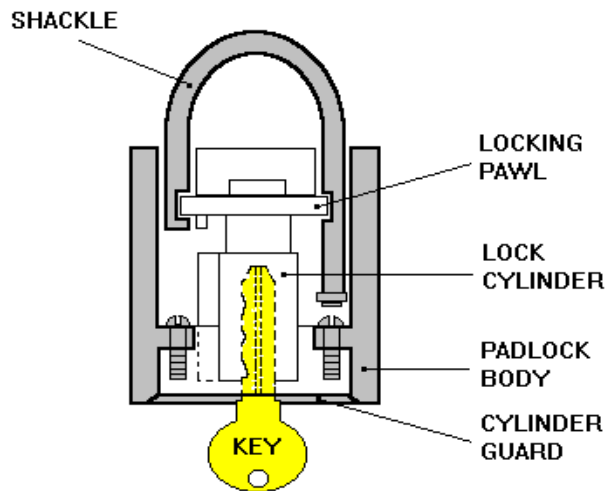
This pair of pliers has been altered to fit most “through-the-lock” forcible entry needs. The end of one handle has been ground to a square taper. It can be used on most rim locks, knob locks, and tubular deadbolts. The end of the other handle has been tapered, heated and bent. It is used for mortise locks and some tubular deadbolts.

PADLOCKS

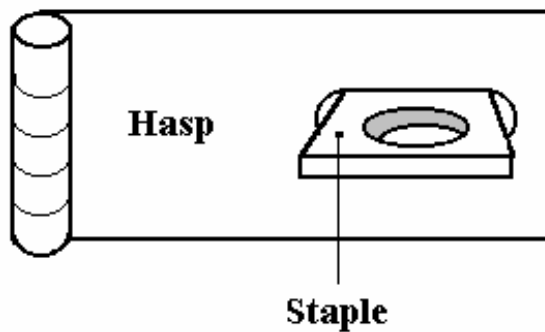
Modern padlocks come in a variety of shapes and sizes, and vary in quality of materials and construction. Despite design differences, padlocks secure in the same basic way--by joining two separate units into one inseparable unit. This may occur when two links of chain are padlocked together, or when a door hasp is closed over its staple and padlocked.

Padlocks are composed of the same basic components although they may differ from conventional shape because of lock design. The main padlock body contains a locking mechanism that engages the shackle on one end or at both ends. **This is significant from a forcible entry standpoint because a padlock that locks only one leg of the shackle requires only a single cut to disable the lock. When the locking mechanism acts on both legs of the shackle, two cuts must be made to break security.**⁹ This is also referred to as “heel and toe” locking.

⁹Ibid.

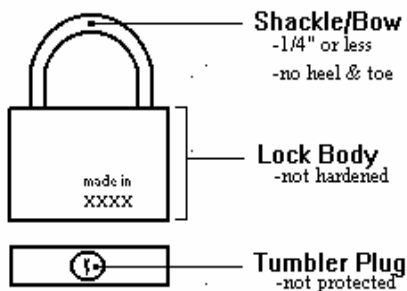


Padlock Components

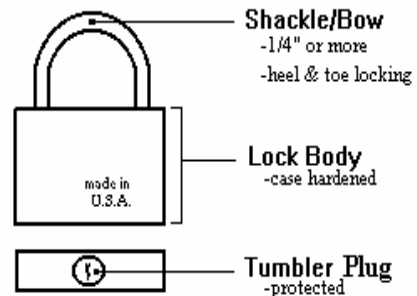


Padlock assemblies are usually mounted using a hasp and staple.

Padlocks can be divided into two types, standard and heavy security.



STANDARD PADLOCK



HEAVY SECURITY LOCK

Heavy security padlocks have a number of features that make them more resistant to forcing than with standard locks. Shackles made of casehardened steel are extremely resistant to cutting with such tools as bolt cutters and hacksaws. Locks with case hardened shackles are usually marked to identify this feature.

SIZE-UP

When the locking system is based on a padlock, look for the weakest point in the system and concentrate the attack on that point. You should look for several places of attack on both the mounting hardware and on the padlock itself. If the staple is exposed you can cut it off with bolt cutters or pry it off with a Halligan tool. If the staple is case hardened, covered, or inaccessible, the hasp may be the weakest link. If screws hold it on, it may be easy to pry it from its mount. If you see large bolts or weld points holding it in place look for an easier way.

What about the lock itself? Is it flimsy or a heavy security lock? Follow these procedures for standard and heavy security padlocks:

STANDARD

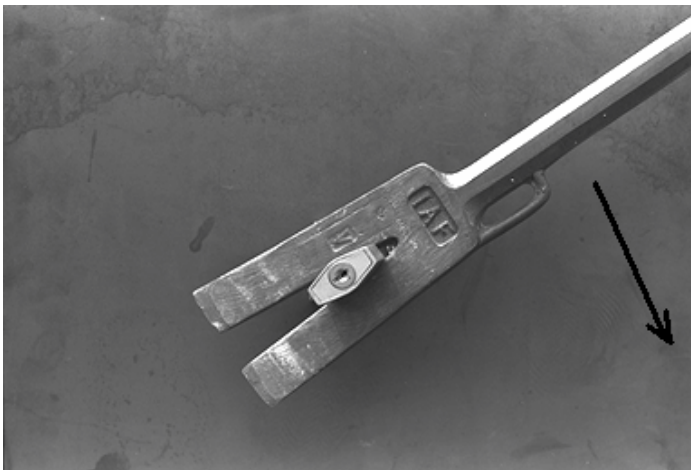
- Drive the point of a Halligan tool into the shackle
Or
- Position the lock shackle into the fork of a Halligan tool or Chicago Door opener thus providing a striking surface. With the flat-head strike the exposed surface of the Halligan or Chicago and drive the lock off the hasp and staple.
Or
- Use bolt cutters
Or
- If the staple is stronger than the lock shackle place the fork of the Halligan or Chicago across the shackle and twist it until you feel firm resistance. Then use a sharp downward twist of the tool. The shear force exerted will often break the shackle. This will also work on some smaller diameter case hardened shackles. This is because the process used to caseharden the steel gives it high compressive strength but leaves it with relatively poor shear strength. If you are not certain the staple is stronger than the lock shackle, the method could backfire. In this instance, the staple may become distorted to the point, where even if the lock was removed, the hasp would not open.



Using the point of the Halligan tool to drive the hasp and lock off the door.



With the shackle between the fork, a striking surface is provided for the ax.



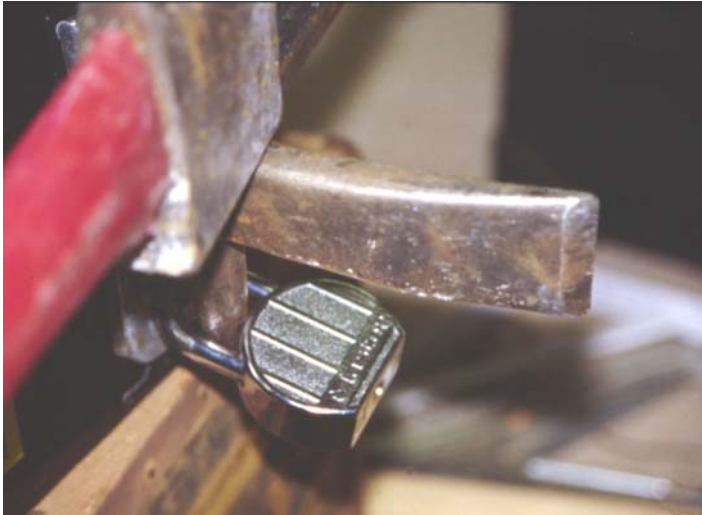
If the staple is stronger than the lock shackle, place the fork of the Halligan or Chicago across the shackle and twist it until you feel firm resistance. Then use a sharp downward twist of the tool. The shear force exerted will often break the shackle.

Heavy Security Padlocks

- Halligan tool
- XL-98 (or suitable multi-purpose saw) with metal cutting blade
- Or**
- Torch

The process used to case harden a lock adds extraordinary compressive strength but leaves it with relatively weak shear strength. For this reason, bolt cutters, which apply compressive force, may not be effective on case hardened locks. Instead, the point of the

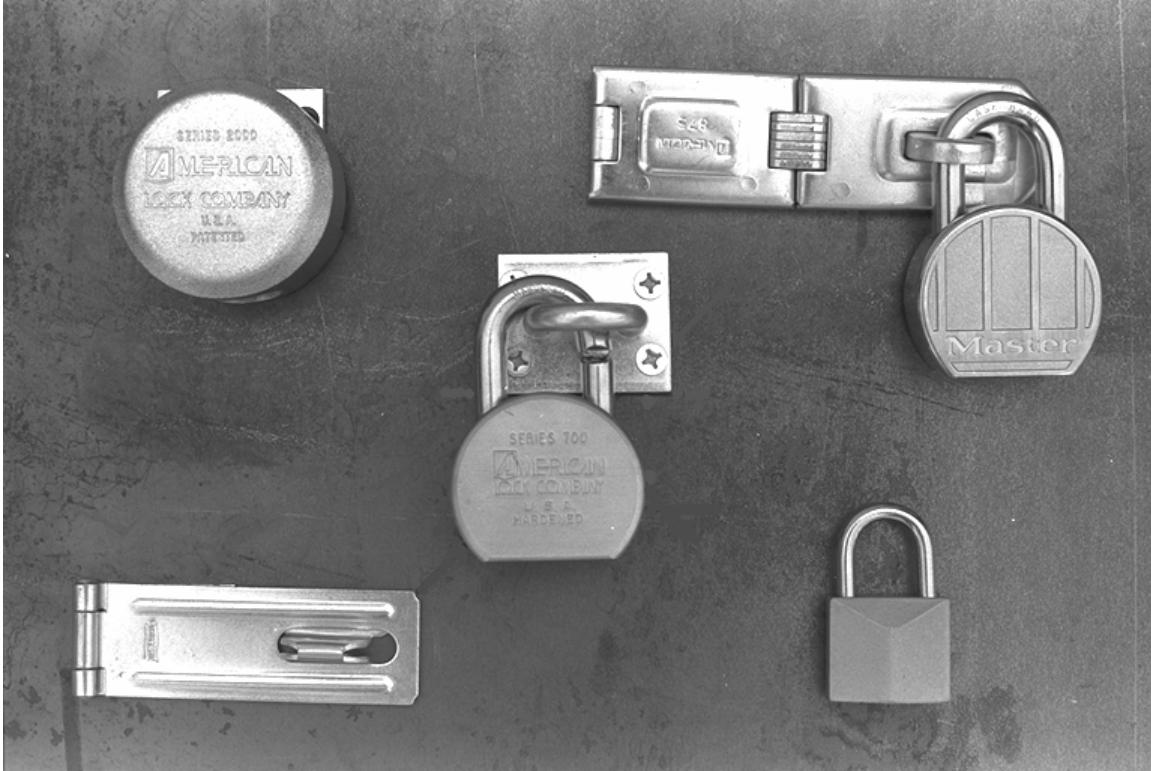
Halligan tool is placed between the legs of the schackle. The fit must be snug. With quick hard blows from a striking tool like the flat-head axe or maul, shear force is imparted to the shackle causing it to fail.



When using the power saw the lock can sometimes bounce and chatter making the cut difficult. If this is the case the operation can be made smoother by having a second member hold the lock still for the saw. This will keep it from moving around as the pressure of the blade is applied. This can be safely accomplished by grabbing the lock with a vise grip attached to a short length of light chain. The proper technique for cutting metal with the XL-98 is to have the operator place the blade on the work and then slowly increase the R.P.M.'s of the saw until it is operating in the cut.

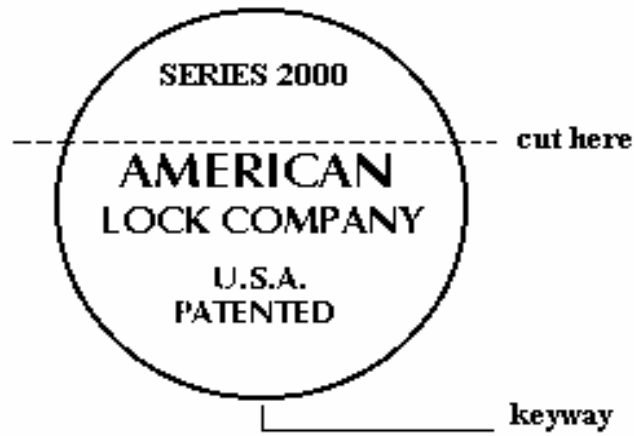


To prevent bouncing and chattering, before cutting the lock shackle with a multi-purpose saw have a second person hold the lock at a safe distance using a vise grip and chain. This will prevent the lock from moving around as the cut is made.



Top left, American 2000 “hockey puck” type lock. Top right, heavy security lock with heavy duty hasp and case hardened staple. Lower right, standard padlock. Lower left, lightweight hasp and staple. Center, heavy security lock. Note the shackle has been cut through with a bolt cutter but is still intact. Heavy security locks have “heel and toe” locking which requires the shackle to be cut in two places. In this instance it took two firefighters under ideal conditions, with the largest bolt cutters carried by the SFFD, two attempts to make this one cut. A second cut probably would have destroyed the bolt cutter.

“American 2000” locks are a unique type of lock, resembling a shiny steel hockey puck. The entire locking mechanism and hasp is concealed behind the body of the lock, leaving no place to pull, cut, or pry using conventional tools. A more reliable method is to cut the lock using an XL-98 with metal cutting blade. When cutting the lock, the cut must be made at the correct location or nothing will be accomplished. Cut across the lock, two-thirds of the height of the lock away from the keyway. If using a torch, apply the flame at the center of the lock, being careful not to breathe the smoke. The lock is made of a very strong alloy that gives off a bright white flame and white smoke when cut with a torch. Do not breathe this smoke.



METAL ROLL-DOWN DOORS

Forcing metal roll-down doors can be a laborious and time-consuming effort. If you have chosen to force this type of door you must have good cause. The primary reason for forcing this door is to quickly access a fire behind it that is threatening floors above. It is especially critical to open up when those floors are occupied by human beings. The strategy here is to open the door as rapidly as possible to apply water to the fire. Another reason for going through a metal roll-down door is when there is no other alternative.

- If locks are visible and can be removed then do so and raise the door. If the door is manual, raising the door is a simple matter of pulling it up. If it is mechanical it means accessing the chain and pulling it to raise the door. If the door is electric it means activating the switch by removing the cylinder and shorting the wires if the key is not available, or accessing the chain and clutch through the motor housing. If all else fails, and it comes down to cutting the door then be prepared. There are a few “trick and fancy” methods taught by self-appointed gurus, but the most effective and time-proven method is the inverted “V” cut, sometimes known as the “tee-pee” cut. Most firefighters are familiar with the procedure, cut the “V”, pull the slats; make entry. Start from the center of the door above eye level and cut down at an angle towards the ground. Next make a cut intersecting the point from where you started your first cut. It also goes down to the ground at an angle. The resulting cuts form an inverted “V”. The hole is large enough for firefighters to enter and can be enlarged by pulling the slats on both sides of the door. Once the slats are pulled the upper portion of the door retracts upward while the lower portion is knocked or pulled out of the way.



Make the first cut at the center of the door above eye level. Cut at an angle to the ground. The second cut should intersect the first cut and continue to the ground at an angle. The resulting cuts form an inverted “V” or “tee pee” cut.



Once the second cut is made at the apex of the “V” the cut portion of the door will begin to curl inward or outward, creating an opening. A hoseline should be positioned behind the saw operator to direct a stream through the opening. The purpose is twofold. It will immediately attack the fire and will provide protection to the saw operator.



Once the two cuts are made, slats on both sides are removed. With the slats removed the door above the cut will retract upward. The remaining portions of the door will need to be knocked or pulled out of the way.



Once the “V” cut is made and the slats removed, the upper portion of the door will retract upwards. The remainder will have to be knocked or pulled out of the way.

The inverted “V” technique is superior because with two cuts, a hole large enough for entry is made. The other methods rely on the ability to pull the slats or reach the chain in order to make entry. Pulling slats with the inverted “V” technique is a bonus not a requisite to entry. Furthermore, as soon as the second cut is begun, an aggressive engine company will launch their attack by directing a stream into the opening.

Whatever the method used, pulling slats are not always as easy as some training videos would have you believe. In many cases they will have to be “persuaded” with force. One method involves hammering the slats with a flat head axe or sledge. This requires the slats have enough “head start” to get the axe or sledge into position. In the event this is not possible try driving the point of a Halligan Tool into the slat to be pulled, then driving the Halligan Tool to remove the slats.



Sometimes pulling the slats will be difficult and require some assistance with a flathead axe, sledge, or maul. Of course this will require that slats be given enough “head start” to provide access to the striking tool.



When slats are particularly difficult to remove, a method that may work is to drive the point of a Halligan tool into a slat. Next, strike the Halligan with a flathead axe, sledge, or maul to remove slats.

REFERENCES

Catalog 5, Iowa American Firefighting Equipment Co., Inc.

Conventional Forcible Entry, Forcible Entry Video Series by Tom Brennan, a Fire Engineering Strategy and Tactics Video Program

Fire Officers Handbook of Tactics, by John Norman, Penwell Publications

Forcible Entry, by Tom Brennan and Paul McFadden

Forcible Entry, 7th Edition, International Fire Service Training Association

Forcible Entry, Video, Fire Department, City of New York

Forcing the Tubular Deadbolt, by Bill Gustin, Fire Engineering Magazine, January 1996

Padlocks, Forcible Entry Video Series by Tom Brennan, a Fire Engineering Strategy and Tactics Video Program

Through-the-Lock Forcible Entry, Forcible Entry Video Series by Tom Brennan, a Fire Engineering Strategy and Tactics Video Program

Thru-the-Lock Forcible Entry, by Robert Morris, Firehouse Magazine, July 1993

APPENDIX A

Security bars can present a serious life safety problem during a fire. Often times they may be covering the only way out for occupants trapped by fire. The Halligan Hook, with its tremendous prying capabilities, works well on some security bars.



Some security bars can be removed by prying them off with a Halligan Hook.