FORCIBLE ENTRY

Table of Contents

INTRODUCTION

Firefighters may see flames and smoke billowing from windows or roofs upon arrival at a fire building. There is often a strong urge to direct a hose line at the visible flames. However, basic fire attack strategy calls for the firefighter to advance and locate the seat of the fire (rather than to automatically apply water at a window or roof and likely "push" the fire toward an unburned area). Therefore, entry into burning buildings is a first step to properly combat the fire. Ideally, this entry should be as easy as turning a doorknob, but this is not often the case. The firefighter must resort to the use of tools and imaginative forcible entry techniques, where entry is frequently blocked.

The body of knowledge required to handle such fire-related forcible entry needs continues to grow as construction and security considerations change. The trend throughout the foreseeable future will be toward stronger and more numerous locking and blocking mechanisms which are designed to keep out unwanted intruders, but also make the job of the firefighter more difficult.

This section covers many of those tools or devices which enable firefighters to obtain entrance to areas where normal openings are locked, blocked, or not provided. Opening these areas of a building is considered to be "FORCED ENTRY" since fire-fighters must gain entrance before rescue, ventilation, investigation, or fire suppression can be effectively achieved. Applying forcible entry to normal openings that are locked means to force open doors and windows by mechanical means. The breaking of a lock, prying a jamb apart, or forcing a window may cause some damage to a door, window, or other part of a building but far less if firefighters were to break down doors or break out window glass. A skillful method of forcible entry will aid in the saving of lives, cause less damage to property, and result in better public relations.

For years, forcible entry has been described as entering an occupancy by use of force. But how much force must be applied? Years ago, when occupancies had one frail lock or a pane of glass to remove, forcible entry was simple.

CONVENTIONAL FORCIBLE ENTRY

Conventional forcible entry is described as entry to a structure by the use of prying and striking tools coupled with force alone. The tools can be used to separate a door from its jamb; to remove a latch from its striker; to break the integrity of a locking device by prying or shearing force; to remove a door from its hinge side; or to remove a door in pieces. The most commonly used tools associated with conventional forcible entry are the Halligan prying bar and the flat head axe. The axe used for this purpose should be of the heavier eight pound class and is carried with its partner, the Halligan tool.

The sledge hammer may be effectively used to break out tile, dead lights, walls, concrete or to free iron bars set in masonry. As an example, to free iron bars for entry, sharp blows should be dealt to the bars at the point of contact with the masonry. The best results are obtained by striking both connections on the same side, or both bottom

connections. Pull out on the bars and use the opposite side connections as a fulcrum to pivot the bars out of the way.

DOOR CONSTRUCTION AND TERMINOLOGY

Doors can be obstacles to firefighters when they endeavor to reach various areas of a building. This section will look at various construction types and proven techniques for entry.

From a firefighter's standpoint of forcible entry, doors may be classified as swinging, revolving, sliding, and overhead. Regardless of the class of door, firefighters should **try** the door to make sure it is locked before force is used. A good rule is **try, pry, break**. If the door is locked, examine it to determine which way it swings and which method of forcible entry will prove most effective.

Wood Door Construction

The three general kinds of wood swinging doors are panel, slab, and ledge. Front doors in residences may be either panel or slab with glass panels in the upper area. Some panels of glass are held in place with moldings, which may be pried off to remove the panel. Residential doors generally open inward as opposed to public buildings, which open outward.

Slab doors are very popular and they may be constructed as either hollow core or solid core doors. The term "hollow core" implies that the entire core of the door is hollow, without fillers, which is not correct. Instead, the core is made up of an assembly of wood strips formed into a grid or mesh. These strips are glued within the frame, forming a rigid and strong core. Over this framework and grid are glued several layers of plywood veneer paneling. The purpose of the hollow core grid is to decrease the weight and cost of the door. Most exterior slab doors that are found on newly constructed residences will be hollow core slab doors, but the exterior slab doors on older homes may be solid core.

The term "solid core" means that the entire core of the door is constructed of solid material. Some solid core slab doors have a core made up of tongue and groove blocks or boards, which are glued within the frame. Other solid core doors may be filled with a compressed mineral substance that is fire resistant. In either case, the door is solid with a plywood veneer covering, a construction which adds considerably to the weight of the door. Some exterior slab doors on industrial and mercantile buildings are solid core slab doors.

Ledge doors, sometimes called batten doors, are found on warehouses, storerooms, barns, and the like. They are made of built up material and are locked with either surface locks, hasps and padlocks, bolts, or bars. Hinges on ledge doors, generally of the surface type with stationary pins, are fastened to the door and facing with screws or bolts.

Door jambs are the sides of the doorway's openings. Door jambs for wood swinging doors may be rabbeted jambs or stopped jambs. The rabbeted jamb is one into which a

shoulder has been milled to permit the door to close against the provided shoulder. Stopped door jambs are provided with a wooden strip or door stop that is nailed inside the jamb against which the door closes. This stop may be easily removed with most prying tools.

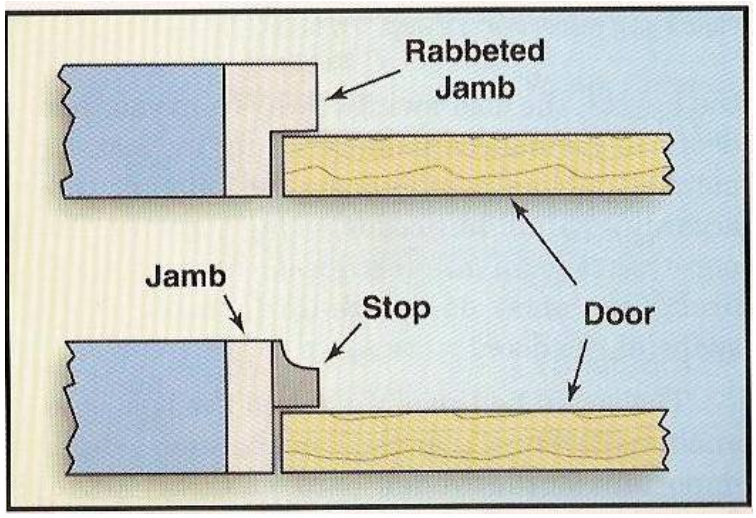

Figure 1
Picture taken from IFSTA Essentials

Metal Door Construction

Metal swinging doors may be classified as hollow metal, metal covered, and tubular. Metal swinging doors are generally more difficult to force because of the manner in which the door and door jamb are constructed. This difficulty is also more acute when the jamb is set in masonry. It is generally considered impractical to force metal doors. The framework of hollow metal doors is constructed entirely of metal. The jambs are hollow and are fastened to the walls by specially designed metal anchors.
Metal covered doors are constructed essentially as hollow metal doors except that there may be a wooden core or metal ribs over which the metal covering is placed. The paneling sometimes consists of metal-covered asbestos.

The structural design of tubular metal is of seamless rectangular tube sections. A groove is provided in the rectangular tube for glass or metal panels. The tube sections form a door with unbroken lines all in one piece and are sometimes found on exterior openings of the more recently constructed buildings. The tubular doors are hung with conventional hardware except that the balance principle of hanging is sometimes used. The operating hardware consists of an upper and lower arm connected by a concealed pivot. The arms and pivots are visible from the exterior side only, and from the interior side the balanced door resembles any other door.

Tubular aluminum doors with narrow stiles are also quite commonly used. The panels of these doors are generally glass but some metal panels are used. Tubular aluminum doors are comparatively light in weight, strong, and are not subject to much spring within the aluminum frame.

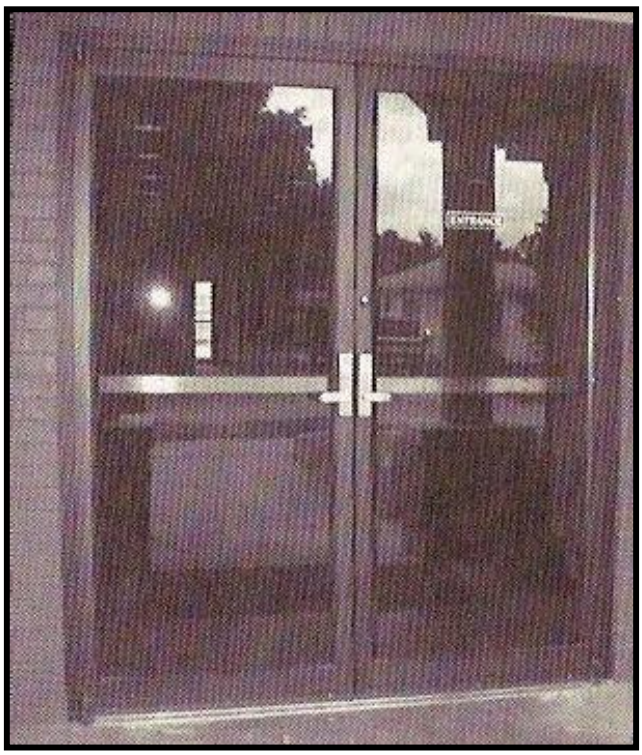

Figure 2 Tubular Door
Picture Taken From IFSTA Essentials

Swinging Doors

Locks and Fasteners

Door locks and fasteners for swinging doors consist of a bolt or bar that protrudes from the door into a metal keeper which is mortised into a door jamb. This bolt or bar may be part of the lock assembly or it may be entirely separate, but in either case the jamb must be sprung enough to permit the bolt to pass the keeper during forcible entry. Some special installations place two bars, one at the top of the door and one at the bottom, and such door locks are exceedingly difficult to force. A record of the type of door and how it is locked can be valuable to firefighters if such information is collected during inspection surveys or pre-fire plans.

OPENING DOORS

The method used to force a swinging door is determined, first, by how the door is hung, and secondly, by how it is locked. Before attempting to force any door, check to see if the door is locked, and whether or not the hinge pins can be removed. Also, the conditions of the building should be observed, and hoselines should be made available for use. Firefighters should then feel the door for heat by using the back of the hand, which is more sensitive to heat. The temperature of the door will indicate whether a backdraft (explosion) is likely when the door is forced or opened.

NOTE: As a general rule, always try to use the fastest method to gain entry and access. When it is compatible with emergency operations, choose the method that will be the cheapest to repair or replace. (**REMEMBER**: Glass is cheaper and easier to replace than doors.)

Breaking Glass

In some cases, less damage may be done by breaking a small glass near the lock, through which the door can be opened from the inside. The act of breaking glass must be done in a certain manner to assure safety to the firefighter, because glass will shatter into fragments of keen cutting edges. Some of the principle safety features for breaking glass are:

Full turnouts
Face shield down
Stand to the windward side if possible
Keep hands above the impact point
Look away

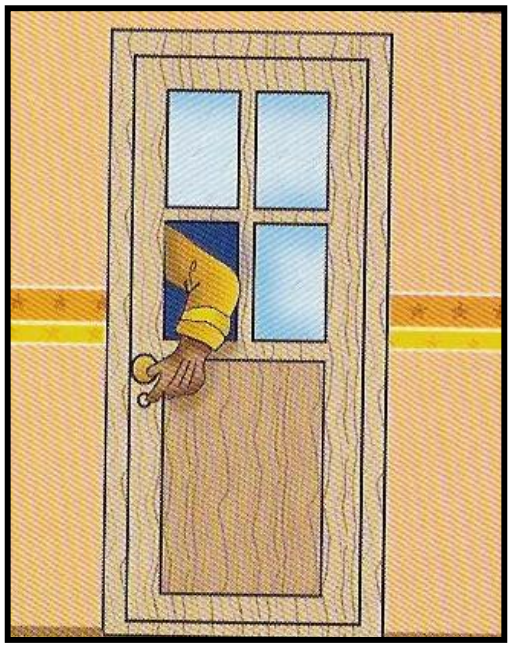

Figure 1
Picture Taken From IFSTA Essentials

This procedure permits the broken particles of glass to fall downward away from the hands and to the side of where the firefighter stands. The glass may be broken with an axe or other tools. **CAUTION**: never break glass with your hands. Full protective clothing should always be worn when breaking glass. After the glass is broken, all jagged pieces should be removed.

NOTE: The firefighter is shown using a pick-head axe. When the window is above your shoulder or when further distance from the window is desirable, a pike pole should be used to break the glass.

First, scrape the edge closest to yourself, then the top, the far edge, and lastly the sill.

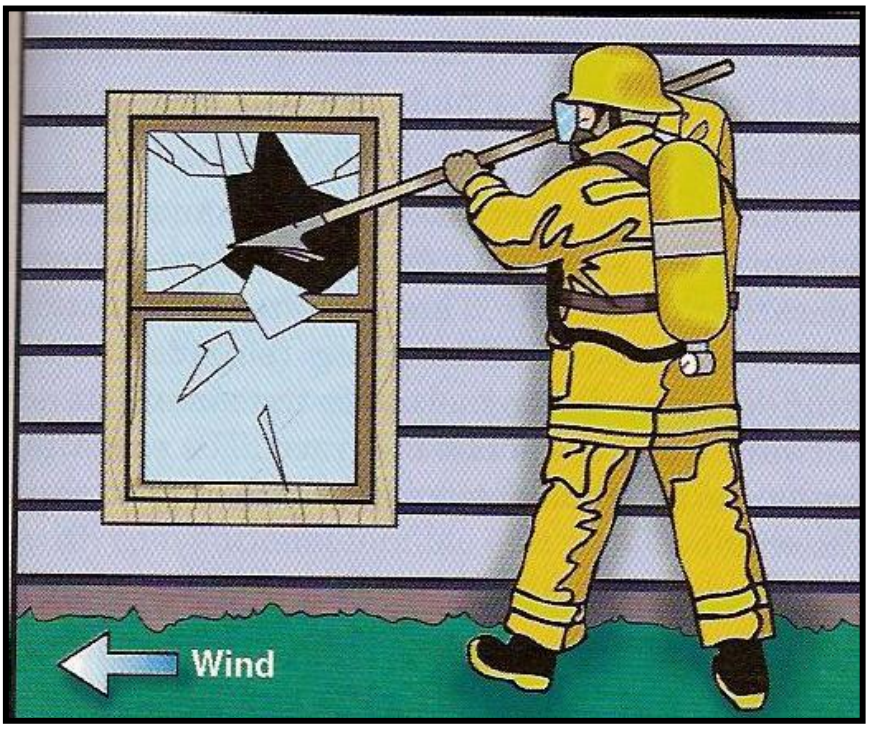

Figure 2
Picture taken from IFSTA Essentials

<u>Forcing Doors that Open Toward the Firefighter</u>

The direction the door opens must be determined prior to forcing entry. The door hinges and door jamb may indicate the opening direction. If the door opens toward the firefighter, it must be forced in a certain manner. Several forcible entry tools may be used for this operation and the techniques of their use are similar.

Step 1: Insert the blade of the tool between the door and jamb, about 6" above or below the lock.

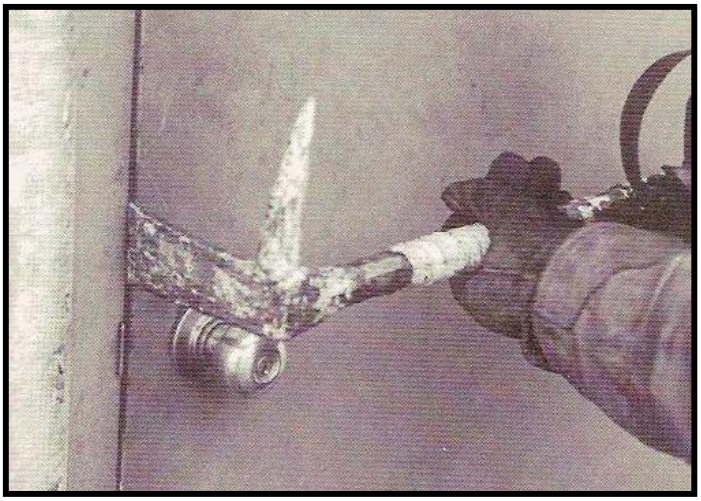

Figure 3

Step 2: Force the blade in and against the rabbet or door stop by working and pushing on the tool (the tool may be hammered with a flat head axe).

Step 3: Pry on the tool bar away from the door to move the door and jamb apart.

Step 4: Pull the door open or pry open with another tool when the lock has cleared the keeper.

This procedure can be done with different tools, such as a spanner, axe blade, pry bar, pry axe or a ram bar, as well as with the Haligan Tool. If two tools are used, insert both tools between the jamb and the door, one above the lock and one below. By alternately prying with one and catching a bite with the other, more force can be applied.

Forcing Doors that Open Away from the Firefighter

Swinging doors that open away from you present greater difficulties. If the door is in a stopped frame, the blade of the tool may be inserted between the stop and the jamb, the stop lifted, and the tool inserted between the door and jamb near the lock. By separating the door away from the jamb, you may spring it sufficiently to permit the bolt to pass the keeper.

Under certain conditions, it may be better to remove the stop completely. The steps in forcing a door that opens away from you, when stops are used on the jamb, are as follows and shown in the illustration. The stop has not been completely removed from the jamb.

Step 1: Bump the cutting edge of the tool against the stop to break the paint or varnish so the blade can be inserted.

Step 2: Loosen the stop at the lock or remove the stop completely.

Step 3: Start the blade between the door and the jamb.

Step 4: Make the initial pry only after the blade is halfway in, to permit the blade to be worked and pushed.

Step 5: With a full bite behind the door, pry the door away from the jamb until the bolt passes the keeper.

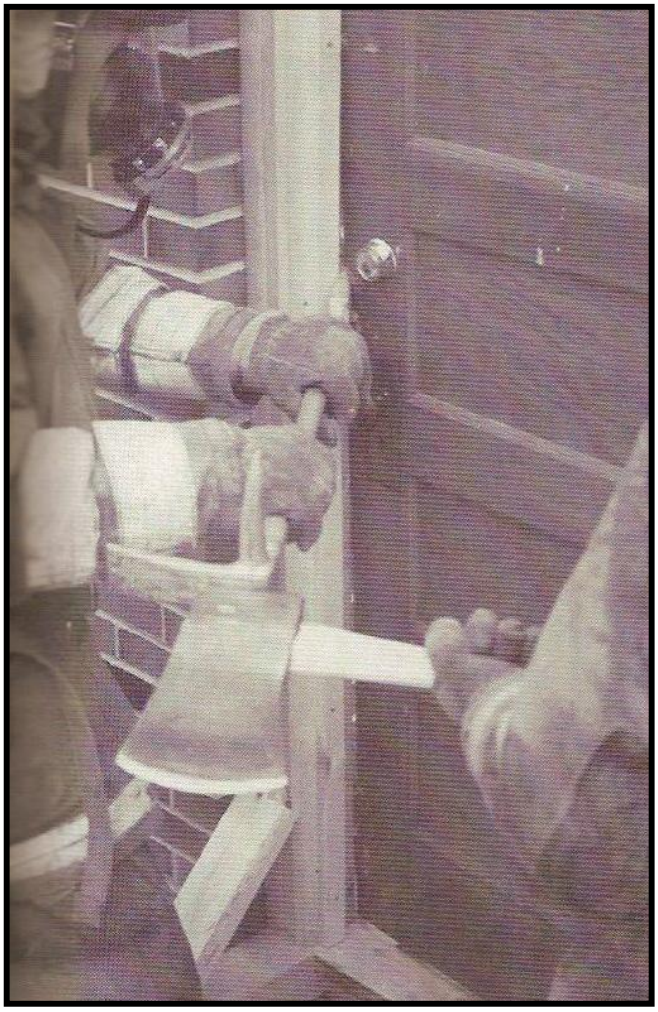

Figure 4

If the door to be opened swings away from you is in a rabbeted jamb, it can be forced by using two tools. Prying against the door with one tool should open a crack between the door and the rabbet, into which the blade of the second tool can be inserted. After the blade of the second tool has been forced well into this opening between the door and the jamb, the door may be pried sufficiently to permit the bolt to pass the keeper. Even with two tools, forcing this type of door construction may be quite difficult.

Double Swinging Doors

Double swinging doors may be forced with most pry tools by prying the two doors sufficiently apart at the lock to permit the lock bolt to pass the keeper. Sometimes a wood molding is fastened to one or both wooden doors where they come together at the center. The purpose of this molding is to cover the crack between the doors when they are closed. In this event, this molding must be removed before the blade of the tool can be inserted. Swinging double doors are sometimes secured with a bar on the inside wall. If the opening between the doors is sufficient to permit the insertion of a flat tool or object, a bar can sometimes be lifted or bumped from the stirrups.

Tempered Plate Glass Doors

Recent trends in building construction and the modernizing of older structures have increased the use of tempered plate glass doors. Such installations are frequently encountered in fire fighting operations. The breakage characteristics of tempered plate glass are quite different from those of ordinary plate glass. This difference is due to the heat treatment that is given to the glass during tempering. The results of heat tempering plate glass produce high tension stresses in the center of the glass and high compression stresses in the exterior surfaces. These tension and compression stresses balance each other.

The heat treatment given to tempered plate glass increases its strength and flexibility. Its resistance to shock, pressure, impacts, and temperatures is also increased. Tempered plate glass is said to be approximately four times as strong after tempering as before. It is several times more resistant to impact and will withstand, without breaking, a temperature of 650^{O}F (343^{O}C) on one side while the other side is exposed to ordinary ambient temperature. When broken, the sheet of glass suddenly disintegrates in relatively small pieces. The glass should be shattered about 14 inches, or knee-high, from the bottom and then cleaned out of the frame. To break the glass, use the pick of a pick-head axe.

Although tempered plate glass doors may be locked at the center, top, or bottom of the door, its resistance to shock and its rigid characteristic make it almost impossible to spring with forcible entry tools. Tests that have been conducted warrant the basic conclusion that firefighters should use every other available means of forcible entry before deciding to gain entrance through an opening that is blocked by a tempered plate glass door. Tempered plate glass door panels are considerably more expensive than any other glass-paneled doors of similar size. Each door is, in a sense, custom-built and the cost of installation varies. The time necessary to prepare a replacement door and have it installed may be considerably longer than for other types of doors.

Plate glass doors frequently have narrower side wing panels installed in the doorway opening. These panels should be regarded with the same precaution as the door. Whenever it is necessary to break tempered plate glass door panels the pick point of a standard fire axe should be used. A firefighter should wear a suitable faceshield to protect against eye injury, or turn away from the door as the glass is being broken.

Fragmentation of the tempered plate glass is in small granules with relatively blunt points and dull edges, while plate glass breaks into much larger sharp and pointed pieces. Plate glass fragments have sufficient weight and force to cause serious cuts or stabbing injuries. There is less hazard involved in breaking a tempered plate glass door panel than there is in breaking ordinary plate glass panels of the same size.

Sliding Doors

The sliding patio door presents the greatest problem from a forcible entry point of view. These units consist of heavy duty, full panel glass that is set into a metal or wood frame. These glass panels are sometimes doubled, "thermopane," or tempered which adds to their value. Patio sliding doors usually slide past stationary glass panels instead of disappearing into a wall. Breaking these glass panels to gain entrance is **not** recommended. Sliding patio doors can, however, be forced open by inserting a wedge tool between the jamb and the door near the lock and prying the door away from the frame. Patio sliding doors may sometimes be barred or blocked by a metal rod or a special device. This feature can easily be seen from the outside and it practically eliminates any possibility of forcing. On older homes, the patio doors may be opened by placing a tool point or a screwdriver under the door and "jimmying" the door up. This may allow the door to bounce free of the hook.

Overhead Doors

Overhead doors may be constructed of metal, fiber glass, or wood framework with wood or glass panels. From a forcible entry point of view, the sectional door does not present a serious problem unless it is motor driven or remote controlled.

The latch is usually in the center of the door and it controls the locks which are on each side of the door. The lock and latch may also be located on only one side. Overhead doors may be forced by prying upward at the bottom of the door with a good prying tool, but less damage will be done and time will be saved if a panel is knocked out and the latch is turned from the inside.

Rolling steel overhead doors, that are found in many commercial areas, may sometimes be forced by prying upward at the bottom. However, if this is the access to be used, the door may need to be cut. The circular saw is used to cut a "door". Two or three sides need to be cut, then pull the metal down for entry. Care must be taken around this door as the integrity of construction is defeated.

Garage doors are usually locked by a Hasp and lock. Entry is made by cutting the Hasp. This method will not work on garage doors with automatic door openers. In fire situations, involving the garage, remember to block open the door as the springs may have lost their strength in the heat.

OPENING WINDOWS

There are many different types and designs of windows through which firefighters must force entrance to perform their duties of rescue and fire extinguishment. Each type presents a different technique if effective forcible entry is to be accomplished through them. It is often easier to force a window than to force a door, and entrance through a window may permit a door to be opened from the inside. The types of windows which will be studied here are double hung or checkrail, hinged or casement, factory or projected, and louver windows.

Double Hung (Checkrail Window)

Checkrail or double hung windows may be made of either wood or metal, but the construction design is quite similar. They usually consist of two sashes that meet in the center of the window, known as the upper and lower sashes. These two sashes may be locked together by a latch or bolt on the inside. Wood checkrail windows are not difficult to pry open if the latch is on the checkrail, for the screw of the lock will pull out and the sashes will separate. Practically any prying tool may be used, such as an axe or spanner wrench. The pry should be made at the center of the lower sash if the sashes are locked at the center of the checkrail.

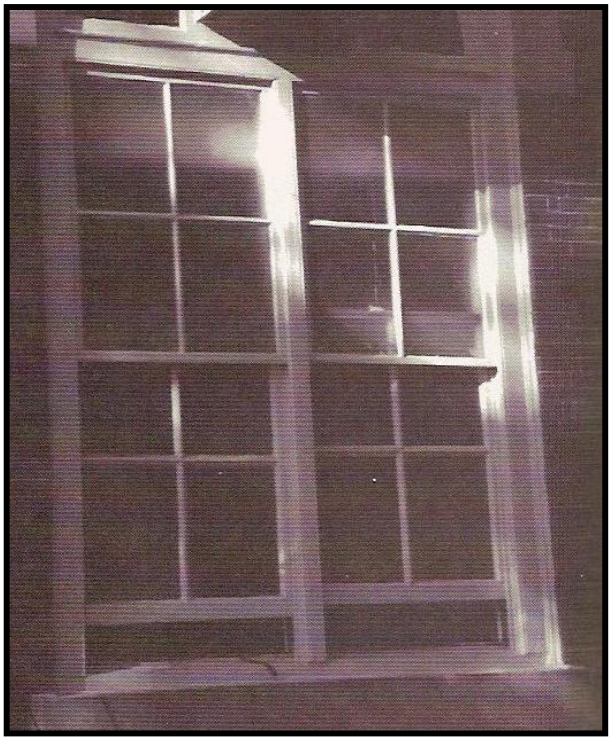

Figure 1

Picture taken from IFSTA Essentials

Forcing sash bolt locks in metal windows presents a different problem. The latch or lock is not likely to give under pry, and excessive damage may be done and more time expended than if the glass were broken near the lock and the window unlocked from the inside. Wire glass often requires more force to break, and the use of the blade or pick of the axe instead of the flat part may sometimes prove advantageous.

Casement Windows

Casement or hinged windows are usually made of metal, but wood casement windows are used. They consist of one or two sashes which are hinged on the side and they swing outward from the opening. If screens are employed, they are located on the inside opposite the direction which the windows swing. Various kinds of casement windows, locks, and operating devices are available. The operating mechanism must also be reached to open the window in addition to the latch. To reach the latch involves cutting the screen and it is quite obvious that the screen must be removed if entrance is to be made at this point. Because of these conditions, the most practical way to force entrance through casement windows is as follows:

- Break the lowest pane of glass and clean out sharp edges.
- Force or cut the screen in the same area.
- Reach in to unlock the latch and then operate the cranks or levers.
- Remove the screen completely and enter.

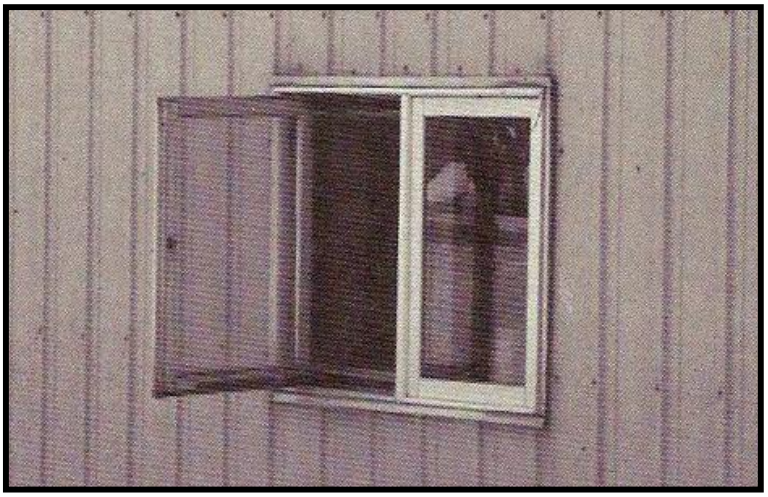

Figure 2

Picture taken from IFSTA Essentials

Projected Windows

Projected or factory windows are ordinarily made of metal and they may project in or out from an opening. They may be pivoted in the center or they may pivot at the top or bottom. "Projected-Out" factory windows swing outward at the bottom and slide down from the top in a groove which is provided for that purpose. "Projected-In" factory windows swing inward at the top and they are usually hinged at the bottom. Pivoted projected windows are usually operated by a push bar that is notched to hold the window in place. Screens are seldom used with this type of window but when present, they are on the side opposite the direction of the projection. The most practical method of forcing factory-type windows is the same as has been previously described for casement windows, except that the crank-operated utility windows are often of the projected window type and they are locked similarly to all other projected windows. Entrance may be made by applying similar techniques.

Louver Windows

Although awning and jalousie windows are often considered to be the same type, there are two main differences that should be considered in a study of forcible entry. Both types are sometimes referred to as **louver** windows, because of their methods of operation.

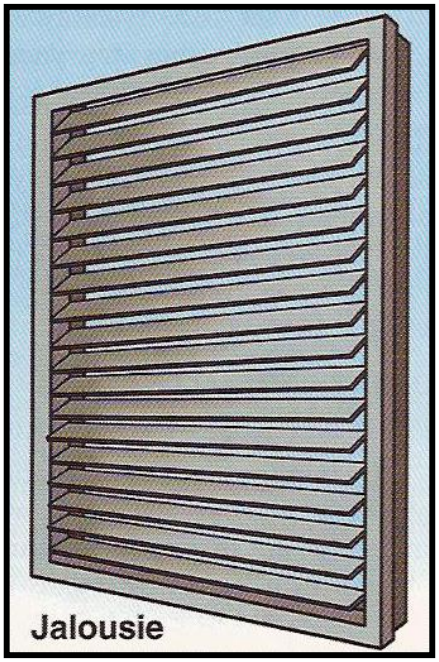

Figure 3
Picture taken from IFSTA Essentials

Awning windows consist of large sections of glass about one foot wide and as long as the window width. Jalousie windows consist of small sections about four inches wide and as long as the window width.

Awning window sections are constructed with a metal or wood frame around the glass panels which are usually double strength glass. Jalousie window sections are usually without frames, and the glass is heavy plate that has been ground to overlap when closed.

The glass sections of both awning and jalousie windows are supported on each end by a metal operating mechanism. This mechanical device may be exposed or concealed along the sides of the window, and each glass panel opens the same distance outward when the crank is turned. The operating crank and gear housing are located at the bottom of the window. Awning or jalousie windows are the most difficult of all types to force. Even with the louvers open, it is obvious that there is not enough room between the louvers to permit a person to enter. Entrance through these windows requires several panels to be broken out. Because of the cost of jalousie windows, these openings should be avoided.

Plexiglass Windows

A current trend in the construction industry is the use of Plexiglass and other thermoplastics in place of glass windows. "Lexan" is an example of one such polycarbonate which has seen wide application as a glass substitute because of its ability to withstand abuse from vandalism or weather. Lexan is 250 times stronger than safety glass, 30 times stronger than acrylics, and is classified as self-extinguishing. It is 50 percent lighter than glass and 43 percent lighter than aluminum. Lexan is available in thicknesses ranging from 1/8 to 1/2-inch (3 mm to 13 mm). Various tests have been conducted by fire departments across the country to gain information on the best way of forcing entry into Lexan windows. These tests along with actual field experiences indicate that a circular saw with a carbide tipped blade is most effective when entry must be made through Lexan.

Barred Windows

To free bars in masonry, a firefighter should strike the bar with a sledge about ten inches above the sill. As the bar bends, the end will sometimes pull free of the sill. Another method is to strike the sill with a sledge opposite the end of the bar. A blow at this point will sometimes crack masonry sufficiently to release the end of the bar. Still another method is to start a hammerhead pick in the masonry sill at the edge of the bar. Strike the head of the pick with a sledge to crack the masonry sufficiently to release the end of the bar.

OPENING WALLS

Masonry and Veneered Walls

The opening of masonry walls is often referred to as **"breaching."** One appliance which may be used is known as a battering ram. The battering ram is made of iron with handles and hand guards. One end is jagged for breaking brick and stone and the other end is rounded and smooth for battering walls and doors. The ram requires two to four firefighters for use.

Metal Walls

Metal and prefabricated metal walls are becoming more and more popular for exterior wall construction. Construction of this type can be found in storage buildings, service stations, store fronts, and in other commercial structures. The metal for these walls is usually in the form of sheets, sections, or panels. These metal sheets are fastened to wood or metal studs by bolts, screws, rivets, or by welding. The metal may have a painted or a porcelain coated surface, and a damaged panel may be difficult to replace. Entrance through a door or window is usually preferred to opening a metal wall and its breaching is usually considered as a "last resort." If opening a metal wall cannot be avoided, a metal cutting power saw is normally the best way to open the wall. The panels should be examined to determine if there are studs or other supports or if the walls support the entire structure. It is extremely important to be sure that the material to be cut will not weaken the structure or that electrical wiring or plumbing is not cut. A neat opening will be easier to repair and, when possible, the entire sheet or panel should be removed. The metal should be cut along the studding to provide stability for the saw and ease of repair.

After the metal is cut, it should be removed and placed in a location where it will not endanger the firefighter.

Wood Frame Walls

Wood frame walls are constructed with wood or fiberboard sheathing nailed over the studs. The exterior siding, which may be wood clapboard, board and batten siding, asbestos shingles, stucco, or other exterior finish, is fastened over the sheathing. When opening a wood frame wall, it is extremely important to watch for electrical wiring and pipes. The need for opening a wooden wall is often to gain access to the area involved by fire between studs. The procedure for opening a wood frame wall is the same as for roofs and floors except that the opening will be vertical instead of horizontal. Remove the siding, sound the wall for stud supports, and cut along a stud.

Partitions

Partitions should not be opened unless there is an indication of fire in the wall. Three ways to determine if the partitions contain fire are feeling on the wall for hot spots,

looking for discolored wallpaper or blistered paint, and listening for the sound of burning. The partition should be opened on the side where opening will cause the least damage. If possible, place a salvage cover on the floor before opening the partition. An opening in a partition should be made only in the area where fire is indicated, and the wall covering should be cut along the studs and removed.

KNOX BOXES

This system provides the security that the building owner needs and is available at no cost to the department because the building owner purchases the equipment. Rapid entry key box systems are easily installed on any building. All necessary keys to the building, storage areas, gates and elevators are kept in a key box mounted at a high visibility location on the building's exterior. Only the fire department carries the master key that will open all the boxes.

The Fire Department should indicate the desired location for mounting, inspect the completed installation, put the building keys inside, then lock the box with the department's master key. Unauthorized duplication of the master key is prevented because key blanks are not available to locksmiths and cannot be duplicated with conventional equipment. They are provided by the factory when the system is first put into use and are controlled strictly through an authorized signature release method. This approach provides a high degree of security and eliminates the need to carry individual building keys on the apparatus, and perform destructive forcible entry. Master knox box keys are kept in a locked security box bolted to the dash of each apparatus.

Figure 1
Picture taken from IFSTA Essentials

Knox boxes are also used at certain facilities (federal O.S.H.A. requirement) to provide access to Material Safety Data Sheets (MSDS) and/or to Hazardous Material Contingency Plans. The boxes are large but controlled by the same master key.

THROUGH-THE-LOCK FORCIBLE ENTRY

In the mid-sixties, with fire and security problems, fire departments realized that an easier method of forcing entry to structures had to be devised. Again, we were still one step behind burglars, and in this case we began to learn from them.

We learned that almost all locking devices worked by one of two simple mechanical manipulations. To jump ahead, these are a cam action or a simple twisting of a tool shape. The thing that was in our way was the lock cylinder itself. Why not pull it out of the way to enable us to manipulate the locking device inside the door with a relatively simple method?

The first method to be employed was the use of the modified nail puller. The theory was to get behind the cylinder on the door face and by a prying motion, pull the barrel of the lock, containing the tumbler assembly and lock manipulating mechanism, out of the lock assembly. The objective is to simply replace the activating mechanism with a homemade device of our own. In most cases, these homemade tools were nothing more than a straight screwdriver and another with a 90^{o} bend in the blade. Soon, the security industry replaced the brass lock face with a break away face. This removed our fulcrum point and made this procedure less effective.

The development of the **K-tool** was the answer to this problem. The case-hardened steal blades in the shape of a "K" were now driven down onto the barrel of the lock and into the brass body. No longer did we have to rely on the frangible lock face for a prying surface.

The K-tool, however, depends on the lock cylinder protruding from the face of the door. Security conscious citizens now began to install their lock tumblers flush with, or slightly depressed with the line or surface of the door. The **A-tool** was a natural development in response to this problem. A few taps of the tool drives it into the door sheathing slightly above the lock cylinder. Now, downward blows will bring the blades of this tool behind the face of the lock and into the brass barrel of the lock.

Figure 1 *Picture taken from IFSTA Essentials*

The purpose of all these tool developments is only to remove the cylinder from our objective - the activating mechanism of the lock itself. Once out of our way, the cylinder activation mechanism can be replaced by one of our simple "key tools" and the lock device opened.

Key Tools

A key tool is used in forcible entry after a lock cylinder has been pulled. It is inserted into the cylinder opening and is manipulated to trip the inside locking mechanism. There are two type of key tools: Regular and 5/32" squared. The regular key tool is flat and tapered at both ends, with one end bent. The bent end is called the cam end because of the type of cylinder hole it is used in. The other end is called the flat or stem end. Regular key tools are used on all locks except police locks. The other kind, which is used for police locks, is called 5/32" square because of its dimensions.

FORCIBLE ENTRY SIZE-UP

As with all problems and decisions concerned with firefighting, size up is of paramount importance.

A. **Location.** Which door should we attack to effect entry? Normally-used, exterior entrances will be our objective in most cases. However, there are exceptions to this rule as we shall see later. Is this the proper door, suitable for fire control conditions? Are we on the proper "side" of the fire for:

1. Life. We must enter the door that will allow us to place water between the known or suspected life hazard and the fire. In some cases, this may mean entry from the rear of the occupancy.

2. Property. If a choice can be made, enter the side that allows for placement of streams on the fire and at the same time protect the most property.

B. **Time available for entry:**

1. Life Hazards. Known or suspected life hazards will indicate the time available to effect entry and the decisions afforded us.

2. Fire condition. The stage that the fire is in on arrival will affect our forcible entry action. If the fire is in the first or second stage, immediate entry is indicated; however, if the fire is in the third or fourth stage, the possibility of backdraft or smoke explosion will have to be planned for.

C. **Swing of the door.** As simple as this seems, one must know which way the door opens if he/she is going to be successful.

D. **Locked condition of the door.**

1. Test the door to be forced - it may be open.

2. If locked, try the door again with a little more pressure this time. You may get an indication which lock, if there is more than one, is the one engaged in the door. You will also be able to "feel" the strength of the locking devices.

E. **Size of the forcible entry problem:**

1. Door to be attacked:

   a. Is it weak or strong?

b. Number and location of the locking devices.

c. Presence of windows or panels in the door near the locking devices.

2. Door surroundings:

a. Window lights in the side panels of the door.

b. Very weak walls holding up very strong doors. It may be easier to punch through the wall and unlatch the door from inside.

TYPES OF LOCKS

In order to manipulate the locking devices on any door, it is necessary to understand how different locks work. There are two types of cylinders: Mortise cylinders and rim (stem) cylinders.

Mortise Locks - get their name because they are chiseled or mortised into the edge of the door. The threaded cylinder is then screwed securely through the face of the door and into the locking mechanism. The activation principal is the cam on the rear of the cylinder. As the key is inserted into the tumblers of the cylinder and turned, it turns a cam on the end of the keyway that comes in contact with the latch lever and slides the bolt out of the strike.

Tripping a Mortise Lock

When a mortise cylinder has been pulled and the cam end of a key tool is chosen, the next step is to establish a "6 o'clock" position to orient the later steps. The 6 o'clock position will not always be straight down as on a clock, but can be to the side. Tempered glass doors may feature this condition. Using it as a reference, insert the correct end of the key tool parallel to the 6 o'clock position, with the cam end pointing to either 5 o'clock or 7 o'clock. Try to depress the dead lock mechanism at one position. If it doesn't work, try the other position because the dead lock mechanism is usually found at 5 or 7 o'clock. If found at 5, depress it and slide to 7 o'clock. If found at 7, depress it and slide to 5 o'clock.

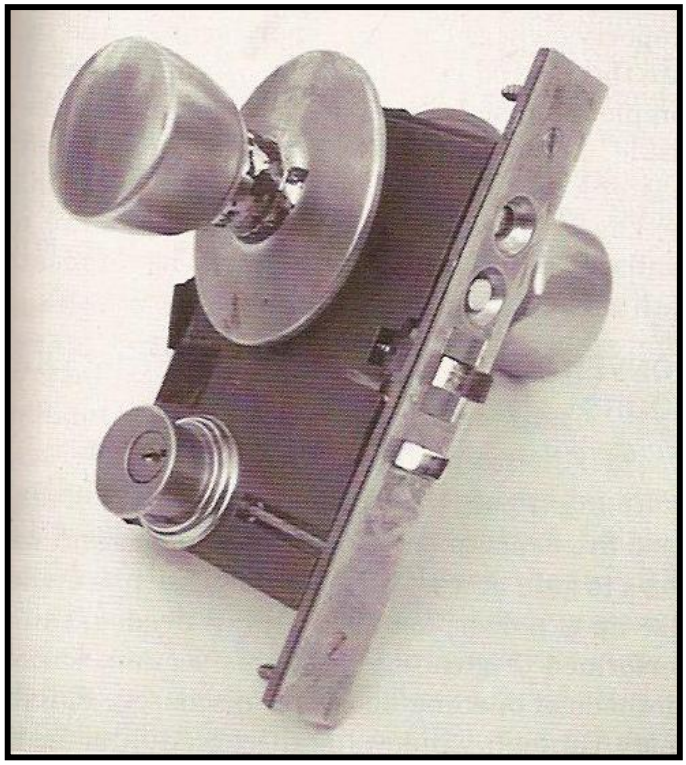

Figure 1

Picture taken from IFSTA Essentials

Rim Locks - are usually installed as an extra lock in addition to the mortise lock that came with the purchase of the door. Usually the higher the position of the lock cylinder on the door, the newer and stronger is the lock. These newer or additional locks are rim locks.

Rim locks have been given this name because they are held in the face of the door by a rim that does not allow the cylinder to pass into the drilled hole in the door. On the back of the cylinder are two tapped holes. They accept retaining screws that have first passed through a backer plate. When tightened, the cylinder is pulled tight against the rim on the outside of the door and the backer plate on the inside of the door.

Tripping a Rim Lock

When a rim lock cylinder has been pulled, use the flat tapered stem end of the key tool to replace the cylinder stem. Insert the key tool while holding it parallel to the ground and perpendicular to the door. Push it until it reaches the back of the lock and turn the tool to retract the lock. Some locks open clockwise, others open counterclockwise. Remember that a square stem on a police lock cylinder requires the 5/32" square key tool.

SAFETY PRECAUTIONS FOR FORCIBLE ENTRY

Always **"TRY, PRY, BREAK"**

Carry tools safely

Watch out for backdrafts

Block doors and windows open after entrance

Full protective clothing

Stand to the upwind side when breaking glass

Block all overhead doors open

One large opening is usually better than several small openings.

Watch bystanders when swinging axes.