

1981

EC81-2056 Keys to Security : Doors and Windows

Wanda M. Leonard

Follow this and additional works at: <http://digitalcommons.unl.edu/extensionhist>

Leonard, Wanda M., "EC81-2056 Keys to Security : Doors and Windows" (1981). *Historical Materials from University of Nebraska-Lincoln Extension*. 4560.

<http://digitalcommons.unl.edu/extensionhist/4560>

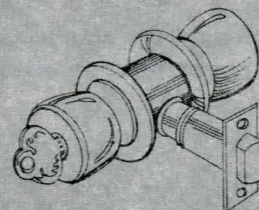
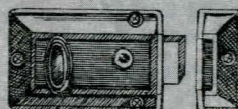
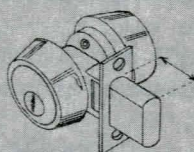
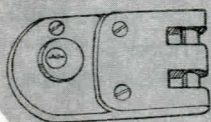
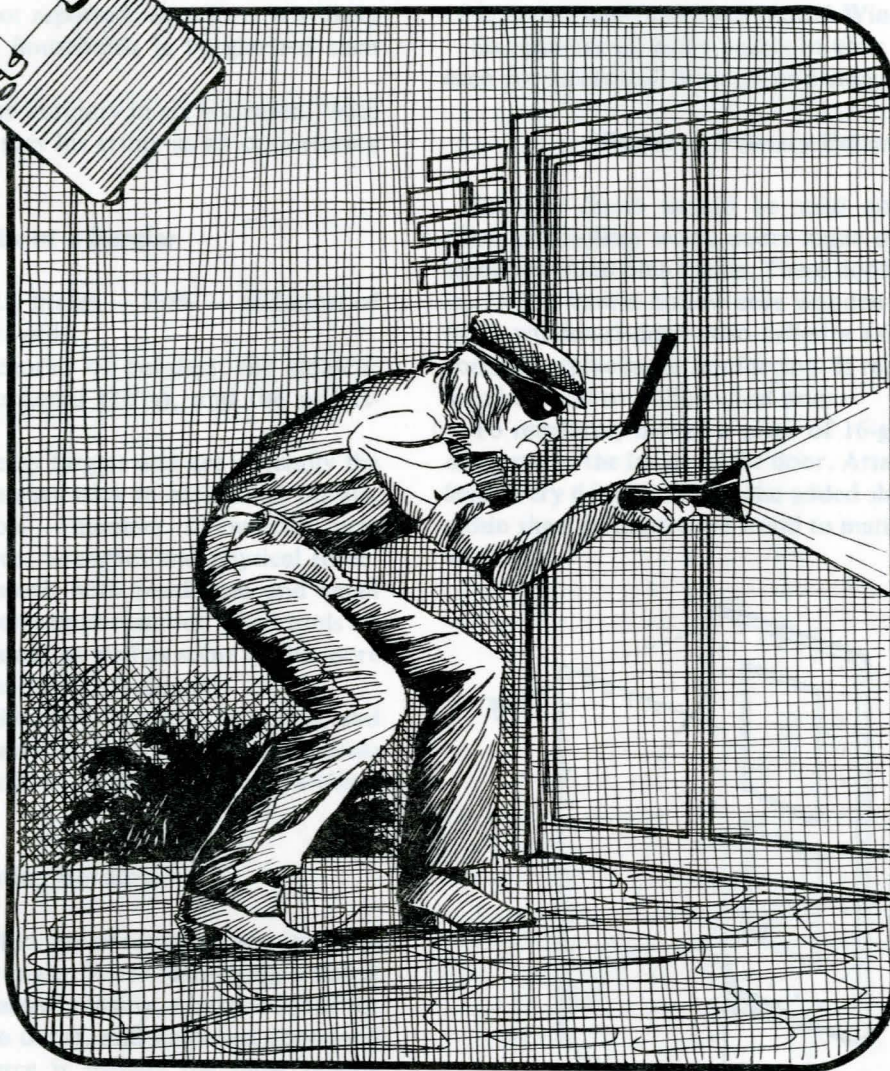
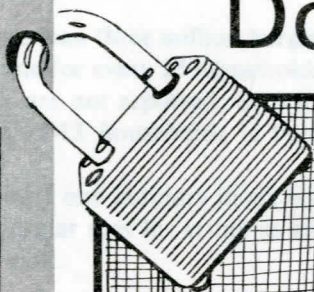
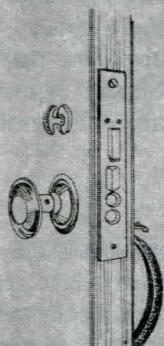
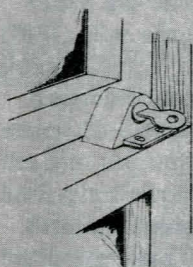
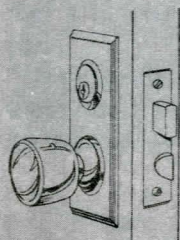
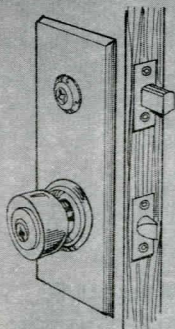
This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Historical Materials from University of Nebraska-Lincoln Extension by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

AGRI
#81-2056
C.2

Nebraska Cooperative Extension Service EC 81-2056

Keys to Security

Doors & Windows



Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Leo E. Lucas, Director of Cooperative Extension Service, University of Nebraska, Institute of Agriculture and Natural Resources.



Keys to Security

Doors & Windows

Wanda M. Leonard, Extension Community Resource Development Specialist

There are more than three million burglaries reported annually — or one for every 25 households. About half of all burglaries are not reported; therefore, it's likely that 1 in every 12-13 households is burglarized each year.

Nationwide, only one burglary in six is cleared. With those odds, a burglar sees his crime as an opportunity for gain at low risk.

Profile of a Burglar

Burglars are primarily males — 99% — and most of them are 14 to 25 years old.

There are three categories of burglars: the amateur (70%), the semi-professional (28%), and the professional (2%).

Amateurs look for easy targets and are generally the easiest to defeat. Amateurs stick to residential burglaries and use simple tools — hammer, screwdriver, pry-bars, plastic credit cards, wrenches and physical force.

Semi-professionals work both residences and small businesses, and they create opportunities. Their tools include those of the amateur as well as some of the more "sophisticated" professional techniques.

Professionals hit vulnerable, lucrative locations, and often work with someone on the "inside." Their tools involve lockpicking, drilling, sawing, removing window glass, and explosives.

Selecting the Target

Burglars tend to select an unoccupied residence by day and a business by night. After identifying a target that shows absence of activity inside, a burglar looks for easy entry points: open doors, and unlocked doors and windows. Physical force is usually the most readily available tool, so he'll attempt breaking door frames and hinges, smashing doors, crowbarring locks, windows, etc.

He's in a hurry, he doesn't want to be seen. If he can't gain quick entry he'll likely move on to an easier target.

Encourage Him to Move On

There's much that can be done to ward off a burglary. You probably can't make your home or business burglar proof, but you can make it burglar resistant.

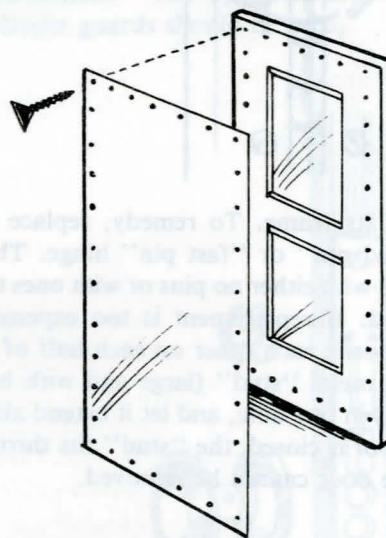
According to the FBI, more than 75 percent of all burglaries involve entry through doors. An astounding 18% are through unlocked doors! Windows come next.

So, identify all entry points to your home and check each for structural firmness and snug fit.

Doors — Primary Entrance

Exterior doors should be solid and sturdy. Many doors are hollow wood doors made of thin decorative wood mounted on a frame. These doors are easy to kick in. If you have a hollow-core wooden door, or a panel (with windows) door (also called a rail and stile door) consider replacing or reinforcing. If replacing, purchase a solid wood or hollow steel door.

To reinforce, mount a piece of 16-gauge sheet metal or plastic to the inside of the door. Attach with screws at least every 6 inches. Paint the added sheet or cover with a thin sheet of decorative wood to match existing woodwork.



Sliding glass doors, aluminum extrusion doors, overhead, receiving and garage doors are treated under Secondary Doors.

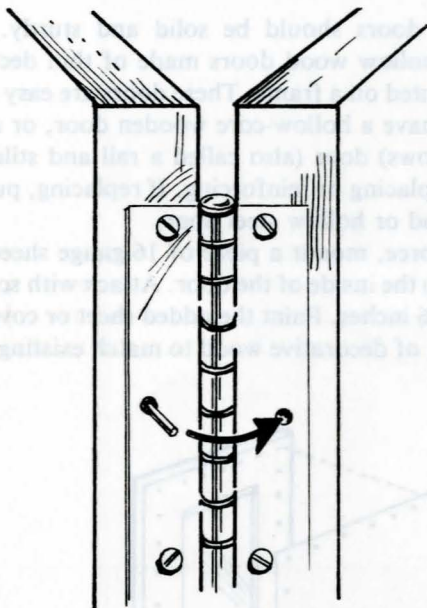
Door Frames

Door frames often are flimsy. To cut material costs, some builders use pine and/or fir for frames. Both pine and fir are soft woods and will collapse with a strong

push or kick. Door openings are roughed in during construction with the door frame shimmed (little wood wedges stuck in here and there) into place. Casing and molding is then placed around the door. The gaps around the door allow enough free play that a prying tool can be used to push the door back into the frame and disengage the locking mechanism. There is a remedy. Remove the casing surrounding the door and fill the gaps with wood or metal filler. **Do both sides of the frame!** You may want to fill the gap from top to bottom for both security and energy concerns, but as a minimum, fill at least 24 inches above and below the locking mechanism.

Hinges

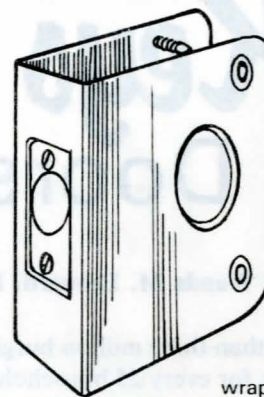
Hinges exposed on the outside are a risk because a burglar can remove the hinge pins and take the door



completely out of its frame. To remedy, replace the hinge with a "fixed pin" or "fast pin" hinge. These hinges are designed with either no pins or with ones that cannot be removed. If replacement is too expensive, drill two holes opposite each other on each half of the hinge and insert a metal "stud" (large nail with head removed will work) in one hole, and let it extend about 1/2 inch. When door is closed, the "stud" fits through both holes and the door cannot be removed.

Strike Plate

A common method of breaking through a door is by breaking the strike plate out of the door frame. The strike is the metal plate attached to the side of the door frame that receives the latch or bolt. Often the screws used to fasten the plate are too short. Use a longer-than-normal strike as well as screws long enough to go all the way through the frame and into the wall studs. The longer strike distributes the burglar's tool over a larger



wrap-around

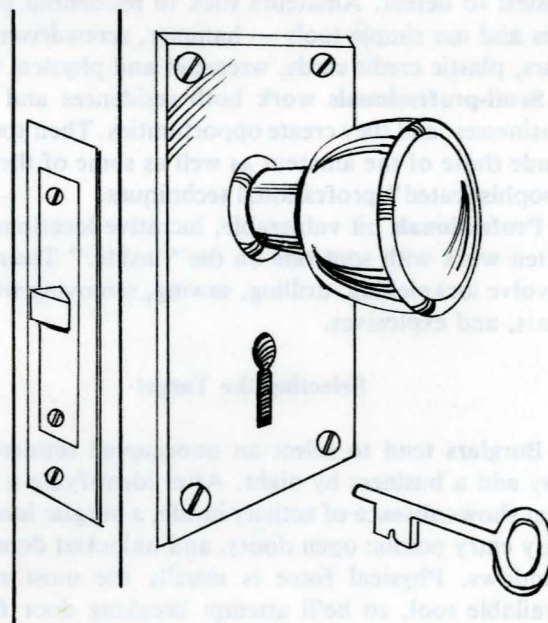
area, the longer screws fasten the strike securely.

Wrap-around strikes are often a top quality strike as well as reinforcement for the door frame.

Door Locks

Locks are a real problem. We want locks that prevent unwanted entry from the outside. However, we need locks that allow immediate exit from the inside in case of fire or other emergency.

If your current lock looks like a wedge-shaped latch, it's subject to "loiding," jimmying and prying. Loiding



is using a celluloid or plastic credit card or knife between the door and door frame to spread the door open enough for the latch to retract into the door, or "pop-out" of the strike. These types of locks have various names including skeleton key tumbler, warded lock, key-in-knob lock, spring latch and tumbler.

If your lock is surface mounted, it is vulnerable to a forceable push that knocks the surface lock and surface strike away from the door and frame. Surface mounted

locks include: chain lock, night latch, and vertical or horizontal rim lock deadbolts.

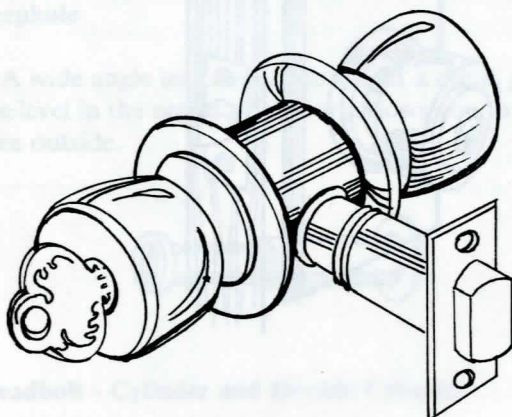
Lock Recommendations

Not Recommended

If you depend on these locks for security, consider installing an additional lock:

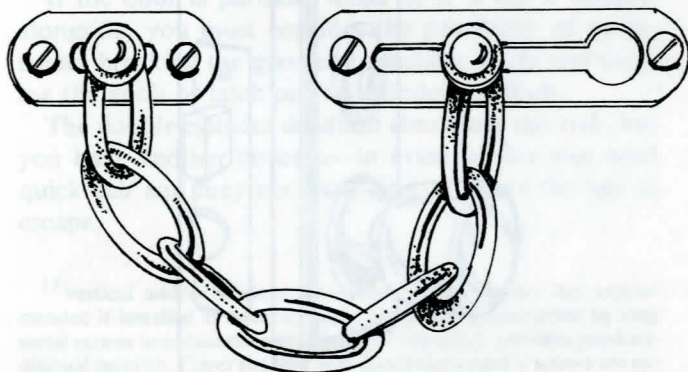
Key-in-Knob

This lock is found on almost 90% of recently constructed homes. The lock is vulnerable to three types of attack: 1) loiding, 2) frame spreading (prying), and 3) physical attack — breaking the knob off with a strong blow (hammer).



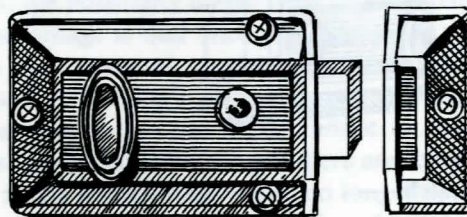
Chain Lock

This lock involves sliding a chain into a cavity. It allows partial opening to view the visitor. However, a good push on the already open door will knock the lock completely off. If you want to view a visitor before unlocking a door, install a peep hole.



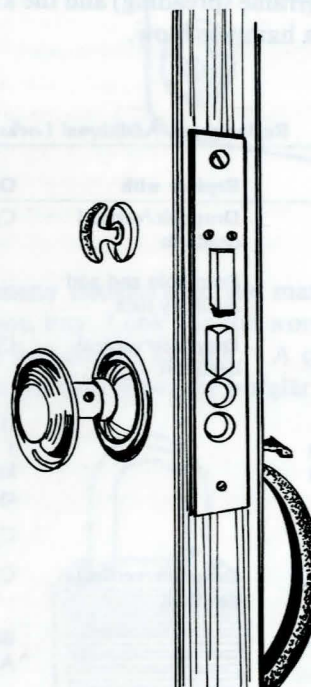
Deadbolts (rim locks)

Both vertical and horizontal deadbolt rim locks are available. The locks are surface mounted and do not provide the metal-to-metal contact necessary to secure a door. Screws in wood can be torn or pushed loose. Screws in metal cannot, at least not as easily.



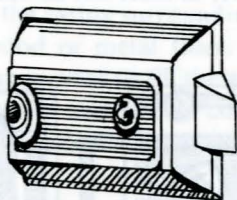
Mortise Lock

There are different types of the mortise lock (the lock cannot be exclusively ruled in or out of the recommended/not recommended categories). The lock features push in buttons on the edge of the door to hold the latch in a locked or unlocked position. Often the latch portion of the lock is **too short** to be effective against prying. Better quality mortise locks have bolts and latches that extend more than 1 1/2 inches into the door frame. The lock does withstand loiding, as well as "punch out destruction." The cylinders are easy to remove, so cylinder guards should be used.



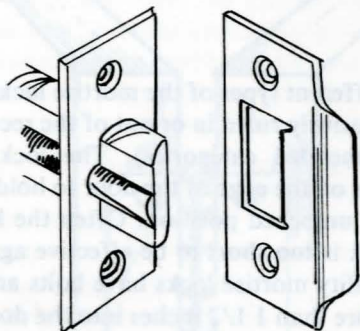
Night Latch

This latch is vulnerable to loiding. Also the latch is surface mounted and can be broken loose from the door by a pushing or kicking force.



Deadlock Latch

An added feature to the regular key-in-lock. A small solid bar extends into the locking cavity alongside the



latch. The deadlock portion is not vulnerable to the credit card/knife attack, but it is too short to be of any real value. The door can be pried open far enough to release the deadlock (frame spreading) and the knob can also be broken with a hammer blow.

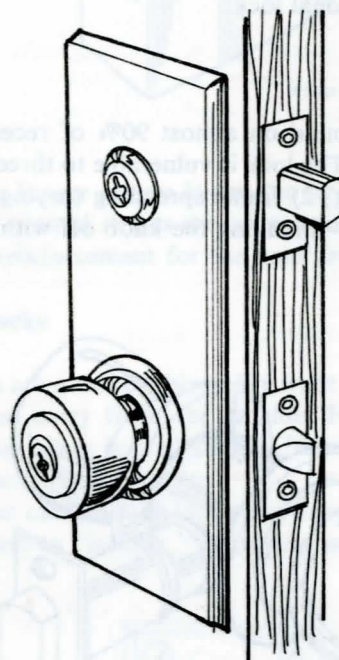
Replacement/Additional Locks

Type of lock currently in use	Replace with	Or add
Key-in-knob	Dropbolt/vertical deadbolt	Cylinder deadbolt
Chain	Peep hole and add auxiliary lock	
Skeleton Key	Dropbolt/vertical deadbolt	Cylinder deadbolt
Mortise lock (on wood doors) (on metal doors)		If deadbolt is over 1 inch in length, keep lock and add a cylinder guard
Night latch		Cylinder deadbolt
Deadlock latch	Dropbolt/vertical deadbolt	Cylinder deadbolt
Vertical deadbolt (rim lock)		Bolt through door. Add cylinder guard
Horizontal deadbolt (rim lock)		Bolt through door. Add cylinder guard

Recommended

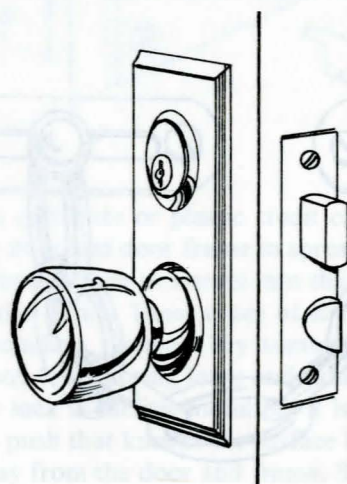
Interconnected Lockset

Two connected locks can be opened by the turn of one knob inside or single key outside. In addition to the latch-type lock, a mortised deadbolt serves as the security lock.



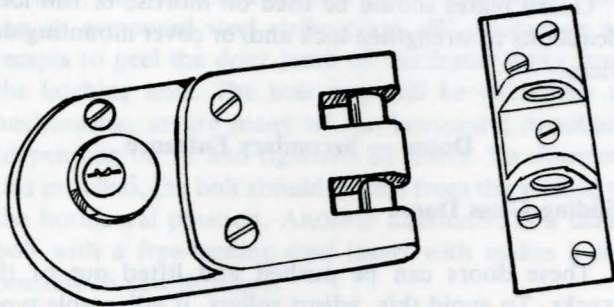
Deadbolt and Separate Latch

A thumb latch on the outside and a knob on the inside allows easy entrance and exit. The deadbolt is a separate unit and can be purchased with a single or double cylinder.



Dropbolt - Vertical Deadbolt^{1/}

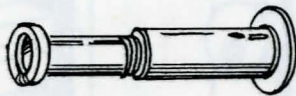
These locks can be used to replace most key-in-knob lock sets. Features include a vertical deadbolt as well as a nonlocking turn lever inside so door can be used unlocked. It serves as the primary opening and closing device as well as a deadbolt lock.



In Addition To Existing Mechanism

Peephole

A wide angle lens about the size of a dime, placed at eye level in the center of a door, allows you to view the area outside.



Deadbolt - Cylinder and Double Cylinder

A deadbolt is a straight, rectangular bar locked only by turning a key or knob. **The bolt bar should be at least 1 inch in length.**

There are three methods available for engaging the deadbolt: 1) cylinder—latch on interior side, key on outside, 2) double cylinder—key on both interior and exterior sides, 3) combination—no key, but a push button combination on both interior and exterior.

It takes thought to decide which engaging/disengaging features to select. All three deadbolts provide equal protection. The question is operation.

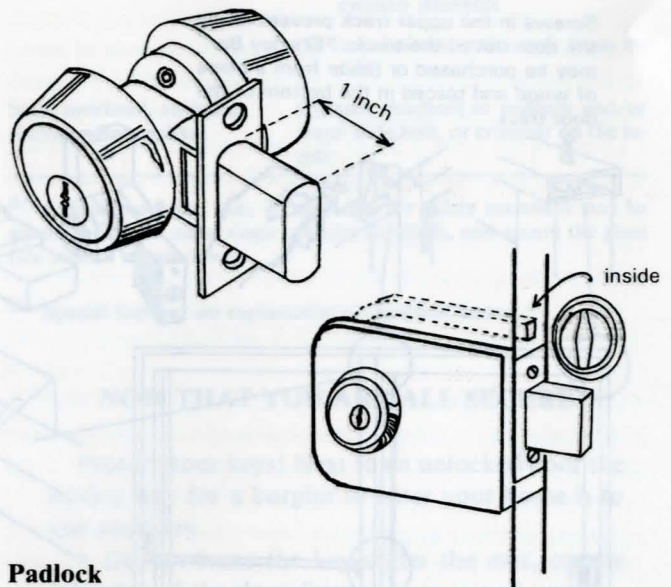
If the door is partially wood or if it has a window alongside, you must consider the possibility of an intruder breaking the glass and reaching inside and turning the knob or latch on the cylinder deadbolt.

The double cylinder deadbolt eliminates this risk, but you have another concern—in event of fire you need quick exit and may not have time to locate the key to escape.

^{1/}Vertical and/or horizontal deadbolt rim locks are not recommended if installed as a surface lock. If the lock is connected by long metal screws to obtain the metal-to-metal feature, it provides good additional security. Cover the lock with a cylinder guard if screws are exposed.

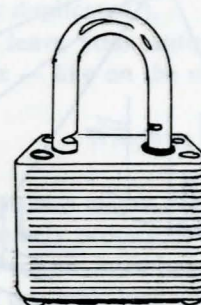
The combination lock has no key hole—it works with push buttons and a combination. A mechanically operated bolt will retract when the number buttons are pushed in the right sequence. One button pushed on the inside makes all the buttons inoperative even with the correct combination. The door can be opened from the inside by pushing a single unlock button, more time saving than a key in the event of a fire. Locking from the outside is accomplished by pushing a reset bar. With no keys, the possibility of key theft or loss is eliminated. A disadvantage is that once you have given the combination to someone (neighbor, caretaker while on vacation), you can't get it back like you can a key. The advantage is that the key(s) cannot be lost or stolen. This may be advantageous if there are school age children in the home—they would no longer need to carry a key, but rather memorize a series of numbers.

Special feature available, (1) the deadbolt extends from the vertical to the horizontal—this is more difficult to defeat than a standard bolt. This type is suggested for sliding doors and some business entrance doors. (2) A deadbolt with a free-turning steel insert makes it impossible to saw through.

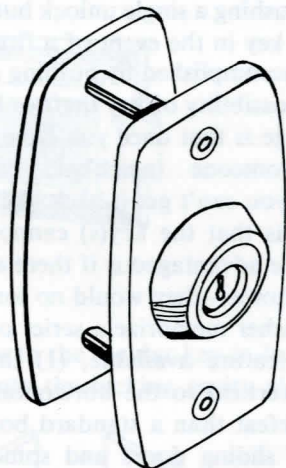


Padlock

There are many padlocks on the market. Read the label before you buy. Look for the words "tumbler," and "positive and double locking." A quality padlock made of hardened steel slows the burglar from hacking,

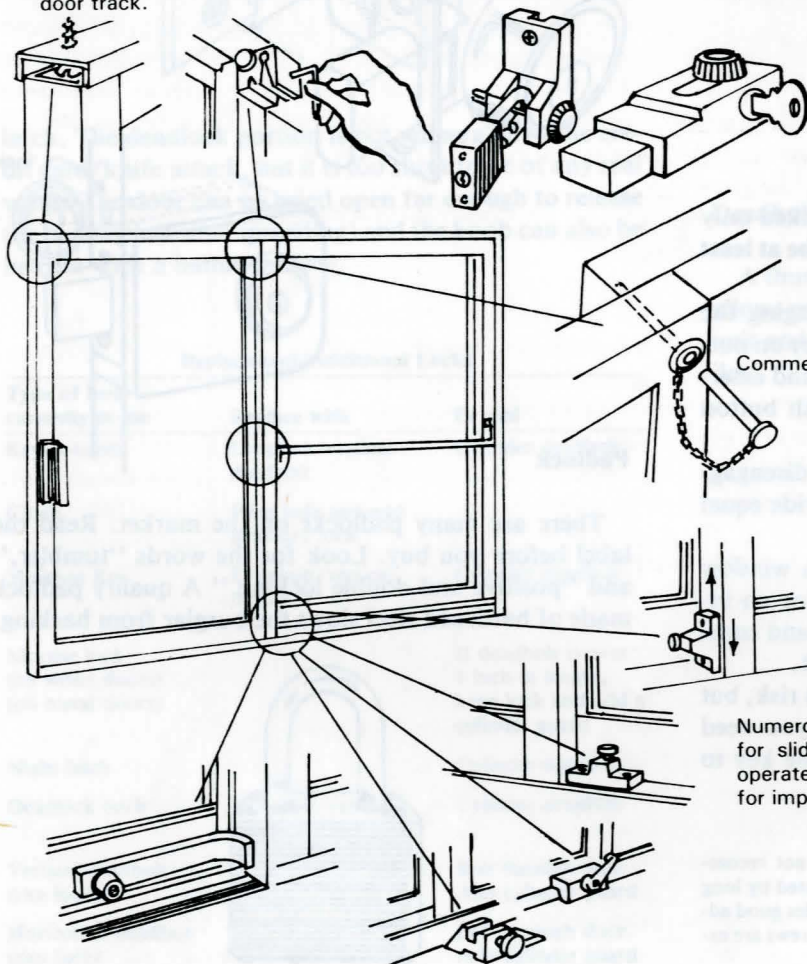


sawing, or cutting the lock. A tumbler mechanism prevents the "one key will fit all padlocks syndrome." Positive locking means that the shackle is not springloaded which is vulnerable to jimmying. Double locking—heel and toe—means both the permanently fastened and the free swinging portion of the shackle, lock.



METHODS OF SECURING HORIZONTAL-SLIDING DOORS AND WINDOWS

Screws in the upper track prevent lifting the door out of the track. "Charley Bar" may be purchased or made from a piece of wood and placed in the bottom of the door track.



Cylinder Guard Plates

Residential burglars often pull or twist the cylinder with a pipe wrench to open. Protect yourself against this type of attack with a cylinder guard. Many good locks come with a built in steel cylinder guard. If your lock doesn't have a cylinder guard, you can add one.

Guard plates should be used on mortise or rim lock deadbolts to strengthen lock and/or cover mounting devices.

Doors — Secondary Entrance

Sliding Glass Doors

These doors can be pushed and lifted out of the tracks. To avoid this, adjust rollers, if adjustable type, or open door and install metal screws in the top (inside) portion of the track. Leave only enough clearance to allow the door to roll freely. A metal or wooden bar (commercially called a Charlie Bar) can be placed in the inside track to brace it closed.

The door can be "pinned" by drilling a downward sloping hole through the track and into the door. Then insert nail to pin.

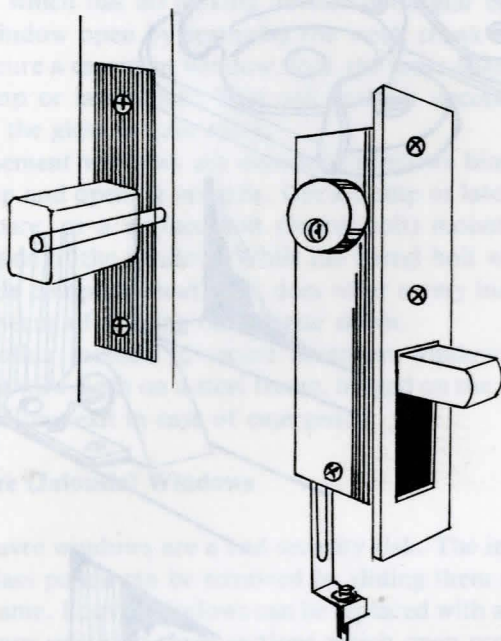
There are a number of locks available to secure sliding doors.

Commercial pin for sliding doors and windows.

Numerous locking devices are available for sliding doors and windows. Those operated by a key are usually preferred for improved security.

Aluminum Extrusion Doors

This door is often used for store entrances, as well as for apartment complexes and some homes. It is vulnerable because the aluminum frame and extrusion can be pried open. The lock extends out from the surface. To prevent removal of the cylinder with prying tools, a beveled, case-hardened cylinder guard is required. Adding an armoured steel strike plate will discourage attempts to peel the door jamb of the frame away from the latching bolt. The bolt may still be vulnerable to hacksawing, as are many of the horizontal deadbolts (depending on fit and tightness of door). To eliminate this problem, the bolt should extend from the vertical to the horizontal position. Another alternative is a deadbolt with a free-turning steel insert with makes it impossible to saw through.



Overhead, Receiving and Garage Doors

These doors may roll overhead, swing, slide, or be accordion style. Whatever the type, they are usually constructed of lightweight material to facilitate movement and operation. Roll-down doors should be locked by electric power or equipped with a slide bolt on the bottom bar with a cylinder deadlock. Other garage-type doors should be secured with cylinder deadlocks, padlocks, and/or metal slide bars, bolts, or crossbars on the inside.

Match a Door With Proper Lock

Type of door	Suggested lock
Wooden	Deadbolt (many styles for replacement and auxiliary)
Wooden with glass	Deadbolt ^{a/} (many styles)
Metal	Deadbolt (many styles)
Double	Vertical deadbolt
Aluminum	Deadbolt with steel cylinder ^{b/}
(business doors)	Deadbolt (vertical to horizontal) ^{b/}
Patio	Metal screws on top track to prevent door from being lifted out.
	Deadbolt lock - especially designed for patio doors (horizontal to vertical) ^{b/}
	Slide bolt made for sliding doors
	Charlie bar (crossbar)
	Pinning
Overhead/garage (business freight doors, machinery building and residential garages)	
Roll down type	(1) Electric power (2) Slide bolts on the bottom bar and a cylinder deadbolt (3) Cane bolt (operable only from inside)
Solid overhead, swinging, sliding, or accordion	Cylinder deadbolt or padlock and/or metal slide bolt, or crossbar on the inside.

a/ A double cylinder may be used, but for safety reasons it may be advantageous to use a single cylinder deadbolt, and secure the glass (see section on windows).

b/ Special feature, see explanation of deadbolt locks.

NOW THAT YOU ARE ALL SECURE

Protect your keys! Next to an unlocked door the easiest way for a burglar to enter your home is to use your key.

- Do not leave the key under the mat, on the top edge of the door frame, or on a nail nearby.
- Do not put your name or address on your key ring.
- Do not leave building keys along with car key when leaving your car for servicing or with a parking attendant (it's a simple procedure to have the building keys duplicated!).
- Do not leave your automatic garage door opener visible — like on the visor.

Windows

Windows offer easy access to a home or other building unless adequately protected.

Windows and frames must be secure and in good condition. The best available lock will provide little protec-

tion if the window frame is rotten or can be pried loose.

Some people maintain all windows should be equipped with a key lock. Others argue that a key lock should never be used because, in case of fire, lives could be lost while fumbling for a key.

If window locks **are** used, the key should be attached to a light-weight chain, long enough to reach the lock. The chain and key must be out of sight to the would be intruder, and at the height that a child can reach.

Locks could be placed on all ground floor windows and engaged only when the family is away on vacation, or when the business operation closes for the day.

Another method of securing windows is by properly installed **grates**. This method will give maximum security.

Glazing (safety glass) and glass bricks are expensive, but highly effective in preventing burglaries.

Types of Glass

The type of glass selected will depend upon the individual circumstances and the goal to be achieved. In addition to the standard glass used in most windows, there is **glazed glass** available in polycarbonate and acrylic materials, **laminated glass** which has a high-tensile plastic layer pressed between two sheets of glass, and **wire-mesh safety glass** which consists of wire mesh embedded in standard glass.

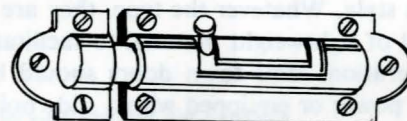
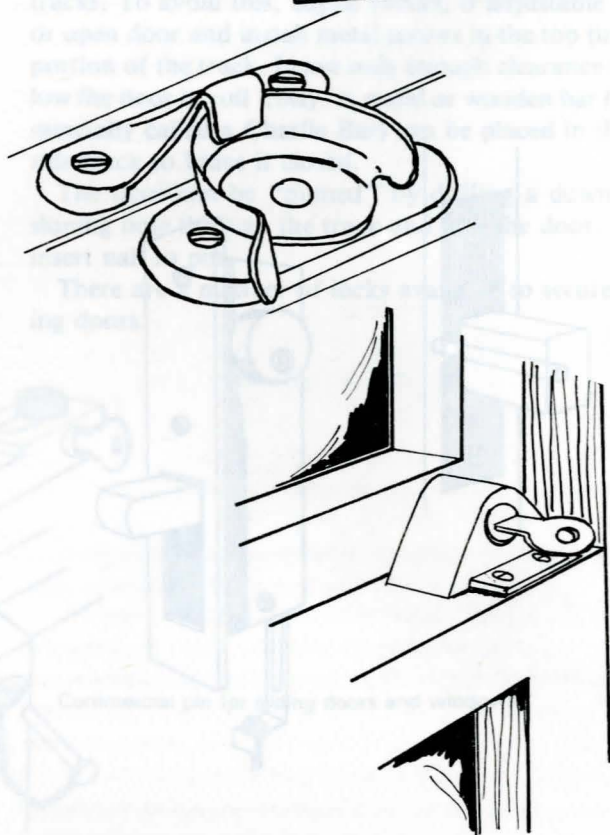
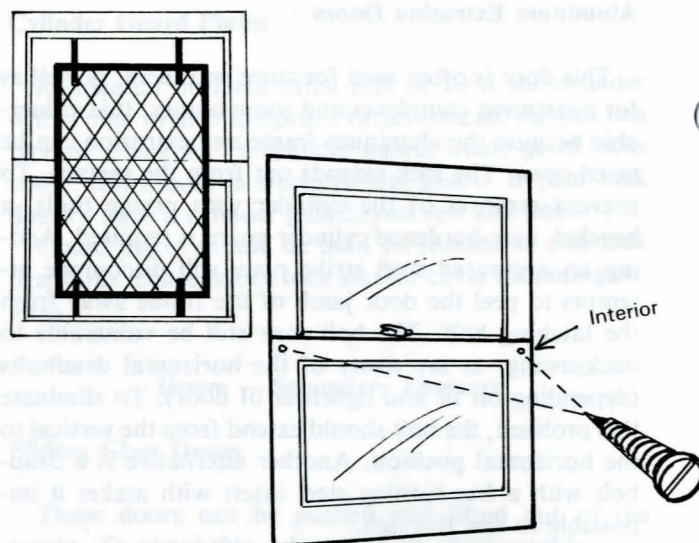
The plastic type glasses are susceptible to scratching. If appearance is a prime concern, plastic safety glass should not be used. Wire-mesh glass can be broken almost as easily as standard glass, as the wire weakens the total strength and the small sections readily fall out.

All forms of special glass are expensive and unless you own a highly vulnerable business (such as a jewelry store), or keep many valuable items in your home, or live in a high-crime area, you may want to stick with standard glass and use methods to secure the entire window.

Sash or Double-hung Windows

The most common window is a double-hung, wooden-framed-sash having top and bottom halves that can be locked together. The standard latch for these windows consists of a curved turn knob on the top edge of a bottom window and a receptacle on the bottom edge of the top window. Most windows do not fit snugly together, and a burglar can gain easy access through the window by inserting a knife between the sashes and maneuvering the latch open. Unless the window is snug, a burglar can rotate the lower portion of the window until the latch rotates out of position.

There are several methods to secure double-hung sash windows. The most common method involves drilling a downward sloping hole into the top of the bottom window and inserting a pin or nail to form a wedge. Cut the



pin so it is flush with the outer edge so that the pin will not protrude for easy removal. The owner can use a magnet to draw the pin out.

If windows are locked in an open ventilating position, they should be pinned to counter attempts to pry them

open. (Note: The National Institute of Law Enforcement and Criminal Justice reports that adult-sized burglars can pass through an opening of 8 inches.) A window that is not used should be screwed shut.

Another method to secure double-hung windows is with a key-controlled window lock. These locks can secure a window completely closed or one that is partially open for ventilation. Keep in mind the need for immediate exit in case of emergency!

Another lock is the keyless lock that resembles a conventional sash-latch. When the turn latch is rotated to a closed position, the windows are so closely pulled together that a knife can no longer be inserted between the sashes. This lock also features an additional lever that serves as a snap lock so that no amount of shaking will dislodge it.

Casement Windows

Casement windows are usually hinged at the sides and swing out from the building with screening inside the window. They are operated from the inside with a hand crank which has no locking device. A burglar can pry the window open by springing the weak crank device. To secure a casement window, lock the inner edges with a clamp or latch lock. That will make it necessary to break the glass to gain entry.

Basement windows are casement windows hinged at the top and opening inwards. Use a clamp or latch lock to secure, or a surface bolt (barrel bolt) mounted on each side of the window. While the barrel bolt will not provide complete security, it does offer a very inexpensive means of slowing the burglar down.

Another method to secure basement windows is to mount wire mesh on a steel frame, hinged on the inside. This allows exit in case of emergency.

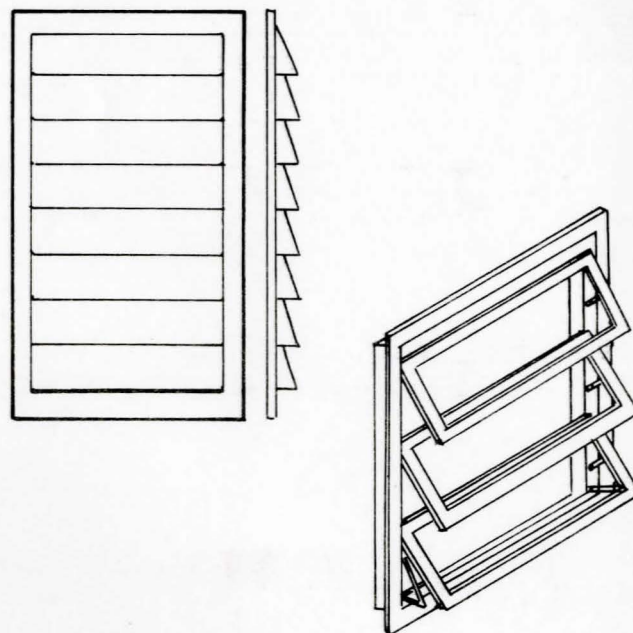
Louvre (Jalousie) Windows

Louvre windows are a bad security risk. The individual glass panes can be removed by sliding them out of the frame. Louvre windows can be replaced with awning windows split into three sections which open out from the bottom with a crank. The crank serves as a locking system by securing each panel. Secure the crank in the same way described under casement windows.

Display Windows, Window Mounted Air Conditioners and Rear Windows

Grillwork, bars, or grates work best to protect these windows. A steel-framed window guard of heavy-gauge

There are numerous specialty locks available. If you have a lock in current use, or if you plan to buy a lock other than those identified in this publication, seek advice from a local locksmith, the sheriff's office, or the police department. They can help you determine if the lock will do the job.



mesh (similar to chain link fencing) is difficult to cut with wire cutters. You can hinge the grates or grillwork so that it can be removed during business hours, or for emergency exit, as in case of fire. Barred windows are most often built with both tops and bottoms encased in cement. These are practically burglar proof, but could cost lives in the event of a fire.

Other Openings

Business buildings usually have openings other than doors and windows. Any opening that provides a possible entrance of 8 inches or more is a potential point of entry.

Roof openings should be barred or covered with heavy gauge screening from the inside. **Skylights** should be protected with 1/2 inch round or 1 x 1 1/2 inch flat steel material, or a steel grill of at least 1/8 inch material with about a 2 inch mesh. **Hatches** should be secured with 16-gauge sheet steel, or with slide bolts. **Air ducts and vent openings** should be provided with iron bars of 1/2 inch round or 1 x 1 1/4 inch flat steel material a minimum of 5 inches apart.

Final Precautions

Both store and residence owners should be cautious with items displayed through the window. Store owners who leave expensive or small items in the window overnight invite burglaries. Likewise, a residence displaying expensive chandeliers or art work through a picture or bay window invite burglaries.

Clean windowsills periodically. This will permit clearer fingerprints should an intruder enter your home or business.