



International
Association
of Fire Chiefs



National
Fire Protection
Association

Fundamentals of Fire Fighter Skills

Chapter 11

Forcible Entry



Objectives

- Understand the association between specific tools and special forcible entry needs.
- Describe the basic construction of typical doors, windows, and walls.
- Know the dangers associated with forcing entry through doors, windows, and walls.
- Know how forcible entry relates to salvage.

Introduction (1 of 2)

- Forcible entry
 - Method to gain access when normal means of entry cannot be used
 - Requires strength, knowledge, proper techniques, and skill
- Use amount of force appropriate to situation.

Introduction (2 of 2)

- Arrange to secure the opening before leaving scene.
- Keep up with how new styles of windows, doors, locks, and security devices operate.

Forcible Entry Situations

- Required at emergency incidents where time is a critical factor
 - Effect a rescue.
 - Control a fire before it extends.
- Company officer selects
 - Point of entry
 - Method to be used
- “Try before you pry!”

Forcible Entry Tools

- Fire fighters must know:
 - What tools are available
 - Uses and limitations of each tool
 - How to select the right tool
 - How to operate each tool
 - How to carry each tool
 - How to inspect and maintain each tool

General Tool Safety

- Incorrect use or improper maintenance can be dangerous.
- Always wear proper PPE.
- Use the right tool for the job.
- Keep tools clean and serviced.
 - Take broken tools out of service for repair.
- Keep tools in proper area or container.

General Carrying Tips (1 of 2)

- Request assistance with heavy tools.
- Use your legs to lift heavy tools.



General Carrying Tips (2 of 2)

- Keep sharp edges and points away from your body.
 - Cover them with a gloved hand.
- Carry long tools pointing down.
 - Be aware of overhead wires.

General Maintenance Tips (1 of 2)

- All tools should be in a ready state.
 - Tools must be in working order, in their storage place, and ready for use.



General Maintenance Tips (2 of 2)

- Tools require regular maintenance and cleaning to ensure readiness.
 - Perform required checks conscientiously.
 - Follow manufacturer's guidelines and instructions.
 - Keep proper records of maintenance, repairs, and warranty work performed.

Types of Forcible Entry Tools

- Striking Tools
- Prying/Spreading Tools
- Cutting Tools
- Lock/Specialty Tools

Striking Tools

- Used to generate an impact force directly on an object or another tool
- Head usually made of hardened steel
- Flat-head axe
- Battering ram
- Sledgehammer

Flat-Head Axe

- One side of the axe head is a cutting blade.
- Other side is a flat striking surface.
- Fire fighters often use flat side to strike a Halligan tool and drive a wedge into an opening.

Battering Ram

- Used to forced doors and breach walls
- Usually made of hardened steel and has handles
- Two to four people needed to use

Sledgehammer

- Sometimes called mauls
- Come in various weights and sizes
- Head of hammer can weigh from 2 to 20 pounds.
- Handle may be short like a carpenter's hammer or long like an axe handle.
- Can be used alone to break down a door or with other striking tools

Prying/Spreading Tools

- Halligan tool
- Pry bar/Hux bar/Crow bar
- Pry axe
- Hydraulic tools

Halligan Tool (1 of 2)

- Widely used
- Commonly used to perform forcible entry
- Pairing with a flat-head axe creates the irons



Halligan Tool (2 of 2)

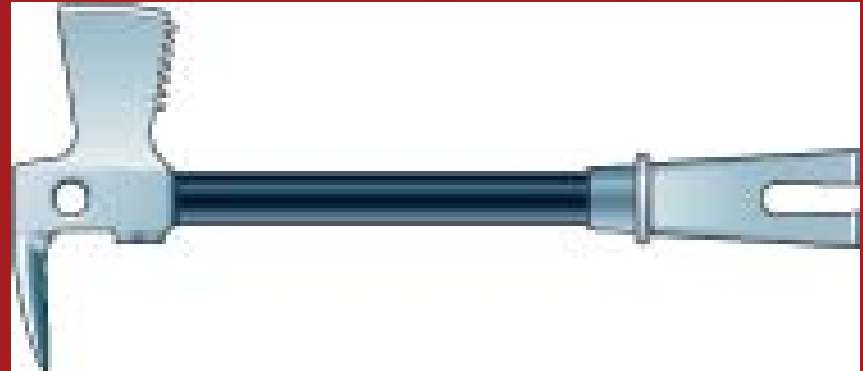
- Incorporates adz, pick, and claw
 - Adz end pries open doors and windows.
 - Pick end makes holes or breaks glass.
 - Claw pulls nails and pries apart wooden slats.

Pry Bar

- Made from hardened steel in a variety of shapes and sizes
- Commonly used to force doors and windows, remove nails, or separate building materials
- Various shapes allow fire fighters to exert different amounts of leverage in diverse situations.

Pry Axe (1 of 2)

- A multipurpose tool
- Used to cut and force open doors and windows
- Includes adz, pick, claw



Pry Axe (2 of 2)

- Consists of two parts
 - Body has the adz and pick.
 - Handle has a claw at the end.
 - Can be extended to provide extra leverage.
 - May be removed and inserted into the head of the adz to provide rotational leverage.
- Use extreme caution.

Hydraulic Tools

- Spreaders
- Cutters
- Rams
- Require hydraulic pressure



Rabbit Tool

- Small hydraulic spreader operated by a hand-powered pump
- Tool designed with teeth that fit into door jamb or rabbet
- As spreader opens, it applies a powerful force that opens doors.

Cutting Tools

- Primarily used for cutting doors, roofs, walls, and floors
- Hand operated and power cutting tools
- Axe
- Bolt cutters
- Circular saw

Axe (1 of 2)

- Many different types of axes
- Cutting edge of axe used to break into plaster and wood walls, roofs, and doors



Axe (2 of 2)

- Flat-head
- Pick-head
- Pry axe
- Multipurpose axes

Bolt Cutters

- Used to cut metal components as bolts, padlocks, chains, and chain-link fences
- Available in several different sizes
- The longer the handle, the greater the cutting force.
- May not be able to cut into some heavy-duty padlocks made of case-hardened metal

Circular Saw

- Gasoline-powered
- Light, powerful, and easy-to-use
- Blades can be changed quickly.
 - Carbide-tipped blades
 - Metal-cutting blades
 - Masonry-cutting blades

Lock/Specialty Tools (1 of 2)

- Used to disassemble the locking mechanism on a door
- Cause minimal damage to the door and the door frame
- Experienced user can usually gain entry in less than a minute.

Lock/Specialty Tools (2 of 2)

- K tool
- A tool
- J tool
- Shove Knife
- Duck-billed lock breakers
- Locking pliers and chain
- Bam-bam tool

K Tool

- Designed to shear off a lock cylinder so it can be removed



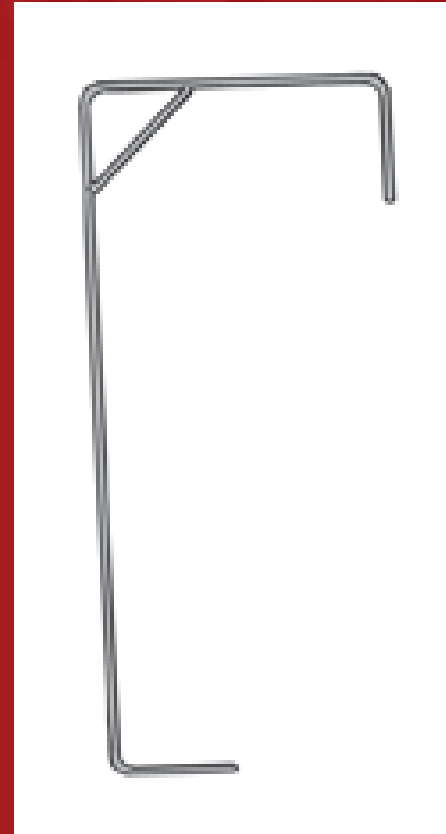
A Tool

- Similar to the K tool, but has a pry bar built into the cutter



J Tool

- Used to open double doors that have panic bars



Lock Tools/Specialty Tools

- Shove knife
 - Opens older model doors
- Duck-billed lock breakers
 - Opens padlocks
- Bam-bam tool
 - Used to pull the tumbler out of a lock

Doors

- Basic Door Construction
 - Door
 - Jamb
 - Hardware
 - Locking device

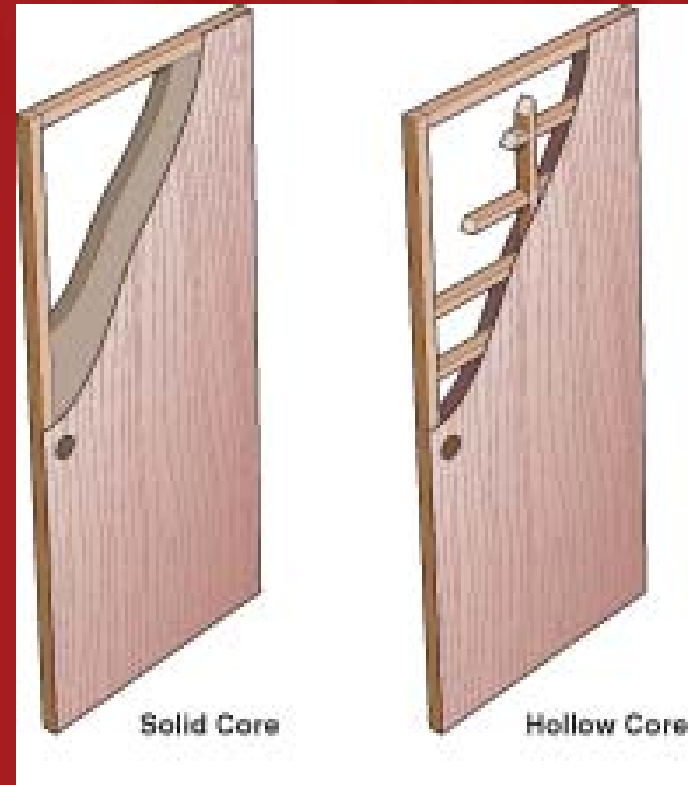


Construction Material

- Wood
- Metal
- Glass

Wood (1 of 2)

- Slab
 - Solid-core
 - Solid wood core blocks covered by a face panel
 - Hollow-core
 - Lightweight, honeycomb interior



Wood (2 of 2)

- Ledge
 - Wood doors with horizontal bracing
- Panel
 - Solid wood doors made from solid planks to form a rigid frame with solid wood panels set into the frame

Metal

- Hollow-core metal doors
 - Have a metal framework interior so they are lightweight
- Solid-core metal doors
 - Have a foam or wood interior to reduce weight without affecting strength

Glass

- Generally steel frame with tempered glass or tempered glass only
- Easy to force
- Produce a large amount of broken glass

Types of Doors (1 of 2)

- Inward-opening
- Outward-opening
- Sliding doors
- Revolving doors
- Overhead doors

Types of Doors (2 of 2)

- Hinges indicate if door is inward- or outward-opening.
- Outward
 - Hinges are visible.
- Inward
 - Hinges are not visible.



Door Frames (1 of 2)

- Wood-framed doors
 - Stopped door frames
 - Have a piece of wood attached to the frame to stop the door from swinging past the latch
 - Rabbeted door frames
 - Have a stop cut built into the frame so it cannot be removed

Door Frames (2 of 2)

- Metal-framed doors are more difficult to force open.
 - Look like rabbeted door frames

Inward-Opening Doors (1 of 2)

- Design
 - Made of wood, steel, or glass
 - Have an exterior frame with a stop or rabbet
 - Locking mechanisms range from standard door knob locks to deadbolt locks or sliding latches.

Inward-Opening Doors (2 of 2)

- Forcing Entry
 - Determine what type of frame the door has.
 - Use a prying tool near the locking mechanism to pry the stop away from the frame.
 - Use a striking tool to force the prying tool further into the jamb.

Outward-Opening Doors (1 of 2)

- Design
 - Used in commercial occupancies and for most exists
 - Designed for a quick exit
 - Made of wood, metal, or glass
 - Usually have exposed hinges



Outward-Opening Doors (2 of 2)

- Forcing entry
 - Check to see if hinges can be disassembled or hinge pins removed.
 - Place adz end of prying tool into the door frame.
 - Use striking tool.
 - Leverage the tool to force the door outward away from the jamb.

Sliding Doors (1 of 2)

- Design
 - Made of tempered glass in a wood or metal frame
 - Have two sections and a double track
 - A weak latch on the frame of the door secures the movable side.



Sliding Doors (2 of 2)

- Forcing Entry
 - Check whether a security rod is in the door track.
 - If present, try another door.
 - If not present, use a pry bar to lever door away from locking mechanism.
 - If necessary, break the glass.

Revolving Doors (1 of 2)

- Design
 - Made of four glass panels with metal frames
 - Designed to collapse outward when pushed backward
 - Usually surrounded by outward-swinging doors



Revolving Doors (2 of 2)

- Forcing Entry
 - Should be avoided whenever possible
 - Opening will not be large enough to allow many people to exit.
 - Can be done by attacking the locking mechanism directly or by breaking the glass.

Overhead Doors (1 of 2)

- Design
 - Can roll up or tilt
 - Made of wood or metal
 - May be hollow-core or solid-core



Overhead Doors (2 of 2)

- Forcing entry
 - Break out a panel or window and manually operate lock from within.
 - Always securely prop door open to prevent door closing.
 - Security roll-up door
 - Cut triangle-shape entry.

Windows (1 of 2)

- Usually easier to force than doors
- Frames made of wood, metal, vinyl
- Glass is the easiest way to force a window, but also the most dangerous.

Windows (2 of 2)

- Safety
 - Wear PPE with face and eye protection.
 - Clear area of personnel.
 - Coordinate with fire attack to prevent flare-ups and backdrafts.
 - Completely clear frame of glass shards.

Glass Construction

- Regular or Annealed Glass
- Double-Pane Glass
- Plate Glass
- Laminated Glass
- Tempered Glass
- Wire Glass

Regular or Annealed Glass

- Commonly used because it is inexpensive
- Larger pieces called plate glass
- Easily broken with a pike pole
- Watch out for shards.
 - Can penetrate helmets, boots, and other protective gear

Double-Pane Glass

- Used in many homes because it improves home insulation
- Uses two panes with an air pocket between them
- Two panes need to be broken separately.
- Watch out for shards.

Plate Glass

- Commercial plate glass is stronger, thicker glass used in large window openings.
- Can easily be broken with a Halligan tool or pike pole
- Watch out for large shards.

Laminated Glass

- Also known as safety glass
- Molded sheet of plastic between two sheets of glass
- Commonly used in vehicle windshields

Tempered Glass

- Specially heat-treated
- Four times stronger than regular glass
- Common in side and rear vehicle windows, commercial or sliding doors
- Breaks into small pellets without sharp edges

Wired Glass

- Tempered glass with wire reinforcement
- Often used in fire-rated doors
- Difficult to break

Frame Designs

- Double-Hung Window
- Single-Hung Window
- Jalousie Window
- Awning Window
- Horizontal-Sliding Window
- Casement Window
- Projected Window

Double-Hung Windows (1 of 2)

- Design
 - Two sashes move up and down
 - Common in residences
 - One center lock or one on either side



Double-Hung Windows (2 of 2)

- Forcible entry
 - Break locking mechanism to force entry.
 - Place a prying tool under the lower sash and force it up.
 - May be cheaper and easier to break glass.

Single-Hung Windows (1 of 2)

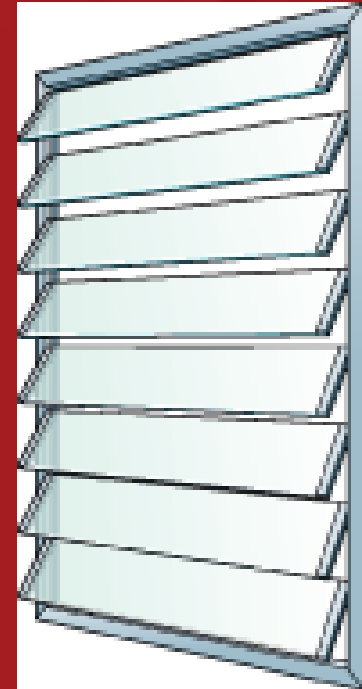
- Design
 - Upper sash is fixed—only lower sash moves.
 - Locking mechanism is the same.
 - May be difficult to distinguish between single-hung and double-hung from exterior.

Single-Hung Windows (2 of 2)

- Forcing entry
 - Use same technique as forced entry through double-hung window.
 - Breaking glass and opening the window is generally easier.

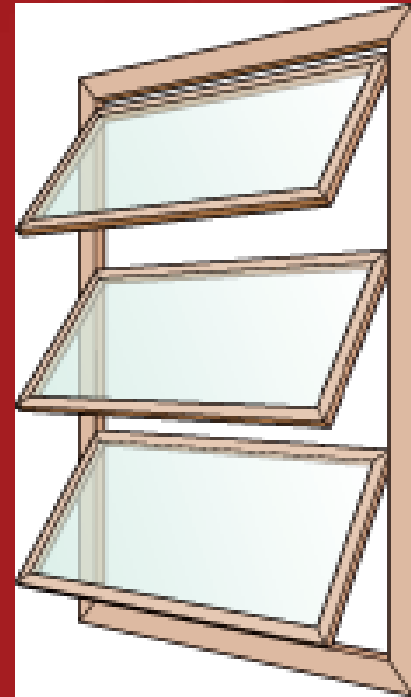
Jalousie Windows

- Adjustable, overlapping sections of tempered glass
- Operated by hand crank
- Difficult to force
- Avoid if possible.



Awning Windows

- Like jalousie, but only one or two panels
- Break open lower panel and operate crank.
- Break out panels.
- May be easier to force than jalousie due to larger panel size



Horizontal-Sliding Windows

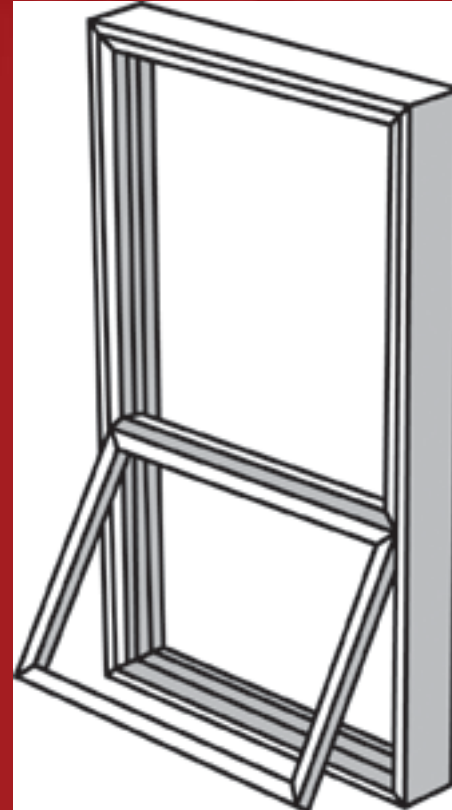
- Similar to sliding doors
- Rods and poles are placed to prevent break-ins.
- Force in the same manner as sliding doors.
- Attempt to locate another window if a security rod is present.

Casement Windows

- Steel- or wood-frame windows that crank open
- Similar to jalousie or awning windows
- Should be avoid because they are difficult to open
- To force, break glass, unlock, and open manually.

Projected Windows (1 of 2)

- Also called factory windows
- Avoid forcing entry

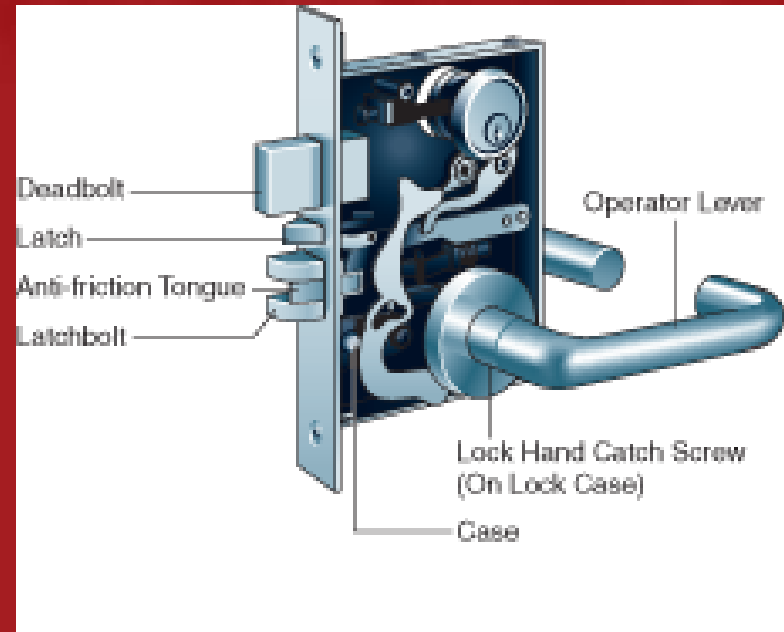


Projected Windows (2 of 2)

- To force entry, break a pane, unlock, and open the window manually.
- If opening is not large enough, break out entire assembly.

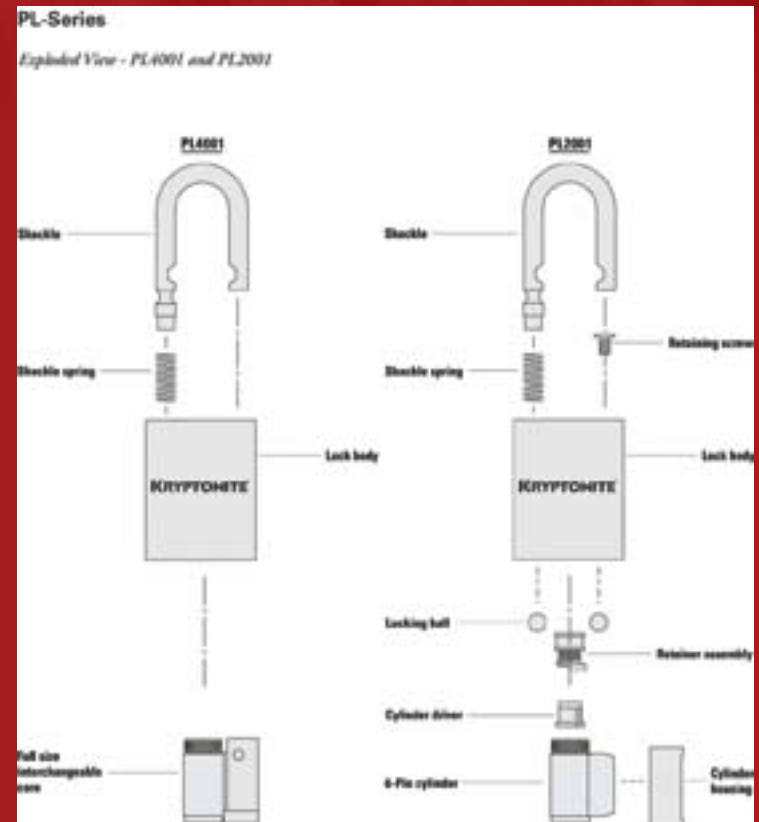
Parts of a Door Lock

- Latch
 - Catches and holds the door frame
- Operator lever
 - The handle
- Deadbolt
 - A second, separate latch that locks and reinforces



Parts of a Padlock

- Shackle
 - U-shaped top of the lock
- Unlocking Device
 - The key way or combination dial
- Lock Body
 - Main part of padlock



Safety

- Keep cutting tools sharp.
- Use proper PPE.
 - Gloves
 - Eye protection
 - Face protection
- Have others stand away.

Types of Locks

- Cylindrical Locks
- Padlocks
- Mortise Locks
- Rim Locks

Cylindrical Locks (1 of 2)

- Design
 - Most common type of fixed lock in use today

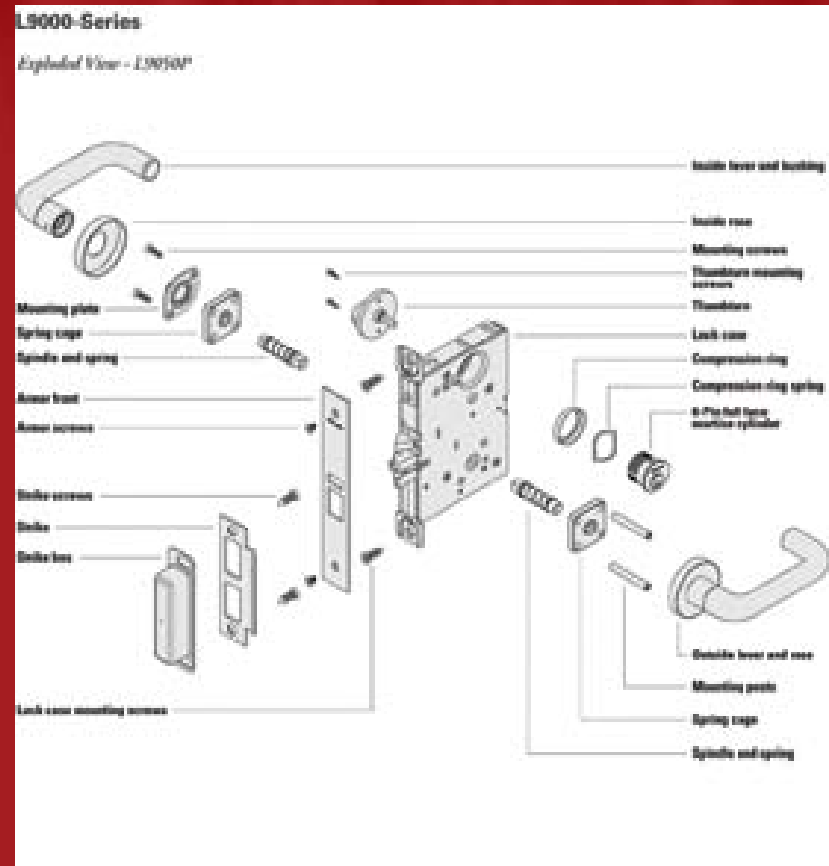


Cylindrical Locks (2 of 2)

- Forced entry
 - To force, place a pry bar near the locking mechanism and lever it.

Padlocks (1 of 2)

- Most common locks on the market today
- Regular- and heavy-duty are available.
- Come with various unlocking devices



Padlocks (2 of 2)

- Forcing entry
 - Cut the shackle.
 - Breaking the shackle is the best method.
 - If padlock is made of case-hardened steel, many conventional methods will be ineffective.

Common Tools

- Bolt cutters
- Duck-billed lock breakers
- Bam-bam tools
- Locking pliers and chain

Bolt Cutters

- Can quickly and easily break regular-duty padlocks
- Cannot be used on heavy-duty case-hardened steel padlocks
- To use, open jaws as wide as possible.
- Close jaws around one side of the lock shackles.
- Once the shackle is cut, the other side will spin freely and allow access.

Duck-Billed Lock Breakers

- Have a large metal wedge attached to a handle
- Place the narrow end of the wedge into the center of the shackle.
- Force it through with another striking tool.
- The wedge will spread the shackle until it breaks.

Bam-Bam Tool

- Can pull the lock cylinder out of a regular-duty padlock
- Has a cased-hardened screw that is placed in keyway
- Once screw is set, the sliding hammer will pull tumblers out of the padlock.

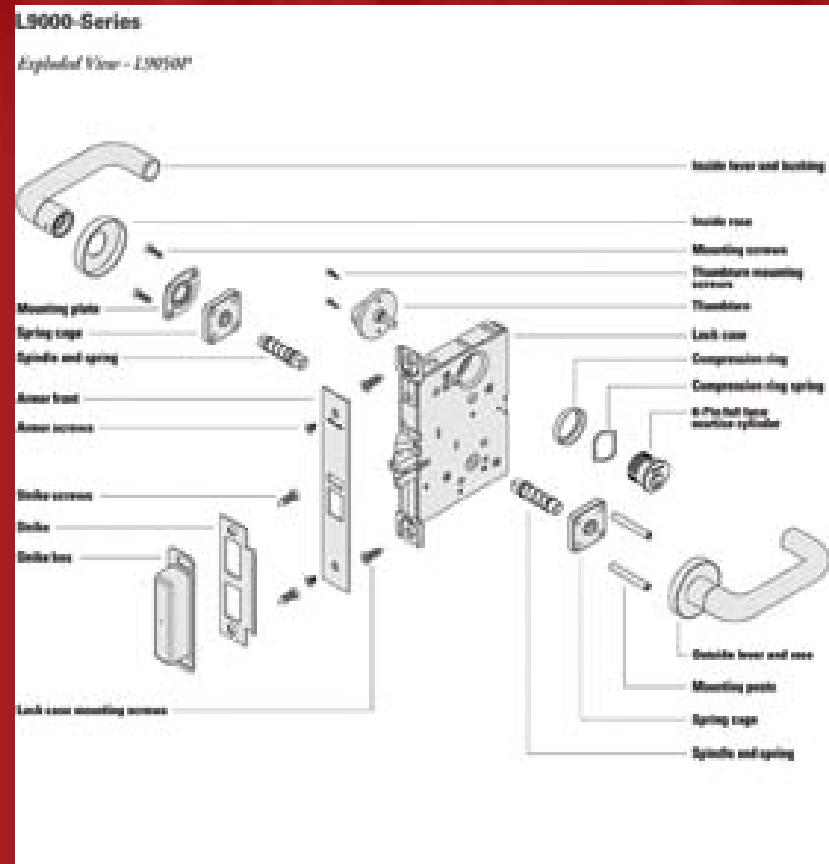


Locking Pliers and Chain

- Attached to a padlock to secure it
- Then it can be cut safely with a rotary saw or torch

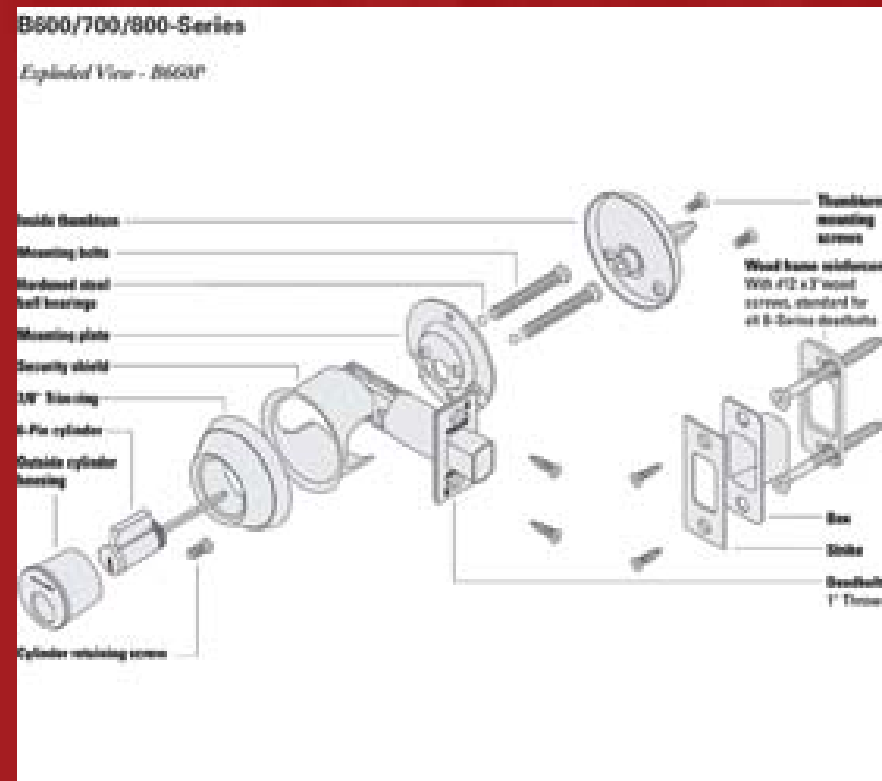
Mortise Locks

- Found in hotel rooms
- Latch will lock door.
- Bolt can be used for added security.
- Difficult to force
- Use through-the-lock technique.



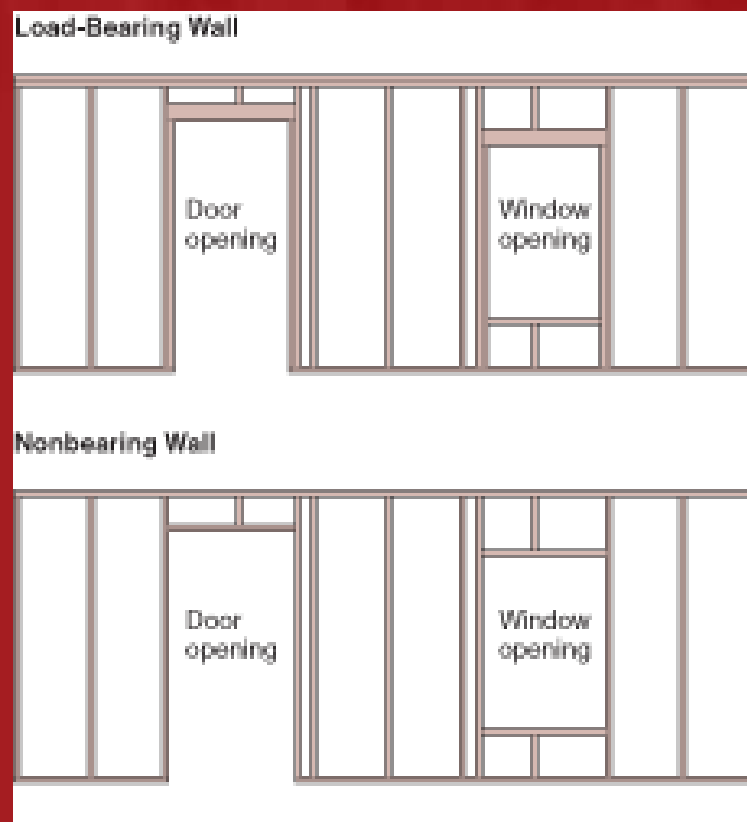
Rim Locks/Deadbolts

- Used as secondary locks
- Have a bolt that extends at least 1" into the door frame
- Difficult to force
- Use through-the-lock method.



Breaching Walls and Floors

- Breach only as a last resort.
- First consider if wall is load-bearing.
 - Could cause collapse if breached
 - Nonbearing walls can be removed safely.



Exterior Walls (1 of 2)

- Can be constructed of one or more materials
 - Wood, brick, aluminum siding, masonry block, concrete, or metal
- Whether to attempt to breach is a difficult decision
 - Masonry, metal, and brick are formidable materials.

Exterior Walls (2 of 2)

- Breaking through can be very difficult.
- Best tools to use are:
 - Battering ram
 - Sledgehammer
 - Rotary saw with a concrete blade

Interior Walls (1 of 2)

- Constructed of wood or metal studs covered by plaster, gypsum, or sheetrock in residences
- Commercial buildings may have concrete block interior walls.
- Breaching an interior wall can be dangerous.

Interior Walls (2 of 2)

- Locate a stud away from electrical outlets and switches.
- Make a small hole to check for obstructions.
- If area is clear, expand to reveal studs.

Floors

- Most floors are wood or poured concrete.
 - Both can be difficult to breach.
 - This is truly a last resort.
- Use a rotary saw with appropriate blade.



Forcible Entry and Salvage

- Try to keep damage to a minimum.
- Secure structure before leaving.
- Replace locks or board up entry point.
- Ensure guard is on-site or request additional police patrols.

Summary

- “Try before you pry.”
- Use the minimum amount of force necessary to gain access.
- Knowledge of building construction is essential to successful forcible entry.
- Use proper PPE.
- Use and carry tools safely.