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Residential Door Hardware: New Function, New Look

Presented by: Hampton Products International Corporation
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Description: Traditional residential door hardware is simple to use, but not always convenient. This course explores a new type of door hardware that can be operated in two new ways: pushing or pulling on the knob or lever to release the door latch. The course includes discussions on the functions of door hardware, types of locksets, security issues, and benefits of push/pull/turn door hardware, and concludes with installation examples.

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Purpose: Traditional residential door hardware is simple to use, but not always convenient. This course explores a new type of door hardware that can be operated in two new ways: pushing or pulling on the knob or lever to release the door latch. The course includes discussions on the functions of door hardware, types of locksets, security issues, and benefits of push/pull/turn door hardware, and concludes with installation examples.

Learning Objectives:

At the end of this program, participants will be able to:

- list the four functions of door hardware and describe their operation and suitable applications
- describe three types of mechanical locksets, how they function, and where they are used
- explain door hardware security issues and methods used to increase security in locksets
- recall the functional features and benefits of push/pull/turn door hardware, and
- summarize the steps involved in the installation of deadbolts and ADA-compliant push/pull/turn levers.

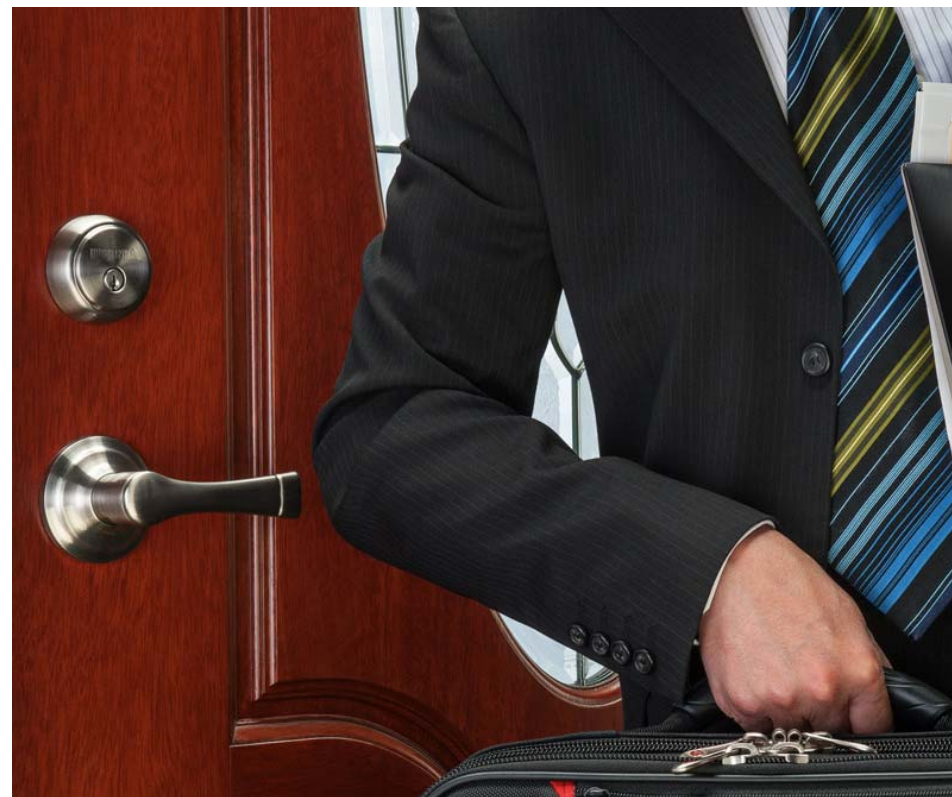
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Table of Contents

Introduction to Push/Pull/Turn Door Hardware	7
Door Handle and Lock Primer	16
Push/Pull/Turn Hardware	34
Selection Considerations	43
Sample Installations	49
Resources	62

Click on title to view





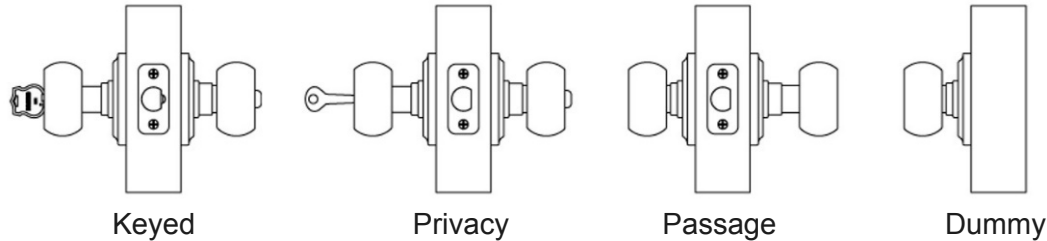
Introduction to Push/Pull/Turn Door Hardware

Traditional Hardware Function and Use

Doorknobs, Levers, and Deadbolts

There are four different door hardware types based on their function:

- Exterior: keyed entrance hardware
- Interior: privacy, passage, and dummy hardware



Traditional knobs involve gripping the knob and twisting/turning it to release the latch. Levers require the ability to turn the handle upwards or downwards to release the latch. Deadbolts require the ability to grip a thumbturn and turn it to retract the bolt.



Images courtesy of blackzheep at FreeDigitalPhotos.net

Push/Pull/Turn Door Hardware

Why a New Design Is Needed

A hands-free door hardware option is desirable as the twisting or turning action required by traditional hardware is difficult to do when arms are loaded or hands are occupied. This type of hardware is also well-suited for people with disabilities or anyone who struggles with gripping objects and/or twisting or turning hand motions.

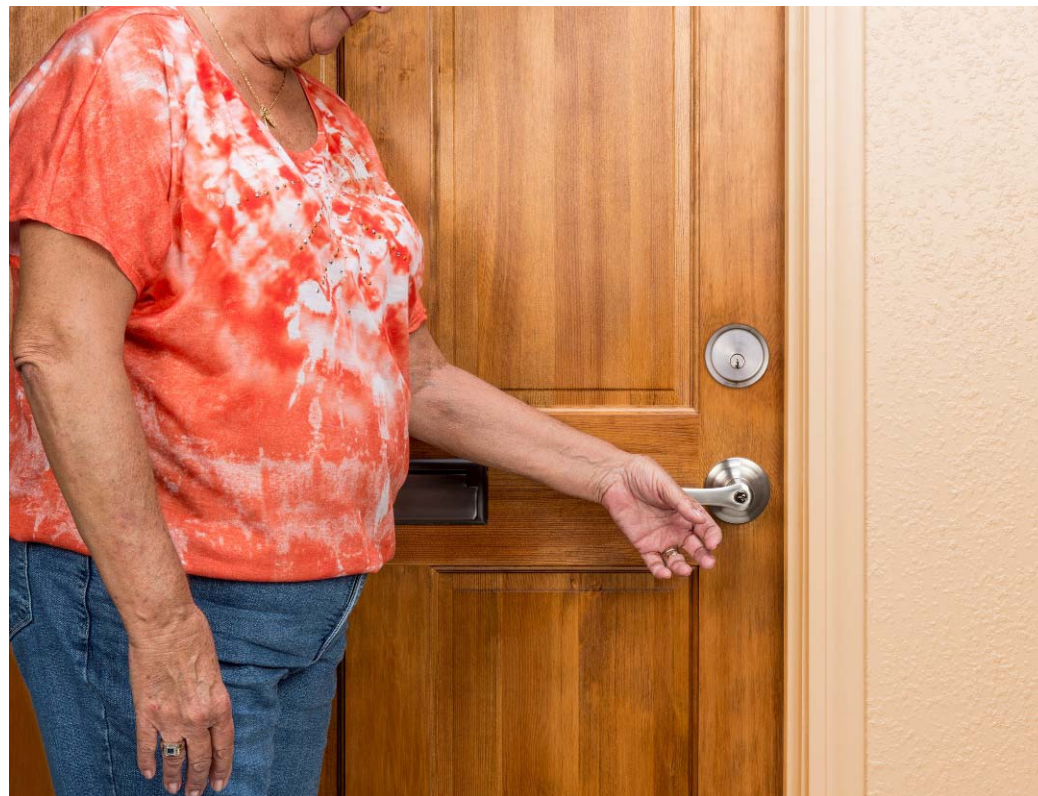
Push/Pull/Turn Handles and Deadbolts

Push/pull/turn knobs and levers are the easiest, most comfortable way to open a door. With just one finger, an elbow, or a hip, you can simply push or pull your way through a door. The classic architectural design of these interior and exterior handles can complement any modern or traditional home. Replacing door handles is one of the simple projects homeowners can undertake to add convenience and refresh the look of their homes.

What Is Push/Pull/Turn Door Hardware?

Designed to improve the way people open doors, push/pull/turn products enable doors to be opened traditionally by turning or rotating the knob or lever, and in two completely new ways: simply pushing or pulling on the knob or lever to release the door latch.

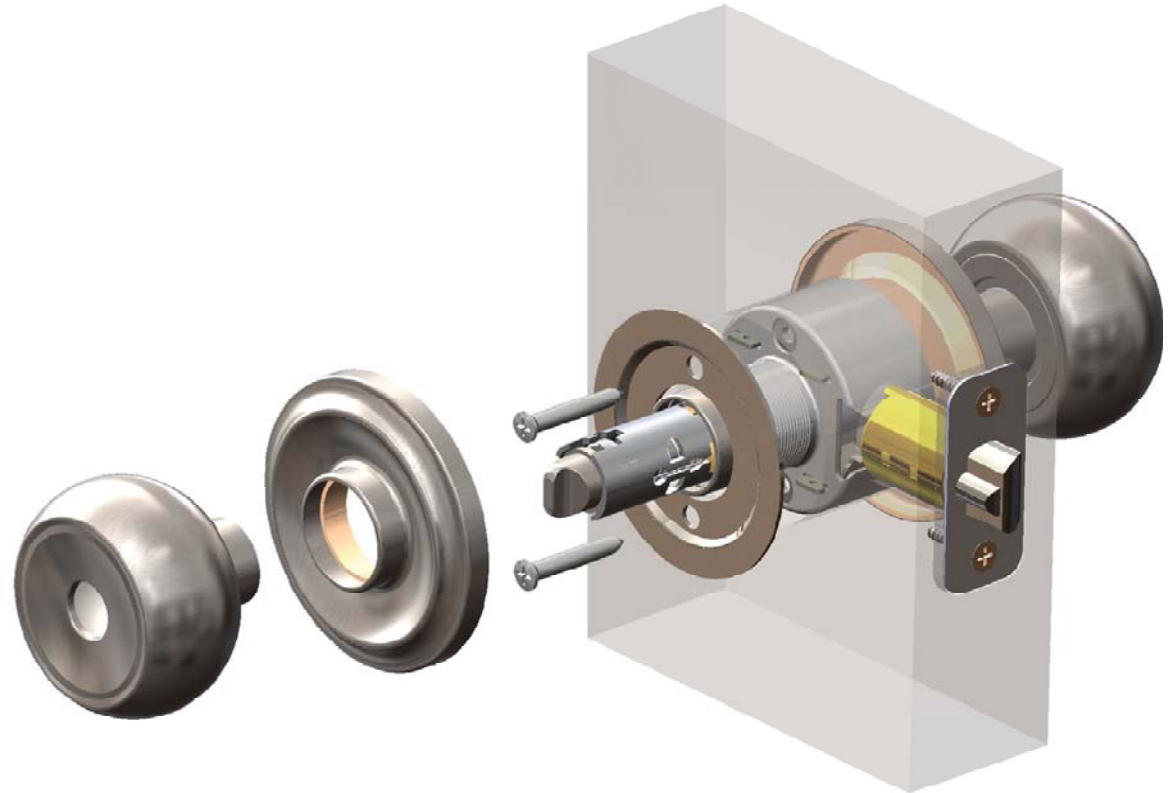
Push/pull/turn door locks make opening doors easier whether your hands are full or free. They still stay closed and locked when the user wants them to be, exactly as traditional locks do. Push/pull/turn handles provide a new door-opening solution, and levers are ADA-compliant.



Push/Pull/Turn Hardware Features

Features include:

- a large decorative rosette for more coverage
- flat areas on the surface of knobs and levers for comfort when pushing
- durable all-metal construction with a cylindrical chassis
- hidden screws for a pleasing aesthetic
- tamper-resistant parts, and
- simple installation.



Glossary of Door Hardware Terms

Active Door/Inactive Door: In a double door set, the active door is opened first and has a working lockset, and the inactive door is bolted at the top and bottom to hold it stationary when shut, and receives the latch or bolt of the active door.

Backset: The horizontal measurement from the edge of the door to the center of the bore hole drilled for the lock.

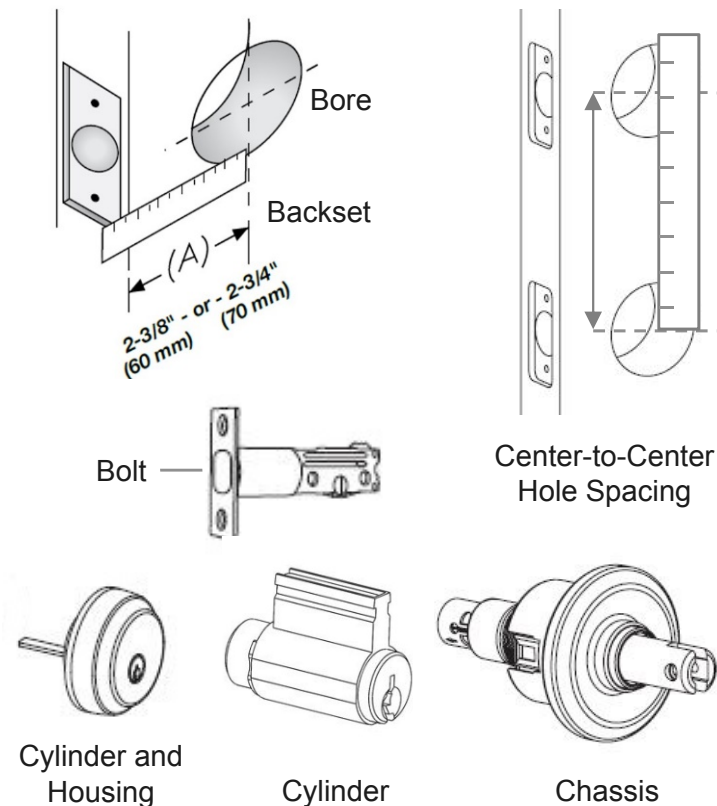
Bolt: The piece of metal that extends from the deadbolt mechanism in the door into the strike plate and secures the door.

Bore: The hole that is drilled through the door to allow for the installation of hardware; typically 2 1/8" in diameter.

Center-to-Center Hole Spacing: The vertical measurement between the center-points of two bore holes. For example, when a bore hole for a deadbolt is located above the bore hole for the knob/lever and latch.

Chassis: The body of the lock itself.

Cylinder: The round or cylindrical shaped mechanism containing the keyway and the pin tumbler.



Glossary of Door Hardware Terms

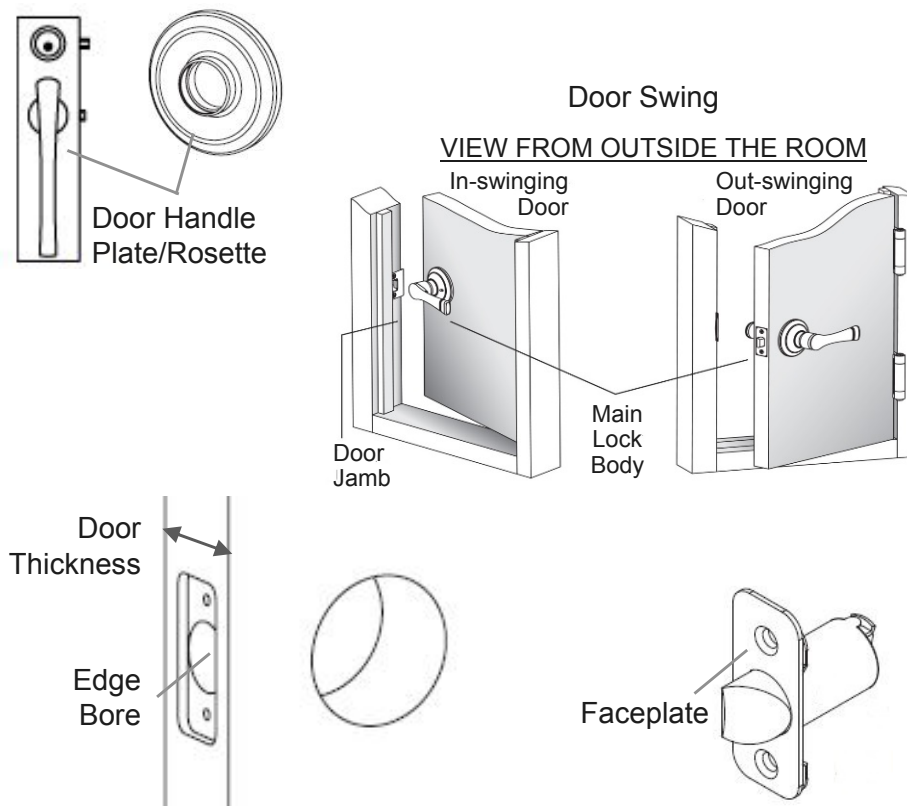
Door Handle Plate/Rosette: A decorative plate covers the bore hole in a door with an attached knob or lever. The rosette is a circular or square plate surrounding the knob or lever and covers the bore hole.

Door Swing: The direction the door opens while standing on the outside. If you stand outside of the door and push it away from yourself to open, it is in-swinging. If you stand outside of the door and pull it towards you to open, it is out-swinging.

Door Thickness: The measurement of the thickness of the door: typically between $1\frac{3}{8}$ " and $1\frac{3}{4}$ ".

Edge Bore: A hole that is drilled into the side edge of the door through to the larger main bore hole.

Faceplate: The rectangular-shaped piece of metal that the door latch protrudes through on the side edge of the door.



Glossary of Door Hardware Terms

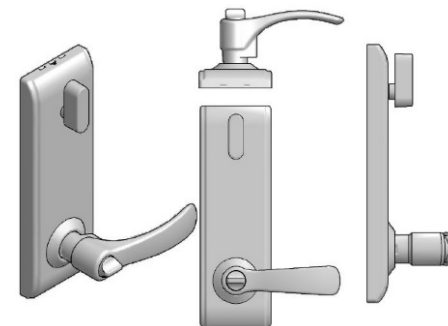
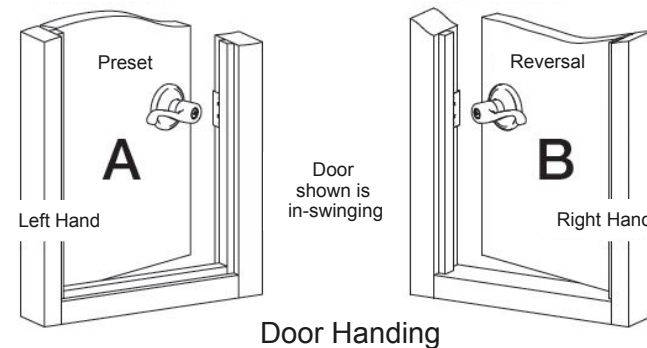
Handing: Left-handed: standing on the outside of the door, hinges are located on the left side. Right-handed: standing on the outside of the door, hinges are located on right side.

Interconnect Device: It provides an emergency egress function on tubular handle sets. When the deadbolt is in the locked position, simply turning the knob or lever will retract both latches.

Jamb: The frame that surrounds the door when it's closed and to which the hinges are attached.

Keying: Specifying how the cylinder in the lock should be keyed.

- Keyed Alike: All the cylinders operate by the same key.
- Keyed Different: Different cylinders operate by different keys.
- Construction Keying: A construction keyed lock is used while construction is underway. When the end users use the tenant key for the first time, it voids the construction key and it no longer works.
- Master Keying: Provides the ability to use one key to open one or more locks that are not keyed the same.



Interconnect Device

Glossary of Door Hardware Terms

Latch Bolt: A spring-loaded bolt with a beveled edge that extends from the edge of the door into the door jamb to permit a latching action when the door closes.

Shear Line: The line where the pins pass from the plug into the housing. The breaks between the bottom and top pins must line up exactly at the shear line in order to rotate the key cylinder.

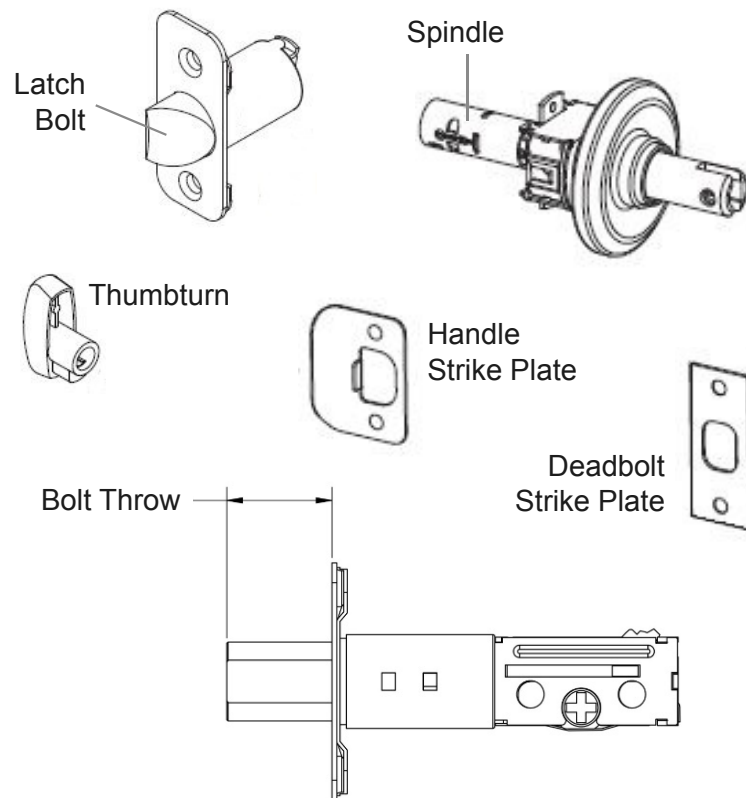
Spindle: The bar that connects knobs or levers through the door and operates the lock mechanism.

Strike Plate: A metal plate installed on the door jamb that receives the latch or bolt from the door.

Throw: The measurement of how far the deadbolt latch bolt projects out from the edge of the door.

Thumbturn: The turnpiece located on the inside trim of a deadbolt that operates the latch mechanism.

Thumb Piece/Press: The small moving part located above the handle on an entry set that is depressed to disengage the latch bolt.





Door Handle and Lock Primer

Function: Exterior Doors

Knobs, levers, and handles offer several functions for different applications like closet doors, bathroom doors, and exterior doors. Here is a quick explanation of each type and what they are used for.

Keyed Entry Knobs and Levers

Entrance or keyed entry knobs and levers are usually used on exterior doors.

The inside portion of a keyed entrance knob or lever will vary according to the manufacturer. For example, one manufacturer may offer a push button lock on the inside that releases when the knob or lever is turned, while another might offer a turn button on the knob or lever itself that has to be unlocked manually.



Function: Exterior Doors

Keyed Entry and Handlesets

Handlesets are most commonly used on exterior entrance doors and do not lock on the handle part, but are available with single cylinder or double cylinder deadbolts, or as a dummy set.

- **Single Door Entry:** Usually if there is just one door, a handleset with a single cylinder deadbolt is sufficient. The deadbolt will lock with a key on the outside, and lock or unlock with a thumbturn on the inside.
- **Double Door Entry:** For a double front door where one side is generally inactive while the other is always active, a combination of two handlesets is required. The active side will use a handleset with a single cylinder deadbolt. The active side will close and latch to the inactive side and the deadbolt will latch into the inactive door edge. The inactive door can be fitted with a dummy handleset.
- **Glass Door Entry:** For a full, or even half, glass front door, many prefer to install a double cylinder deadbolt. A double cylinder deadbolt is keyed on both sides, so rather than a thumbturn on the inside, it has a keyhole like the exterior does. The reason for this is that if a burglar were to break the glass, he still would not be able to unlock the door. However, this is not always recommended, as exiting the home quickly in the event of a fire means first locating the key to unlock the door. This option should only be used when there is another escape route easily accessible.



Function: Exterior Doors

Deadbolts

Deadbolts are used to securely lock the door with a bolt that is inserted into the jamb. Deadbolts are available in single cylinder and double cylinder versions.

- **Single Cylinder:** The single cylinder function is an option for deadbolts. Single cylinder deadbolts have a keyed cylinder on the outside and a thumbturn to lock and unlock the door on the inside. The thumbturn on the inside allows for an easy exit in case of an emergency. Unless glass is present near the lockset, the single cylinder entrance lockset is preferable.
- **Double Cylinder:** The double cylinder function is also an option for deadbolts. Double cylinder deadbolts have a keyed cylinder on both sides. They provide additional security but are usually not recommended because they make it more difficult to exit the home in the case of an emergency. They are, however, a good option for doors with glass in them or that are near a glass panel, and are often used on garage doors and patio doors. Double cylinder deadbolts are sometimes restricted by local building codes.



Function: Interior Doors

Passage/Hall/Closet Knobs and Levers

Knobs and levers for passage doors are non-locking—they do not have keyed cylinders or locking buttons. They provide unimpeded access to any room. Passage, hall, and closet knobs and levers are used on closets, laundry rooms, or other rooms that do not require a privacy lock.

Privacy/Bed/Bath Knobs and Levers

Privacy hardware is generally used on bedrooms and baths, or anywhere that privacy is wanted but an actual keyed lock is not necessary. They provide secure locking from the interior. Locking features for privacy, bed, and bathroom door knobs will vary according to manufacturer. For example, they might have a pin hole on the outside, and a push button lock on the inside that releases when the knob is turned. Other brands will have a turn button on the knob itself that has to be unlocked manually, and a pin hole on the end of the knob or on the rosette. In the case of an emergency, they can be unlocked using a generic key provided by the manufacturer that is inserted into the pin hole on the rosette or knob.

Dummy Knobs and Levers

Dummy knobs and levers are one-sided, with no working parts. They are usually surface mounted or mounted from behind. They can be sold in pairs to be used on sets of double doors. Dummy knobs are usually used on shallow closet doors, which may have a ball catch or magnetic catch to keep the door closed when not in use. Dummy door knobs and levers are also often used on the inactive side of a French door.

Mechanical Locksets: Mortise

A mortise style lock is the most secure form of an entry lockset.

A mortise lock is one that requires a pocket—the mortise—to be cut into the door where the lock is to be fitted, and is most common in commercial construction. Residential uses of these locksets are usually reserved for front entrance doors.

The locking mechanism is contained within the mortise case, and it operates as a combination lock comprising a keyed deadbolt and a knob- or lever-operated latch. A bore hole in the face of the door receives the spindle to which knobs or levers are attached. A second bore hole above the first receives the cylinder(s) and thumbturn. The deadbolt can be activated in conjunction with unlocking the standard door latch.

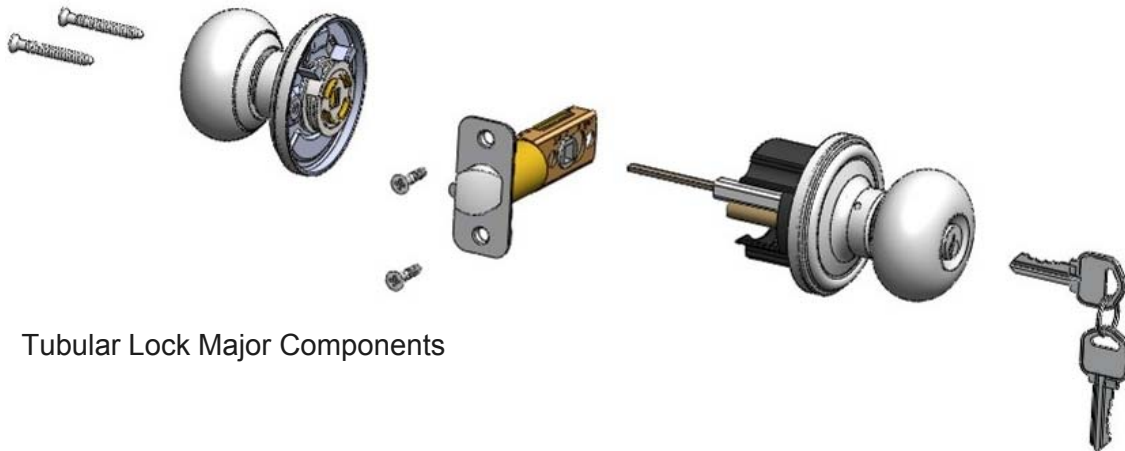


Image: User: whykkk; MRX-K Grade 1 Mortise Lock - Knob [CC-BY-SA-2.0](#) via [flickr](#).

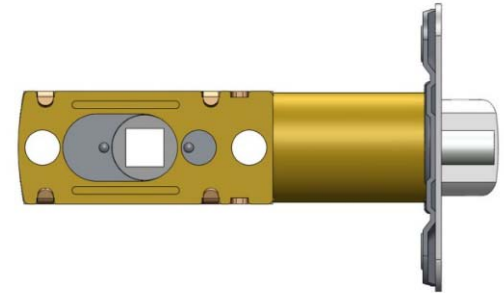
Mechanical Locksets: Tubular

In a tubular lock, the mechanism for retracting the lock bolt is part of the latch assembly. The outside lock chassis has either a square or half-round extension which passes through this mechanism for actuation.

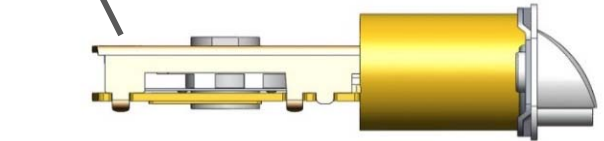
In a tubular lock, the inside and outside spindles are joined by the extension through the latch, and move in tandem after assembly.



Tubular Lock Major Components



The tubular latch has to fit in a 1-inch bore, limiting the size of the components. The rear portion of this latch is often the first mechanism to fail in use.

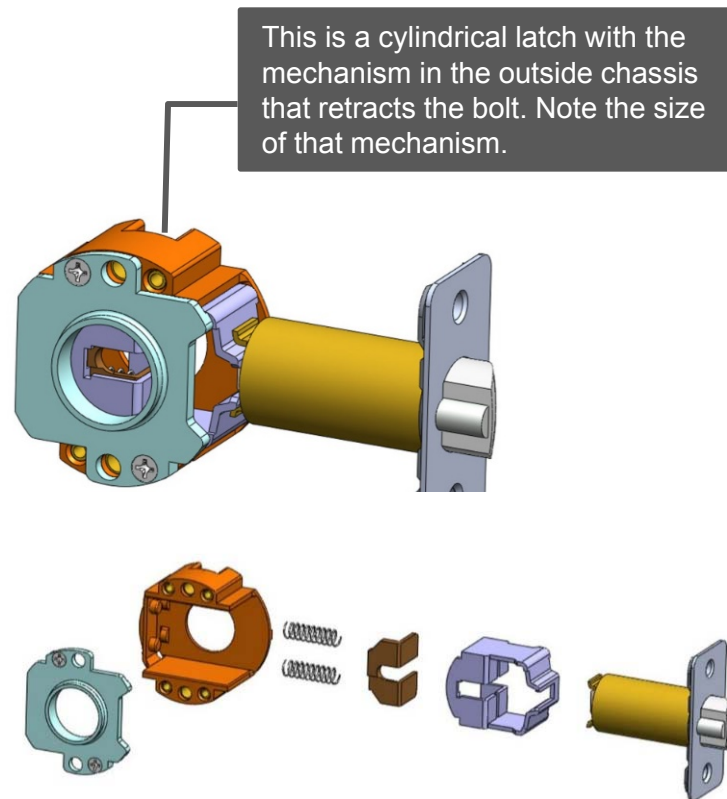


Mechanical Locksets: Cylindrical

In a cylindrical lock, the mechanism for retracting the latch bolt is part of the lock chassis. The latch is comparatively simple and connects to the outside lock chassis at the periphery.

In a cylindrical lock, the inside and outside knob spindles are independent of each other. Because of the independent spindles and the larger mechanism for retracting the latch, cylindrical locks can be configured for many lock functions, such as storeroom, classroom, etc. In addition, levers can be “clutched,” i.e., the outside lever rotates without retracting the latch.

Cylindrical locks have larger rosettes and mounting plates. The components are made of thicker steel. They have an inside and outside bushing which requires that the mating spindles be made with more precision to ensure they are round.



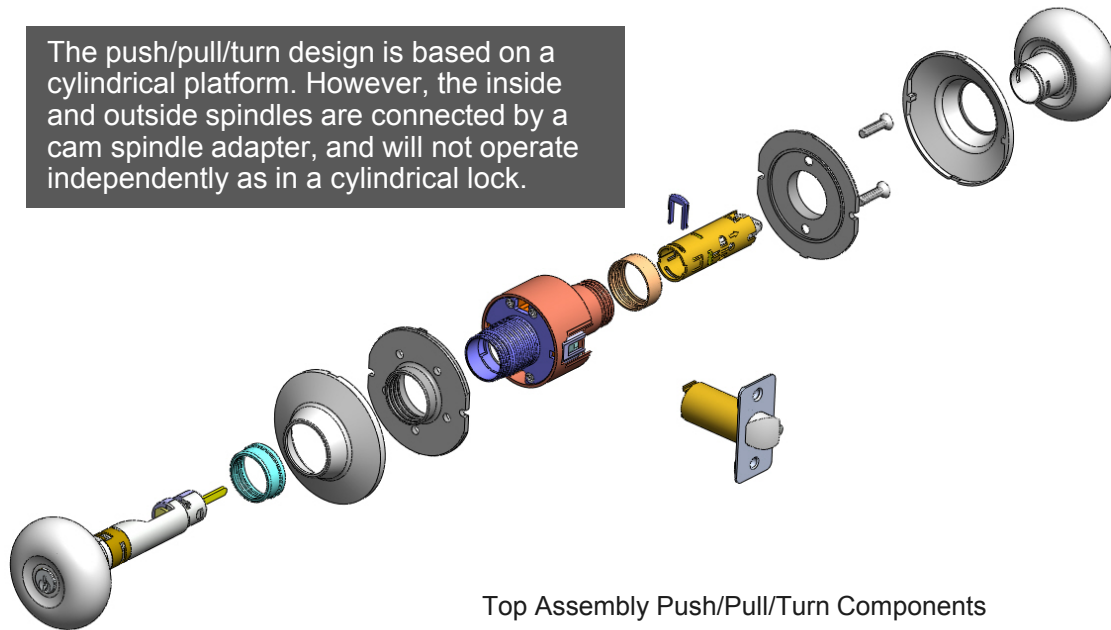
Mechanical Locksets: Cylindrical

Cylindrical locks can be configured to more lock functions than tubular locks. These functions, such as storeroom locks, are more often required in commercial settings.

Because of the larger, stronger components, especially the latch retraction mechanism, the cylindrical locks hold up to more wear and tear than tubular locks.

Because the outside chassis contains the retraction mechanism, which is then covered with a “cylindrical” protective sleeve, it is easier to achieve a UL fire rating, which is important in commercial applications.

The push/pull/turn design is based on a cylindrical platform. However, the inside and outside spindles are connected by a cam spindle adapter, and will not operate independently as in a cylindrical lock.



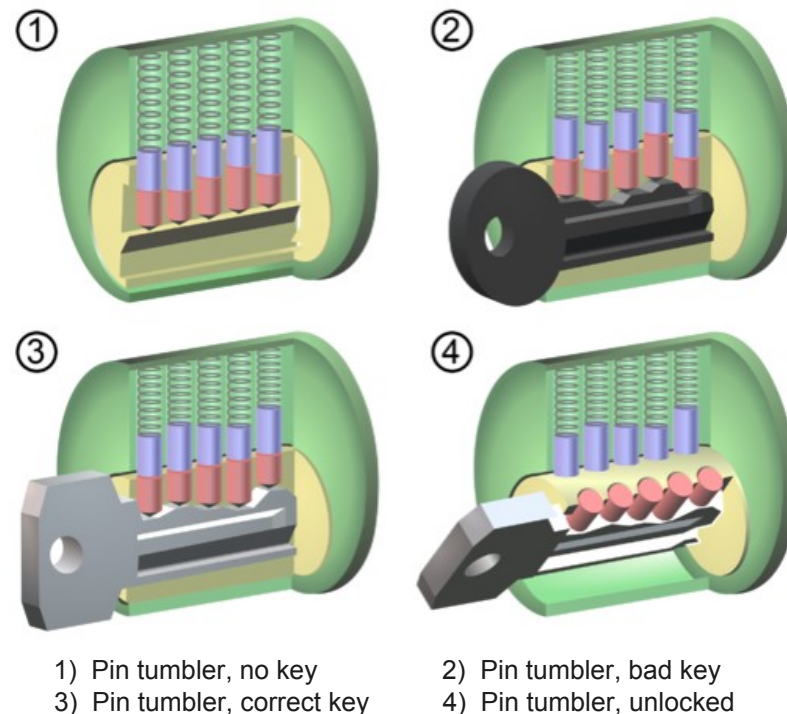
Top Assembly Push/Pull/Turn Components

General Security for Exterior Doors: Pin Tumblers

The majority of key-operated locks utilize pin tumblers to provide access. The mechanism uses small sliding pins of varying lengths in a lock cylinder that work against coil springs. Each pin must be raised to the proper height by the corresponding notch depth cut in the key to allow pins to separate at the shear line in order for the cylinder plug to rotate and open the lock.

Pin tumblers generally comprise:

- **Bottom Pins (Key Pins):** Pins that are touched by the key and sized corresponding to the different depth cuts on the key.
- **Top Pins (Driver Pins):** Pins placed between the key pins and the springs that block the rotation of the plug unless the proper key is used.
- **Master Pins:** Pins between the driver and key pins that enable a master key to operate the same lock.



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User: Crisco 1492. [CC-BY-SA-3.0](https://creativecommons.org/licenses/by-sa/3.0/) via [Wikimedia Commons](https://commons.wikimedia.org/wiki/File:Pin_tumbler_lock_mechanism.svg).

ANSI Grades

The Builders Hardware Manufacturers Association (BHMA) works alongside the American National Standards Institute (ANSI) to develop and publish performance standards for builders hardware. These standards have cycle, operational, strength, security, dimension, and finish requirements. Products that meet the standards, as tested by a nationally recognized testing laboratory, may be listed in the *Directory of Certified Products* published by BHMA. Product grades are defined by progressive performance benchmarks in the given tests, and traditional numeric classification is being replaced by alphabetic classification.

Grade 1 or Grade A: These locks are the highest security door lock grade and were initially designated for commercial use only. Today, they are used on residential and commercial properties that require heightened security. The locks may have additional security features such as bump-proof cylinders, electronic mechanisms, and solid brass components.

Grade 2 or Grade B: These locks provide greater than minimum standard security and are installed on the majority of residential and commercial properties with medium to low traffic. This grade represents most of the locks in use for high residential security and lightweight commercial security.

Grade 3 or Grade C: These locks provide minimum security and can be found on starter homes and commercial properties with minimal valuables to protect. They are basic locks suitable for lightweight residential and commercial security.

Testing

UL 437 Standard for Key Locks

Attack Resistance Tests:

- Picking test
- Lock bumping test
- Impression test
- Forcing test
- Drilling test
- Sawing test
- Prying test
- Pulling test
- Driving test

Polymeric Materials Tests:

- Strength
- Aging-stress distortion
- Moisture absorption

Other Tests:

- Endurance test
- Salt spray corrosion test



UL Fire Rated

UL certifies materials, systems, and assemblies used for structural fire resistance and separation of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from the building. UL performs performance testing of hardware per ANSI/BHMA test standards.

Push/pull/turn locksets, knobs, and levers, when specified, are UL listed for a 90-minute fire rating in the U.S. and Canada, when used with UL latches. Their complementary deadbolts have the same fire rating. This is particularly important for apartment communities and is required in commercial spaces and garage service doors for single-family structures.

BHMA has created a series of publications called *Hardware Highlights*. Each document within the series provides a brief overview of an ANSI/BHMA standard and gives a few examples of the types of evaluations conducted for certification. The next few slides list some of the ANSI/BHMA standards and describe a few applicable tests.

ANSI/BHMA Standards for Door Hardware

Deadbolts

ANSI/BHMA A156.36 – 2010 Auxiliary Locks

SCOPE: 1.1 ANSI/BHMA A156.36 establishes requirements for auxiliary locks, and includes dimensional criteria and five classifications of tests: operational, cycle, strength, security, and finish.

ANSI/BHMA A156.40 – 2015 Residential Deadbolts

SCOPE: 1.1 ANSI/BHMA A156.40 establishes requirements for residential deadbolts and deadlatches, and includes durability, security, and finish tests. Residential deadbolt and deadlatches are generally used for single-family homes and multifamily dwellings.

Operation: Door hardware must operate in a manner that ensures ease of egress and smooth closing. For example, the forces that retract the latch or bolt must not exceed a maximum torque of 9 in-lbf.

Durability: Hardware must be durable. High-grade residential deadbolts, for example, must pass a rigorous test that requires 400,000 cycles of opening and closing.

Security & Strength: Deadbolts must allow carefree operation and provide a high degree of security. Several aggressive tests are specified, including one that loads the door against the deadbolt with 1,350 pounds of force.

Appearance: Builders hardware must maintain its aesthetic. Resistance to corrosion, chemicals, abrasion, and sunlight are all considered during a variety of finish tests.

ANSI/BHMA Standards for Door Hardware

Locks and Handlesets

ANSI/BHMA A156.2 – 2011 Bored and Preamsembled Locks and Latches

SCOPE: 1.1 This Standard establishes performance requirements for bored and preassembled locks and latches, and includes cycle tests, strength tests, operational tests, security tests, material evaluation tests, finish tests, and dimensional criteria.

Operation: Attributes such as the force to retract the latch and force to close the door are measured to ensure ease of egress and smooth closing. For example, lever-operated locks must open with a maximum torque of 28 in-lbf.

Durability: Hardware must be durable. Grade 1 locks, for example, must pass a rigorous test through one million cycles of opening and closing with a 10-pound axial load applied.

Safety & Security: Locksets must allow carefree operation and provide a high degree of security. Aggressive tests are specified, including a 1,200 in-lbf locked lever torque and two directions of impact.

Appearance: Builders hardware must maintain its aesthetic. Resistance to corrosion, chemicals, abrasion, and sunlight are all considered during a variety of finish tests.

ANSI/BHMA Standards for Door Hardware

Finishes

ANSI/BHMA A156.18 – 2012 Materials and Finishes

SCOPE: 1.1 This Standard establishes finish test methods and code numbers for finishes on various base materials. It includes criteria for viewing comparative finishes to the BHMA match plates and establishes five categories of finishes.

Corrosion: Nearly every type of builders hardware is evaluated to the salt spray test described in the standard. The test method and failure criteria include lack of corrosion, staining, and blistering.

Wear & Chemical: The surface must hold up to handling during the operation of the hardware so it is put through a combination of tests, including pencil hardness, abrasion, and perspiration resistance.

Safety & Security: Finishes need to be formulated to resist degradation over time from exposure to light. Visual failure modes are any chipping, flaking, and color loss or change.

Nomenclature: Useful to designers, specifiers, and other users, most combinations of architectural finish and substrate are assigned a BHMA Code Number, such as 605 for clear-coated bright brass.

Increasing Security in Locksets

Anti-Pick Locks

Many locks can be picked using a couple of small instruments to create torsion (to turn the lock) and to push the pins up into the opening position in the cylinder. The lock will open once the top half of the pins are aligned above the shear line.

To make a lock almost impossible to pick, the top half of the pin stack can have a mushroom shape or an indent that catches when it is being picked. This will give the lock picker the impression that the pin is in place even though it isn't. Alternatively, ridges in the top half of the pin stack make it difficult to determine when the pin is at the correct height.

Anti-Pry Shields

Anti-pry shields provide increased security and protection. They cover the latch to prevent attacks and hold the lock in place during installation.

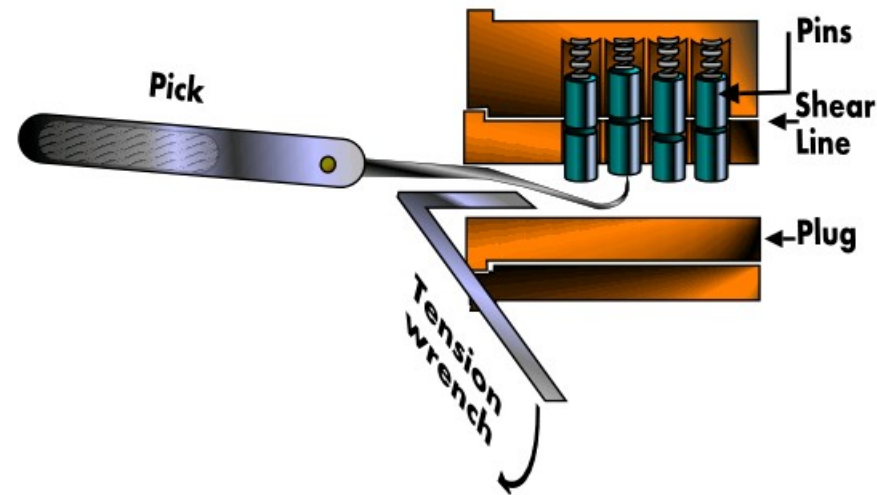


Image: User: Oldie~commonswiki; Pin and Tumbler Lock Picking. [CC-BY-SA-3.0](#)
via [Wikimedia Commons](#).

Increasing Security in Locksets

Anti-Drill Locks

A lock can be drilled by drilling just below the shear line in the keyhole to create a guidance point. Using increasing sizes of drill bits, the hole size is enlarged and the lock is destroyed. A flat-headed screwdriver can be used to turn the lock.

Anti-drill locks have hardened steel or ceramic plates inside to keep the internal mechanisms from snapping, or steel pins and a steel cylinder to defend against drilling.

Anti-Bump Locks

Lock bumping means making the pins jump above the shear line to gain access. This process uses a key with a series of low ridges. When the key is bumped hard into the cylinder and turned instantly after, the lock may open. This is a quick method of gaining entry and leaves no signs of intrusion.

Anti-bump locks have more pins and specially made keys. Shallow pin stacks help prevent them from jumping up. Locks with programmable side bars and no top pins, and locks that use rotating disks, also protect against bumping.



ADA Compliance: Levers and Deadbolts

In order to be ADA-compliant and accommodate a broader range of users, parts must be operated without hand or finger dexterity, fine motor movement, or simultaneous actions.

Handles, Pulls, and Knobs

U-shaped pulls and lever handles meet ADA requirements. Stationary knobs with a shape that can be loosely gripped also are acceptable. Knobs that require a full-hand grip and turning, and thus twisting of the wrist, do not comply.

Applicable section of the 2010 ADA Standards for Accessible Design

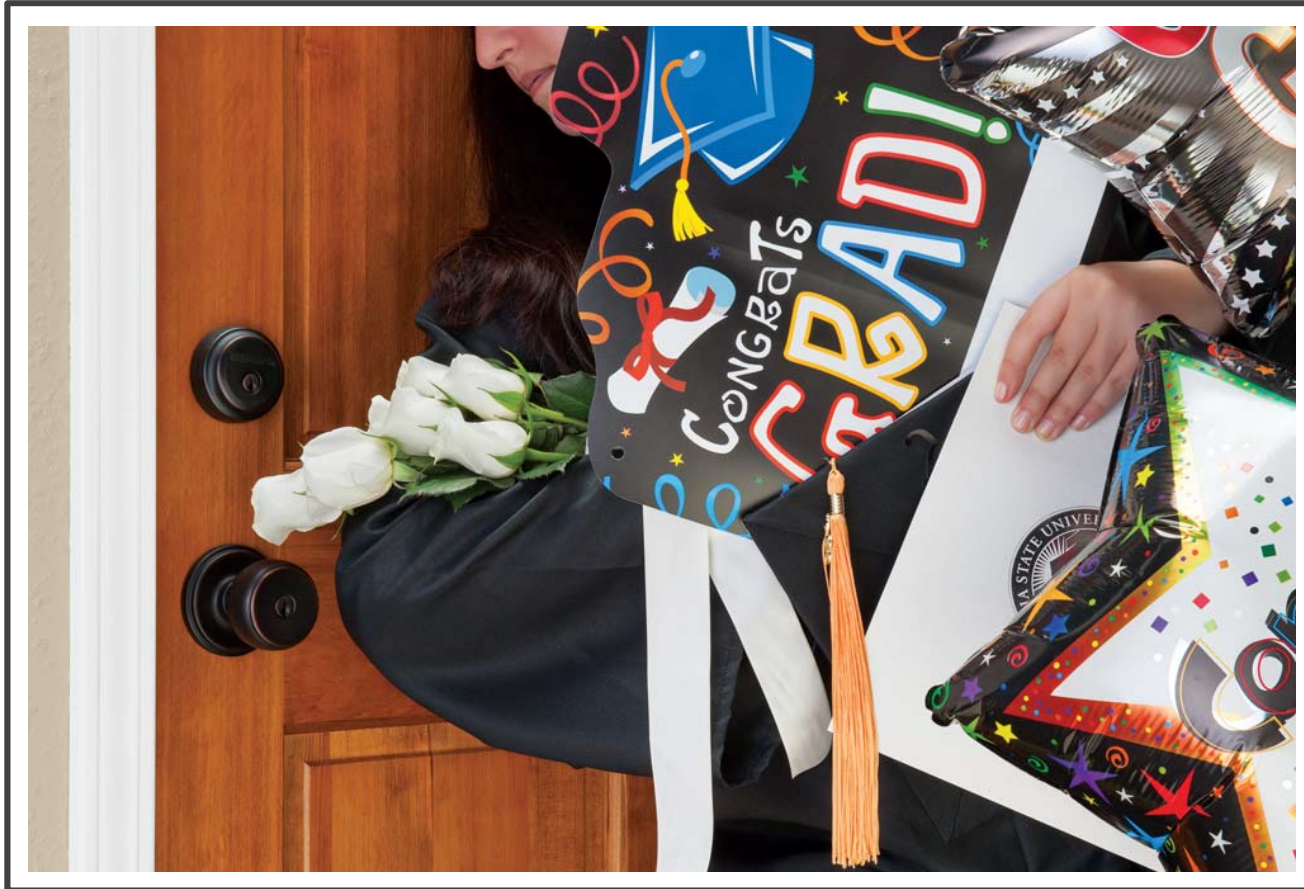
309 Operable Parts

309.1 General. Operable parts shall comply with 309.

309.2 Clear Floor Space. A clear floor or ground space complying with 305 shall be provided.

309.3 Height. Operable parts shall be placed within one or more of the reach ranges specified in 308.

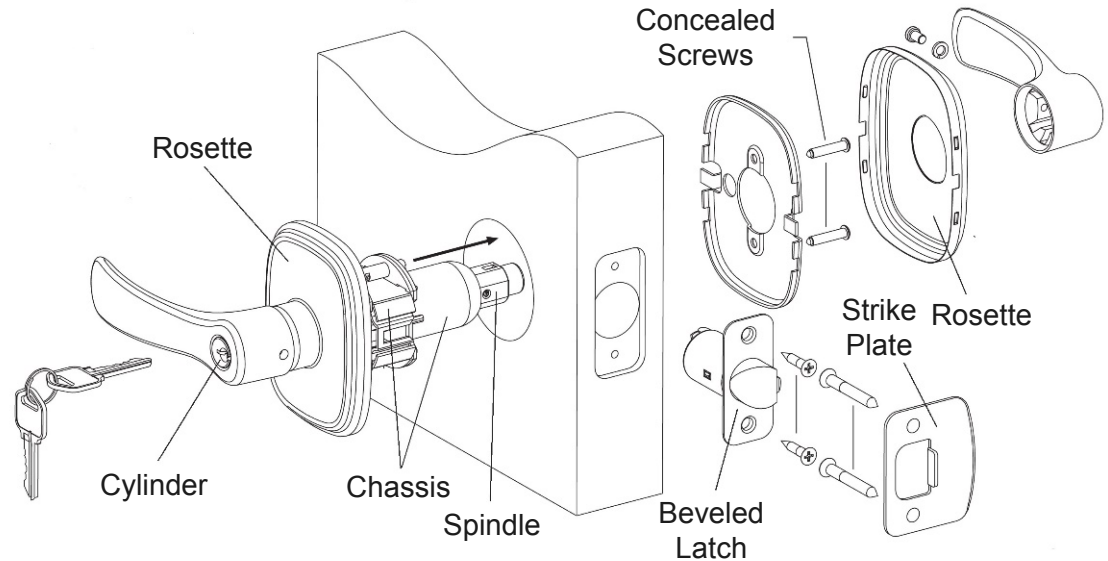
309.4 Operation. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.



Push/Pull/Turn Hardware

Features of Push/Pull/Turn Hardware

- All push/pull/turn hardware is ANSI Grade 2 (except for the warped door test on the levers).
- The cylinders are five-pin tumblers.
- They have a cylindrical chassis for durability.
- The screws are concealed for improved appearance.
- They have beveled latches for the smooth opening of the door.
- They have large decorative rosettes offering 33% more coverage than standard knobs/levers to hide blemishes on the door, particularly from old hardware.



Features of Push/Pull/Turn Hardware

- There are 90-minute UL fire rated options available.
- Keyway options include knobs, levers, deadbolts.

Finish Warranty

- Push/pull/turn hardware products currently available have a ten-year warranty for defects in material or workmanship.

Mechanical Warranty

- Featuring durable, all-metal construction, push/pull/turn products are built on a cylindrical chassis normally used in commercial applications, so they are exceptionally durable and come with a lifetime warranty.
- The keyed products are pick-resistant, bump-resistant, and drill-resistant, and the deadbolts are also equipped with anti-pry shields and steel anti-drill plates to provide the highest level of security.

Exterior Options

Keyed Entry Knob or Lever w/wo Deadbolt

Description

- Keyed entry is suitable for front doors, back doors, and garage doors.
- The knob is locked or unlocked by a key outside, or turn button inside.
- The outside lever is locked by a push button inside, and is unlocked by a key, or by pushing, pulling, or turning the inside knob/lever.
- The inside lever is always free. The outside lever cannot be locked with a key.

Appearance

- Finishes include polished brass, satin nickel, polished chrome, and aged bronze.
- These are available as knobs, levers, and knob/lever combinations.



Exterior Options

Non-Keyed Entry Knob or Lever with Deadbolt

Description

- These are non-keyed knobs and levers for front doors, back doors, and garage doors coupled with a keyed deadbolt.
- The deadbolt is operated by a key outside, and a thumbturn inside.

Appearance

- Finishes include polished brass, satin nickel, polished chrome, and aged bronze.



Exterior Options

Single Cylinder Deadbolt

Description

- The deadbolt is operated by a key outside and a thumbturn inside.

Appearance

- Finishes include polished brass, satin nickel, polished chrome, and aged bronze.

Handleset and Deadbolt

Description

- The latch bolt is operated by pushing on the outside handle or by pulling or turning the inside knob. The handle and knob are always free.
- The deadbolt is operated by a key outside and a thumbturn inside.

Appearance

- Finishes include polished brass, satin nickel, polished chrome, and aged bronze.



Interior Options

Passage

Description

- These are passage locks for laundry rooms, pantries, kids' rooms, and closets.
- Both knobs or levers are always free.

Appearance

- Finishes include polished brass, satin nickel, polished chrome, and aged bronze.



Interior Options

Privacy

Description

- These are privacy locks for bedrooms and bathrooms.
- The knob is locked or unlocked by a turn button inside. The outside knob is unlocked by an emergency key.
- They are not fully compliant with the definition of either F76A or F76B in ANSI156.2. The inside knob does not operate the latch when locked, nor does it release the locking mechanism.
- The outside lever is locked by an off-set push button inside. The outside lever is unlocked by an emergency key or by pushing, pulling, or turning the inside lever, or by closing the door. The inside lever is always free.

Appearance

- Finishes include polished brass, satin nickel, polished chrome, and aged bronze.



Interior Options

Dummy

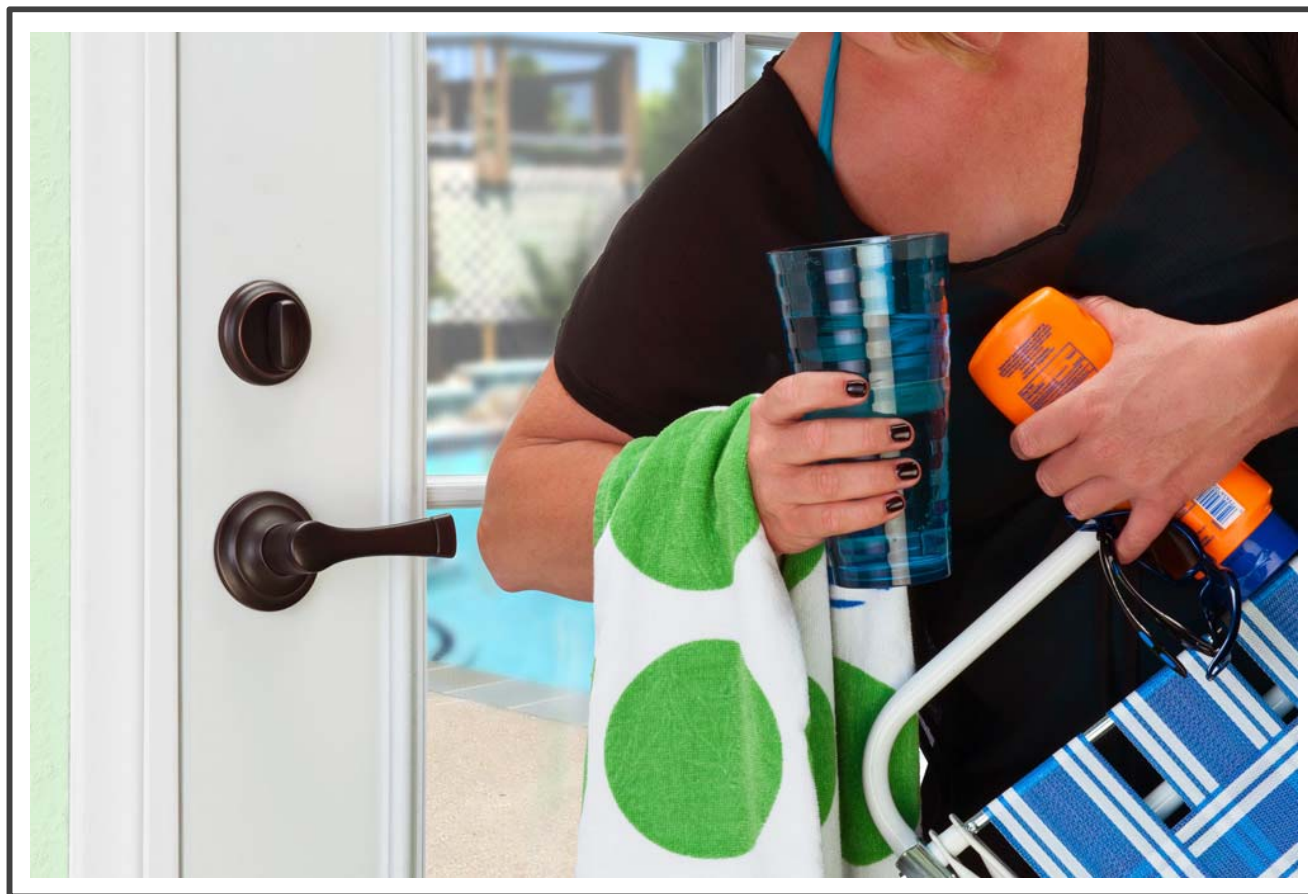
Description

- These are dummy locksets for closets and French doors.
- A dummy knob or lever is used for a door where only a pull is required. It does not operate a latch. The dummy door lockset functions as a door pull.

Appearance

- Finishes include polished brass, satin nickel, polished chrome, and aged bronze.

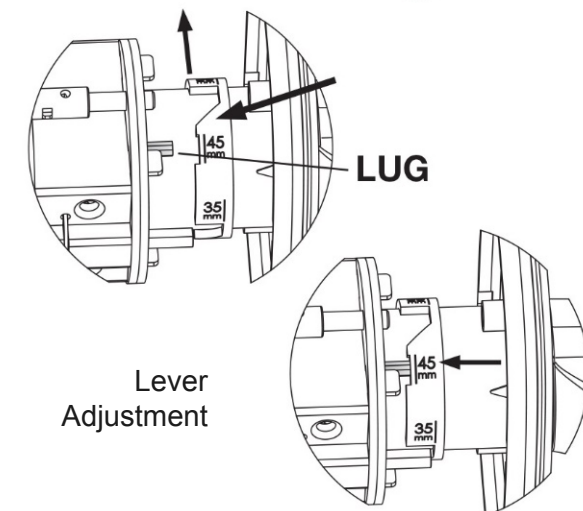
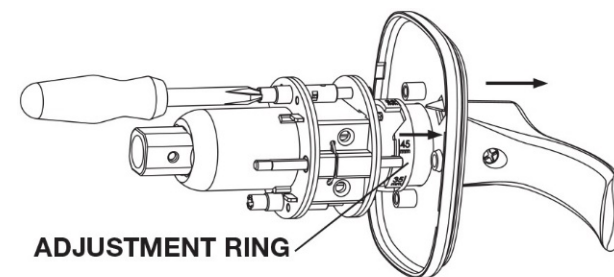
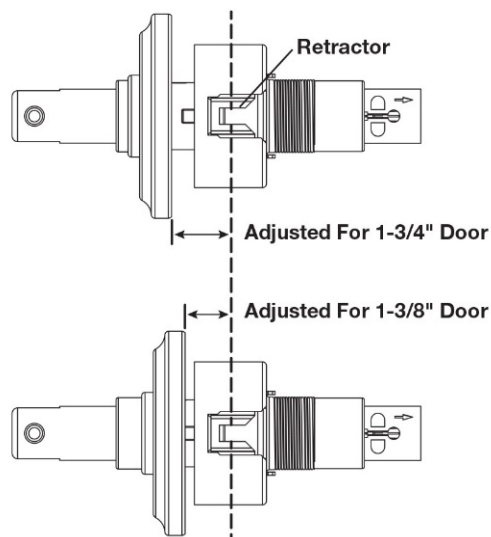
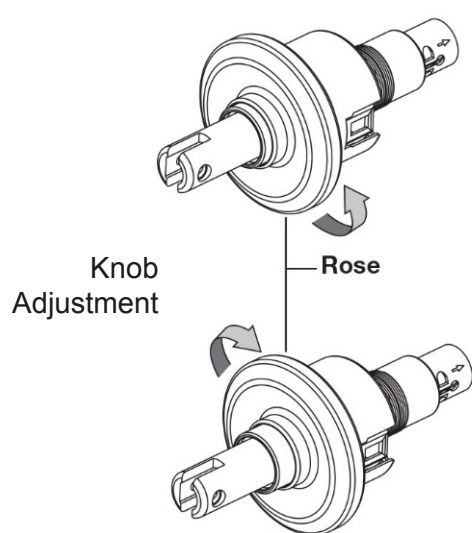




Selection Considerations

Considerations: Door Thickness

Door hardware may have to be adjusted to accommodate the thickness of the door. The retractor needs to be on the centerline of the door when installed. Keyed hardware is preset for thick ($1\frac{3}{4}$ ") doors. Non-keyed hardware is preset for thin ($1\frac{3}{8}$ ") doors. If an adjustment is needed, it is simple to do. Follow the manufacturer's instructions as the adjustment is different for knobs and levers.

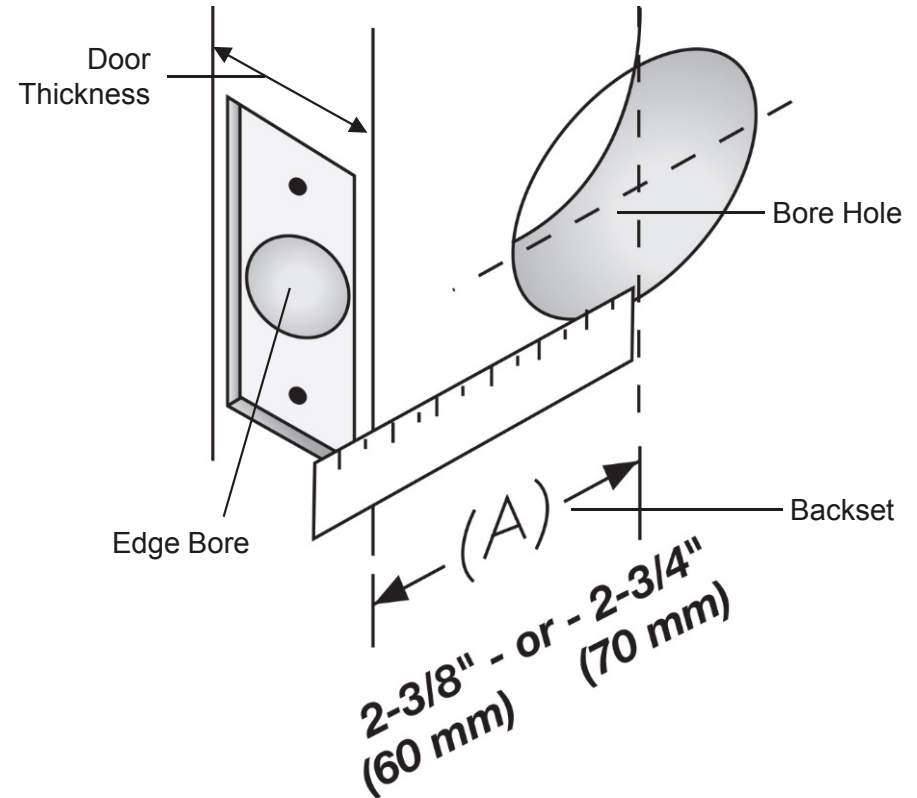


Considerations: Backset Dimension

The backset is the distance from door edge to the center of the hole on the door face. Push/pull/turn products accommodate backsets that are $2\frac{3}{8}"$ or $2\frac{3}{4}"$.



Please remember the **exam password BACKSET**. You will be required to enter it in order to proceed with the online examination.



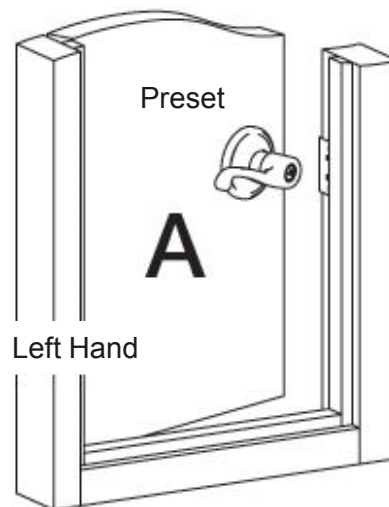
Considerations: Handing of the Door

Depending on the hardware chosen (some hardware is universal), you may need to know the handing of the door. Door handing is the direction in which the door swings.

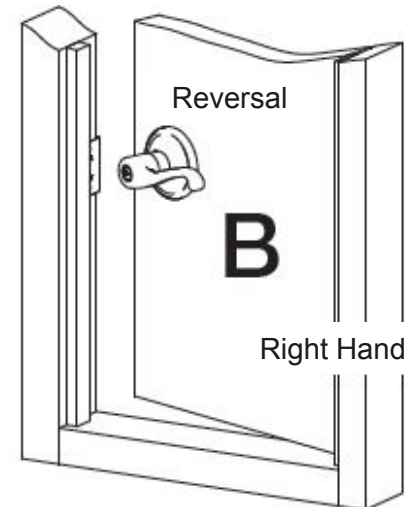
To determine handing:

- 1) Stand on the outside of the door.
- 2) Facing the door, see what side the hinges are located on.
 - Left Hand – The hinges are on the left side of the door.
 - Right Hand – The hinges are on the right side of the door.

Preset orientation of lever handle:



Reverse orientation of lever handle:

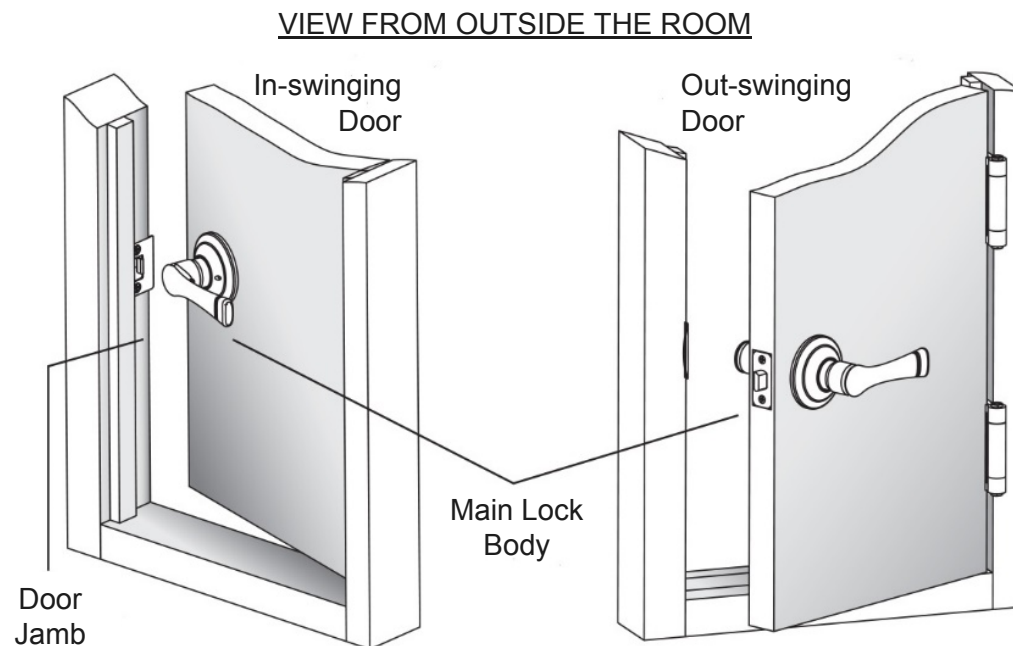


Door shown is in-swinging

Considerations: Door Swing

To determine the swing of a door, face the outside of the door. If the door is pushed into the room to enter from the outside, it is an in-swinging door. If the door is pulled open to enter the room from the outside, it is an out-swinging door.

NOTE: Push/pull/turn levers and passage knobs work on both in-swinging and out-swinging doors. Push/pull/turn keyed knobs, privacy knobs, and handlesets work on in-swinging doors only.

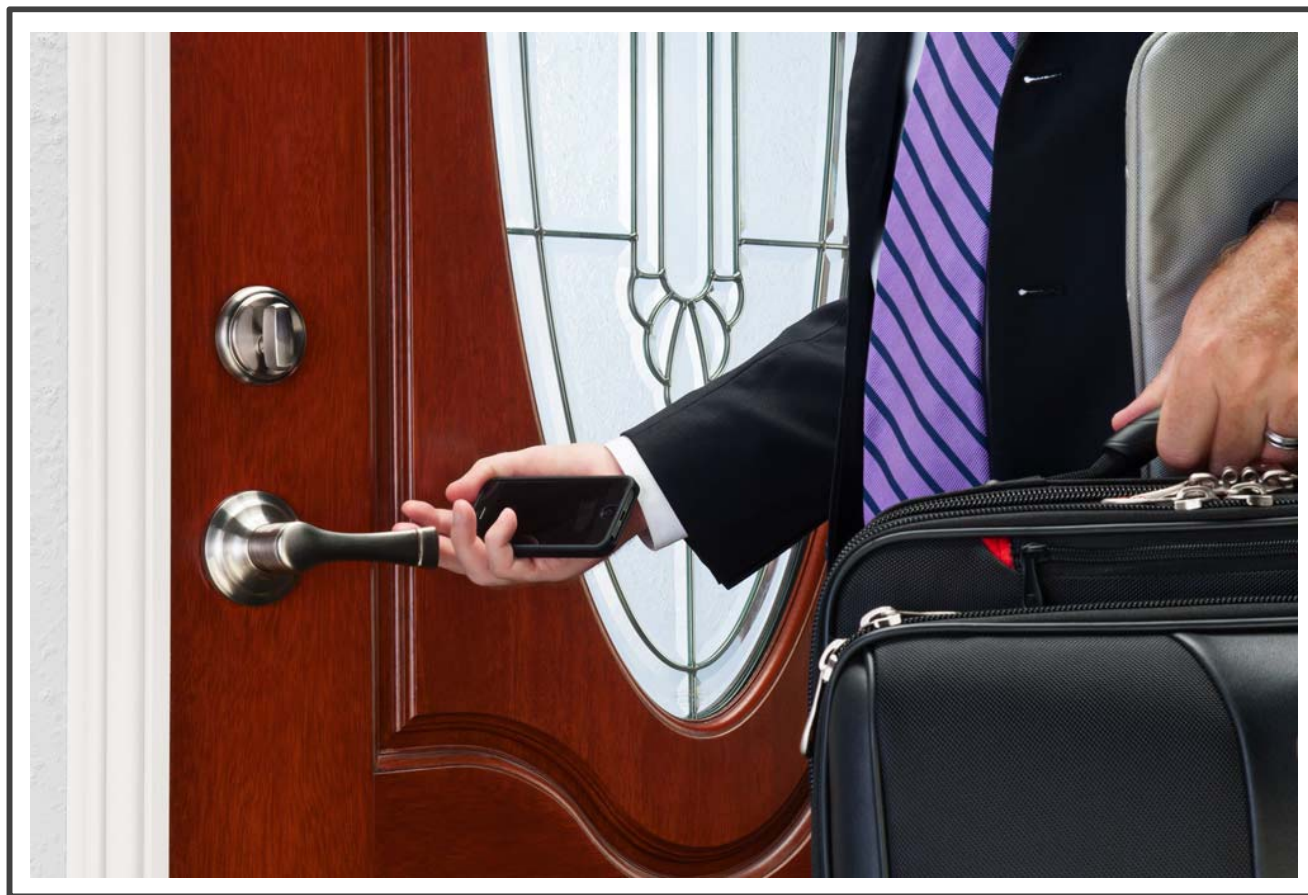


Considerations: Type of Lockset

There are a few questions that should be asked before selecting door hardware:

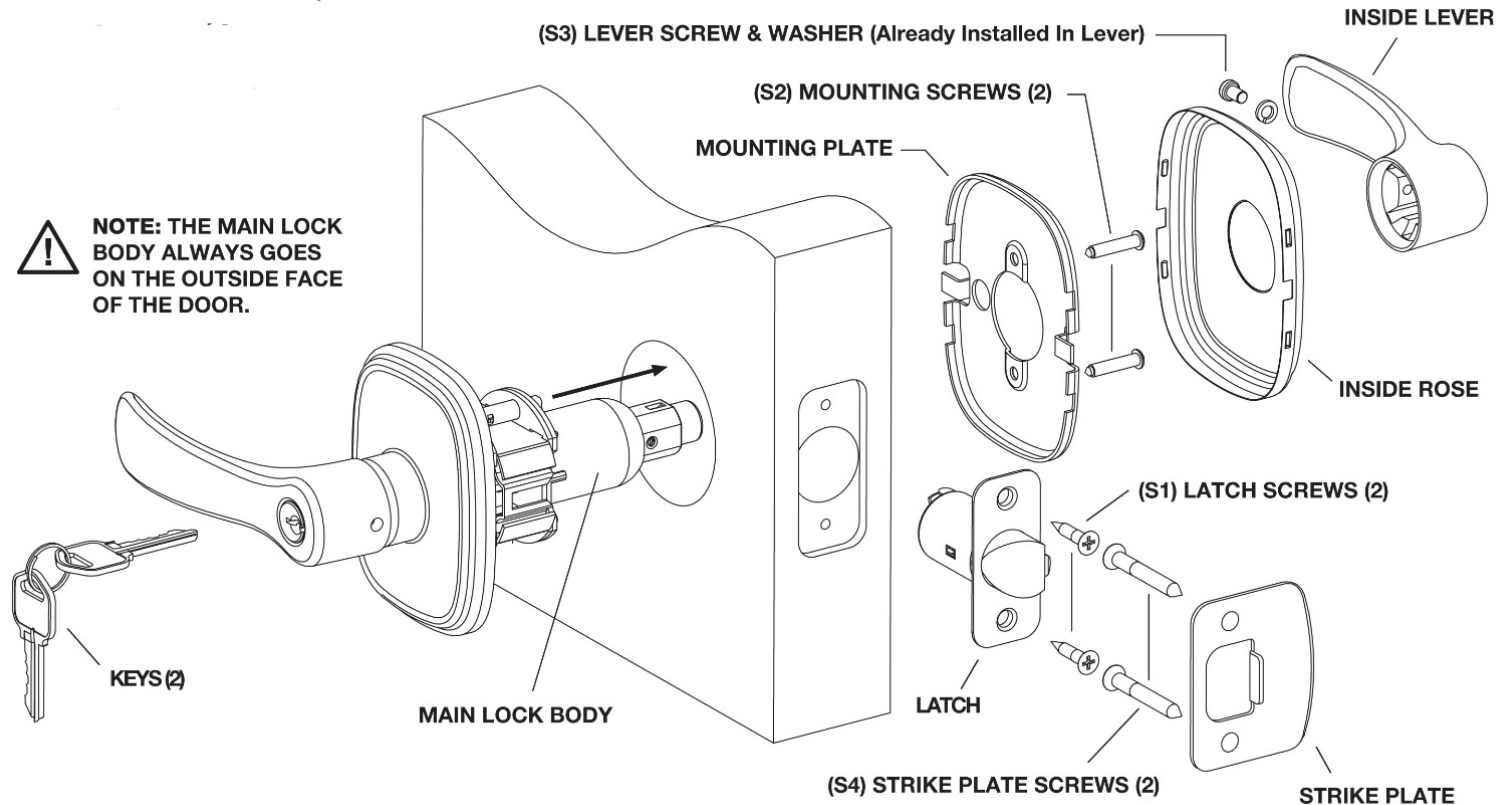
- Is it an interior or exterior door?
- What level of privacy or security is required?
- What aesthetic is desired?
- Is it an in-swinging or out-swinging door?





Sample Installations

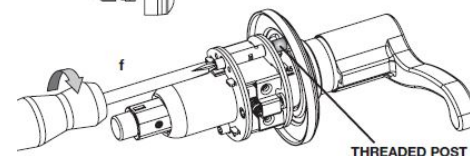
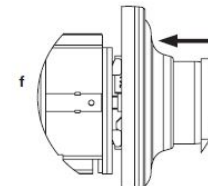
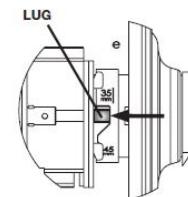
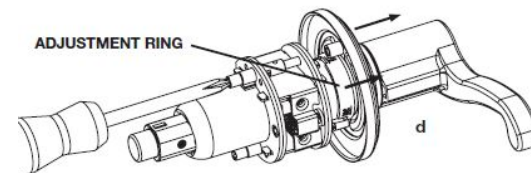
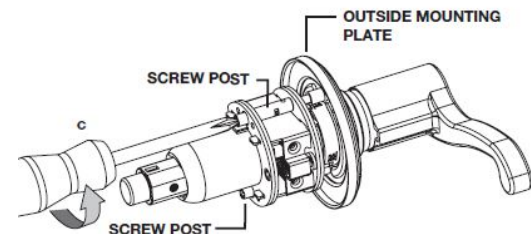
Installation: Lever Handle Locksets



Installation: Lever Handle Locksets

1) Adjust for Door Thickness

- a) Door thickness should be $1\frac{3}{8}$ " (35 mm) or $1\frac{3}{4}$ " (45 mm). Round to the nearest of those two thicknesses if necessary.
- b) Entry levers are preset for a $1\frac{3}{4}$ " door. Privacy and passage levers are preset for $1\frac{3}{8}$ " thick doors. Lockset is preset for a $1\frac{3}{4}$ " door. If thickness is about $1\frac{3}{4}$ ", proceed to next step.
- c) If thickness is closer to $1\frac{3}{8}$ " (35 mm), position of the outside mounting plate must be adjusted by loosening the screw posts that hold the mounting plate.
- d) Slide the mounting plate and adjustment ring back.
- e) Rotate adjustment ring until the 35 mm notches on the ring are aligned with the lugs and slide the adjustment ring against the lugs.
- f) Slide outside mounting plate back against adjustment ring and secure it by screwing the two screw posts back into the threaded posts on the mounting plate.



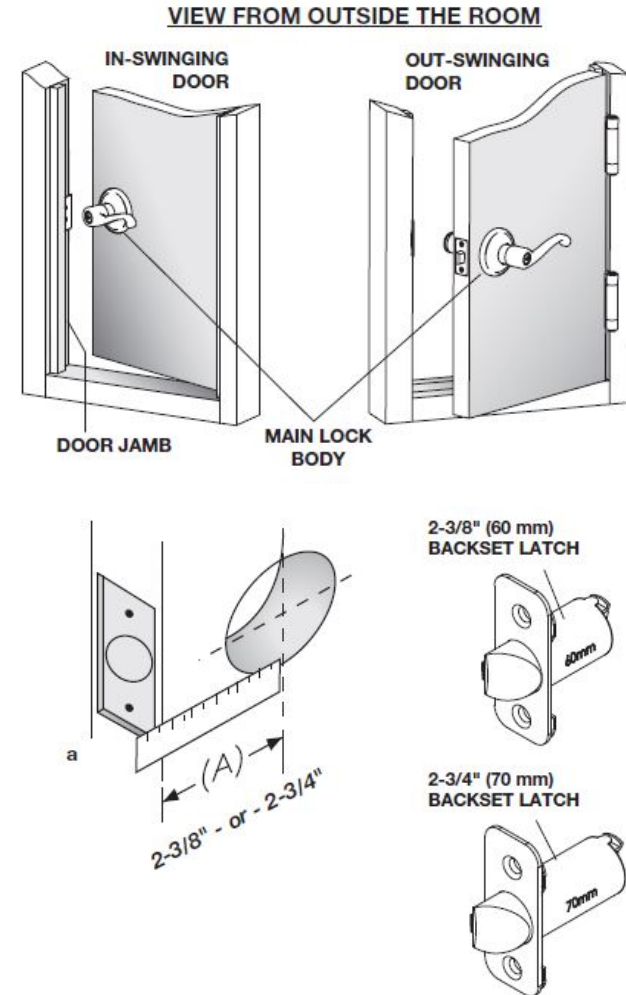
Installation: Lever Handle Locksets

2) Determine Type of Door

- The push/pull/turn lever can be installed on both in-swinging and out-swinging doors.
- The main lock body always goes on the outside face of the door. For out-swinging doors, the outside face is the side of the door on which the hinges are visible.
- Push the lever to enter a room with an in-swinging door, or pull the lever to enter a room with an out-swinging door.

3) Select Appropriate Latch

- Backset is the distance from the door edge to the center of the $2\frac{1}{8}$ " (54 mm) hole on the door face.
- Select the $2\frac{3}{8}$ " (60 mm) or $2\frac{3}{4}$ " (70 mm) latch based on the backset of door.



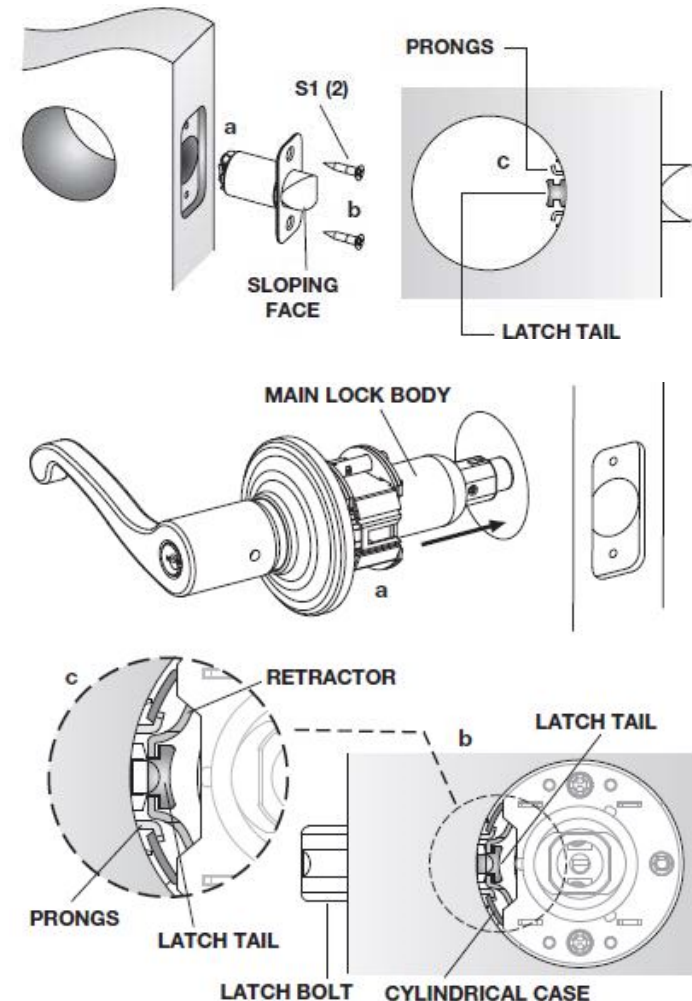
Installation: Lever Handle Locksets

4) Install Latch

- Insert the latch into the 1" (25.4 mm) hole in the door edge. Sloping face of latch bolt should face towards the door jamb.
- Insert two (S1) screws in the faceplate holes and tighten.
- After installation, the latch prongs and latch tail(s) should be visible through the 2 $\frac{1}{8}$ " bore in the door as shown.

5) Install Main Lock Body

- Insert main lock body through the 2 $\frac{1}{8}$ " (54 mm) hole.
- Look through the hole from the inside of the door to guide the main lock body.
- Make sure the cylindrical case engages with the latch prongs and the retractor interlocks with the latch tail.
- Test by rotating the lever—the latch bolt should retract.



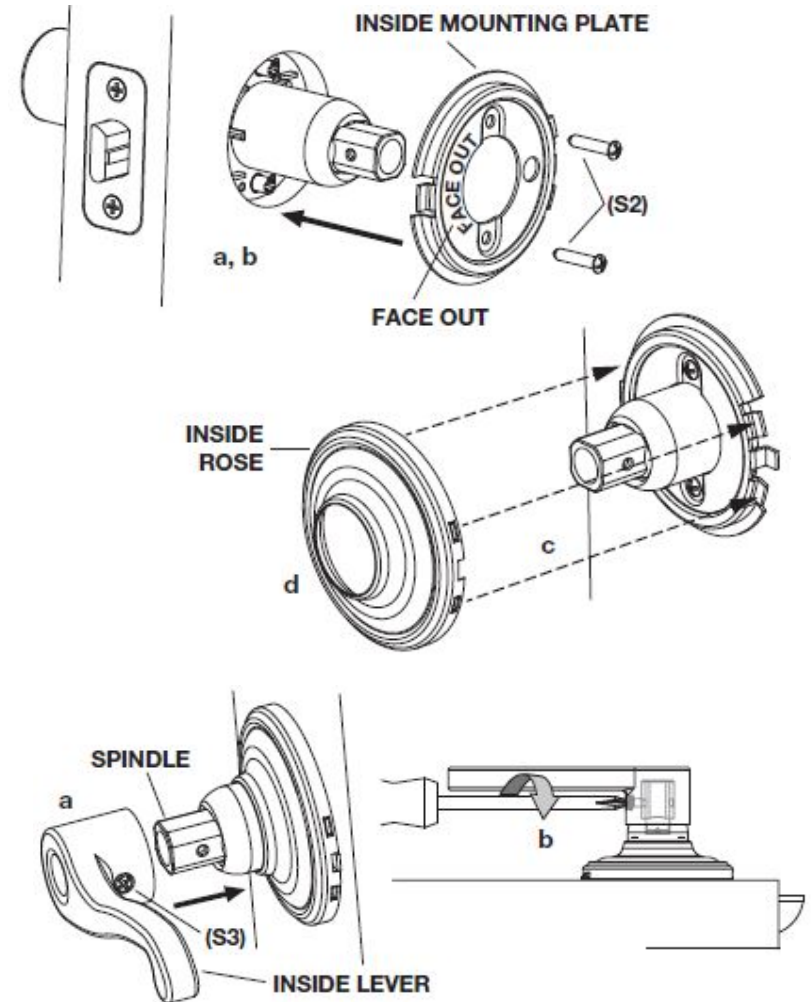
Installation: Lever Handle Locksets

6) Install Inside Mounting Plate and Rosette

- Place inside mounting plate over main lock body and against the inside door face with the mounting holes aligned vertically. Position the mounting plate so it reads "FACE OUT" when it is against the door.
- Insert two (S2) mounting screws and engage the threaded holes in the main lock body and tighten.
- Install the inside rosette by aligning with the notches on the mounting plate and snapping it on.

7) Install Inside Lever

- Push the inside lever onto the spindle until it stops.
- Tighten the (S3) screw located on the inside of the lever. The screw will engage the hole in the spindle.
- Test installation by pushing, pulling, and turning the lever.



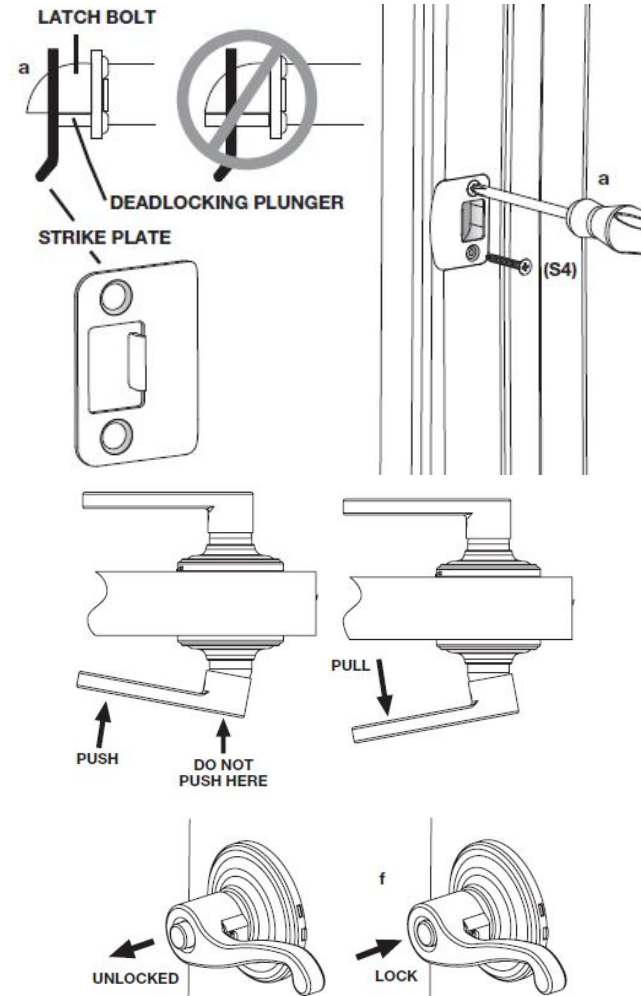
Installation: Lever Handle Locksets

8) Install Strike Plate

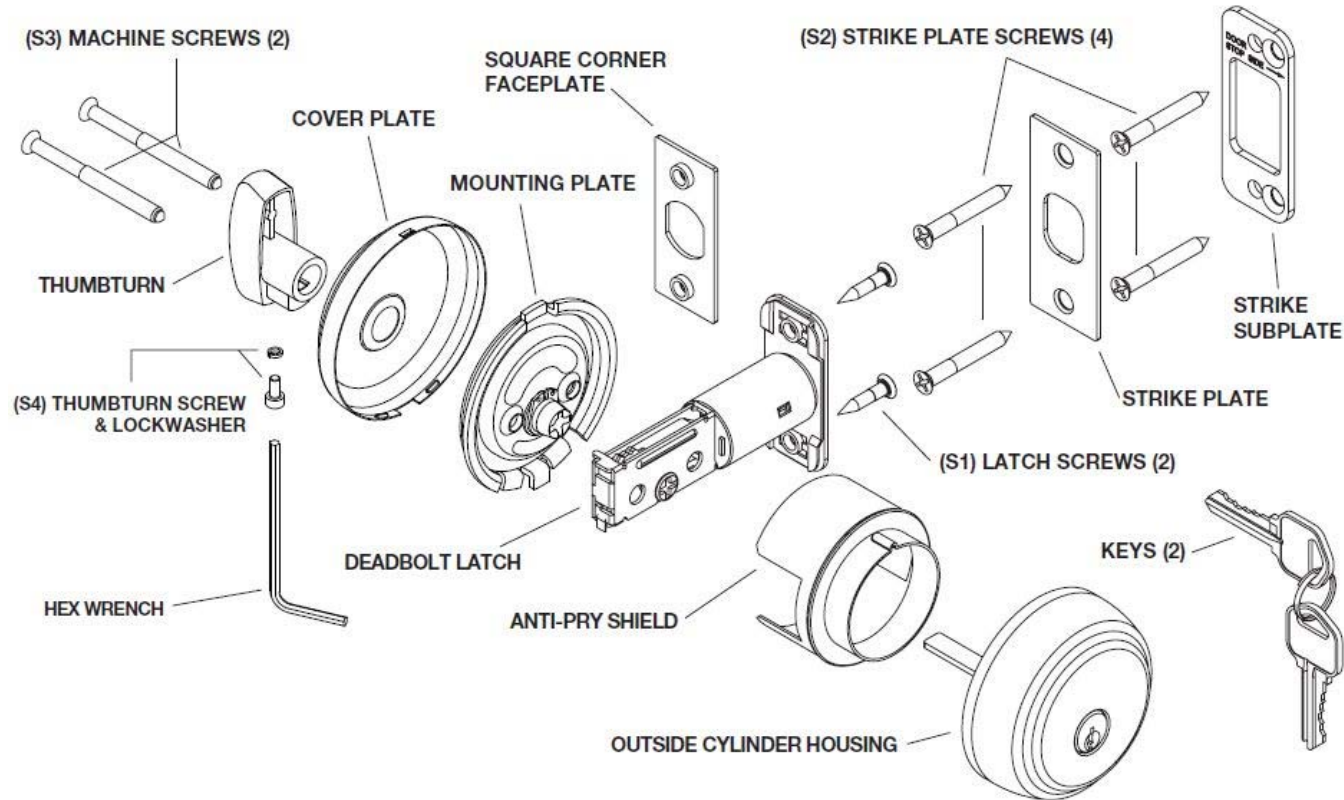
- Secure the strike plate with two (S4) strike plate screws. Make sure the deadlocking plunger is depressed by the strike plate and does not enter the hole in the plate.
- It is important that the latch bolt moves freely in and out of the strike plate in push/pull/turn locks.

9) Operation

- Push or pull the lever near the end.
- Out-swinging Door – To open from the outside, push the lever, or turn the lever in either direction. To exit, pull the lever, or turn the lever in either direction.
- In-swinging Door – To open from the outside, pull the lever, or turn the lever in either direction. To exit, push the lever, or turn the lever in either direction.



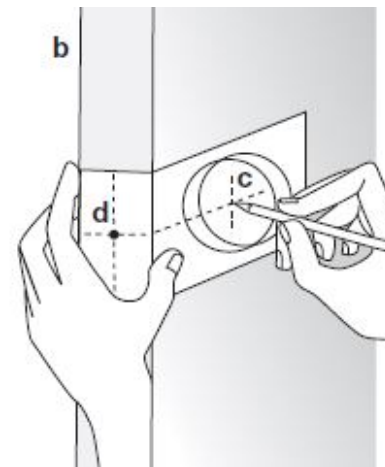
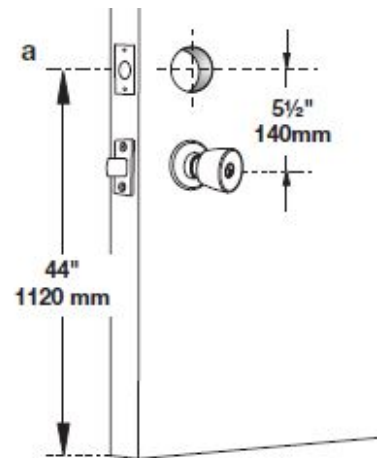
Installation: Deadbolt



Installation: Deadbolt

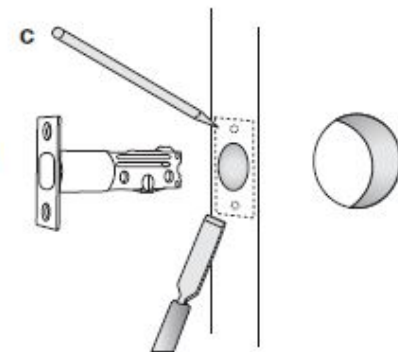
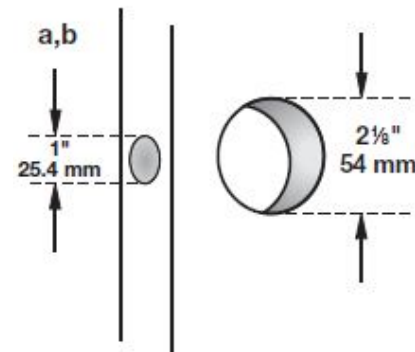
1) Mark Door with Template

- Mark the centerline for the deadbolt about 44" (1120 mm) from the floor, or about 5½" (140 mm) above the center of an existing knob or lever.
- Apply template, with the dotted fold line on the door edge.
- Select the 2⅜" (60 mm) or 2¾" (70 mm) backset and mark the center for the hole for the deadbolt on the door face. Mark the center for the latch hole on the door edge according to the door thickness.



2) Drill Holes

- Drill a 2⅛" (54 mm) hole on the door face.
- Drill a 1" (25.4 mm) hole in the door edge for the latch.
- Insert latch into hole, mark outline of faceplate, and chisel ⅛" (3 mm) deep or until faceplate is flush with door edge.
- Drill two ⅛" (3 mm) pilot holes for the latch screws.



Installation: Deadbolt

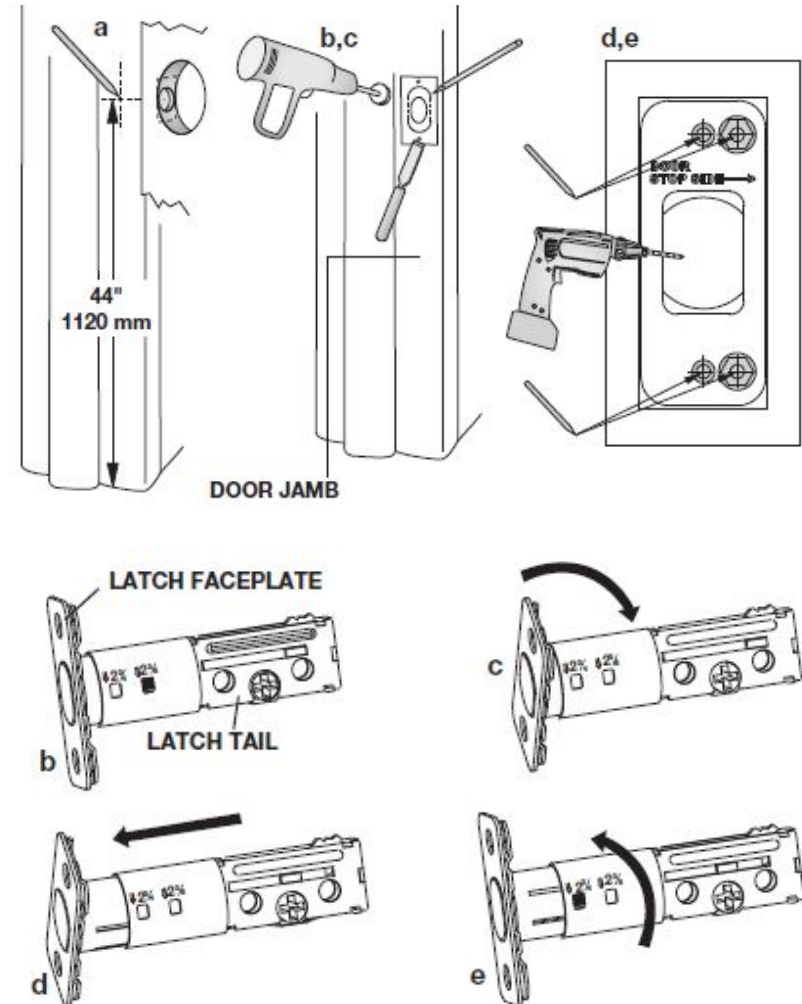
3) Prepare Door Jamb for Strike Plate

- Mark centerline on the door jamb exactly opposite the latch hole in the door edge.
- Drill a 1" (25.4 mm) hole at least 1 1/8" (29 mm) deep in door jamb.
- Center the strike plate over the 1" hole and mark outline. Chisel about 7/32" (5.5 mm) deep or until strike plate and subplate are flush with door jamb.
- Place the strike subplate in the prepared area in jamb and mark screw locations. Drill four 1/8" (3 mm) pilot holes.

4) Select the Proper Backset

To adjust backset from 2 3/8" to 2 3/4":

- Retract the latch bolt.
- Hold latch faceplate in left hand and latch tail in right and twist faceplate clockwise about 1/8 turn.
- Pull the latch faceplate out until it stops; rotate back into position so notch is engaged in hole marked 2 3/4".



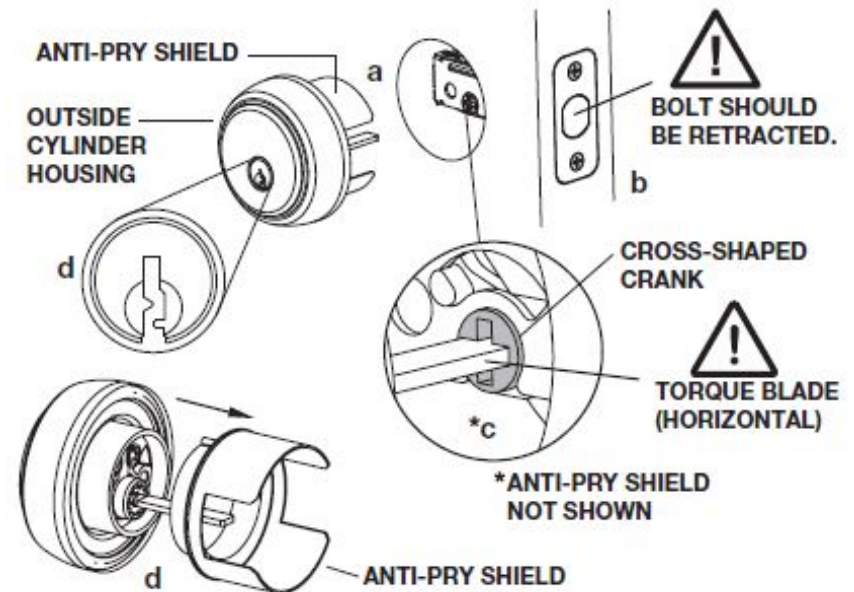
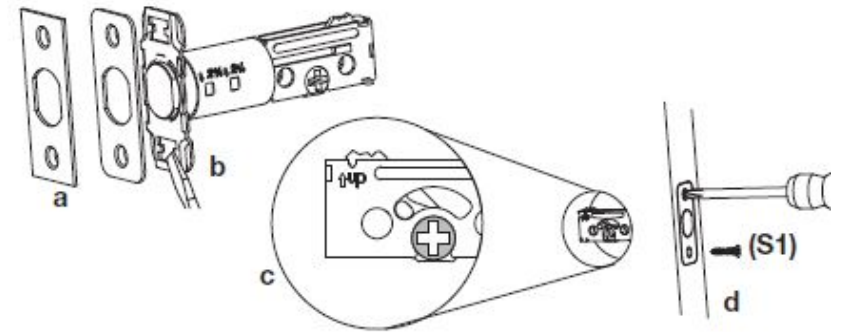
Installation: Deadbolt

5) Install Latch

- Select faceplate to match the cutout in door edge.
- Install latch into hole in edge of door in “UP” position with the cross-shaped crank at the bottom.
- Insert two (S1) latch screws through the holes and tighten.

6) Install Outside Cylinder Housing

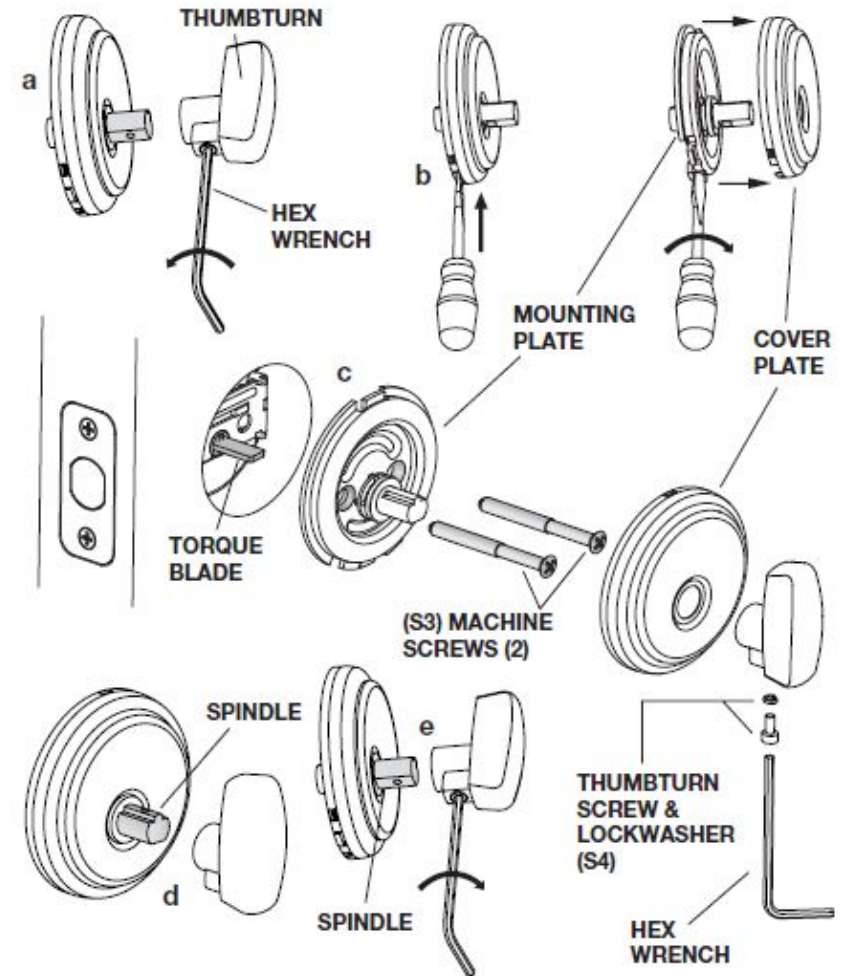
- Orient torque blade of cylinder in a horizontal position. Retract bolt of deadbolt latch. Keyhole should be in the down position.
- Insert torque blade through the cross-shaped crank and push outside cylinder housing until it is flush with door.
- The hole should be $2\frac{1}{8}$ " (54 mm) in diameter to fit anti-pry shield. If an existing hole is smaller, it should be enlarged. The anti-pry shield can be removed, but the deadbolt will no longer meet ANSI Grade 2 standards.



Installation: Deadbolt

7) Install Thumbturn Assembly

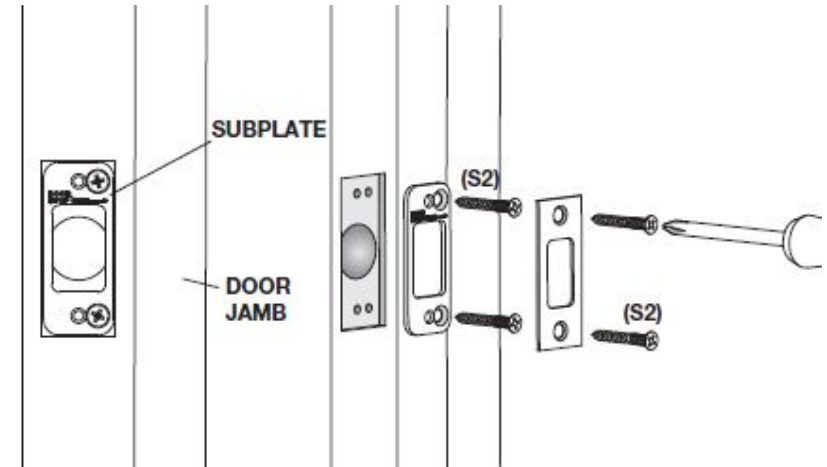
- Remove thumbturn by loosening the (S4) thumbturn screw and lockwasher and slide thumbturn off spindle.
- Remove snap-on cover plate.
- Slide mounting plate onto torque blade and push until flush against door. Insert two (S3) screws through holes in the mounting plate, engaging threaded holes in outside cylinder. Snap rosette onto mounting plate.
- Align thumbturn with spindle.
- Slide thumbturn onto spindle, and tighten (S4) thumbturn screw and lockwasher. The screw should engage the hole in spindle. Tighten until head of screw is flush with thumbturn.
- Test installation by extending the bolt using the thumbturn, and by retracting the bolt using key in the outside cylinder assembly.



Installation: Deadbolt

8) Install Strike Plate with Strike Subplate

- Place strike subplate in prepared area in jamb with words "DOOR STOP SIDE---->" visible and pointing towards jamb.
- Insert two (S2) strike plate screws through holes in subplate and tighten.
- Place strike plate over subplate and insert two (S2) strike plate screws through holes and tighten.
- Close door and test by extending bolt using thumbturn. Make sure the bolt can be inserted fully into strike plate.



Resources

“2010 ADA Standards for Accessible Design.” *ADA.gov*. Department of Justice, September 15, 2010. Web. http://www.ada.gov/regs2010/2010ADASTandards/2010ADASTandards_prt.pdf Accessed May 2016.

“ANSI/BHMA Standards.” *BHMA*. Builders Hardware Manufacturers Association, n.d. Web. <http://www.buildershardware.com/bhma-standards> Accessed May 2016.

Brinks Home Security. Hampton Products International Corporation, n.d. Web. <http://www.brinksppr.com/> Accessed May 2016.

“Hardware Highlights.” *BHMA*. Builders Hardware Manufacturers Association, n.d. Web. <http://www.buildershardware.com/Hardware%20Highlights> Accessed May 2016.

“UL 437 Standard for Key Locks.” *UL Standards*. UL, n.d. Web. <http://ulstandards.ul.com/standard/?id=437> Accessed May 2016.

Watts, Louie. “Anti-pick, Anti-bump, Anti-drill—What Does It All Mean?” *Good to Be Home*. Anglian Home Improvements Magazine, October 11, 2015. Web. <http://www.anglianhome.co.uk/goodtobehome/company-news/product-promotions/anti-pick-anti-bump-what-does-it-all-mean/#.VypQvYQrLIW> Accessed May 2016.

Conclusion

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