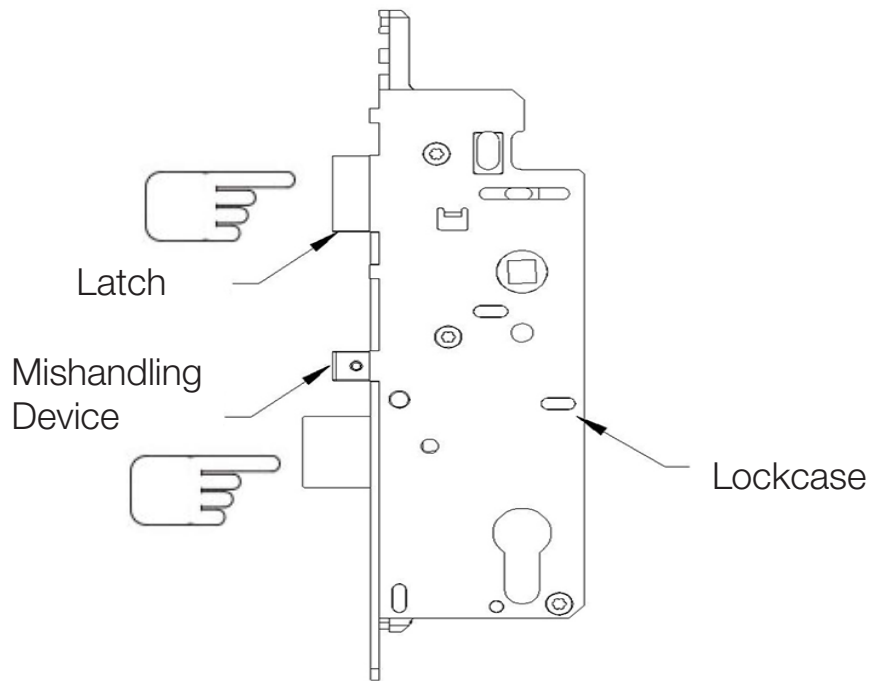


Service Information Packet

Version 4

Hardware Adjustment



Reversing Mishandling Device

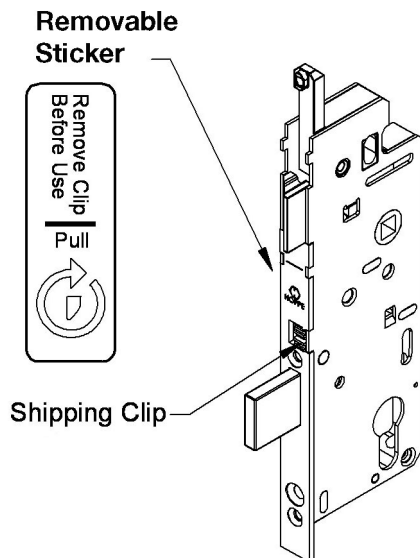
1. Pull and rotate Mishandling device 180* with handle and release back into lockcase.

Reversing Latch

1. Pull and rotate Latch 180* with hand and release back into lockcase.

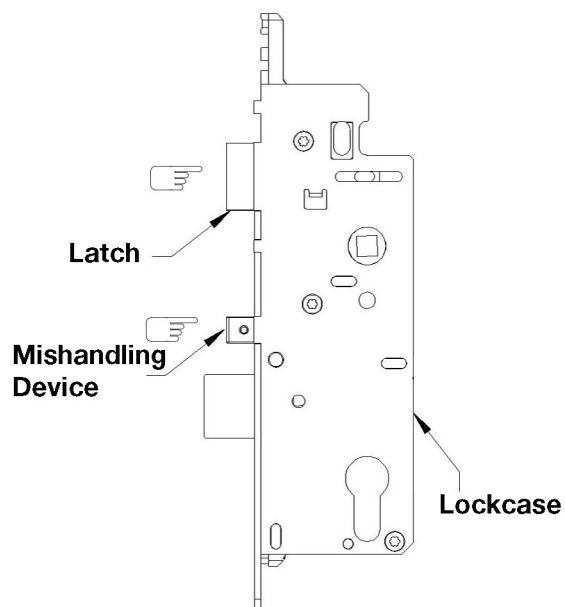
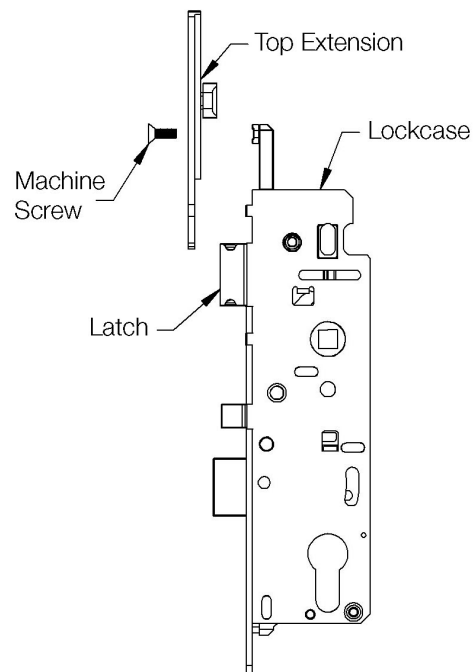
Hardware Instruction Sheet

Shipping Clip for Mishandling Device



1. Remove Sticker
2. Remove Shipping Clip.

Attachment



Reversing Latch and Mishandling Device

1. Pull and rotate Latch 180* with hand and release back into lockcase.
2. Pull and rotate Mishandling device 180* with handle and release back into lockcase.

1. Trim Maintenance:

Use water to clean and a soft cloth. Do not use brass cleaner as it will remove the protective coating.

2. Profile Cylinder:

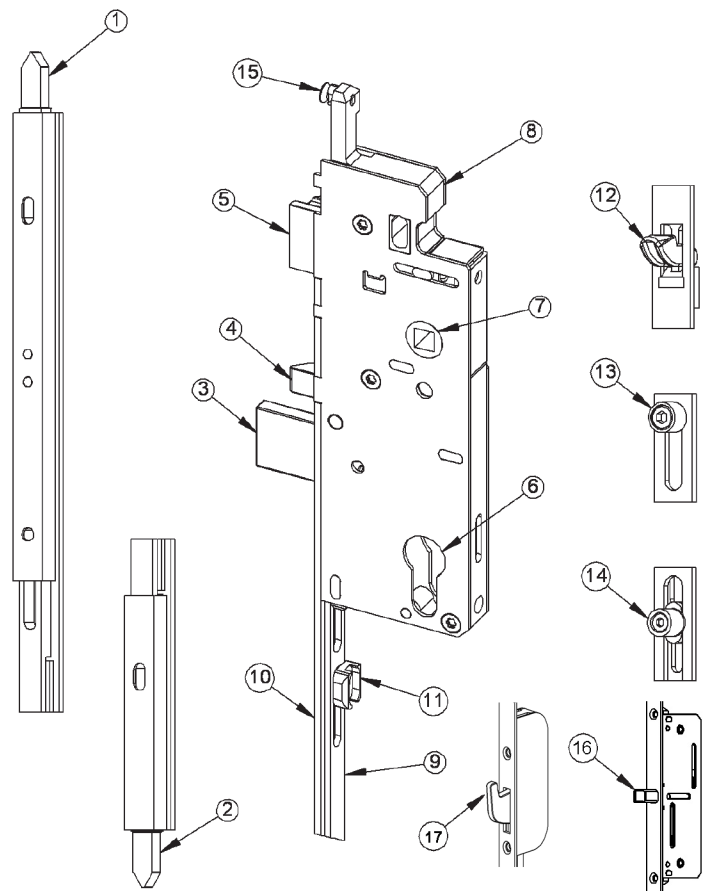
Cylinders are available in rekeyable version in Schlage C and Weiser 5 pin keyways. Key blanks are available at most hardware stores

TERMINOLOGY:

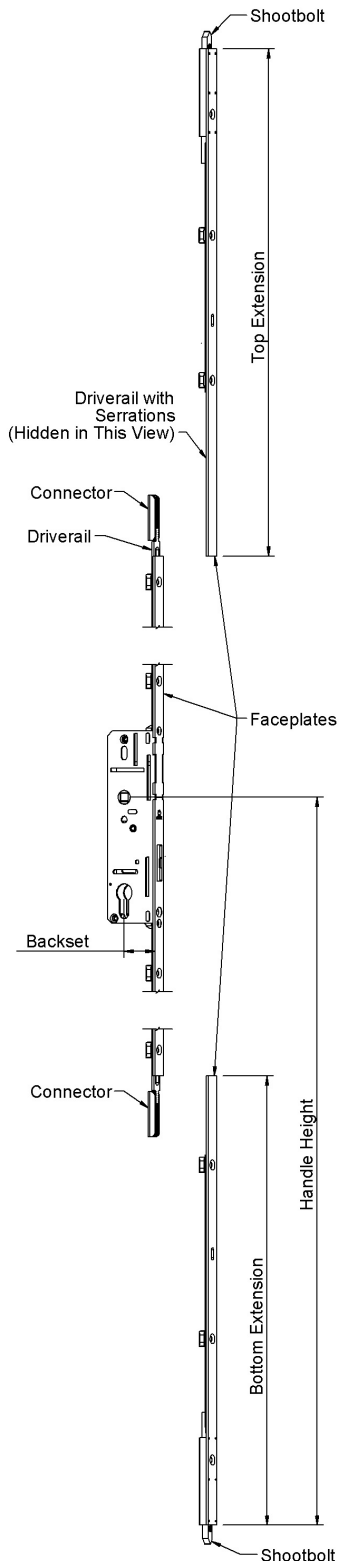
1. Top Shootbolt
2. Bottom Shootbolt
3. Deadbolt
4. Mishandling Device
5. Latch Bolt
6. Cylinder Hole
7. Handle Hole
8. Lockcase
9. Drive Rail
10. Faceplate
11. Screw Support
12. Tongue
13. Roller
14. Auto-Release Roller
15. Top Extension Phillips Machine Screw
16. Roundbolt
17. Swing Hook

Note:

All options are shown for the sake of terminology. The gear system you have will NOT contain all of the components as shown in the diagram below.



Inactive Assembly Instructions



We recommend assembly of the inactive gear in the activated (locked) position. To be consistent in the operation and assembly, you should assemble the gear operator as follows:

Install main gear body assembly into stile using either method:

- a. If using a jig to center the gear on the handle hole, slide into place and screw down.
- b. If aligning off the bottom, extend the bottom shootbolt mechanism all the way out. Butt the gear against the bottom extension, and then screw the gear in place.

1. Operate and extend the shootbolt mechanism with the handle. Then lock the thumb-turn mechanism (cylinder). The thumb-turn mechanism will spin freely after it hits the locking point. If the thumbturn mechanism feels as though it has hit the locking point but does not spin freely, the mechanism is not working properly.
2. Connect the drive rail of the bottom extension to the connector of the main gear. Make sure the teeth are fully engaged (seated into the connector). The shootbolts should extend $\frac{3}{4}$ " or 1" (model options). Screw the bottom extension to the stile. Repeat this to the top extension.

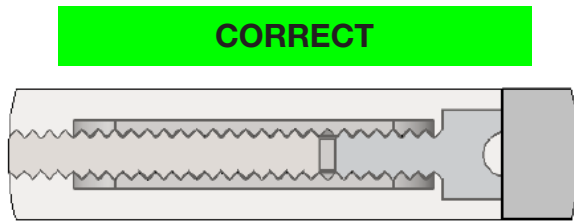
Note: Tolerance – There is an allowance of up to $\frac{1}{8}$ " (3mm) between the gear and extensions.

3. Finish screwing the inactive system onto the stile. Be sure you install screws only to the holes that will not be filled when the astragal is applied.
4. Unlock the thumb-turn mechanism. Operate the handle set to retract and extend the shootbolts. The shootbolt mechanisms should operate freely.
5. Now try to operate the shootbolts while the lock is engaged. The shootbolts should not retract.

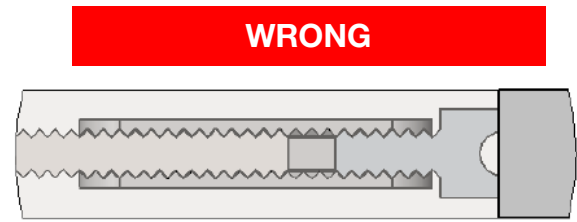
HLS9000 ACTIVE Top Shootbolt Extension Installation Procedure

After installing the Active Gear/Bottom Extension, the Middle Extension, and cutting the Top Shootbolt Extension to length:

1. Insert the Drive Rail Serrations into the Coupler as shown and slide the Top Extension Faceplate flush against the Middle Extension Faceplate. The Top Shootbolt should now be fully retracted into the Shootbolt Housing.



Drive Rail Serrations are fully engaged in Coupler



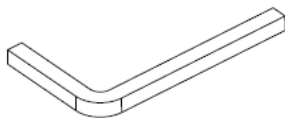
Drive Rail Serrations are not fully engaged in Coupler (Gap between serrated ends must be less than 3 teeth)

2. Install the Cover Plate to reinforce the connection between the Middle Extension and Top Shootbolt Extension.

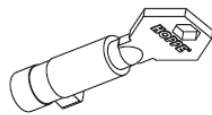


Cover Plate
HOPPE p/n 2875118

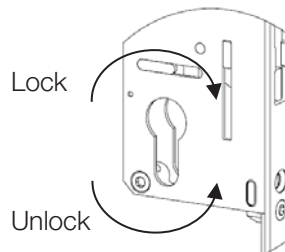
3. Install remaining screws to fix the extension to the door
 - a. To inspect for proper installation, use a Construction Handle to activate the Gear/Bottom Extension. The Multipoints should now be extended. Insert a Construction Key into the Gear/Bottom Extension and turn to lock as shown. Proper installation is indicated by:
 - i. The Construction Key will turn freely
 - ii. The Construction Handle will be locked (cannot rotate to retract Shootbolts)



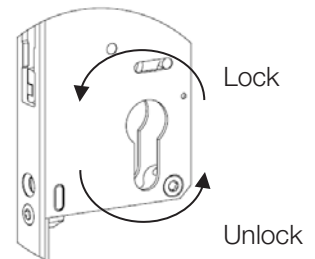
Construction Handle
HOPPE p/n 2426890



Construction Key
HOPPE p/n 2667482



OR



- b. Unlock the Gear/Bottom Extension by turning the Construction Key as shown above.

Troubleshooting Guide

Multipoint Swing Door Hardware



Be certain door is square in frame before adjusting other hardware. With the door in the open position, engage system by lifting handle and extend deadbolt by turning thumb turn. If the system operates on the door edge and the deadbolt operates, the hardware system is fully functional.

1. SYSTEM WILL NOT OPERATE WHEN YOU LIFT THE HANDLE

Probable Cause: Improper installation of handle set.

Solution: Remove handle and reinstall. See Handle Set Installation Instructions.

2. SYSTEM OPERATES IN THE OPEN POSITION WHEN YOU LIFT THE HANDLE BUT NOT IN THE CLOSED POSITION WITH THE DOOR SHUT

Probable Cause: Relationship of door in the frame.

Solution: Check to make sure the door is square in the frame.

Probable Cause: If automatic version, the auto release pin may not be adjusted properly.

Solution: See Hardware Adjustment Sheet.

3. LOCKING POINTS WILL NOT ENGAGE WITH DOOR SHUT

Probable Cause: Deadbolt is not fully extending.

Solution: Clear away anything blocking travel of deadbolt (insulation, wood, etc.).

4. DEADBOLT WILL NOT FULLY ENGAGE

Probable Cause: Locking points are not fully engaged. System design does not permit deadbolt operation unless locking points are fully engaged.

Solution: Check system again for binding problems. Confirm deadbolt extends fully into strike. Check to confirm locking points are correctly engaging strikes on the frame.

5. THUMBTURN OR KEY WILL NOT TURN

Probable Cause: Backplates may not be on straight.

Solution: Confirm that inside and outside holes line up with lockcase. Loosen backplate screws 1/2 turn.

6. HANDLE SAGS OR RETURNS SLOWLY

Probable Cause: Cladding or wood in the hole is interfering with shaft.

Solution: Check to see if machined holes line up with screw and handle holes. May need to file or drill hole slightly larger.

7. SET SCREWS WILL NOT GO INTO HANDLE COMPLETELY

Probable Cause: Shaft is not assembled properly.

Solution: Remove handle to see how shaft is assembled. See Handle Set Installation Instructions for proper assembly and position of shaft.

8. BOTTOM LOCKING POINT MOVES BUT TOP LOCKING POINT DOES NOT

Probable Cause: Top extension drive rail is not connected at the lockcase.

Solution: Remove screws used to attach top extension to the door and the machine screw that attaches it to the lockcase, and remove top extension. Place the end of the drive rail (the "L" shape) in the lockcase above the latchbolt, as you slide the top extension into the door. Fasten with a screw at the lockcase and the one up higher. Operate the gear to make sure it works. Then finish installing the rest of the screws.

9. IF DOOR HAS PLAY OR IS NOT SEALING CORRECTLY

Probable Cause: Unit is not adjusted properly.

Solution: Bend tab on strike.

Solution: If available adjust Roller (See Adjustment Instructions)

Solution: If available adjust Hinge

10. KEY DOES NOT WORK IN CYLINDER

Probable Cause: Cylinder was rekeyed incorrectly.

Solution: Check with Builder or Installer to see if cylinder was rekeyed to match other doors in the house. If so, return to locksmith to rekey properly.

Final Assembly Troubleshooting Solutions



The first thing that should be done is to operate sash while open. This will make it easier to determine if the problem is in the sash or frame. To activate all systems, lift up on handle.

1. DEADBOLT WILL NOT FULLY ENGAGE FROM KEYSIDE

Probable Cause: Shootbolts not fully engaged. System design does not permit deadbolt operation unless drive rail has completed travel.

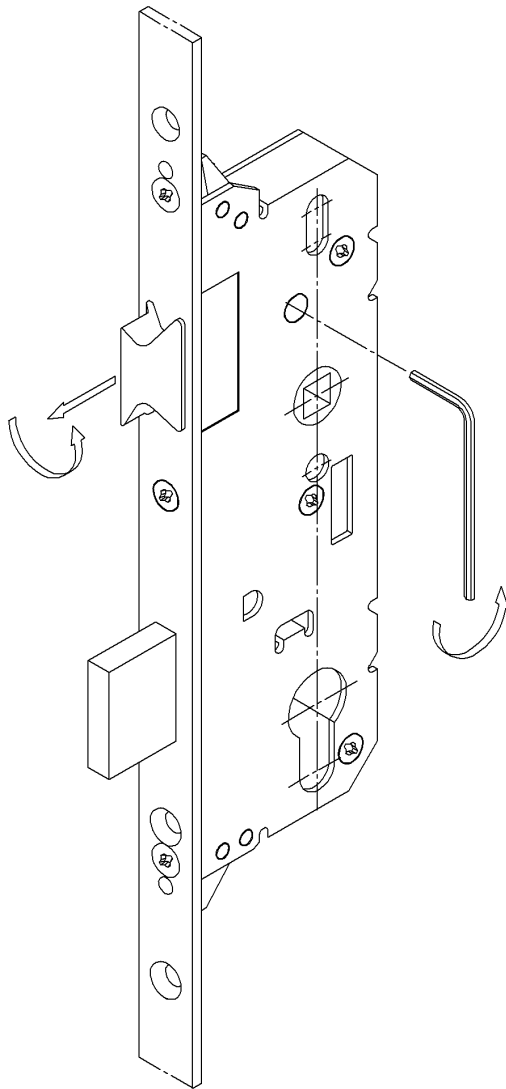
Solution: Check system again for binding problems in deadbolt and shoot bolt areas. Note that the system allows for manual operation via lifting the handle.

2. CYLINDER DOES NOT SPIN

Probable Cause: Backplate may not be on straight.

Solution: Loosen backplate screws ½ turn.

NOTE: The semi-automatic version also has a complete manual override. Lift handle up from the 3 o'clock position to 1 o'clock, or 9 o'clock to 11 o'clock and you will manually force the shootbolts out.



To Reverse Latch:

1. Push hex wrench or small punch into reversing hole and punch latch out until it clears the lockcase.
2. Rotate latch 180 degrees and release back into lockcase.

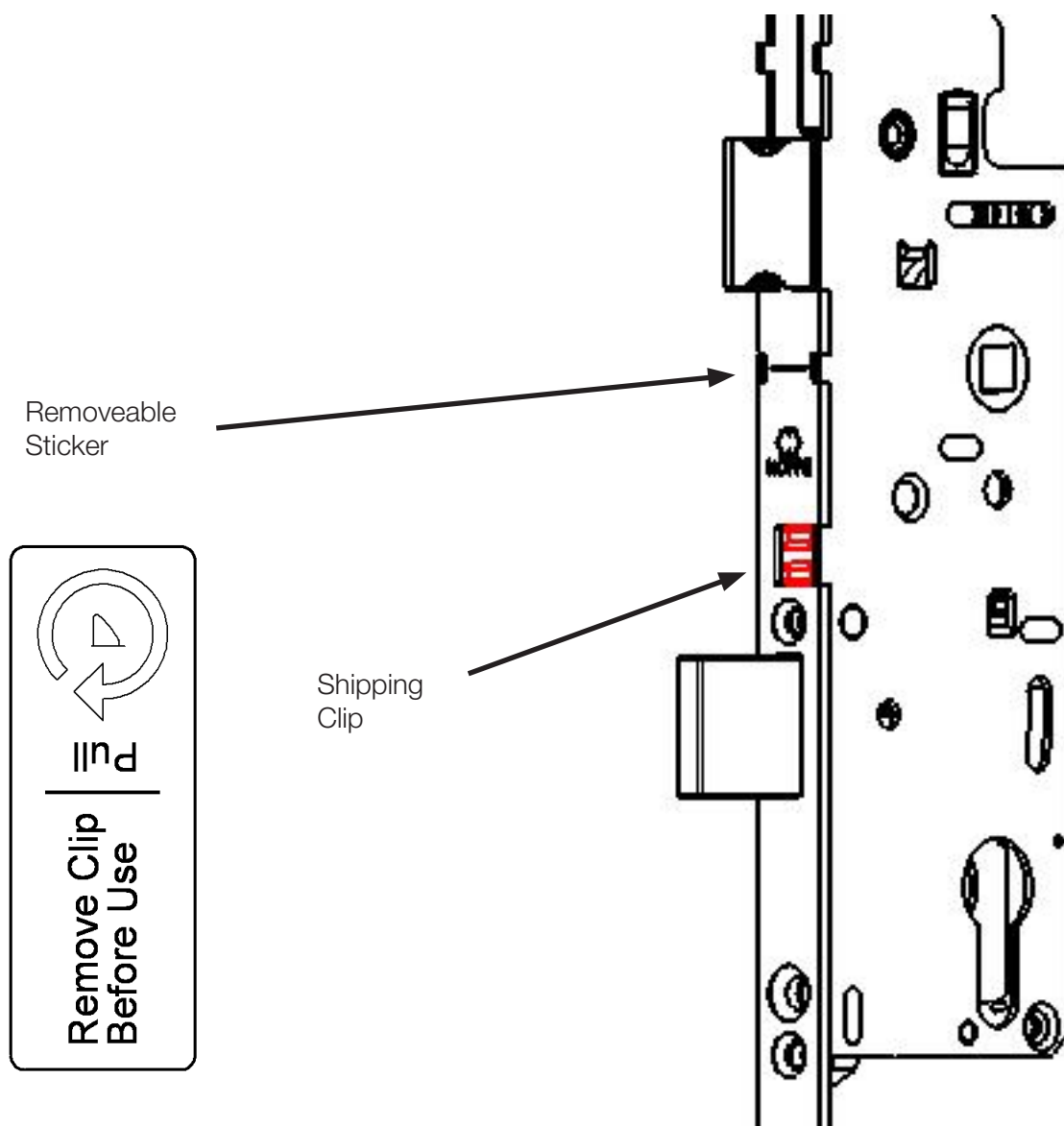
Shipping Clip for Mishandling Device

Reversing Mishandling Device in Field:

1. Remove sticker
2. Remove shipping clip
3. Make sure mishandling device is sloped the same as latch.
4. If not, pull out and spin 180° to the same direction.

Reversing Mishandling Device in Factory:

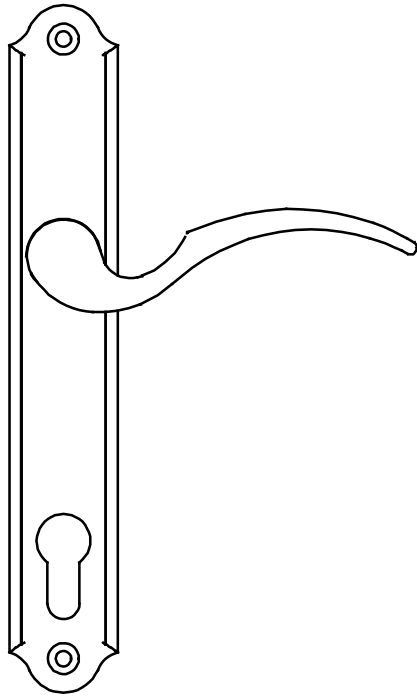
1. Remove shipping clip
2. Pull out mishandling device to spin to slope the same as latch.
3. Push mishandling device in and snap shipping clip back in.



Remove shipping clip
before operating multipoint gear system.

Swing Door Handle Operation Instructions

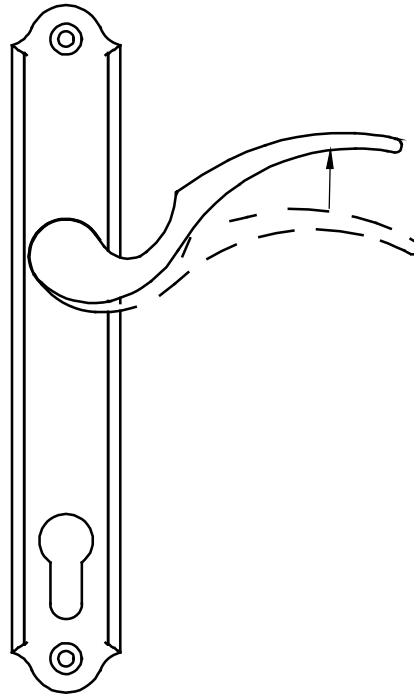
Handles and backplates vary in style.



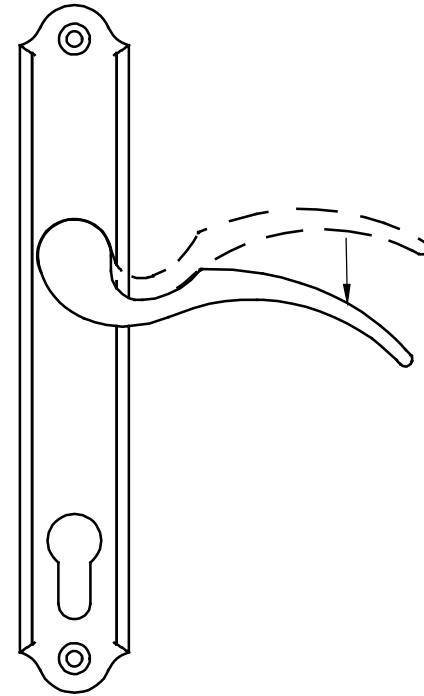
To lock automatic system, push door shut. Multipoint engages automatically.

To lock manual system, lift handle to engage multipoints prior to engaging deadbolt.

Use key or thumbturn to engage deadbolt.



If deadbolt will not fully engaged, manually engage system by lifting handle prior to engaging deadbolt.



To open, disengage deadbolt with key or thumbturn, push handle down to stop and then open door.

Swing Door Handle Set Installation Instructions



A Phillips screwdriver is required.

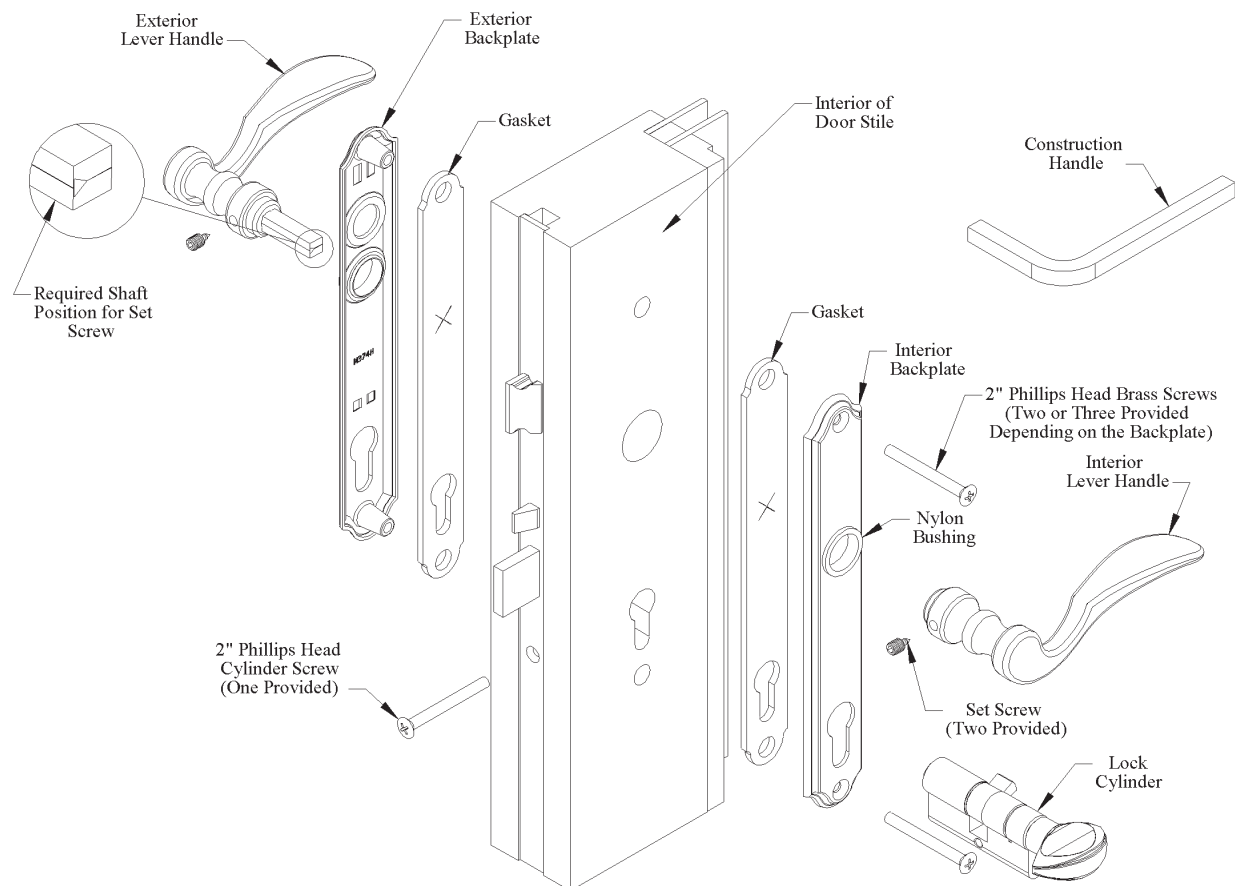
A 3mm hex wrench for set screws is provided in the hardware package.

To prevent damage to the handle set during the construction phase, use the enclosed construction handle to operate the door. Lift the handle to engage the multipoints. Push down to disengage.

Use water and a soft cloth to clean. Do not use brass cleaner or solvent based cleaning agents as they will remove the protective coating on the hardware.

Note: Handles and backplates vary by style but application is the same.

1. Apply the backplate gasket to the inside of the exterior and interior backplates. Push gaskets firmly into place to ensure a tight seal. Attach interior and exterior backplates to the door and fasten loosely with the screws provided. Note: The screw heads must be on the interior side of the door.
2. Insert the two-piece handle shaft into one handle. Be sure to orient the shaft as shown below. Screw the set screw until flush with handle using the hex wrench provided. Insert the handle with shaft attached through the escutcheon plate and door gear handle hole until extending out opposite side of door.
3. Install remaining handle onto shaft, pressing tightly to the backplates. Tighten the handle set screw with hex wrench. Screw until flush with handle.
4. Insert the keyed cylinder from the interior side of the door until it is flush with the exterior backplate. Install the cylinder screw in the screw hole below the deadbolt in the edge of the door to secure in place.
5. Hand tighten the backplate screws to complete assembly.



1-888-485-4885

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Fixed (Dummy) Trim Installation Instructions

Figure 1

1. Determine handing. Remember handles will be perpendicular to backplate, pointing either to the left or right.
2. Slide handle into backplate so square corners of the handle neck match up with notches in backplate.
3. Insert screw from back side of plate into handle neck and firmly tighten down with the included 6mm hex wrench.

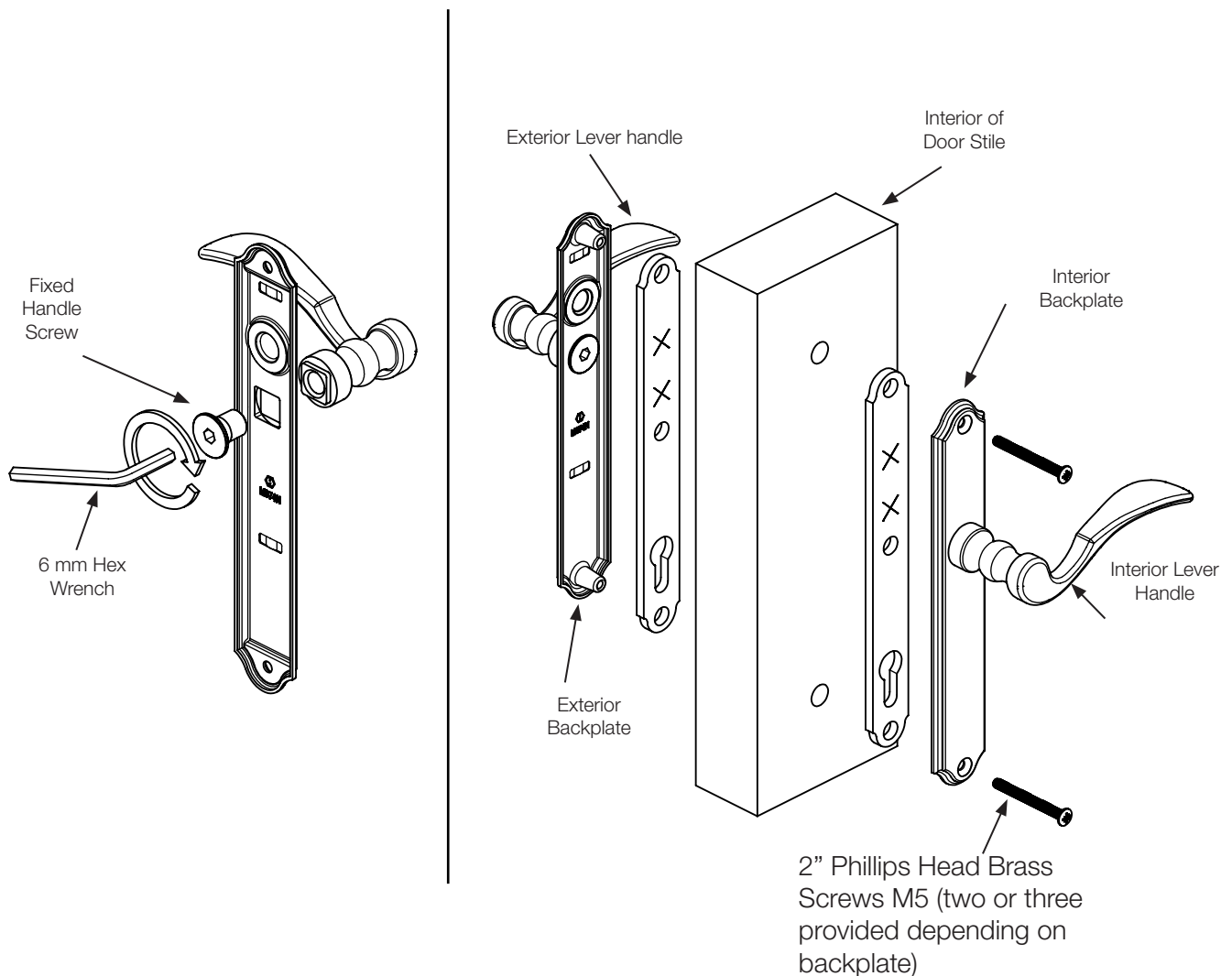
Figure 2

1. For alternative backplate style, drill 1/8" pilot hole, then drill 7/16" hole through door stile to accept backplate screws and lugs. Make sure to drill straight through.
2. Mount handle and backplate assemblies to interior and exterior of door with screws provided.

A 6mm hex wrench is needed for installation

Note:

The inside backplate has through holes and the outside backplate has threaded lugs.

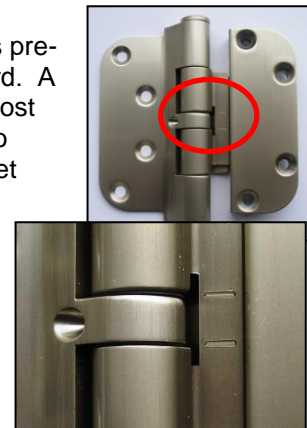


HOPPE Adjustable Hinge Installation Instructions



Two types of HOPPE Adjustable Hinges will be installed on each door panel:

- Set Hinge:** The Set Hinge provides +/- 0.12" vertical adjustment. The Set Hinge is pre-assembled at a centered position allowing for 0.12" adjustment upward or downward. A centered position is indicated by the alignment of two hash marks with the middlemost knuckle gaps when viewing the hinge in the open position as shown. There are two types of set hinges. Refer to the application diagram on Page 2 to determine the set hinge that matches your door configuration.
- Guide Hinge:** The Guide Hinges provide +/- 0.12" horizontal adjustment. Look for the visible adjusting screw on the face of the door sash leaf. This identifies the hinge as a Guide Hinge.



Installation

- Determine hinge locations on the frame and door panel. Recommended hinge positions are given in the table. The topmost hinge on the door panel is given in the first row.

Number of Hinges	3	4	4	5
Panel Weight	Up to 165 lbs	Up to 165 lbs	165 to 330 lbs	165 to 330 lbs
Hinge Position from Top of Panel to Bottom	GUIDE	GUIDE	GUIDE	GUIDE
	SET	GUIDE	SET	GUIDE
	GUIDE	SET	SET	SET
		GUIDE	GUIDE	SET
				GUIDE

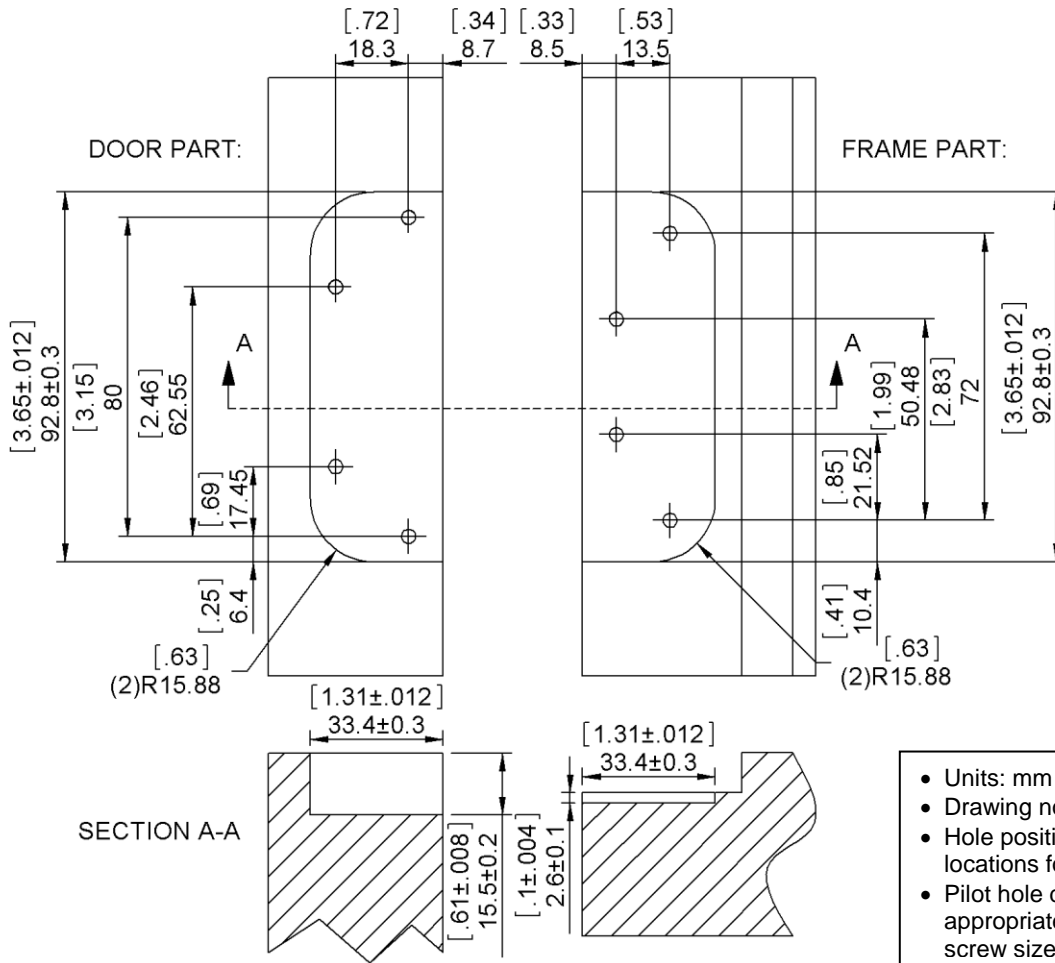
- Prepare the door panel and frame. Door preparation specifications are given on Page 2.
- Fasten hinges into the door panel. #10 ANSI wood screws that have a minimum length of 1.25" are recommended. The Set Hinge must be installed according to the installation label. The label on the frame leaf will point down to the sill when properly installed.
- On the frame, use #10 ANSI wood screws that are 5/8" to 3/4" long in three of the four screw locations. One screw on each hinge should be at least 1 1/2" long to reach the stud. This screw is typically left out and is installed after the door is positioned in the rough opening.
- Install the frame leaf of the Set Hinge into the routing on the frame and fasten securely. Do not allow the Set Hinge(s) to support the weight of the panel without installing the Guide Hinges.
- Install the frame leaf of the guide hinges into the routings on the frame and fasten securely. Leaves on the Guide Hinges will slide freely up and down for alignment with the rout.
- Do not adjust hinges prior to the final installation into the rough opening. This will affect the ability of the door installer and end user to utilize the full adjustment range of the HOPPE Adjustable Hinge.
- DO NOT allow paint, wood stain, dry wall compound, silicon, putty or other finishing materials to seep into or become lodged in hinges. Cover or mask hinges during finishing processes.



Disassembly

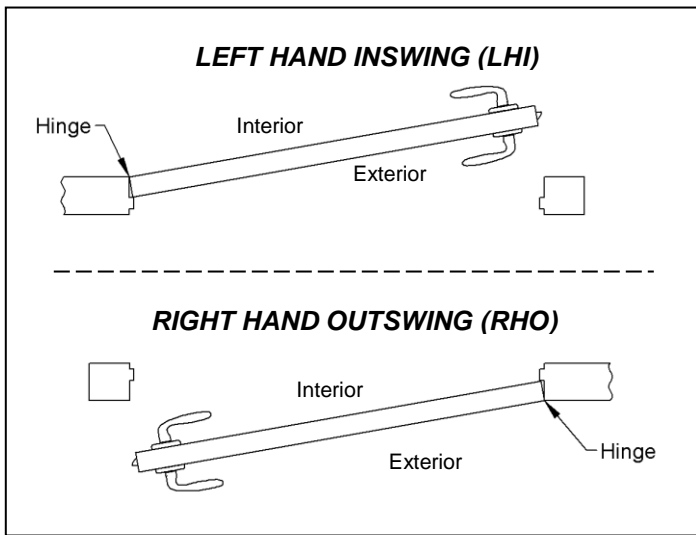
- Do not attempt to remove the hinge pin as this may cause damage.
- To disassemble the door panel from the frame, support the weight of the panel to relieve the weight from the hinges.
- Carefully remove either the frame leaf screws or door leaf screws to displace the panel.

Door Preparation Specifications

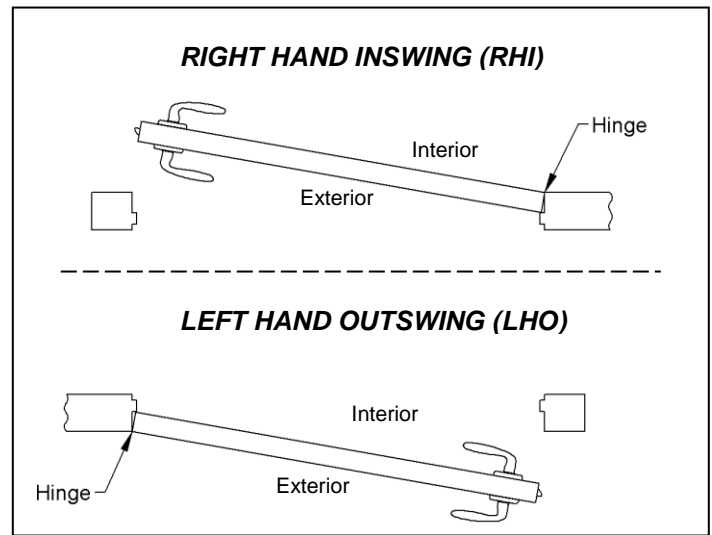


Application Diagram for Set Hinges

NOTE: The same Set Hinge is used for both left hand inswing (LHI) doors and right hand outswing (RHO) doors. These Set Hinges are designated LHI/RHO. A different Set Hinge is used for both left hand outswing doors and right hand inswing doors. These are designated LHO/RHI.



Use LHI/RHO Set Hinges for these doors



Use LHO/RHI Set Hinges for these doors

HOPPE Adjustable Hinge Adjustment Instructions

Introduction

There are two types of HOPPE Adjustable Hinges on each door panel:

1. Set Hinge: One or two per panel. The set hinge provides +/- 0.12" vertical adjustment.
2. Guide Hinge: Two or three per panel. The guide hinges provide +/- 0.12" horizontal adjustment. Look for the visible adjusting screw on the door sash leaf. This identifies the hinge as a guide hinge.
3. Hinge designs may vary, but adjustment remains the same.

Required Tools

1. A 3/16" hex wrench is required.
2. A small flat head screwdriver is required.
3. A plastic putty knife is recommended.

Vertical Adjustment for Doors with One Set Hinge

With the door closed or open:

1. Remove the press-fit Finial Cap from the bottom of the Set Hinge to expose the adjustment screw. Use the small screwdriver for Set Hinges featuring a plastic Finial Cap. A plastic putty knife is recommended for Set Hinges featuring a brass Finial Cap.
2. Insert the hex wrench into the bottom of the Set Hinge. Tighten the screw to raise the panel and loosen to lower the panel.
3. Reinstall the Finial Cap removed in Step 1.

Vertical Adjustment for Doors with Two Set Hinges

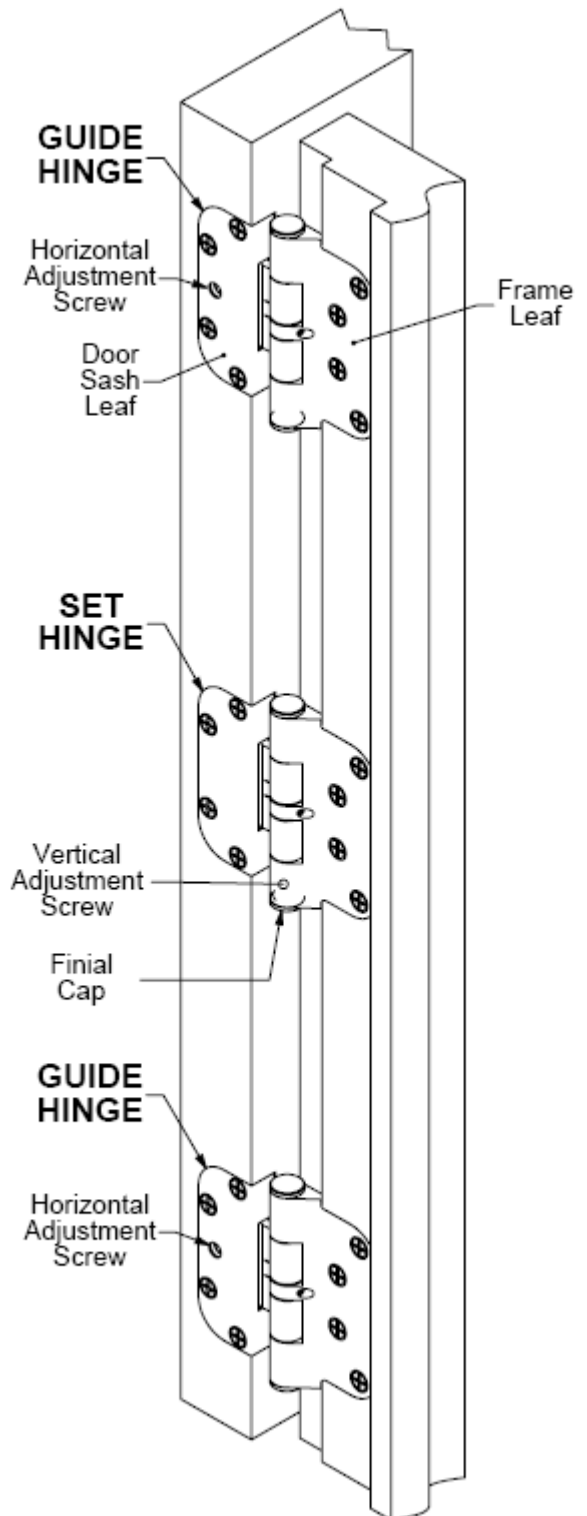
With the door closed or open:

1. Remove the press-fit Finial Cap from the bottom of the Set Hinge to expose the adjustment screw. Use the small screwdriver for Set Hinges featuring a plastic Finial Cap. A plastic putty knife is recommended for Set Hinges featuring a brass Finial Cap.
2. To raise the panel, insert the hex wrench into the topmost Set Hinge and tighten the adjustment screw to achieve the desired adjustment. Insert the hex wrench into the other Set Hinge and tighten the adjustment screw 1/8 turn past the onset of resistance to distribute the panel weight evenly between both Set Hinges.
3. To lower the panel, insert the hex wrench into the topmost Set Hinge and loosen the adjustment screw as far as possible without removing. Insert the hex wrench into the other Set Hinge and loosen the adjustment screw to achieve the desired adjustment. Retighten the adjustment screw on the topmost 1/8 turn past the onset of resistance to distribute the panel weight evenly between both Set Hinges.
4. Reinstall the Finial Caps removed in Step 1.

Horizontal Adjustment

With the door open:

1. Insert a 3/16" hex wrench into the horizontal adjustment screw.
2. Turn clockwise to decrease the margin and counterclockwise to increase the margin on the hinge side.



Troubleshooting Guide for HOPPE Hinge



Be certain that the door frame is square and securely fastened in place before adjusting the hinges.

Items to check before starting:

- 1) Make sure the door is installed properly per manufacturer's instructions.
- 2) Make sure door frame on the hinge side is properly attached to the rough opening. This is done by either a long screw going through one of the hinge screw holes to the frame (preferably each hinge having one) or screws going through the door frame to the stud wall.
- 3) Make sure the long screw has hit the stud wall and is not just going into drywall or unsupported material.
- 4) Make sure all 8 of the screws in the hinge are tightened down flush and are not at an angle.

With the door in the open position, (the wider the better) use a 3/16" Hex tool to adjust the hinges. It is better to start with the set hinge and then move to the guide hinges when possible. Refer to HOPPE Adjustment Instructions.

Note: When turned **clockwise**, the **guide** hinge **increases** the margin on the **lock side**.

1. PANEL SEEMS TO HAVE DROPPED

Probable Cause: Make sure that the screws through the hinge are long enough so that they are securing the panel to the framework.

Solution: Run a long screw in one outside edge screw holes that will reach the studs.

Probable Cause: Unit has long screws but is screwed into drywall rather than a stud.

Solution: Remove long screw from hinge and switch it with one of the screws at the back of the hinge.

You should not see this issue due to any mechanical issues with the hinge, so check the installation.

2. HINGE CAN NOT ADJUST ENOUGH TO SOLVE PROBLEM

Probable Cause: Check to see if any of the hinges are at their maximum height adjustment. If one hinge has the middle leaf touching the sash part (either extreme) and the other hinges still have adjustment, then the sash to frame route was placed in the wrong position.

Solution: This is difficult because it is a factory issue. If you move the frame part to a better position, the hinge it will leave frame exposed. Talk to the factory if this is the case.

Probable Cause: Poor installation.

Solution: This hinge is not intended to fix poor workmanship. It is intended to help with installation issues and movement in building materials that happen as the house settles. You can use the long screws to help pull the unit towards the hinge side between the vertical and horizontal adjustments so you should be able to take care of most issues.

3. MARGIN TIGHT AT THE MIDDLE OF THE DOOR

Probable Cause: Frame is hour-glassed.

Solution: Use long screws to pull the center hinge towards the stud. Avoid using the hinge to solve this problem.

4. ADJUSTMENT SCREW STRIPPED OUT

Probable Cause: Use of too much force. The screw stops when it reaches the end of its adjustment and is restricted from turning.

Solution: Replace the hinge. Contact the HOPPE North America, Inc. customer service department at 888-485-4885.

5. SET HINGE DOES NOT SWING FREELY OR MAKES NOISE

Probable Cause: The set screw is over adjusted.

Solution: Loosen the top adjustment screw a full turn or two if needed.

6. FINIAL DOES NOT SIT STRAIGHT ON TOP OF THE HINGE

Probably Cause: Adjustment screw is in too low on the hinge knuckle.

Solution: Screw in the adjustment screw to provide enough room for the finial to sit.

Installation Instructions

90-Degree Turn Cylinder

Tools required:

- Phillips head screw driver
- Hex wrench (provided)
- Ring wrench (provided)
- Pliers (recommended)

Installation:

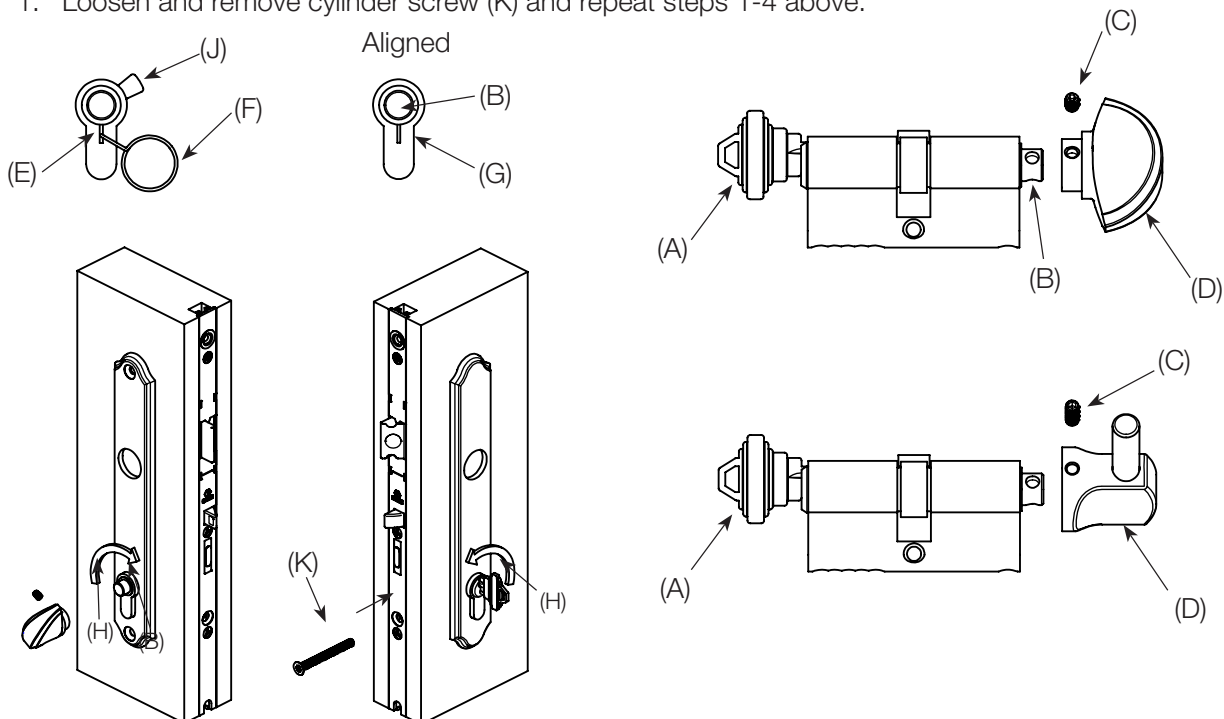
1. Loosen set screw (C) on knob (D) using the hex wrench provided. Knob designs may vary from design shown.
2. Remove knob (D) from body of cylinder (B).
3. Align drive tab (J) with the cylinder body to install the cylinder into the lock as shown by (G). If the drive tab (J) cannot be rotated to this position, push the pin (E) down with the ring wrench (F) to disengage the stops and turn the cylinder shaft (B) until the drive tab (J) is aligned with the cylinder as shown by (G).
4. Holding in this position, insert the cylinder body into the lock so the drive tab (J) is inside of the lock.
5. Rotate the shaft (B) (use pliers if necessary) such that the top of the shaft (B) moves toward the edge of the door or insert the key (A) into the cylinder and rotate such that the top of the key (A) moves towards the edge of the door (H). The shaft or key will rotate freely and will stop after approximately 120°. Do not force rotation. The dead bolt should not extend (dead bolt will extend on single point gear). Confirm that one of the two set screw openings is positioned on the bottom of the shaft (B).

Warning: If the shaft (B) or key (A) is rotated the wrong direction, the cylinder will lock after approximately 120° and cannot be rotated in either direction. If this happens, push the pin (E) down with the ring wrench (F) included to disengage the stops and turn the shaft (b) or key (A) in the opposite direction until the dead bolt extends.

6. Fix knob (D) on shaft (B) as shown.
7. Tighten set screw (C). Install cylinder screw (K) as shown.

Removal:

1. Loosen and remove cylinder screw (K) and repeat steps 1-4 above.



HOPPE Profile Cylinders Rekeying Instructions



Handle of excellence.

Introduction

- Rekeying should be done by a qualified locksmith.
- Cylinder designs vary. HOPPE supplies CES brand cylinders and non-logo cylinders.
- Cylinders feature Schlage® SC1 keyways and may be rekeyed using Schlage® rekey kits.
- Cylinders should be rekeyed to an existing Schlage® key whenever possible.
- The HOPPE key gauge measures key cuts 1 through 9 the same as a Schlage® key gauge.
- If rekeying a CES cylinder with CES pins, use the CES pin number that corresponds with the measured key cut.
- If rekeying a CES cylinder with Schlage® pins, use the Schlage® pin number that is one less than the measured key cut. A key cut measuring 4 uses a #3 Schlage® pin.
- If rekeying a non-logo cylinder with Schlage® pins, then use the Schlage® pin number that corresponds with the measured key cut.
- If rekeying a non-logo cylinder with CES pins, use the CES pin number that is one higher than the measured key cut. A key cut measuring 4 uses a #5 CES pin.

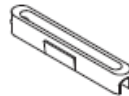
Recommended Tools and Accessories



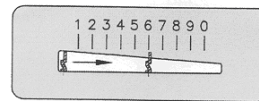
REMOVAL TOOL for PLASTIC INSERT
Part Number 2000899
(for use with CES cylinders)



2 mm or 5/64" HEX WRENCH
(for use with non-logo cylinders)



PLASTIC INSERT
Part Number 8771719
(for use with CES cylinders)



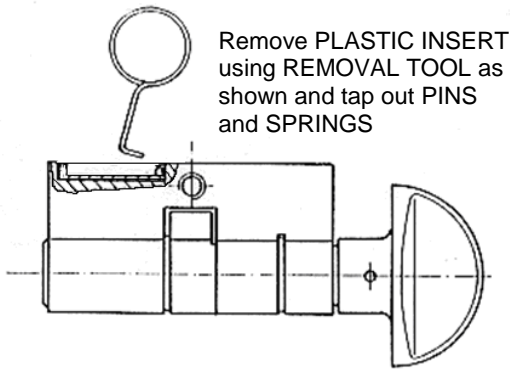
HOPPE KEY GAUGE
Part Number 2070820



HOPPE REKEY KITS
Schlage® Pins, 30 cyl. capacity
- Part Number 3459001
CES Pins, 10 cyl. capacity
- Part Number 8785243

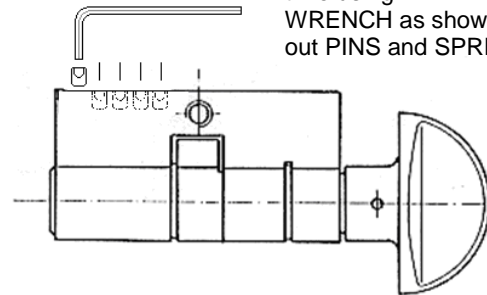
Steps to Rekey

1.



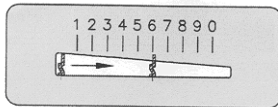
Remove PLASTIC INSERT using REMOVAL TOOL as shown and tap out PINS and SPRINGS

OR



Remove one SET SCREW at a time using 2 mm HEX WRENCH as shown and tap out PINS and SPRING

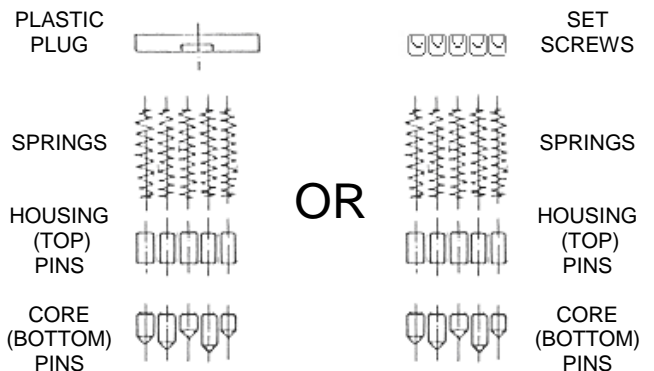
2.



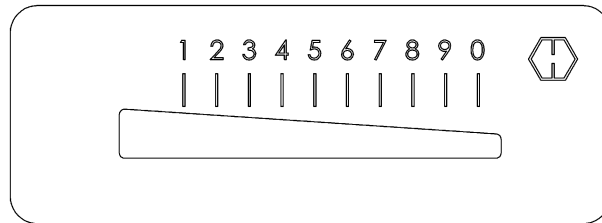
Determine CORE PIN size with KEYING GAUGE

3.

- Insert desired CORE PIN into the appropriate cylinder pin hole.
- Note: for cylinder designs featuring six pin holes, the innermost hole (furthest from the key face) is left blank.
- Insert HOUSING PIN
- Insert SPRING
- Repeat until all PINS have been replaced and install PLASTIC INSERT OR install SET SCREW and repeat until all PINS have been replaced.



Handling of Keying Gauge



1. Move the key left into the gauge so the incisions show to the top.
2. Push the key within the incision to be measured to the right as far as possible.
3. Note the incision depth.

Note: HOPPE Gauge is for CES pins. If using Schlage pins the number will be (1) less.
Example: #5 CES pin is a #4 Schlage pin.

CES Pins VS. Schlage Pins Conversion Chart



It is possible to use either Schlage bottom (core) pins or CES bottom (core) pins when rekeying the Schlage “C” keyway cylinders, however, the pin lengths vary slightly between sources. The conversion chart below lists the correlation between CES and Schlage pin numbers and sizes.

Note: HOPPE gauge uses CES pin lengths. If using Schlage pins, the number will be (1) less. Example: #5 CES pin is a #4 Schlage pin.

<u>CES Pins</u>			<u>Schlage Pins</u>	
<u>Pin Length (mm)</u>	<u>Pin Number</u>	<u>Pin Length (inches)</u>	<u>Pin Number</u>	<u>Pin Length (inches)</u>
4.2	1	0.1654	0	0.1655
4.57	2	0.1799	1	0.1805
4.95	3	0.1949	2	0.1955
5.35	4	0.2106	3	0.2105
5.72	5	0.2252	4	0.2255
6.1	6	0.2402	5	0.2405
6.47	7	0.2547	6	0.2555
6.85	8	0.2697	7	0.2705
7.25	9	0.2854	8	0.2855
7.62	0	0.3000	9	0.3005