

SCHLAGE

Schlage large format cores

Service manual

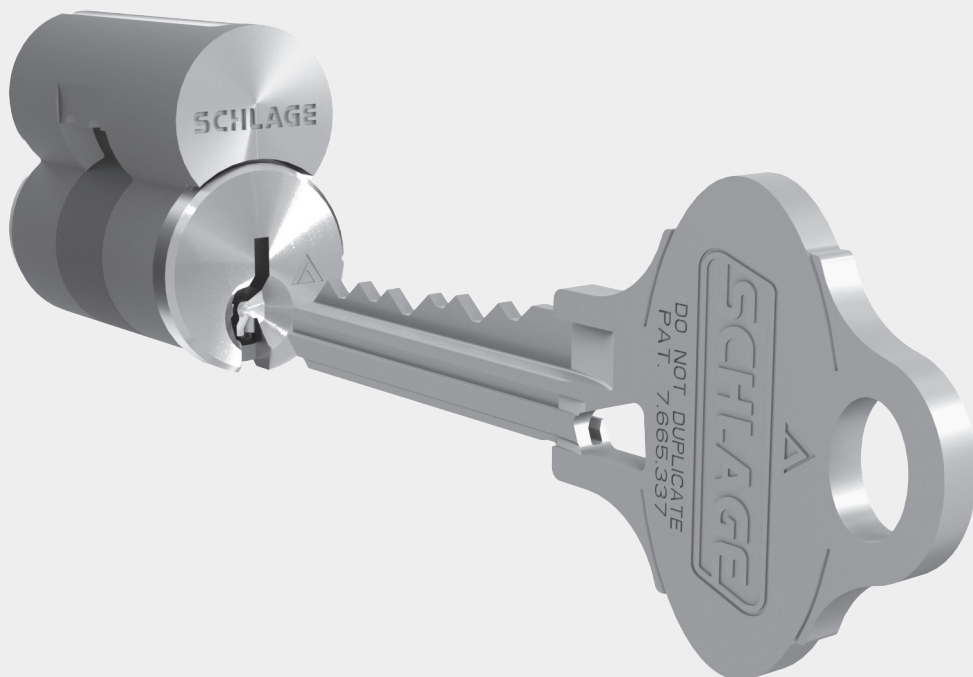


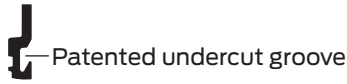
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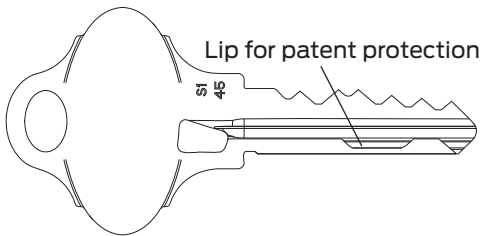
Everest 29 Patented Key Control

Everest 29 Patented Key Control

Most building owners have security problems due to the unauthorized duplication of keys. Schlage Everest 29 keys are protected by U.S. utility patent 7,665,337 and design patent D689,759.

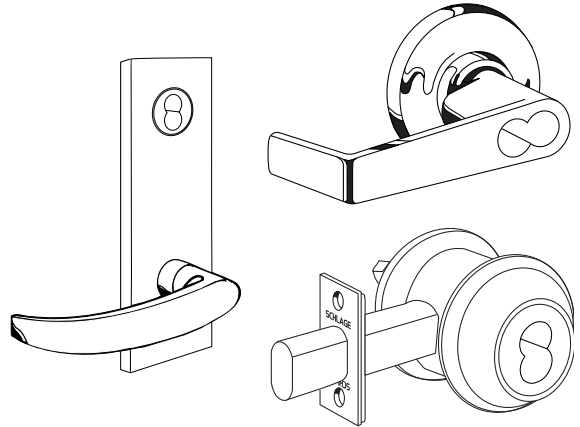


The patented undercut groove requires a secondary milling operation to make the key blank. It is a violation of federal patent law for anyone other than Schlage to manufacture and distribute these blanks. By replacing standard cores with Everest 29 patented key cores, end users can be assured of a high level of key control.



Locksets

An array of Schlage deadbolts, mortise locks and key-in-lever locksets are now available to accept LFIC cores. Consult Schlage sales literature and your local distributor for the latest offering of functions and finishes.



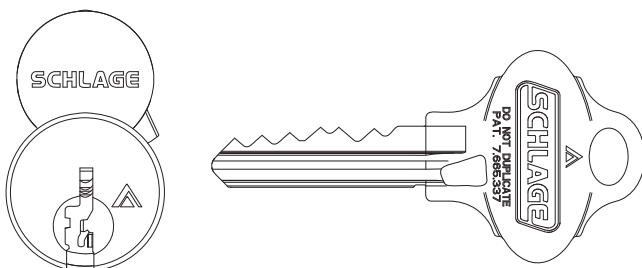
Key Control Summary

Most Everest 29 Family restricted keyways are for end users who do their own key cutting. The keyway is used for each job is registered to the end user by Schlage. Everest 29 restricted key blanks, cut keys and cores are furnished only through authorized Schlage distributors and then only when the end user attaches a letter of authorization to the purchase order.

Restricted items are shipped directly to the end user or a location specifically authorized by the end user. Shipping the order prevents locksmiths and distributors from having access to keys and cores without the permission of the end user.

Restricted keyways are for locksmiths and other security dealers who cut all keys for their end user customers. Dealers must sign special key control contracts to handle these keyways.

As a further deterrent to unauthorized key duplication, Schlage stamps a facility code or locksmith ID number on all keys and blanks to identify where they originated.

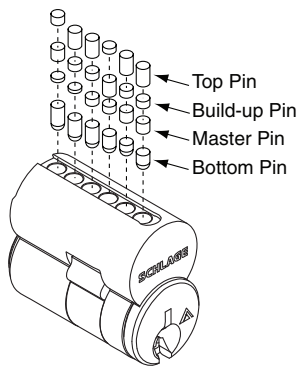


If You Are Not Familiar With Pinning Large format Interchangeable Cores

Visit alle.co/LFIC for interactive instructions on how to pin LFIC cylinders.

1. Never remove the plug, unless you have a Primus cylinder. These cores are designed to be top loaded. All combining is done strictly by numbers as it is not possible to see any of the pins at the shear line. Each pin size is determined with simple addition and subtraction. There is no opportunity for trial-and-error. The plug may need to be installed with Primus cylinders.

→ NOTE: Refer to the Schlage Primus service manual for pinning all Primus cylinders.



2. For all operating keys, have the bittings legibly and neatly written. You can get bittings from the bittings list or by gauging each key individually. Each digit of the control key should be directly over the corresponding digit of the master and change key. With the control key bitting on the top, it is helpful to draw a line under it in order not to confuse control bittings with operating bittings during the pin calculation. Unless the core is cross keyed, you normally only need three key bittings: control, TMK (top master key) and change key. In most properly designed systems, intermediate level master keys will operate automatically. This is because each digit of their bitting is usually contained either in the TMK or the change key. If any master keys must operate which have a digit not already contained in the change or TMK, that digit must be written in the appropriate position and pinned in.

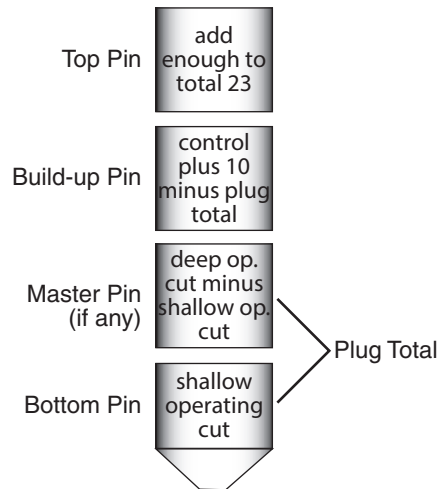
3. There are two shear lines in each control chamber; one for the operating keys (change, master, grand master, etc.) and one for the control key. A build-up pin is used to span the distance between the two. Its length changes based on the difference between the control key and the deepest operating key.

NOTE: Control chambers for Corbin Russwin cylinders are only chambers 2 and 3. Control chambers for Sargent cylinders are only chambers 3 and 4.

The pin stack is illustrated in Step 6, together with the addition and/or subtraction necessary to determine pin. All control chambers use exactly the same logic and math. They differ only by the specific bitting number of each key in a given cut position.

4. Combine one chamber completely before moving on to the next. Think of each one as a simple math problem which always has the answer of 23 for control chambers and the standard Schlage-15 rule for all other chambers. Many beginners try to install all seven bottom pins, then all master pins, then all build-up pins, etc. This method may seem easier but it forces you to think through each “math problem” two or three times, rather than once. Mistakes are more common with this method. You will also never pick up any speed this way and will usually have to write down all the pins before combining the core. Your goal should be to calculate each chamber quickly in your head as you build each stack.
5. With all chambers combined, turn the plug back to the 12 o'clock position so all the pin stacks can fall into place. Caution: The bottom of the Schlage keyway is very wide and open. Do not turn the plug in a direction which would allow the pins to engage in the bottom of the key slot.

CONTROL CHAMBERS ONLY



Memorize:

$$\text{Control} + 10 - \text{Plug Total} + \text{Build Up}$$

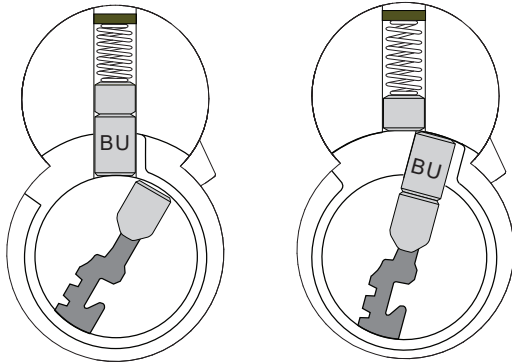
$$\text{Total Stack Height} = 23$$

Refer to pages 8 (Corbin) and 9 (Sargent) for detailed examples of how to pin cylinders for proper operations with operating keys and a control key. It is important to remember that pinning rules differ for control chambers (rule of 23) and standard chambers (Schlage-15 rule).

6. In a master keyed core, each chamber normally has four pins. With the plug turned, you can watch the top surface of each pin stack as you complete it. The top surfaces should all line up evenly. Paying attention to this detail lets you spot a pinning error immediately and

If You Are Not Familiar With Pinning Large format Interchangeable Cores

correct it before it's too late.



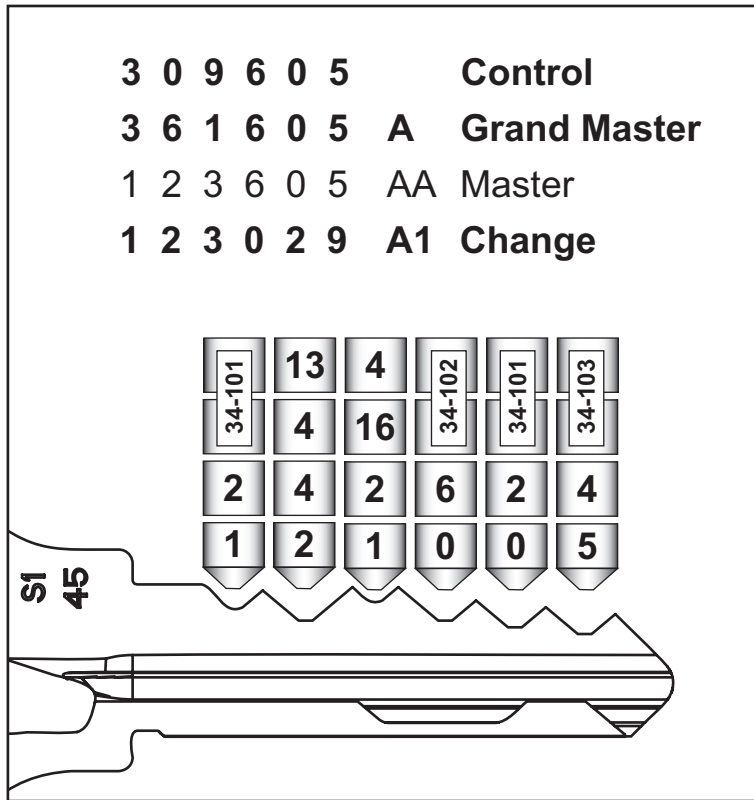
Operating Key

Control Key

7. Add a very small amount of lubricant¹ into each chamber. If using graphite, do not overdo this or the springs will not have room to compress properly.
8. Cap the core:
 - a. Install a spring into each chamber.
 - b. Slide top strip over the entire cylinder.
 - c. Press down and crimp the top strip, starting at the front and ending at the back. Crimp along full length of cap strip. 9-1/2" tongue and groove slip joint pliers are suggested.
9. Test all three keys (control, TMK and change key).
10. Spray a small amount of lubricant into the keyway and run a key in and out several times to work the lubricant through the core. This step is especially important for Schlage patented cores. This is the only way to lubricate the special side pin.

¹ Schlage uses FinLub TF from Interflon. Other lubricants can be used, however, performance can vary greatly depending on lubricant properties.

6-Pin Combining Example (Corbin Russwin)



Chamber 1

Shallowest operating cut is **1**
 (= **bottom pin**)
 Deepest minus shallowest is **2**
 (= **master pin**)

**Standard
 Schlage-15 rules
 apply.**

Chamber 3

(Control chamber Rule of 23)
 Shallowest operating cut is **1**
 (= **bottom pin**)
 Deepest minus shallowest is **2**
 (= **master pin**)
 Formula of $C + 10 - P = BU$
 $9 + 10 - 3 = 16$
 We now have $1 + 2 + 16 = 19$
 "units of stuff" loaded.
4 (= top pin) must be added to
 total 23

Chamber 5

Shallowest operating cut is **0**
 (= **bottom pin**)
 Deepest minus shallowest is **2**
 (= **master pin**)

**Standard
 Schlage-15 rules
 apply.**

Chamber 2

(Control chamber Rule of 23)
 Shallowest operating cut is **2**
 (= **bottom pin**)
 Deepest minus shallowest is **4**
 (= **master pin**)
 Formula of $C + 10 - P = BU$
 $0 + 10 - 6 = 4$
 We now have $2 + 4 + 4 = 10$
 "units of stuff" loaded.
10 (= top pin) must be added to total
 23

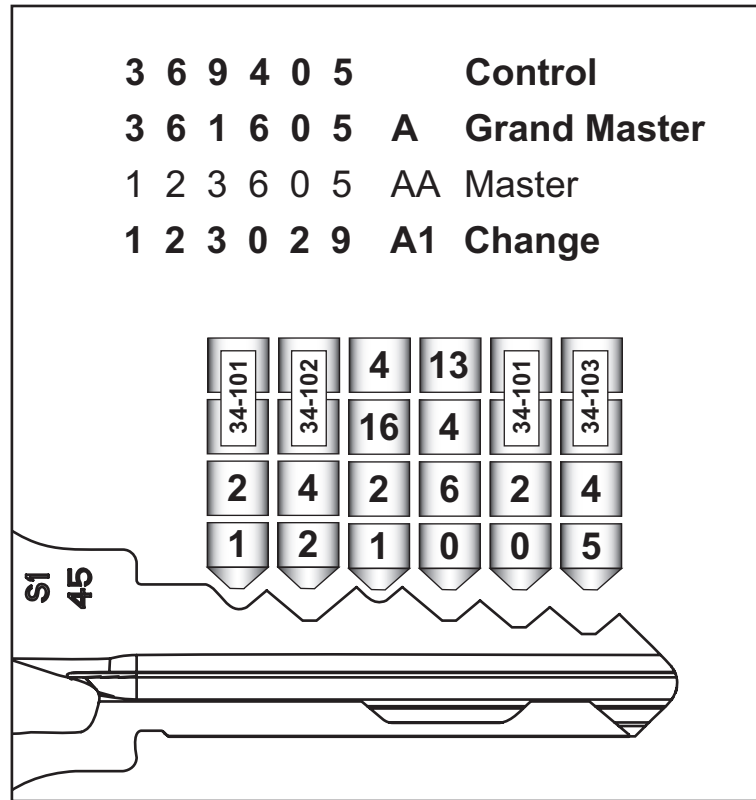
Chamber 4

Shallowest operating cut is **0**
 (= **bottom pin**)
 Deepest minus shallowest is **6**
 (= **master pin**)
**Standard
 Schlage-15 rules
 apply.**

Chamber 6

Shallowest operating cut is **5**
 (= **bottom pin**)
 Deepest minus shallowest is **4**
 (= **master pin**)
**Standard
 Schlage-15 rules
 apply.**

6-Pin Combining Example (Sargent)



Chamber 1
 Shallowest operating cut is **1**
 (= **bottom pin**)
 Deepest minus shallowest is **2**
 (= **master pin**)
Standard
Schlage-15 rules
apply.

Chamber 3
(Control chamber Rule of 23)
 Shallowest operating cut is **1**
 (= **bottom pin**)
 Deepest minus shallowest is **2**
 (= **master pin**)
 Formula of $C + 10 - P = BU$
 $9 + 10 - 3 = 16$
 We now have $1 + 2 + 16 = 19$
 "units of stuff" loaded.
4 (= top pin) must be added to
 total 23

Chamber 5
 Shallowest operating cut is **0**
 (= **bottom pin**)
 Deepest minus shallowest is **2**
 (= **master pin**)
Standard
Schlage-15 rules
apply.

Chamber 2
 Shallowest operating cut is **2**
 (= **bottom pin**)
 Deepest minus shallowest is **4**
 (= **master pin**)
Standard
Schlage-15 rules
apply.

Chamber 4
(Control chamber Rule of 23)
 Shallowest operating cut is **0**
 (= **bottom pin**)
 Deepest minus shallowest is **6**
 (= **master pin**)
 Formula of $C + 10 - P = BU$
 $4 + 10 - 6 = 8$
 We now have $0 + 6 + 8 = 14$
 "units of stuff" loaded.
9 (= top pin) must be added to
 total 23

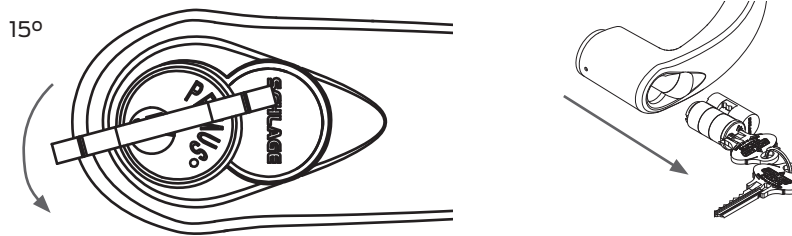
Chamber 6
 Shallowest operating cut is **5**
 (= **bottom pin**)
 Deepest minus shallowest is **4**
 (= **master pin**)
Standard
Schlage-15 rules
apply.

Rekeying the LFIC cylinder

Rekeying the LFIC cylinder

1. Remove the core.

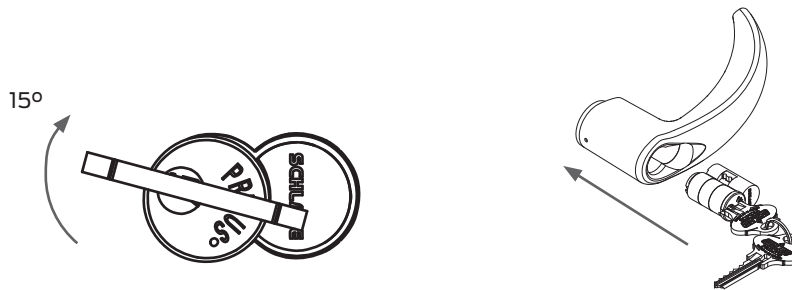
Insert control key and rotate 15° counter-clockwise* until action stops. Pulling on key will now extract core from housing.



* For Corbin Russwin and Sargent cylinders, rotate 15° clockwise.

2. Install the new core.

Insert control key and rotate 15° clockwise until action stops. Insert core into lever or housing. Rotate key 15° to the vertical position, locking the core into place. Pulling on the key will now extract the core from the housing.

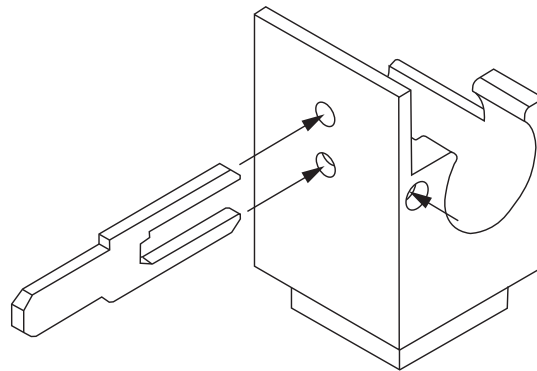


Retrofitting competitor tailpiece modification

These instructions only apply to tailpieces that will be used with Primus LFIC cylinders.

1. Remove the original tailpiece from an installed lock. Check the fitting of the competitor tailpiece to see if it needs to be modified. If modification is necessary, insert the tailpiece into the tailpiece modification jig (47646702). Tighten the set screws on each side.

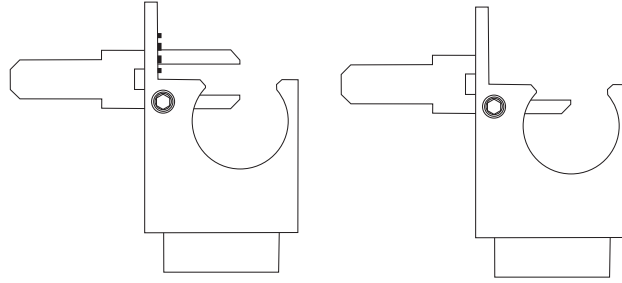
→ NOTE: Make sure any washers or spacers are installed onto the tailpiece before inserting it into the tailpiece modification jig. Remove as little tailpiece material as possible.



2. Flush cut the upper tailpiece leg with a hacksaw.

→ NOTE: Use the tool wall as a guide.

Troubleshooting



3. Loosen the set screws and remove the tailpiece.

➔ NOTE: Remove any burrs and sharp edges from the tailpiece once it is removed from the modification tool.

Troubleshooting

If any key fails to operate the core you've just combined, review the bittings and try to ascertain where the mistake may be. Using a mallet, tap the ejector tool.

If the problem persists, take your next best guess of where the error is and repeat with another chamber. When all keys operate, you know that the remaining chambers are combined correctly. Recombine the empty chambers. This technique is also used when it is necessary to decombine the core for rekeying.

If you find combining difficult, we recommend completely finishing one chamber at a time, including the capping process, leaving the remaining chambers empty. This allows you to test all keys chamber by chamber until you build up enough accuracy and confidence to handle all chambers at once.

If keys fail to operate smoothly and you are positive you have cut the keys and pinned the core correctly, your key machine may be out of adjustment or pins may have gotten mixed up in your pin kit. You will need calipers or a micrometer to check your pins and keys against the specs.

Key bitting specifications

The following specifications are the same for Schlage Classic keys, including Primus XP


<p>Code Card</p> <p>C45</p> <p>for HPC 1200CM Code Machine</p> <p>Use of cutting wheel CW-14MC is not recommended</p>
--

MACS = 7	
Increment:	0.15"
Progression:	Two Step
Blade Width:	.343"
Depth Tolerance:	+ .002" - 0
Spacing Tolerance:	± .001"


Root Depths			
0	.335"	5	.260"
1	.320"	6	.245"
2	.305"	7	.230"
3	.290"	8	.215"
4	.275"	9	.200"

Pins and springs

Bottom pins		
Size	Length	Part no.
0	.165"	34-300
1	.180"	34-301
2	.195"	34-302
3	.210"	34-303
4	.225"	34-304
5	.240"	34-305
6	.255"	34-306
7	.270"	34-307
8	.285"	34-308
9	.300"	34-309




LFIC master pins		
Size	Length	Part no.
2	.030"	34-202
3	.045"	34-203
4	.060"	34-204
5	.075"	34-205
6	.090"	34-206
7	.105"	34-207
8	.120"	34-208
9	.135"	34-209
10	.150"	47578810
11	.165"	47578811
12	.180"	47578812
13	.195"	47578813
14	.210"	47578814
15	.225"	47578815
16	.240"	47578816
17	.255"	47578817
18	.270"	47578818
19	.285"	47578819

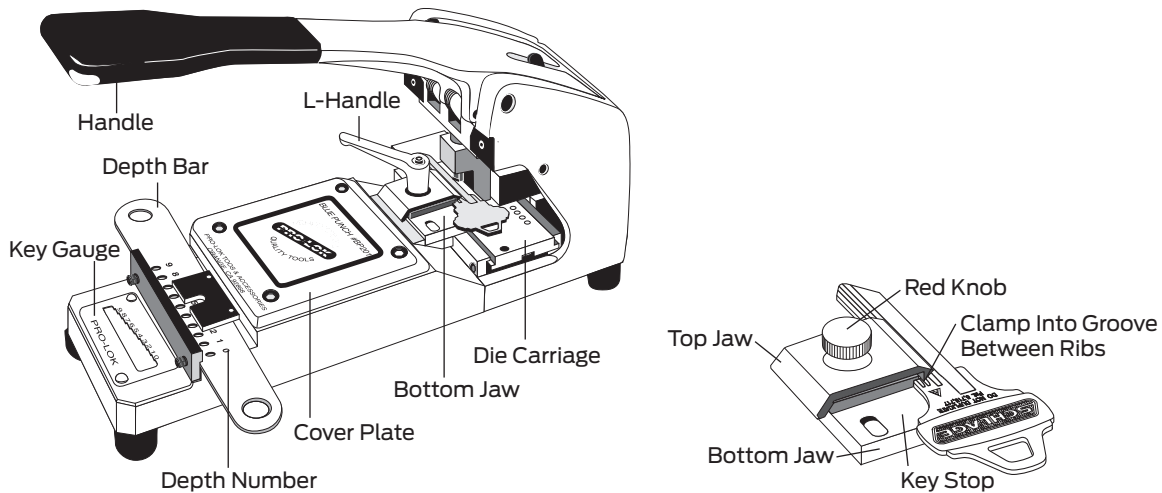


Other pins and springs	
Description	Part no.
Tumbler Spring	C503-113
Check Pin	34-007
Check Pin Spring	C603-951

Top pins			
Size	Length	Part no.	Application
1	.235"	34-101	Plug total = 0, 1, 2, 3
2	.200"	34-102	Plug total = 4, 5, 6
3	.165"	34-103	Plug total = 7, 8, 9



Cutting Everest 29 keys on the blue punch

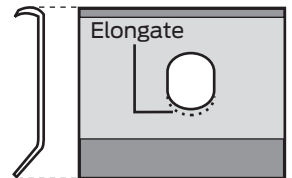


The original version of this popular key machine was developed in the mid-1970's. Pro-Lok® is the most recent in the succession of companies that have manufactured the machine. Even if you have what appears to be an original Schlage punch (40-075), it was made by one of the earlier companies. The basic principles are the same for all versions of the machine, but there are minor differences in the vise jaws which affect the machine's ability to cut Everest 29 S & T Family keys.

Machines made before July 1999 were not designed to hold Everest keys. Most of these machines have a thin top vise jaw made of stamped steel. Some machines will hold Everest keys, except sections with "45" in the designation (such as S145). Even the first generation solid steel jaw was produced before Everest keys existed and must be replaced.

You may be able to alter your old style jaw by slightly elongating the hole, so it can travel far enough to engage in S145 groove. However, this solution should only be a temporary measure until you install the 40-074 upgrade package with the properly shaped top jaw.

In the close-up illustrations of the vise, notice the different positions of the top jaw required to engage the grooves and seat the different shapes of Schlage key sections properly.



Most Everest 29 Key Sections:

T100, T120, T123, T124, T135, T150

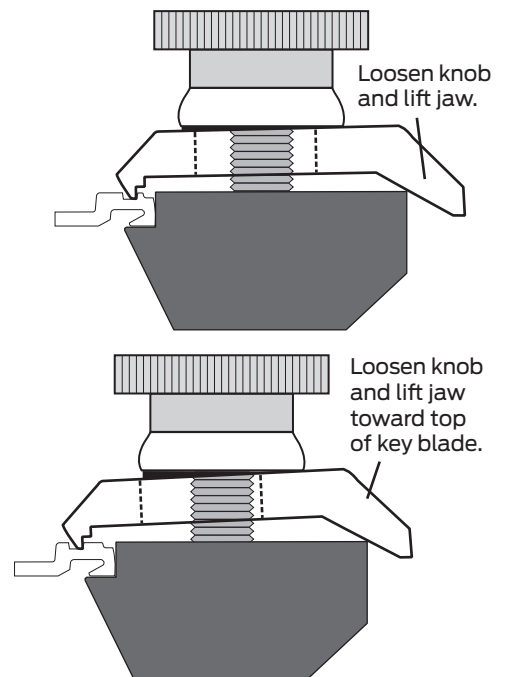
S100, S120, S123, S124, S135, S150

Everest 29 "45" Sections:

T145, T245, T345

S145, S245, S345

Not only must the top jaw engage in different places up and down the side of the various key sections, but the lever or knob screw must be tightened or loosened substantially. Loosening and tightening the lever or knob screw allows enough travel in the top jaw to accommodate the difference in thickness between Classic and Everest 29 key sections, and to adjust for the angles at which the top jaw sits.



Upgrading to new top jaw

Red knob operation

Tighten the red knob on the Obverse key sections or loosen it enough to let the top jaw move up to grab into the high groove of S145, or anything in between.

Black lever operation

Pro-Lok changed the red knob to a black clutching lever in 1998, before Everest keys existed.

The lever can only swing about 180° before hitting the body of the machine. If the Blue Punch is used only to cut one type of Schlage key section, the lever's travel may be set for fast secure clamping every time.

The black lever does not allow the top jaw to travel from its lowest position (for Obverse keys), to an intermediate position (for clamping most of the Everest 29 S & T Family keys), to the highest position required (for S145). Commercial locksmiths who cut a variety of Schlage key sections daily may find the continuous lever adjustment inconvenient. On most machines, the lever must be specifically adjusted for each of the three clamping positions.

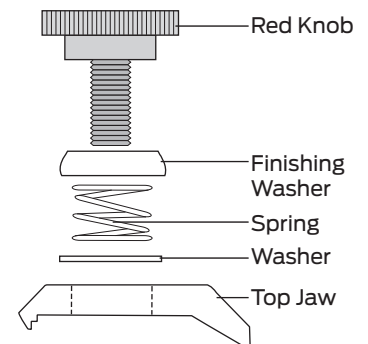
Use the following procedure to back the screw out for Everest keys or to tighten the screw for Obverse keys:

1. Lift the lever against spring pressure to disengage it from the screw.
2. While disengaged, swing the lever to the left or right without turning the screw.
3. Let go of the lever and it snaps back into engagement with the screw.

Upgrade package 40-074

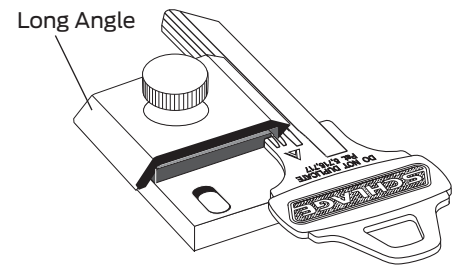
A newly designed top jaw, red knob, spring, finishing washer and regular washer can be obtained from your Schlage or Pro-Lok distributor.

Changing the top vise jaw has no effect on the accuracy of the machine. If the machine exhibits mechanical problems or cannot cut keys accurately, please contact your Pro-Lok distributor to arrange for your machine to be rebuilt.



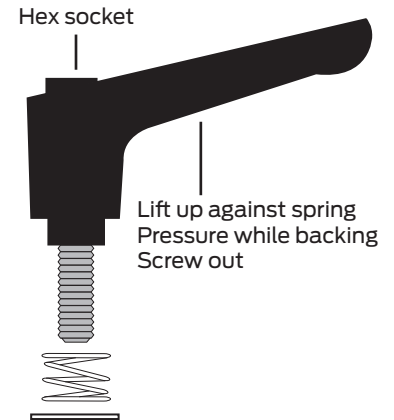
Upgrading machines with a red knob

1. Unscrew the old knob.
2. Remove the old top jaw.
3. Install the new pieces. Install the jaw so the end with the longer angled portion is toward you. The end with the shorter angle has a lip to engage in the groove of the key section.
4. Screw on the new red knob.



Upgrading machines with a black lever

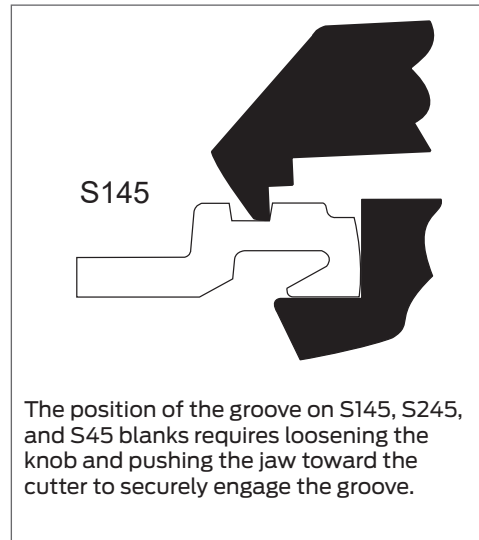
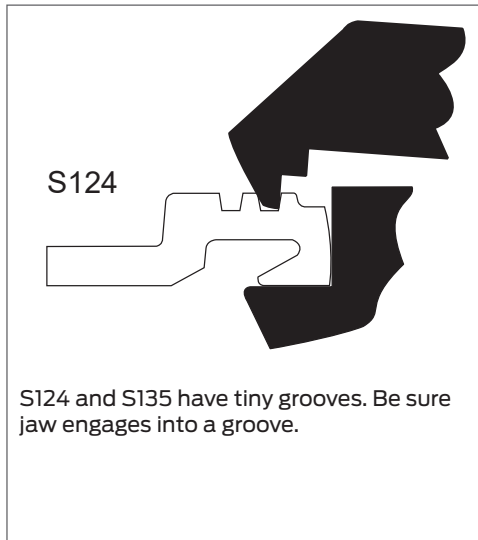
1. Swing the lever as far to the right as it will go. Lift up against spring pressure to disengage it from its screw.
2. Swing the lever back as far to the left as it will go and let it down to engage the screw.
3. Repeat this process as many times as necessary to unscrew the screw completely and remove the lever. A hex wrench may be helpful.
4. Remove the lever, spring, washer and top jaw.
5. Install the new jaw so that the end with the longer angled portion is toward you. The end with the shorter angle engages the groove in the key milling.
6. Reinstall the black lever or install the new red knob depending on your preference: The red knob screws into place. If reinstalling the black lever, use an Allen wrench to start the screw, then reverse the process used to remove the lever. To adjust the lever's final position and rotation, clamp a single key or key blank of the key section you will cut most frequently.



Tips for cutting Everest 29 keys

After cutting several keys of each key section the procedure will become familiar. However, for the first few keys, please observe these important details:

- Push the die carriage all the way to the right before inserting a key blank. If you clamp an Everest key before moving the carriage, its large bow may prevent the carriage from travelling far enough to allow the first cut to be correctly positioned. (Cut position will begin at #2 and incorrectly cut the key.)
- Closely observe the proper engagement of the top jaw into the key section. If the jaw clamps on the surface of a rib or into the very bottom relief on an Everest key, the key jaw is not able to square up the blank in the vise, incorrectly cutting the key.



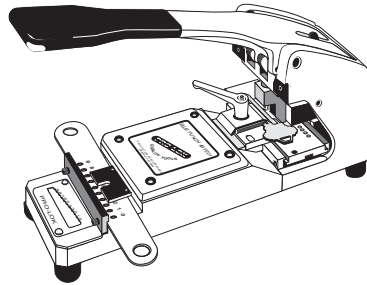
Service Equipment

Pin kit 40-119



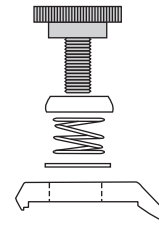
Contains all conventional pins and springs, modular follower M504-548, tweezers and M540-056 cylinder cap removal tool.

Key biting punch 40-075



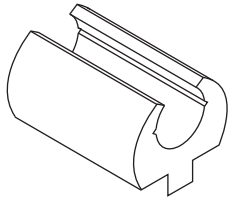
Blue punch for cutting Obverse and Everest Open C family keys.

Vise jaw upgrade kit 40-074



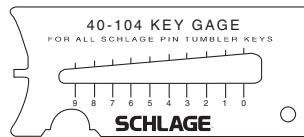
Replaces jaw on Blue punch key machines manufactured before July 1999 to add Everest C family capability to Obverse family key machines.

Plug holder 40-066

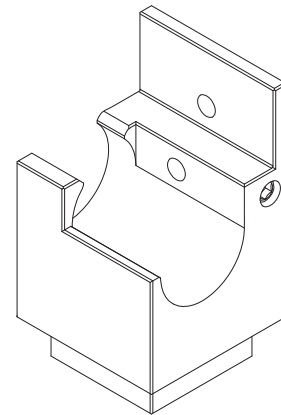


Has grooves for Primus sidebar. Included in 40-070 finger pin kit.

Key gauge 40-104



Tail modification jig 47646702



➔ To replace cylinder master pins, go to pg. 12 for specific master pin information.

Cylinders

Description	Part number
Sargent cylinder	47492846
Corbin Russwin cylinder	47492854
Sargent Primus cylinder	47505672
Corbin Russwin Primus cylinder	47505697
Uncombined Sargent cylinder	47580487
Uncombined Corbin Russwin cylinder	47580488
Uncombined Sargent Primus cylinder	47580489
Uncombined Corbin Russwin Primus cylinder	47580490

Accessories

Description	Part number
Retaining clip	C604-471
Cylinder top cover	90-212
Pin	34-300-9
Master pin	34-202-9
Cylinder tumbler spring	C503-113
SFIC blocking pin	34-950
Pin blocking spring	C504-116
Finger pin	34-001-6
Sidebar spring	C603-952
Sidebar	C603-950
Cylinder top pin	34-101-3
Fingerpin	34-058
Fingerpin spring	C603-951

About Allegion

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For more, visit www.allegion.com.

aptiQ ■ LCN ■ **SCHLAGE** ■ STEELCRAFT ■ VON DUPRIN