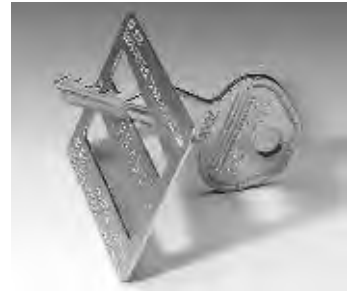


# Keying

Master Lock keys are coded from bow to tip and with a few exceptions, the increment used is .0155". Master Lock keys will be encountered with two types of stamping on them. Both direct and blind codes are stamped on the keys for different products. In the 291 pin kit you will find the 290-0371 key gauge for decoding keys. The "B" series of keys, 6000B and 7000B, use gauge 290-0373. For ProSeries® products, use the top slot in the gauge. Insert the key in the slot at the large end perpendicular to the gauge. Once inserted, pull the key toward the smaller end of the slot until it stops. The number stamped on the gauge directly below where the key stops is the cut depth for that cut position on the key. Repeat the process for each cut position on the key to determine the actual combination of the key.



The cylinder being rekeyed may be set to an existing key combination or it may be zero-bitted. In either case, follow the plug out of the shell and discard the existing pins from the plug. If the cylinder was Master Keyed, also remove any master pins that may have been retained in the shell. For the combination decoded, select the appropriate length pin from the 291 pinning kit, and install in the appropriate pin chamber of the plug. Once all pins have been installed, insert the plug into the shell and check for smoothness of operation. If you note roughness in the operation, check the key to be sure it has been produced to the bitting specifications on page 25.

## MASTER KEYING

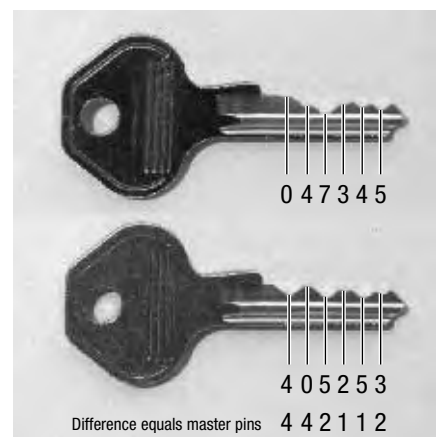
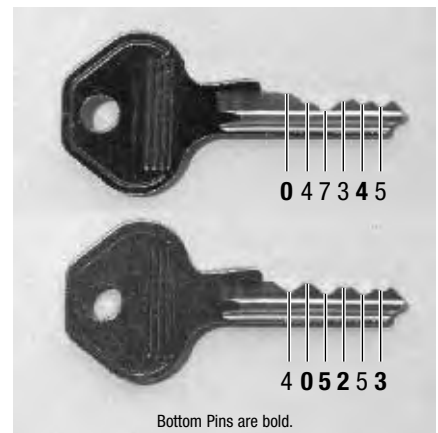
Most keying system software offers the option of providing a pinning chart. It is advisable to use that option. If the option is not available, the following example illustrates the procedure required to determine the pinning of a master keyed cylinder.

With the example master key combination of 047345 at right, and the change key combination of 405253, the first step is to figure out the bottom pins that you must install in the cylinder, then the required master pins must be determined.

Bottom pins must be selected to allow operation of the shallowest cut per position in the cylinder for either key. By comparing the two combinations, select the shallowest cut for each cut position from either key. In our example we have highlighted the shallowest cut depth, and you can see that our bottom pins for the cylinder will be 005243. The master pin sizes are determined by subtracting the shallowest cut depth from the deepest cut depth for each pin position in the lock. As noted in the example, the difference is 442112.

From this process, we know that in the first pin chamber we must have a number zero bottom pin and a number 4 master pin for both keys to operate. The illustration at the right shows the pinning for the master keyed cylinder example. Depending upon the size of your key system, you may or may not require master pinning in all of the pin chambers.

If you find that some cylinders require master pins in different pin chambers or if different cylinders require different quantities of pin chambers to have master pins, question the design of the system before proceeding. Having master pins in different pin chambers may indicate that the system utilizes a Rotating Constant Method of progression, which should be verified. Having different quantities of master pins in different cylinders usually indicates faulty key system design, and you should recommend that the system be replaced.



Use of the service holes is another optional method for rekeying if the cylinder hasn't been, or doesn't need to be master keyed. While the steps are more numerous it often proves to be a quicker method than using a follower. The procedure is;

- Insert key and rotate 180° to remove existing bottom pins via the service holes
- Without removing the key, rotate the plug another 90°
- Remove the old key and insert the new one
- Rotate the plug back to the 180° position and install new bottom pins via the service holes
- Rotate the plug to the key pull position and remove key

# Keying *continued*

## **EDGE™ KEY CONTROL SYSTEM**

The new EDGE™ System has a secondary locking mechanism in the form of two ball bearings on each side of the keyway. The nickel-silver keys have a dimple cut on each side of the new actual key section.

The ball bearings are required to align with a slot in the shell before the key can be removed and that means that the service holes on the bottom of the shell cannot be used for rekeying as with other ProSeries® cylinders. When using a follower during rekeying care should be taken to retain the ball bearings in the plug because they are not staked in place and can be lost.

The technique of rolling your fingers along the plug as it is removed has proven effective. If ball bearings are lost, they can be replaced with any standard 3/32" ball bearing and Master Lock sells a package of 200 via part number 296-0200, they are also included in the regular #291 keying kit.



These cylinders and keys are 100% compatible with the American Lock EDGE™ mortise, rim and knob style cylinders. The American Lock EDGE™ products use a nickel silver key for the added strength needed in door lock applications.

NOTE: If one or more of the ball bearings is left out of the cylinder during reassembly there is a danger of one of the top pins entering the ball bearing hole and rendering the cylinder useless. Missing ball bearings also eliminate the key control potential in the particular cylinder.

## **EDGE™ KEY CONTROL SYSTEM MASTER KEYING**

The EDGE™ System products require application of one important rule regarding key system development. Number one master pins cannot be used in any EDGE™ cylinder. Those cylinders each have two slots in the shell for the ball bearings and if a number one master pin in the plug falls into one of those slots it will jam the cylinder preventing further rotation of the plug or withdrawal of the key.

If you do not have the capability to produce keying systems that have eliminated the need for number one master pins, Master Lock will generate a system for you with up to four levels of keying and a total of 20,000 CK's in the system for a six pin cylinder. Master Lock has a flat fee for this service but you must realize that a copy of the key system will not be retained by Master Lock Co. A pinning matrix is also supplied with the keying system on a CD\_ROM.

## **PYTHON™ PLUG**

The Python plug may be removed from the lock housing with a service key if the plug is in the unlocked position. If the plug isn't in the unlocked position the differently sized tenons on the back of the plug won't let it be removed.

The Python plug also interacts with a circular actuator inside the lock body and that actuator is located only by the plug. Before using the service key to remove the plug the cable should be removed from the lock body and the body should be stored carefully when the plug has been pulled for rekeying to avoid displacing the actuator. Displacement of the actuator effectively destroys the lock.



# Keying *continued*



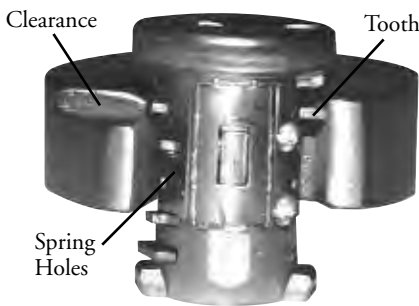
The disc tumblers are the snap in style and a special keying tool is available for rekeying. This tool is also supplied in the keying kit for the Python. One major difference in the Python versus a standard laminated padlock is the number of depths available. Normally Master's number 1 key has the potential for 8 depths, (0 through 7), but the Python only has 7, (0 through 6). The majority of locks using the number 1 key don't use a number 7 depth, but if you encounter one that does, it cannot be keyed into the Python plug.



The keying kit also includes a key gauge, four different spare plugs and two service keys.



The keying tool has a tooth on it that can be positioned on a disc tumbler to remove it from the plug. The inner portion of the jaws on the tool is ideal for pressing the tumblers into the plug.



Removal of a tumbler is best accomplished as shown in the illustration at left. The tumbler will be ejected into the clearance area of the tool and then may be exchanged for the desired tumbler.

The fifth tumbler is a steel retainer tumbler. This tumbler has a long side and a short side and the longer side is the side that should be placed over the spring.

Once rekeying has been accomplished the service key can be used to replace the plug in the lock body and the key should be pinched to allow removal without pulling the plug.

Product Category	Model Numbers	Plug Assembly
Python™ Adjustable Locking Cables	8401D, 8402D, 8413	8401-0337
Key Cabinets	7122D – 7128D	8401-0338
Automotive Security	1470DAT, 2847DAT, 2854DAT, 2878DAT	8401-0339
Automotive Security	739DAT, 2989AT, 8287DAT, 8289AT	8401-0340