

LOCKSMITH NEWSLETTER

Consumers Guide to Understanding Master Keying

When most people think of a master key they assume -one key fits all. Many people have just one key for all the locks to their house and consider this key a master key. Although this master key will open all the locks on their house that does not make it a true master key. The standard definition of a master key defines it as "a key operating all the master keyed locks or cylinders in a group, each lock or cylinder usually operated by its own change key."

Convenience vs. Security

By using special pins called master pins the locksmith can pin each cylinder so that it will be operated by two differently cut keys. However, it must be understood that master keying is done for convenience and not security and here is why. A cylinder operated by a single key is 100 percent secure because each lock cylinder of the standard pin tumbler variety operates when its proper key is inserted; thereby aligning the pin tumblers correctly to create a shear line. At this point the lock can be turned. A lock without any master pins added to it is considered pure because only one properly cut key can create a shear line. When master pins are added to the same cylinder more shear lines are created compromising the security of the cylinder. For instance, once a master pin is added to a chamber, two shear lines are created and now two different keys can operate the same cylinder. One key is called the master key while the other is called the change key. That same cylinder that once had 100 percent security now has 50 percent security. As more master pins are added, more shear lines are created further

compromising the security of the cylinder. If one master pin is added to each chamber in a six-chamber cylinder sixty-four shear lines have been created and now the lock offers 1.5 percent security.

But don't be alarmed. Master keying is an accepted practice that makes perfect sense and when done by a qualified locksmith, master keying can be accomplished quite successfully. Convenience outweighs security when master keys are needed for buildings or institutions. Imagine an owner of a small commercial building having to carry several keys to each suite when he could have one master key that operates every suite. This is just one of a few reasons why master keying is performed. It makes sense to master key however one must understand the principles behind master keying in order to maintain the system so the user enjoys years of worry free key control. This is why most master key systems should be kept as simple as possible. Besides having the best possible security the simpler the system the easier it is to understand and manage. The locksmith recognizes this and plans each system accordingly.

Basic Principles

There are two methods of master keying and each method has its own basic principles. There is the Rotating Constant method of master keying and there is the Total Progression method. To explain these methods would take more than the space allowed in this newsletter. There are also different levels of master keying from simple two level systems to much more

complex six level systems. There are master keys, grand master keys and great grand master keys. The locksmith can decide which level is right for each particular keying situation. Setting up even the simplest system takes careful planning in today's computer driven world. All master key systems are based on mathematics and computers have helped the locksmith generate systems with ease. Although even the best planned system can quickly deteriorate if the user does not fully understand how the master key system operates.

Understanding the system

Before he can generate a master key system the locksmith must first research the buildings function. Along with careful planning it is the locksmith's duty to prepare a diagram of the system and carefully explain it to the owner. Simplicity is paramount when generating master key systems and a carefully planned system involving the owners understanding of that system can go a long way in maintaining the integrity of the system. Knowing what keys operate what locks is only the beginning in understanding a master key system. The owner must understand from the early stages of the design to the point where the keys are finally delivered how and why the system works. After all, it will be the owner's responsibility to maintain the master key system once the locksmith's work is done. This is why most master key systems should be kept as simple as possible. Besides having the best possible security the simpler the system the easier it is to understand and manage. The locksmith recognizes this and plans each system accordingly.

Maintaining Master Key Systems

Even the most simple master key system can be quickly destroyed if the system is not maintained properly. The owner must be responsible or must make someone responsible for caring for the system. If the owner in his haste lends out the master key

instead of taking the time to find the proper key the system will be compromised. The master key should never be loaned out. Keys could be duplicated and returned without the owner ever knowing. Patented protected keys can also be used in a master key system to prevent unauthorized key duplication. Whether it is a high security key system or a standard key system a master key in the wrong hands could prove disastrous. Keys should be marked and stored in a key cabinet. Extra copies of change keys should be stored there as well. When the need arises to re-key locks or add locks it should be done by the locksmith that generated the system to keep the system genuine and to not have keys work where they're not intended to work.

Remember master keying is a convenience and once the theories are understood, and basic principles are adhered to, master keying can give years of continued reliable use.

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