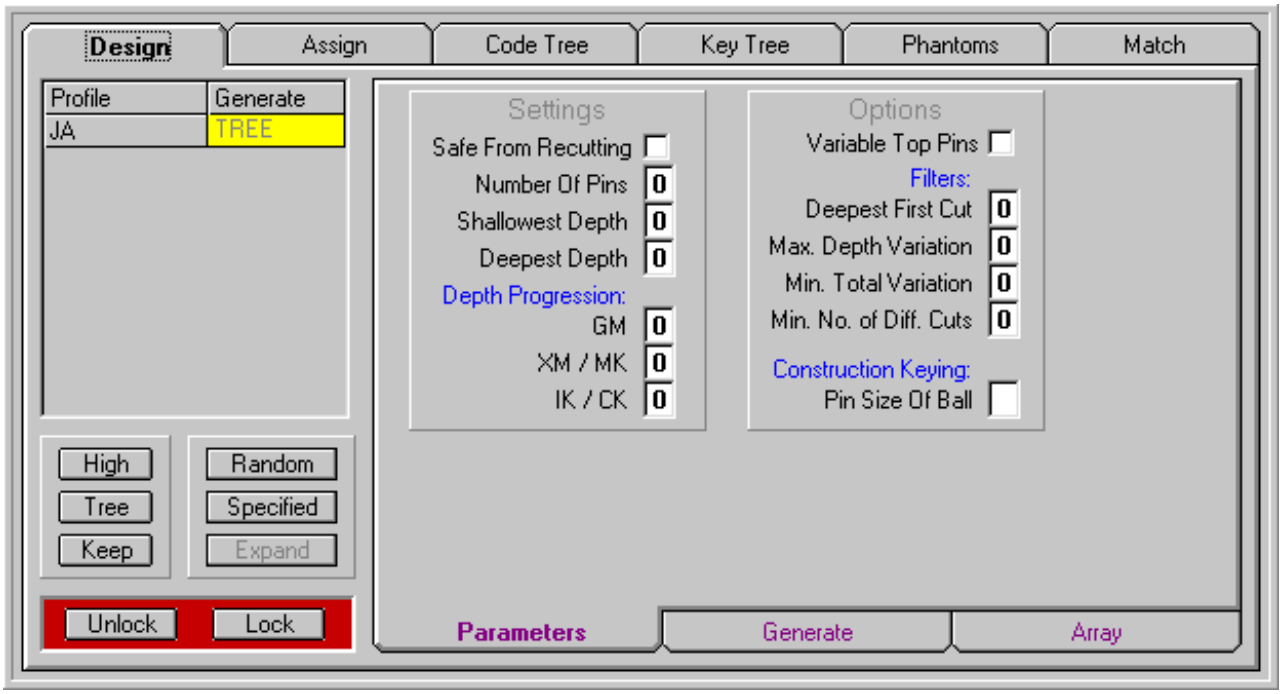
KEY MASTERY ™

Standard (4 to 7 pin)

Version 4.3

Code Design – Standard Module



There are six tabs within the Code Design section

Design This is where you initially design and generate codes for new key systems as well as expanding on existing ones.

Assign For assigning the generated codes to your keys or manually entering your key codes.

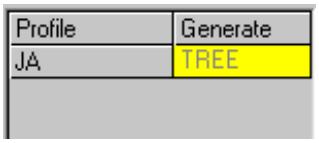
Code Tree For viewing and printing the generated codes in a tree layout according to their rank.

Key Tree For viewing keys with their codes in a tree layout according to their Key Above or the rank of their code.

Phantoms To check your key system for phantom keys. Essential after changing the keying of existing Doors.

Match This tab is automatically activated when necessary to match Key Codes and Design Codes. ***Clicking on this tab will do nothing***.

Design

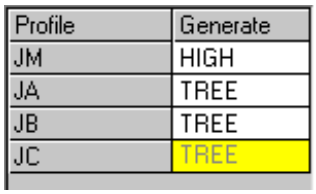


To the left of the screen is a list of profiles for the key system. Fictitious profiles can also be introduced to enable you to create different design structures within the same system.

Will only generate the Highest Level Code for that profile. This can be used for the master profile or single key systems.

Will generate the full tree of codes as specified. This is the default.

Allows you to keep the existing codes for that profile while generating others.



With multi-profile systems, the master profile will default to High, as you would normally only want the Highest Level Code generated on this profile. The remainder will default to Tree, allowing you to generate the same codes on each.

Two buttons are provided to generate new systems, another for expanding existing system.

After a system has been generated, you can lock the design to stop users from accidentally changing the structure. When locked, only the Expand button is active.

To the right of the screen are three more tabs:

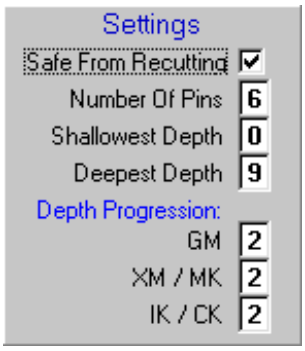
Parameters The settings you wish to use to generate the codes

Generate The positions you wish to progress and the number of codes required.

Array The key depths you wish to progress in each position.

Parameters

Settings



This information is used to generate the codes. They **cannot** be changed when expanding on existing systems as existing codes will be affected.

Safe from Re-Cutting: When generating in random mode, Key Mastery will ensure that 1 chamber in all level of masters will be a shallow cut, ensuring that a subordinate key cannot be cut down to make a higher level key.

Note: *This feature cannot work when utilizing rotating constants or generating cross keys.*

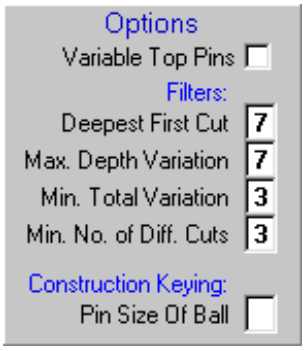
Number Of Pins: Pin chambers in each cylinder or cuts on each key (4 to 7)

Shallowest Depth: The depth number used for the shallowest cut (usually 0 or 1)

Deepest Depth: The depth number used for the deepest cut (use **X** for 10)

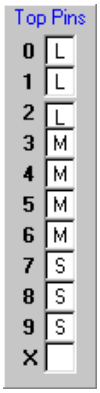
Depth Progression: The minimum depth difference between any 2 key codes.

Options



This information is used to determine unwanted codes and activating other features. These **can** be changed when expanding on existing systems.

Variable Top Pins: If required for the lock type you are using, Key Mastery will open another window allowing you to enter the top pin size for the combined bottom and master pin sizes in each chamber. These are printed on the pinning reports.



Deepest First Cut: A very deep cut in the first position can make the key weak. Here, you can specify the deepest cut desired.

Maximum Depth Variation (MACS): Depending on the spacing and angle of cuts on the keys, a deep cut can completely cut away a shallow cut next to it. If you specify a **7** here, Key Mastery will remove or mark the code 35**91**46 (9-1=8) but allow 35**92**46 (9-2=7)

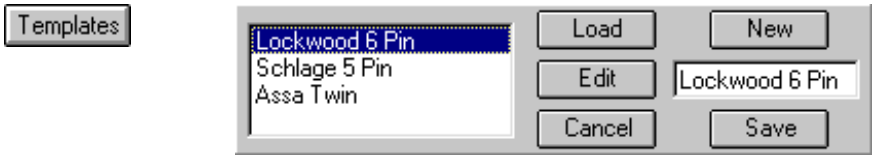
Minimum Total Variation: To ensure that there is reasonable depth variation over the key, you should specify at least a **3** here.

Minimum Number of Different Cuts: To ensure that there are different cuts along the key, you should also specify a **3** here.

Pin Size Of Ball: For lost ball construction keying, specify the size of the ball as a pin size. Usually 2, 3 or 4.

Parameters (Continued)

The Parameters can be saved as Templates, to be re-called for future new systems



Generate

Key Mastery can generate codes on up to 6 levels

GGMK			Great Grand Master
[G]	**GMK**		Grand Master
[X]	**XM**		Cross Master – can be selectively keyed with any key under a GMK
[M]	**MK**		Master Key
[I]		**IK**	Interchange Key – can be selectively keyed with any key under a MK
[C]		**CK**	Change Key

The characters in brackets are used to designate the chambers. ***Constants are left empty***.

The Direction Buttons allow you to choose the direction the codes will be progressed, as well as the direction that the constants will be rotated.

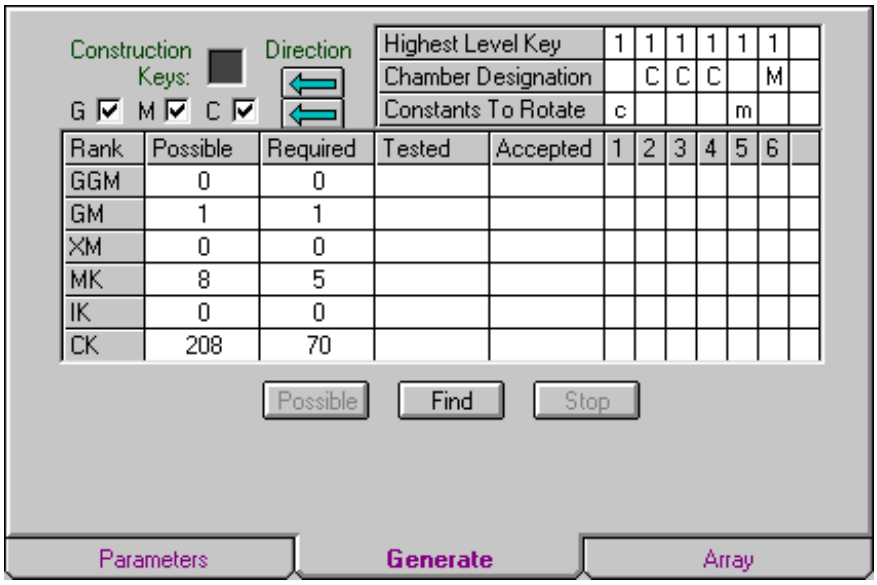
Two Options are provided to generate new systems

Will automatically find a system that will provide the codes that you require.

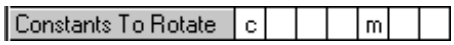
Allows you to design the system yourself. Ideal for re-generating existing systems.

Random

This is by far the easiest way to generate new codes, as all you need to do is type in the number of codes required on each level. In the example below, we have asked for 1 GM, 5 MK's and 70 CK's (individual codes) under each MK.

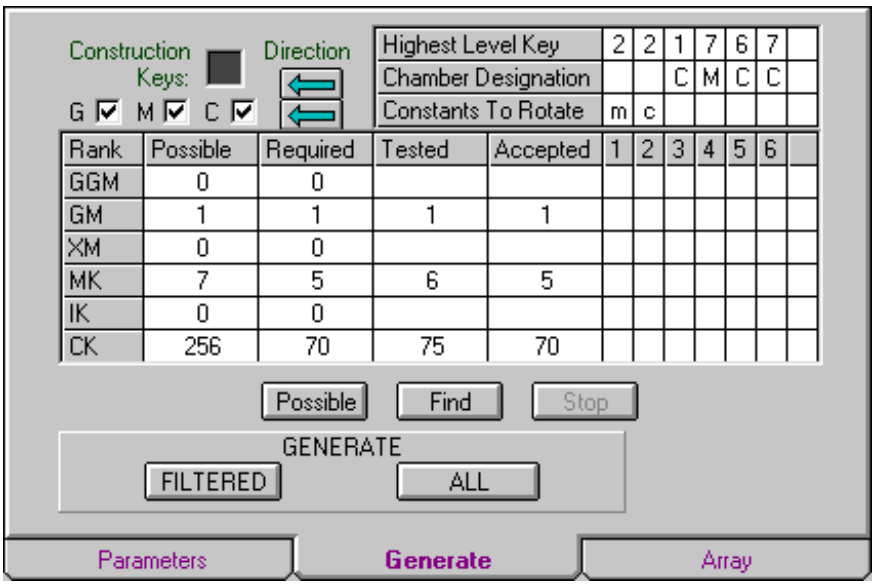


Wherever possible, Key Mastery will utilize rotating constants, to minimize the number of master pins. Here we have a rotating constant for MK's and CK's.



If you prefer not to have rotating constants on any level, then untick the boxes:

On typing in your requirements click  and Key Mastery will find a design that will produce the required number of codes. Clicking this button again will produce another design.



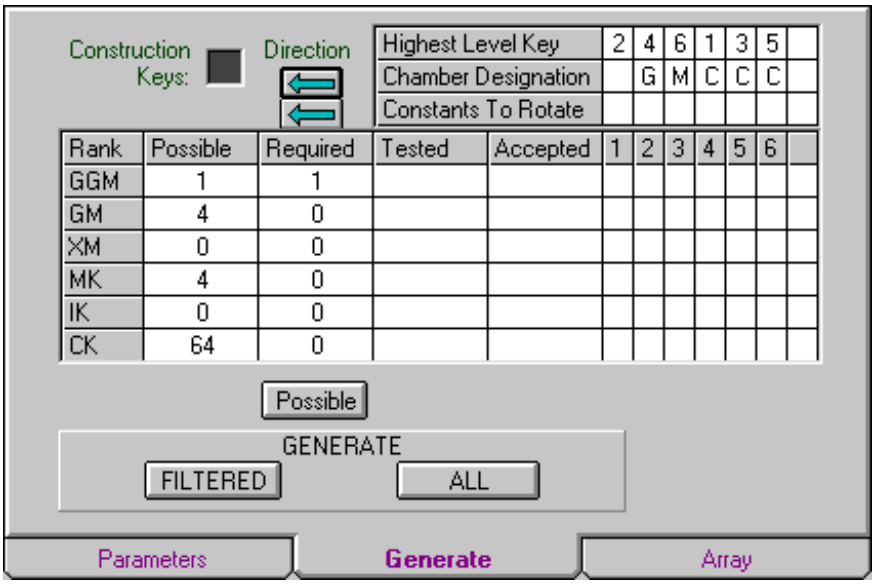
On finding a system, simply click on  or  as described in the next section.

Specified

This option allows you to specify the way you want codes to be generated.

Highest Level Key	2	4	6	1	3	5	
Chamber Designation							
Constants To Rotate							

Type in the highest level code on this line
Designate the chambers to be progressed
Choose which constants to rotate



2	4	6	1	3	5	
	G	M	C	C	C	

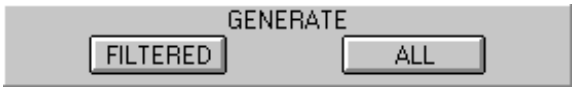
1	2	3	4	5	6	
	0	0	3	1	1	
	2	2	5	5	3	
	6	4	7	7	7	
	8	8	9	9	9	

As you type in the information, Key Mastery calculates the Array and the theoretical number of codes displaying them in the Possible Column.

Tip: *It is a good idea to leave as many constants as possible. This will provide your customer with better security and allow flexibility when expanding.*

If you do not need all the possible codes, you can specify the quantity in the Required column.

For smaller systems, simply press [Possible] which will fill in the Required column for you.



[FILTERED] Will only generate the good codes. This is the recommended option

[ALL] Would generate all codes, good and bad. Handy in certain situations.

Array

Mixes or Sorts the array

Sets the array to the group chosen in the parameters

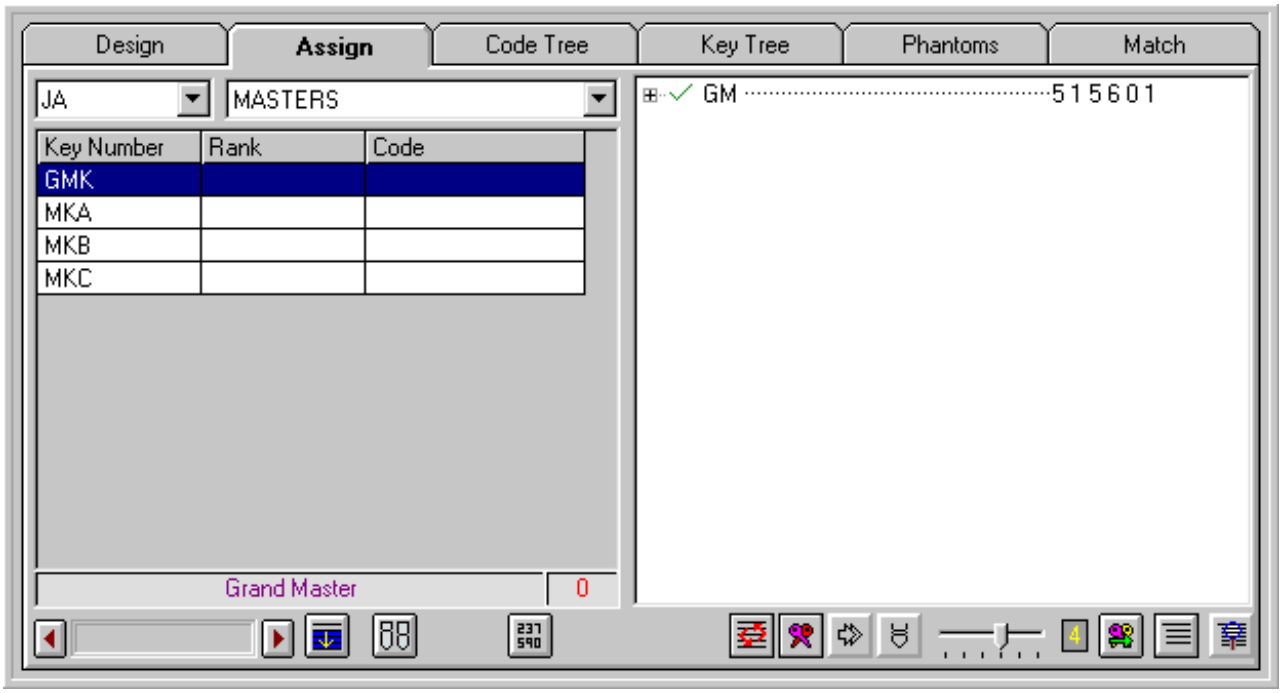
To add the array of manually entered key codes

To minimize the array to what is used.

Allows you to manually edit the array.

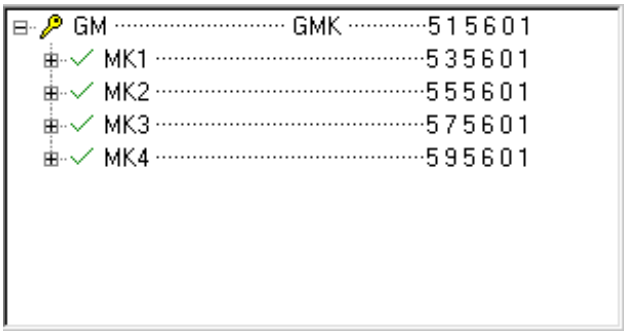
Assign

After the codes are generated, you can assign them to the keys.



On the left hand side is the key list under the MASTERS heading. On the right, are the generated codes, in a tree format. As our GMK key is already selected, you can simply assign it a code by **Right Clicking** on the GM code. Once a code is assigned a small key appears next to the code.

The tree will expand allowing you to choose the codes for your masters. Right Click on any of the MK codes for the MK



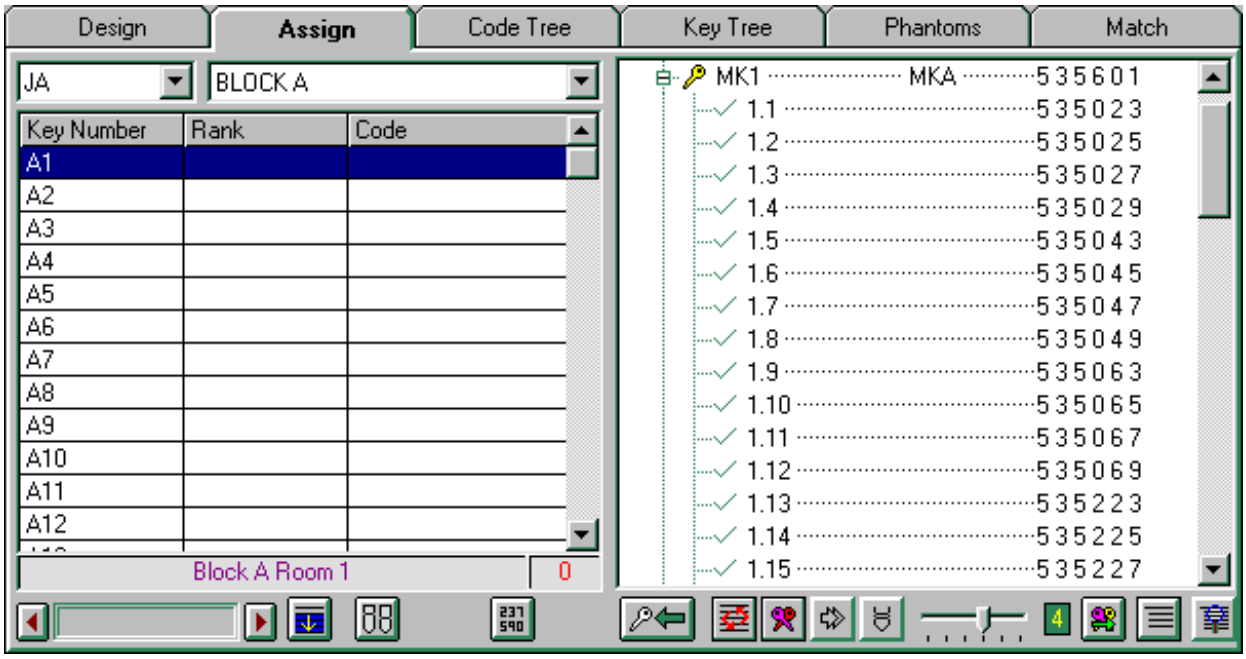
You will notice that the Rank as well as the Code is transferred to your keys in the key list. The code tree also displays the key using the assigned codes.

Key Mastery has many features to help you assign codes, but it cannot assume what you want with any level of masters and cross masters, as there are too many possible alternatives that you may have in mind. Hence it is up to you to choose these codes to meet with your requirements.

Once the masters have been chosen, Key Mastery is ready to automatically assign your individual keys, which would normally be the most laborious job, especially if there is any cross keying.

Assign (continued)

The drop down Profile and Heading lists allow you to choose the desired key list.



For the majority of systems, all you will need to do is click 2 buttons to assign your individual Keys:

The select down button will select all your keys (you can also select with your mouse).

The assign button will automatically assign codes to the selected keys according to your settings.

Will randomly select codes in the list. (Default)
This button toggles to:
Will search for codes sequentially down the list.

Ensures that no Phantoms (unwanted cross-keys) are created. (Default On)
Only required for cross-keyed systems, but should be left on anyway.

Looks for codes that will produce the least number of master pins. (Default Off)
This is only required for cross-keyed systems. Will slow down assigning.

Ensures that the codes you choose will not produce #1 pins in the pinning. This is only necessary if the depth progression is 1 and the #1 pin is not allowed.

Selects the variation required between key codes. (Default: Double the depth progression)

Assign (continued)

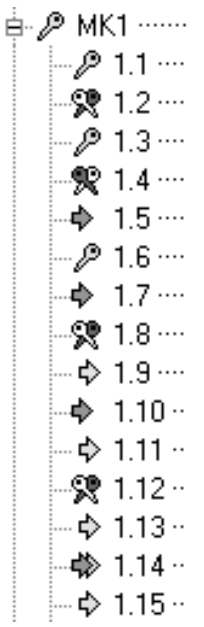
There are also additional buttons below your key list. Their functions are as follows:

Counts the number of master pins throughout the system. The smaller the number, the more secure the system.

Allows you to manually Enter a Key Code

The remaining buttons are for altering your viewing options as follows:-

Shows the status of each Code in relation to the selected key.



This code is the best for the chosen key.

Meets with the minimum variation but will cause unnecessary master pins.

Creates minimum masters, but does not meet with the minimum variation.

A good code, but did not meet with any of your requirements.

This is a bad code.

This code is already assigned to another key.

This is a phantom code and should not be used.

Assigning this code will cause other keys to phantom.

This code will create #1 master pins.

The assigned code is a phantom or causes other keys to phantom.

Close Branches. Will close the branches of your key tree to display masters only.

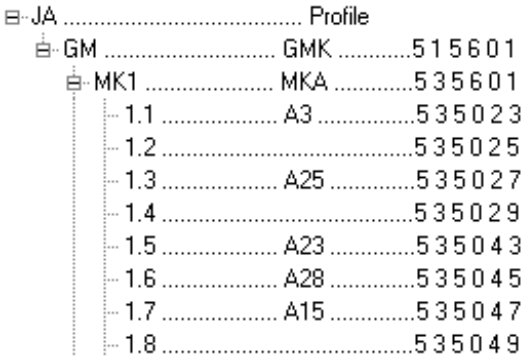
Find Key Above ON/OFF.

Key Mastery always tries to find the code branch for the Key Above. If you have not specified a Key Above or allocated the incorrect one, this button will enable you to open the correct code branch manually.

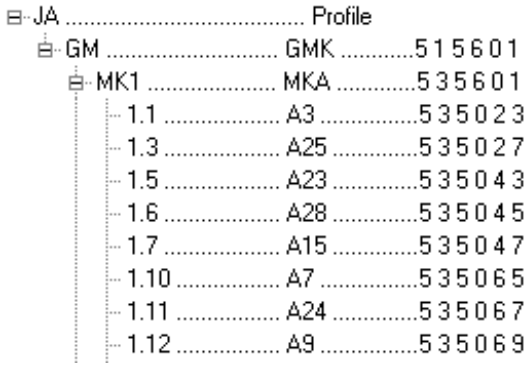
Code Tree

Displays the generated codes.

Displays all codes.



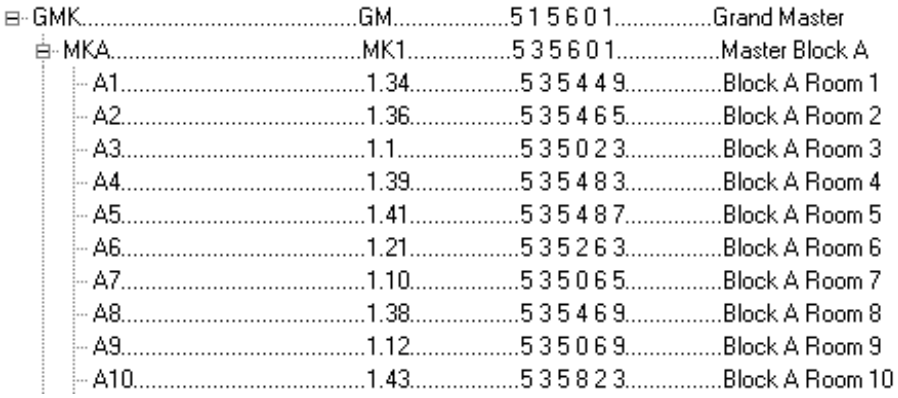
Only displays the assigned codes.



Key Tree

Key Above Tree

Key Rank Tree



In most cases, both tree options will produce the same tree, as they did here. If they didn't and you want the Key Above to correspond with the rank of the code, simply click on this button:

Set Key Above to Code Rank

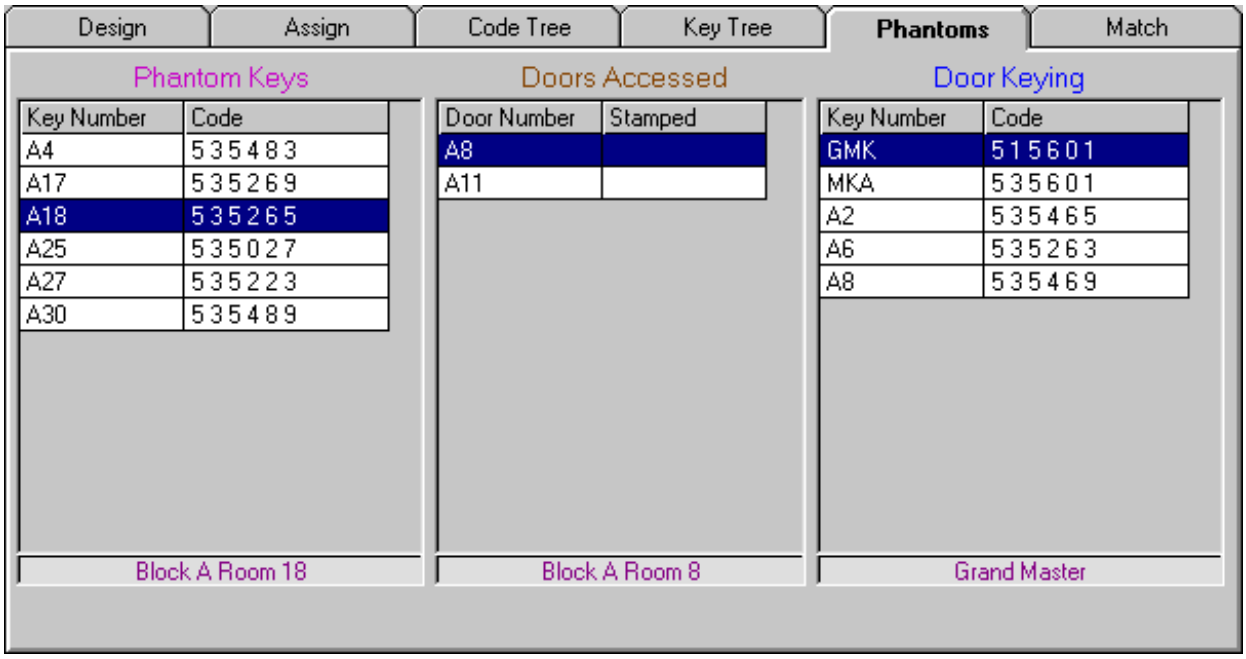
Phantoms

Although Key Mastery has the option to automatically check for Phantoms as you are assigning codes, there are two instances where a separate phantom check is vital.

- Re-Keying Doors after the system has been designed.
- Replacing lost keys in doors that have been cross keyed.

In any case, it is good practice to run a check.

The following example shows a system that was cross keyed after codes were assigned.



The **Phantom Keys** list shows all key that access doors they were not intended to.

The **Doors Accessed** list displays the doors accessed by the highlighted key.

The **Door Keying** list shows the keying of the highlighted door, with the codes of the keys.

On close examination, you should be able to determine which keys need replacing.