

easy entrie

V3.1

Program V3

Instructions for the Easy Entrie profile milling machine

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www.security.org

Manufactured exclusively by Bosch GmbH, Esslingen, Germany

www.Easyentrie.de



The Easy entrie program calculates the profile of the key based upon data obtained during the measurement process. These instructions provide a guide as to the proper use of the Easy entrie profile milling machine. They have been prepared in conjunction with the manufacturer. Detailed information can be found in LSS+ regarding the use of this machine.

LEGAL NOTICE

The Easy entrie is intended for use in duplicating non-restricted keyways and blanks. It is virtually impossible to replicate patented profiles in Speed-Profile mode, because of the way in which measurements are taken and key blanks are milled. The profile that is produced by this technology will not precisely duplicate all characteristics of the target blank. Source keys that are measured and produced in Fine-Profile mode may infringe on patents. Patents may be infringed if an attempt is made to replicate certain functions of the key as it interacts with the locking mechanism. For that reason, the user is cautioned to check specific laws of the jurisdiction where the machine is utilized.

Instructions for the Easy Entrie profile milling machine

These instructions will detail the proper use of the Easy entrie. Although production of profiles is straightforward, certain procedures must be followed in order to replicate blanks accurately. Please read the instructions completely before utilizing the Easy entrie. The first part of this document outlines the standard method of duplicating keys. The use of Easy entrie PC software is described in a later section.

Theory of Operation

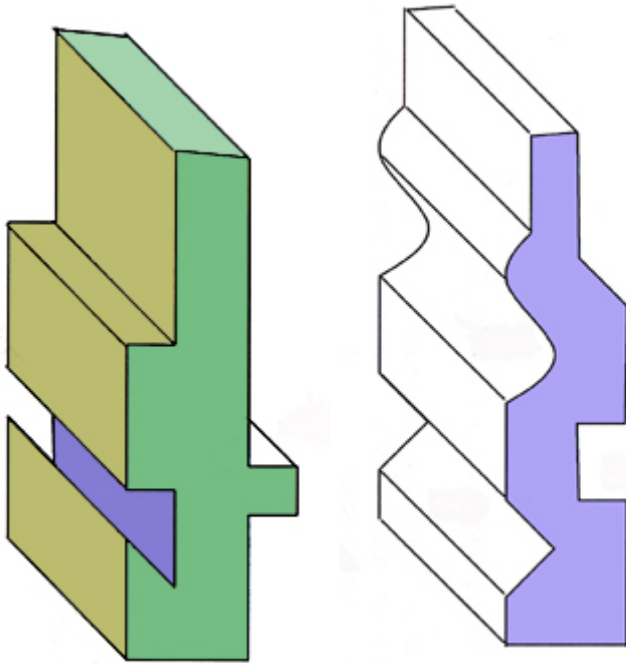
The Easy entrie is a self-contained profile milling machine that is capable of replicating a wide array of pin tumbler keyway profiles, from either an original blank key, or from a key that has been previously cut and contains bitting. The system utilizes a patented measuring process that samples a portion of the surface of the source key in minute steps, and then translates this information to allow a substantial copy to be reproduced. The measurement of the precise angles, curves, and bullets on any key is not exact, due to the means by which the probe gathers information. Therefore, the milled blank that is generated by the Easy entrie is not an exact replica, but is an approximation that is calculated to pass all of the wards within a specific keyway. This is also dependent upon whether a coarse or fine operating mode is selected for milling.

The design of the cutting wheel of the Easy entrie will not permit the replication of certain profiles, as shown in the diagram (left). Angled square cuts cannot be measured. So also, protruding bullets are not able to be copied. Different angles, comprised of curves, squares and complex combinations can all be replicated, as shown in the diagram (right). Milling is across the entire longitudinal surface of the key. Therefore, laser track, dimple and other side millings cannot be reproduced. The Easy entrie is not a key cutter; it cannot duplicate conventional bitting, but rather, only the ward patterns to correspond with the keyway. The machine is capable of replicating blank keys from source keys that contain bitting, so long as the probed surface is set to an area that contains a complete portion of the blade.

Once the source key is measured, the information is fed to the milling cutter, after the correct Rohlex blank has been selected. There are several different blanks available from the manufacturer, and depend upon the thickness of the source key. They are labelled with a two-digit number on their face for easy identification. The Rohlex is milled on both sides in sequence, until all cutting is completed. The replica of the source key is removed, and trimmed to remove the end of the blank. The Rohlex is

then inserted into a traditional key cutting machine to replicate the bitting of the source key, or can be used for impressing of a cylinder, or extrapolation of the top level master key.

The information that is obtained during the measurement process may also be input into a PC, if the Easy entrie software is being utilized. This data may be stored within a data base, or the profile can be manipulated for special operations that require different iterations of the blank to be produced and saved.



Overview of the Process

There are two primary processes (**measurement** and **milling**) and ten critical steps to produce a blank key from a source profile, using the Easy entrie in conventional mode.

1. **Calibrate the Easy entrie at initial power up by insuring that there are no keys in the holding vice, and no Rohlex in the milling compartment;**
2. **Insert the source key into the key holding vice and be certain that the sampled area encompasses the total width of the blade;**
3. **Initiate the measurement sequence;**
4. **When the measurement process has been completed, remove the source key;**
5. **Select the appropriate Rohlex, and insert it into the milling chamber;**
6. **Select milling resolution: Speed or Fine, depending upon the precision required;**
7. **Begin the milling process;**
8. **Remove the Rohlex when the process is completed, or generate additional copies;**
9. **Trim the Rohlex to remove the tip of the blank;**
10. **Insert the Rohlex into a conventional key cutting machine in order to duplicate the bittings of the source key.**

Unpack the Easy entrie

The following components are shipped with the Easy entrie and must be present for proper use. The original box and packing material should be retained in the event that the machine must be returned to a repair facility.

- ✓ Easy entrie profile milling machine
- ✓ Power supply: converter from mains power to 24V DC
- ✓ Small Allen wrench driver to change the cutting wheel
- ✓ Large Allen wrench to control tightening of the "Rohlex"
- ✓ Arrest pin for changing the cutting wheel
- ✓ Replacement cutting wheel
- ✓ Aluminium tray to catch the filings that are produced during the cutting process
- ✓ Assortment of key blanks

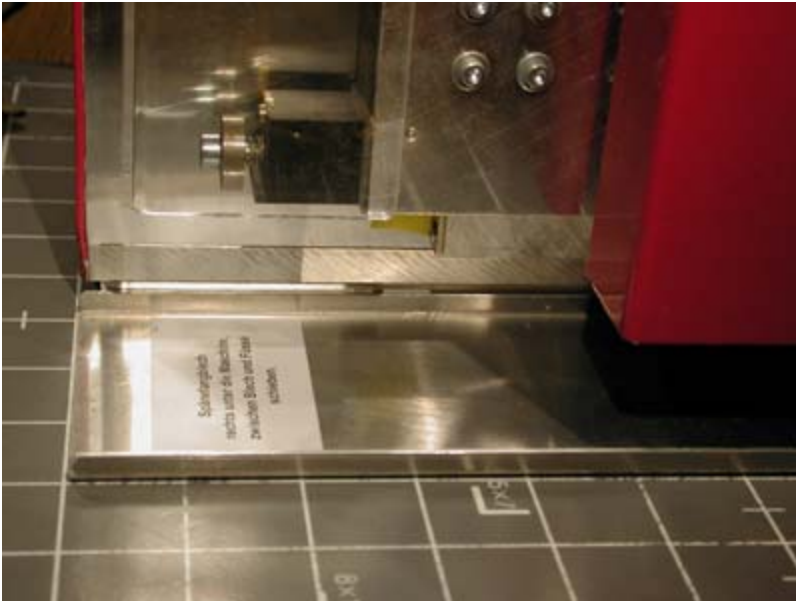
Operational safety

Sale of the Easy entrie is based upon a contract, wherein the customer is granted a license and agrees to operate the machine in conformance with certain safety requirements, including:

- **Do not touch in the cutter during the milling process, due to the likelihood of injury;**
- **Keep children away from the machine due to the risk of injury;**
- **During the milling phase, the plastic cover must be closed;**
- **Do not touch any moving parts on the Easy entrie while the machine is in operation;**
- **Do not allow metal filings to come into contact with the power supply'**
- **Wear protective goggles when trimming the Rohlex, after milling has been completed.**

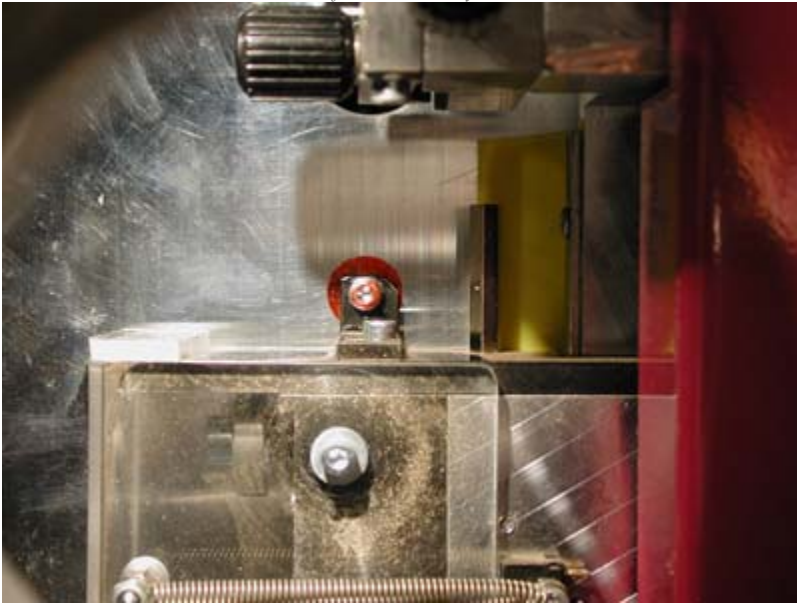
Setting up of the Easy entrie

Place the Easy entrie on a flat surface (table or workbench) where it is to be operated and locate the mains adapter beside it. At this point, do not connect the power cable to the unit. The power supply must not come into contact with liquids such as water or soft drinks. Do not place the power adapter near the profile cutting unit in order to avoid the possibility of metal filings contaminating its circuitry. Place the aluminium tray adjacent to, and directly under the milling area to catch metal debris during the cutting process.



Remove the transport lock pin

A special red locking pin has been inserted into the movable milling platform prior to shipping from the manufacturer. It must be removed before power is applied to the machine. Be certain to retain this pin, should the machine be transported at a later date. It will help protect the internal components from damage.



Connect to mains power



Be certain that the power adapter is in the “off” position. Insert the DIN connector into the correct receptacle (24V) at the rear of the Easy entrie. Connect the adapter to mains power, and be certain that the adapter is suitable for the correct voltage. The Easy entrie is produced in Germany and is normally shipped with a power supply to operate at 230 VAC. It is recommended that the power supply be turned off when the Easy entrie is not in use for long periods of time. The other connectors are utilized for computer interface.

PRODUCING A BLANK KEY WITH THE EASY ENTRIE

PART I: MEASUREMENT

Be certain that there are no keys in the holding vice or milling area before applying power. Power up the Easy entrie by turning on the mains adapter. The user is guided by prompts on the display at each step in the measurement and milling process. The arrow keys and **OK** are utilized for navigation and confirmation of the entry of information.

Navigation

The Easy entrie requires user input to select different options and processes. The left and right arrow keys, **OK** and **STOP** are used for this purpose.

Press → to select the **next** function;

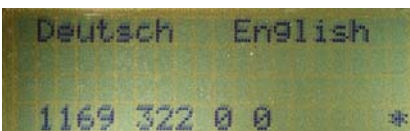
Press ← to select the **previous** function.

Press **OK** to enter the selected function.



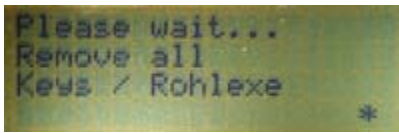
Select the language

After a few seconds, the display shows either German or English for language selection:



The default is German. Press OK if you want to work with your Easy entrie in the German language, If you wish to change the language to English, please press the right arrow and then press **OK**. The English language selection will be saved as the default for future use.

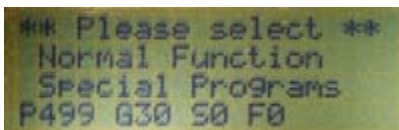
In subsequent initialization, press **OK** to proceed.



The user must select **normal** or **special** function, as shown in the display. Once the machine is powered up, it will self-calibrate. During this process, there must not be any keys (original sample or Rohlex) in either the holding vice or cutting area.

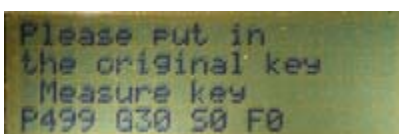


Photograph showing the milling area, clear of obstructions.



Press OK to launch the **normal** program. Note that the option "Special Programs" include important functions and will be explained subsequently.

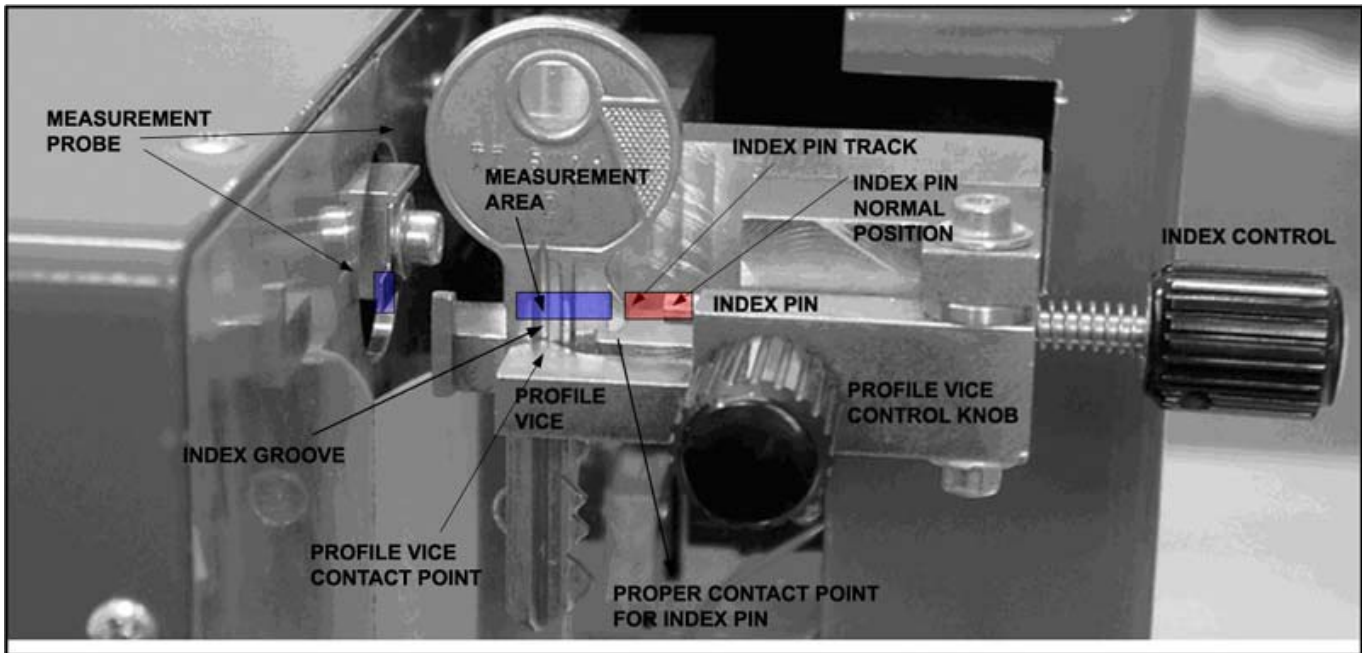
Start Menu



Now you are at the Start Menu. This prompt will always appear at the beginning of the measurement process, and at the end of the cutting procedure.

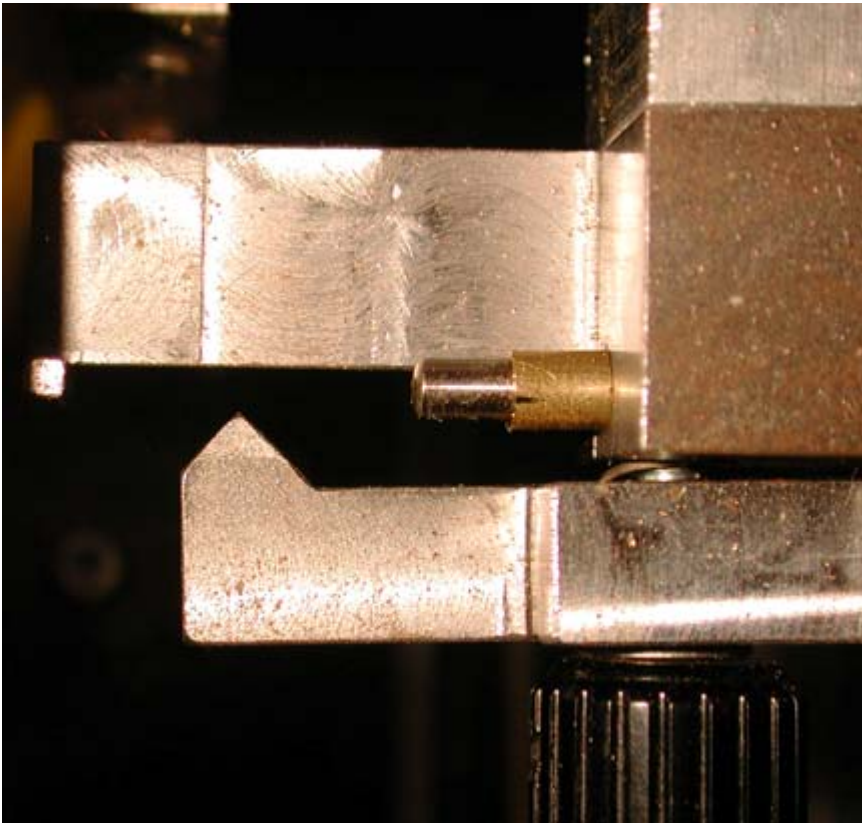
Preparations

Please utilize only original keys for measurement. DO NOT use previously cut Rohlex blanks for this function. Only one individual key should be placed in the holding vice with no other items such as key rings, chains, or other attached keys. The measurement probe MUST be free to traverse the blank on both lateral surfaces without obstruction.



This photograph provides an identification of all critical components of the Easy entrie profile milling machine. Note the key is improperly positioned for measurement, because the index pin is not directly below the shoulder of the key.

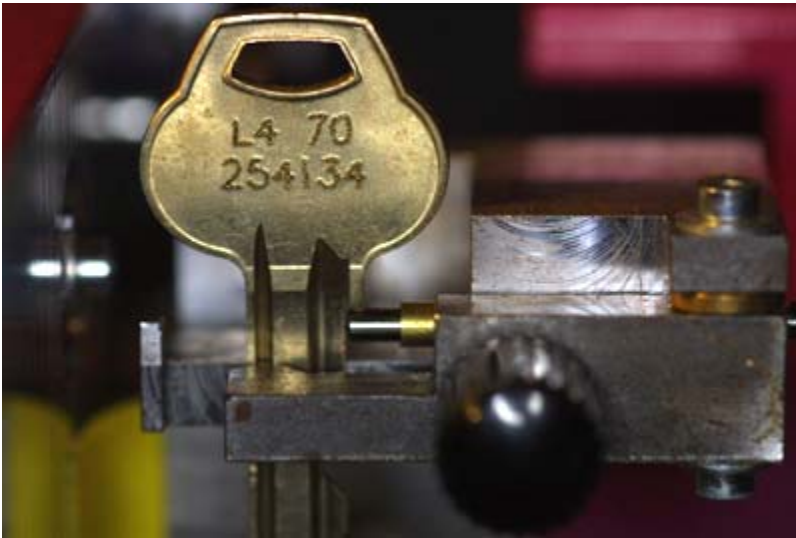
Key holding vice



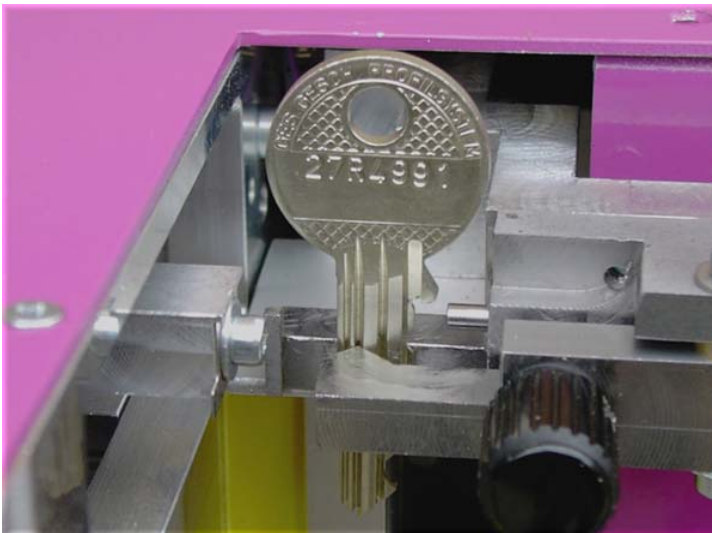
The key holding vice is an integral part of the measurement system. Its function is to securely retain the original key to allow accurate probing of its surface during the measurement process. Note the geometry of the clamp. The “v” shaped fixture is designed to allow the blank to be seated properly within a groove. There are some instances, however, where this may be difficult, especially if the profile contains wide milling. In such instances, care must be taken to place the original key in the correct position, and to insure that the key is not inserted at an angle. Note the function of the index pin. Its purpose is to properly align the shoulder of the key to insure that the probe will take the proper measurements.

Be certain that the blank is oriented with the should stop toward the RIGHT as shown in the photograph, and that the index pin and shoulder make contact.

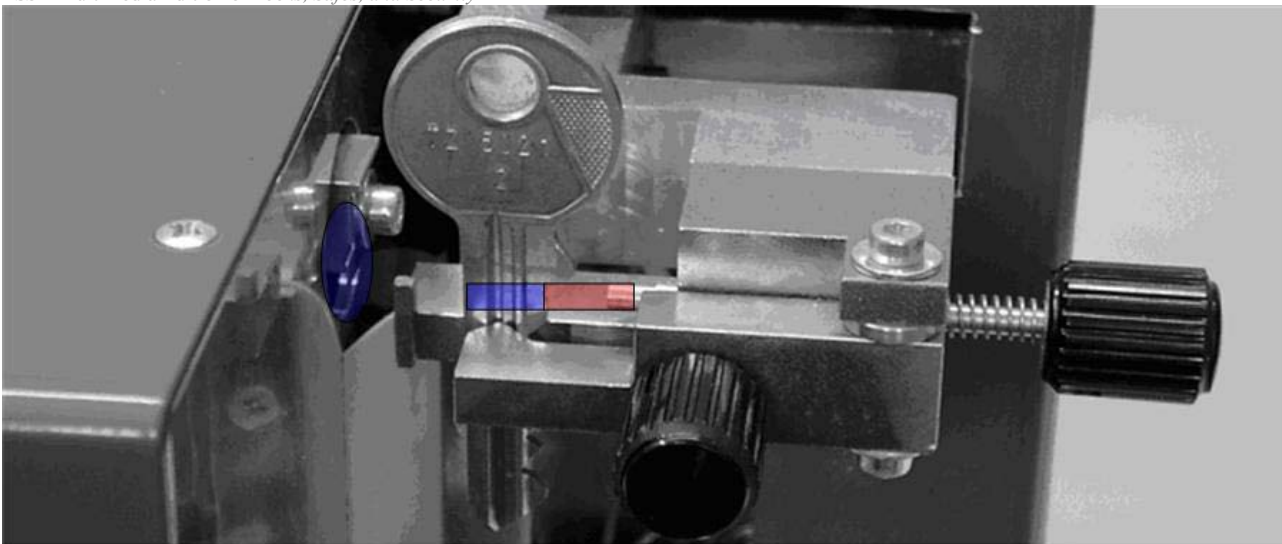
The correct way to clamp the key



This is the correct method of clamping the original key. Note that the surface area of the key that is probed is equal to the index pin contact point against the blade. Be certain to withdraw the index pin once the key is properly seated and the clamp is tightened.

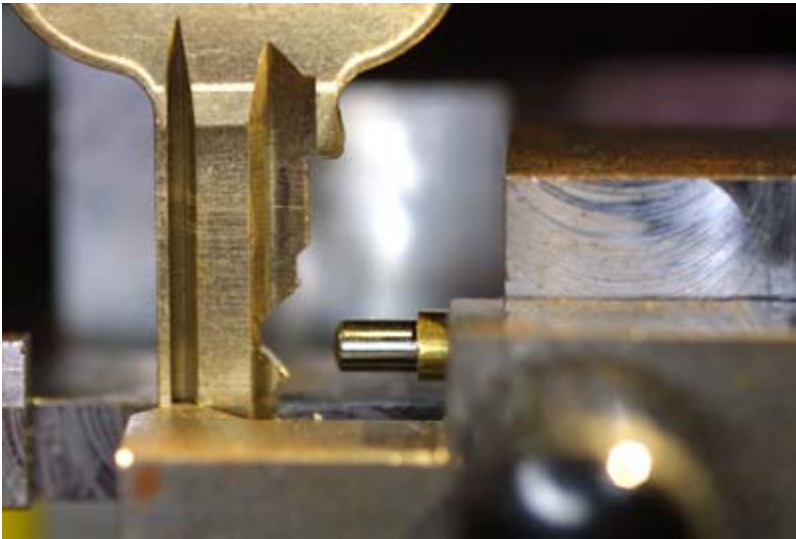


This photograph shows the proper insertion and alignment of the key. Note the position of the index pin with reference to the shoulder.

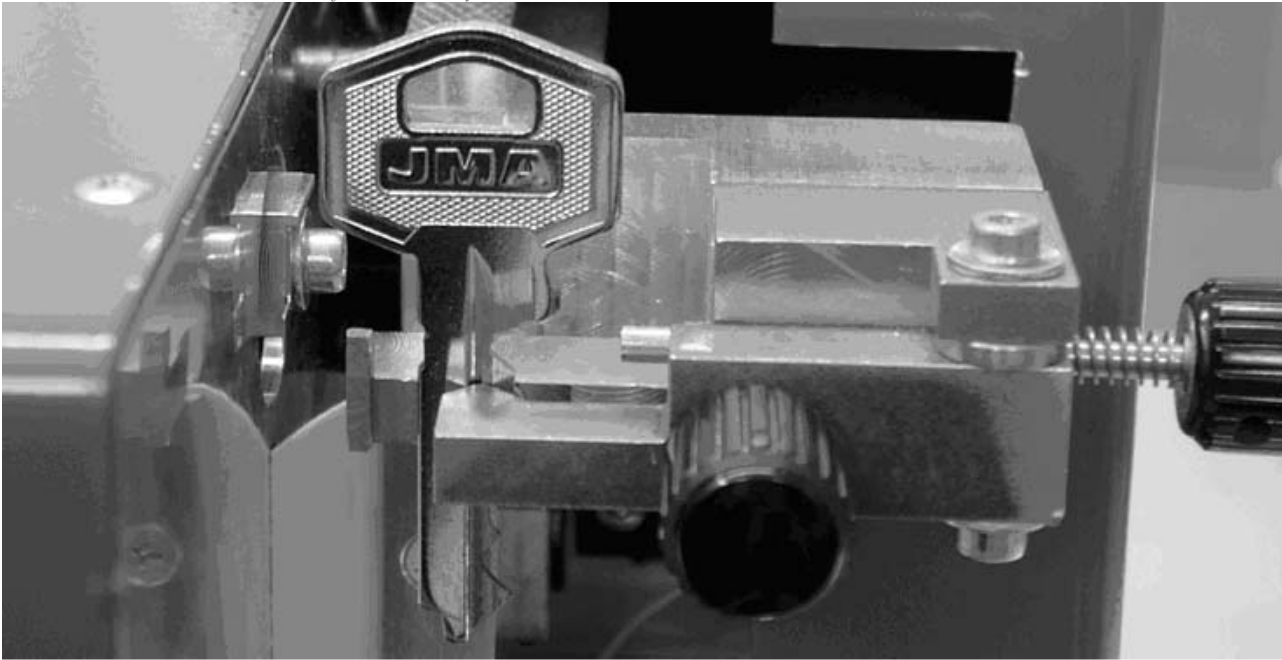


The area shown in red indicates proper alignment of the index pin with the shoulder of the key. The area in blue designates the sampled portion of the blade. The probe is also shown in blue, on the left.

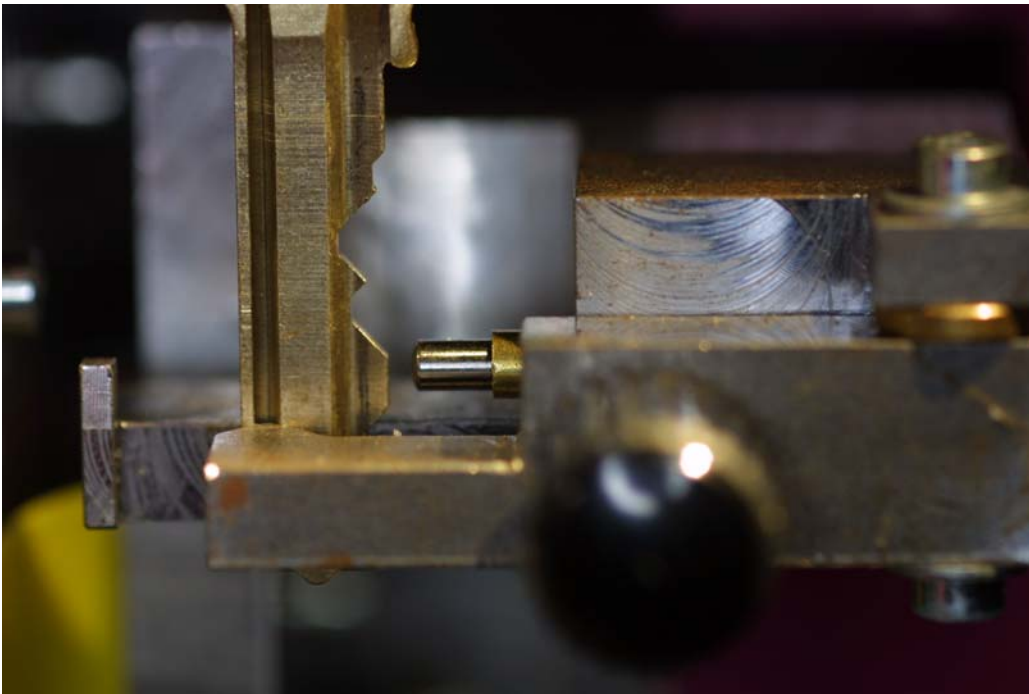
Improper placement of the key in the holding vice



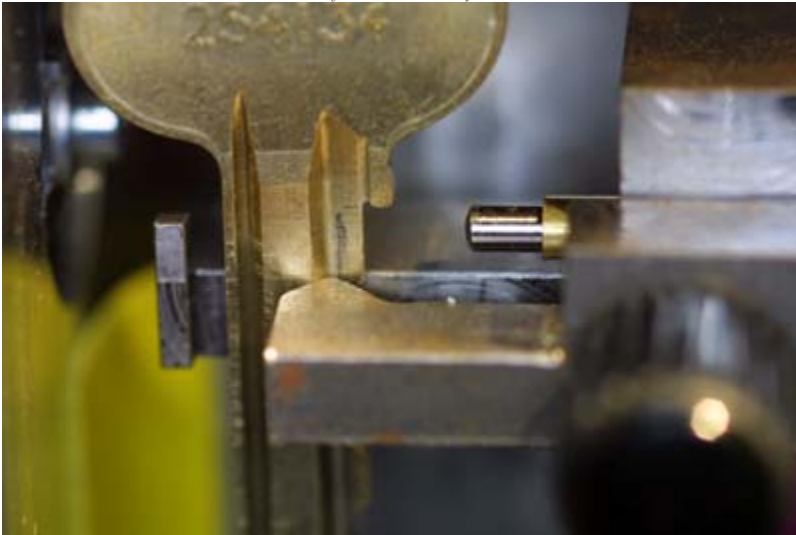
This photograph shows the improper placement of the key in the vice. Note that the index pin does not make contact with the shoulder, and the sampled area would probe a portion of the blade that does not contain the complete dimensions from the base of the blade to its full width.



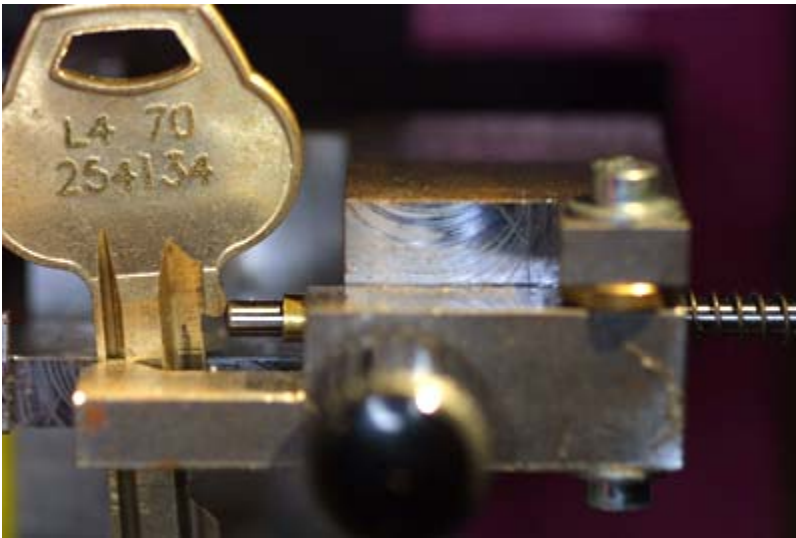
In this photograph, the key is not placed properly because of the deep cut in the first position. Therefore, the blank must be moved so that the probed area is equal to the full width of the blade, shown in the next photograph.



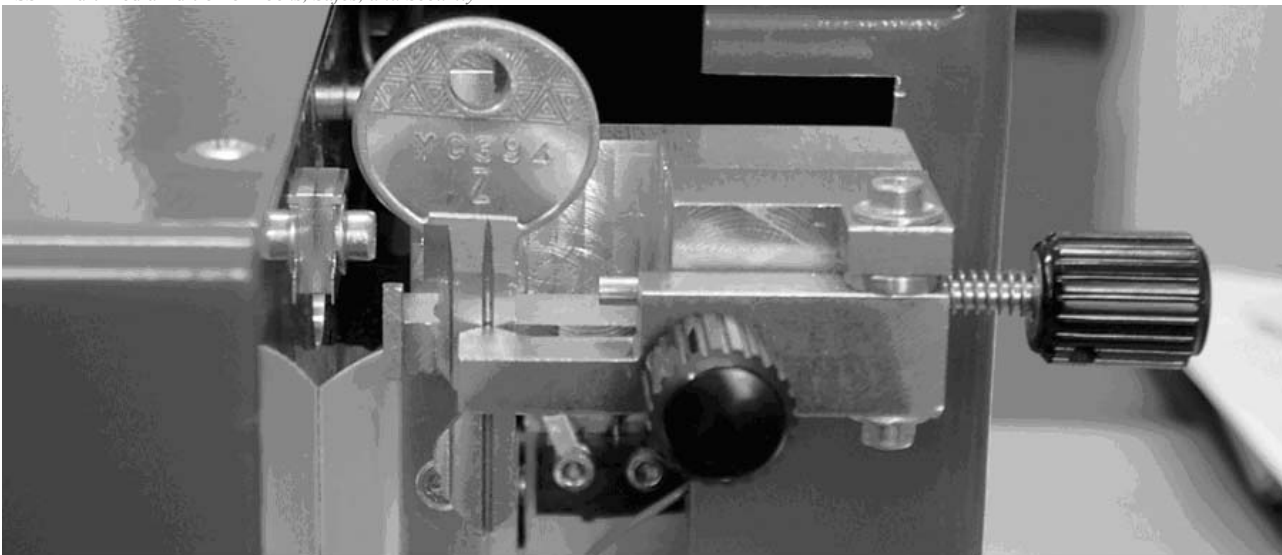
The key is moved vertically until the index pin can align with an area of the blade that is suitable for measurement. Note that the full width of the blade is available, based upon the specific selected bitting position.



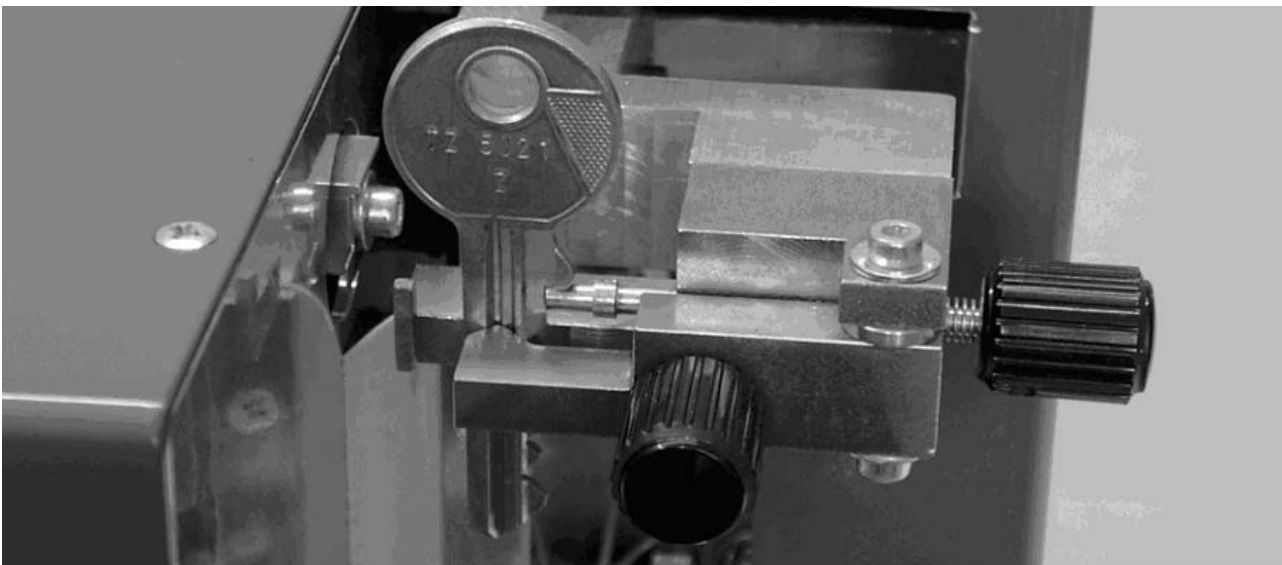
In this photograph, the index pin is not properly aligned with the shoulder of the key, and the holding vice is not aligned with the proper groove, causing improper measurement and unstable operation.



This key is improperly clamped at an angle, and the index pin is not properly aligned with the shoulder.



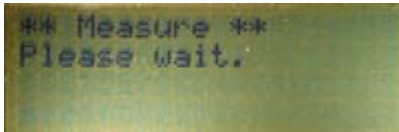
The key is placed backwards in the key holding vice. The bitting must be toward the right.



The index pin is wedged against the shoulder. It must be withdrawn before measurement of the key is initiated.

Begin measuring the source key

Once the key is properly seated in the holding vice, press OK to begin the measurement of the blade. The profile will be probed on both surfaces (front and back). This process continues for about three minutes, depending upon the complexity of the profile. Be certain that there are no obstructions to the movement of the probe across the key blade. The process may be aborted by pressing the STOP key for five seconds.



```
** Measure **  
Please wait.
```

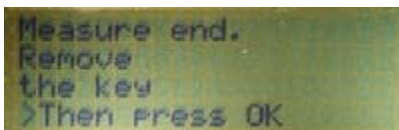


```
Key is too wide  
>Abort  
Cut nevertheless
```

```
RISK by patented  
Keys! Please read  
Instruction!  
OK or STOP
```

Prompts are provided that will indicate the status of measurement, and results. If the key is too wide, or is a patented profile, a warning will be provided. If the source key is too wide, it cannot be replicated, unless the profile is modified with special software provided by the manufacturer.

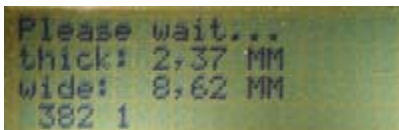
Completion of measurement: remove the key



```
Measure end.  
Remove  
the key  
>Then Press OK
```

Once measurement is completed, the key is removed from the key holding vice by loosening the control knob. Be certain that nothing comes into contact with the measurement probes during the time the machine is running. They can be bent easily, which would make measurement inaccurate.

Once the key is removed, press **OK**.



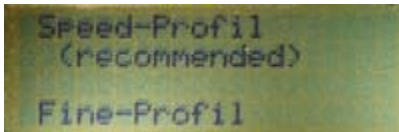
```
Please wait...  
thick: 2,37 MM  
wide: 8,62 MM  
382 1
```

The measurement of the source key is displayed as well as the preferred milling process to be employed during replication of the blank.

PART II: MILLING THE KEY

On the basis of the data produced during the measurement process, the Easy entrie determines the profile of the keyway and the proper Rohlex that is required. The milling process will replicate the source key with substantial accuracy, but does not produce an exact duplicate because of the way the key is measured. The milled blank will pass all of the wards for the designated keyway.

There are two milling functions or modes: **Speed-Profile**, and **Fine-Profile**. The function " **Speed-Profile** " is the default value.



The **Speed-Profile** mode has certain advantages:

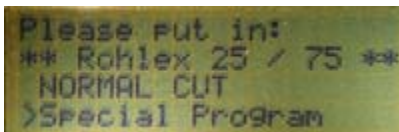
- The cutting process completes in less time because the profile has been specifically calculated for the cutter;
- This mode makes it impossible to exactly duplicate a patented profile, because it cannot possess all of the characteristics of the original source key;

The **Fine-Profile** mode produces an almost exact replica of the source key, with far greater resolution. This can result in the infringement of certain patents, and the user is cautioned to check with legal counsel prior to utilizing this mode.

The correct Rohlex will be calculated automatically

The Easy entrie automatically calculates the proper Rohlex for milling, and displays the blank number that must be inserted into the milling system. This determination is based upon the thickness of the source key and its width. The proper Rohlex must be utilized to produce an accurate replica of the source key. Each Rohlex has a different width and thickness, as shown in the chart below.

ROHLEX DIMENSIONS		
ROHLEX #	WIDTH	THICKNESS
20	.337"	.078"
23	.336"	.089"
25	.336"	.100"
27	.342"	.107"



Please put in:
** Rohlex 25 / 75 **
NORMAL CUT
>Special Program



Prepare to mill the blank

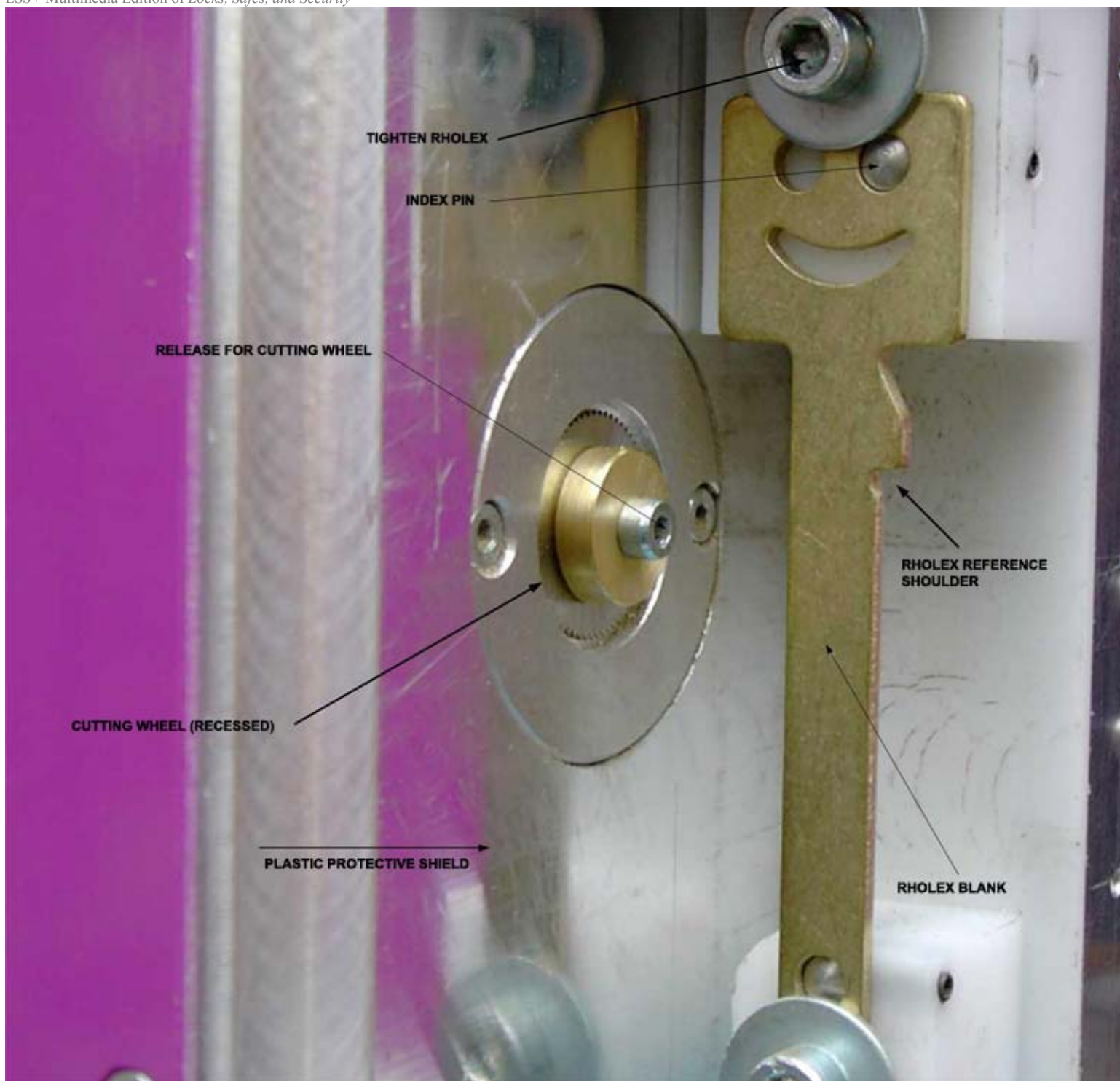


The Rohlex must be properly clamped into the milling area. The large Allen driver is used for this purpose. Loosen both top and bottom screws and insert the Rohlex at the top, then bottom. There are index pins that protrude and mate with the holes in the blank. Note that the Rohlex is oriented so that the shoulder stop is always to the right. The proper procedure to mount the Rohlex is:

- Lift the plastic cover to gain access into the milling area;
- Loosen both top and bottom Allen screws to allow insertion of the Rohlex;
- Insert a new Rohlex, top first, then bottom;
- Be certain to orient the Rohlex with the shoulder stop to the right;
- Tighten both of the Allen screws;
- Close the plastic cover.

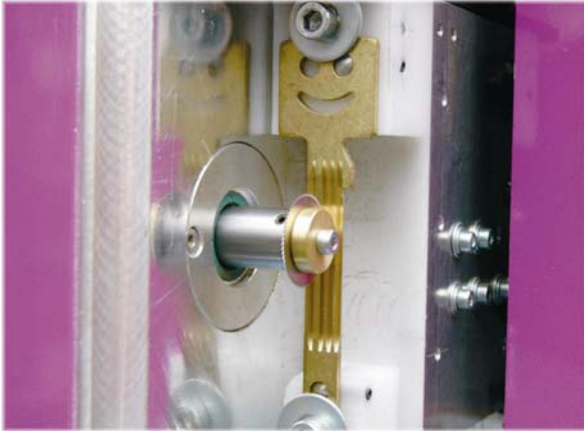
Begin cutting the blank

Be certain that the plastic cover is down. Press **OK** to start the cutting program.



Cutting data will be calculated

The system will process the measurements that have been previously acquired from the original source key, and will begin to mill the blank. In the event that the cutting wheel is too worn, a prompt will advise how many milling cycles have occurred previously. Generally, a wheel has a life of between fifty and one hundred cycles. As shown, the cutter extends from its idle position, and cuts each side of the Rohlex in sequence. It does this by subsequent vertical passes across the blank. The system will calculate the wear on the cutting wheel and compensate accordingly. Never use a previously cut Rohlex.



Cutting the Rohlex

```
*** Cutting ***  
Wait 5-7 minutes  
Do not open the  
glass cover!
```

```
Cutting-blade OK?:  
50  
#####  
0%.....50%.....100%
```

The milling process is completely automated. A visual prompt will be provided, showing that milling is in process. If the procedure must be aborted, hold the STOP button for five seconds. Once the cycle is interrupted, it cannot be resumed.

Remove the Rohlex

```
Cut ending  
Remove Rohlex.  
  
Then Press OK
```

Upon completion of the milling process, a prompt will indicate that the Rohlex should be removed. Lift the plastic cover to do so. Then press **OK**.

Milling completed

```
** Please select **  
-Start-Menu  
>-Cut the same key  
again.
```

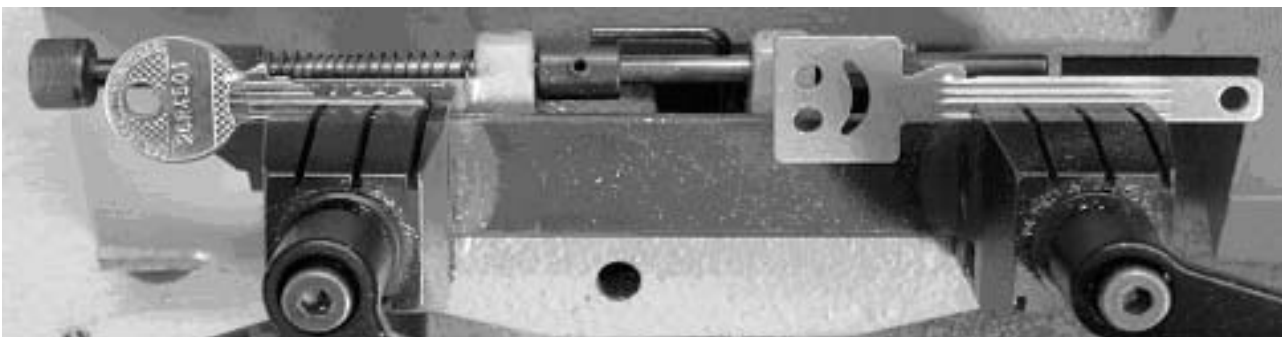
Once milling of the Rohlex has been completed and it has been removed, a prompt will provide two options: returning to the **Start menu**, or **cutting another Rohlex**. Pressing OK will return to the Start menu. Selecting "Cut the same key again" will prompt to insert another Rohlex and repeat the process.

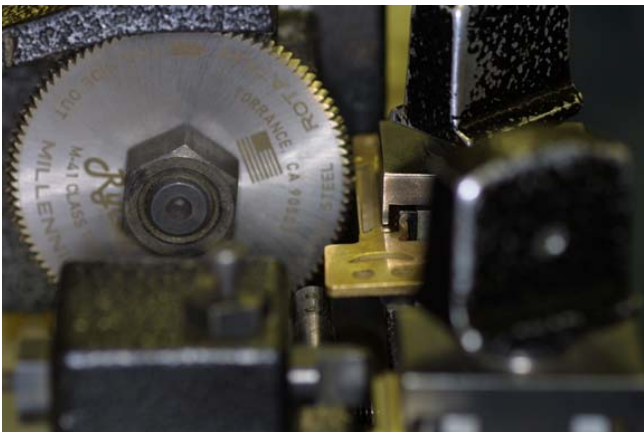
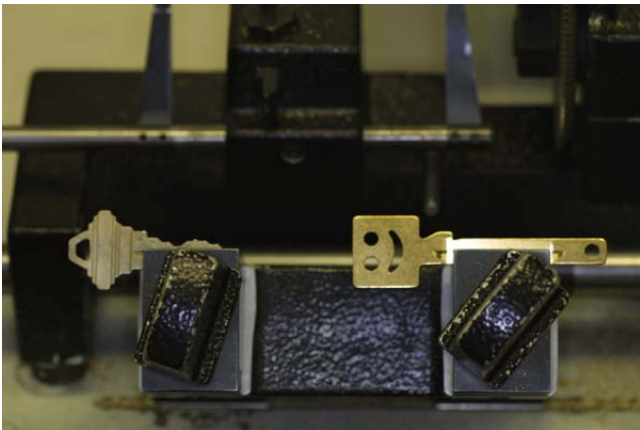
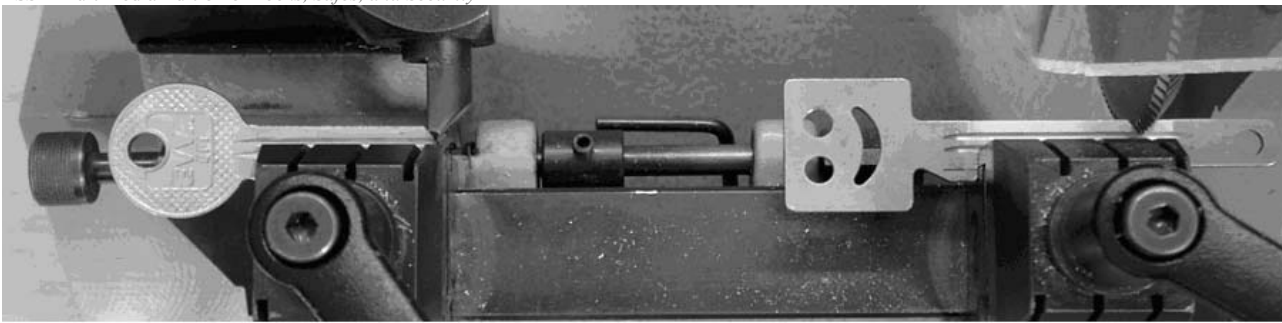
Cut the Rohlex like a normal key blank

Once the Rohlex has been removed, it still must be trimmed to eliminate the index hole at the tip of the blank. It may then be cut on a key machine, or utilized for impressing or extrapolation of the top level master key.

First burnish the back-side of the Rohlex with the wire brush of the key cutting machine. The Rohlex may then be inserted into the key vice of the machine, using the cutting wheel to trim the end. Be careful not to cut the entire end of the key in one operation because of the likelihood that the cutting wheel will make contact with the key machine surface. Rather, the Rohlex should be reversed for two cutting passes.

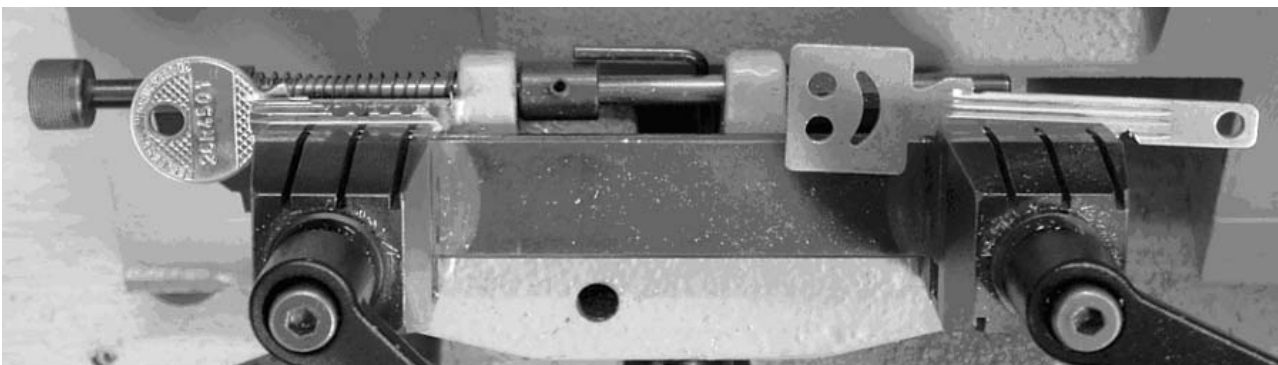
The author prefers to utilize a Dremel tool with a cutting wheel to make two angled cuts at the end of the key in order to remove excess metal. The blank may be laid on a table top. The Dremel tool is used to cut half of the key at one time. The blank is then reversed and the process repeated. Be certain to use a wire brush to clear any metal burrs. Once trimming has occurred, the Rohlex appears as any other key blank, ready for cutting.





These photographs show both a source key and Rohlex milled profile that have been inserted into a standard key cutting machine.

Proper insertion into key cutting machine



Be certain to properly clamp the Rohlex into the key cutting machine at the proper angle. Here, it can be seen that the Rohlex is not indexed properly.

Special Programs

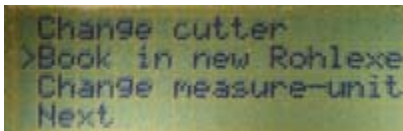
```
** Please select **  
Normal Function  
Special Programs  
P499 G30 S0 F0
```

Normal Function is the default value for measuring and cutting of blanks.

Special Function allows the following sequences to be accomplished:

- Change cutter
- Change measuring units
- Change thickness

Change cutter



```
Change cutter
>Book in new Rohlexe
Change measure-unit
Next
```

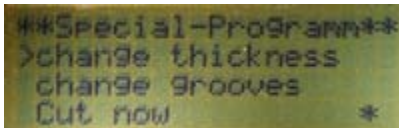
If the cutting wheel must be exchanged, this function must be selected in order to allow the Easy entrie to measure the new wheel. After 50-100 Rohlexes have been milled, the cutting blade must be replaced. The sequence to change the cutter requires:

- Switch off the Easy entrie. After 20 seconds switch it on.
- Press → and then press **OK**
- Select “change cutter” and press **OK**
- Use the small Allen driver to remove and replace the cutter from the spindle, then press OK and follow the instructions on the display.

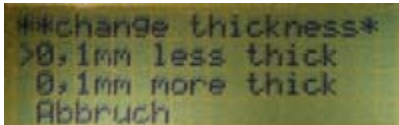
Change measuring-unit

Measuring units must be changed through the selection of this program.

Change thickness



```
##Special-Programm##
>change thickness
change grooves
Cut now *
```



```
##change thickness*
>0,1mm less thick
0,1mm more thick
Abbruch
```

If it is required to change the thickness of the Rohlex for an individual blank, this program must be utilized. For example, if a source key is very worn and does not function properly in the lock, the milling machine can be instructed to replicate the blank, but with a thicker profile.

Cleaning

It is recommended that a light paint brush be utilized to remove brass filings that may build up inside the milling area. The aluminium tray should always be employed to catch metal debris that is generated during the cutting process. The work area should be periodically be cleared of metal filings.

A detailed description of the Easy entrie appears in **LSS+**, the multimedia edition of **Locks, Safes, and Security**. You may contact the author at mwtobias@security.org. Information about LSS+ can be found at security.org.