

In Memory

Wiegand W. Jensen

We grieve the loss of a friend of the locksmiths across North America. Wiegand W. Jensen passed away on Friday, March 11th, 1983.

His willingness to impart knowledge to others is virtually unparalleled in the security industry. No question was too basic or simple that he was above responding to in a most positive manner, ever the while striving for perfection of our craft for those who dared to show pride in calling themselves locksmiths. He thrived on seeing others become more proficient at their craft. Wiegand W. Jensen believed in the old school of experience, but to be a professional, this experience had to be progressed into a more accurate and professional method to be passed onto those learning locksmithing.

Mr. Wiegand W. Jensen passing will leave a very large void in the security industry. We must all continue to pass along the standards of education and proficiency that were an every day part of his life.

Mr. Wiegand W. Jensen will be remembered for improvements he made towards code cutting with his: "MICRO-DIAL KEY-KRAFTER",

The Canadian Locksmith extends most sincere condolences to Mr. Jensen's Family.

1 INTRODUCTION

Welcome to the Micro-Dial Key Crafter Manual.

1.1 About this manual

The purpose of the Micro-Dial Key Crafter Manual is to provide you, locksmith who have purchased this machine, with the information you need to set up, use, and maintain the machine.

It includes information about the machine's uses, identification of its parts, and task-based, step-by-step instructions for its use and maintenance. Pictures and drawings are included to aid identification and use of the machine's parts.

1.2 What you need to know to use this manual

The manual is written for locksmiths and assumes, therefore, that you understand the technical terminology involved in the trade but not necessarily the terminology of this particular key cutting machine. All terminology specific to the Micro-Dial Key Crafter is explained in the manual.

1.3 How to use this manual

The manual is organized so that you can read it from cover to cover if you are new to the machine. If you are already familiar with the machine but have specific questions about its use or maintenance, you can also quickly find and use just the parts of the manual you require.

All of the parts of the machine are labelled on Figures 1 and 2, on the following pages. Throughout the manual, each time a part is named in the instructions, the name of the part is followed by its number and location in these figures, so that you can easily locate and identify it.

2 THE MICRO-DIAL KEY CRAFTER

2.1 About the Micro-Dial Key Crafter

The Micro-Dial Key Crafter cuts all regular paracentric (pin tumbler) keys, as well as double-sided, Best and Falcon, and flat steel keys. It does not cut round, dimpled, or high-security keys such as Abloy or Medeco.

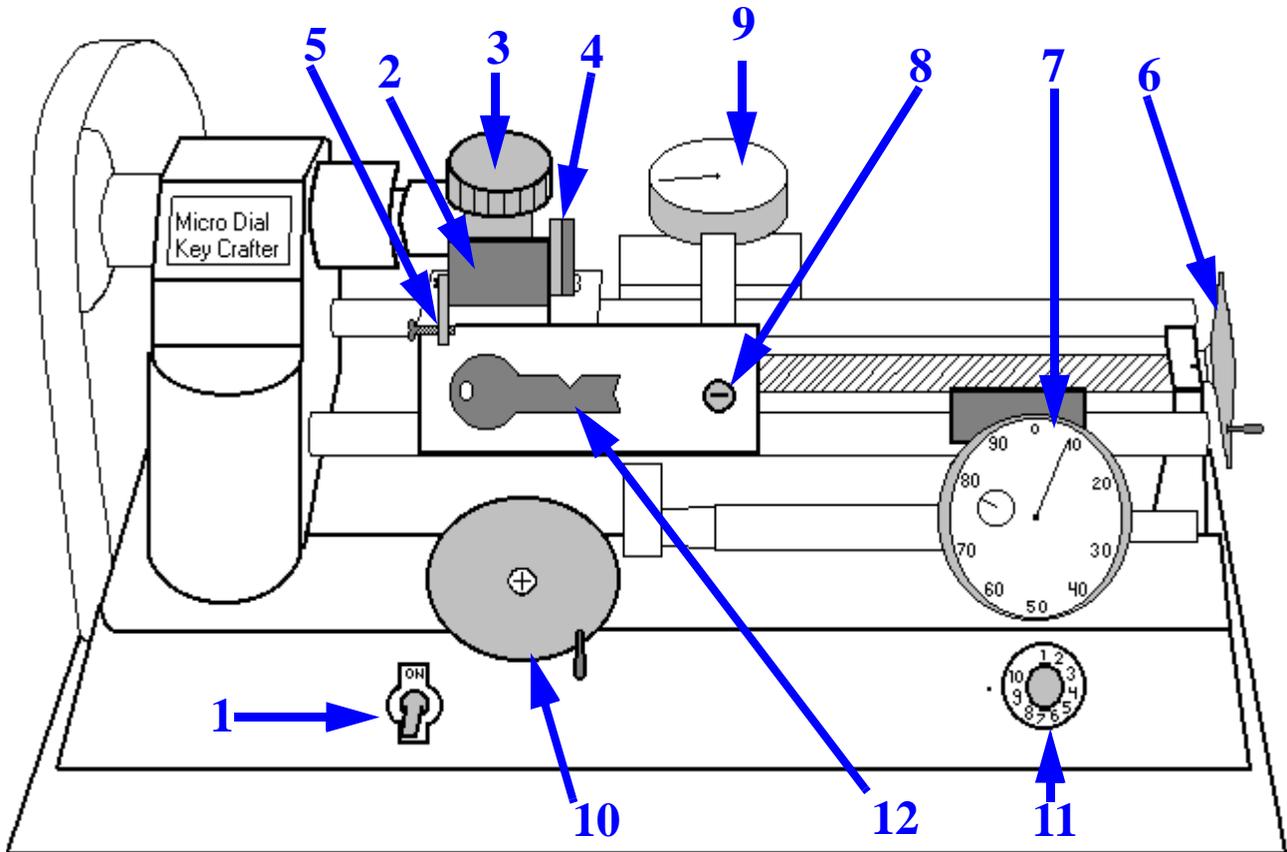
The Micro-Dial Key Crafter works on a method that requires only the printed information of the spacing of the cuts and their root depths. With this information, you can cut a key to within an accuracy of less than .002 inches.

As well, the Micro-Dial Key Crafter comes with its own patented Micro-Dial Calipers. When the cut spacing and root depths information is not available, you can get this information from an existing key by measuring that key with the calipers.

Once you have the cut spacing and depth information, you can use that information to set the Micro-Dial Key Crafter's Spacing and Depth Dials for each cut to be made. The Spacing Dial is used to set the spacing of the first cut from the key stop and the distance between each of the subsequent cuts as the blank is moved in front of the cutter. The Depth Dial is then used to indicate the root depth of each cut as the cutter makes the cut.

2.2 Parts

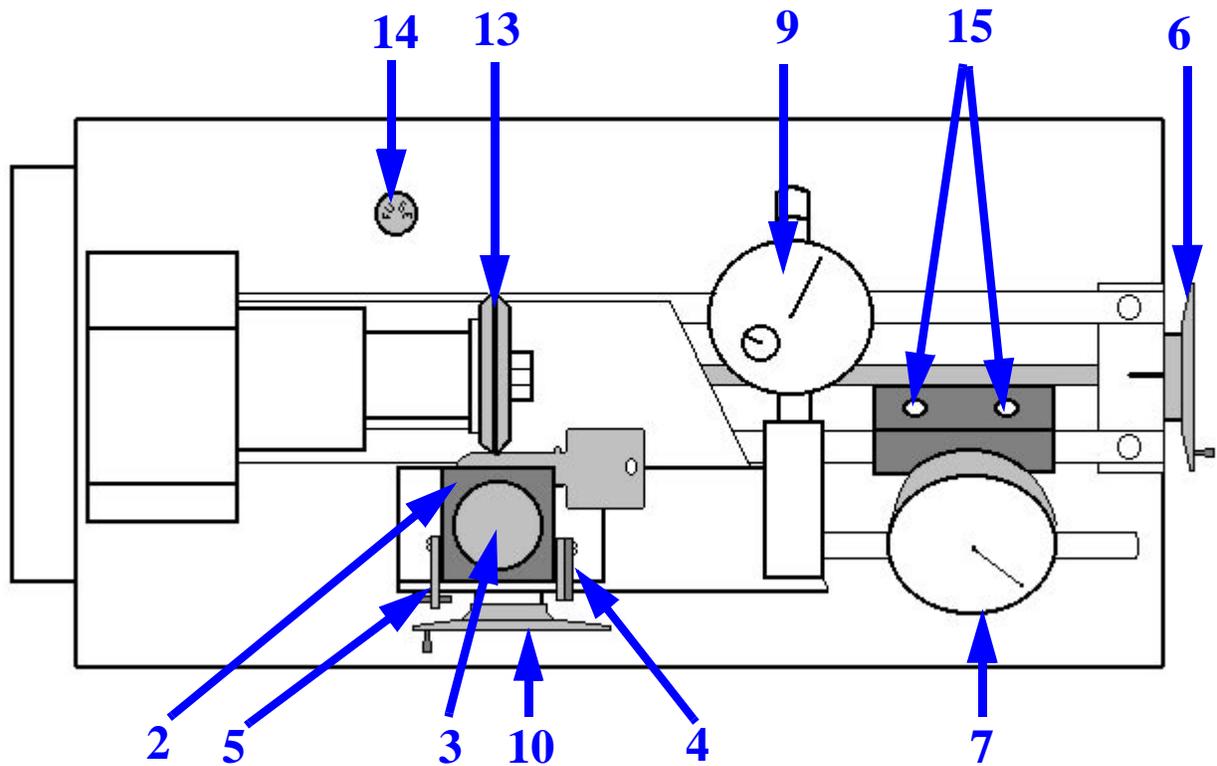
Figure 1. The Micro-Dial Key Crafter (Front View)



1. On/Off Switch
2. Vis
3. Vise Knob
4. Inner and Outer Key Stops
5. Flat Key Stop
6. Spacing Setting Wheel

7. Spacing Indicating Dial
8. Depth Adjusting Screw
9. Depth Indicating Dial
10. Depth Setting Wheel
11. Cutter Speed Control Dial
12. Gauge Key

Figure 2. Close-up of the cutting area (Top View)



- 2. Vise
- 3. Vise Knob
- 4. Inner and Outer Key Stop
- 5. Flat Key Stop
- 6. Spacing Setting Wheel
- 7. Spacing Indicating Dial

- 9. Depth Indicating Dial
- 10. Depth Setting Wheel
- 13. Cutter
- 14. Fuse
- 15. Spacing Adjusting Screws

3 SETTING UP THE MACHINE

3.1 Placement of the machine

You can set The Micro-Dial Key Crafter up either in the shop or in a truck. In either situation, place the machine on a sturdy, flat work surface with plenty of light, and check to make sure that the machine is level before plugging it in.

The 110VAC motor uses less than 300 watts of power. When using the Micro-Dial Key Crafter in a truck, use an AC Converter - 12VDC to 110AC. We also recommend that, for use in a truck, you place the machine on a 1 inch foam rubber pad to absorb shock.

Once the machine is set in place and plugged in, you will need to adjust the settings before using the machine.

3.2 Adjusting the spacing and depth settings

1. With the machine off, place the gauge key (12, fig.1, page 3) in the vise (2) and tighten it in place with the vise knob (3). Move the vise toward the stationary cutter (13, fig.2, page 4) until the gauge key just touches the cutter.
2. If the depth indicating dial (9) does not read .295 inches, adjust it to this figure by turning the depth adjusting screw (8, fig.1).
3. With the gauge key against the outer stop (4), center the cutter by placing it into the cut in the gauge key so that you can move the cutter without touching either side of the cut until the cutter is at the deepest point of the cut.
4. With the cutter centered in this way, the spacing indicating dial (7) should read .500 inches. If it doesn't, loosen the spacing adjusting screws (15, fig.2) to adjust it to this figure.

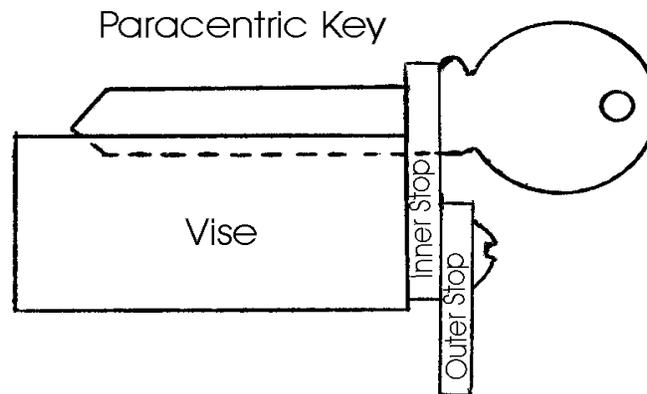
4 CUTTING PARACENTRIC (PIN TUMBLER) KEYS

4.1 Identifying the correct key stop

Pin tumbler and disk tumbler keys have a bow stop. This means that the raised part of the blade before the head of the key is used to stop the key at the top of the keyway. All cut spacing measurements are relative to pinholes or disk retainers in the lock, measured from this stop.

4.2 Setting the key blank in the vise

Figure 3. Setting paracentric blanks in the vise



1. Set your blank in the vise (2, fig. 2, page 4) with the bow on the right as shown in Figure 3 above.
2. Line up the stop of the blank against the inner stop of the vise by pushing the inner stop of the vise down against the blank and sliding the blank up against it as shown above.
3. Tighten the vise knob (3, fig. 2) to hold the blank in place.
4. Lift the inner stop of the vise back out of the way. If left in place, it could get damaged during cutting.

4.3 Setting the cutter speed control

The cutter speed control allows you to adjust the speed of the cutter for the type of material you are cutting. The cutter speed control dial's settings are numbered from 10 to 0, with a setting of 10 representing full speed, a setting of 9 representing 90% speed, and so on.

The softer the material you are cutting, the higher the speed setting should be. The harder the material, the lower the setting. A soft brass might, then, cut best at full speed, or a setting of 10 on the cutter speed control dial. A harder brass blank might cut more easily at a speed of about 80%, or setting of 8. Harder materials such as nickel, silver, and steel, are best cut at lower speeds.

The optimum setting for each blank to be cut will depend in part on the thickness of the blank and in part on your own preferences. Gaining experience in determining the best cutter speed setting for each type of blank will help you maintain the sharpness and prolong the life of your cutter blades.

To set the cutter speed control dial

1. Toggle the on/off switch on the front of the machine (1, fig. 1, page 3) to turn the machine on.
2. Turn the cutter speed control dial (11, fig. 1) to align the desired setting number with the indicating pin to the left of the dial .

4.4 Cutting the key

1. With the machine still on, turn the spacing setting wheel (6) until the arrow on the spacing indicating dial (7) is pointing to the manufacturer's specification for the spacing of the first cut.
2. Cut the key blank by turning the depth setting wheel (10) until the arrow on the depth indicating dial (9) is pointing to the manufacturer's specification for the depth of the first cut.

3. Repeat steps 1 and 2 until all of the manufacturer's specified cuts have been made.
4. Toggle the on/off switch to turn off the power.
5. Loosen the vise knob, and remove the key.

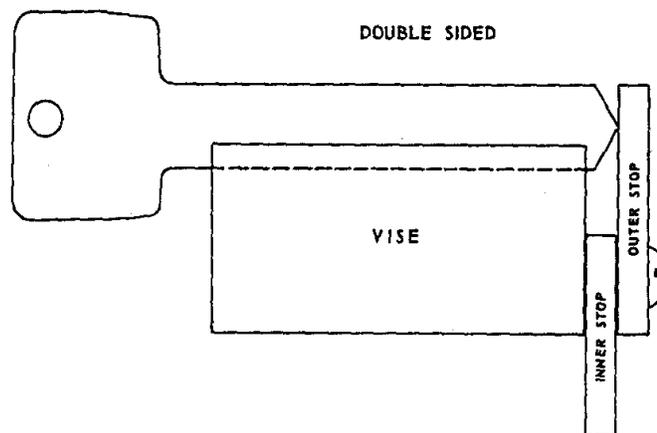
5 CUTTING DOUBLE-SIDED KEYS

5.1 Identifying the correct key stop

Double-sided keys use the tip of the blank as the stop. This type of stop has come into prominence with the introduction of the double-sided automotive key. All cut spacing measurements for this type of key are relative to this stop.

5.2 Setting the key blank in the vise

Figure 4. Setting double-sided blanks in the vise.



1. Set your blank in the vise (2, fig.2, page 4) with the bow on the left as shown in Figure 4 above.
2. Lower the outer vise stop and slide the tip of the blank up against it as shown above.
3. Tighten the vise knob (3) to hold the blank in place.
4. Lift the stop out of the way. If left in place, it could get damaged during cutting.

5.3 Setting the cutter speed control

The cutter speed control allows you to adjust the speed of the cutter for the type of material you are cutting. The cutter speed control dial's settings are numbered from 10 to 0, with a setting of 10 representing full speed, a setting of 9 representing 90% speed, and so on.

The softer the material you are cutting, the higher the speed setting should be. The harder the material, the lower the setting. A soft brass might, then, cut best at full speed, or a setting of 10 on the cutter speed control dial. A harder brass blank might cut more easily at a speed of about 80% or setting of 8. Harder materials such as nickel, silver, and steel, are best cut at lower speeds.

The optimum setting for each blank to be cut will depend in part on the thickness of the blank and in part on your own preferences. Gaining experience in determining the best cutter speed setting for each type of blank will help you maintain the sharpness and prolong the life of your cutter blades.

To set the cutter speed control dial

1. Toggle the on/off switch on the front of the machine (1, fig. 1, page 3) to turn the machine on.
2. Turn the cutter speed control dial (11, fig. 1) to align the desired setting number with the indicating pin to the left of the dial.

5.4 Cutting the key

1. With the machine still on, turn the spacing setting wheel (6) until the arrow on the spacing indicating dial (7) is pointing to the manufacturer's specification for the spacing of the first cut.
2. Cut the key blank by turning the depth setting wheel (10) until the arrow on the depth indicating dial (9) is pointing to the manufacturer's specification for the depth of the first cut.

3. Repeat steps 1 and 2 until all of the manufacturer's specified cuts have been made.
4. Toggle the on/off switch to turn off the power.
5. Loosen the vise knob, turn the key over and reposition it in the vice against the outer stop.
6. Repeat steps 1 to 4 to cut the other side.

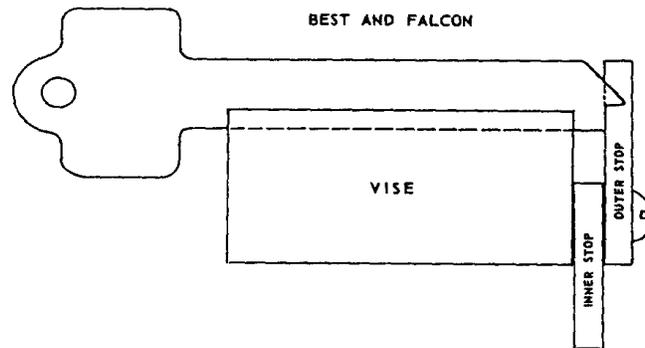
6 CUTTING BEST AND FALCON KEYS

6.1 Identifying the correct key stop

Best and Falcon core keys use a recessed cut at the back of the tip as the stop. When cutting these keys, all cut spacing measurements are relative to this stop.

6.2 Setting the key blank in the vise

Figure 5. Setting Best and Falcon blanks in the vis



1. Set your blank in the vise (2, fig. 2, page 4) with the bow on the left as shown in Figure 5 above.
2. Lower the outer vise stop and slide the blank up to it as shown above.
3. Tighten the vise knob (3) to hold the blank in place.
4. Lift the outer vise stop out of the way. If left in place, it could get damaged during cutting.

6.3 Setting the cutter speed control

The cutter speed control allows you to adjust the speed of the cutter for the type of material you are cutting. The cutter speed control dial's settings are numbered from 10 to 0, with a setting of 10 representing full speed, a setting of 9 representing 90% speed, and so on.

The softer the material you are cutting, the higher the speed setting should be. The harder the material, the lower the setting. A soft brass might, then, cut best at full speed, or a setting of 10 on the cutter speed control dial. A harder brass blank might cut more easily at a speed of about 80% or setting of 8. Harder materials such as nickel, silver, and steel, are best cut at lower speeds.

The optimum setting for each blank to be cut will depend in part on the thickness of the blank and in part on your own preferences. Gaining experience in determining the best cutter speed setting for each type of blank will help you maintain the sharpness and prolong the life of your cutter blades.

To set the cutter speed control dial

1. Toggle the on/off switch on the front of the machine (1, fig. 1, page 3) to turn the machine on.
2. Turn the cutter speed control dial (11, fig. 1) to align the desired setting number with the indicating pin to the left of the dial.

6.4 Cutting the key

1. With the machine still on, turn the spacing setting wheel (6) until the arrow on the spacing indicating dial (7) is pointing to the manufacturer's specification for the spacing of the first cut.
2. Cut the key blank by turning the depth setting wheel (10) until the arrow on the depth indicating dial (9) is pointing to the manufacturer's specification for the depth of the first cut.

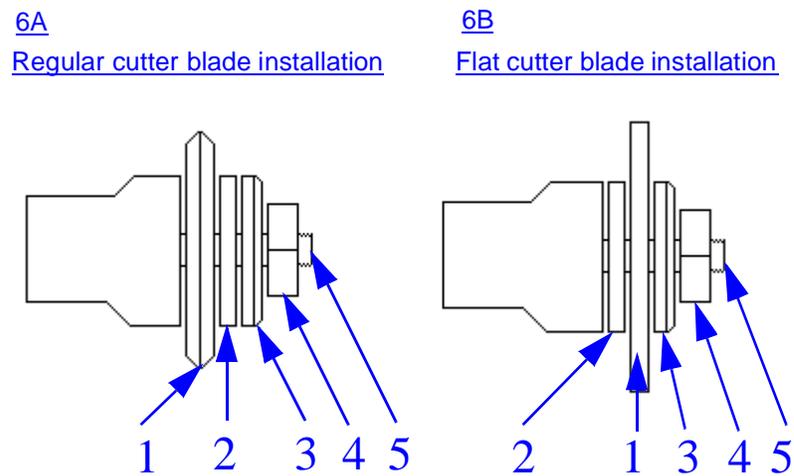
3. Repeat steps 1 and 2 until all of the manufacturer's specified cuts have been made.
4. Toggle the on/off switch to turn off the power.
5. Loosen the vise knob, and remove the key.

7 CUTTING FLAT KEYS

7.1 Changing the cutter blade

Before cutting flat keys, you must replace the regular cutter blade with a flat cutter blade, available from Jensen LockCraft, and adjust the spacing and depth settings for cutting either a long or a short flat key.

Figure 6. Flat vs. Regular Cutter Blade Installation



1. Blade
2. Flat Washer
3. Bevelled Washer
4. Nut
5. Cutter Spindle

To install the flat cutter blade

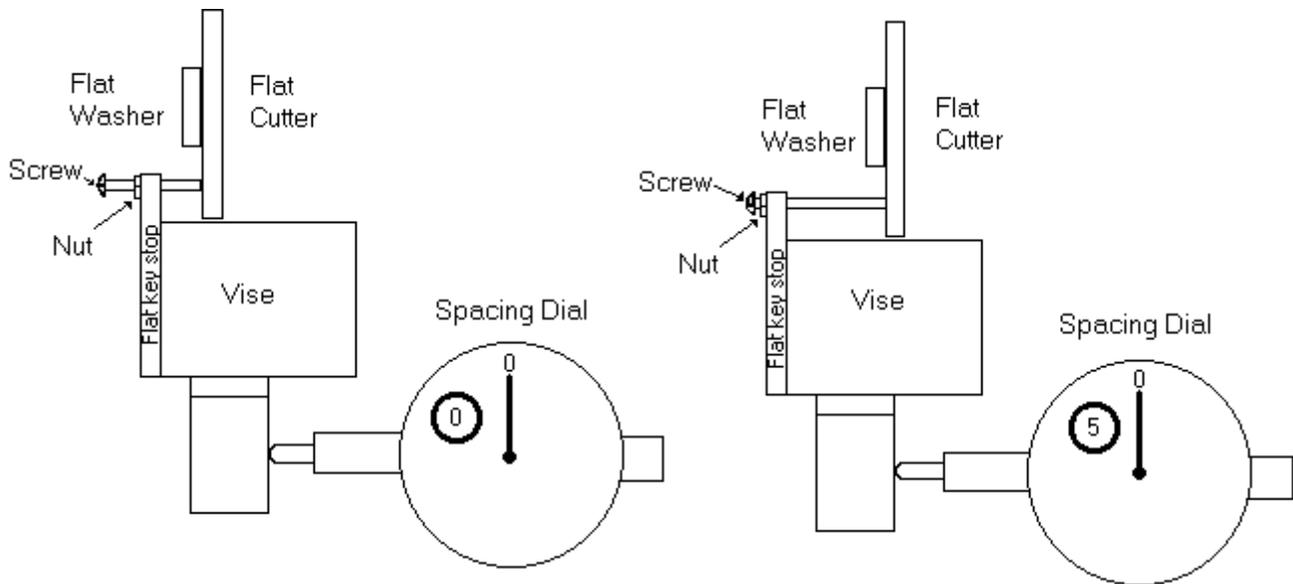
1. See Figure 6A. Remove the nut (4) from the end of the cutter spindle (5).
2. Remove the bevelled washer (3), the flat washer (2), and the regular cutter blade (1), from the spindle.
3. See Figure 6B. Replace the flat washer (2) on the spindle first.

4. Place the flat cutter blade (1) on the spindle (5), making sure that the cutting teeth are facing in the direction the cutter turns, counter-clockwise when viewed from the end of the spindle.
5. Replace the bevelled washer (3) and the nut (4).

Figure 7. Adjusting spacing settings for long and short flat keys

7A. Settings for long flat keys

7B. Settings for short flat keys



To adjust the spacing and depth settings

1. Move the vise by turning the spacing setting wheel (6, Figure 2, page 4) until the spacing indicating dial reads .000 inches for cutting long keys or .500 inches for cutting short keys as shown in Figure 7 above.
2. On the flat key stop, loosen the nut and adjust the screw until it touches the left side of the flat cutter as shown above.
3. Lock it in place with the nut.

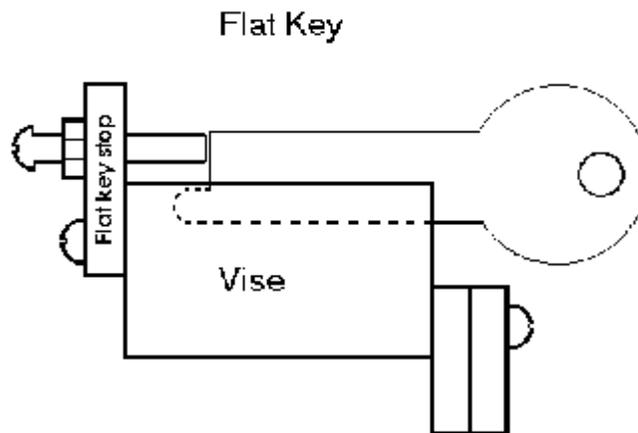
4. With the machine off, place the gauge key (12, fig. 1, page 3) in the vise (2) and tighten it in place with the vise knob (3). Move the vise toward the stationary cutter (13, fig. 2, page 4) until the gauge key just touches the cutter.
5. If the depth indicating dial (9) does not read .295 inches, adjust it to this figure by turning the depth adjusting screw (8, fig. 1).

7.2 Identifying the correct key stop

Flat keys, including Safe Deposit keys, use the end of the blade for the stop rather than the tip protruding from the end. All cut spacing measurements are relative to this stop.

7.3 Setting the key blank in the vise

Figure 8. Setting flat blanks in the vise



1. Set your blank in the vise (2, fig. 2, page 4) with the bow on the right as shown in Figure 8 above.
2. Line up the stop of the blank against the flat key stop of the vise as shown above.

3. Tighten the vise knob (3, fig. 2, page 4) to hold the blank in place.
4. Lift the flat stop out of the way. If left in place, it could get damaged during cutting.

7.4 Setting the cutter speed control

NOTE: Most flat keys are made of steel. Thus a setting of 6 or 7 is recommended.

The cutter speed control allows you to adjust the speed of the cutter for the type of material you are cutting. The cutter speed control dial's settings are numbered from 10 to 0, with a setting of 10 representing full speed, a setting of 9 representing 90% speed, and so on.

The softer the material you are cutting, the higher the speed setting should be. The harder the material, the lower the setting. A soft brass might, then, cut best at full speed, or a setting of 10 on the cutter speed control dial. A harder brass blank might cut more easily at a speed of about 80%, or setting of 8. Harder materials such as nickel, silver, and steel, are best cut at lower speeds.

The optimum setting for each blank to be cut will depend in part on the thickness of the blank and in part on your own preferences. Gaining experience in determining the best cutter speed setting for each type of blank will help you maintain the sharpness and prolong the life of your cutter blades.

To set the cutter speed control dial:

1. Toggle the on/off switch on the front of the machine (1, fig. 1, page 3) to turn the machine on.
2. Turn the cutter speed control dial (11, fig. 1) to align the desired setting number with the indicating pin to the left of the dial.

7.5 Cutting the key

1. With the machine still on, turn the spacing setting wheel (6) until the arrow on the spacing indicating dial (7) is pointing to the manufacturer's specification for the spacing of the first cut .
2. Cut the key blank by turning the depth setting wheel (10) until the arrow on the depth indicating dial (9) is pointing to the manufacturer's specification for the depth of the first cut.
3. Repeat steps 1 and 2 until all of the manufacturer's specified cuts have been made.
4. Toggle the on/off switch to turn off the power.
5. Loosen the vise knob, and remove the key.

8 MAINTAINING THE MICRO-DIAL KEY CRAFTER

8.1 Troubleshooting

Cutter blades

If a cutter blade becomes dull, replace it as soon as possible. Using a dull blade strains the whole machine. Remember, you are not applying pressure by hand, but forcing the cutter with a screw feed capable of applying hundreds of pounds of pressure.

Spacing and Depth Indicating Wheels and Dials

Move the spacing and depth indicating wheels into position slowly. Forcing these wheels and, therefore, the dials, beyond their normal travel can damage them.

8.2 Where to get help

If your Micro-Dial Key Crafter is damaged, contact your local Jensen Lockcraft company representative for information about repair and replacement options.