INTRODUCTION

Congratulations on the puchase of your new Sidewinder key machine. We are confident you will enjoy years of trouble-free service from the machine, as well as the best support in the industry Framon is known for. The Framon Sidewinder is built to exacting standards using the most advanced computer operated equipment.

The Sidewinder is designed to accurately duplicate high security side milled keys. The automotive market is the major application for side milled keys. Side milled keys are now being used by Mercedes Benz, Opel, BMW, Volvo, Saab, Infiniti, Lexus, and Volkswager/Audi.

All of the above side-milled keys can be cut using the Framon Sidewinder without needing an adapter or special cutters. VW & Audi keys do require a special set of vises, which you should find in the drawer below the machine. If you plan on cutting a high volume of VW & Audi keys, you may want to consider a 3mm cutter and guide. The supplied 3/32" cutter and guide will cut these keys with no problem; however, the 3mm cutter and guide will give longer life than the 3/32" due to its size.

Please note your Serial number:

Date of Purchase:

WARRANTY

The warranty on the Framon Sidewinder machine is in effect for a period of one year from the date of purchase. Framon Mfg. Co. will replace all or any part of any machine proven to be defective in materials or workmanship. If any machine is returned to us in the first year, Framon Mfg. will absorb all cost for repairs, **including freight**. After one year, Framon Mfg. will charge the customer for parts, freight and a flat service rate for labor. Machines will be repaired and shipped within two days of receipt. This warranty is valid to the original purchaser only. Cutters are not covered by this warranty. Framon cutters are among the finest cutters made today, but we have no control over their use.

WARRANTY CLAIMS PROCEDURE

The purchaser must inform Framon Mfg. Co. by telephone or letter and obtain permission from Framon before returning any machine. Framon will not accept any machine returned without prior permission. Any correspondence pertaining to any problem with a Framon Sidewinder machine should include date of purchase, from whom purchased, and serial number of machine.

Machines sent back to Framon for repair must be packed properly. If you must use Styrofoam popcorn to pack the machine, be sure to put the machine in a plastic bag before adding the popcorn, as the material breaks into smaller pieces in shipping and lodge in the motor. There **is** a surcharge if we need to remove guards or take the motor apart to clean out the Styrofoam.

OPERATING RULES

Warning - Do not attempt to operate a Framon Sidewinder machine until you have read the owners manual carefully. Learn the machines applications and limitations.

- Do not force the cutting procedure. The machine will do a better job when operated at the rate for which it was designed.
- Keep the work area clean.
- Wear proper apparel. Loose clothing, hair or jewelry can get caught in the cutter.
- Secure the pattern key and key blank correctly.
- Be sure the machine is unplugged when using the allen wrench to secure cutters.
- Keep machine clean of dust and chips.
- Remove hex wrench immediately after making adjustments.
- Keep cutter sharp and replace as often as necessary for optimal cutting.
- Before cutting a key, make sure that adjustments are correct.
- Never operate any piece of equipment while under the influence of drugs, alcohol, or any medication.
- Use the Framon Sidewinder machine only for the purpose for which it was designed.

OPERATING PARTS

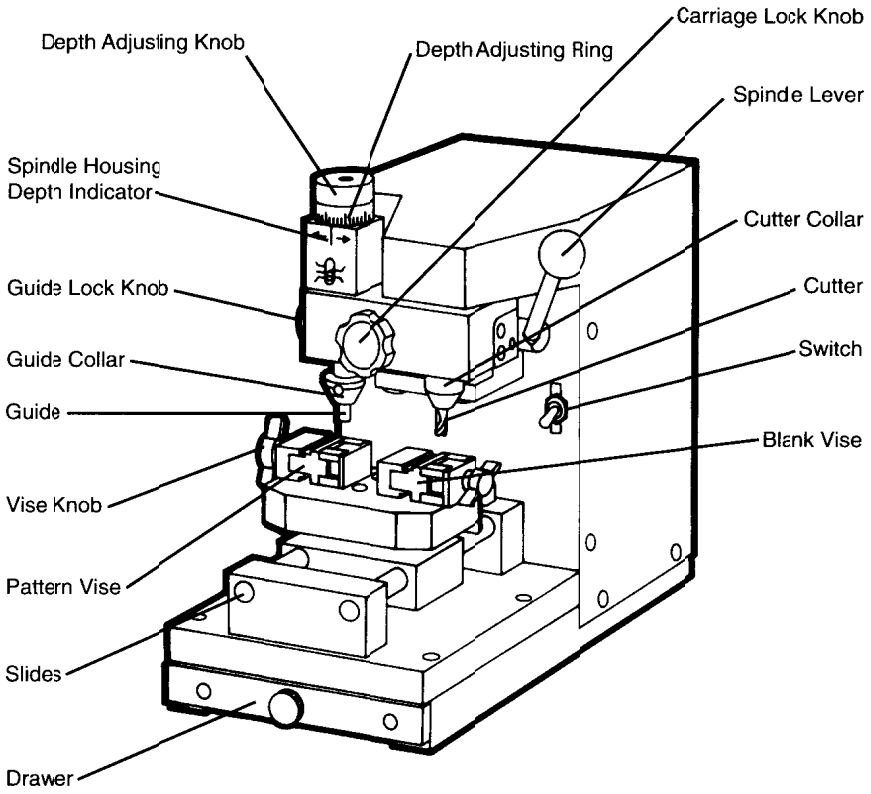


Figure 1 Operating Parts List

The operation of any key machine can result in foreign objects being thrown into the eyes. This can result in severe eye damage. Always wear safety glasses or eye protection before operating a key machine.

Always operate machine in a well lighted area.

OPERATION

The carriage of the Framon Sidewinder moves linearly (in-and-out) along the length of the key blade. The cross slide, which is mounted onto the carriage, is designed for lateral (side-to-side) movement. The key vises are mounted onto the cross slide. With this combination of components, a key can be moved from side-to-side as well as in-and-out. The cutter and guide are mounted into the vertically movable spindle head.

MILLING INSTRUCTIONS

The process of cutting a key using the Framon Sidewinder machine involves removal of material from the surface of the key blade. The Framon Sidewinder machine uses an end mill to cut the high security automotive keys. The end mill rotates clockwise. There are two ways to cut with an end mill. They are "conventional cutting" and "climb cutting", (see Illustrations "conventional cutting" and 'climb cutting").

Keys cut on the Framon Sidewinder must be cut using the "conventional cutting" method.

"Conventional cutting" is feeding the material, in this case the key, into the cutter in order to reproduce the pattern of the key. In this type of cutting, the end mill cuts from the facing surface. See Figure 2 "Conventional Cutting" for left and right side of key.

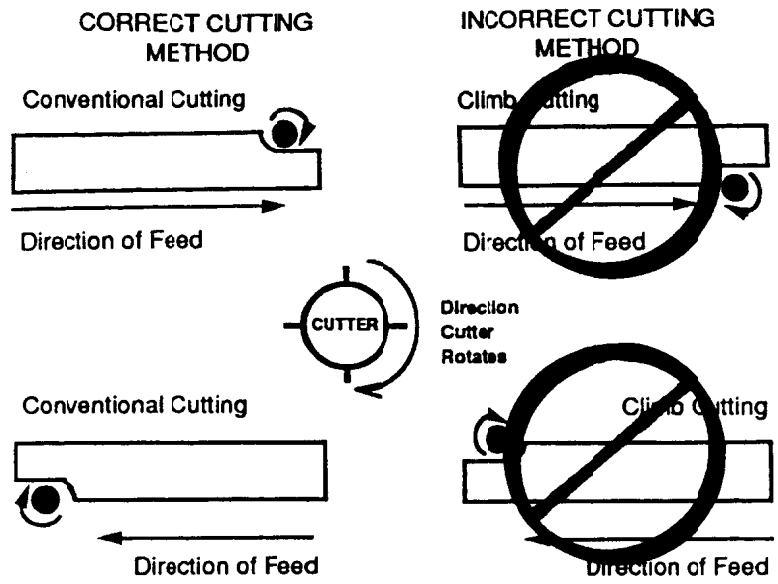


Figure 2: *Cutting Methods*
Conventionally cut all side milled key blanks

The "Climb cutting" method is constantly cutting away at a new surface from the side. See Figure 2 "Climb Cutting". This is **not** the proper method.

To "conventionally cut" a key (with external cuts) removing material from the **right side** of the key blank, the cutter is positioned nearest the head of the key and the carriage is slowly pulled toward the operator to complete the cut. Be sure to maintain the side tension of the guide against the pattern key.

To "conventionally cut" a key (with external cuts) removing material from the **left side** of the key blank, the cutter is positioned nearest the tip of the key and the carriage is slowly pushed away from the operator to complete the cut. Be sure to maintain the side tension of the guide against the pattern key.

CUTTING TIPS

- Keys cut on the Framon Sidewinder must be cut using the "conventional cutting" method.
- Always give the cutter time tc cut.
- Too little side pressure can result in an improperly cut key.
- Too much side pressure also can result in an improperly cut key, but more likely will damage or break the cutter and reduce cutter life.
- De-burr the first side of the key before flipping over to cut the second side. This will ensure that the key blank lies flat in the vise.
- Cutting too slow can actually do more damage to a cutter than going too fast. Cutting too slow will cause the cutter to heat up from rubbing on the side of the key, destroying the heat-treating on the cutter. For four-track type keys (cuts on the left and right side of the key), cutting one side should take 10-15 seconds.

VISES

The vises of the Framon Sidewinder machine are reversible to provide the best clamping pressure for cutting the different shapes of side milled keys.

To identify the vise sides:

Side "A" jaws have even steps to accommodate most side milled keys.

Side "B" jaws have a large step on the movable jaw and a small lip extending approximately three-quarters the length of the fixed vise jaw. The lip is to better secure smaller keys and keep them from tipping during the milling process. Mercedes two track keys should be duplicated using side "B" jaws.

To reverse the vises:

1. Slide the carriage out from beneath the cutter area. This will provide sufficient room to reverse the vise jaws. Be sure to remove all chips from the vises and the cross slide before replacement.
2. Back the lock knob for the vise until spring pressure is relieved.

3. Separate the vise bottom from the fixed jaw, and slide the entire vise fixture out of the holding post. Lift it straight up about two inches.
4. Flip it over so the second jaw face is on top, and slide the fixture back into the holding post.
5. Thread the lock knob into position to accept the key.
6. Repeat this procedure to reverse the second vise jaw. For the Sidewinder to operate properly, both vises must be using the same jaw sides.

ALIGNING KEYS IN VISES

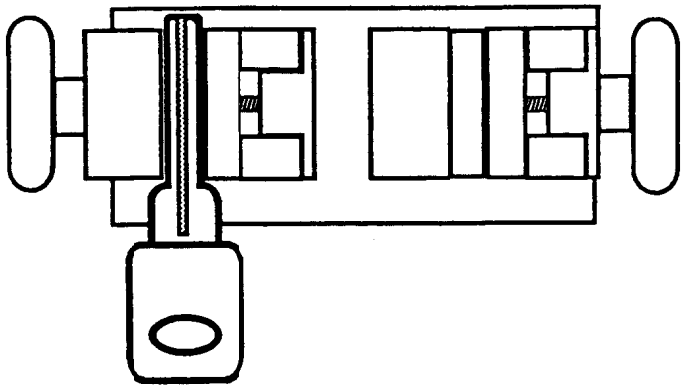


***Figure 3**: Shoulder Stop*
Clean vise jaw surfaces before mounting the pattern key and the key blank.

Aligning Shoulder-Stopped Keys

Most side milled keys have one or two shoulders from which alignment can be obtained. Insert the keys into the vises, and make certain that the same shoulder for both keys is used to attain alignment.

Aligning Tip-Stopped Keys

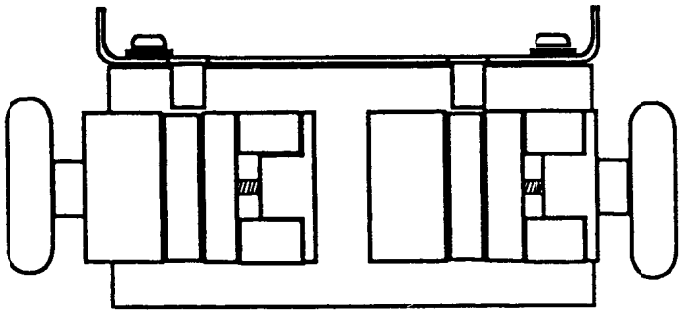


Figure 4: *Tip Stops*
Lower tip stop before duplicating the key.

For long keys or keys without shoulders, the tip stop plate must be used. The tip stop is built into the carriage at the base of the vises and slides up into place for alignment. Slide the tip of the key against the tip stop and tighten the vise jaw.

The tip stop must be lowered before milling a key.

Aligning Keys Using Adjustable Stop

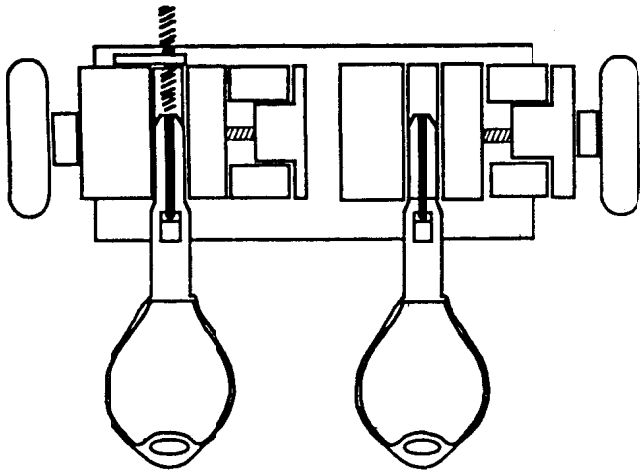


Figure 5: *Adjustable Stop*
Align the pattern key first using the adjustable stop, then align the key blank.

The adjustable stop is designed for non-shouldered keys whose blades are too short to reach the built-in tip stop. This stop is included to operate as a varying length tip stop. It is first positioned for the tip of the pattern key at the far edge of the vise jaws. The threaded rod is then rotated until it contacts the tip of the key. The adjustable stop is then positioned in front of the key blank tip to determine the proper position.

CUTTERS/GUIDES

The Framon Sidewinder key machine includes two (2) cutter and guide sets: .093-inch diameter cutter and guide and a .156-inch diameter cutter and guide. The .156-inch cutter is solid carbide and the .093-inch cutter is cobalt. Both of these cutters are designed for accurate milling and long service life. When cutting the Lexus keys or any key which have small cuts, the .093" diameter cutter and guide set must be used.

PREPARATION

The preparation procedure sets the depth of cut for all side milled keys. This procedure must be performed prior to cutting different keys.

Make certain the height gauge is set at the "set" position and the guide is in the free position.

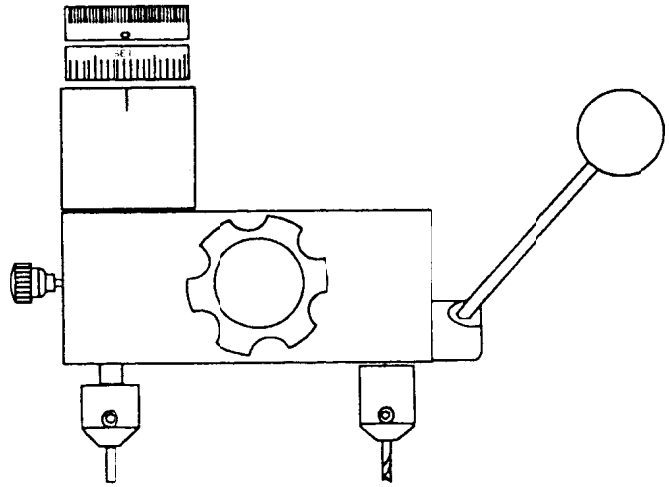


Figure 6: *Cutter and guide adjustments*

SETTING THE CUTTER AND GUIDE ALIGNMENT

This procedure must be done any time a cutter or guide is changed in the machine.

Insert two identical keys into the vses (flat steel keys work best). With the carriage all the way towards the user, insert the guide into the left collet until it bottoms out. Tighten the guide into place. Insert the cutter into the collet but do not tighten it. Slide the carriage under the guide & cutter so that the guide & cutter are positioned above the key blanks. Allow the cutter to drop down onto the surface of the key. Next, pull down on the spindle lever until the guide is completely compressed. While the guide is being compressed, you should see the cutter being drawn into the collet. Tighten the carriage lock knob. With the knob tightened, you do not need to hold pressure on the spindle lever. There should be no up-down travel to the guide at this point; if there is, you have not completely compressed the guide. Next, tighten the cutter into place. The guide & cutter are now set at equal depths.

CHANGING THE GUIDE

All the guides available for this machine are to be installed following the same procedure. Using a .125-inch hex head wrench, loosen the setscrew in the guide chuck, releasing the guide. The new guide is inserted into the chuck until it bottoms out. Tighten the set screw that secures the guide.

Once the guide has been changed, the alignment with the cutter must be checked.

PREPARING THE SIDEWINDER TO CUT A KEY

1. Insert the pattern key into the left vise and lock it into place. The vises are reversible to accommodate different shaped keys. This key **must be positioned flat** in the vise.
2. Position the cut away portion of the pattern key under the guide and pull down on the spindle lever until the guide contacts the key. Continue downward pressure until the guide shaft bottoms out and the downward movement of the spindle lever stops. Do not use excessive pressure.
3. While maintaining slight pressure on the spindle lever, tighten the carriage lock knob to fix the position of the guide.
4. Turn the height gauge knob to the "10" position. This will allow the guide to raise above the surface of the pattern key so the bottom of the guide will not drag during the cutting procedure.
5. Slide the carriage from beneath the spindle housing.
6. Push up on the guide until it stops. Lock the guide in place by tightening the guide lock knob. The guide lock knob is on the left side of the spindle head. The Sidewinder is now set-up to cut keys.
7. Insert the key blank into the right vise and lock it into place. This key blank **must be positioned flat** in the vise. You are now ready to mill a new key.

CUTTING KEYS

Four Track Type

The four track keys are used on some models of Mercedes Benz and BMW. This type of key has cuts on all four edges of the blade.

When cutting this type of key, begin at the shoulder on the right side. Starting here, the key blank will be cut using the conventional cutting method. Direction of feed is from the shoulder to the tip.

Complete the cut moving the cutter past the tip. Continue around the tip of the key back up to the left shoulder.

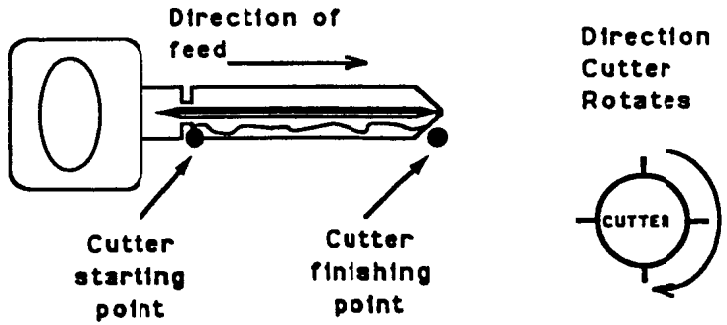


Figure 8: *Duplicating a four track key cutting the first side.*

You will make a "U" shaped cut around the first side of the key.

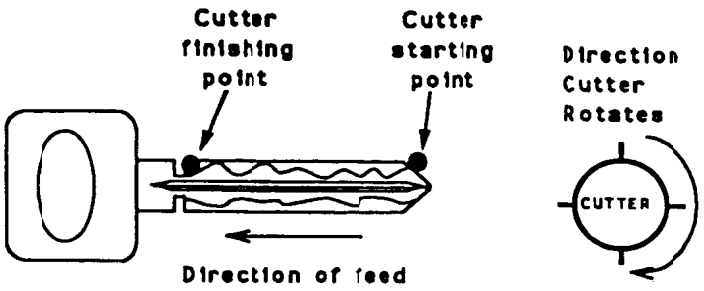


Figure 9: *Duplicating a four track key cutting the second side.*

Once this side has been cut, flip over ***the key blank*** and duplicate both sets of bittings onto the other side.

Two Track

The two track key is the most common of the side milled keys. The bitting is along only one edge of the blade; either the left or the right when looking from bow to tip. The key is a convenience type, having the same cuts on each side of the blade. Although spacing, depths and key dimensions vary from model to model and manufacturer to manufacturer, the duplicating procedure is the same. This will ensure proper duplication. If the biting is on the right side (when looking from bow to tip), begin at the shoulder or just before the first cut nearest the bow. Starting here, the key blank will be cut using the conventional cutting method. Direction of feed is from the bow to tip. Once this side has been cut, flip over the key blank and duplicate the bitting set onto the other side.

If the bitting is on the left side (when looking from bow to tip), begin at the tip or just before the first cut nearest the tip. Starting here, the key blank will be cut using the conventional cutting method. Direction of feed is from the tip to bow.

Once this side has been cut, flip over both the pattern key and the key blank and duplicate the bitting set onto the other side.

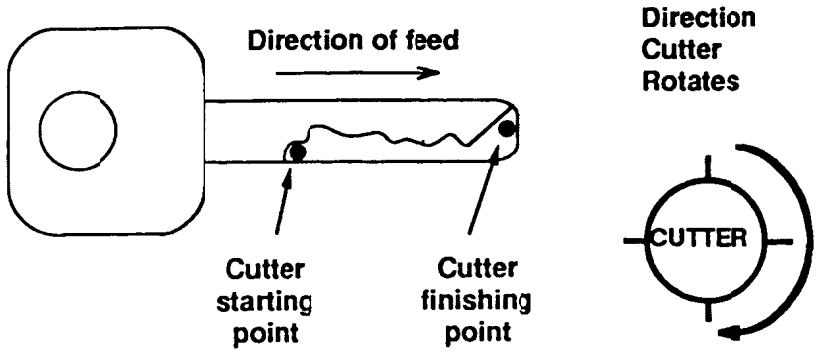


Figure 10: *Duplicating a two track key cutting the right side. When cutting a two track key, follow every contour of the pattern key.*

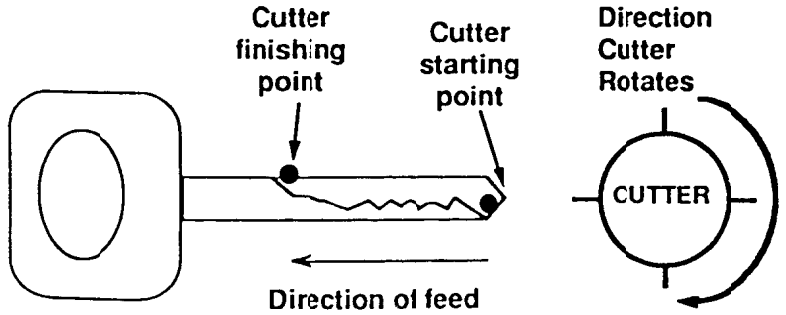


Figure 11: *Duplicating a two track key cutting the left side.*

Lexus/Volkswagen/Audi

This type of key has cuts on both sides of a center groove in the blade. Be sure to use the .093' diameter cutter and guide set. (3mm cutter and guide recommended for Volkswagen/Audi.)

When cutting this type of key, begin from the tip on the right side. Starting here, the key blank will be cut using the conventional cutting method. The direction of feed is from the tip to the bow. Beginning at the tip will provide an entry for the guide. Complete the cut moving the cutter to the cut closest to the bow.

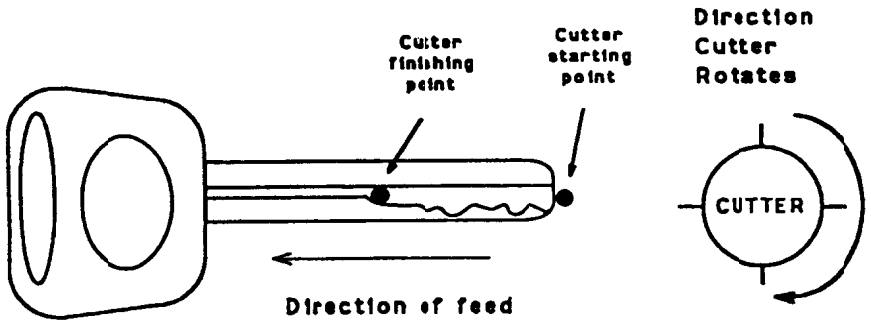


Figure 12: *Duplicating a Lexus key cutting the first side*

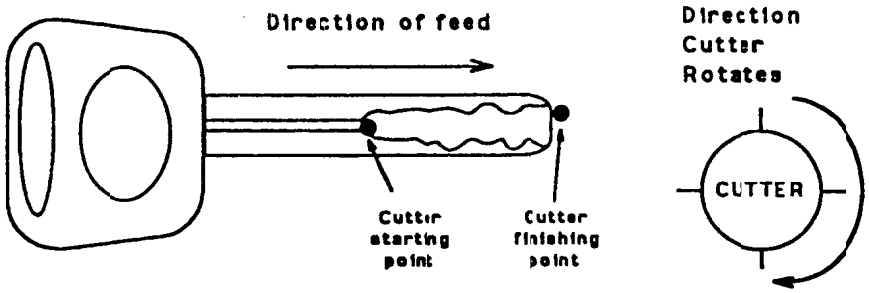


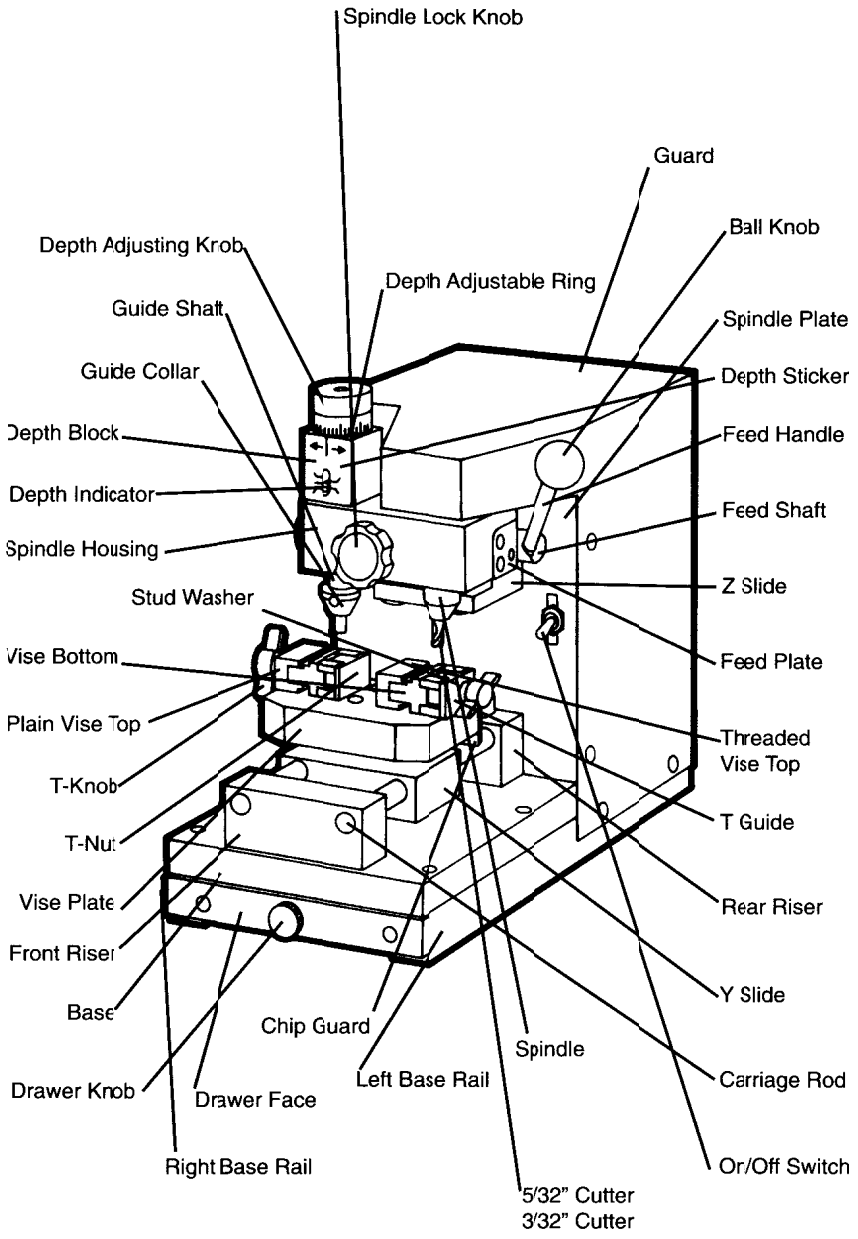
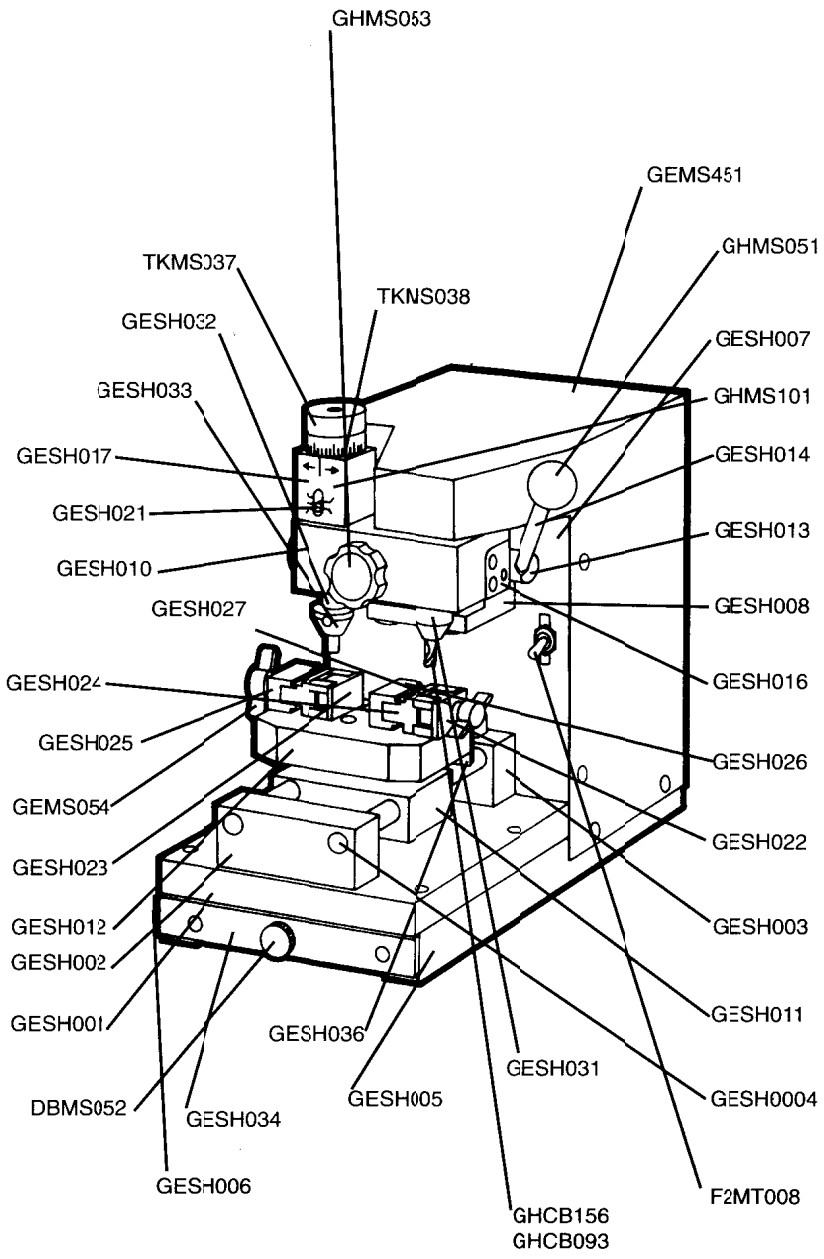
Figure 13: *Duplicating a Lexus key cutting the second side*

Position the cutter and guide just before the cut closest to the bow on the left side of the groove. Starting here, the key blank will be cut using the conventional cutting method. Direction of feed is from the bow to the tip.

Once this side has been cut, flip over key blank and duplicate the bittings onto the other side.

NOTE: The smaller cutter diameter requires a slower feed and greater care when entering the cut.

PARTS LISTING



PARTS BY NUMBER LISTING