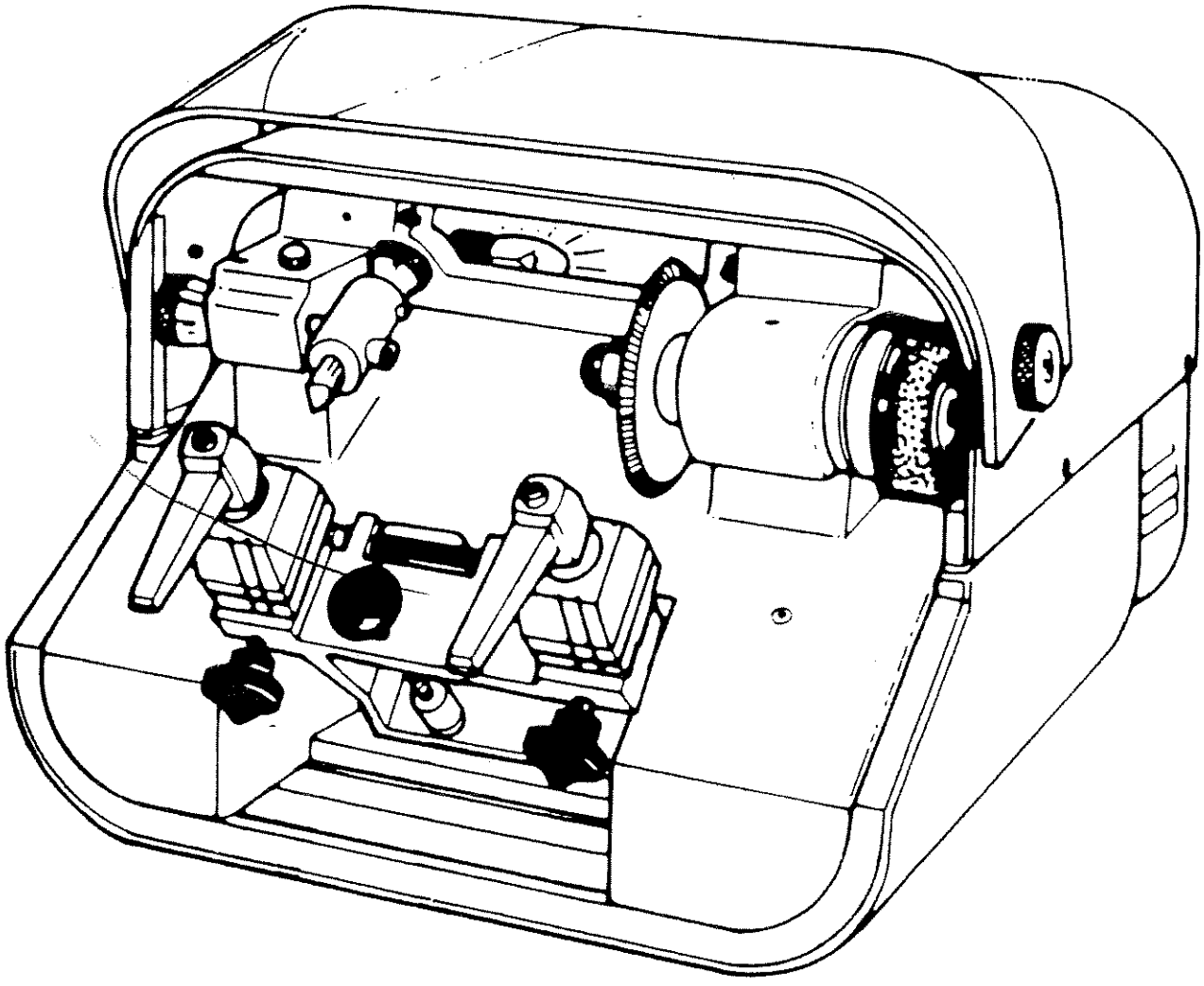
KD71A

INSTRUCTION MANUAL

IMPORTANT! Read these instructions before you use your new KD71A Key Machine.



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This manual is registered and applies specifically to the machine which carries this serial number. It properly identifies your model and assures you will receive correct parts, if and when you require replacement parts. Retain this manual is a safe place. It's the only one of its kind. If ownership of this machine is transferred, this service manual should accompany the machine.

When seeking service information about this machine, refer to the Model No. (which is KD71A), your registration number (see below) and the part number desired (see pages 4 to 9). Note that most parts are interchangeable with the previous models (KD50, KD50A, KD71)

CONTENTS

ONE YEAR LIMITED WARRANTY

ILCO UNICAN warrants to the original buyer of any new model KD71A machine that it will repair or replace, at its option, any part of any machine which proves, to the reasonable satisfaction of ILCO UNICAN, to have defects arising from the faulty manufacture of the machine or from defective material or components, during a period of one (1) year from the date of shipment of the machine by ILCO UNICAN, provided that the machine is returned by prepaid transport to ILCO UNICAN or to its authorized representative before the expiry of the warranty period together with a detailed description of the alleged defect(s). ILCO UNICAN may, at its discretion, elect to refund the purchase price allocable to the part affected, or to issue a credit if the price therefore remains unpaid.

ILCO UNICAN sells precision-made machines. The buyer assumes all risks, and ILCO UNICAN shall not be liable for any reason, if the machine has been subjected to improper installation, improper use, improper or inadequate maintenance, negligence, if any unauthorized modification or alteration is made to the machine, or in case of accident. For greater certainty, any machine not operated in accordance with ILCO UNICAN's printed instructions or operated beyond its rated capacity shall not be covered by this or any other warranty.

Any and all warranties made by ILCO UNICAN on any machine, product, or component thereof shall be effective only if and for so long as the buyer complies with all payment obligations pursuant to the buyer's accepted and acknowledged order. Failure to meet such payment obligations shall void all warranties and not extend the period of time for which such machine, product of component thereof is warranted irrespective of whether or not payment is eventually made.

These warranties are in lieu of and not in addition to any other warranty of condition, expressed or implied, including without limitation merchantability, fitness for a particular purpose or latent defects. The buyer releases ILCO UNICAN from any liability for any reason other than a breach of its warranties hereunder.

The liability of ILCO UNICAN shall in no case, including negligence, exceed the purchase price of the defective machine, nor shall ILCO UNICAN be liable for any personal injuries, property damage or consequential damages.

Use only genuine ILCO UNICAN replacement parts on this machine!

Registration and Serial number is _____

Congratulations!
You've purchased a superior key cutting machine.

The KD71A key machine you've just received will give you consistently accurate key cutting for many years to come ... and a profitable return on your investment. It will save you time and money.

The KD71A is superbly engineered and built with uncompromising quality for the professional who is serious about convenience, accuracy and profitability. This advanced machine incorporates design and operating features that let you cut keys more accurately and more profitably than most machines on the market. You now can cut a key just by pressing a button — it's done automatically. You just watch ... or do something else.

Technically, the machine you've just purchased is called a key duplicator; it transfers and duplicates cuts from you customer's key onto a key blank. It's designed to cut the most popular types of keys — the standard house, car and padlock key (called cylinder keys by the trade).

Your new key machine is not like conventional key cutting machines which require tedious manual positioning and movement of the entire carriage. Instead, it has a sophisticated mechanism that automatically moves the carriage across the cutter. You merely load the keys, and press a button. The machine will lower the key gauge, lift the carriage to the cutter, cut the key and turn itself off. Efficient and accurate!

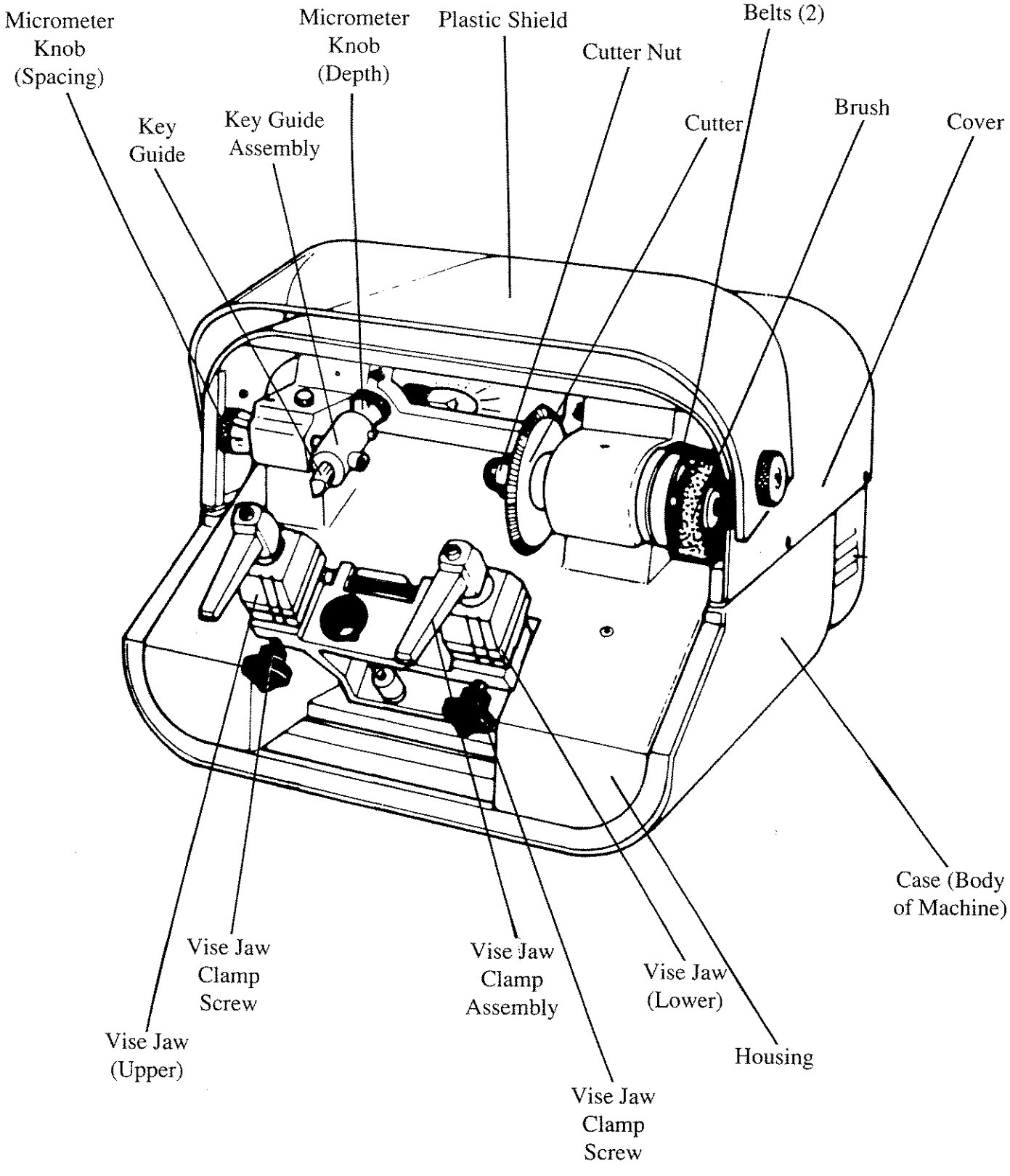
UNPACKING INSTRUCTIONS

Your new KD71A key machine has been shipped to you in a sturdy, specially cushioned container to prevent the possibility of damage during handling and shipment.

Once the machine is removed from the carton, it should be set up on a level workbench and wiped free of all rustproofing oil. The machine is adjusted at the factory and test keys have been cut on it, but it is recommended that you check the adjustments to make sure they have not slipped or shifted during transit (See Pages 16 "SPACING AND DEPTH ADJUSTMENT").

CAUTION! **DO NOT DESTROY OR DISCARD THIS VALUABLE SHIPPING CARTON. STORE IT CAREFULLY IN A SAFE PLACE. IN THE EVENT OF A PROBLEM WITH YOUR MACHINE, IT MUST BE RETURNED TO OUR SERVICE FACILITY IN ITS ORIGINAL PROTECTIVE CARTON.**

OPERATING PARTS



NOTE: On/Off power switch (KD50A-15) is not shown, but is visible on the left side of the machine.

OPERATING PARTS IDENTIFICATION

Refer to page 4.

Part No.	Identification
KD71A-1A	Housing
KD71A-2A	Case (Body of Machine)
KD71A-4A	Cover
KD71A-8A	Belt (two)
KD71A-15	On/Off power switch (not shown)
KD71A-51	Clamp Screw, vise jaw (two)
KD71A-53	Upper vise jaw (two)
KD71A-54	Lower vise jaw (two)
KD71A-58	Clamp Assembly, vise jaws (two)
KD71A-68	Knob, setting gauge assembly
KD71A-86	Key Guide Assembly
KD71A-89A	Key Guide
KD71A-96	Cutter Nut
KD71A-102B	Brush
KD501-104	Plastic Shield
KD501-150	Micrometer adjusting knob
CU50A	Cutter, 3,150" diameter, cobalt steel

EXPLODED VIEW PARTS LIST

Refer to pages 8 and 9 for illustrations.

Part No.	Description
KD71A-1A	Housing
KD71A-2A	Case (Body of Machine)
KD71A-3A	Back Plate
KD71A-4A	Cover
KD71A-5	Motor Shelf
KD71A-6B	Motor Shelf Adjustment Bracket
KD71A-7A	Motor Pulley
KD71A-8A	Belt
KD71A-9	Motor 110V
KD71A-10	Power Cord and Plug
KD71A-11A	Bushing, Strain Relief
KD71A-12	Terminal
KD71A-13	Grounding Stud
KD71A-14	Grounding Nuts
KD71A-15	On/Off Switch, Rocker Type
KD71A-16	Power Cable
KD71A-17	Light Socket
KD71A-18	Light Bulb
KD71A-19	Socket Support Bracket
KD71A-20A	Transparent Light Guard
KD71A-21	Momentary Switch - N. O.
KD71A-23A	Carriage
KD71A-24A	Carriage Shaft
KD71A-38A	Carriage Shaft Tensions Pin
KD71A-39A	Carriage Spring
KD71A-40A	Carriage Spring Anchor Pin
KD71A-45	Microswitch Mounting Plate
KD71A-50	Slug (Jaw Post Retainer)
KD71A-51	Clamp Screw (Jaw Post)
KD71A-52	Jaw Spring
KD71A-53	Upper Vise Jaw
KD71A-54	Lower Vise Jaw
KD71A-55	Vise Jaw Post (Left)
KD71A-56	Vise Jaw Post (Right)
KD71A-57	Retaining, Right Post
KD71A-58	Clamp Assembly
KD71A-59	Thrust Washer
KD71A-64A	Setting Gauge Finger (Left)
KD71A-64B	Setting Gauge Finger (Right)
KD71A-66	Setting Gauge Spring

Part No.	Description
KD71A-67	Setting Gauge Shaft
KD71A-68	Setting Gauge Knob
KD71A-69	Setting Gauge Sleeve
KD71A-71B	Detent Release Shaft
KD71A-73B	Detent Release Shaft Sleeve
KD71A-76	Setting Gauge Release
KD71A-77	Detent Release Spring
KD71A-87	Mounting Cylinder
KD71A-88	Barrel
KD71A-89	Key Guide
KD71A-90	Adjusting Screw Bushing
KD71A-91	Adjusting Screw (Diametral)
KD71A-92	Adjusting Screw (Lateral)
KD71A-95	Cutter Spindle
KD71A-96	Acorn Nut
KD71A-97	Cutter Washer
KD71A-98	Bearing
KD71A-99	Bearing Spacer, External
KD71A-99IN	Bearing Spacer, Internal
KD71A-100	Pulley
KD71A-102B	Brush, 3" Nylon
KD71A-103	Brush Shoulder Screw
KD71A-104A	Plastic Shield
KD71A-105	Shield Knob
KD71A-106	Shield Spacer
KD71A-107	Foot
KD71A-109A	Chip Pan
KD71A-111	Service Bar
KD71A-112	Service Pin, 1.2mm
KD71A-113	Service Pin, 1.7mm
KD71A-114	Hex Wrench Set (2, 2.5, 3, 4, 5, 6mm)
KD71A-115	Open End Wrench
KD71A-116	Bar (to secure cutter spindle)
KD71A-120	Service Kit
KD71A-136	Pin Retainer
KD71A-137A	Name Plate (Label)
KD71A-139	Grounding Label
KD71A-143	Pin Spring Retainer
KD71A-144	Carriage Stop
KD71A-146	Carriage Stop Adjusting Screw

EXPLODED VIEW PARTS LIST

Refer to pages 8 and 9 for illustrations.

Part No.	Description	Part No.	Description
KD71A-148	Belt Tension Support	KD71A-250	Transversing Cam
KD71A-149	Belt Tension Bracket	KD71A-253	Longitudinal Cam
KD71A-150	Adjusting Knob	KD71A-255A	Reducer Unit
KD71A-161	Switch Plate	KD71A-256	Micro Switch
KD71A-177	Function Selector	KD71A-257	Microswitch Control Pin
KD71A-178	Light Socket Threaded Spacer	KD71A-258	Reduction Unit Pulley
KD71A-179	Spacer Nut M10	KD71A-259	Reflex Belt
KD71A-236	Upper Tappet Pin	KD71A-260	Ball Bearing
KD71A-237	Balancer Support	KD71A-261	Carriage Sliding Block
KD71A-238A	Reduction Unit Support	KD71A-262	Carriage Shaft Bushing (Right)
KD71A-239	Balancer and Tappet	KD71A-263	Carriage Shaft Bushing (Left)
KD71A-240	Lower Carriage Spring	KD71A-264	Transmission Belt
KD71A-241	Tappett Wheel	KD71A-265	Transmission Pulley
KD71A-242	Lower Carriage Spring Retainer	KD71A-266	Transmission Shaft
KD71A-243	Upper Tappett	KD71A-267	Transmission Housing
KD71A-244	Cam Holder Pin	KD71A-268	Transmission Unit Support
KD71A-245	Lower Tappett Support	KD71A-269	Reducer Unit Stabilizing Pin
KD71A-246	Lower Tappett Unit	KD71A-270	Steel Ball 08
KD71A-247	Lower Tappett Washer	CU50A	Cutter
KD71A-248	Lower Tappett Wheel	KD71A-IM	Instruction Manual

OPERATING ACCESSORIES

Service Bar
Used to adjust spacing and depth. Also serves as stop for shoulderless keys.

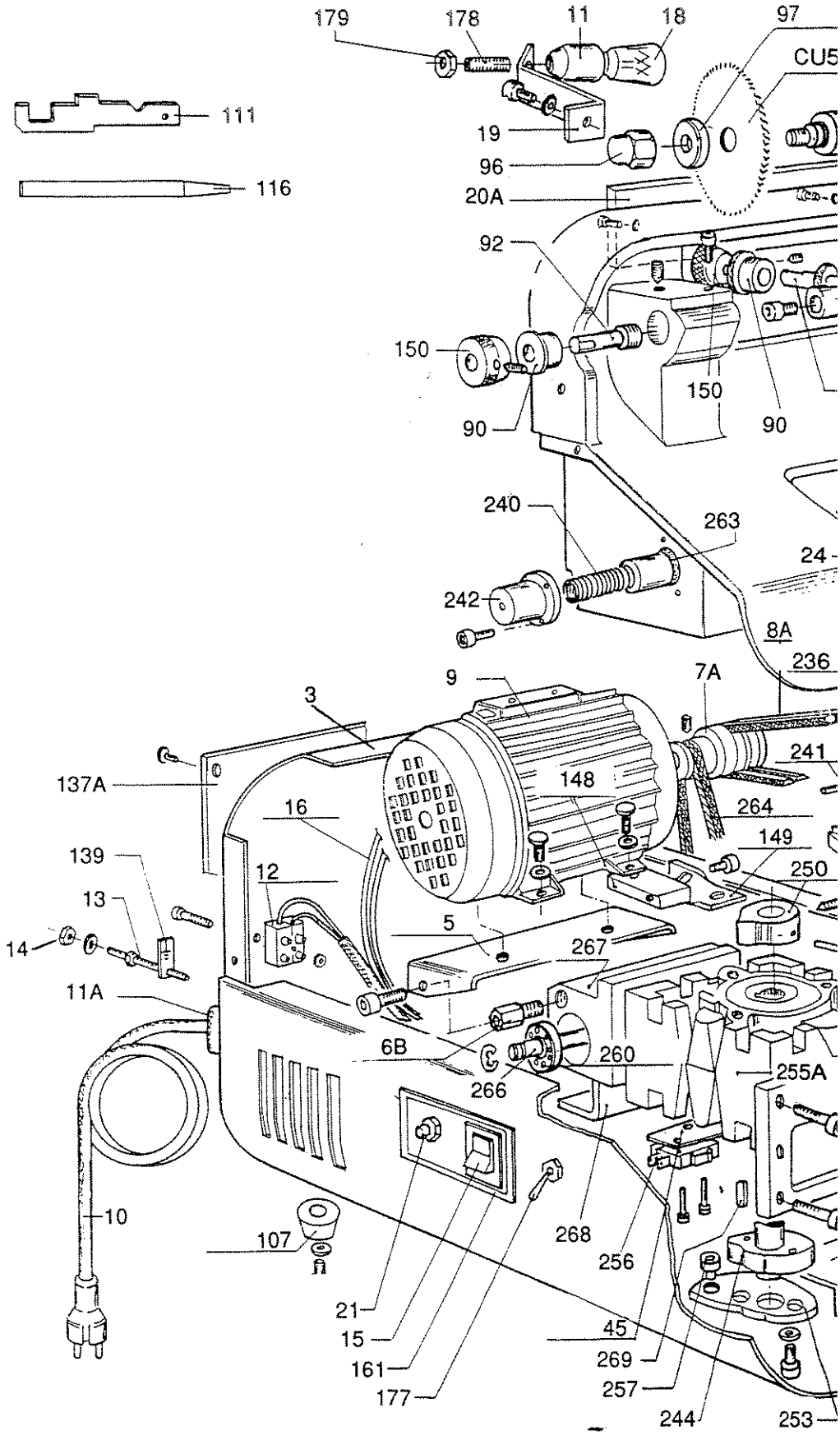
Service Pins
Used as shims to raise narrow blade keys above surface of vise jaw.

Metric Allen Wrench
Various size wrenches are used to loosen and retighten set screws on the machine.

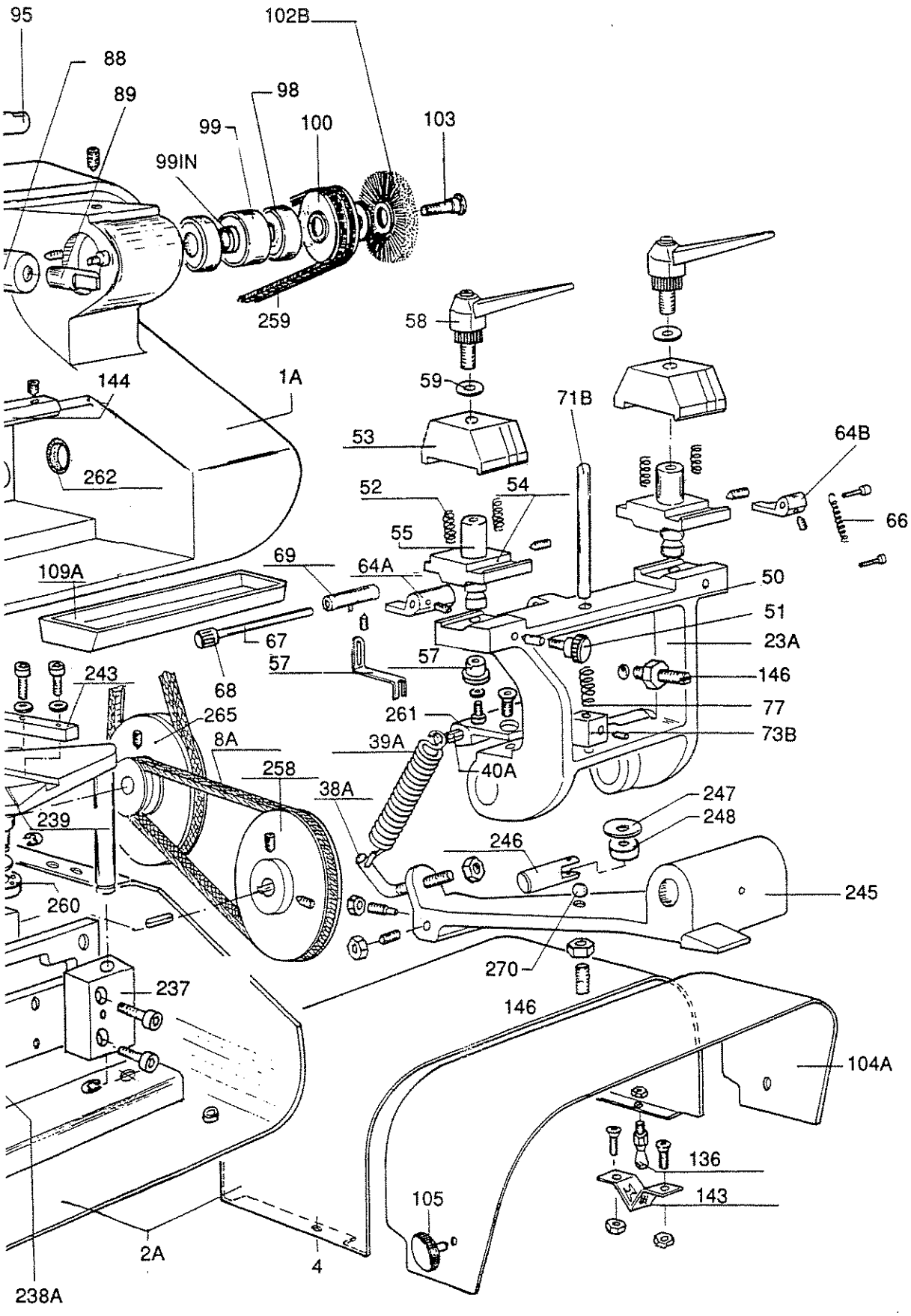
Metric Wrench
Used to loosen and retighten cutter nut and belt tension adjustment nut.

Cutter Spindle Bar
Used to hold cutter spindle rigid while removing cutter nut.

EXPLODED VIEW



EXPLODED VIEW



THE CUTTING OPERATION

GENERAL OPERATING SEQUENCE

The KD71A has a constant power switch which must be turned on. However, the machine motor will not operate until activated by depressing the actuating button (part no. KD71A-21).

In it's off position, the carriage is normally down, in a position for loading the keys in the vises. After the keys are clamped in the vises, using the key gauge, the key gauge is left in its alignment position next to the shoulder of the keys. The actuation button than is depressed, which will start the motor. The carriage will move to the right immediately, move upward so that the shoulders are near the key guide and cutter, and then move to the left. In it's movement, the carriage will run the key over the cutter while the key guide traces the pattern key cuts.

When the carriage has reached the ends of the keys, it will drop down and the motor (and cutter) will stop. At this point, the pattern key and the duplicate key can be removed from the vises.

To deburr the new key, depress the actuating button and let the carriage go through a cutting cycle to activate the brush. It is not necessary to have key blanks in the vises. The KD71A is provided with a special stop that prevents the cutter from striking the right vise jaw.

The function selector (Part No. KD71A-177) will create two distinct actions. In its 'on' position, the function selector will permit the machine to go through a normal automatic action for key cutting, when the actuating button is depressed. In the 'off' position, the automatic action is cancelled. When the actuating button is depressed, the machine will operate but, as soon as the button is released, the machine will stop cutting. The 'off' function is needed in order to properly position the carriage for adjustments.

PROPER KEY CUTTING TECHNIQUES

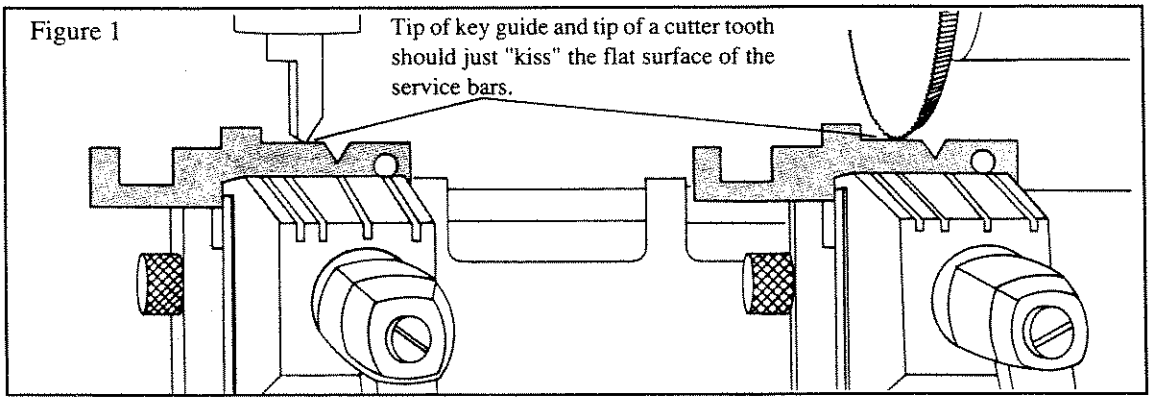
Even though your KD71A key machine is designed to make key cutting fast, easy and accurate, operator skill is important. The actual mechanics of placing keys within the vise jaws are simple to learn, but there are some basics that must be followed. A properly adjusted key machine, used by someone who ignores good key cutting techniques, will **NOT** produce a good key. The way a person clamps a key into the vise jaws is critical to the accuracy of the duplicated key.

Remember - the real purpose of a duplicate key is simply to operate the lock for which it was intended. If your customers don't bring back the keys, you can assume the keys are cut correctly. If customers return the keys, you should re-examine your cutting techniques and adjustments of the machine.

Here are some important operating tips:

1. Vise jaws - clean them regularly so that no metal chips lie under the keys. **It is essential that both keys lie flat across the entire width of both vise jaws. Neither key should be tilted.**
2. Do NOT use pliers or other tools to tighten the vise jaws. Firm hand pressure is sufficient.
3. Keep the carriage shaft free of metal chips. A thin film of oil can be applied to it. The carriage should travel smoothly along its shaft.
4. NEVER touch the shoulder of a key to the side of the key guide. This will cause the shoulder of the key blank to touch the side of the cutting wheel. When this happens, some of the metal will be cut away from the shoulder of the key blank. If the resulting duplicated key is duplicated two, three, four times over, an error will accumulate and cause a non-operating key. Do not grind away the shoulder.
5. Don't run the cutter into the vise jaw; this will only dull the cutter, and reduce cutter efficiency.
6. Keep the cutter clean. Don't let any foreign objects or instruments blunt it. This cutter is a precise cutting tool and should be handled with care.
7. Lubricating of moving parts is important. Oil cups are provided to keep the cutter shaft bearings well lubricated. The carriage spindle should be lubricated with a thin film of oil.

ADJUSTING FOR PROPER DEPTH OF CUT



Set the function selector (Part No. KD71A-177) to the 'off' position; this will turn off the automatic action of the machine. Next, clamp the two service bars in the vise jaws as shjown in Figure 1, making certain that both bars rest flat against the bottom of the vise and are butting against the edge of each vise jaw. At this point, depress the actuating button (Part No. KD71A-21) intermittently; this will jog the carriage upward a bit at a time whenever the button is depressed. Stop depressing the actuating button when the service bars touch either the key guide or the cutter.

Turn the cutter by hand. The machine is correctly adjusted if the cutter barely grazes the top of the right service bar. If the cutter is stopped from turning or turns freely without contacting the service bar, the cutting depth must be adjusted, as follows:

1. Loosen the Allen screw that holds the key guide .
2. Turn the cutting depth micrometer adjusting knob behind the guide, either left or right. This will move the key guide in or out. Do this until the cutter just grazes the top of the right service bar when the left service bar is resting against the key guide. Turn the cutter by hand. Since no cutter is perfectly round, it's important to adjust to the high spot of the cutter. Rotate the cutter at least one full turn to locate the high spot. If you adjust to the low spot of the cutter, the cuts on the key blank will be made deeper than the pattern cuts.
3. Tighten the key guide Allen screw.

NOTE: This adjustment must be made if the cutter is replaced or whenever a test key fails to operate its lock. It is recommended that test keys be cut weekly, of more often if large volume of keys is cut.

ADJUSTING FOR PROPER LATERAL DISTANCE (SPACING)

Key cutting accuracy also depends upon the spacing of the key and blank key to be the same as the distance between the key guide and cutter. To assure that the lateral distance adjustment is correct, refer to Figures 2 and 3 and proceed as follows:

1. Insert the service bars into the vise jaws making sure that each service bar is butting against the edge of each vise jaw. This is critical!

SPACING ADJUSTMENT (Continued):

Figure 2

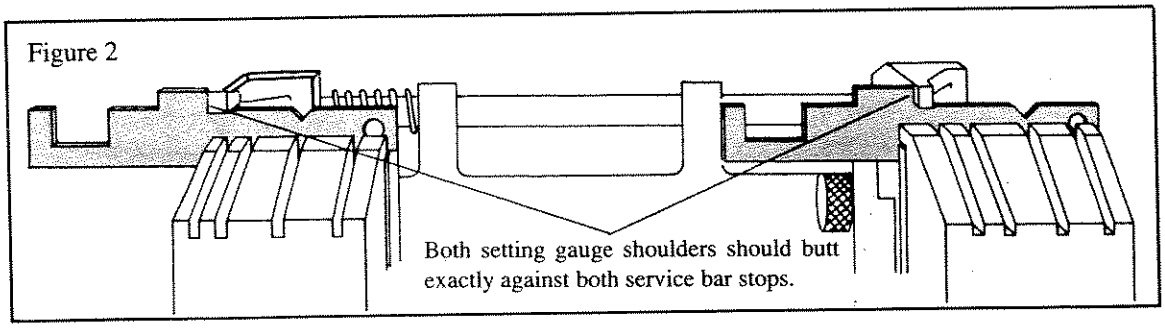
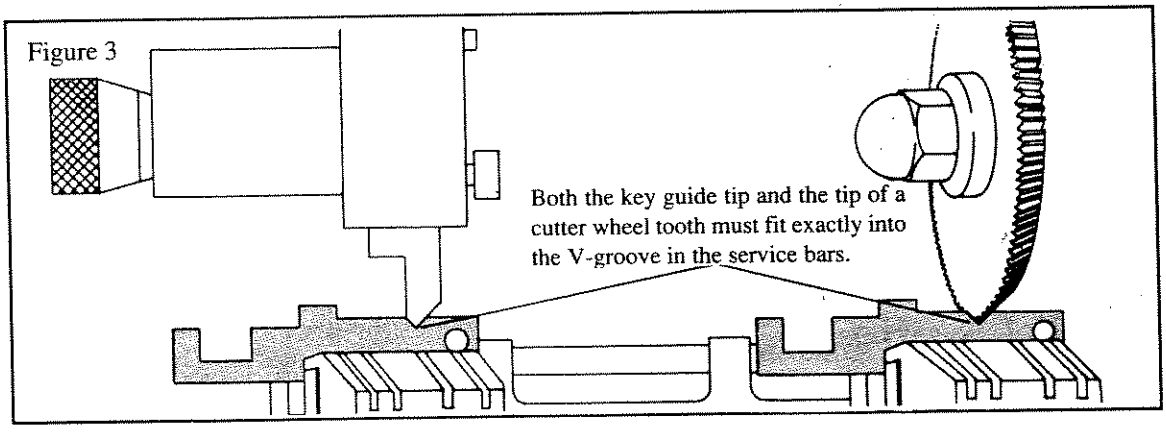


Figure 3



2. Rotate the key setting gauge up and make certain that both setting gauge shoulders rest exactly against the service bar stops as shown in Figure 2.

   If there is a discrepancy, loosen the right setting gauge Allen screw and adjust so that both gauge shoulders rest exactly against both service bar stops.

3. Set the function selector to the 'off' position; this will turn off the automatic action of the machine. Depress the actuating button intermittently; this will jog the carriage upward and sidewards a bit at a time whenever the button is depressed. Stop depressing the actuating button when the V notch of the left service bar is lined up with the key guide.

   When jogging the carriage sidewards, pull the carriage back slightly with the right hand, to keep the cutter from contacting the right service bar.

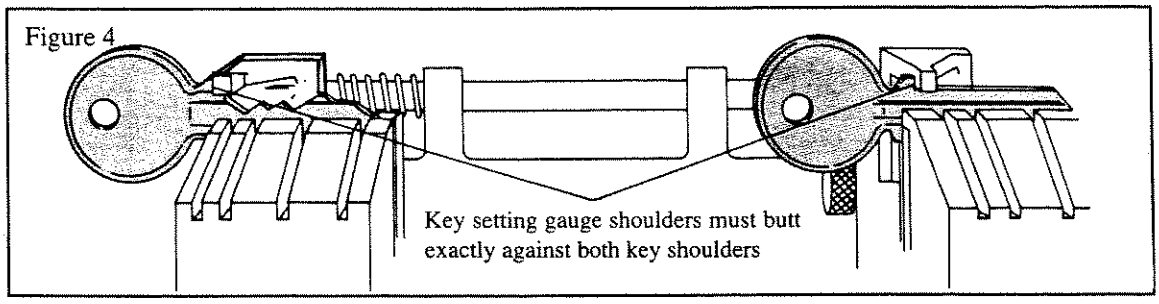
4. Insert the key guide and cutter into the V shaped grooves in the service bars as shown in Figure 3. Both the key guide and the tip of a cutter wheel tooth must fit **exactly** into their V grooves or the setting will not be accurate (make certain that you do not seat the space between two cutter teeth into the V groove).

5. If the guide and cutter do not seat exactly into each of the V grooves, the distance between the cutter and guide must be altered. Loosen the Allen screw in the key guide assembly and turn the micrometer adjusting knob fore or aft. This action will shift the position of the key guide assembly to the left or right. Continue until the key guide and the cutter both drop into the V notches of the service bars.

   Note that the carriage can be pulled down manually to ease the key guide and cutter out of the V notches so the key guide assembly can be shifted.

ALIGNING KEYS WITH SHOULDERS

Figure 4

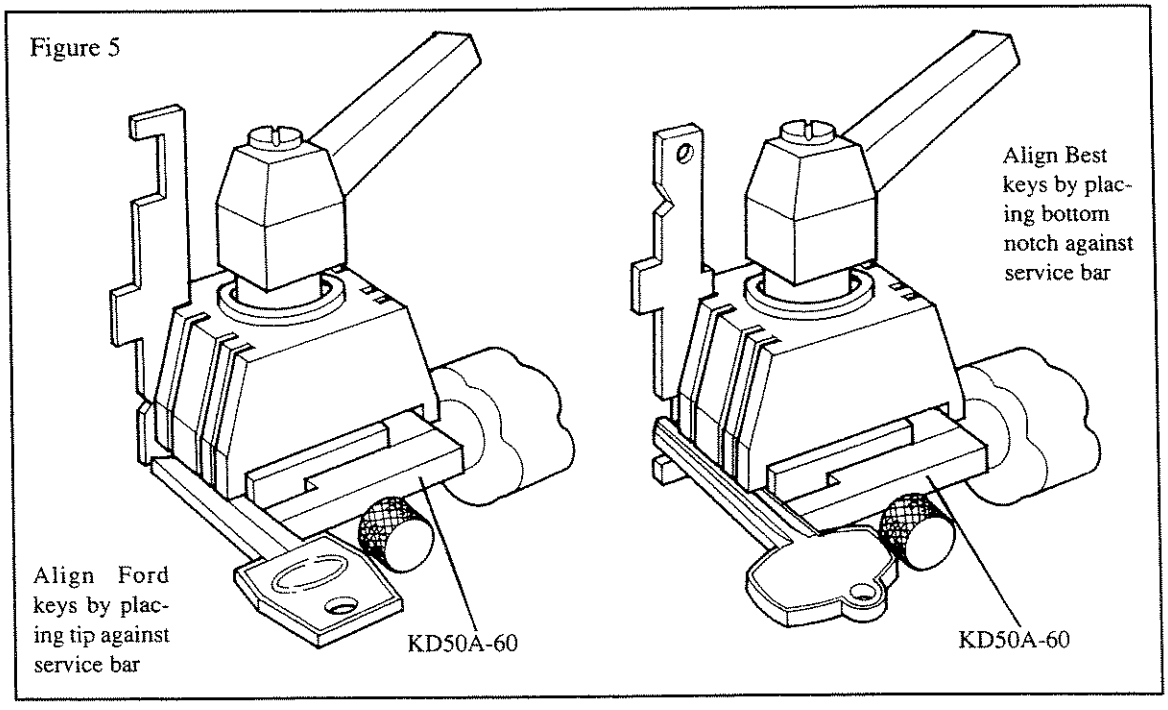


Insert the pattern key, left to right, into the left vise. Rotate the key setting gauge upward and set its left shoulder against the shoulder of the pattern key. Be sure the key is lying flat along the bottom of the vise. Secure the key by turning the clamp assembly clockwise.

Insert the key blank in the same manner, into the right vise, and secure. Make sure that the key setting gauge is exactly against **both** key shoulders. The key and key blank now are spaced the correct distance apart and are ready for cutting. See Figure 4.

ALIGNING KEYS WITHOUT SHOULDER (FORD AND BEST)

Figure 5



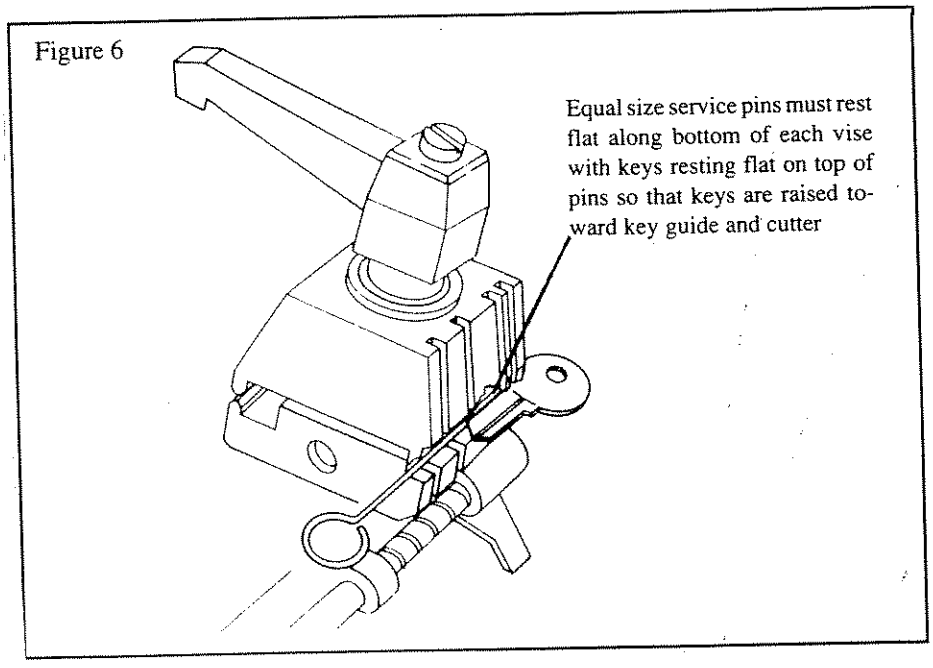
On keys without shoulders, the key setting gauge cannot be used. It is necessary to use the service bar to correctly position the key and the blank.

The vise jaws have a series of slots and any slot can be used for the service bar. Also note the key head rest (KD50A-60), which prevents the key from tilting as the vise jaw is tightened. The key head rest can be moved to properly support the key. See Figure 5.

HOW TO ALIGN KEYS

ALIGNING NARROW BLADE CYLINDER KEYS

Figure 6

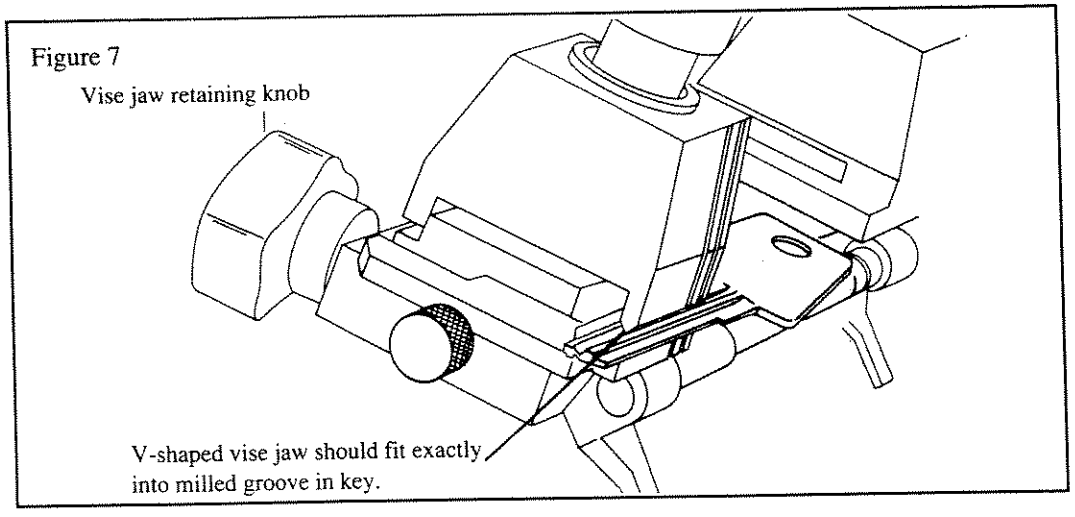


Some keys have a very narrow blade and therefore sit deep in the vise jaws with only part of the cuts showing above the vise. This makes it necessary to use the service pins to raise the key for proper cutting.

Insert an equal size pin under each key and blank on the bottom of the vise jaws. This will raise both the key and blank to allow the correct depth of cut to be made. See Figure 6. Do not cut into vise jaw!

ALIGNING DOUBLE SIDED CYLINDER KEYS

Figure 7

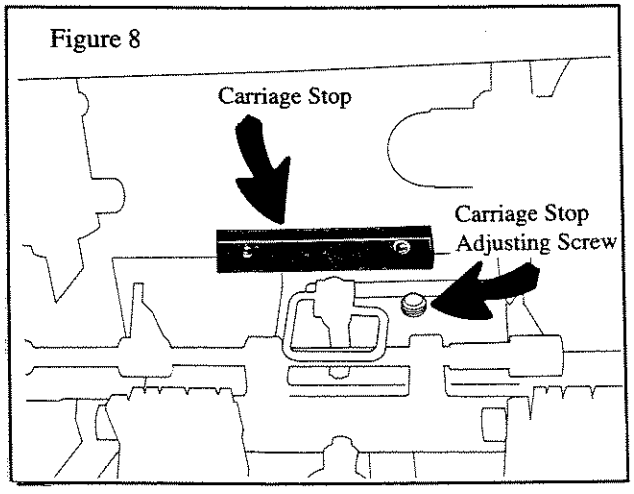


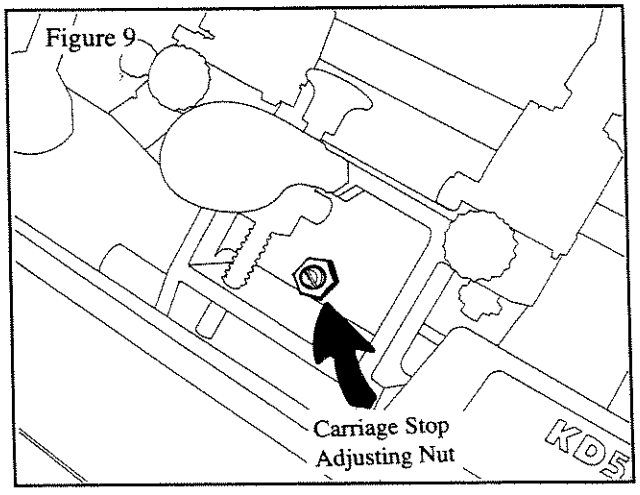
Before cutting this style of key, examine the key to see if there is a milled groove on either side. If so, then reverse the vise jaw and clamp the key using the V jaws. The key will be held securely when only the top or bottom V jaw fits into a milled groove.When there is no V groove on either side of the key, then use the flat vise jaw.

ALIGNING DOUBLE SIDED CYLINDER KEYS (Continued):

If the cuts are not the same on both sides of the key, make the shallow cuts first so that, when you turn the key over to cut the second side, there will be enough metal to grip the key securely during the actual cutting.To reverse the vise jaw, loosen the retaining screws at the base of the vise jaws. Raise, rotate and reseat both vise jaws and then retighten their retaining screws. Note the V shape of the jaws. Insert the key between the jaws, with a milling groove resting in the point of the V. This will hold the blank securely. Align for spacing and proceed to cut.

ALIGNING CARRIAGE TO PREVENT VISE JAW DAMAGE





This machine is equipped with a carriage stop that prevents the carriage from moving all the way up to the cutter. When properly adjusted, it stops the cutter from grinding into the vise jaw. Such a condition could occur when reaching the tip of the cut key, and the carriage continues to move through its cycle.

The carriage stop (Part No. KD71A-144) is a U-shaped channel secured to the housing by set screws. It's positioned to span the travel of the carriage during the cutting cycle; normally, this position does not change. In addition, there's a carriage stop adjusting screw that is installed in the carriage; this screw controls the distance between the cutter and the vise jaw. See Figure 8.

The carriage stop adjusting screw is set at the factory to create a clearance of .004" between the cutter and the vise jaw. This distance is NOT critical and can be set without measuring instruments. Just loosen the lock nut and turn the screw in or out so the cutter does not touch the vise jaw. The machine should be off. When an ordinary business card can slide between the cutter and vise jaw, the adjustment is correct and the accuracy of key cutting will not be affected. CAUTION! Do not make this clearance too wide. Key cutting could be effected on some keys having deep cuts.

It's a good idea to check the clearance on a regular basis, especially when a large quantity of keys are cut. If the cutter is allowed to strike the vise jaw, the edges of the cutter will be dulled immediately, causing a reduction in the life of the cutter.

CUTTER, BELT OR KEY GUIDE CYLINDER

If the belts stretch, they will slip when the motor is in motion, thus reducing the power supplied to the cutter. This will be evident to the operator, since the cutter will slow down. A belt nut adjustment (Part No. KD71A-149) will restore tension to the belt until it must be replaced. To reach the belt adjustment nut, open the top cover of the machine. Replace cover after adjustment is made.

There's no prescribed length of time that a cutter should last since this depends upon the usage to which it's subjected. Factors such as the length of time to cut a key, sound, appearance, and "feel", are some of the clues that will indicate when a cutter needs replacement. You should keep an extra cutter and key guide cylinder on hand for immediate replacement when needed.

To replace the cutter, just unscrew the cutter nut (note the left hand thread!) using the holding bar supplied to prevent the cutter spindle from turning (See Figure 10). Install the new one against the spindle shoulder. Replace washer and nut; tighten the nut securely.

Figure 10

One word about the key guide cylinder. This could become worn with heavy usage and should be replaced. Slight wear on the key guide cylinder can be compensated for by making a radial (tilting) adjustment. Loosen the Allen screw at the top of the key guide cylinder, then tilt the cylinder so that an unused portion of the cylinder edge makes contact with the V in the service bar (or cuts in the key). Retighten the Allen screw. Beyond that adjustment, a new cylinder is required. To replace the key guide cylinder, loosen the Allen screw on the right side of the cylinder and turn the rear micrometer until the cylinder drops out. Insert new cylinder, turn micrometer until tip of cylinder is properly adjusted for depth and retighten Allen screw.

SPACING AND DEPTH ADJUSTMENT

The practice of cutting duplicate keys requires that both the pattern key and the key blank be placed in the same relative position in the vise jaws. There are two alignments that are critical - spacing and depth. The key setting gauge controls the spacing; that is, it contacts the shoulder on both keys and sets them properly within the vise jaws. Do NOT attempt to bend or to alter the shape or position of the fingers of the key setting gauge. If the fingers are bent out of shape, they will not set the keys in proper relation to each other; this will cause an error in the spacings of the notches in the key.

The depth adjustment is controlled by the key guide. With two identical key blanks clamped into the vises, and with the left key resting against the key guide, the right key should just barely "kiss" the cutting wheel edge. If not, loosen the key guide Allen screw and adjust the rear micrometer knob, in or out as needed.

For continually accurate key cutting, it's advisable to keep a "test" lock in your key cutting area. Every week or so, depending upon the quantity of keys you cut, make a duplicate of the original key for your test lock. Try the duplicate in the lock and look for any binding or hard turning of the key. If it works smoothly, your machine is maintaining its adjustment. If it binds, you should recheck your key cutting techniques and adjustments. We recommend that a high quality locking device, such as a Master pin tumbler padlock or a Schlage pin tumbler lockset, be used as the test lock.