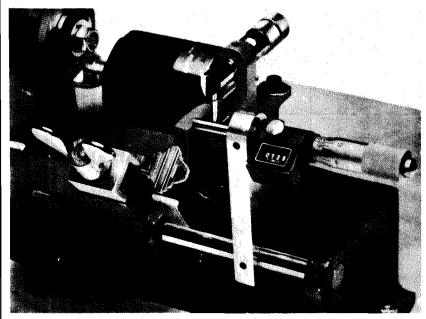


# FOLEY-BELSAW MODEL 200 KEY MACHINE ADJUSTMENT & OPERATION INSTRUCTIONS

# NEW CODE SPACING ATTACHMENT FOR YOUR FOLEY-BELSAW KEY MACHINE



For several months now there has been all kinds of ideas and gadgets that use our Key Machine to cut keys by code. Some ideas were very good, while others were over priced and complicated. Waste no more time or money!

Foley-Belsaw Company in cooperation with many professional Locksmiths is proud to offer the ONLY FACTORY MADE and APPROVED spacing adaptor that will easily attach to

any Model 200 Machine.

Our new Code Spacing Attachment is so easy to use and makes such a perfect key you will want to have one machine in your shop and one for your mobil unit. This simple, yet accurate design lets you cut any key — foreign or American — with the accuracy of a code machine that cost hundreds or thousands of dollars more. No more spacer keys or depth key sets, no code cards or special listing. All you need is what every locksmith already has — Code Books and Key Blanks!



# **FEATURES:**

- Easily attached to any Foley-Belsaw key machine no holes to drill. Simply mounts onto slide shaft.
- Easy to read instructions for installing and using your spacing code attachment with any depth and spacing charts or code books.
- No extra cutters to purchase. Uses your current code cutting wheel and guide.
- Choice of two types, our Best, with a direct reading digital micrometer is the most popular and easiest to read. OR The standard barrel micrometer for the economy

# KEY RITE KEY MACHINE ADJUSTING METER



This is a new device that will save you hundreds of dollars in wasted keys. Keys that didn't work because they were cut wrong will be practically eliminated. No more angry customers returning with keys that don't work. The Key Rite is an Electronic Meter that takes the Hit-or-Miss drudgery out of checking and readjusting key duplicating machines. This unique reader is powered by two penlite AA Batteries and weighs only 4 ounces. It hooks up to almost any machine within seconds and not only indicates if the duplicator is out of adjustment, but also whether it is cutting high or low. When the Key Rite is used the Key Machine can be so finely set that duplicate keys will match the customer's sample within

Outpilicate keys will material the described and seconds.

Bright green and red lights signal the micro changes as the machine is being adjusted. Special detector key gauges which are mounted in the vises take the place of key blanks as formerly used in the old fashioned method of adjusting.

You Pit is case to use because the Key Machine re-

Key Rite is safe to use because the Key Machine remains in the off position during adjustment. It is so easy to use that even a novice can expertly adjust almost any key duplicating machine after reading the easy to follow instructions

Order your Key Rite today and eliminate your miscut

wasteď keys.

NO. AEG5747308 **\$51.95** 

# **KEY-RITE REPLACEMENT DETECTOR PLATES**





NO. AEG5747806 **\$6.95** 

New replacement detector plates for your Jefferson Key Rite adjusting meter are now available. Made with the new space age insulation which will help eliminate the short circuit problem of the jaws of your key machine. Order a spare set today to have on hand as a backup for your Jefferson Key Rite meter.

# 12 VOLT D.C. MOTOR KIT

Foley-Belsaw D.C. Motor Kit NO.AEGG5167 \$38.95

**INSTALL IN MINUTES** 



We have many students and customers who use their key machines in their cars, trucks or vans. In the past, it was common to hunt through local salvage yards looking for old motors that could be adapted. However, they often proved to be inefficient for key machine

Now you can supply power to your Model 200 easily and for a price that anyone can afford. We have located a powerful little 12 volt D.C. motor that runs at 2500 rpm with enough power to easily cut any key. There are only two wires to connect. One for a ground and the

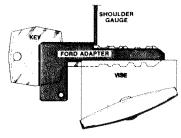
Each motor comes with a pulley, belt, motor bracket and instructions for mounting and wiring. TOTAL PRICE... \$36.95. ORDER YOURS TODAY!

# FORD AUTO KEY BLANK ADAPTOR

How It Works: Insert the original Ford key into the key machine vise and tighten vise just enough to hold the key in position. Place the Ford adaptor over the original key. The edge of the adaptor should be against the face of the vise and the bent ear should wrap around the tip of the original Ford key. (See drawing) Slide the original key and adaptor to the right until the adaptor butts against the key machine shoulder gauge. Tighten wing nut and remove adaptor. Repeat this procedure with the key blank.

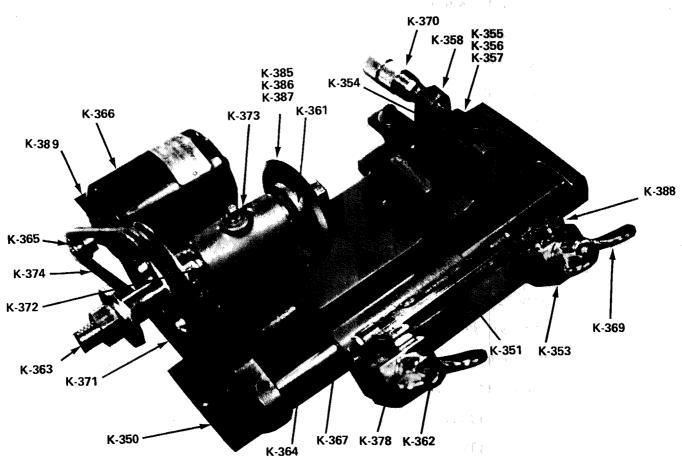
This specially designed adaptor is used to accurately gauge the Ford automotive key blank. It allows the key machine operator to gauge from the tip of the key using a machine equipped with a standard shoulder gauge. The Ford automotive adaptor can be used on the Foley-Belsaw 200, lico Professional Automatic and many other manufacturers' key machines to facilitate quick, accurate align-

NO. AEG5747206 \$1.20 each



# **MODEL 200 KEY MACHINE**

# PARTS LIST



| ORDER<br>NO. |                            |      | ORDER<br>NO. |                       |      |
|--------------|----------------------------|------|--------------|-----------------------|------|
| AEG5726003   | Base                       | K350 | AEG5726029   | Bearing               | K367 |
| AEG5726005   | Slide Casting              | K351 | AEG5726021   | Wing Nut              | K369 |
| AEG5726006   | Clamp                      | K353 | AEG5726022   | Micrometer            | K370 |
| AEG5726007   | Spring                     | K354 | AEG5726023   | Pulley (Cutter Shaft) | K371 |
| AEG5726008   | Tracer Guide (Steel)       | K355 | AEG5726020   | Bearing               | K372 |
| AEG5726009   | Tracer Guide (Duplicating) | K356 | AEG5726024   | Alemite Fitting       | K373 |
| AEG5726013   | Tracer Guide (Code)        | K357 | AEG5726002   | Belt +                | K374 |
| AEG5726014   | Guide Arm Casting          | K358 | AEG5726025   | Spring                | K378 |
| AEG5726015   | Retainer                   | K361 | AEG5726010   | Slotting Cutter       | K385 |
| AEG5726016   | Stud                       | K362 | AEG5726012   | Duplicating Cutter    | K386 |
| AEG5726017   | Shaft                      | K363 | AEG5726011   | Code Cutter           | K387 |
| AEG5726018   | Slide Shaft                | K364 | AEG5726026   | Gauge                 | K388 |
| AEG5726019   | Pulley (Motor)             | K365 | AEG5726027   | Motor Mount           | K389 |
| AEG5726001   | Motor                      | K366 | AEG5726028   | Chip Guard            |      |

# MODEL 200 KEY MACHINE

# PRICE LIST

| ORDER  |
|--------|
| NUMBER |

| AEG5726003 | Base K350                       |
|------------|---------------------------------|
| AEG5726004 | Slide Casting With Studs Only   |
| AEG5726005 | Slide Casting K351d (Complete)  |
| AEG5726006 | Clamp K353                      |
| AEG5726007 | Spring K354                     |
| AEG5726008 | Tracer Guide (Steel) K355       |
| AEG5726009 | Tracer Guide (Duplicating) K356 |
| AEG5726013 | Tracer Guide (Code) K357        |
| AEG5726014 | Guide Arm Casting K358          |
| AEG5726015 | Retainer K361                   |
| AEG5726016 | Stud K362                       |
| AEG5726017 | Shaft K363                      |
| AEG5726018 | Slide Shaft K364                |
| AEG5726019 | Pulley (Motor) K365             |
| AEG5726001 | Motor K366                      |
| AEG5726029 | Bearing K367                    |
| AEG5726021 | Wing Nut K369                   |
| AEG5726022 | Micrometer K370                 |
| AEG5726023 | Pulley (Cutter Shaft) K371      |
| AEG5726020 | Bearing K372                    |
| AEG5726024 | Alemite Fitting K373            |
| AEG5726002 | Belt K374                       |
| AEG5726025 | Spring K378                     |
| AEG5726010 | Slotting Cutter K385            |
| AEG5726012 | Duplicating Cutter K386         |
| AEG5726011 | Code Cutter K387                |
| AEG5726026 | Gauge K388                      |
| AEG5726027 | Motor Mount K389                |
| AEG5726028 | Chip Guard                      |
|            |                                 |

# **LOCKSMITH SUPPLIERS**

Acme Lock and Key Co. 8020 Olive St. New Orleans, LA 70125

Armstrong's Lock & Supply, Inc. 1440 Dutch Valley Place, N.E. Atlanta, GA 30324

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Clark Security Products, Inc. 7140 Engineer Rd. San Diego, CA 92117

Dire Locksmith Supply Co. 2201 Broadway Denver, CO 80205

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Doyle Lock Co. 2211 W. River Rd., N. Minneapolis, MN 55411

Dugmore and Duncan, Inc. 30 Pond Park Rd. Hingham, MA 02043 Ewert Wholesale Hardware 4709 W. 120th St. Alsip, IL 60658

Fairway Supply, Inc. 2631 Lombardy Lane Dallas, TX 75220

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Hans Johnson Co. 8901 Chancellar Row Dallas, TX 75247

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Kenton Locksmith Supplies, Inc. 10 Lincoln St. Kansas City, KS 66103 Key Hardware Co. 2400 San Fernando Rd. Los Angeles, CA 90065

Key Supply 149 Gough St. San Francisco, CA 94102

Lawrence Locksmith Supply 3000 Long Beach Rd. Oceanside, NY 11572

Locks Company 2050 N.E. 151 St. Miami, FL 13204

McDonald Locksmith Supply Go. P.O. Box 16907 Memphis, TN 38116

H.E. Mitchell Co. 118 S.E. 8th St. Portland, OR 97214

Mountain West Alarm Supply P.O. Box 10780 Pheonix, AZ 85064

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Safemasters Co., Inc. 2700 Garfield Ave. Silver Spring, MD 20910

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D. Silver Hardware Co., Inc. 145 Lafayette Ave. North White Plains, NY 10603 Southern Lock and Supply Co. 10910 Endeavor Way Pinellas Park, FL 33565

M. Taylor and Co., Inc. 5645 Tulip St. Philadelphia, PA 19124

The Lockware Co. 1613 W. Pratt St. Baltimore, MD 21223

Tweeds Locksmiths, Inc. 601 Elm Ave. Portsmouth, VA 23704

Veehoff Supply Co. Box 361, 908 Lake Ave. Storm Lake, IA 50588

Wacker Hardware Co. 560 W. Randolph Chicago, IL 60606

Zipf Lock Company P.O. Box 987 Columbus, OH 43216

# TRADE PUBLICATIONS

Locksmith Ledger 850 Busse Hwy. Park Ridge, IL 60068 312-693-5940

National Locksmith 1533 Burgundy Parkway Streamwood, IL 60107 312-837-2044

# LOCKSMITH SUPPLIES (CANADA)

Agencies W. Pelletier 1980, Inc. 651 Motre Dame Quest Ste. 375 Montreal, PQ H3C 1H9

Benton Ltd. J.W. 1271 Hornby St. Vancouver, BC V6A 1W4

Blander, P. Locksmith Supply Co. 28 Mt. Royal W. Montreal, PQ

Craig Co. Ltd., C.C. 1500 King Edward St. Winnipeg, MB R3H 0R5

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The International Key Co. 28 Mount Royal West Montreal, PQ

Serrubec Inc. 2069 Ave. Chartier Dorval, PQ H9P 1H3

Shield Supply & Services Ltd. Unit 17-1391 St. James St. Winnipeg, MB R3H 0Z1

Stearman Ltd., Jack 420 W. 6th Ave. Vancouver, BC V5Y 7L2

# NATIONAL ASSOCIATION

ALOA Assoc. LS of America, Inc. 3003 Live Oak St. Dallas, TX 57204 214-827-1701

# **MANUFACTURERS**

All-Lock P.O. Box 3042 North Brunswick, NJ 08092 201-545-7000

Best Lock Corp. P.O. Box 50444 Indianapolis, IN 46250 317-849-2250

Briggs & Stratton P.O. Box 702 Milwaukee, WI 53201 414-259-5218

Chicago Lock Company 4311 W. Belmont Ave. Chicago, IL 60641 312-282-7177

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Kwikset 516 E. Santa Ana St. Anaheim, CA 92805 714-535-8111

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Lori Corp. Old Turnpike Southington, CT 06786 203-621-3601

Lucky Line Prod. P.O. Box 17397 San Diego, CA 92117 619-270-0153

Master Lock Company 2600 North 32nd St. Milwaukee, WI 53210 414-444-2800 The Mosler Safe Company 1561 Grand Blvd. Hamilton, OH 45013 513-867-4000

1. 31 4. 21 -

National Cabinet Lock P.O. Box 200 Mauldin, SC 29662 803-297-6655

Norton Door Controls P.O. Box 25288 Charlotte, NC 28212 704-283-2103

Sargent & Company 100 Sargent Drive New Haven, CT 06509 203-562-2151

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Scotsman Security Prod., Inc. P.O. Box 1250 Pine Grove, CA 95665 209-295-5498

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Star Key & Lock Mfg. 1274 Flushing Ave. Brooklyn, NY 11237 21-821-8300

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Weiser Lock 5555 McFadden Ave. Huntington Beach, CA 92649 714-898-0811

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# **LOCKSMITH EMBLEMS & ACCES.**

# **SHOULDER & CAP PATCHES**

3" CAP OR SHOULDER **EMBLEM** 

NO. AEG2126404 \$2.75

21/4" x 21/2"

SHOULDER SHIELD **EMBLEM** 

NO. AEG2126403 \$2.75

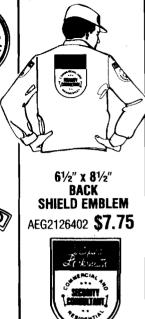


SHOULDER



41/2" x 3/4" **POCKET EMBLEM** 

NO. AEG2126405 \$1.75







### 3" x 31/4" BONDED BONDED

**EMBLEM** 

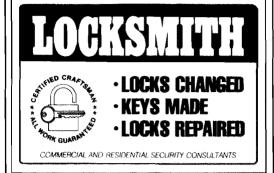
NO. AEG2126406 \$1.75

**LOCKSMITH CAPS** CERTIFIED LOCKSMITH'S CAP, Royal Blue cap with White crown. Locksmith emblem printed in deep Blue. Lettering is bright Red with Blue outline.

**TOP QUALITY** 

NO. AEG2126401 \$4.75 each

# INDOOR/OUTDOOR **SHOP SIGNS**



### (Royal Blue/White)

A real attention getter when displayed in your window or outside your shop. It is tough, white vinyl coated on the back with its own adhesive. Just peel off the backing paper and smooth the sign onto glass, metal or wood. We include a separate blank panel which you can letter with your name, address, phone number, shop hours and other information. Overall size with panel, 19" x

At This LOW Price, It REALLY pays To Advertise! Order Several NOW!

> Retail Value \$7.20 Special catalog price only NO. AEGG5004 \$3.95 each

# SECUR-A-TACH ... YOUR ANSWER TOWARDS INCREASING KEY SALES!



Here's a unique new product that makes standard metal give-a-way key rings

ditional give-a-ways, but also gives you a much faster way of ringing newly cut

It's just what the doctor ordered for keeping keys separate on a master-keyed job! But here's the kicker! All too often when you give a customer a standard give-a-way key ring with newly cut keys, he thinks it is a key ring. Since Secur-A-Tach doesn't look like a key ring and since your customer has to destroy the Secur-A-Tach to separate his keys, more often than not, he'll advise you that he'd like to purchase a key ring. The result — more key ring sales and more

NO. AEG5747559 **\$12.50** per 1,000 pieces



# COMPAR BOARD

- Find keys quickly and easily!
- · Printed with Star number headings! Holds up to 112
- different styles! Beautifully colored masonite flat display board size 24" high by 16" wide!



- The perfect key organizer!
- Complete with hooks!

Contains all comparative key blank numbers printed directly on the board next to each respective key hook.

NO. AEG5786632 **\$23.00** 

Made of flexible, nylon type plastic, Secur-A-Tach not only is stronger than tra-

profit to you!!

# **KEY CAROUSEL**

NO. AEG5786685 \$58.00



Smart compact rotary display with big 96 hook capacity. Another first from Star, to help you display better, sell

Carousel - For Auto, Padlock & Utility Lock Regular Brass Key Blanks - printed with STAR Number Headings. Comparative Numbers and Make of Lock above hooks - size 12" diameter by 18" height. With Hooks, Wt. 5 lbs.

# **KEY BLANK** INVENTORY

Here is a helping hand towards an inventory method for your key blank stock, hanging on those pegboard hooks. Just mount these bright, orange colored tags on the key hooks; in front of your deter-

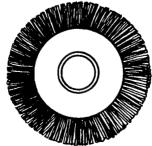
mined "order point".

An Excellent "Running Low" Reminder Packed 100 per Box.

NO. AEG5786686 **\$5.50** per box

# SOFTIE BRUSH 3" Diameter — 1/2" Hole





The HPC Softie Brush is the only key machine brush made of DUPONT TYLON-X. The carbide impregnated brush deburrs faster and smoother than wire and lasts 6 times longer than wire. Non flaring-no flying wire strands. Will fit the Foley-Belsaw Model 200 Key Machine:

NO. AEG5787427 **\$6.50** 

# MODEL 200 KEY MACHINE INSTALLATION ADJUSTMENT AND OPERATION

# **FOR**

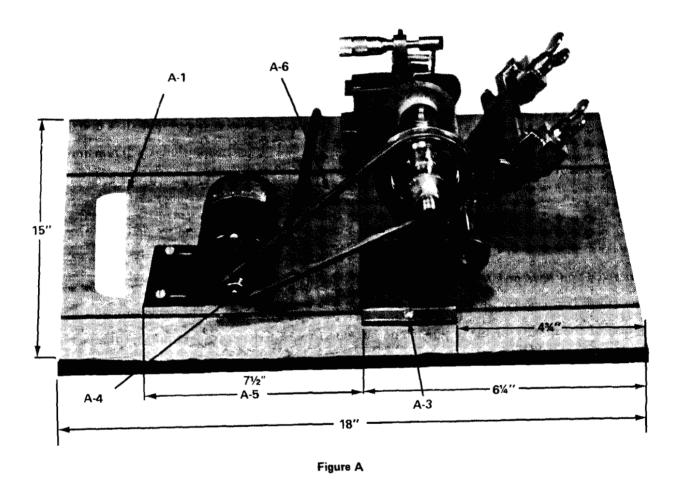
# DUPLICATING CYLINDER KEYS

The key machine is the locksmith's primary tool and one of his best sources of income. The basic function of a key machine is to duplicate keys accurately. It is a delicate piece of equipment and requires the maintenance and care of a precision machine. It should be used for the purpose it is designed for and not for general shop use. Once your key machine is set up and properly adjusted it will remain that way if you do not abuse it by misuse. A good key machine properly set up and adjusted will accurately duplicate a key to within one or two thousandths of an inch. This accuracy is necessary to properly duplicate keys that will work. A locksmith takes great pride in keeping his key machine set up for accurate duplication. Many key machines in use today do not duplicate properly because they are not adjusted or operated properly. You have no doubt heard the complaint of people who had keys duplicated in service stations, dime stores, or grocery stores, that the key did not work properly. The reason for this is not primarily because of the quality of the key machine but due to inexperienced operators and the lack of knowledge in setting the machine in proper adjustment and keeping it that way.

Your FOLEY-BELSAW Model 200 Key Machine has been designed with precision, accuracy and versatility in mind. Special features have been incorporated into the design to make it a combination key duplicating machine and a code cutting machine. These instructions will deal with the installation and operation of the machine for duplicating cylinder keys. Cutting keys by code and cutting flat steel keys will also be covered.

The location of your key machine is very important. It should be set up in a place in your shop that offers natural light if at all possible. A bench tool light should also be used. You should have enough work area to allow for a key display board to be hung on the wall beside or behind the machine for easy accessibility.

There are two ways of mounting your key machine. You can either mount it directly to your work bench or on a piece of plywood so that it can be used as a portable installation. If the machine is not attached to the bench you can easily take it out on the job with you. We recommend this method of mounting instead of directly to the bench since you will have occasions to take the machine on the job.



For ease of operation it should be mounted approximately 36" high. This height will give the average man a good view of the working parts of the machine without excessive stooping. The actual dimensions for the mounting board should be approximately 15" x 18" x 3/4"

plywood or the equivalent. Figure A shows a recommended method of making this board and mounting your key machine and motor. You can cut a hole in the board at A-1 to use as a handle to carry the machine.

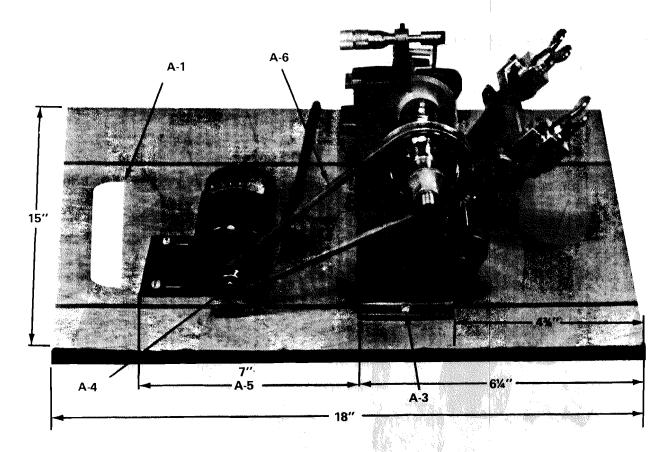


Figure A

First set the machine on the mounting board as shown in Figure A. Line up the front edge so that it is square with the mounting board. The front edge should be approximately 4¾" back from the front edge of the board as shown.

Line up the side edges of the machine so there is an equal distance on each side of the board. Use the mounting holes on the base of the machine as shown at A-3 to mark the board for the mounting screws which you will find in your parts bag. Tighten these screws down tight so the machine is solid. Next unpack the motor

and install the motor pulley. This pulley should be set on the shaft with the set screw toward the motor and flush with the end of the motor shaft as shown at A-4. Then attach the motor mount to the motor, with screws provided in the motor. Line up the motor so that the belt A-6, will run straight between the motor and machine pulley. In the diagram shown above, at position A-5, the distance from the back of the Key Machine base, to the back of the motor mount, is appoximately 7½ inches. Next mark the holes in the motor mount and using the screws you received in the parts bag, fasten the motor to the mounting board. Install the drive belt, A-6. Cut out hole A-1 for handle.

Figure B shows the major parts of your key machine. Study these carefully as we will be referring to them quite frequently.

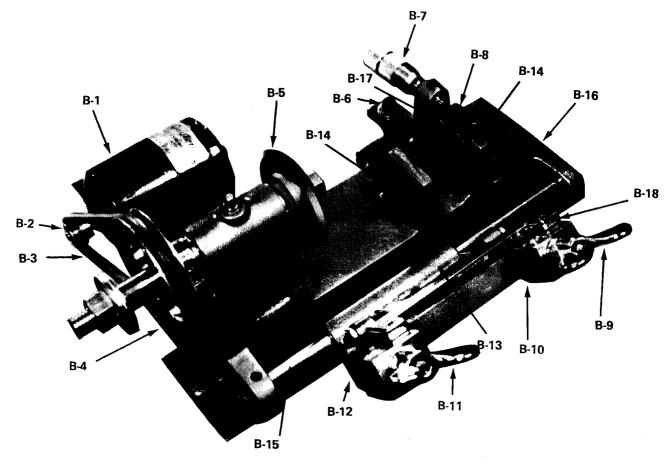


Figure B

| B-1. | Motor                                   | B-10. | Right hand key vise                |
|------|---|-------|------------------------------------|
| B-2. | Motor pulley                            | B-11. | Left hand key vise clamping handle |
| B-3. | Drive belt                              | B-12. | Left hand key vise                 |
| B-4. | Machine pulley                          | B-13. | Carriage                           |
| B-5. | Key cutter                              | B-14. | Lateral adjustment screw           |
| B-6. | Initial depth adjustment setting screws | B-15. | Carriage guide bar                 |
| B-7. | Micrometer                              | B-16. | Base casting                       |
| B-8. | Key guide                               | B-17. | Key guide spring                   |
| B-9. | Right hand key vise clamping handle     | B-18. | Shoulder gauge                     |

# **INITIAL ADJUSTMENTS**

Your machine has been set at the factory, however, a slight adjustment may be necessary. The first adjustment you should check on your machine is the lateral adjustment. The distance between the KEY CUTTER and the KEY GUIDE must be the same as the distance between the faces of the B-18 shoulder gauge. See Figure C. THE DISTANCE BETWEEN THE CUTTER AND GUIDE, AS SHOWN AT C-1, MUST BE THE SAME AS THE DISTANCE BETWEEN THE FACES OF THE SHOULDER GAUGE AS SHOWN AT C-2. There is a special set of adjustment keys in your parts bag that you will use to set up your machine. Notice these two keys are identical and each has a large "V" groove.

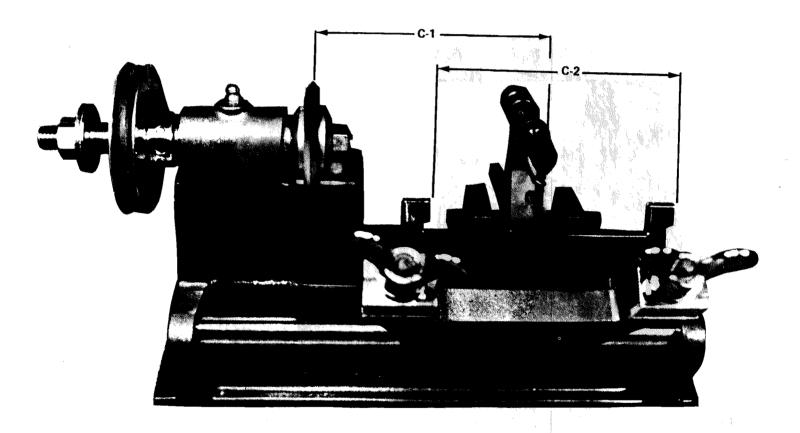


Figure C

First, raise the B-18 shoulder gauge up against the key vises. Now insert both adjustment keys in the vises and line up the front shoulder of both keys as they touch the faces of the shouldering gauge . . . . tighten both keys in the vises and lower the shouldering gauge.

Raise the carriage so the "V" in the adjustment key in the LEFT hand vise contacts the key cutter as shown at D-2, Figure D. Notice where the guide contacts the adjustment key in the RIGHT hand vise. It may be off to one side or another as shown at D-3. As this figure shows, it would be necessary to move the key vise to the RIGHT to make it line up, or move the guide to the LEFT. Since the key vise cannot be moved it will be necessary to move the guide to the left

until the point is in the bottom of the "V" of the adjustment key. To do this you loosen the lateral adjustment screw shown at point B-14. On the right side is another adjustment screw. Tighten the screw on the right and this will move the guide to the LEFT. Continue doing this until you have the point of the guide in line with the bottom of the "V". Don't worry if the guide doesn't touch the bottom of the "V" as this will be taken care of in the next adjustment.

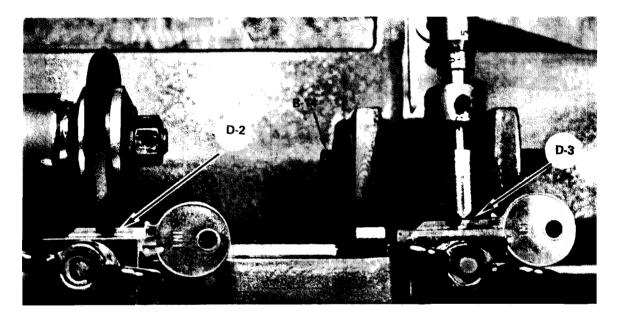


Figure D

The next step is to adjust the guide until it touches the edge of the adjustment key and at the same time the cutter must touch the edge of the adjustment key in the left hand vise. First, set the micrometer to 0 degree. See Figure E. There are two basic parts to your micrometer: the cylinder as shown at E-1, and

the barrel as shown at E-2. There is a 0 degree setting on the cylinder at E-1 and a 0 degree setting on the barrel at E-2. Turn the barrel until you line up the two 0 degree settings as shown.

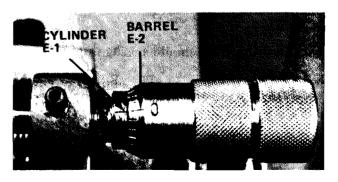


Figure E

Now, with the cutter firmly against the edge of the adjustment key, check to see where the key guide is in relationship to the adjustment key in the right hand vise. Does the guide have to go in or out? The adjustment screws shown at B-6 will allow you to move the guide either forward or backward as necessary.

There are two allen screws shown at B-6. The one at the back is the actual adjustment screw. The one in front, nearest to the guide, is the lock screw.

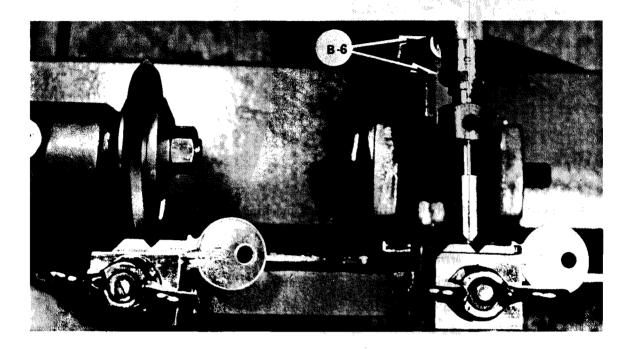


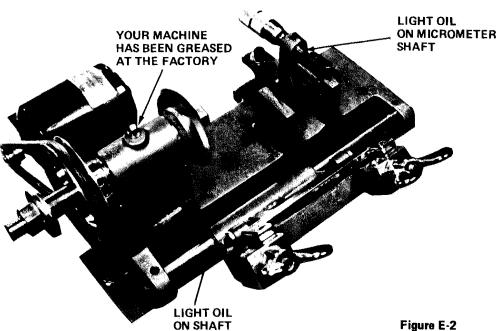
Figure E-1

To move the guide forward, turn the back screw counter clockwise and then turn the front screw clockwise to lock the tilting segment in place.

To move the guide back, you would first have to loosen the front locking screw then turn the back adjusting screw clockwise. Then lock the front lock screw.

As you make this adjustment, hold the guide against the edge of the key and turn the cutter by hand. When it just scrapes the key in the left hand vise your machine will be in proper adjustment.

# LUBRICATION AND CUTTER ROTATION



Use a light #10 motor oil for the B-15 carriage guide bar, use medium gun grease on the key machine cutter shaft. Oil the carriage guide bar as needed to insure ease of operation. Be sure to keep this guide bar and the rest of the machine clear of metal chips and shavings at all The main shaft carrying the cutter is factory lubricated and needs only a small amount of gun grease once a year. The motor does not require ANY lubrication.

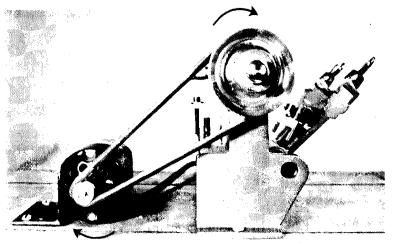
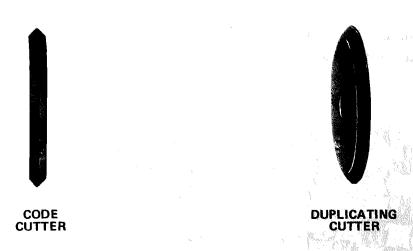


Figure F

The cutter rotation is very important. The file type cutter was installed on your machine at the factory and the teeth should be pointing DOWN. All cutters have teeth pointing in the same direction. ALWAYS install the cutters as shown in Figure F with the teeth pointing DOWN. Installation of a cutter with the teeth pointing UP would make the cutter work in the wrong direction and damage it. The rotation of your motor is so that the cutter revolves in the direction of Figure F. This throws the chips and shavings down and away from your face.



There are three types of cutters used on your machine. The "V" type file cutter was installed at the factory. This cutter is for cylinder keys only. This "V" type file cutter can be used for both duplicating and cutting keys by code. The other file cutter in the parts bag is the one you will be using most of the time. It is primarily for duplicating cylinder keys. Steel keys should NOT be cut with these cutters. The third cutter in the parts bag is used for cutting steel keys.



STEEL

Since most of your cutting on the key machine will be duplicating keys, we'll change over to the duplicating cutter. You will be using the "V" type cutter more for code work, however, it can be used for duplicating cylinder keys.

In your parts bag you will find a file type duplicating cutter and matching guide. Notice that these guides are made with the same angle as the cutter.



First, remove the nut and the outside collar on the cutter shaft. Turn the nut counter-clockwise to remove. Then, install the duplicating cutter as shown at G-1. Be sure the flat side of the cutter is to your right as you face the machine.

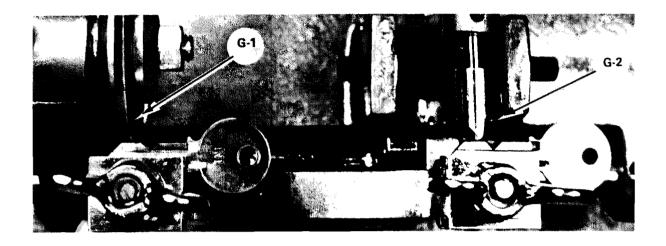
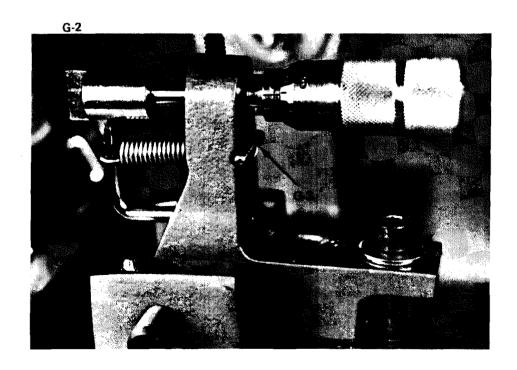


Figure G

Next, change the guide. See Figure G. Pull out the pin shown at G-3 and it will release the spring. Pull the guide G-2 straight forward and remove the spring. In the parts bag there is another guide for duplicating. Slip the spring on this guide and install it the same as the other guide. Put the pin back in to hold the spring.



Your starting point for duplicating keys should always be at the shoulder. You should work toward the tip of the key. Line up the shoulder of the key with the edge of the guide as shown at H-2. Then, line up the shoulder of the blank with the edge of the cutter as shown at H-1.

Now, push the carriage toward the cutter and with a forward pressure, move the carriage to the right, SLOWLY. Watch the key and the guide to see that the guide follows the cuts in the key. DO NOT WATCH THE KEY THAT IS BEING CUT. On some keys, it may be necessary to make more than one pass across it if there is a series of very deep cuts. After the key is cut from the bow to the tip, recut it again from the tip, to the bow. Now, take out the key you have just cut and scrape off all the burrs. Match it with the original the same as you did in an earlier lesson on matching keys.

Placing the key and blank in the vise clamps properly as well as using an even amount of pressure when cutting is very important. As long as the starting point of your cutter (H-1) is the same as the starting point of the guide (H-2), your key should be cut correctly.

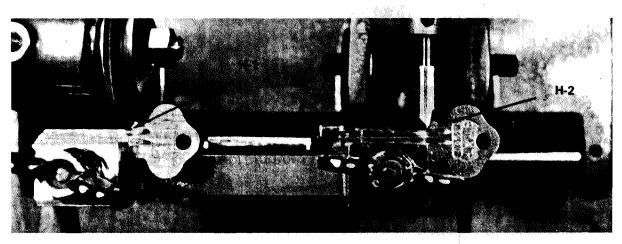


Figure H

If the key doesn't work, check to make sure the cuts are not too deep or too shallow. If this is the case, you need to make an adjustment at the micrometer. Remember, these cutters may have high spots on them and you will have to adjust the depth on these high spots. This you can determine by turning the cutter by hand until it just scrapes the adjustment key.

If your depth adjustment is correct and you checked the spacing and found it okay, then you could be using an uneven amount of pressure when forcing the key into the cutter. You will learn to use an even and proper amount of pressure with practice on the machine.

After reading the complete instruction manual, you should test your key machine for proper adjustment. The best way to do this is to make a key. We suggest that you duplicate a key for your car or house, or maybe for a padlock you have available. This way, you can check your finished product in the lock, to see that it works properly.

Now, we will cover the duplication of flat keys and how to change over from cylinder key making to flat key making.

When changing from one cutter to another, it is always necessary to recheck the depth adjustment since these cutters vary a little in diameter. There are very few cutters that will be the same in diameter down to two or three thousandths of an inch. We can compensate for this difference in diameter by using the micrometer instead of going to the trouble of resetting the depth adjustment. If the new slotting cutter for steel keys that you are going to install is larger, you turn the micrometer to move the guide farther out, or toward you. If the cutter is smaller, you turn the micrometer to move the guide in, or away from you.

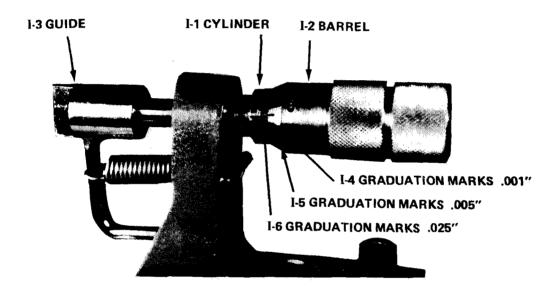


Figure I

First, let's study the construction of the micrometer again and how it works. Figure I shows how to read the micrometer. I-1 is the cylinder, I-2 is the barrel and I-3 is the guide. The small graduation marks shown at I-4 on the barrel represent one thousandth of an inch (read .001). Each time the barrel is turned from one of these marks to the next, it moves the I-3 guide back or forward one thousandth of an inch (.001").

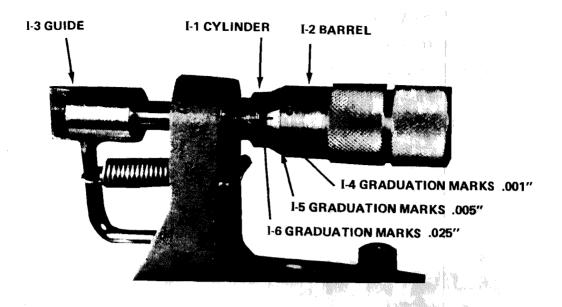


Figure I

There are 25 of these graduation marks around the barrel which would equal twenty-five thousandths of an inch (.025"). If you turn the barrel one complete circle, you would move the I-3 guide .025". The second graduation marks on the barrel are shown at I-5. These are longer marks and represent five thousandths of an inch (.005"). By turning the barrel from one mark to another such as from 0 degree to 5 would move the guide .005". All you have to remember for the barrel graduation marks is that the short ones represent .001" and the long ones represent .005" and one complete circle represents .025". To make these decimals clear in your mind, the following shows the decimal equivalent of the inch and how to read it:

| .001"  |   |   | • |   |   |   |   | ٠ |   |   | One thousandths of an inch               |
|--------|---|---|---|---|---|---|---|---|---|---|--|
| .005"  |   |   | • |   | • |   | ٠ |   | ٠ |   | Five thousandths                         |
| .025'' |   |   |   | • | • |   |   |   |   | • | Twenty-five thousandths                  |
| .050"  | • |   |   |   |   | ٠ | ٠ |   |   |   | Fifty thousandths                        |
| .075"  |   |   |   |   |   |   | ٠ | ٠ |   | ٠ | Seventy-five thousandths                 |
| .100"  |   |   |   |   |   |   |   |   |   |   | One hundred thousandths                  |
| .125"  |   |   |   |   |   |   |   |   |   | • | One hundred and twenty-five thousandths  |
| .150'' |   | ٠ |   |   |   |   |   |   |   |   | One hundred and fifty thousandths        |
| .175"  |   |   |   |   |   |   |   |   |   |   | One hundred and seventy-five thousandths |
| .200′′ |   |   |   |   |   |   |   |   |   |   | Two hundred thousandths                  |

Each graduation mark on the CYLINDER as shown at I-6 represents twenty-five thousandths of an inch (.025"). Now, with your micrometer setting on 0, turn it with your right hand to your RIGHT, one full turn. This represents .025" on the barrel markings and notice that the barrel lines up with the second mark on the cylinder. Turn it one more full turn and it is .050". If you turn the barrel five more points to the right, the reading would be .055". Now turn the micrometer back to 0 and we will reset the machine to cut flat steel keys.

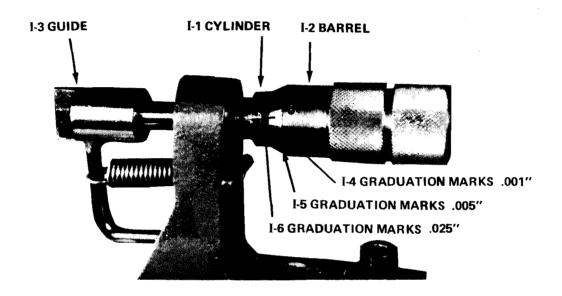


Figure I

It will be necessary to use a special guide to cut the steel keys since they have narrow slots and the guide used for cylinder keys cannot be used. The guide must always have the same shape as the cutter.

First, we'll remove the file cutter by first

removing the nut and outside collar. Install the slotting cutter for the steel keys on the arbor. This cutter is packed in the parts bag. Be sure the teeth are pointing DOWN or toward you. Install the collar and tighten the nut.

Next, change the guide. See Figure J. Pull out the pin shown at J-1 and it will release the spring. Pull the guide J-2 straight forward and remove the spring. In the parts bag there is another guide for the steel keys. Slip the spring on this guide and install it the same as the other guide. Put the pin back in to hold the spring.

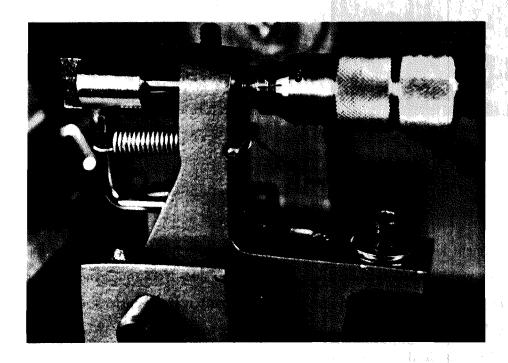


Figure J



Figure K

Clamp the two adjustment keys in the vises and raise the carriage to touch the cutter. See Figure K. Point K-1 shows the cutter touching the adjustment key. If the cutter does NOT touch the key, turn the micrometer to the RIGHT SLOWLY until the key just touches the cutter. If the cutter touches the key and the right hand key does NOT touch the guide, turn the micrometer to the LEFT SLOWLY until both touch as shown in Figure K. Now rotate the cutter slowly by hand. If it scrapes the key hard, turn the micrometer forward slowly until it just scrapes the key. Next, read the micrometer to see what setting it is. It may be almost the same as the other cutter or it may be several thousandths low or high. Remember, each small mark on the barrel represents one thousandths of an inch.

Record this reading. It may be 5 or 10 thousandths, either low or high. In the future, anytime you change from the file cutter to the slotting cutter, all you have to do is to change the micrometer setting to the reading you recorded and you are ready to duplicate flat steel keys.

The spacing will not be the same when using the slotting cutter since it is narrower, but we will not have to change the lateral adjustment. Steel Keys Can Be Gauged Or Measured From The Tip Instead Of From The Shoulder.

Figure L shows how to set up for cutting steel keys. First, clamp the key, L-1, in the right hand vise and then line up the tip of the key with the guide as shown at L-2. The blank L-3 goes in the left hand vise. Line up the tip with the edge of the cutter as shown at L-4. Tighten the clamp. Check to be sure that the key is touching the guide at L-2 and the blank is touching the

cutter at L-4. Now, duplicate the cuts in the key. Make the cuts straight in. DO NOT put side pressure on this cutter. If the slot must be wider than the cutter, make two cuts. Make the first cut straight in all the way to the bottom. After you have all the cuts made, turn the key over and make any cuts necessary on the other side.

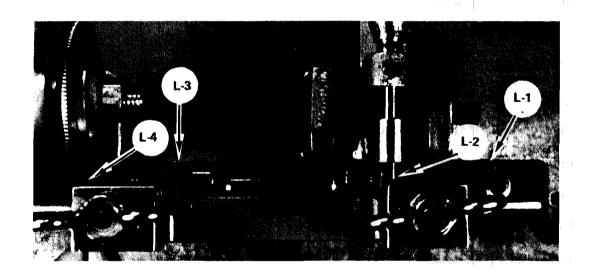


Figure L



Figure M

# SPECIAL HOLDING DEVICES

Occasionally you will run into a key that has grooves made in such a manner that it will be difficult to clamp in the vise. When this occurs, it will be necessary to improvise a small shim in order to clamp the key up solid and square. Figure M shows a blank with very little on the bottom side. If this blank were clamped in a vise, it would have a tendency to tilt down as shown in Figure M. By the addition of a small shim, shown in Figure N, at point N-1, this blank could be clamped in the vise straight and square. These shims are usually made out of small pieces of scrap metal or wire. Figure O shows another type of blank that may cause trouble in clamping. The rib shown at O-1 causes it to tilt either up or down. O-2 shows a small piece of wire inserted between the key and the vise to hold it square.

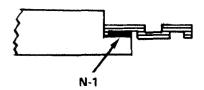


Figure N

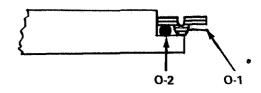


Figure O

# CUTTING A KEY BY CODE

To cut a key by code, it is necessary to change to your "V" type cutter and guide. Set the micrometer on 0-0 degree.

You first have to determine the correct code or cuts on the key to cut a key by code. This information is published in code books and is sold by locksmith suppliers.

It is also necessary to have a spacer key, also referred to as a guide key. This type of key will have shallow cuts, all the same depth, and allows you to determine the correct spacing of the cuts. Spacer keys are also available through locksmith suppliers, or you can make your own from the empty lock plug. This is done by putting a key blank in the empty plug, and making a mark on the key through the empty pin chamber. To make this mark, use a sharp pointed tool such as an awl or ice pick. After making these marks, you then cut the key at each mark, making all cuts the same depth, approximately .025" deep.

Code books furnish you with the information on the depth and spacing of each cut. The depth given in code books is measured from the root of the key to the bottom of the cut. In order to use these codes with your Belsaw Key Machine, it will be necessary to subtract this distance from the width of an uncut blank, which will give you the setting for your micrometer.

Example . . . If you wish to cut a key by code for an automobile, you would refer to your code book to find the correct cuts and to the depth chart for the depth of each cut. If the blank you are using is .250" wide and you want to make a cut with a depth of .175", you would subtract .175" from .250", which gives you .075". You would then back off your micrometer to .075" and make the cut.

After making this cut, you can check it by measuring from the bottom of the cut to the back of the key. It should be .175".

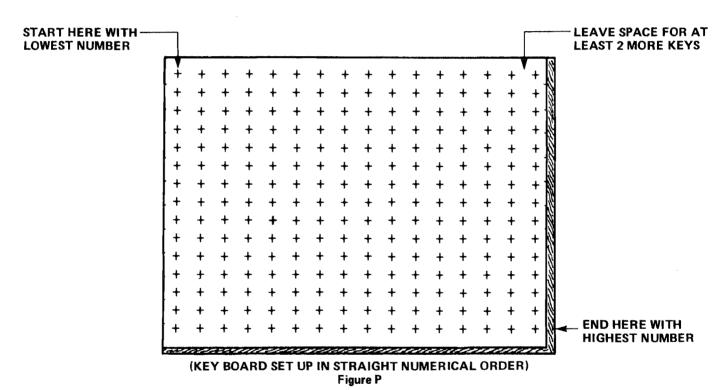
In your course you will have practice lessons and supplies to cut keys by code with the machine.

Page 19

# HOW TO SET UP YOUR KEY BOARD

Many locksmith supply companies, some of which will be listed in this book, sell a complete keyboard assortment in addition to locksmith supplies. These assortments are fine for the beginner if he is operating in the proper locality. They consist of a wide selection of blanks, however, many of them may be dead stock in your particular locality. In many areas, particularly suburban communities, you will find one or two types of locks particularly popular. For example, in one community you may find the Schlage or Wiser lock to be very popular for home door locks, and very few Russwin or Corbin locks and you would want to carry a larger supply of Schlage and Wiser blanks. You will have to feel out your own locality to see what kinds are the most popular.

One type you will find common, in almost any community, is the automotive key. They run almost consistent throughout the entire country. You should maintain a complete stock of these blanks with the exception of some of the earlier and discontinued models.

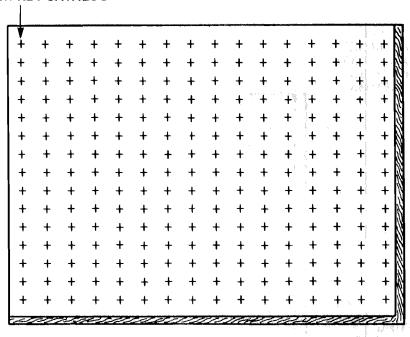


There are three basic methods you can use to set up a key board. Locksmiths have varied opinions of the best method. You can choose the one best suited to your particular needs. You can set the entire board up numerically as shown in Figure P. In setting it up numerically, you would insert key hangers, screws or nails in a piece of plywood approximately 1/2" thick at even spacings across and up and down. When installing these key hangers, which are available from most locksmith supply houses, you should leave

space for several keys between them so you can add new ones at some later date. To start your numbering system, begin at the top left hand corner with the lowest number and work across to the right. You would end up with the largest number in the lower right hand corner. The size of your key board will depend on the amount of keys you intend to stock. Generally a board 3 feet by 4 feet is adequate. Many locksmiths prefer this method.

The second method of setting up a key board is by the make of the lock, with no regard to the numbers. See Figure Q. The locks are grouped alphabetically, starting in the top left hand corner and progress through the board the same as the numerical system. Your key catalog lists the blanks by lock make.

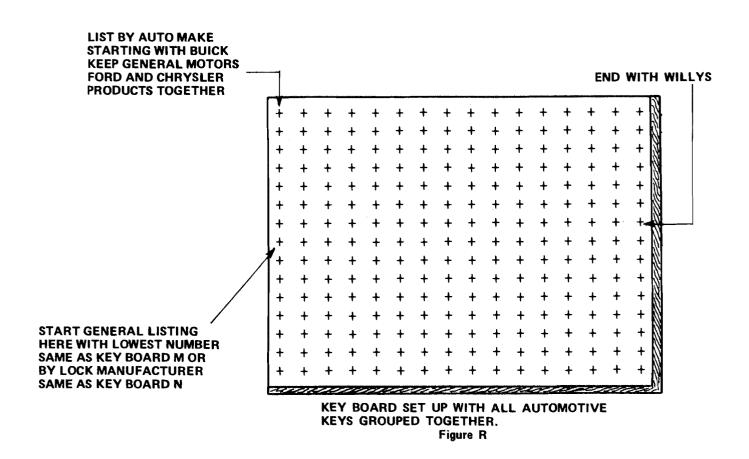
# START HERE WITH ACE AND FOLLOW THROUGH SAME ORDER AS YOUR KEY CATALOG



(KEY BOARD SET UP BY LOCK MANUFACTURER)
Figure Q

W. W. 2007

The third method is a combination of these two. See Figure R. The entire board is set up with either of the two systems and automotive blanks are kept separate and grouped by make of car. A large percentage of the keys you will duplicate will be automotive and a board set up this way will make it easier and faster to pick out the proper key blank.



The following list of locksmith suppliers will be glad to fill your requirements for key blanks and other locksmith supplies. Some of them have their own catalog and will send you one with the first order. Some of them charge for the catalog and refund the price on your first order. Most suppliers have a minimum order. When writing to these companies for the first time it would be well to mention that you are studying locksmithing with the FOLEY-BELSAW INSTITUTE.

We have a catalog of locksmith supplies and key blanks which you should have received. If you have not received your copy, please let us know.

# IL COUNTES ON KEY BOARDS ● KEY BLANK ASSORTMENTS

Assortments shown on this page are ideal for your special cutting requirements. Each assortment consists of an attractive steel keyboard and the 15 blanks.

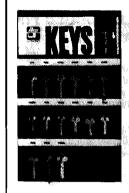


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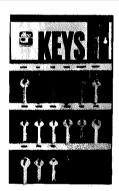
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Ilco Lock Company has prepared an assortment of the most popular motorcycle key blanks. As you know, motorcycles are becoming more and more popular, and we have grouped together an assortment of blanks that are the most popular across the country! Now you will be able to get into the lucrative business of duplicating motorcycle key blanks with a very low initial investment. Up until now, it has been hard to find motorcycle keys, and when they are found, they were nade of steel, which ruins your cutters quickly. This new assortment offers a quality brass, nickel plated

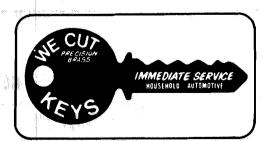
motorcycle key.
The assortment covers Honda, Kawasaki, Yamaha and Suzuki. You will receive 10 each of 15 popular motorcycle blanks, a display board complete with tags and hooks, and a cross reference key blank catalog. Many locksmith shops are charging \$2.50 or more to duplicate a motorcycle key. With an average charge of \$2.50, your profit on this assortment is a whopping \$309.50. Your cost on this assortment complete with board, hooks, tags and catalog is only \$65.50.

Order your motorcycle assortment today, and be the first in your area to cash in on this very profitable market.

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|  | AT UNDER THE  | PLAN CHECKED BELOW:  | subject to change<br>without notice.  | ILCO KEY BLANK TOTAL   |  |  |
| SIGNATURE X<br>PLEASE INDICATE `                                   | YOUR PRESENT ACCOU  | NT NO.   |   | SUBTOTAL   |  |  |
| ☐ 1. FULL PAYMENT☐ 2. C.O.D. PLAN - S                              | WITH ORDER - Send checkend 10% deposit with your o  | or money order for total price. rder of the TOTAL AMOUNT OF ORDER. Pa  | ay balance due  | MO Res. Add 6.225% S   | alac Tay MN Dae  |  |
| on receipt of order<br>*□3.30-DAY BILLING<br>submit credit appli   | plus C.O.D. fee which must<br>PLAN - Balance due within 3<br>cation with order.   | be paid by cash, money order or certified c<br>0 days of invoice date. If opening a new net 30   | heck.<br>O-Day Account  | Metro Mpls. Add 6.5%<br>Non-Metro Mpls. Add 6  | Sales Tax  | and the same of th |
| is n <b>ot</b> m <b>ade, a</b> mini<br>a financ <b>e</b> charge de | mum payment of \$15 or 1/1  | n payment due with 30 days of Invoice date.<br>O of the unpaid balance (whichever is greate<br>sidence. No minimum order required - add<br>on with your initial order.   | er) is due plus   | POSTAGE and HANDLIN<br>(Do not include if priced Fre   |  |  |
| *If you have not ordered or  | oredit basis within past 12 mon<br>on our file before we can proces   | ths, please till in credit application and include with (  | order, Complete   | Guaranteed Delivery (Option<br>immediate replacement of d<br>lost Parcel Post and UPS sh   | amaged or  | .75  |
| PLEASE CHARGE TO:  Discover  VISA                                  | Card 🖸 MasterCard<br>🗀 Foley-Belsaw R   | AMOUNT TO BE CHARGED \$<br>evolving Charge   |   | SPECIAL \$6.00 SERVICE CH<br>(Only for orders under \$25.0<br>TOTAL  |  |  |
| ACCOUNT<br>NUMBER  |   |  |   | TOTAL ENCLOSED   | (ACC)  | - the state of the |
| MY CARD EXPIRES  |   | If MasterCard, please fill in small numbers at left above name.  |   | SHIPPING CHARGE  | S FOR POSTAGE & um order \$25.00.  |  |
| (Sign here if this is a C  | harge purchase)   | DATE   | 9   | Orders Up to \$25.00\$<br>\$40.01 to \$55.00\$<br>\$1 <b>00.01</b> to \$150.00\$   | 4.25 \$55.01 to \$1  | 00.00 \$5.00   |

SIGNATURE X
If your card limit, at this time, is not sufficient to cover the amount, simply askyour Credit Card Bank to increase your credit limit. Subject to acceptance by the Cardholders Charge Card issuing Bank.

Service Charge for orders under \$25.00 add \$6.00 to Total, after all other charges.

# **STAR KEY BLANKS**

NOTE: MINIMUM ORDER PER NUMBER IS 10 EACH AND MULTIPLES OF 10.

| PRII<br>GR <b>O</b> |  | Bag of<br>10                    | 50 j<br>num  | · I   | 100 per<br>number                      |              |   |                |                  |   | PRICE Bag of GROUP 10   |                               | 50 per<br>number  |   | 100 per<br>number |   | 1000 per<br>number            |  |
|---------------------|--|---------------------------------|--------------|---|--|--------------|---|----------------|------------------|---|---|-------------------------------|---|---|-------------------|---|-------------------------------|--|
| A<br>B<br>C         |  | \$ 1.70<br>2.20<br>3.50<br>2.00 | 13.          | 00  | \$ 13.00<br>17.00<br>26.00<br>15.00    |              | \$ 120.00<br>160.00<br>250.00<br>144.00   |                | E<br>F<br>G<br>H |   | 3.00<br>1.30<br>1.20<br>2.40                                      | \$ 12.5<br>6.0<br>5.5<br>10.0 | 00<br>50  | \$ 24.00<br>11.00<br>10.00<br>19.00                               |                   | \$ 230.00<br>100.00<br>90.00<br>180.00  |                               |  |
| No.<br>Order        | Star<br>Number   | Price<br>Group                  | No.<br>Order | Star<br>Number  | Price<br>Group                         | No.<br>Order | Star<br>Number  | Price<br>Group | No.<br>Order     | Star<br>Number  | Price<br>Group  | No.<br>Order                  | Star<br>Number  | Price<br>Group  | No.<br>Order      | Star<br>Number  | Price<br>Group                |  |
|                     | AD1<br>6AL1<br>6AL1<br>5AR2<br>6AR3<br>5AU12<br>6BE2W<br>5BN11<br>5BN11<br>5BN11<br>5BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR11DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0BR1DS<br>0 | F<br>F<br>F<br>A<br>F           |              | 7C05 5C06 6C07 5C08 6C07 5C08 5C010 5C011 7C011 7C011 7C011 5C012 7C013 6C014 6C016 6C017 6C016 | BAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA |              | OFD5 HFD6 OFD6 OFD7 HFD8 HFD9 HFD10 OFD10 HFD11 HFD12 SFT1 FT3 SHD1 HN2-3 HN6 HN6 SHU1 SHU1 HN2-3 HN6 SHU1 SHU1 SHU1 SHU1 SHU1 SHU1 SHU1 SHU1 | F              |                  | 5NW1 5NW1 7NW1 6NW2 5PE1 5PE2 6NW1 6NW2 5PE2 6NW1 6NW2 5PE2 6NW2 5PE2 6NW2 5PE2 6NW2 5PE2 6NW2 6NW2 5PE2 6NW2 6NW2 6NW2 6NW2 6NW2 6NW2 6NW2 6NW | ABCBAAAAAAAAAAFFAFAAAAAAAAAAAAAADDDAFFFEABDDEAFDEDDEBBCAAABCAAABA |                               | 58A7<br>58A8<br>58A8<br>58A10<br>58E1M<br>58E1M<br>58E2<br>58E1M<br>58E1M<br>58E1S<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M<br>58E1M | ABBBGAFABABBGFAFFDFFFFFBBACADAAFAFADDDDDAAAAADDDDDAAFAFAAAAGAFFAA |                   | HYA4 HYA5 4YA6 5YA6 6YA6 6YA7 6YA8 6YA9 YA10 5YA11 6YA12 5YA13 6YA14 4YA15 YJ1 LYJ1 SYJ1 SYJ1 SYJ1 SME1 6ME1 5ME2 6ME2 WADDITIO Star Number HBR15C GM Ign. w/o Vats "C" 1988-on 1988-on 1988-on HPL89 Chry. Ign Double side 1989-on | Price<br>Group<br>F<br>n<br>D |  |
| Onci                | ın   | <u> </u>                        |              | D   | ^                                      |              |   | AR TO          |                  | ,   |   | ^                             |   | 11  |                   | TOTAL   |                               |  |
| GROU                |  | A                               |              | В   | C                                      |              | D   | I              |                  | F   |   | G                             |   | Н   |                   | TOTAL   |                               |  |
| QUAN                |  |                                 |              | ·   |  |              |   |                |                  | - <del>Springers geregept</del> ymise   |   |                               | <u></u>   | · · · · ·   |                   | ORDER   |                               |  |
| FAIC                | <b>L</b>   |                                 |              |   |  | Enter he     | ere and o   | n order        | form o           | pposite :   | side.   |                               |   |   |                   |   |                               |  |