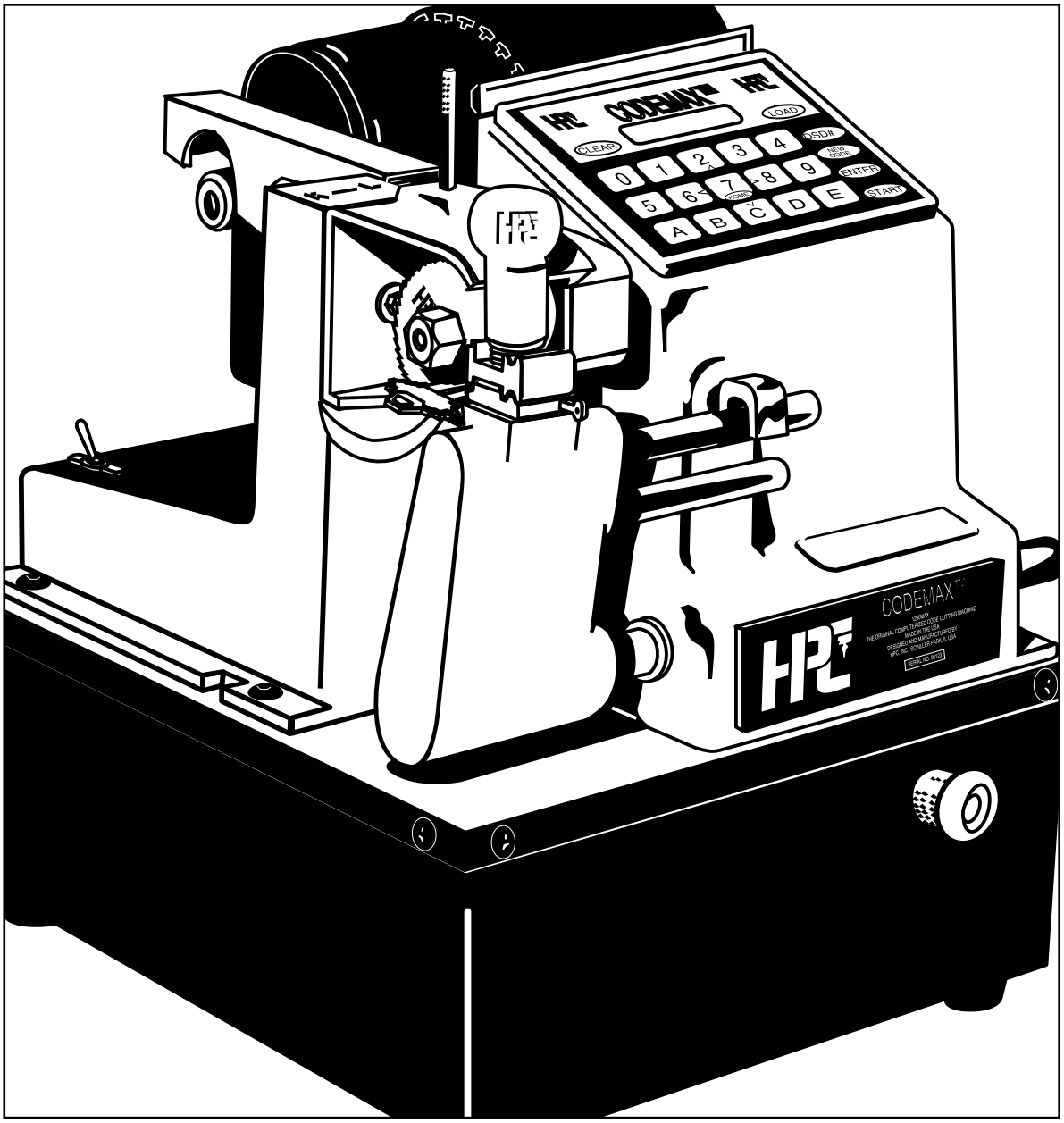
CODEMAX®

1200MAX

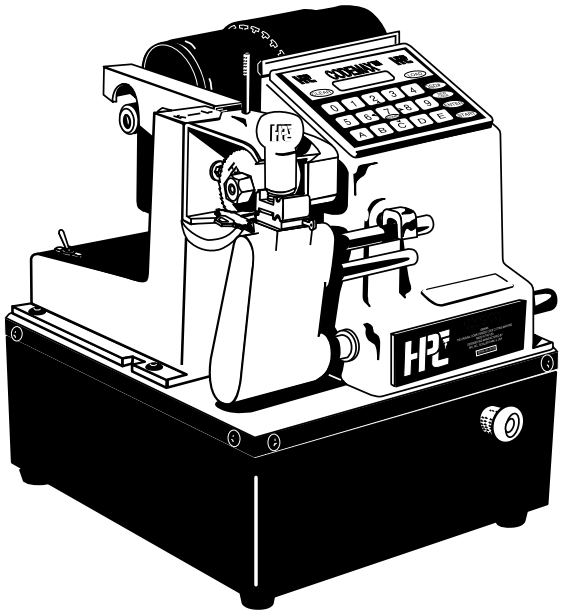
COMPUTERIZED CODE CUTTING MACHINE



Schiller Park, IL • 60176 • USA

The CodeMax®

Computerized Code Key Machine



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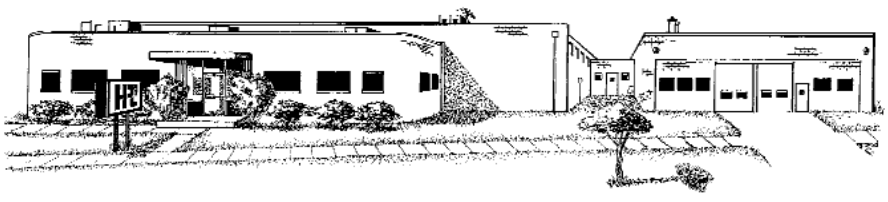


Index

1. About The CodeMax®

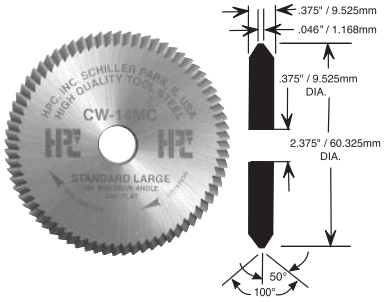
The development of the CodeMax® and its present and future capabilities has been an ongoing challenge for HPC, Inc.

Thousands of man-hours have been spent in the research and development of the CodeMax® over the past years. The CodeMax® has been designed to bring capabilities to professional security personnel that have not been seen within the industry to date.

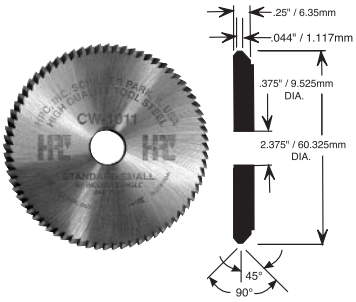
Along with the development of the CodeMax® as a stand-alone code key machine, there have been additional man-hours spent in the development of software programs that will work in conjunction with the CodeMax® to produce an automated key cutting environment. HPC has developed software for code referencing (CodeSource™), master keying applications (MasterKing®), and key control systems (KeyTrail®).

This manual explains the operation and usage of the CodeMax®.

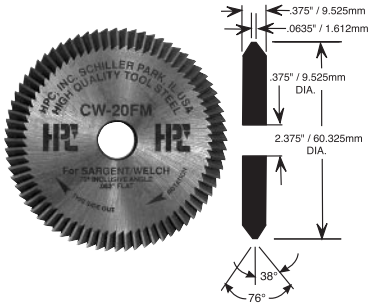
1.1 Product Packaging Checklist



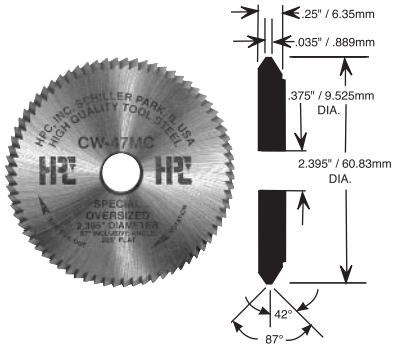
HPC Cutter Wheel (installed)
(CW-14MC)



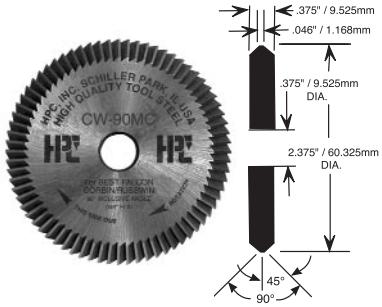
HPC Cutter Wheel
(CW-1011)



HPC Cutter Wheel
(CW-20FM)

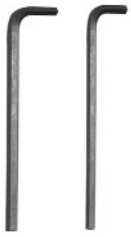


HPC Cutter Wheel
(CW-47MC)



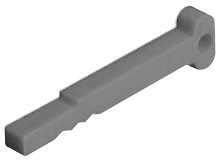
HPC Cutter Wheel
(CW-90MC)

Cutter Wrench
(WRENCH-3)



Allen Wrenches
(WRENCH-2, WRENCH-4)

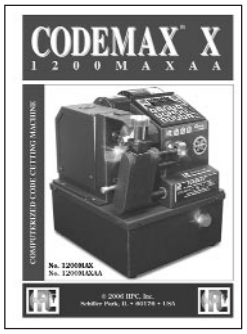
Cutter/Adjustment Wrench
(WRENCH-1)



Red Tip Gauge
(CM-1054MA)

Horseshoe Tip Gauge
(CM-1054R)

DSD List
CodeMax® Update
Restore CD
(MAX-CD)

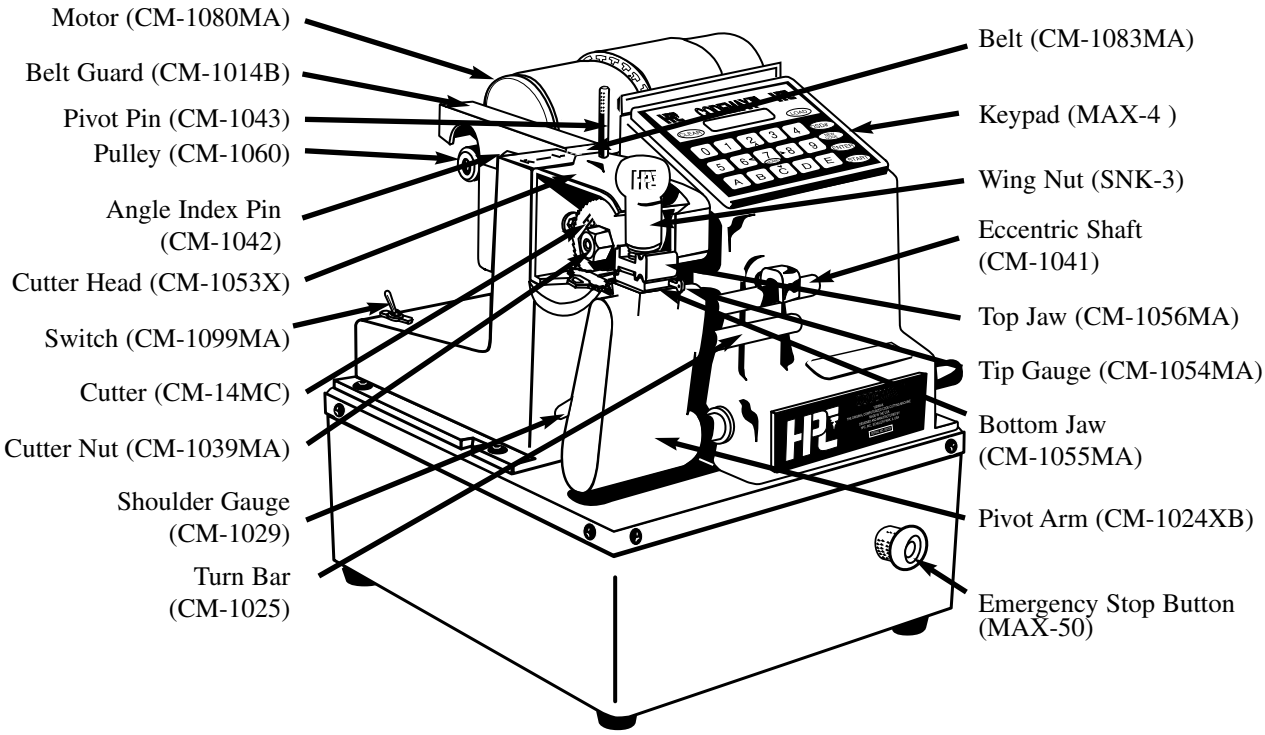


CodeMax® X Manual
(1200MAX-MAN)

Your CodeMax® computerized code machine also has the following additional items (see illustrations on previous page):

Qty	*Stock No.*	*Description*
1	CW-14MC	HPC Cutter Wheel (Installed on Machine)
1	CW-1011	HPC Cutter Wheel
1	CW-20FM	HPC Cutter Wheel
1	CW-47MC	HPC Cutter Wheel
1	CW-90MC	HPC Cutter Wheel
1	WRENCH-1	Cutter/Adjustment Wrench
1	WRENCH-3	Cutter Wrench
1	WRENCH-2	Allen Wrench
1	WRENCH-4	Allen Wrench
1	CM-1054R	Black Horseshoe Tip Gauge
1	CM-1054MA	Red Tip Gauge
1	HDSB	HPC Depth and Spacing Book
1	—	Codemax Manual
1	—	Warranty Registration Card

1.2 Parts Designation



1.3 Preparing To Use The CodeMax® Computerized Key Machine

Before using the CodeMax® key machine, read this manual in order to gain a thorough understanding of all of its capabilities. You will receive peak performance and efficiency from your machine by fully comprehending all of its functions.

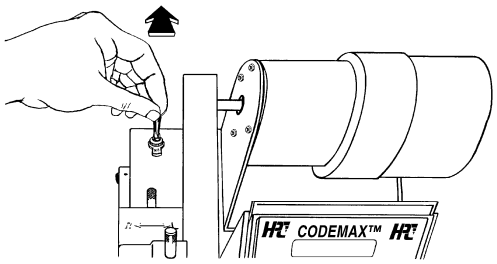
Make sure that the power outlet that the CodeMax® will attach to is properly wired, i.e., grounded with correct hot and neutral leads. If the outlet is not wired properly or power from the available outlet is not regular (i.e., you experience frequent power brownouts), the CodeMax® may malfunction. While the CodeMax® contains an internal surge protector, it is recommended that you use a surge/brownout protector when operating the CodeMax®.

CodeMax Power Specifications:

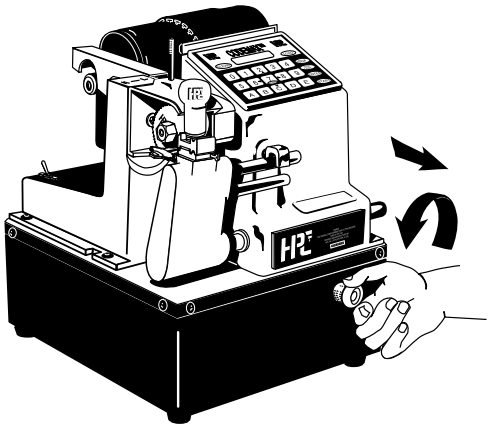
USA:	120 VAC
Europe:	240 VAC

1.4 Basic CodeMax® Setup

Find a suitable location for the CodeMax® machine. This should be an area with good ventilation for the cutter motor and easy access to the front and top of the machine for use and cleaning.



Plug the cord into the back of the CodeMax® and then into the appropriate electrical outlet. Turn on the CodeMax® using the toggle switch located at the top, left rear of the CodeMax®.



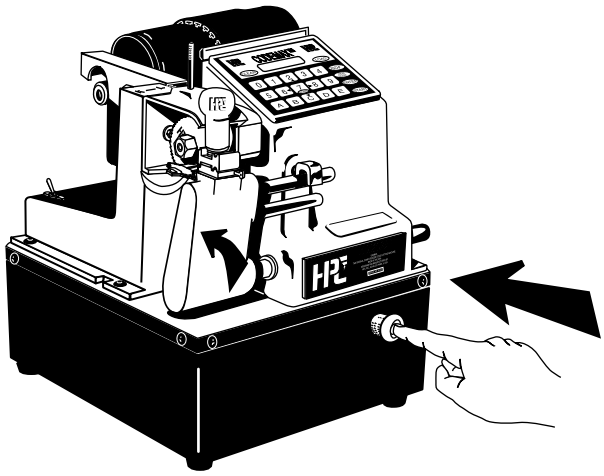
The display will read “Emergency Stop Depressed”. Make sure there is nothing interfering with the pivot arm, cutter wheel, and motor. Turn the large, red, emergency button located at the front of the CodeMax® counterclockwise, approximately one eighth of a turn, until it “pops” out.

CODEMAX®

CodeMax Ready
HPCSoft Version 6.20

The CodeMax® will go through a brief test routine to prepare itself for use. The CodeMax® display will read “CodeMax Ready”, indicating that the machine is in its main screen and ready for use.

1.5 The Emergency Button



The CodeMax® has an emergency button installed.

Pushing the emergency button at any time will immediately freeze the operation in which the machine is engaged. For example, if you started the cutting process and realized you accidentally left the shoulder gauge up, or had the wrong cutter or key blank installed, pushing the emergency button would instantly turn off the cutter motor and stop the pivot arm from travelling.

To reset the CodeMax®, after the machine freezes, turn the emergency button counterclockwise, approximately one eighth of a turn, until it "pops" out, and the machine will return to its Home Position. Make the necessary adjustments (e.g. put the shoulder gauge down, or install the correct cutter or keyblank) and start the key cutting process again.

> **Note: When the emergency button is pushed, the CodeMax ® will clear the bittings entered, if the bittings were entered directly on the CodeMax® keypad.*

If you have any questions, please call the HPC Service Dept. 1-800-323-3295.

This concludes the "About The CodeMax®" section.

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2. Cutter Wheels

2.1 Cutter Wheel Descriptions

The model 1200MAX is supplied with five standard cutter wheels. The CW-1011 cutter is used for cabinet, padlock, and most vehicle applications. The CW-14MC cutter is used for cutting most standard cylinder keys. The CW-90MC is similar to the CW-14MC but makes cuts with a steeper slope for special applications. The CW-20FM cutter is a 76 degree cutter used for Sargent applications. The CW-47MC is a 47 degree cutter used for certain automotive applications.

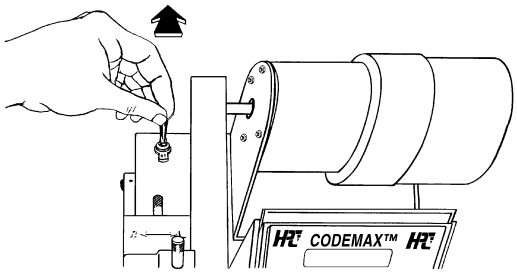
Flat steel cutters, the Medeco cutter (CW-1012), the Emhart cutter (CW-1013), and the ASSA Cutter (CW-32MC) are all optional cutter wheels that are available for use with the 1200MAX. Additionally, the Medeco Commercial Jaw (MJ-1) is an optional jaw for cutting the Medeco Standard Commercial Keyway (Air). The Key Mark Jaw™ is available from Medeco.

Registering your CodeMax® with HPC will enable us to inform you of new features and capabilities as they become available.

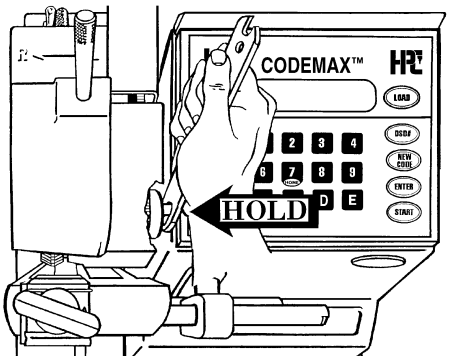
2.2 Replacing Cutter Wheels

The following procedure is recommended when changing cutters:

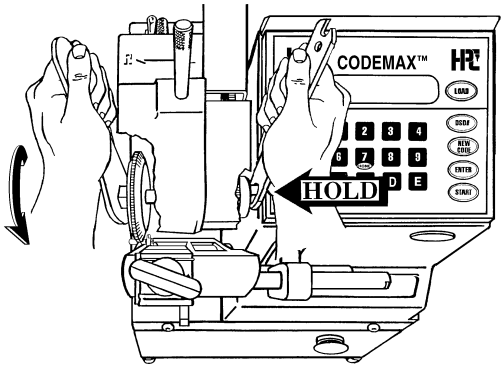
IMPORTANT NOTE: Be sure the cutter is installed for a clockwise rotation, with the arrow facing the outside, so it can be seen.



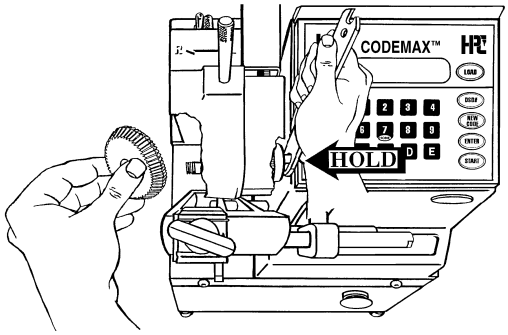
1) Turn the CodeMax® off.



2) Hold the cutter shaft with the 1/2 inch end of Wrench-1.

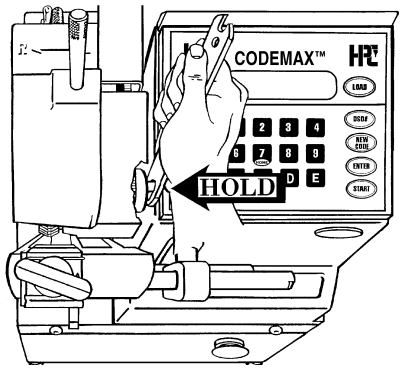


3) Loosen the cutter shaft nut with the 3/4 inch Wrench-3 by turning it clockwise (left hand thread). The cutter shaft is threaded with reverse, left hand thread.

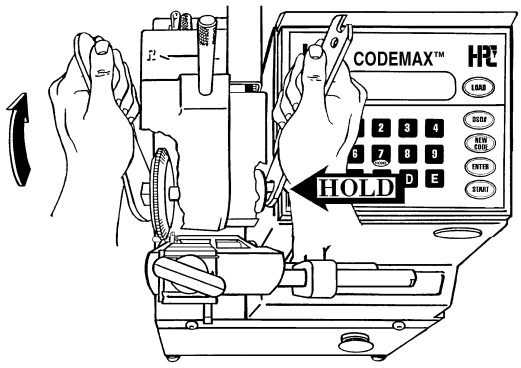


4) Remove the cutter. Slide the replacement cutter onto the shaft.

IMPORTANT NOTE: Be sure the cutter is installed for a clockwise rotation, with the arrow facing the outside, so it can be seen.



5) Hold the shaft with the 1/2 inch Wrench-1.



6) Install the nut, turning **counterclockwise** onto the cutter shaft with the 3/4 inch wrench.

Do not overtighten the nut!

2.3 Resharpening Cutter Wheels

One of the most important features of the CodeMax® is its capability to maintain correct depth and spacing with virtually no setup time involved, including the changing of the cutter wheels. This capability is dependent upon the use of cutters whose outside diameters are carefully calibrated. We recommend using only HPC or HPC authorized cutter wheels.

Eventually, a cutter becomes worn and must be replaced or resharpened. In order to maintain matched cutter diameters, all cutters for the CodeMax® must be resharpened at the same time to account for material lost during this process.

The diameter of a resharpened cutter is smaller and will therefore make cuts shallower if no depth adjustment is made. See Depth Adustment Section (5.2) for further information.

This concludes the “Cutter Wheels “ section.

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3. Holding And Gauging Keys

The CodeMax® comes from the factory calibrated and ready to cut keys to manufacturers' specifications. The necessity for special gauges and adapters has been held to a minimum. Basically, one upper Vise Jaw, which is removable and reversible, covers the greatest range of key cutting. This upper Vise Jaw (CM-1056MA) is marked "A" on one side and "B" on the other. When the A side is in use, the letter "A" faces up, in sight of the operator. The B side is in position when the "B" is seen. Manufacturers' data and information about the corresponding jaws can be found in the HDSB Depth And Spacing Book.

3.1 Vise Jaws

Jaws A & B – Standard Jaws (CM-1056MA) Installed

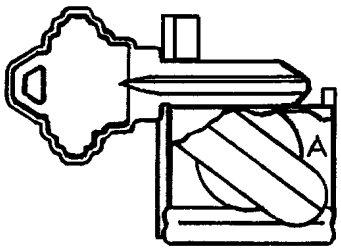


Fig. 1A. Properly seated key in jaw A.

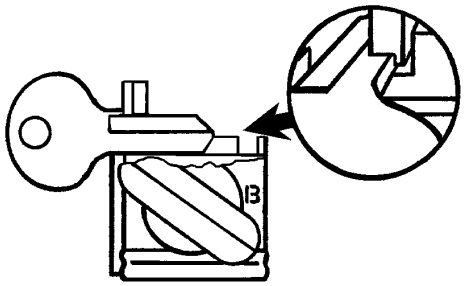


Fig. 1B. Properly seated key in jaw B.

Vise jaw A is used for all standard keys with the deepest cut no less than .142 inches (see Fig. 1A). Jaw B is used for small keys that use cuts of such great depth that a lip on the jaw is provided to hold the key closer to the cutter. See Fig. 1B.

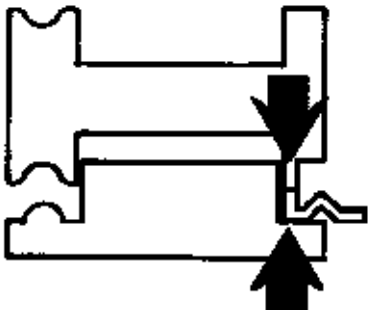


Fig. 2.

If the key should tip when placed in jaw A, such as a Best™ key, you can use jaw B. Fit the key groove onto the lip of the jaw so that the key rests firmly against the back of the jaw. Use this method only if there is a problem holding the key in place. See Fig. 2.

Jaw C – Medeco® Jaw (MJ-1) Optional Equipment Required For Cutting Medeco® Keys (Not Required For Biaxial Keys)

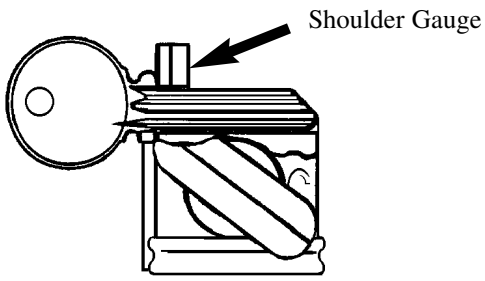


Fig. 3A.

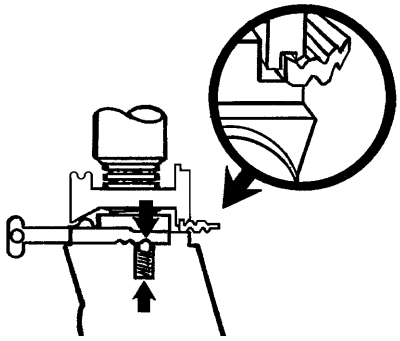


Fig. 3B. Properly seated key in jaw C.

An optional cutter (CW-1012) and Jaw C (MJ-1) are required to cut commercial level Medeco® keys. Both parts are readily available from your HPC distributor. Biaxial keys only require the CW-1012 cutter, not MJ-1.

The optional Jaw C is a specially milled CodeMax® jaw. It is required for holding the standard Medeco® keys (see Fig. 3A). Vise Jaw C is milled to fit and firmly nest into the Medeco® commercial key grooves. The proper and firm grip provided by Jaw C is necessary due to the extremely deep cuts used on Medeco® keys. Instructions for using Medeco's Keymark Jaw are available from Medeco®.

Gauge the key from the shoulder, making sure the key grooving and special jaw milling are nested together (see Fig. 3B).

3.2 Key Gauges

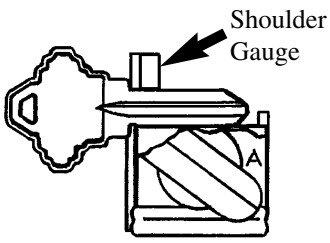


Fig. 4

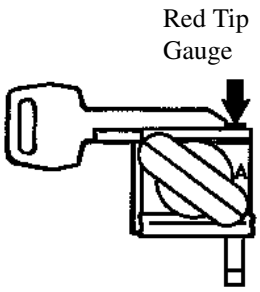


Fig. 5

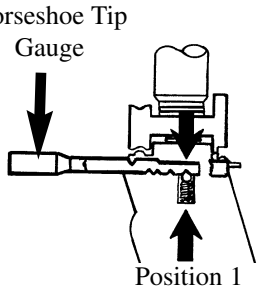


Fig. 6

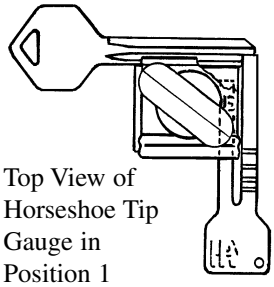


Fig. 7

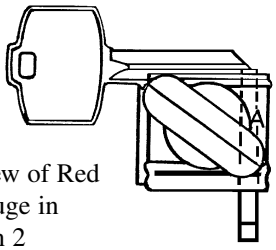


Fig. 8

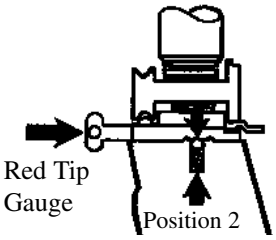


Fig. 9

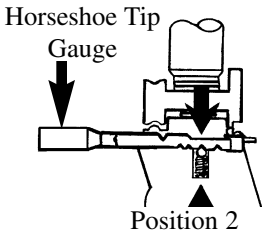


Fig. 10

Keys with shoulders are gauged by placing them squarely into the vise assembly and swinging the key Shoulder Gauge (12FG) upward. The key is moved laterally, as required, until the key's shoulder just touches the left hand surface of the gauge (see Fig. 4).

> *Note: Be sure to tighten the wing nut and swing the Shoulder Gauge back down before starting the cutting process.*

Keys without shoulders are properly gauged by using the Red Tip Gauge (CM-1054MA) or the black Horseshoe Tip Gauge (CM-1054R). The bottoms of these tip gauges have several grooves, allowing them to be held in different positions by a spring loaded ball bearing. These tip gauges are pulled back to the first position where they are held within the base of the lower jaw (Figs. 5 & 6) safely out of the path of the cutting wheel.

See Figs. 7, 8, 9, & 10 for tip gauge references.

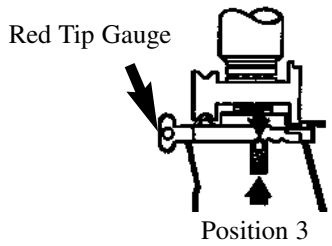


Fig. 11.

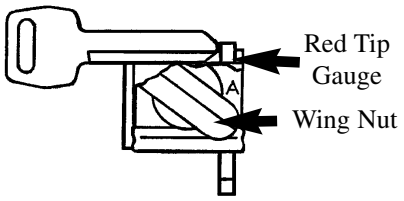
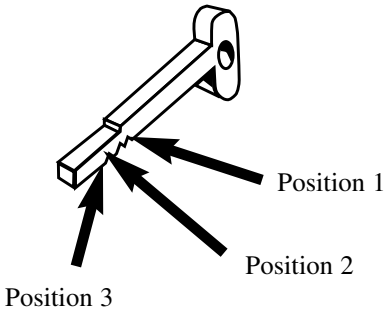
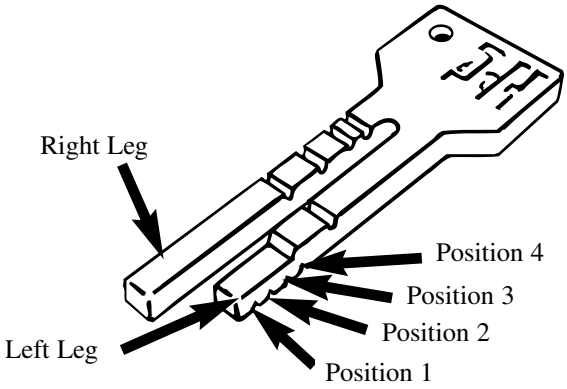


Fig. 12. 5 Pin Ford.

In the third position, the Red Tip Gauge is sent forward into the third groove and this is the proper setting for old, 5-pin Ford keys (see Figs. 11 & 12). To clamp and gauge double sided Ford type keys, the offset of the key is set against the face of the jaw. Slide the key to the right until the tip butts against the tip gauge and tighten the wing nut. The blank is held off the key rest by this method, thereby eliminating the need for any special blocks (see Figs. 11 & 12).





Red (Plastic) Tip Gauge No. (CM-1054MA)

Position 1: Out of the way
Position 2: Best
Position 3: Ford

(Black) Horseshoe Tip Gauge (No. CM-1054R)

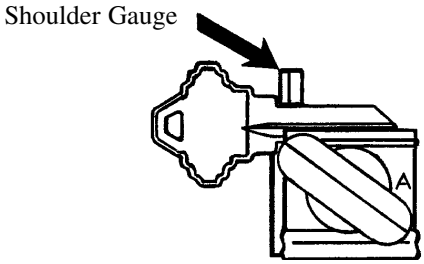
Position 1: Best – Right Leg
Position 2: Ford – Right Leg
Position 3: Best – Left Leg (same as 2 red)
Position 4: Ford – Left Leg (same as 3 red)

Note: Red Tip Gauge should be pulled back to position 1 or removed when cutting shoulder gauged keys.

Remove Black Horseshoe Tip Gauge completely when gauging or cutting shoulder gauged keys or when gauging from positions 3 and 4 prior to cutting.
Positions 1 and 2 of Horseshoe Tip Gauge are designed to bring the tips of key blanks even with the right side of the jaw. If the right leg is bent inward (so the tip gauge doesn't enter the jaw) or bent outward (so key blanks gauge beyond the right side of the jaw) the right leg should be gently tapped back into alignment.

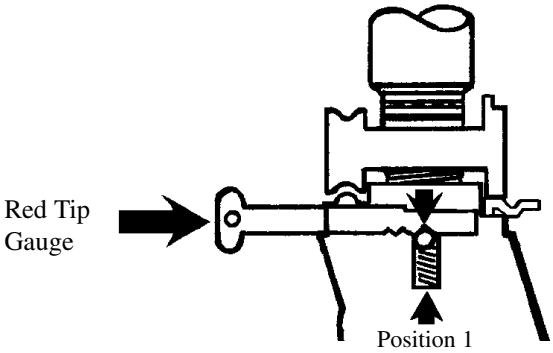
3.3 Gauging Methods

3.3.1 Standard Cylinder Key With Shoulder Gauging Using Jaw A (Example: Schlage, DSD #60)

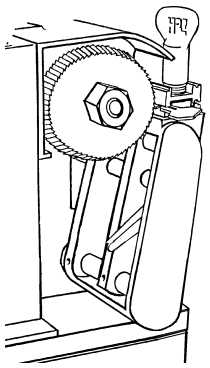


1) Place the key blank in Jaw A. Raise the Shoulder Gauge to its upright position. Position the key blank with the shoulder of the key lightly touching the left hand edge of Shoulder Gauge (avoid undue pressure – see Note below).

Note: The spacing of the key cuts can be significantly affected by any damage incurred to the Shoulder Gauge. Handle the Shoulder Gauge with care! Damage to the Shoulder Gauge most often occurs when the gauge comes in contact with the cutter, or when undue pressure is used when gauging against the key's shoulder. Make sure to gently position the key blank against the Shoulder Gauge to avoid damage.



2) Make sure the Tip Gauge (if installed) is out of the way. The Red Tip Gauge is pulled to the rear and safely in the detent position (Position 1) before continuing, and the Horseshoe Tip Gauge is removed.



3) Tighten the Wing Nut and flip the Shoulder Gauge down before continuing.

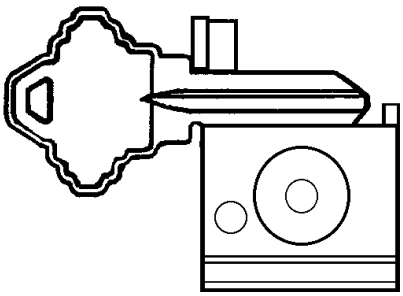
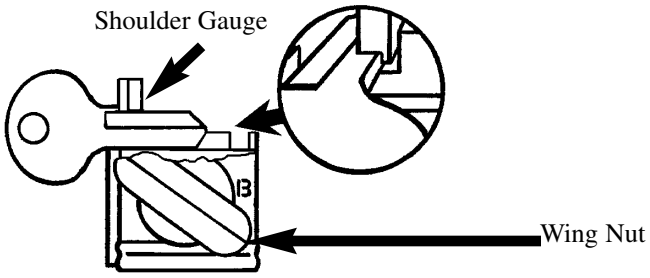


Fig. 4. Wing Nut and Top Jaw of vise removed to show top view of the Bottom Jaw only, for key positioning.

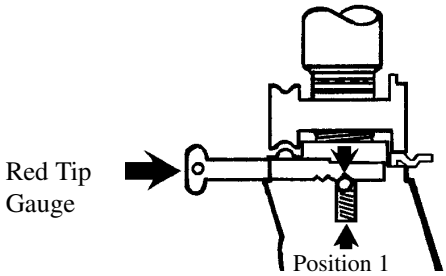
4) Make sure the key is lying flat against the back of the Bottom Jaw before tightening the Wing Nut.

3.3.2 Standard Cylinder Key With Shoulder Gauging Using Jaw B (Example: Master, DSD #49)

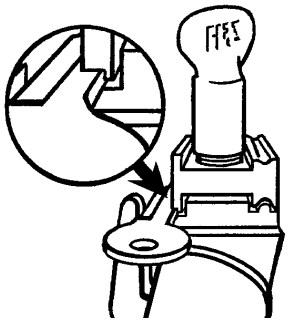


1) Place the key blank in Jaw B. Make sure that the key lies in front of the the lip, and and flat against the lip. Raise the Shoulder Gauge to its upright position. Position the key blank with the shoulder of the key lightly touching the left hand edge of Shoulder Gauge (avoid undue pressure – see Note below).

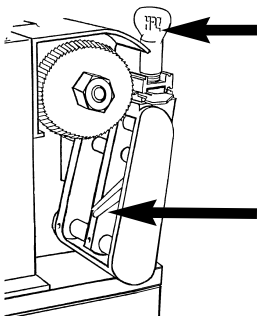
Note: The spacing of the key cuts can be significantly affected by any damage incurred to the Shoulder Gauge. Handle the Shoulder Gauge with care! Damage to the Shoulder Gauge most often occurs when the gauge comes in contact with the cutter, or when undue pressure is used when gauging against the key's shoulder. Make sure to gently position the key blank against the Shoulder Gauge to avoid damage.



2) Make sure the Tip Gauge is completely out of the way, and that the Horseshoe Tip Gauge is removed.

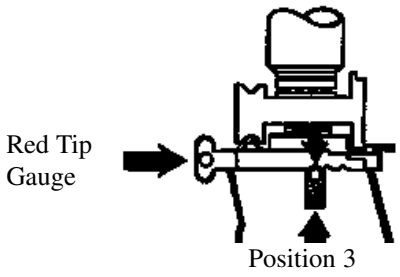


3) Make sure that the key lies in front of the the lip, and and flat against the lip.



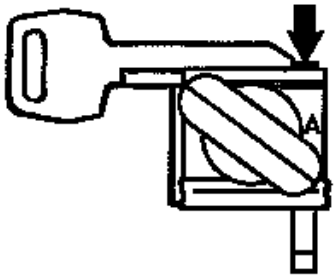
4) Tighten the Wing Nut and flip the Shoulder Gauge down before continuing.

3.3.3 Red Tip Gauge In Position 3 (Full Short Tip Stop) Using Jaw A (Example: Ford, DSD #34)



1) The Red Tip Gauge is pushed inward to position 3.

Note: Make certain to pull the Tip Gauge to the rear (position 1) before cutting.



2) The key is gauged from the tip. Make sure the Shoulder Gauge is lowered before continuing.

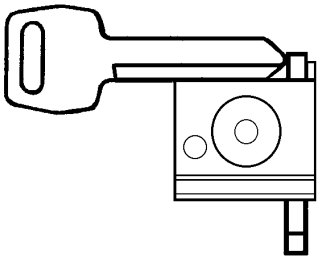
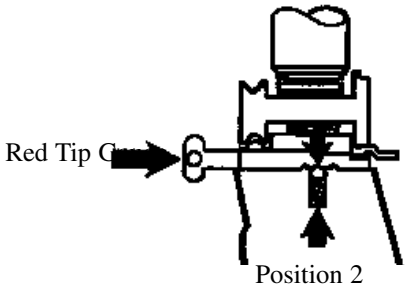


Fig. 3. The Wing Nut and Top Jaw of the vise removed to show a top view of the Bottom Jaw only, for key positioning and Tip Stop settings.

3) Make sure the blank is lying flat on the ledge against the back of the Bottom Jaw before tightening the Wing Nut.

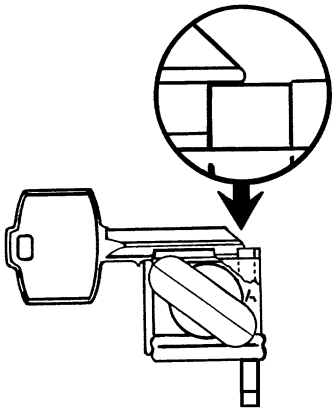
Note: For Ford blanks (DSD#34), the key blank grooving edge lies directly on the face of the jaw for ignition and trunk keyways. No riser blocks are used.

3.3.4 Red Tip Gauge In Position 2 (Middle Short Tip Stop) Using Jaw A (Example: KABA-PEAKS 6-Pin, DSD #608)



1) The Red Tip Gauge is pushed inward to Position 2. The Tip Gauge is pulled to the rear (position 1) while cutting.

Note: Make certain to pull the Tip Gauge to the rear(position 1) before cutting.



2) The key is gauged from the bottom stop, not the tip.

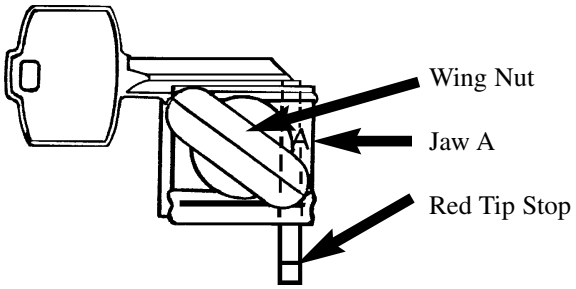
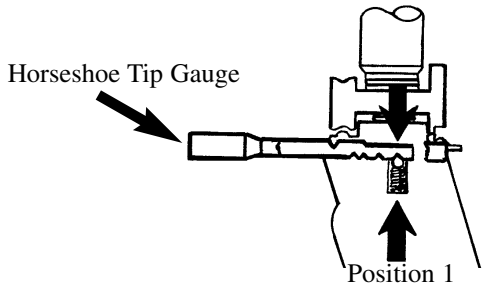


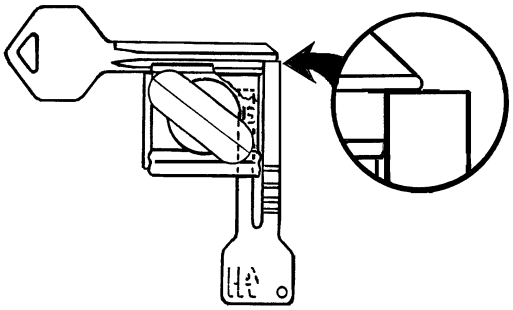
Fig. 3. The Wing Nut and Top Jaw of the vise partially removed to show a top view of the Bottom Jaw only, for key positioning and Tip Stop settings.

3) Be sure the key lies flat against the back edge of the Bottom Jaw before tightening the Wing Nut.

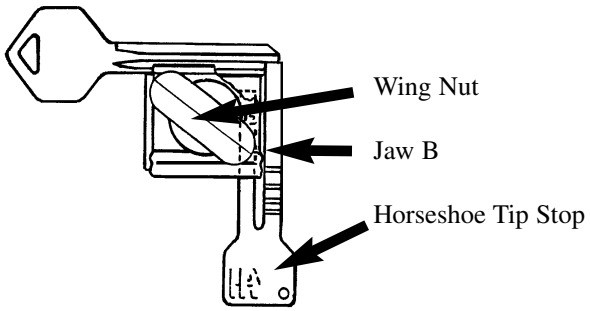
3.3.5 Black Horseshoe Tip Gauge In Position 1 (Short Tip Stop) Using Jaw B (Example: DSD #3)



1) The Tip Gauge is pushed inward to position 1.

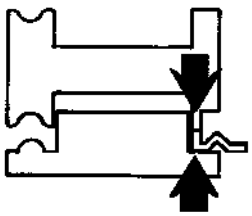


2) The key is gauged from the bottom stop of the key, not the tip.



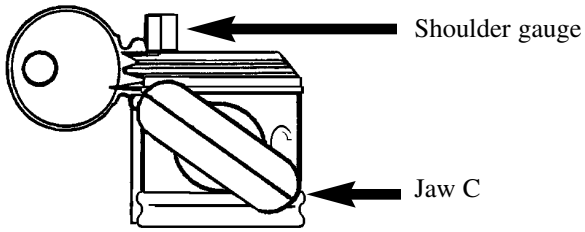
3) Slide the key to the right until the bottom stop of the key touches the right leg of the Horseshoe Tip Stop. Be sure the key lies flat against the back edge of the bottom jaw before tightening the wing nut.

Note: Undue pressure against the right leg will cause the legs to spread, resulting in inaccurately cut keys.



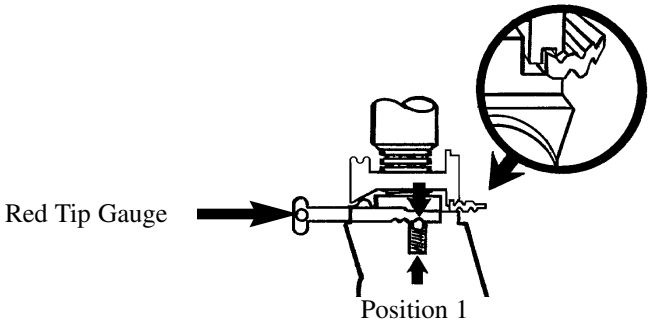
4) Note the special holding on the key milling using Jaw B. (The key must flat against the back ledge of the Bottom Jaw as shown.)

3.3.6 Medeco® Standard Commercial Key Using Jaw C (Optional Equipment) With Shoulder Gauging (Example: DSD #51)

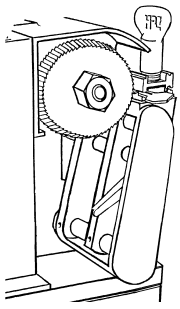


1) The key shoulder touches the left hand edge of the Shoulder Gauge. Avoid undue pressure – see note below.

Note: The spacing of the key cuts can be significantly affected by any damage incurred to the Shoulder Gauge. Handle the Shoulder Gauge with care. Damage to the Shoulder Gauge most often occurs when the gauge comes in contact with the cutter, or when undue pressure is used in gauging against the key's shoulder. Make sure to gently position the key blank against the Shoulder Gauge to avoid damage.

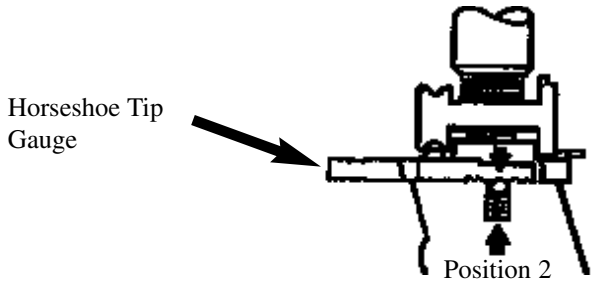


2) The jaw and key grooves "nest" into each other. The Tip Gauge (if installed) is pulled back to the rear to position 1 (Horseshoe Tip Gauge is removed). Open Jaw C only enough to slide the key into position. Be sure the key groove and jaw milling mate before tightening the Wing Nut.

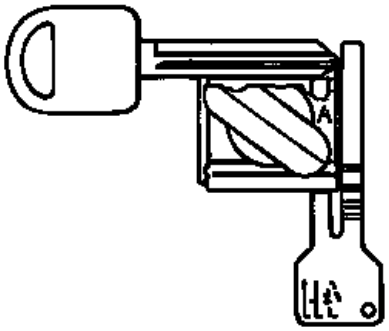


3) Flip the Shoulder Gauge down and tighten the Wing Nut before proceeding.

3.3.7 Black Horseshoe Tip Gauge In Position 2 Using Jaw A or B (Example: GM Modular 94+, DSD #259)



1) The Horseshoe Tip Gauge is pushed inward to position 2.



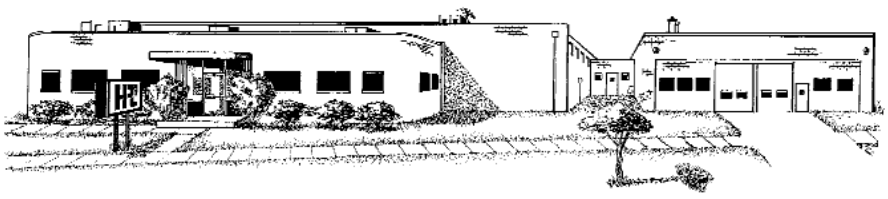
2) The key is gauged from the tip as shown. Be sure the key lies flat against the back of the Bottom Jaw before tightening the Wing Nut. Lower the Shoulder Gauge.

Note: Undue pressure against the right leg will cause the legs to spread, resulting in inaccurately cut keys.

Note: On Ford blanks (DSD's 35 and 261) the key blank grooving edge lies directly on the face of the key vise. No riser blocks are used.

This concludes the "Key Gauging" section.

Expect Quality...
Demand HPC.



4. Key Cutting Methods

1) *Stand Alone Key Cutting* utilizing the internal capabilities of the CodeMax®.
2) *Computer Assisted Key Cutting* using a computer loaded with HPC software connected to the CodeMax® via a serial cable (No. CABLE-25S) attached to the back of the CodeMax®.
3) *Micrometer Key Cutting* using space and depth information manually inputted into the CodeMax®.

4.1 Stand Alone Key Cutting

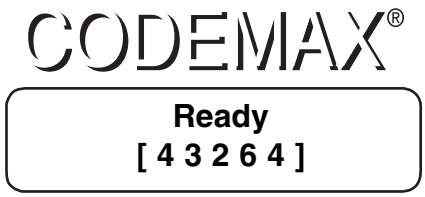
DSD# stands for: Depth and Space Data Number. To cut a key utilizing the internal capabilities of the CodeMax, press DSD#. The display will prompt you to enter a valid DSD number chosen from the HPC Depth And Spacing Book (HDSB).

For example, if you were cutting a key for a Schlage pin tumbler cylinder you would enter "60" (press "6", then press "0"), then press ENTER to accept this selection.

Note: At anytime during this process you can clear a wrong entry or return to the previous screen by pressing CLEAR.

After accepting a valid DSD number the CodeMax® displays the name of the selected manufacturer and displays the correct gauging point for that DSD. For example, the Schlage display will read "Use Shoulder Stop As Gauge". Other possible gauging points are: "Use Red Tip Stop As Gauge", "Use Black Tip Stop As Gauge", or "Use Left Side Of Jaw As Gauge".

Insert and gauge the key (refer to "Section 2. Key Gauging"). The next display will be "Enter Bitting". Enter the bitting desired starting with the cut closest to the bow.* For this example we will make the bitting "43264". Enter "43264" by pressing "4", "3", "2", "6", "4", and then ENTER. The display should now show:



Note: Certain manufacturers, such as Best, list bittings **tip to bow. Tip to bow bittings need to be reversed to **bow to tip** order.*

From the Ready screen, you have several options:

1) You may press START to begin cutting the key bitting shown on the screen.

2) You may press NEW CODE or CLEAR and enter in a new bitting. (Remember to press ENTER to accept the new bitting.)

3) You may press CLEAR twice to return to the "Enter DSD Number" prompt, or twice more to reset the CodeMax®.

4) You may press “A” to change to the Contour Cutting Mode. Contour Cutting will remove peaks between cuts on a key, for smoother operating automotive keys (only recommended for automootive keys). Press “A” again to return to the Standard Cutting Mode.

5) You may press “6” (<) to decrease the rate of speed at which the pivot arm approaches the cutter or press “8” (>) to increase the rate of speed at which the pivot arm approaches the cutter. This is particularly useful when dealing with hardened keys and wanting to cut them at a slower rate.

6) Press ENTER to autoload the next DSD Number associated with the manufacturer chosen. This is used in the case of “Double-Sided Different” keys. If no autoload specifications are present, the CodeMax® will return to the main screen.

Special Considerations

While the key is being cut, you may see other prompts on the display screen for keys with angular cuts.

4.1.1 Angular Key Cutting

If you are cutting a key that has angular cuts, such as Medeco® or Emhart, the CodeMax® will pause after each cut to allow you to change the cutter angle if necessary. You will see the following display:

CODEMAX®

Rotate Cutter Head Now

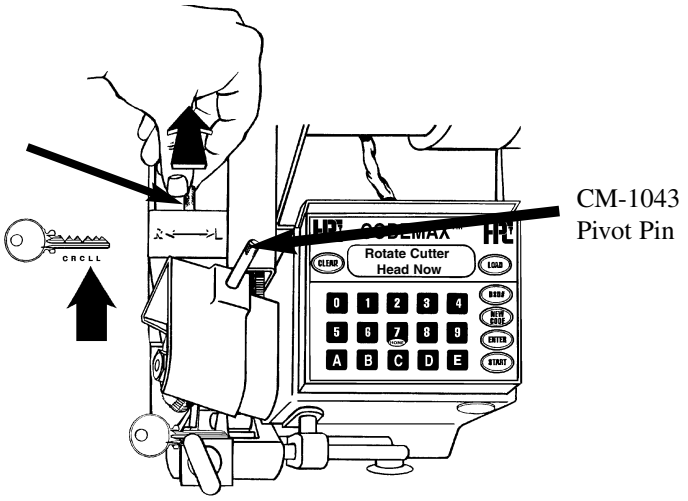


Fig. 1. Pull out Angle Index Pin to rotate cutter head.

The Cutter Head may be rotated by pulling out the CM-1042 Angle Index Pin on the back of the Cutter Head. Rotate the Cutter Head to line up with the "L" or "R" behind the Cutter Head using the CM-1043 Pivot Pin as a handle (see Fig. 1, above). Rotate the head to the "L" to make a left angled cut, or to the "R" to make a right angled cut. When you release the CM-1042 Angle Index Pin make sure it is properly seated before proceeding to the next cut. Once the Cutter Head is properly positioned, press ENTER to begin the next cut.

4.1.2 Decoding And Cutting Medeco® Keys

The depths and angles must be decoded prior to cutting the key. Depths can be measured with a knife-edge caliper, a key micrometer, or with one of the special decoders commercially available. In addition to decoding depths and angles for Medeco® keys, the HPC Pocket Sized Decoder (HKD-75 – see Fig. 2 below) also contains an assortment of code cards for other locks. Remember, decoding devices are not designed to replace micrometers or calipers.

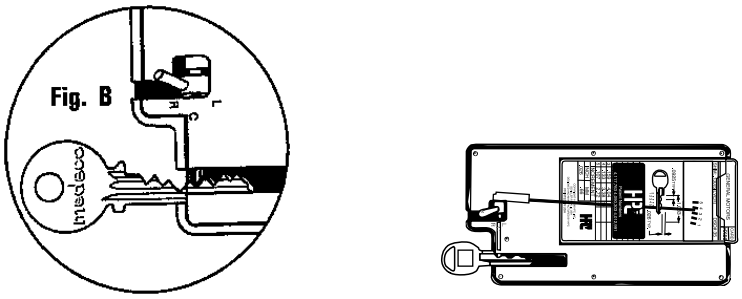


Fig. 2. HPC Pocket Sized Decoder (HKD-75)

Medeco® Biaxial: The CodeMax® uses 12 spaces to accommodate the different "fore" and "aft" possibilities on a 6 pin key. This is accomplished by inserting a zero (0) in the unused spaces. For example, a key that reads:

D	B	M	D	K	S
aft	fore	aft	aft	fore	aft
4	3	5	2	3	2

For the CodeMax® you would think of it as:

04	30	05	02	30	02

and input it as:

043005023002

REMEMBER: The CodeMax® does not automatically rotate the cutter head. It stops at each position and prompts you with "Rotate The Cutter Head Now". Pull the spring loaded CM-1042 Angle Index Pin back and rotate the cutter head using the CM-1043 Pivot Pin. Release the angle index pin and let it lock into the correct position. Then press ENTER to make the next cut.

CodeMax® Automatic Angle Cutter Head

Example 1: Medeco® Level 1 Commercial

1) Find the correct DSD using the supplied HDSB manual. The DSD numbers for the 1200MAXAA are the same as the 1200MAX CodeMax®. The first example will be DSD 51. This is original style Medeco® Level 1 Commercial. **This requires the MJ-1 jaw and CW-1012 cutter.** The key will have either 5 or 6 cuts and any combination of angles.

2) After inserting and gauging the key, use the keypad and select the "**DSD**" button, enter "**51**" and then press "**ENTER**."

3) When the bittings screen comes up it will have room for 12 characters. Think of the 12 characters as 6 sets of 2 characters each. This allows a pair of characters (one number for the bitting, one letter for the angle) to represent each cut on the key.
This example will have the bitting of **324323** with the first cut being a "**Left**" angle, the second a "**Right**" angle, the third a "**Center**", fourth a "**Left**", fifth a "**Right**" and sixth a "**Left.**" For the first space or cut, enter the depth of the cut, then the angle (example: 3L). Do this for all the depths and space positions (Use the "B" key for Left, the "C" key for Center and the "D" key for Right). **Example: 3L2R4C3L2R3L**.

4) Go to step 7.

Example 2: Medeco® Biaxial

5) The next example will be DSD 76. This is Medeco® Biaxial. This uses the regular "**A**" Jaw and CW-1012 cutter. The key will have either 5 or 6 cuts and any combination of angles, plus the addition of "**FORE**" and "**AFT**" positions. After inserting and gauging the key, use the keypad and select the "**DSD**" button. Enter "**76**" and press "**ENTER.**"

6) When the bittings screen comes up it will have room for 12 characters. Think of the 12 characters as 6 sets of 2 characters each. This allows a pair of characters (one number for the bitting, one letter for the angle) to represent each cut on the key. This example will have the bitting of **324323**. With the first cut being a "**Left**" angle the second a "**Right**" angle the third a "**Center**", fourth a "**Left**", fifth a "**Right**" and sixth a "**Left**." Medeco® Biaxial also requires that you specify whether each cut is in the "FORE" or "AFT" position.

A) To specify a "FORE" cut on CodeMaxAA enter the number, then the angle. This would read: 3L.
B) To specify an "AFT" cut enter the angle, then the number. This would read: L3. Do this for all the depths and space positions. Use the "B" key for Left, the "C" key for Center and the "D" key for Right.

Example: 3LR2C43LR23L

3L number 3 depth in the "Fore" position with a Left angle.
R2 number 2 depth in the "Aft" position R2 number 2 depth in the "Aft" position.
C4 number 4 depth in the "Aft" position with a Center or no angle.
3L number 3 depth in the "Fore" position with a Left angle.
R2 number 2 depth in the "Aft" position with a Right angle.
3L number 3 depth in the "Fore" position with a Left angle.

7) Press the "**ENTER**" key, then the "**START**" key. The 1200MAXAA will go through its normal homing routine and then will proceed to the first cut from the shoulder. If the first cut is an angle cut, the machine will move to the first space before turning the cutter head. After completing the first cut, the 1200MAXAA will then move to the next cut the first cut, the 1200MAXAA will then move to the next cut all the cuts and center the cutter head after the last cut before moving the pivot arm back to the Home position.

4.1.3 After The Key Has Been Cut

After the key has been cut you will have four options:

1) Press START to cut an additional key.

2) Press NEW CODE or CLEAR to enter a new bitting.

3) Press ENTER to autoload the next DSD number associated with a "Double-Sided Different" key. If no autoload specifications are present, the CodeMax® will return to the main screen.

4) Press CLEAR until you reach the main screen.

NOTE: At all screens you may press CLEAR to return to the previous screen.

4.1.4 Additional Notes

1) The CodeMax® always cuts shoulder stop keys from bow to tip. All bittings must be entered into the CodeMax® in bow to tip order.

2) If the original manufacturer (such as Kwikset) widens some or all of the cuts, the CodeMax® will automatically do the same.

3) When cutting double-sided keys where there is a shoulder on only one side of the key, or where the shoulders are not symmetrical (such as some VW keys), always cut the shoulder gauged side of the key first, then press ENTER to cut the plain side.

4) Most double-sided keys that are gauged by the back of the jaw should be cut by code on one side and duplicated on the other side. Because most double-sided keys are gauged by placing an uncut blade against the back of the jaw, the recommended cutting procedure is to cut the first side on the CodeMax® and then cut both sides of another blank in a duplicator, using the code-cut key as the original.

5) At all screens you may press CLEAR to return to the previous screen.

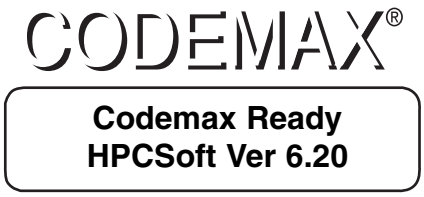
4.2 Computer Assisted Key Cutting

A personal computer that uses Windows 3.1 or Windows 95 as its operating system, and has authorized HPCSoft™ software products properly installed, can be connected to the CodeMax® using a serial cable for computer assisted key cutting.

The CodeMax® cable (No. CABLE-25S) is a 25-foot serial cable designed for this purpose. It is attached to the serial port on the computer and to the RS422 port on the back of the CodeMax®. Refer to your computer manual to locate the serial port on the computer.

A single bitting may be downloaded from CodeSource™ or KeyTrail® to the CodeMax®, or as many as 250 different bittings from MasterKing® may be downloaded for master key systems.

To download data from the computer, make sure the CodeMax® is in a clear condition. The display will read:



Click on the CodeMax® icon when the computer is ready to send data to the CodeMax®. HPC authorized software will then perform its handshake with the CodeMax® and download the data. The display will read:

Once the download transmission is complete, the CodeMax® may display an information message about the incoming keys.This message will appear for approximately 2 seconds, then the first key bitting will appear at the Ready screen.

When the first bitting appears at the Ready screen you may:

1) Press START to cut the key to the bitting displayed. You may cut any number of copies of the bitting.

2) Press “C” (DOWN ARROW) to move forward through the key bittings.

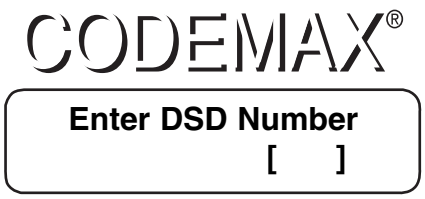
3) Press “2” (UP ARROW) to move backward through the key bittings.

4) You may press NEW CODE to insert a different bitting.

5) Press HOME (7) to change functions. For example, this feature may be used to temporarily stop cutting keys for a master key system, so that one or more keys not in the master key system may be cut. To return to the original function press ENTER, then press HOME (7). The CodeMax® will resume from the point of interruption.

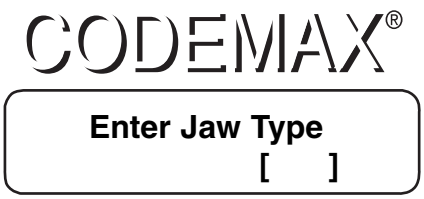
4.3 Micrometer Key Cutting

From the main screen press DSD#. The display shows:

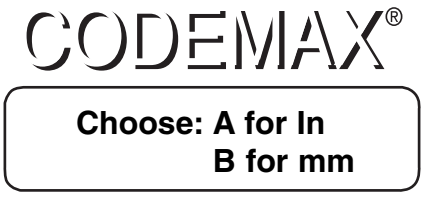


Press “0” to signify that you wish to use the micrometer function of the CodeMax. Press ENTER and the display
changes to:

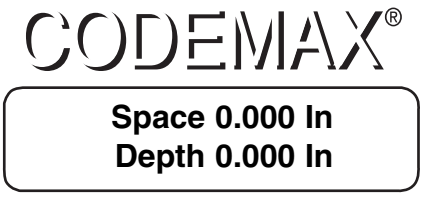
The display then changes to:



Press A, B, or C to signify which jaw will be used. For our example, press A. The display changes to:

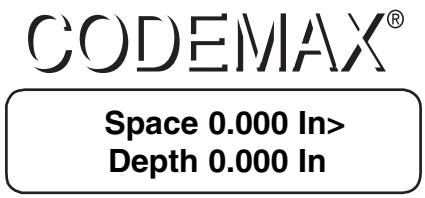


Press A or B to indicate the use of inches or millimeters for space and depth measurements. For this example, press A for inches. The CodeMax® advances to the main micrometer screen and the display shows:

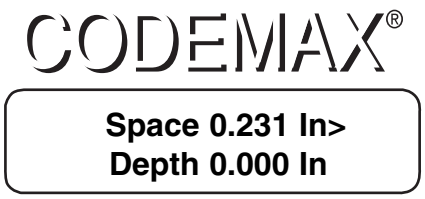


SPECIAL NOTE: To cut keys on the CodeMax® using the micrometer method you must use standard CodeMax cutters that have a center line of .188" and 2 3/8" diameter. Keys may be gauged from either the shoulder or the tip. Tip gauged keys require special calculations. The zero point for the Horseshoe Tip Stop is 1.215 and all spacing must be calculated from this point. So, even if you are using a Tip Stop you must calculate spacings as though they were from a shoulder The zero point for the Red Tip Stop is .940" and all spacing must be calculated from this point.

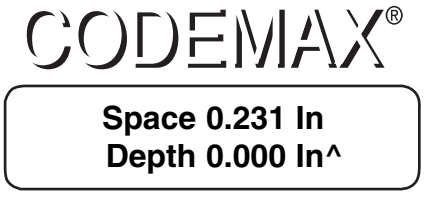
You must indicate that the first cut is to be measured from the shoulder of the key to the right. Press "8" (>). The following display appears:



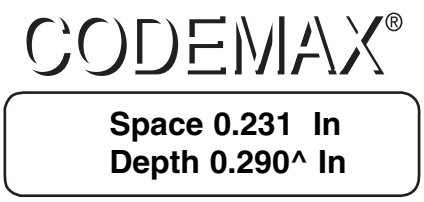
The arrow to the right of the spacing display line (>) confirms that the first cut is to be to the right of the shoulder of the key. After setting the direction, set the spacing value from the shoulder to the first cut. For our example, the Schlage value is .231, so press "2", "3", "1", then press ENTER. The display changes to:



Press START and the CodeMax® aligns the Pivot Arm for the first cut. When the CodeMax® stops, press "2" (UP ARROW) to signify that the Pivot Arm will be moving up into the cutter. The display shows:



Next, indicate the depth of the first cut. Our example requires a depth of .290. Press “2”, “9”, “0”, then press ENTER. You will see the following display:



Press start to make the cut. Notice that the CodeMax® stays in the cut position and the cutter continues to spin. This allows you to widen the cut, if necessary, by using the space commands. To return to the home position in preparation for making the next cut, press HOME (7).

Review Of Micrometer Key Cutting Procedures

Let’s quickly review the basic steps required:

1) Press “8” (>).

2) Set spacing numbers from shoulder to first cut, then press ENTER.

3) Press start to activate spacing stepper motor.

4) Press “2” (up arrow).

5) Enter depth numbers.

6) Press start for the CodeMax® to make the cut.

7) Repeat steps 1, 2, and 3 if the cut has to be widened. If the cut does not have to be widened, press Home (7) to return to the home position.

Final Micrometer Key Cutting Procedures

We will now continue with cutting an example key using the Micrometer Key Cutting Procedure.

Press “8” (>) to set the direction from the shoulder of the key.

Next, enter the cut-to-cut spacing. For our Schlage example, this is .156. Press “1”, “5”, “6”, then press ENTER and START. Notice that the carriage does not move to “.156”, but to “.387”. The CodeMax® totals the distances of our first and second cuts (.231 + .156 = .387) and the display shows the real location, 0.387.

Remember, the cutter wheel does not move laterally. Only the carriage holding the key blank moves. To position the cutter to the right of the shoulder at a designated spacing, the carriage moves to the left. Do not let this confuse you as you watch movements for spacings.

Next, indicate the direction and depth of the cut. For our example, press “2 (up arrow) to set the direction (the carriage moves up to the cutter), then press “2”, “4”, and “5” (the depth of the cut is .245). Press ENTER and START to make the cut. When the cut is complete, press HOME in preparation for the next cut.

Now that you have the hang of things, repeat steps 1 through 7 until all of the cuts are made. Once the key is complete, press CLEAR to return to the main screen.

This concludes the “Key Cutting Methods” section.

5.2 Space Calibration

No readjustment of space is required when changing from one depth and spacing specification to another. The information sent by the DSD number or computer positions the correct lateral alignment when using factory cutters. The need to readjust the space is rare and should be attempted only after the more common causes for miscut keys have been eliminated.

Remember, when originating a key by code, quite often, code numbers are misread. Locks can sometimes be coded incorrectly when they are new, and code books occasionally have typographical errors. All this distracts from successful cutting of keys by code.

You may proceed after eliminating the above mentioned causes for miscut keys and checking for correct depth calibration.

5.2.1 Cutting Too Close To The Tip (On Keys Gauged From The Tip Stop)

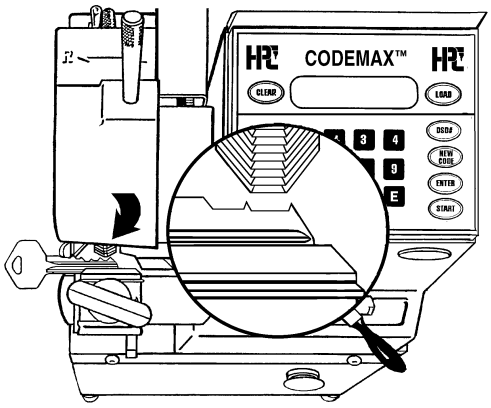


Fig. 1

Tools required: 5/64" Allen wrench, factory cut key, rubber or rawhide mallet.

1) Select a tip-gauged, factory cut large cylinder type key, such as Best, Falcon, or Ford. Make sure that all cuts are deeper than a #1 depth.

2) Install the correct cutter wheel.

3) Turn on the CodeMax®.

4) Select and enter the proper Depth and Spacing Data number.

5) Enter in all #1 cuts for the depths. Then press ENTER to accept, and then press START to begin the cutting process.

6) The CodeMax® will start to travel laterally towards the key. When the machine travels to the first cut (closest to the tip) and the key begins traveling towards the cutter (making depth cut), push the emergency button.

7) Check to see if the cutter is in the center of the cut (see Fig. 1).

8) If the cutter is too close to the tip of the original key, use a 5/64 inch allen wrench to loosen the four set screws on the lower inside and bottom of the pivot arm (CM-1024XB).

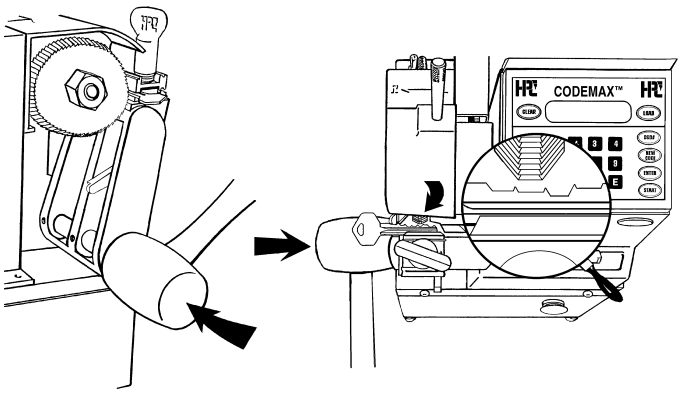


Fig. 2

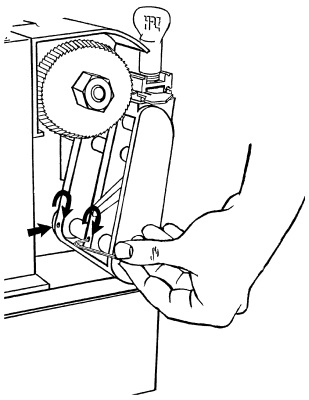


Fig. 3

9) With a small rawhide or plastic mallet, lightly tap the lower, left side of the Pivot Arm until the pin seat of the cut is directly opposite the flat of the cutter (see Fig. 2). With the cutter aligned opposite the cut, retighten the set screws (see Fig. 3).

10) Release the Emergency Button. The Pivot Arm will return to the HOME position.

Note: you may have to recalibrate the Shoulder Gauge after recalibrating the Tip Gauge.

5.2.2 Cutting Too Far From The Tip (On Keys Gauged From The Tip Stop)

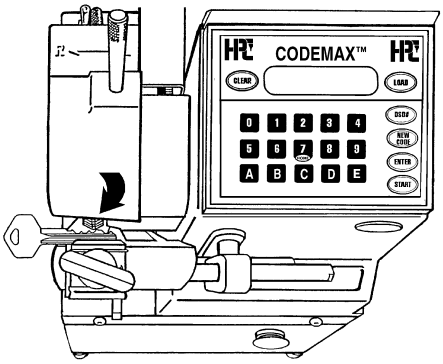


Fig. 1

1) Select a tip-gauged, factory cut large cylinder type key, such as Best, Falcon, or Ford. Make sure that all cuts are deeper than a #1 depth.

2) Install the correct cutter wheel.

3) Turn on the CodeMax®.

4) Select and enter the proper DSD number.

5) Enter all #1 cuts for the depths. Then press ENTER to accept, and then START to begin the cutting process.

6) The CodeMax® will start to travel laterally towards the key. When the machine travels to the first cut (closest to the tip) and the key begins traveling towards the cutter (making the depth cut), push the emergency button.

7) Check to see if the cutter is in the center of the cut (see Fig. 1).

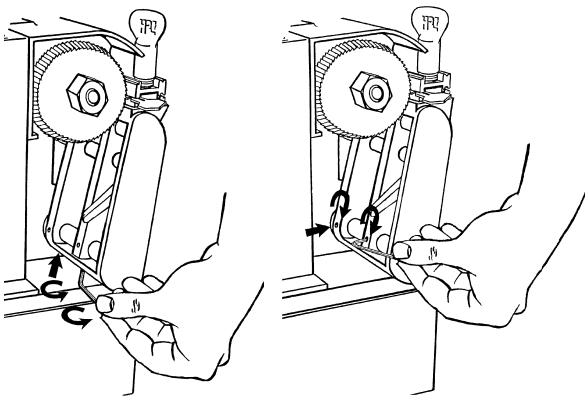


Fig. 2. Loosen four (4) set screws

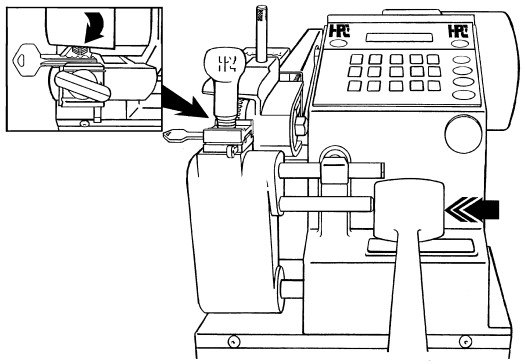


Fig. 3. Lightly tap inside of carriage arm.

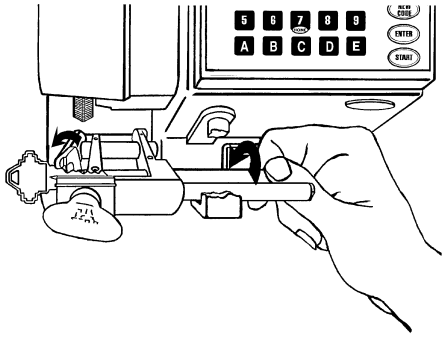
8) If the cutter is too far from the the tip of the original key, use a 5/64 inch allen wrench to loosen the four set screws on the lower inside and bottom of the Pivot Arm (CM-1024XB) (see Fig. 2).

9) With a small rawhide or plastic mallet, lightly tap the inside of the Pivot Arm to move the cutter closer to the top of the key while centering the cutter flat with the pin seat (see Fig. 3).

10) Release the Emergency Button. The Pivot Arm will return to the Home position.

Note: you may have to recalibrate the Shoulder Gauge after recalibrating the Tip Gauge.

5.2.3 Cutting Too Far From The Shoulder



Note: Only recalibrate the shoulder gauge after being sure that the tip gauge is properly calibrated.

1) Select a shoulder gauged, factory cut type key, such as a Schlage or Arrow. Check to see that the #1 space (closest to the shoulder) is greater in depth than a #1 cut.

2) Install the correct cutter wheel.

3) Turn the CodeMax® on.

4) Select and enter the proper DSD number.

5) Enter in a #1 cut for the depth. Then press ENTER to accept, and press START to begin the cutting process.

6) The Pivot Arm will start to travel laterally towards the key. When the Pivot Arm travels to the first cut (closest to the shoulder) and the key begins traveling towards the cutter (making the depth cut), push the Emergency Button.

7) Loosen the key in the jaw. Slide the key to your right until the pin seat of the cut is directly opposite the flat of the cutter. Tighten the key in the jaw.

8) Release the Emergency Stop Button to allow the machine to return to the Home position.

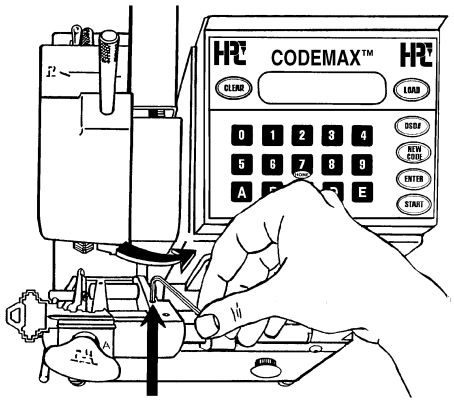


Fig. 1

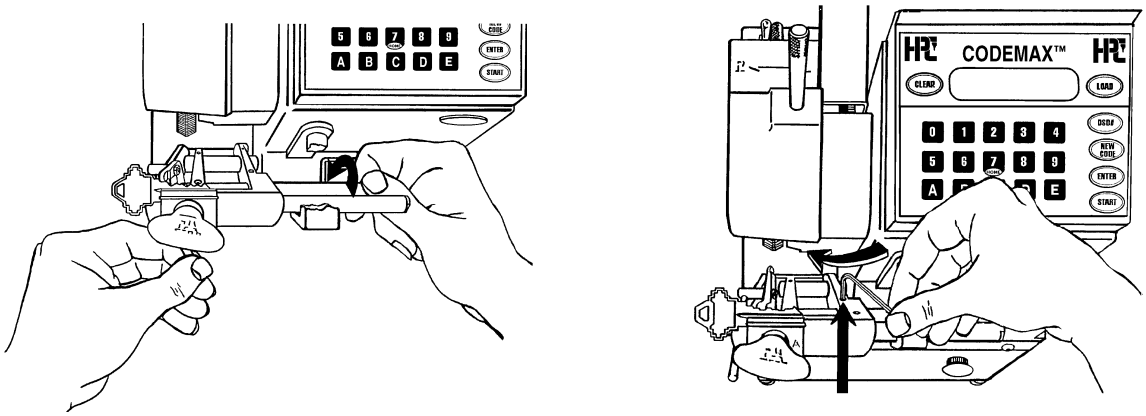


Fig. 2

9) Loosen the set screw that holds the Turn Bar in place in the Pivot Arm. See Fig.2. Swinging the Shoulder Gauge should also rotate the Turn Bar.

Note: If the Turn Bar does not rotate, squirt some WD-40, or equivalent, on the threaded end. Then work it loose by simultaneously swinging the Shoulder Gauge and rotating the Turn Bar (see Fig. 1).

10) Swing the key Shoulder Gauge down to release the Turn Bar. Then, firmly gripping the right end of the Turn Bar so that it remains stationary, swing the key Shoulder Gauge up against the key. The Shoulder Gauge should be just touching the shoulder of the key. Now, without rotating the Turn Bar further, tighten the set screw that holds the Turn Bar (see Fig. 2).

5.2.4 Cutting Too Close To The Shoulder

Note: Only recalibrate the Shoulder Gauge after being sure that the Tip Gauge is properly calibrated.

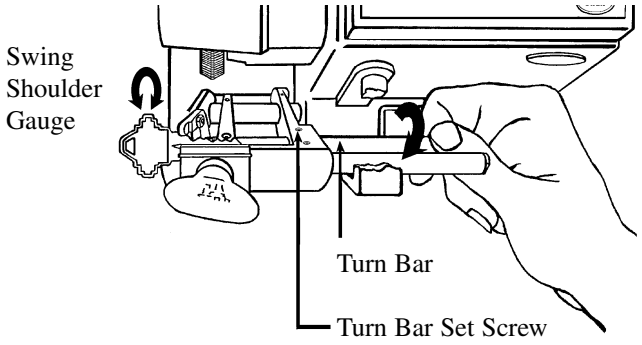


Fig. 1

1) Select a shoulder gauged, factory cut original large cylinder type key, such as a Schlage or Arrow. Check to see that the #1 space (closest to the shoulder) is greater in depth than a #1 cut.

2) Install the correct cutter wheel.

3) Turn the CodeMax® on.

4) Select and enter the proper DSD number.

5) Enter in a #1 cut for the depth. Then press ENTER to accept, and then press START to begin the cutting process.

6) The Pivot Arm will start to travel laterally towards the key. When the Pivot Arm travels to the first cut (closest to the shoulder) and the key begins traveling towards the cutter (making the depth cut), push the Emergency Button.

7) Loosen the key in the vise. Slide the key to the left to line up the cutter flat opposite the pin seat. Tighten the key in the jaw.

8) Release the Emergency Stop Button to allow the machine to return to the Home position.

9) Loosen the set screw that holds the Turn Bar in place in the Pivot Arm. Swinging the Shoulder Gauge should also rotate the Turn Bar.

Note: If the Turn Bar does not rotate, squirt some WD-40, or equivalent, on the threaded end. Then work it loose by simultaneously swinging the Shoulder Gauge and and rotating the Turn Bar. (See Fig. 2)

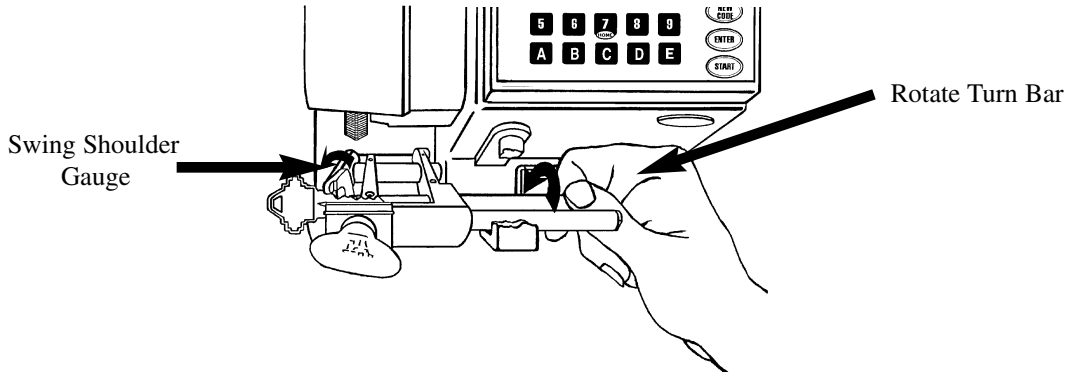


Fig. 2

10) Swing the key Shoulder Gauge down to release the Turn Bar. Then, firmly gripping the right end of the Turn Bar so that it remains stationary, swing the key Shoulder Gauge up against the key. Rotate the Turn Bar to the desired position and hold it there. The Shoulder Gauge should just touch the shoulder of the key (see Fig. 2). Now, without rotating the Turn Bar further, tighten the set screw that holds the Turn Bar.

5.3 Depth Adjustment

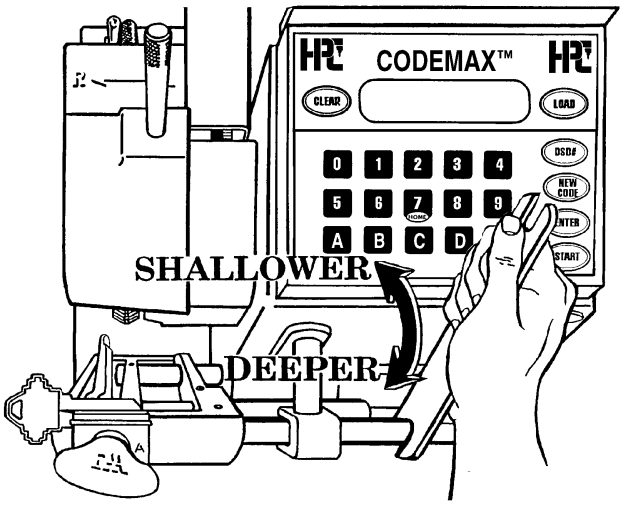


Fig. 1

The need to readjust depth is caused by cutter wear or cutter replacement It is easily accomplished by rotating the eccentric shaft (CM-1041) with the 3/8 inch end of Wrench-1, turning towards you to cut deeper, and away from you to cut shallower. The 180 degree rotation allows depth adjustments of plus or minus .015 inch. Since the eccentric shaft is made of drill rod, there is no need to loosen the two binding screws prior to rotating it (see Fig. 1).

Tools Required: Key Micrometer or Caliper, Key Blanks, Correct Depth and Spacing Data, Wrench-1 (use 3/8 inch end for depth adjustment).

1) Install a key blank in the CodeMax® jaw.

2) Turn the CodeMax® on.

3) Select and enter the proper DSD number (e.g. 60 for Schlage Large Pin).

4) Enter the depths, press ENTER to accept, and press START to begin the key cutting operation.

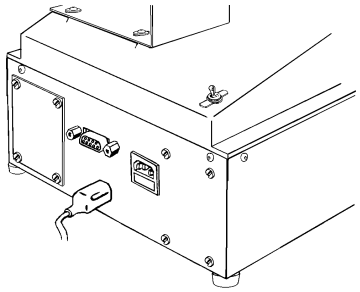
5) After the key has been cut, use a micrometer or caliper to measure the depth cut and compare it against the Depth and Spacing specifications chosen in step 3 above. If the reading of the micrometer is the same as the Depth and Spacing specifications, the machine is cutting correctly. If the cuts are higher or lower, adjust the Eccentric Shaft as explained in the beginning of this section (see Fig. 1). When checking the calibration on a key machine, it is very important to use the proper tools in order to maintain the accuracy of the machine. A key micrometer or caliper is a small investment and is highly recommended to acquire the greatest accuracy.

5.4 Removal And Replacement Of HPC Memory Board

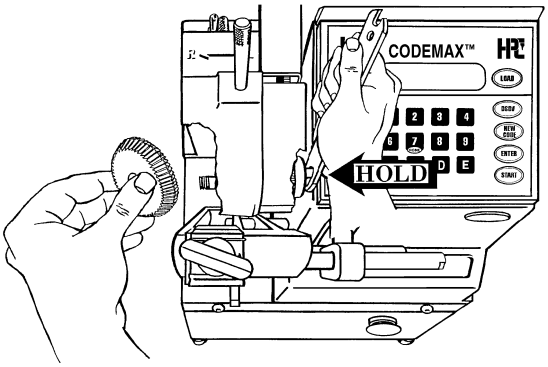
CodeMax® updates are available annually and contain DSD information on new locks as well as refinements to the CodeMax operating system.

The CodeMax® is easily updated with a specially printed Circuit Board. This Circuit Board is designed to be replaced by the user without accessing the internal components of the CodeMax®.

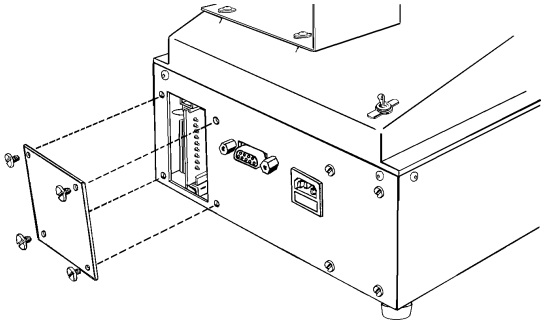
Before starting, be sure to have a clean work area free of brass chips and other contaminants.



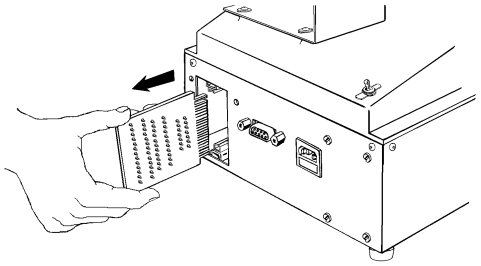
1) Unplug the Power Cord from the back of the CodeMax®.



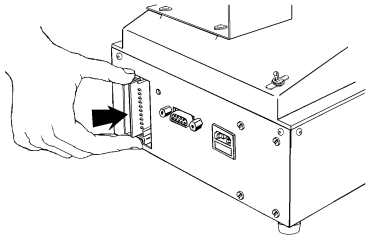
2) Remove the cutter wheel from the CodeMax®.



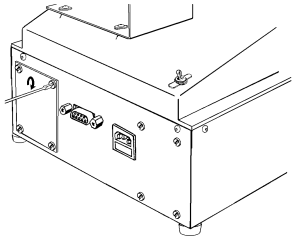
3) Remove the four screws that secure the access plate on the back of the CodeMax®.



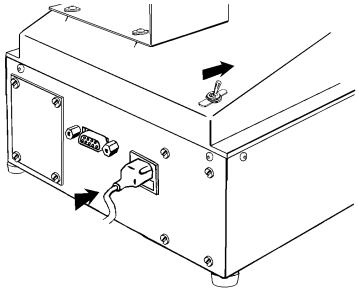
4) Carefully grasp the Circuit Board and slowly pull it (Note which side the components are facing.)



5) Carefully insert the new Circuit Board into the guide rails and push it into the card holder securely. (Be sure the components are facing the same direction as the original.)



6) Reinstall the Access Plate with the foam side facing the CodeMax®.



7) Plug the Power Cord back into the CodeMax® and turn on the machine.

Additional Notes on Memory Board Replacement

If the CodeMax® beeps or does not start up as it should, repeat steps 1 thru 3. Next, pull the circuit board back out an inch or so and reinsert it. Although the insertion tab should prevent incorrect insertion, remember the components on the board should be facing the same way as the original card. Next, complete steps 6 and 7. If the CodeMax® is still not operating as it should, call HPC for technical support.

This concludes the "Recalibration of CodeMax®" section.

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6. Troubleshooting

Problem: The CodeMax® is turned on but nothing appears on the display screen and the internal stepper motors do not start.

Solution: Check the cord, fuse, and the available power supply.

Problem: The CodeMax® is turned on but all that appears on the display screen are square blocks.

Solution: Remove the keyboard from the casting. This problem is most often associated with a shorted keyboard wire against the casting. Once the keyboard has been removed from the casting, attempt to turn on the machine again. If the screen starts normally, inspect the keyboard wire or call HPC to obtain a new keyboard wire.

Problem: The stepper motors jam while using the CodeMax®.

Solution: Try turning off the CodeMax® for a few seconds to clear the memory, then turn it back on to reset the machine. If this does not clear the jam, consult factory assistance.

Problem: Keys are not being cut accurately.

Solution: Check three possibilities: Either your cutter wheel is dull (or not the proper diameter), the machine is out of adjustment, or the cutter belt is loose. Attempt to cut the key utilizing the micrometer function. If the keys cut utilizing the micrometer function are also not accurate, the machine probably requires adjusting. Make sure the belt is snug (or overtight) and see Section 5: Recalibration of CodeMax®.

Problem: The CodeMax® is turned on but the stepper motors produce a grinding sound, like they have crashed into the casting.

Solution: Turn off the machine (several electronic switches may have gone bad). Under these conditions you should consult factory assistance.

In the event that this troubleshooting section does not solve your problems, or you have any additional questions, call the HPC Service Center.

7. Glossary

Autoload:
The downloading of information from compatible software packages.

CodeMax®:
HPC's computerized code machine.

Contour Cutting:
The carriage moves laterally across the cutter, producing a key with no peaks between cuts.

Depth:
Measured in thousandths of an inch or hundredths of a millimeter. Refers to y-axis cutting on the CodeMax. Also, a measurement from the bottom of the key to the root of the cut.

Emergency Button:
A red button in the front of the CodeMax used for stopping all machine movements.

Jaw:
The vise that holds the key in position for cutting on the CodeMax or any other machine.

Jaw Type:
Denoted by the letters A, B, or C. Indicates the proper jaw used for cutting a specific key.

Memory Board:
Removable circuit board holding the HPC DSD and program proms.

Plain Side:
The flat side of the key which faces towards the cutter when properly positioned for cutting (the gauging point for this type of key is referred to as a Left Side Jaw Gauge).

Series:
A set of numbers within a given range, which refers to a key code number.

Shoulder Gauge:
Used to gauge standard cylinder and automotive keys. (Refer to section 3.3).

Shoulder Side:
The non-flat side of the key which faces towards the cutter when properly positioned for cutting (the gauging point for this type of key is referred to as a Shoulder Gauge).

Speed Adjustment:
Increase or decrease rate of feed in the y-axis or depths.

Tip:
The end of the key that enters the lock first. Also, certain keys may be gauged utilizing the tip of the key (the gauging point for this type of key is referred to as Red Tip Stop or Horseshoe Tip Stop gauging).

Tip Gauge:
Used to gauge keys with no shoulders. (Refer to section 3.3)

Widen Cut:
On keys such as Kwikset, Weiser, Volkswagen, etc. the x-axis (or spacing) often needs to be widened more than the standard cutter wheel allows. In this manual, this is usually referred to as general widening or erratic widening. This is a function that is specified by the manufacturer and performed automatically by the CodeMax®.

8. Exploded Views

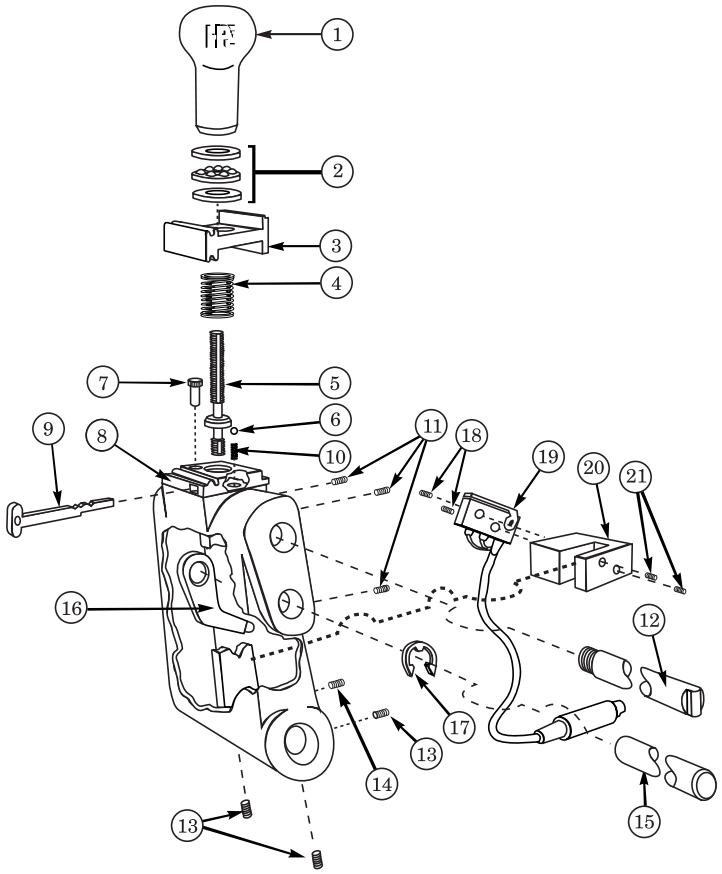


Fig. A: Pivot Arm with Safety Switch Assembly Parts List

#	Description	Stock #
1.	Wing Nut	SNK-3
2.	Ball Bearing Washer	BBW-2
3.	Top Jaw	CM-1056MA
4.	Spring	CM-1293MA
5.	Stud	CM-1019MA
6.	Ball Bearing	CM-50108
7.	Set Screw	CM-50110
8.	Bottom Jaw (factory installation recommended)	CM-1055MA
9.	Tip Stop	CM-1054MA
10.	Spring	CM-1090MA
11.	Set Screw	CM-50139
12.	Eccentric Shaft	CM-1041
13.	Set Screw	CM-50109
14.	Set Screw	CM-50112
15. & 16	Turn Bar & Shoulder Gauge	CMB-FG
17.	Retaining Ring	CM-50105
18.	2-56 Screw	MAX-92
19.	Shoulder Gauge Wire Assembly	MAX-90
20.	Shoulder Gauge Micro Switch Bracket	MAX-91
21.	6-32 Set Screw	MAX-89

1200MAX Parts List

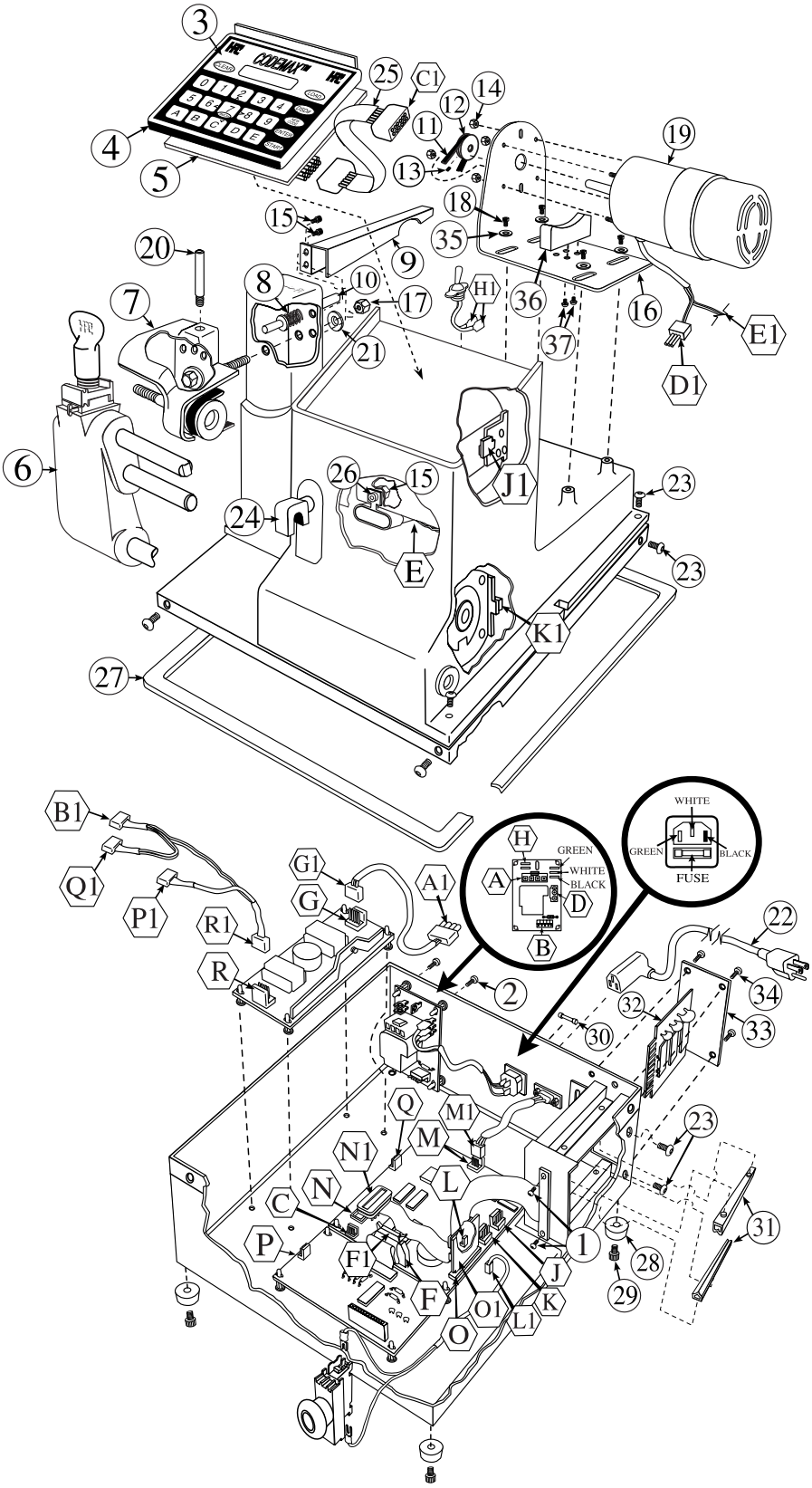
#	Description	Stock #
1.	Screw	MAX-86
2.	Screw	MAX-87
3.	Keypad	MAX-4
4.	Pad Locator	MAX-5
5.	Keypad Display Circuit Board	MAX-6
6.	Pivot Arm Assembly	CM-1024X
7.	Cutter Head Assembly	CM-1053X
8.	Grip Spring	CM-1079
9.	Belt Guard	CM-1014B
10.	Angle Index Pin	CM-1042
11.	Belt	CM-1083MA
12.	Motor Pulley	CM-1060MA
13.	Set Screw	9100-11
14.	Nut	CM-50148
15.	Screw	CM-50158
16.	Motor Mounting Bracket	CM-1040MA
17.	Hex Nut	CM-50157
18.	Screw	CM-50167
19.	Motor	CM-1080MA
20.	Pivot Pin	CM-1043
21.	Washer	CM-50100
22.	Power Cord	MAX-34
23.	Screw	MAX-35
24.	Plunger U-Bracket	MAX-43
25.	Wire Assembly (Display Board)	MAX-44
26.	Screw #8-32 x 1/4	MAX-46
27.	Gasket	MAX-47
28.	Rubber Bumper	CM-50133MA
29.	Screw	CM-50134
30.	Amp Fuse	MAX-78
31.	Rack Guide for DSD Program Board	MAX-81
32.	DSD Program Update Board	MAX-82
33.	Cover Plate	MAX-83
34.	Screw	MAX-84
35.	Washer	CM-50167-1
36.	Motor Support	CM-50186
37.	Motor Support Screws (2)	CM-50188

Circuit Connections

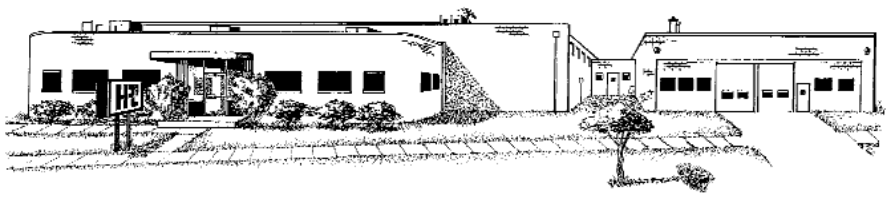
A1.	connects to:	A
B1.	connects to:	B
C1.	connects to:	C
D1.	connects to:	D
E1.	connects to:	E
F1.	connects to:	F
G1.	connects to:	G
H1.	connects to:	H

+J through R inclusive

Fig. B: 1200MAX Primary Assembly and Circuit Connections



Expect Quality...
Demand HPC.



9. Preventive Maintenance, Lubrication, Repairs, and Guarantee

1) MOTOR — The motor is equipped with sealed bearings that require no lubrication.

2) CUTTER HEAD — The cutter head is equipped with precision ball bearings for years of trouble free service and requires no lubrication. The cutter head swivel surface and plunger angle holes should be given a light coat of LPS#3 or equivalent, once every four to six months.

3) BEARINGS AND SLIDING SURFACES — These are to be given a light coat of a light grease at least every six months.

4) EXPOSED STEEL SURFACES — All remaining exposed steel shafts, cutters, etc., should be sprayed with WD-40 or equivalent light oil at least every six months. Wipe off any excess.

5) CLEANING — Remove all brass chips, dirt, and grit from the surface of your machine daily, with a soft bristle brush. Take particular care in keeping the jaw area clean and free of all residue build-up.

6) CALIBRATING DEPTH FOR RESHARPENED CUTTERS — The diameter of a resharpened cutter is smaller and therefore will make cuts shallower (if no depth adjustment is made). This is easily accomplished by rotating the eccentric shaft with a 3/8" open end wrench.

   See Depth Adjustment Section (Section 5.2) for full explanation of the eccentric shaft adjusting process.

   As cutters become worn, the alternative to purchasing a new set would be to resharpen them.

   Note: HPC does not resharpen cutters.

   In order to maintain matched cutter diameters, all cutters for this machine must be resharpened at the same time, and all diameters must be sharpened proportionately.

7) DRIVE BELT — The drive belt (CM-1083MA) was selected especially for this machine and should give years of good service. If it becomes worn or broken and requires replacement, be sure to install the new belt with the teeth outward.

   Note: The drive belt is somewhat more noisy when it is made to "cross-over" as the cutter head is swiveled to either the left or right angle when cutting Medeco® keys.

8) GUARANTEE — The CodeMax® Code Machine is fully guaranteed for one year from the date of purchase, against factory defects in material and workmanship. Mail the Warranty Card immediately, to validate your guarantee. Should your machine require factory repairs, it should be packed securely, along with a letter clearly stating the nature of the problem, and returned to the factory.

   During the one year warranty period, you will be billed for handling and shipping only. Neither HPC, Inc. nor HPC distributors have "loaner machines" available.

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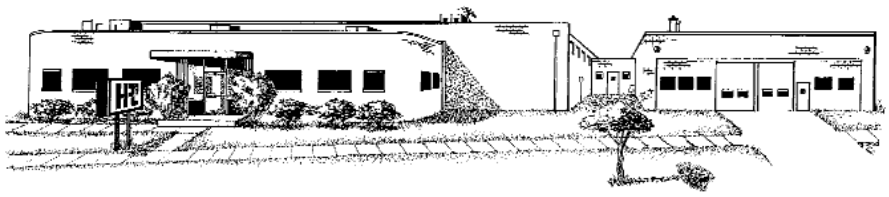
www.hpcworld.com



HPC Service Center

If the need should arise, please note the following in order to assure you, our customer, of prompt service on your key machine repair:

1) The HPC Service Center answers questions involving key machines and related parts Monday through Friday from 8:00 am to 5:00 pm Central Time.

2) REPAIRS — The preventive maintenance and recalibration of space and depth are the only repairs or adjustments suggested. Every effort has been made to thoroughly test every machine. Internal operating mechanisms, while extremely simple in function and design, are **factory repairable only.** Additional repair charges may be incurred by attempting to make these types of repairs yourself.

3) Parts for repairing any HPC key machine can be purchased directly through the Service Center by calling our toll-free number: 1-800-323-3295. When ordering any parts over the phone, please have a list of the part numbers and descriptions ready to expedite the ordering process. If the parts are needed in a hurry, they can be sent out UPS Next Day Air or Second Day Air. There is an extra cost incurred when parts are shipped this way.

4) If you need to send an HPC key machine in for repair, pack the machine securely in a box strong enough to prevent damage during shipping. Also be sure that your machine is equipped with an HPC cutter when it is sent in for repairs. Include a letter explaining exactly what type of problem you are having and any other work you may want done on the machine. Make sure your address and phone number are on the letter as well as the name of someone we can contact if the need arises while repairing your machine. Our shipping address is:

HPC, Inc.
Attn: Service Center
3999 N. 25th Avenue
Schiller Park, IL 60176

5) The usual method of payment for key machine parts is C.O.D. Other methods of payment include Visa, Mastercard or pre-paying your order with a check. If you wish to have your HPC distributor billed for the cost of repairs, they will have to call in with approval of the billing and a purchase order for the work being done, before the machine is repaired. Unless otherwise specified, key machines that are not under warranty will be shipped C.O.D. via UPS after the repairs have been made.

6) If you wish for the service department to call you with an estimate for repair of your machine, please specify this request in writing.

7) If while inspecting your machine our service department discovers additional problems not listed in your note, a service technician will call you with this information and the estimated charges to repair.

8) If no request is made for HPC to call with a repair estimate, but the cost is expected to exceed $250.00 or 25% of the cost of a new machine, you will be contacted with this information.

9) You will be called if the C.O.D. amount will exceed $250.00.

10) If after informing you of the repair estimate it becomes apparent that the cost will be higher, you will receive a call informing you of the additional charges before any additional work is done.

11) We are sorry, but neither HPC, Inc. nor HPC distributors have “loaner machines” available.

Additional Authorized HPC Service Center:

Eastern Canada:
Eric Ducharme
A. A. & E. Machine Repair
37 Bluebell Circle
Whitby, Ontario L1P1L2