

Tiger SHARK™

Manual



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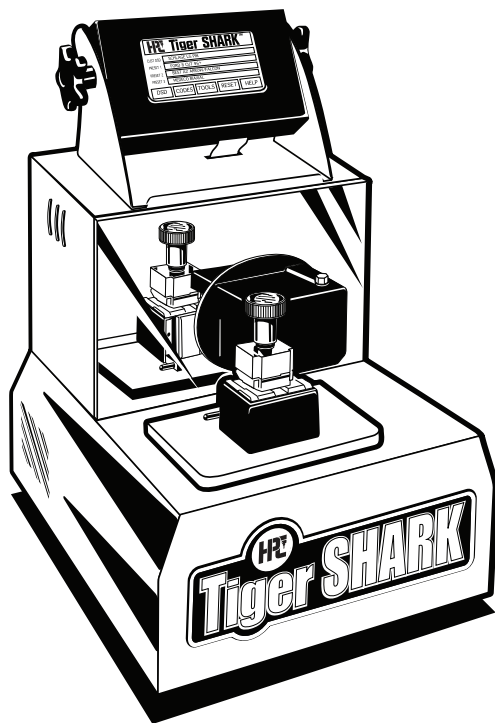
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Lock Picks,
Car Opening Kits,
Locksmithing Tools,
and much more at:

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Tiger SHARK™



INTRODUCTION & FEATURES

1.1 Introduction

1.2 Accessories Checklist

1.3 Parts Designations

1.4 Preparing to use the Tiger SHARK™

1.5 Touch Screen

Tiger SHARK™

1.1 Introduction

Thank you for purchasing the Tiger SHARK™ computerized code machine. We appreciate your business. We are confident your investment in this machine will pay off in increased productivity and in the ability to better serve your customers.

The Tiger SHARK™ is the culmination of thousands of hours of research and development. This machine combines a state of the art, computer controlled code cutting key machine with the most extensive key code database ever compiled, plus the touch screen user interface. In addition, HPC's master keying (MasterKing®) and key management (KeyTrail®) software programs will download key cutting data to the Tiger SHARK™, providing a comprehensive computerized solution to key control. Please complete and return the enclosed registration card. It is imperative to register your machine with HPC.

As a registered owner of the Tiger SHARK™, you will receive notices of updates and upgrades to the machine, as well as access to our technical support.

If you have any questions about your Tiger SHARK™, please contact our Customer Service Department at:

HPC, Inc.
3999 N. 25th Avenue
Schiller Park, IL 60176 U.S.A.
Tel: 800.323.3295 (from U.S.A. and Canada)
847.671.6280
Fax: 847.671.6343
Email: hpc@hpcworld.com
www.hpcworld.com

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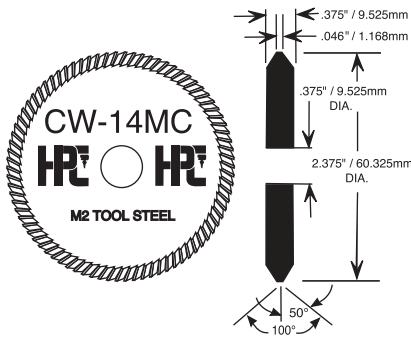
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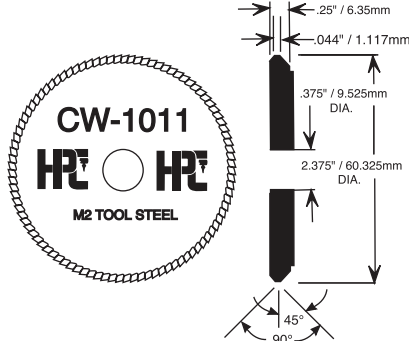
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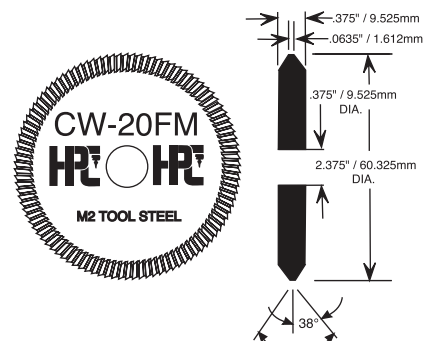
1.2 Accessories Checklist



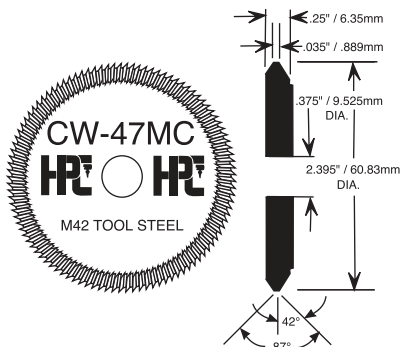
HPC Cutter Wheel (installed)
(CW-14MC)



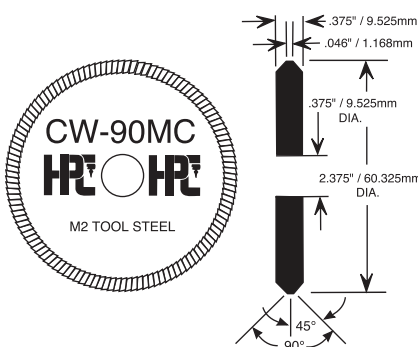
HPC Cutter Wheel
(CW-1011)



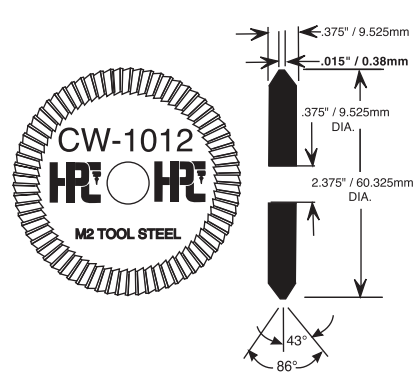
HPC Cutter Wheel
(CW-20FM)



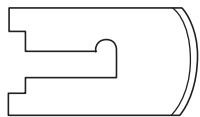
HPC Cutter Wheel
(CW-47CM)



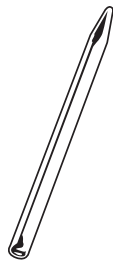
HPC Cutter Wheel
(CW-90MC)



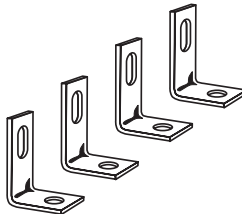
HPC Cutter Wheel
(CW-1012)



Decoder Plate



Stylus



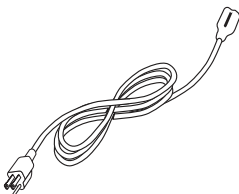
Bolt Down Brackets (set of 4)



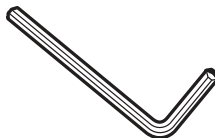
Tiger SHARK™
Manual



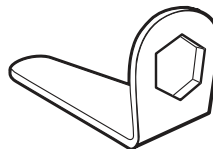
Calibration Key



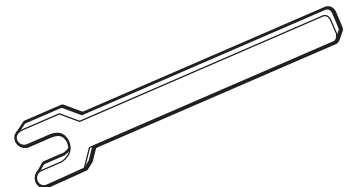
AC Power Cord



3/32" Allen Wrench

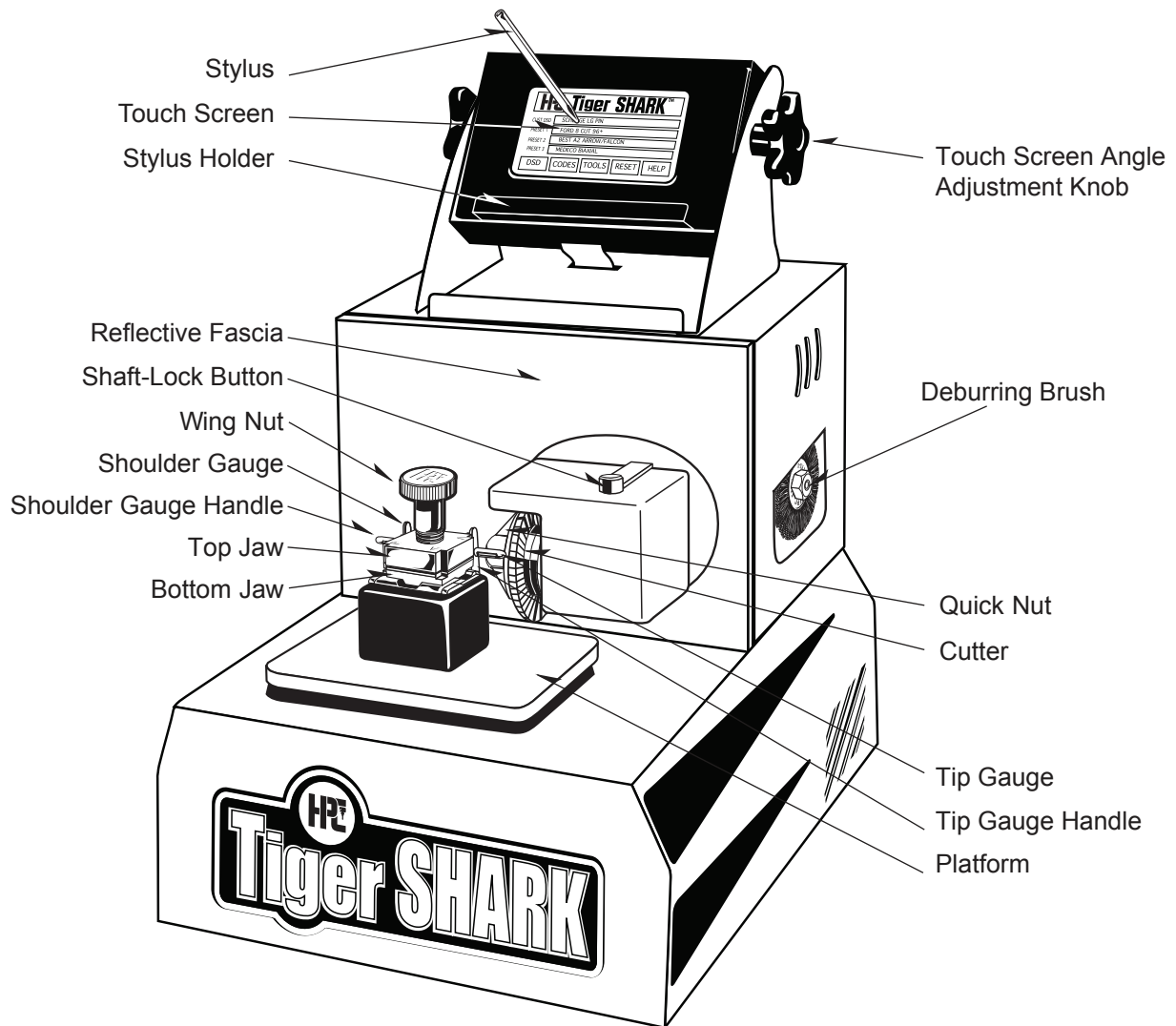


Cutter Nut Wrench



Cutter Shaft Wrench

1.3 Parts Designation



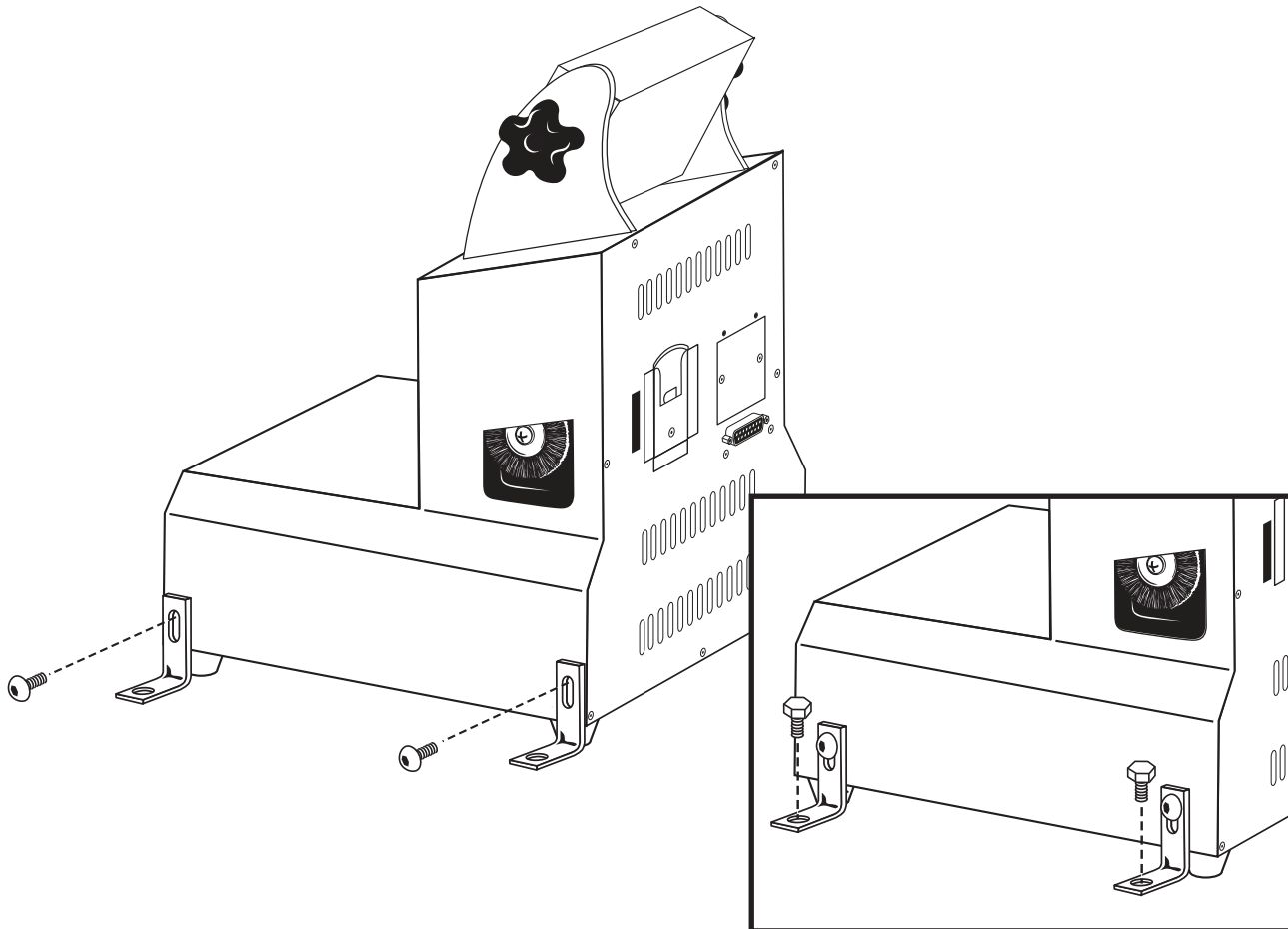
1.4 Preparing To Use The Tiger SHARK™

Before using the Tiger SHARK™ 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 Tiger SHARK™ 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), it may cause the Tiger SHARK™ to malfunction. While the Tiger SHARK™ contains an internal surge protector, it is recommended that you use a surge/brownout protector when operating the Tiger SHARK™.

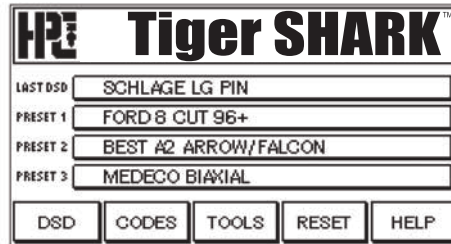
Power Requirements: 120 VAC, 60 hz, 4 amps OR 240 VAC, 50hz, 4 amps

The Tiger SHARK™ is supplied with Bolt Down Brackets. If you prefer to bolt down the machine to your work bench or counter, simply align the brackets to screw locations located on the side panels of the machine. Remove side panel screws, place slotted side of bracket against panel and thread screws in to place but do not tighten. Make sure bracket is flush with surface of counter. Tighten brackets down using your own bolts (suitable for the type and thickness of your workbench). Next, tighten screws on bracket sides to secure machine to bench.



1.5 Touch Screen

The Tiger SHARK™ is equipped with a state of the art touch-sensitive display screen. Use the stylus provided in much the same way as you would use a mouse to navigate and select objects on your PC. You can also use your fingertip. However, it is recommended to use the stylus for the greatest accuracy and to keep the screen cleaner.



The machine is programmed to dim the screen after approximately 10 minutes of non-use. Simply tap or touch the screen to reactivate it. This auto-dimming feature cannot be modified.

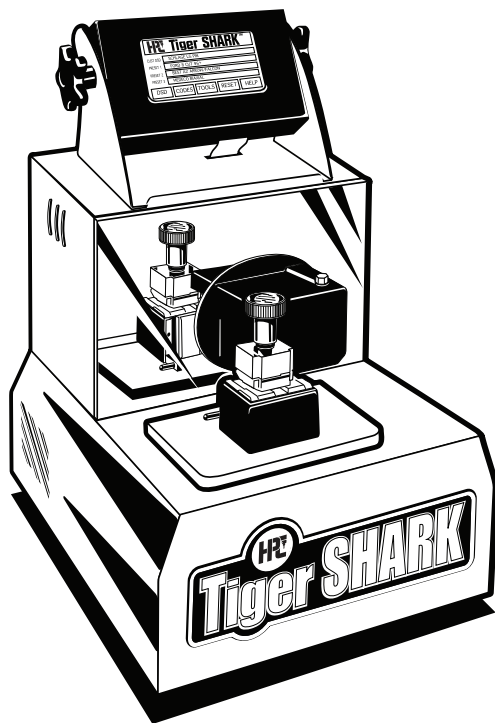
To clean the screen use a commercial glass cleaner sprayed on a soft cloth. Do not spray the touch screen directly.

Avoid prolonged exposure to direct sun light. Excessive exposure to direct sunlight can cause the screen to go dark. This is a normal occurrence with LCD screens, and is not permanent.

The screen has been calibrated during production of the machine. However, if you notice that the accuracy of your stylus taps have diminished (you do not get the results expected from a particular key), this indicates the screen requires re-calibration to align the image on the screen with the touch-sensitive coating. Please refer to the Tools section **5.6** for instructions.

WORK AREA: It is important to maintain a clean work surface, free from key dust debris and dirt. A hand vacuum or small brush is recommended.

Tiger SHARK™



CUTTER WHEELS

2.1 Cutter Wheel Descriptions

2.2 Replacing Cutter Wheels

2.3 Changing Cutter Wheels

2.1 Cutter Wheel Descriptions

The Tiger SHARK™ is supplied with 6 standard cutter wheels.

CW-1011: used for cabinet, padlock, and most vehicle applications

CW-14MC : used for most standard cylinder keys

CW-90MC: similar to the CW-14MC, but makes cuts with a steeper slope for special applications

CW-20FM: 76 degree cutter used for Sargent keys

CW-47MC: 87 degree cutter used for certain automotive keys

CW-1012: for Medeco® keys

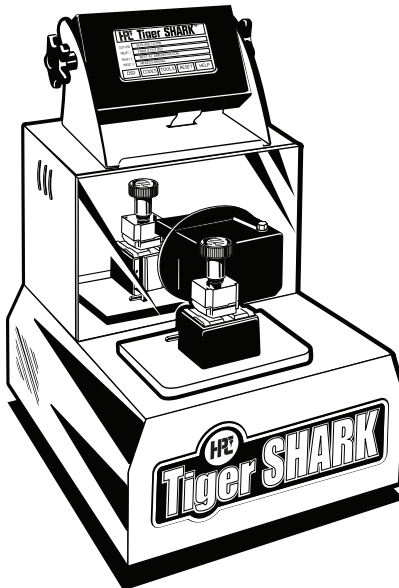
Flat Steel cutters, the Emhart cutter (**CW-1013**), the ASSA Cutter (**CW-32MC**), as well as others, are optional cutter wheels that are available for use with the Tiger SHARK™.

Refer to the HPC website, www.hpcworld.com for a complete list of cutters and applications.

2.2 Replacing Cutter Wheels

Cutter wheels eventually wear out and become dull. The life expectancy of a cutter wheel is dependent on the quantity and types of keys you are cutting and the composition of your key blanks.

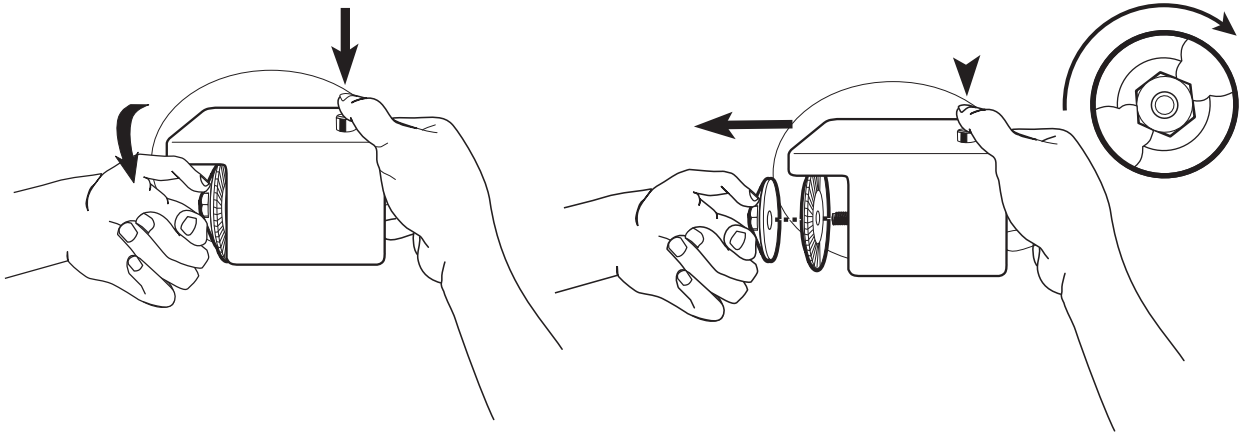
HPC does not recommend sharpening cutter wheels. Each time a cutter is sharpened, a small amount of material is removed and the diameter is slightly reduced. This reduction in diameter will result in cuts shallower than the manufacturer's specifications.



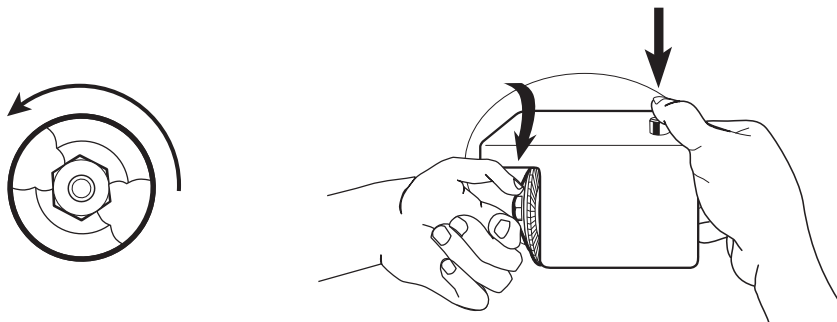
2.3 Changing Cutter Wheels

The Tiger SHARK™ is equipped with the HPC Quick Nut; tools are not required to change cutters. The following procedure is recommended when changing cutter wheels:

1. Turn the Tiger SHARK™ off. Hold the cutter head assembly and press down the shaft-lock button.

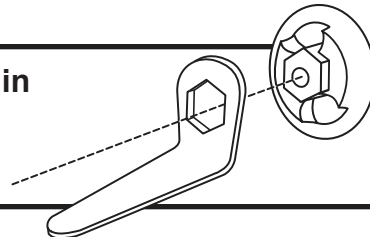


2. Turn the Quick Nut clockwise (toward the front of the machine) and remove it.
NOTE: The locknut is reverse thread.
3. Remove the cutter. Slide the new cutter onto the shaft. **IMPORTANT NOTE:** Be sure the cutter is installed for a clockwise rotation, with the arrow facing the outside, so it can be seen.
4. Reinstall the Quick Nut, turning counterclockwise (toward the rear of the machine) onto the cutter shaft.
5. Hold the cutter head assembly securely and press down the shaft-lock button.

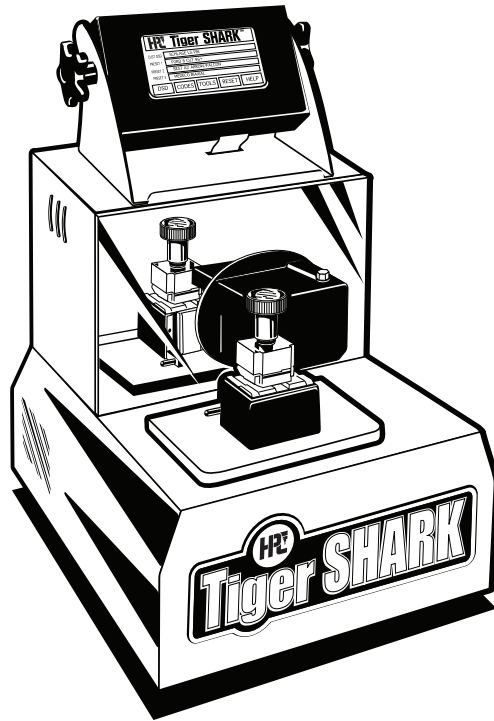


6. Tighten the Quick Nut. Note: Do not overtighten the nut.

NOTE: A special wrench has been included in case the Cutter Nut has been inadvertently overtightened.



Tiger SHARK™



LOADING / GAUGING KEYS

3.1 Loading Key Blanks

3.2 Gauging Methods

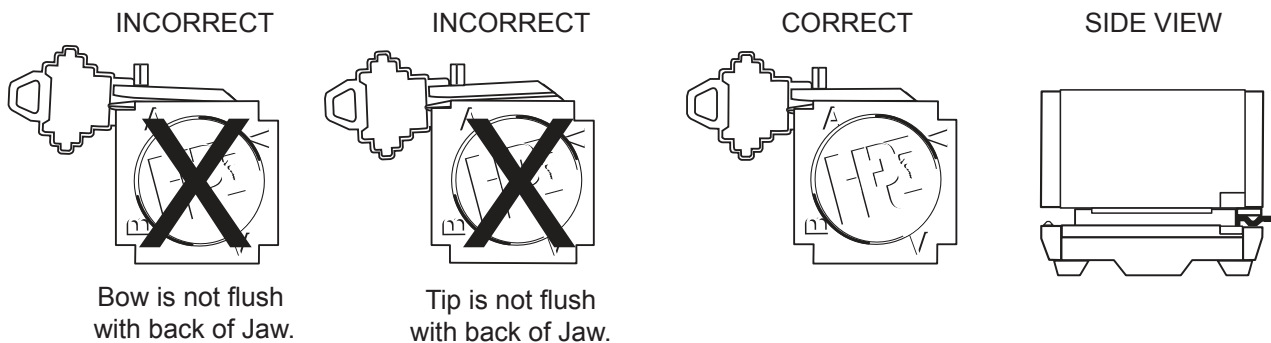
3.3 4-Way jaws

3.1 Loading Key Blanks

The Tiger SHARK™ is equipped with 4-way jaws and integral shoulder and tip gauges. The choice of using the shoulder or tip gauge is mandated by the type of key being cut. If in doubt of the gauge point, refer to the information on the CUT SCREEN for the key to be cut (see **4.1** “Cutting by DSD”, step 6 in this manual for information on the CUT SCREEN).

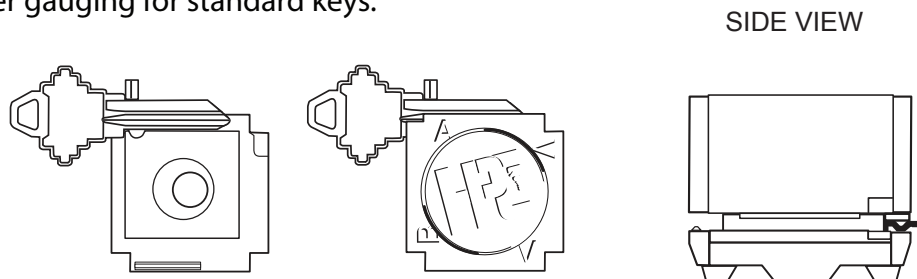
Important: The shoulder and tip gauges have safety switches. The cutter motor will not power on until the gauges are lowered to their rest position. The Touch Screen will indicate to lower the gauges if necessary

Loosen the wing nut and place the key blank between the top and bottom jaw. The bottom of the key blank should be against the back of the bottom jaw. Make sure that the key is level in the jaw.

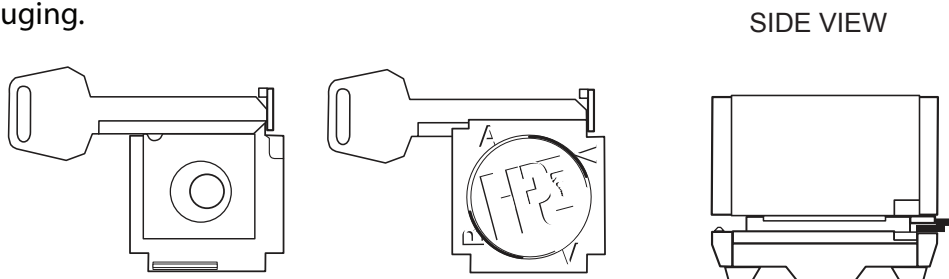


3.2 Gauging Methods

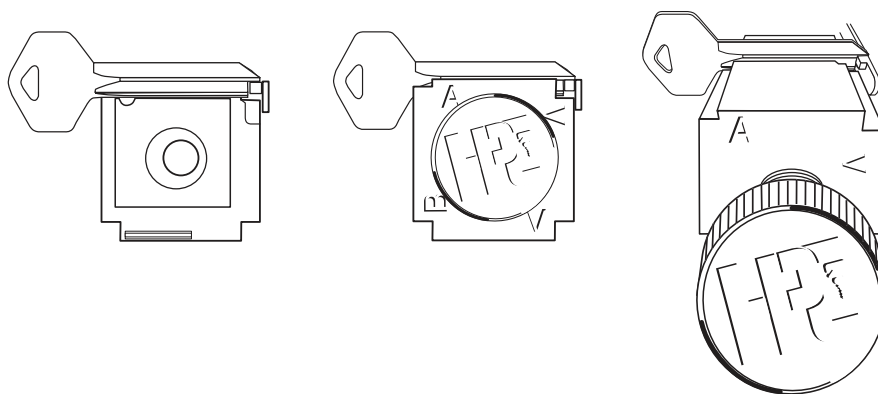
Typical shoulder gauging for standard keys.



Typical tip gauging.



Special Best style tip gauging.

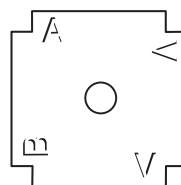


3.3 4-Way Jaws

The Tiger SHARK™ is equipped with state of the art 4-way jaws. These jaws are expertly machined to insure secure holding of virtually all keys. The 4 sides are marked as follows:

The **A-side** is for most standard size keys.

The **B-side** is for most small size keys.

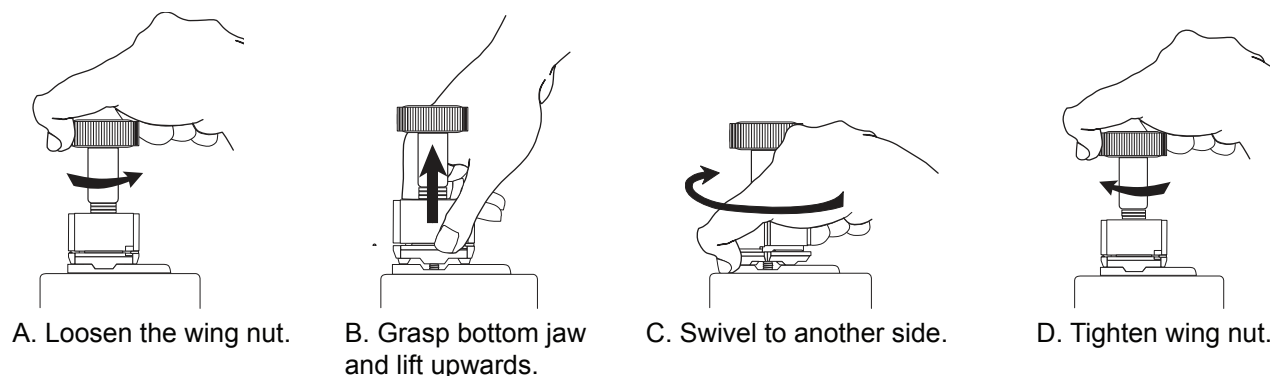


The CUT SCREEN or BITTING SCREEN will indicate which side to use for the particular key to be cut.

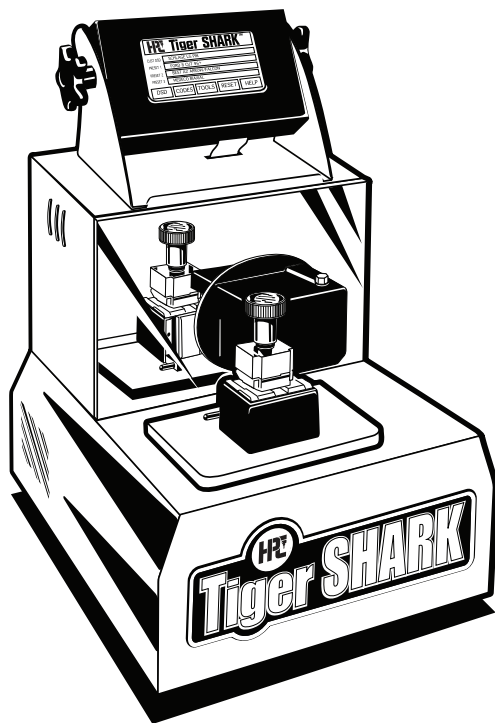
The sides marked **V** and **^** are for use with double sided keys. The **^** indicates the holding ridge is on the bottom jaw, pointing up. The **V** indicates the holding ridge is on the top jaw, pointing down.

These holding ridges will allow you to clamp on the grooves in the keyway. When you use these sides of the jaw you are not gauging from the back of the jaw, as you do on the A-side and B-side.

To change sides:



Tiger SHARK™



KEY CUTTING

4.1 Cutting by DSD

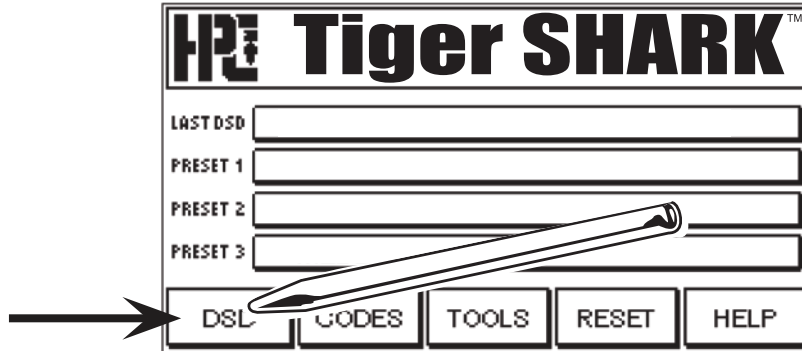
4.2 Cutting by Code

4.3 Cutting Specialty Keys

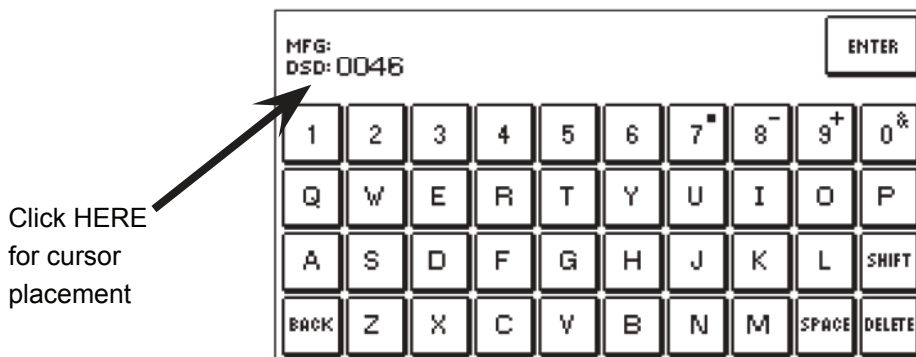
4.1 Cutting by DSD

1. DSD stands for Depth & Space Data. This is HPC's reference number for the key cutting information for a specific lock. If you know the bitting for the key you are cutting, press DSD on the touch screen.

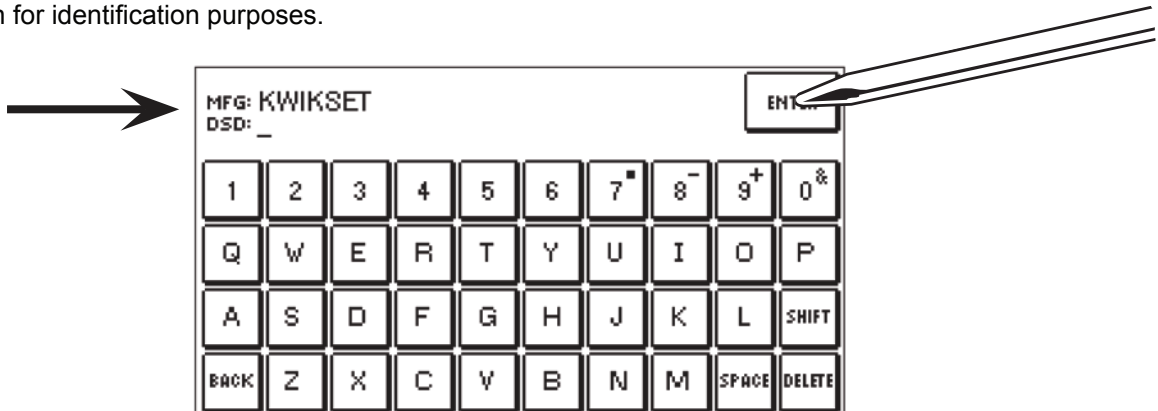
The main display will show:



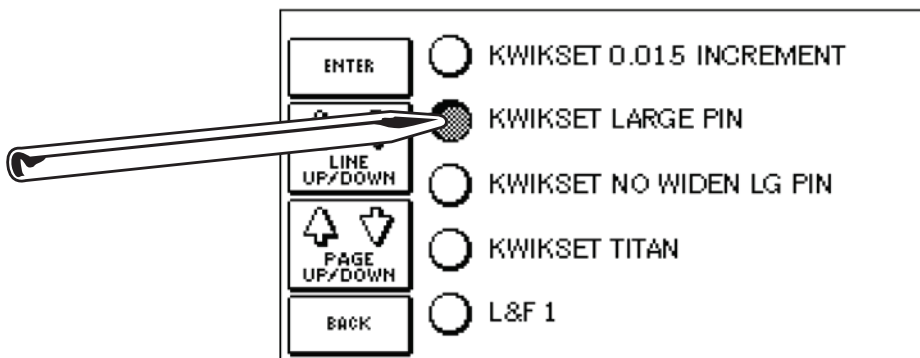
2. If you know the DSD number, type it in the DSD field.



3. If the DSD number is not known, type in the name of the manufacturer in the MFG field. Then press ENTER. If there is more than 1 listing for the manufacturer entered, the screen will display a list of the different DSD numbers for that manufacturer along with a description for identification purposes.



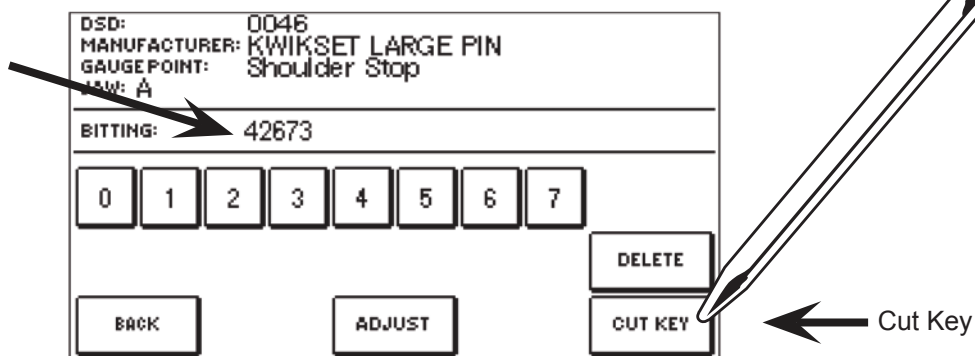
4. Select the DSD required by clicking on name.



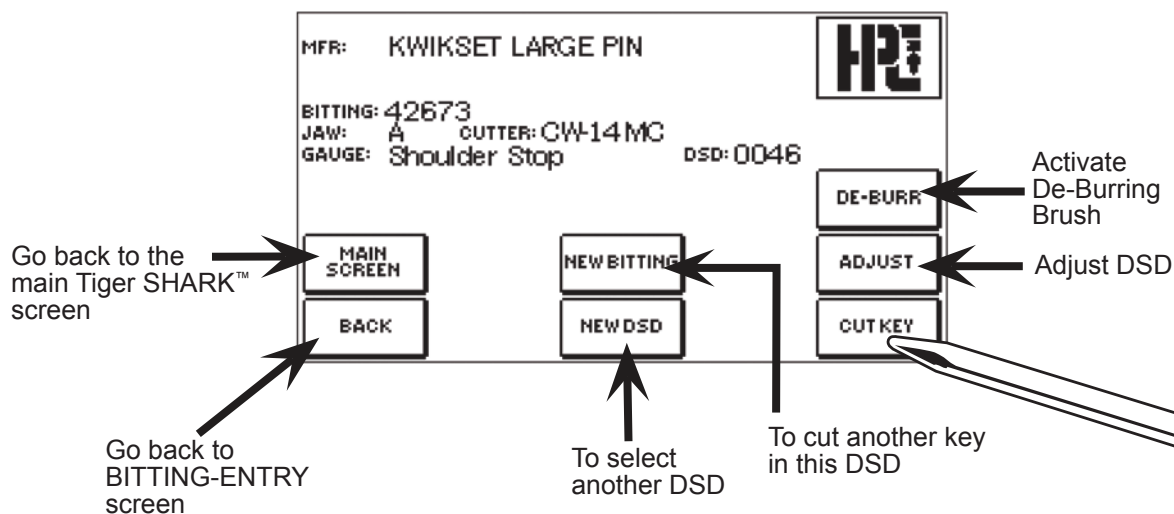
LINE UP/DOWN will scroll through this page/screen.

PAGE UP/DOWN will scroll manufacturers alphabetically by full page.

5. The next screen confirms the cutter and jaw to use, the gauge point, and bittings to be cut.
6. Enter the bitting of the key using the number buttons. Press CUT KEY to go to the CUT SCREEN.

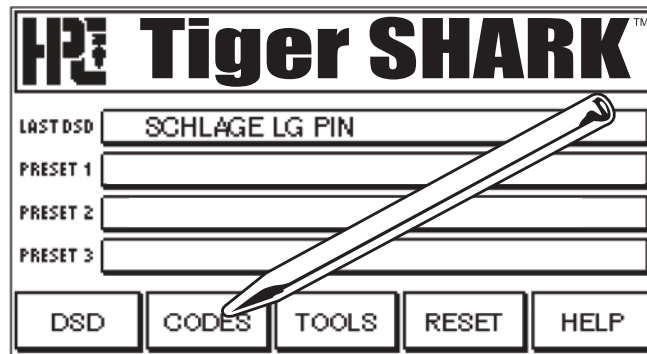


7. Load key blank, and press CUT KEY to start cutting process.



4.2 Cutting by Code

1. To cut by Code, select CODES from the main Menu Screen.



2. Next, select the type of Codes you wish to search. For example: Vehicle Codes. If for some reason the type of key is not known, it is also possible to search the entire database by using the SEARCH ALL CODES button. However, this will increase the search time.

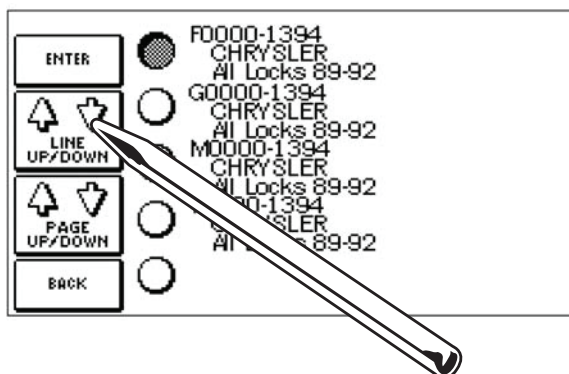


3. Searches can be done by code number and/or manufacturer, or by key blank number (original, Curtis, Ilco, Ilco EZ and Silca). The Search Screen will allow you to search by Code or by Manufacturer. Type in information with Stylus and then press ENTER. The SEARCH BY key in the upper left will alternate between CODE or KEY BLANK Search Screens.

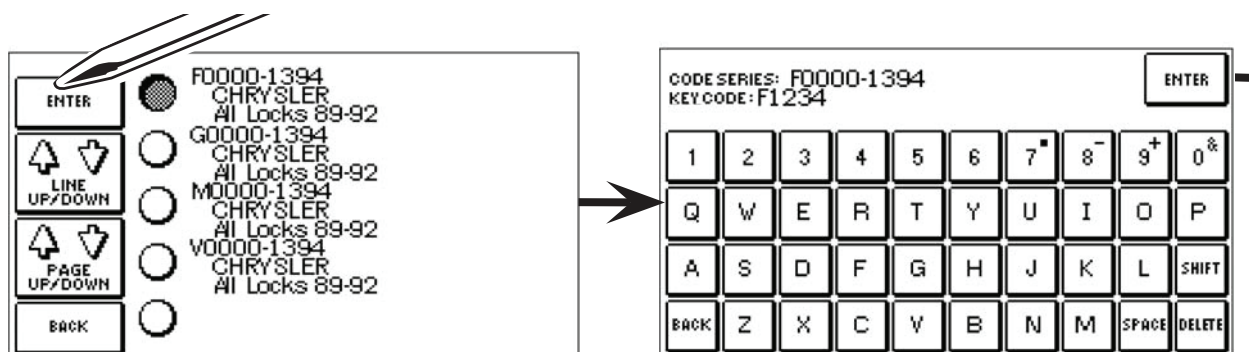
SEARCH BY BLANK ONLY		VEHICLE CODES										ENTER	
		CODE: F1234											
		MFG: CHRYSLER											
1	2	3	4	5	6	7 [■]	8 ⁻	9 ⁺	0 ^{&}				
Q	W	E	R	T	Y	U	I	O	P				
A	S	D	F	G	H	J	K	L	SHIFT				
BACK	Z	X	C	V	B	N	M	SPACE	DELETE				

SEARCH BY CODE / MFG ONLY		VEHICLE CODES										ENTER	
		BLANK: 594145											
1	2	3	4	5	6	7 [■]	8 ⁻	9 ⁺	0 ^{&}				
Q	W	E	R	T	Y	U	I	O	P				
A	S	D	F	G	H	J	K	L	SHIFT				
BACK	Z	X	C	V	B	N	M	SPACE	DELETE				

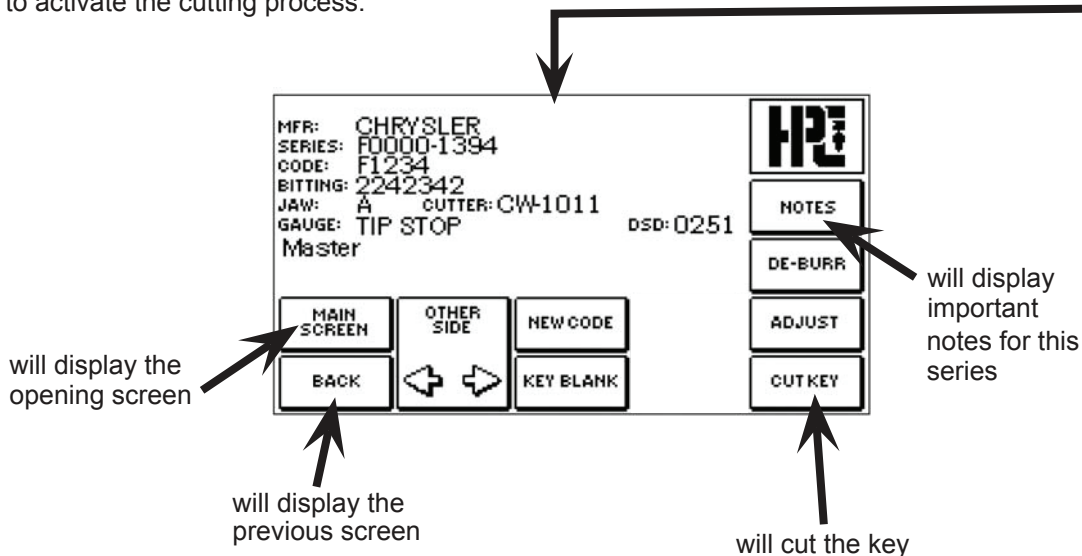
4. The screen will display all code series that match the search criteria entered. Select the appropriate series. Use LINE UP/DOWN to scroll through the current page. Use PAGE UP/DOWN to scroll through the pages, if there are more than 5 results from the search.



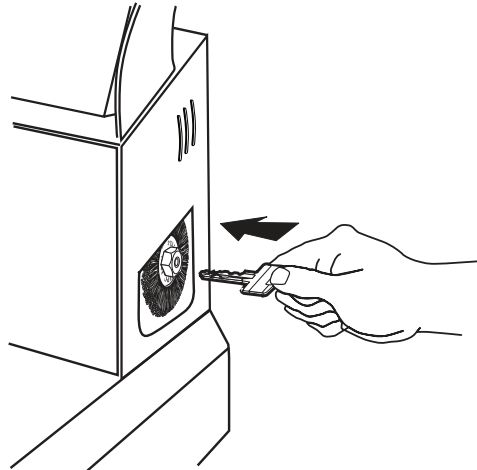
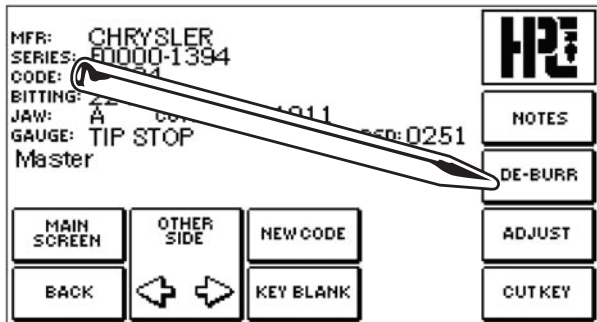
5. Select the appropriate series. If searching by key blank or manufacturer, the screen will prompt you to enter the code number. Once the code number is entered, the screen will display the CUT SCREEN.



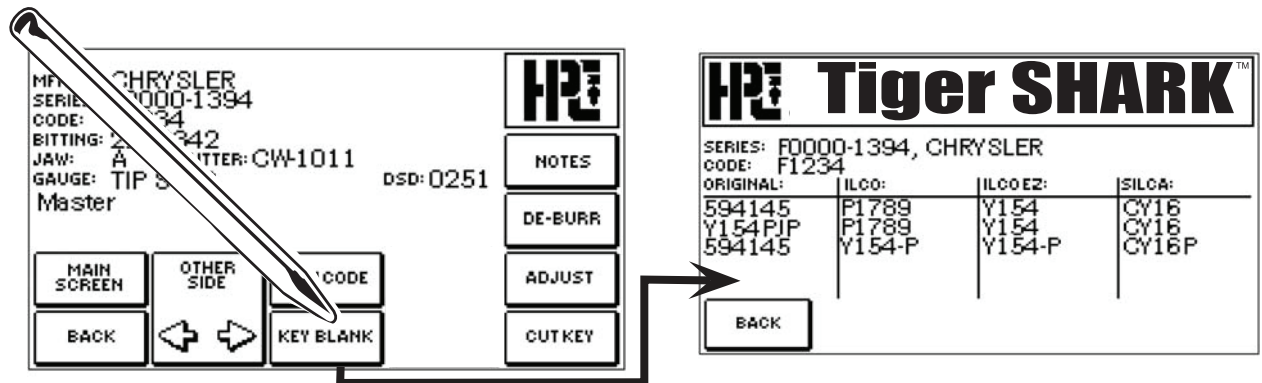
6. The CUT SCREEN displays the CUTTER, JAW and GAUGE POINT. Press CUT KEY to activate the cutting process.



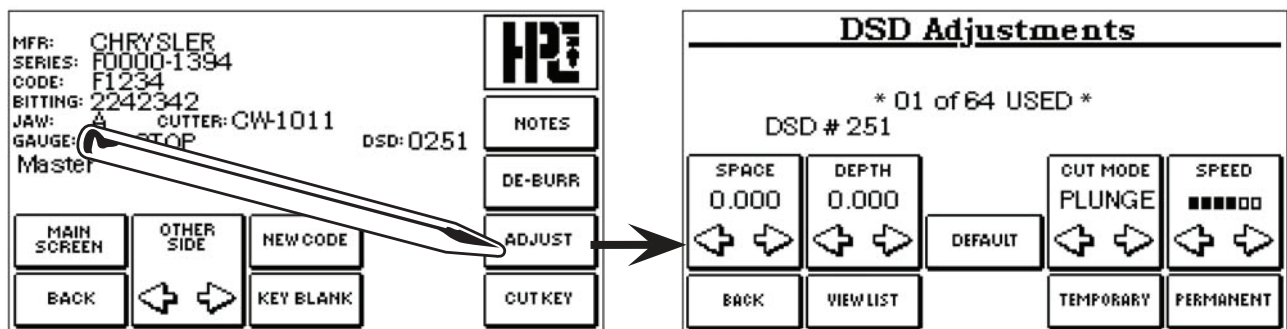
- 7 Choosing DE-BURR from the CUT SCREEN will activate the Deburring Softie™ Brush on the right side of the machine. Press the DE-BURR button twice and hold; the deburring brush will continue to turn for as long as it is depressed. Hold the newly cut key firmly, and position key to deburr using the Softie™ Deburring Brush.



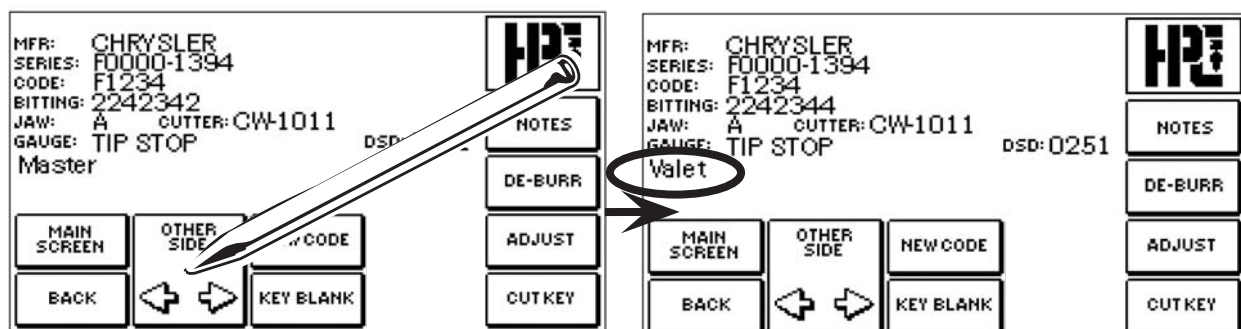
8. Choosing KEY BLANK from the CUT SCREEN will display compatible key blanks for the code which you have chosen. Use the BACK key to return to the CUT SCREEN.



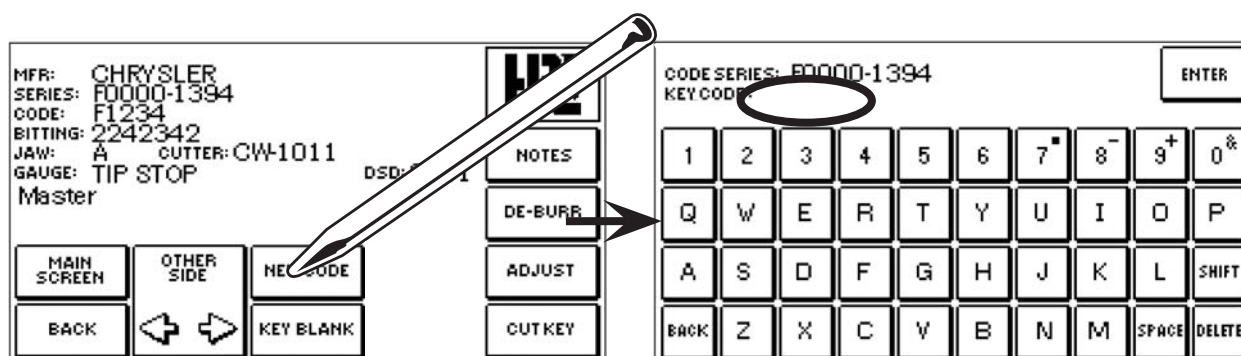
9. Choosing ADJUST from the CUT SCREEN (prior to cutting the key) will display the DSD ADJUSTMENTS Screen. Please refer to Section 5.4 in this manual for instructions on using the Adjustments feature.



10. When cutting double-sided different keys, choosing OTHER SIDE will display the code for the other side of the key. It will also display the code for a Valet Key, where applicable. To cut the second side of a double-sided same key, simply reverse the key blank and press CUT KEY again.



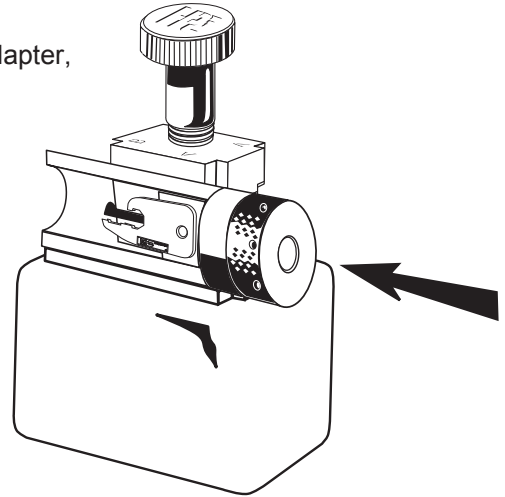
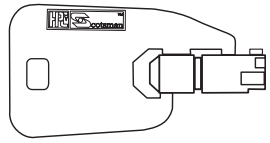
11. To cut another key in the same code series, press NEW CODE. The screen will display the CODE SERIES SCREEN. Here you may enter a code which occurs between the indicated code series. Selecting ENTER will return you to the cut screen for that new code number.



4.3 Cutting Specialty Keys

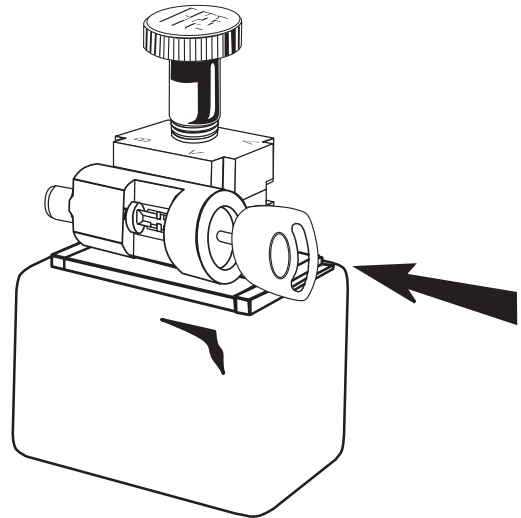
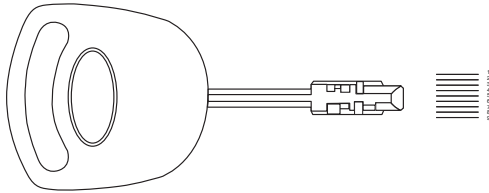
1. Tubular Keys

Standard 7-pin tubular keys can be cut by code using the optional adapter, **No. TKA-SHARK**, available from your HPC distributor.



2. Tibbe Keys

Tibbe keys can be cut by code using the optional adapter, **No. TIBBE-SHARK**, available from your HPC distributor.



3. Medeco® Keys

Medeco® Biaxial® keys use a combination of the depth of the cut, angle, and position of angle for each chamber of the cylinder. The cutter head on the Tiger SHARK™ automatically pivots to cut the appropriate angle.

Medeco® uses the following letters to identify the angles and position:

Code	Position & Angle	Tiger SHARK™ Button
K	Fore, Left	FL
B	Fore, Center	FC
Q	Fore, Right	FR
M	Aft, Left	AL
D	Aft, Center	AC
S	Aft, Right	AR

To cut these keys, use the Medeco® Biaxial® for Tiger SHARK™ DSD (No. 4076). Enter the depth of the cut, followed by the position and angle.

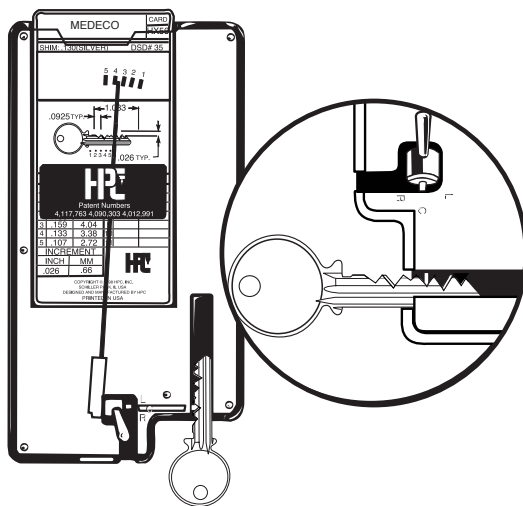
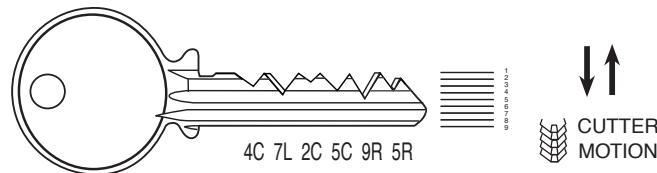
DSD: 4076								
MANUFACTURER: MEDECO BIAxIAL								
GAUGE POINT: Shoulder Stop								
JAW: A								
BITTING: 30D5Q04BD2KM3Q010D								
0	1	2	3	4	5	6		
		FL	AL	FC	AC	FR	AR	DELETE
BACK			ADJUST				CUT KEY	

The Tiger SHARK™ will also accommodate double cuts, utilizing 2 angles in each chamber. Consult with Medeco® for their specifications on using double-cut angles. To cut double angles, enter the depth, then the fore angle, then the aft angle.

Because the option exists for cutting double angles, this DSD number allows 3 positions for each space of the key (depth, fore, and aft).

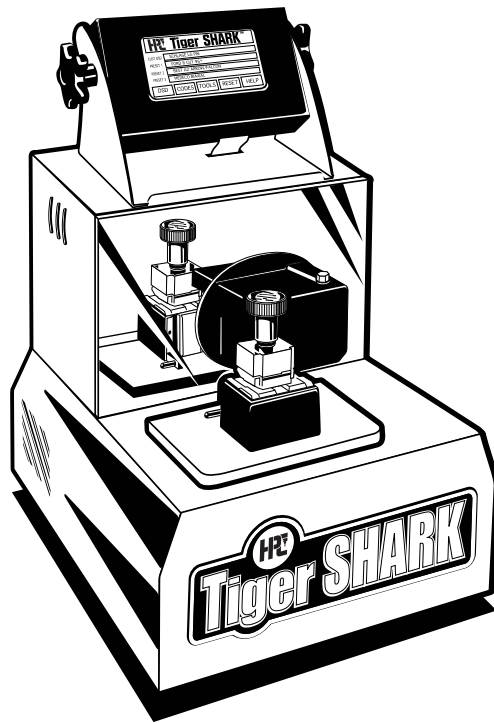
If you are cutting only single angles, the Tiger SHARK™ will automatically fill in a 0 (indicating no cut) in the unused position.

If it is necessary to decode a Medeco® key, HPC offers the HKD-75 Pocket-Sized Decoder. The Tiger SHARK™ cannot decode angle cuts. This tool will decode the depths and angles of Medeco® keys, as well as the depths of keys for over 100 other locks. Contact an authorized HPC distributor for details on this product.



Medeco® Angle Cut Keys
 4076 - Medeco® Biaxial
 4076 - Medeco® Biaxial and Double Cut
 51 - Medeco® Standard

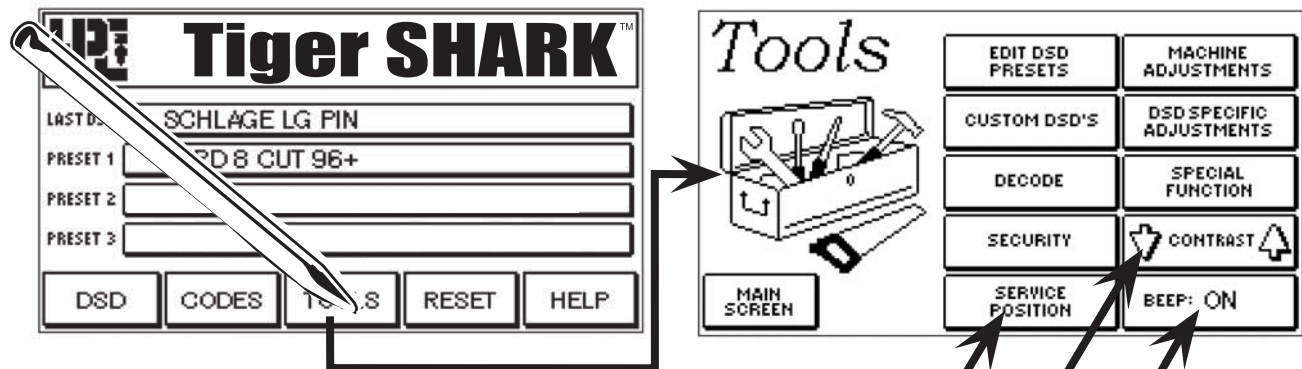
Tiger SHARK™



TOOLS

- 5.1** Edit DSD Presets
- 5.2** Machine Adjustments
- 5.3** Custom DSDs
- 5.4** DSD Specific Adjustments
 - 5.4.1** Cut Styles
- 5.5** Decode a Key
- 5.6** Special Functions
- 5.7** Security

The Tools section provides the means to make adjustments, update, maintain, and customize your Tiger SHARK™ Machine. Select TOOLS to display the Tools Menu. Choosing MAIN SCREEN at any time will return you to the Tiger SHARK™ Main Menu.



Moves the carriage to allow more room for easier access.

Adjusts the screen contrast.

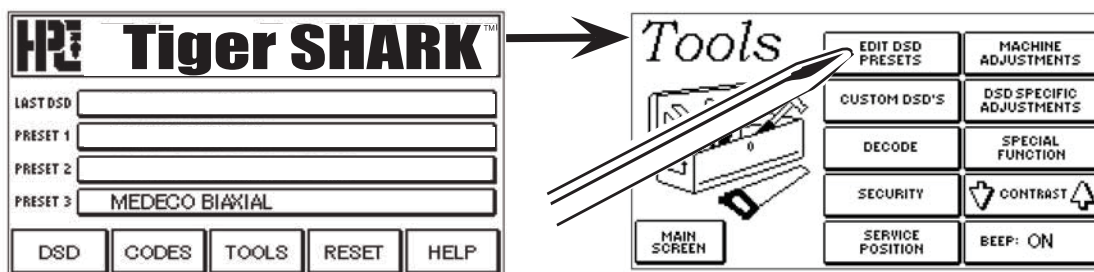
Turns the beep tone on or off.

The other buttons are explained in these sections:

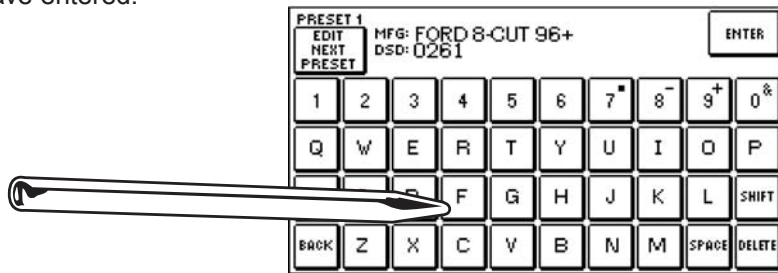
- 5.1 Edit DSD Presets
- 5.2 Machine Adjustments
- 5.3 Custom DSDs
- 5.4 DSD Specific Adjustments
- 5.5 Decode
- 5.6 Special Function
- 5.7 Security

5.1 Edit DSD Presets

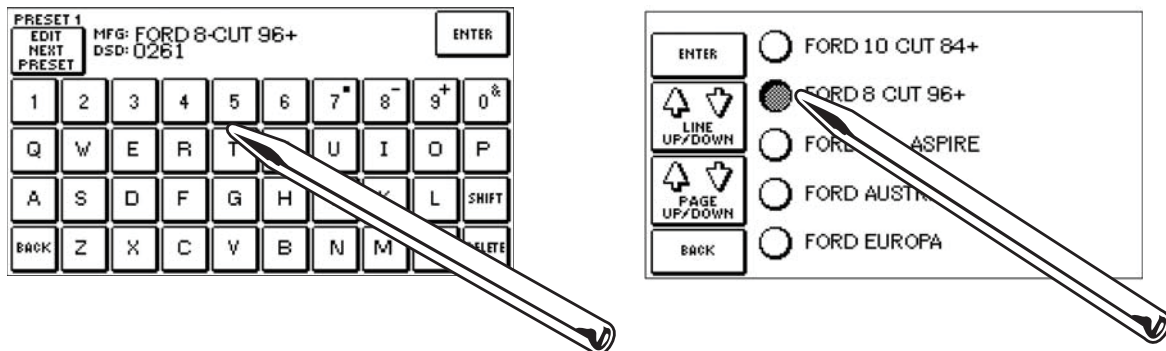
1. When your machine arrives new, the main screen will display Preset 1, Preset 2, and Preset 3 as blank. Programming your own Presets will allow you to proceed directly to the biting screen, bypassing the search process. Generally, you will set these presets to your most frequently cut DSDs. These Presets are not to be confused with the LAST DSD at the top of the main screen. After you have cut your first key by DSD with your machine, the last DSD cut will be recorded and can be used in the same manner as Presets. The last DSD will change accordingly to the last DSD key you cut. To edit Presets, select EDIT DSD PRESETS from the Tools Menu.



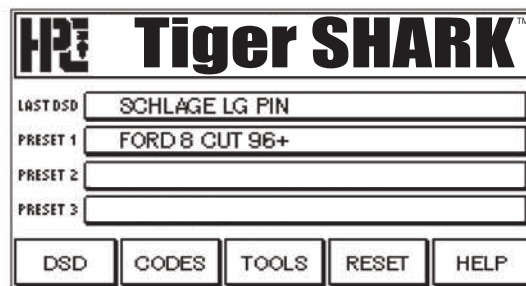
- The Preset 1 Edit Screen will be displayed. If the DSD Number is known, simply type it in next to DSD: and select ENTER. This will automatically fill in the correct manufacturer description for the DSD you have entered.



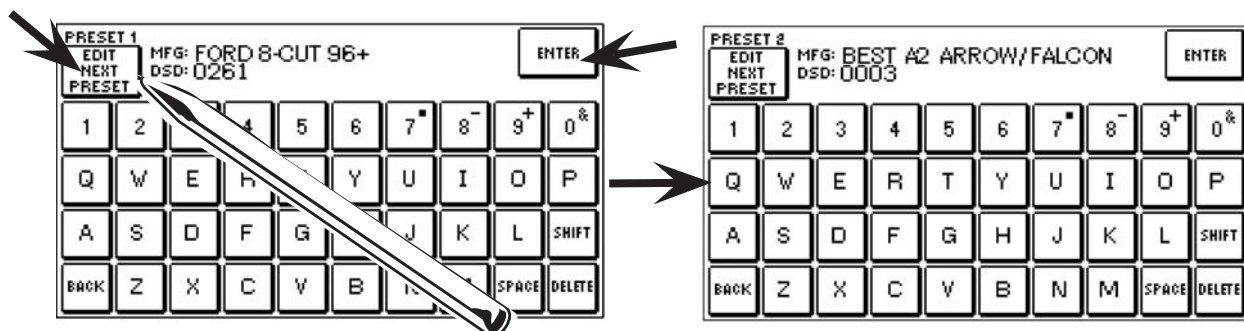
- If the DSD is not known, you may search by manufacturer by typing in a manufacturer name, selecting ENTER, and choosing from the Search List.



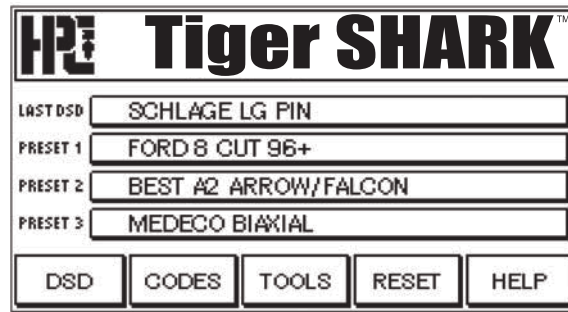
- This will bring you back to the Main Menu. Preset 1 is now set to the DSD which you have selected. This can be changed at any time by going to the TOOLS Menu and selecting EDIT DSD PRESETS.



- After Preset 1 has been set, you may now set Preset 2 and Preset 3 by entering the EDIT DSD PRESET Screen and selecting the EDIT NEXT PRESET button.



- After all Presets have been made, the Main Menu will appear with DSD Presets displayed, similar to the one shown here.



- Selecting any one of these four buttons (LAST DSD, PRESET 1, 2, or 3) will take you directly to the biting screen (see page 21).

5.2 Machine Adjustments

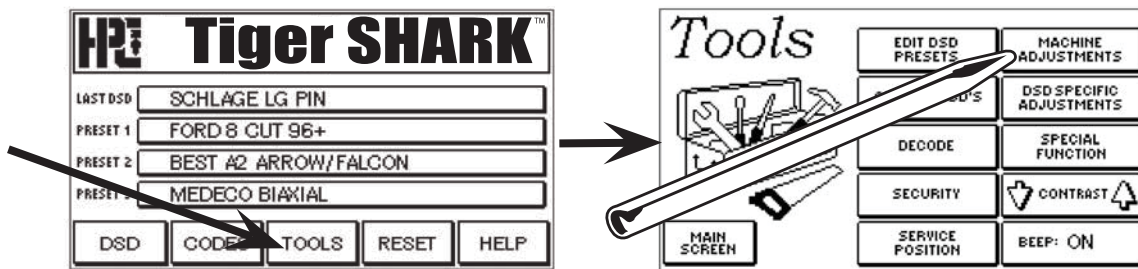
The Tiger SHARK™ is calibrated and tested prior to shipment. Adjustments should not be required to cut keys to any of the DSDs.

However, over time, re-sharpened cutter wheels, and other factors may cause the machine to cut out of calibration. In this instance, you can electronically adjust the calibration of the machine.

Prior to making any machine adjustments, it is imperative to verify the machine is out of calibration. To check the calibration of the machine, cut several different types of keys and use a micrometer to carefully measure the depths and spaces. Compare these measurements with the lock manufacturer's specifications.

If you find the keys are consistently cut outside of the specified dimensions, use the following directions to make adjustments to the machine:

- Select the TOOLS button from the Main Menu, then MACHINE ADJUSTMENTS.



- The Machine Adjustments Screen will allow you to adjust Depth and Space by using the right and left arrows indicated, in increments of .001" or .01mm. These adjustments can be saved by choosing SAVE, cancelled by selecting CANCEL, or returned to the machine's standard settings by choosing DEFAULT.

DEFAULT: Revert to the factory preset calibration

TIP SPACE: Moves cuts closer to (minus) or away from (plus) the tip of the key for tip gauged DSDs

SHOULDER SPACE: Moves cuts closer to (minus) or away from (plus) the shoulder of the key for shoulder gauged DSDs

TIP TO BOW: Causes the cutter to cut deeper (minus) or shallower (plus) at the tip of the key

DEPTH: Causes the cutter to cut deeper (minus) or shallower (plus)

BACK: Go back to the TOOLS Menu

CANCEL: Cancel any changes made (prior to saving)

SAVE: Save the adjustments made

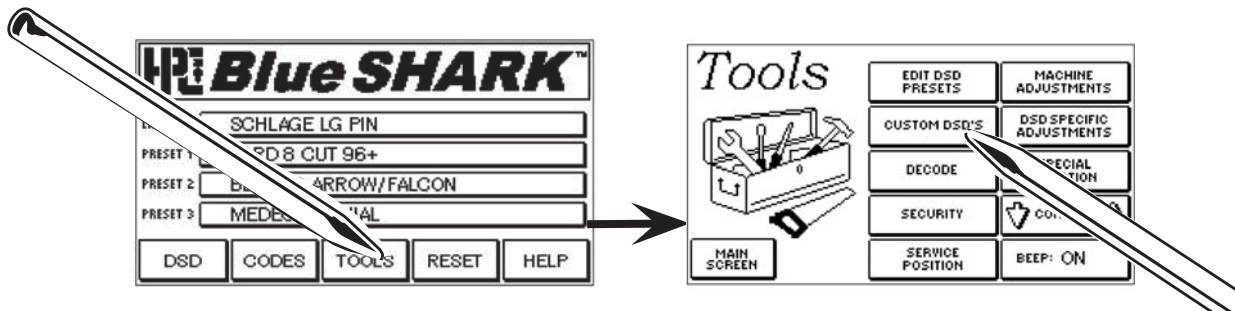
DATA TYPE: Select units of measure in thousandths of an INCH or hundredths of a MILLIMETER

Machine Adjustments				
TIP SPACE 0.000 ← →	SHOULDER SPACE 0.000 ← →	DATA TYPE INCH DEFAULT	TIP TO BOW 0.000 ← →	DEPTH 0.000 ← →
BACK		CANCEL		SAVE

 MINUS (-) ARROW .001" / .01mm.
  PLUS (+) ARROW .001" / .01mm.

5.3 Custom DSDs

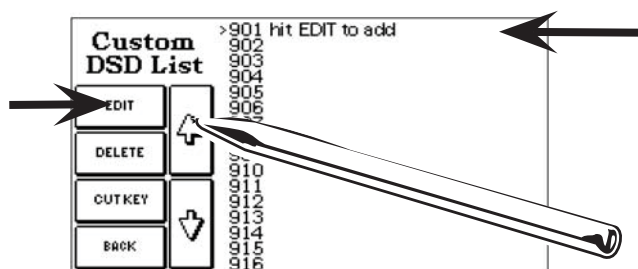
1. Custom DSDs allow for the creation of your own original DSD. This is particularly useful if you have a proprietary or restricted lock for which you are cutting keys. To create a custom DSD, first choose TOOLS from the Main Menu, and then select CUSTOM DSDS from the TOOLS Menu.



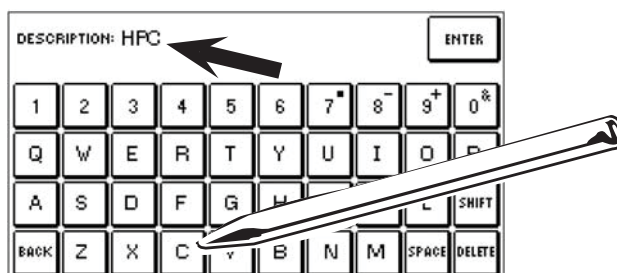
2. The machine will display the Custom DSD List as shown below. You may create and store up to 38 Custom DSDs. From this menu, you have the option to edit the list, create a new DSD, delete a DSD from the list, or cut a key using a specified DSD.

Custom DSD List		>901 hit EDIT to add
EDIT	↑	902
DELETE		903
CUTKEY		904
BACK	↓	905
		906
		907
		908
		909
		910
		911
		912
		913
		914
		915
		916

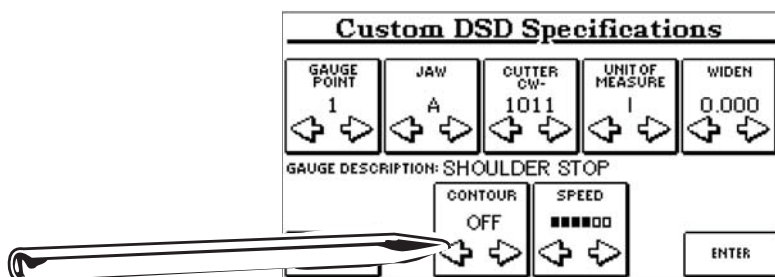
3. To create a new DSD, scroll down to a blank line. You will see "hit EDIT to add." Select the EDIT button from the menu.



4. From this screen you can now type in a description to give your new DSD a name. By pressing the SHIFT key, you can insert a period(.), dash(—), plus sign(+) or ampersand(&) into the description. In this example, we have used the name HPC. Press ENTER to record the description for your new DSD.

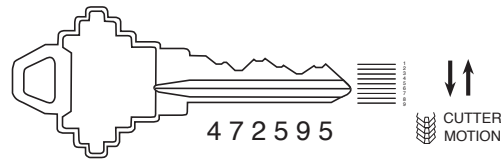


5. The Custom DSD Specifications Screen will appear as shown here. This screen allows the user to adjust the GAUGE POINT (1-shoulder, 2-left side of jaw, 6-extended tip gauge, 7-standard tip gauge), JAW TYPE, CUTTER, UNITS OF MEASURE (inch/metric), WIDENING (.020" widening means .065" flat; .020" plus .045", standard cutter flat), CONTOUR, and SPEED.

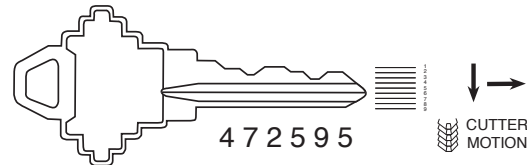


6. Adjusting the CONTOUR setting determines the type of cut your machine will execute. The Tiger SHARK™ defaults to a Plunge cut when the CONTOUR displays OFF. When CONTOUR is ON, your machine will execute a CONTOUR cut.

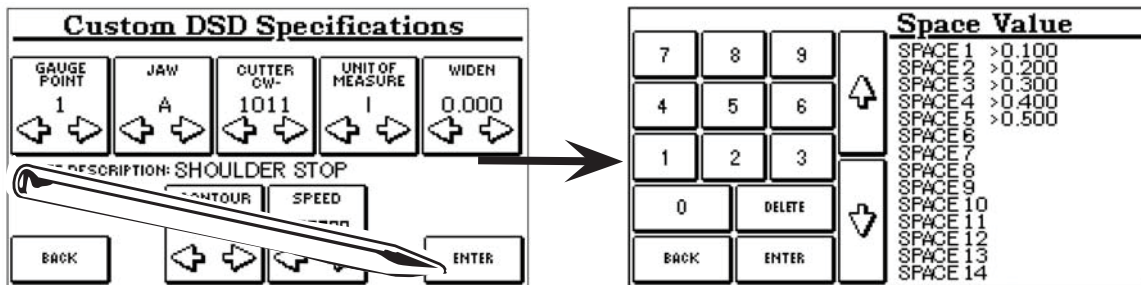
The Plunge Cut (CONTOUR OFF) is the default cut style. It is made when the cutter comes straight down into the blank, backs off, and moves in again to make the next cut after the carriage has moved to the next cut position.



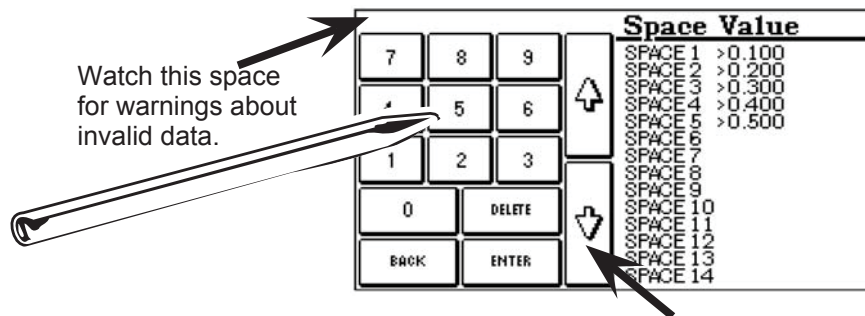
A Contour Cut (CONTOUR ON) eliminates peaks between cuts. It is created when the cutter moves forward to make the first cut, and then moves straight laterally to the next position before moving in to cut the next depth in the sequence.



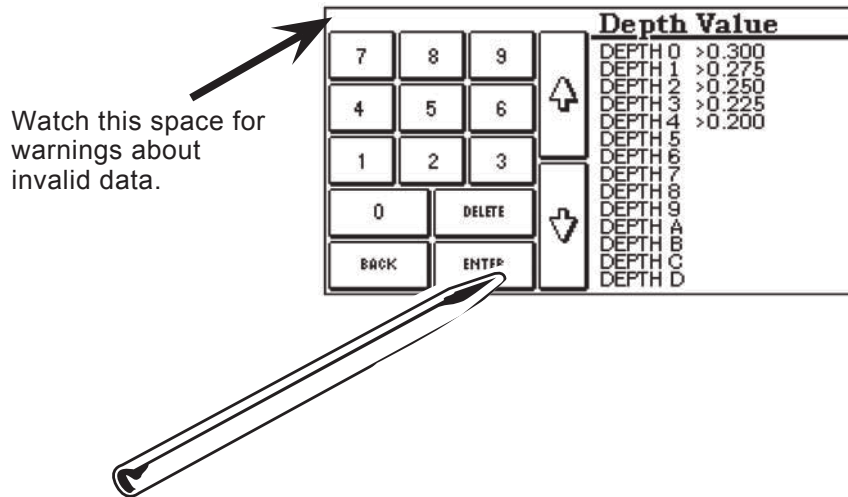
- After all pertinent information has been entered to your desired specifications, select ENTER. The screen will then display the Space Value Settings Screen.



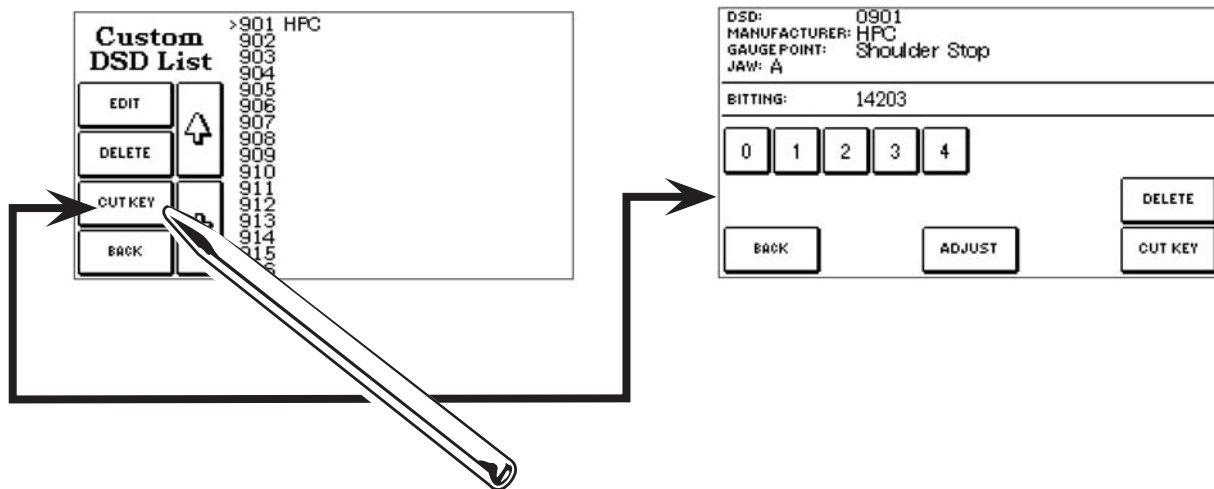
- At this screen, enter Space Values one at a time by typing in a number in thousandths of an inch or hundredths of a millimeter (depending on which unit of measure was selected). Use the up and down arrows to edit the values of the spaces. Spaces are measured from the designated gauge point. Selecting DELETE will erase the value you have entered. When you have entered the desired spaces, press the ENTER key.



9. At this screen, enter Depth Values one at a time by typing in a number in thousandths of an inch or hundredths of a millimeter (depending on which unit of measure was selected). Use the up and down arrows to edit the values of the depths. Selecting DELETE will erase the value you have entered. When you have entered the desired depths, press the ENTER key.



10. The newly added Custom DSD is now DSD #901. To use any new DSD Number you have created, refer back to Section 4.1 or select the CUT KEY button from the Custom DSD List Screen as shown here. Refer to page 21 for information on how to cut the key. Selecting DELETE will erase the DSD you have entered.

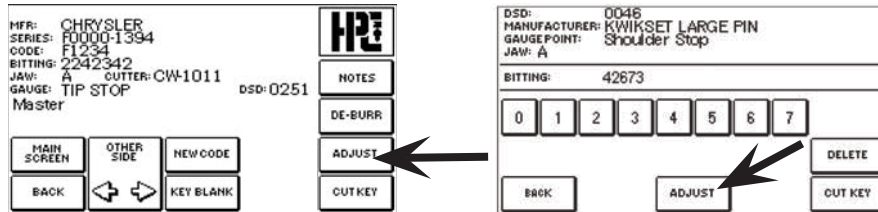


5.4 DSD Specific Adjustments

Part of the versatility of the Tiger SHARK™ is the ability to make adjustments to a specific DSD. This feature can be beneficial when cutting a key for a lock with worn pins or wafers (by cutting the key shallower you can compensate for the decreased height of the worn pins) or if using a particular cutter wheel that has been sharpened (by cutting a little deeper you can compensate for the decreased diameter of the cutter). Adjustments can be made on a temporary basis (for the current cutting session only) or on a "permanent" basis (stored for continued use). Due to limited computer storage space, adjustments can only be stored for 64 DSD numbers.

If it becomes necessary to adjust a specific DSD, use the following instructions:

1. From the CUT screen or the BITTING screen. Select ADJUST.



SPACE: Use the arrows to increase (to the right) or decrease (to the left) the starting point of the first space.

DEPTH: Use the arrows to increase (to the right) or decrease (to the left) the depths (note: this adjustment is applied to all depths).

CUT MODE: Use the arrows to scroll through the different cutting modes (refer to Section 5.4.1 for details on the different modes).

SPEED: Use the arrows to increase or decrease the speed at which the carriage engages the cutter wheel. Note: if cutting a particularly hard key blank (such as stainless steel), better results may be achieved by slowing the speed.

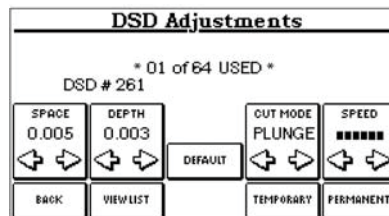
DEFAULT: Reverts the DSD back to original factory specifications (cancelling any adjustments made).

BACK: Will display the previous screen (either the CUT screen or BITTING screen) without saving any adjustments made.

VIEW LIST: Will display a list of all "permanently" adjusted DSD.

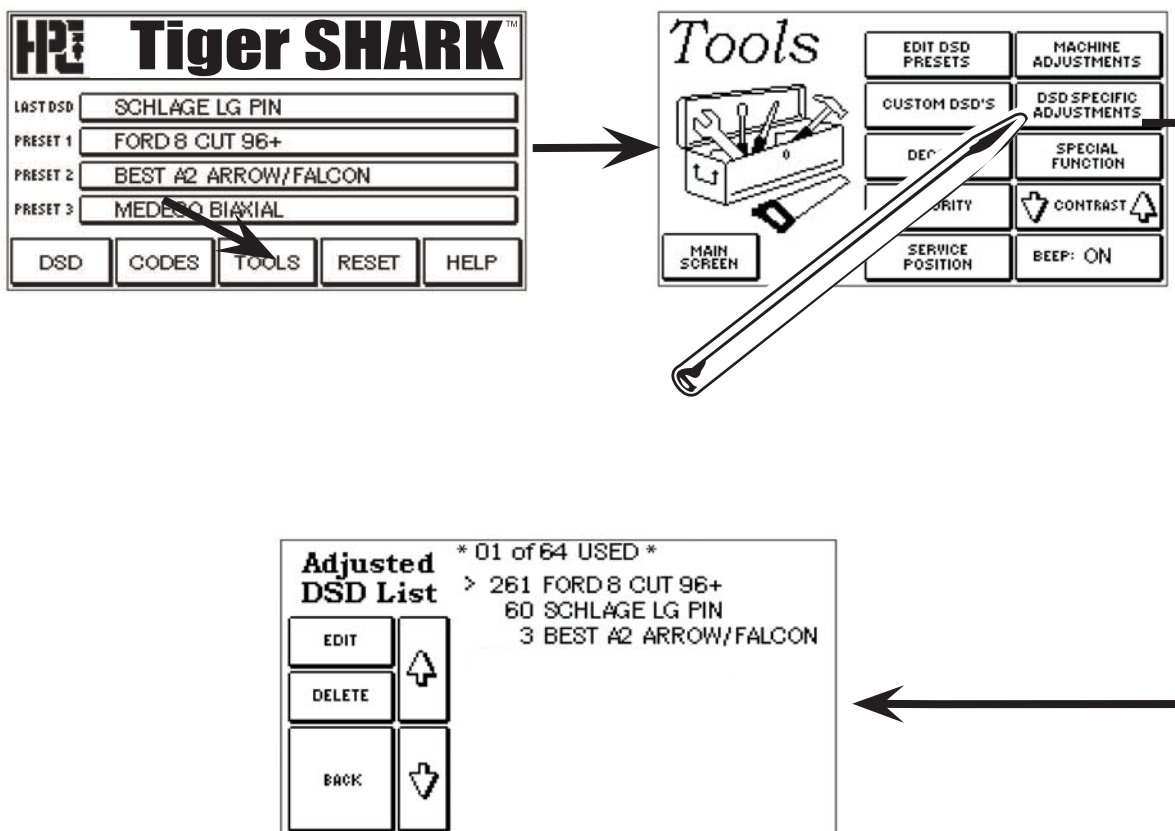
TEMPORARY: Will save the adjustments made for the current cutting session only, and return to the CUT screen or BITTING screen. The screen will display ADJUSTED DSD.

PERMANENT: Will store the adjustments, and apply them to all future uses of this DSD. After selecting PERMANENT, select BACK to return to the BITTING screen or CUT screen. See the following for instructions on editing or deleting adjustments.



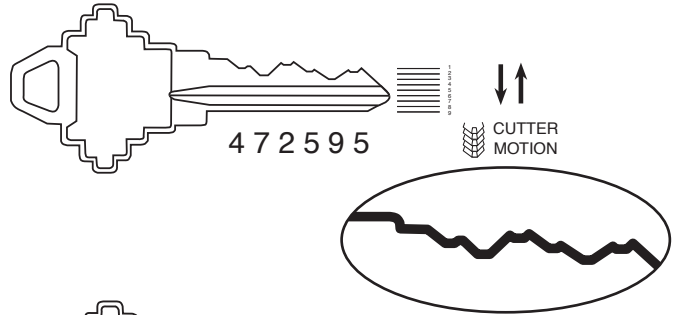
To edit or delete the permanent adjustments made to a DSD:

1. Select TOOLS from the Main Menu, then select DSD SPECIFIC ADJUSTMENTS.
2. The first screen displays a list of all the DSDs that have been "permanently" adjusted. Use the Up and Down arrows to scroll through the list. EDIT: Allows changes to the adjustments made to a DSD. DELETE: Deletes the adjustments made to a DSD (reverting it to the factory specifications). BACK: Will return to the TOOLS menu.

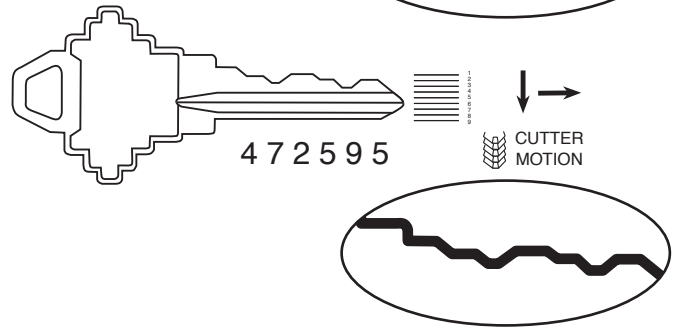


5.4.1 Cut Styles

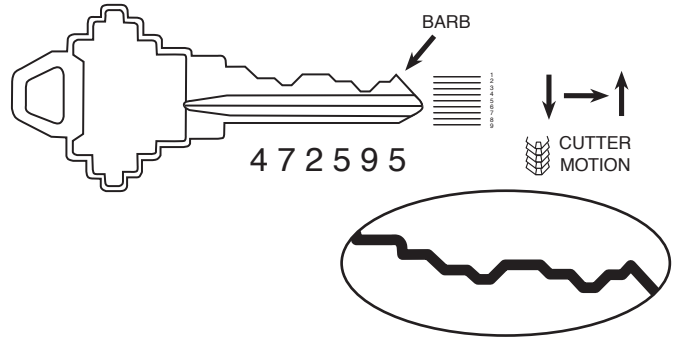
1. The **Plunge Cut (PLUNGE)** is the standard cut style. It is made when the cutter comes straight down into the blank, backs off, and moves in again to make the next cut after the carriage has moved to the next cut position.



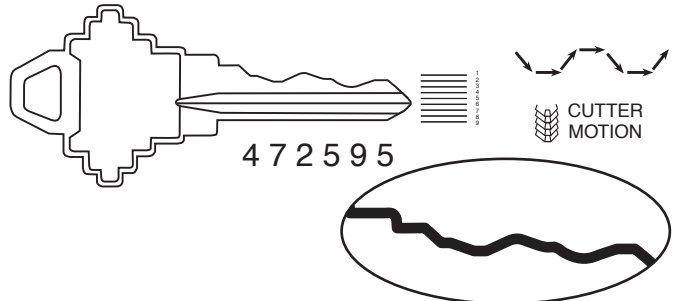
2. A **Contour Cut (CONT)** eliminates peaks between cuts. It is created when the cutter moves forward to make the first cut, and then moves straight laterally to the next position before moving in to cut the next depth in the sequence.



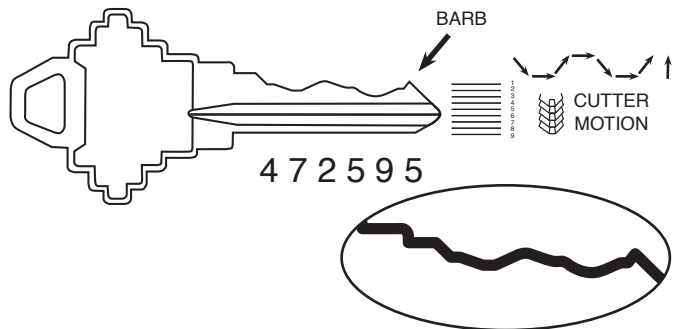
3. A **Contour with Barb Cut (CONT-B)** eliminates peaks but leaves the end of the key uncut for key retention. It is made when the cutter moves forward to make the first cut, and then moves straight laterally to the next position, and upon the last cut, moves outward to create the characteristic barb on the key blade end.



4. A **Smooth Cut (SMOOTH)** is made by the cutter wheel moving from depth to depth across the key blade at an angle instead of straight. It determines the best angle between cuts with no peaks.



5. A **Smooth with Barb Cut (SMTH-B)** is made like the Smooth Cut, with the cutter following at an angle, and then withdrawing after the last cut to form the characteristic barb. It determines the best angle but leaves the end of the key uncut for key retention.



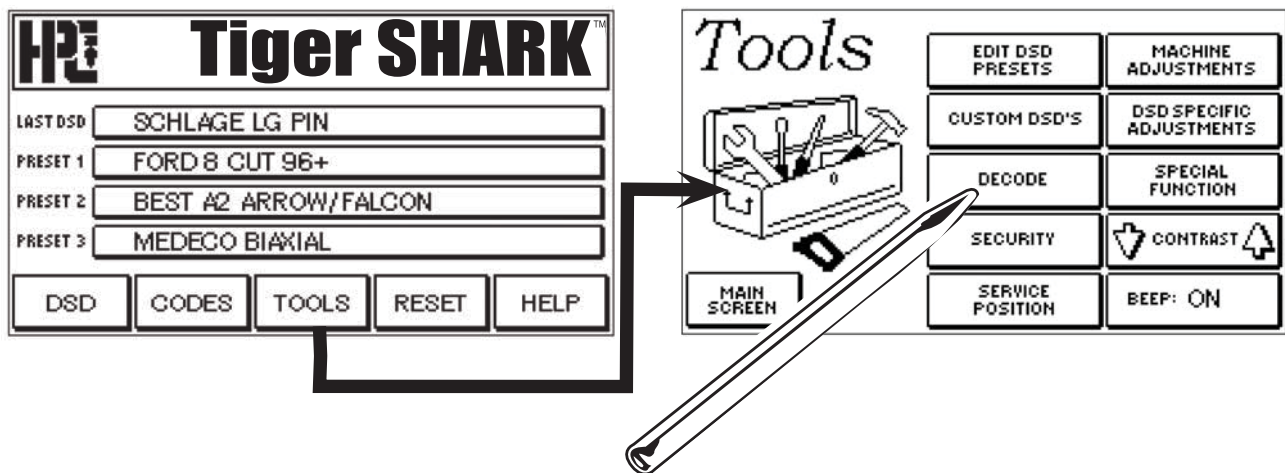
5.5 Decode a Key

The Tiger SHARK™ is equipped with a feature to decode cut keys. Using the Decoder Plate, it will touch-off on each cut 3 times to determine the depth. The machine is programmed to account for worn keys. If the cut is decoded as a non-standard depth for the specified DSD, the software will select the nearest shallower depth.

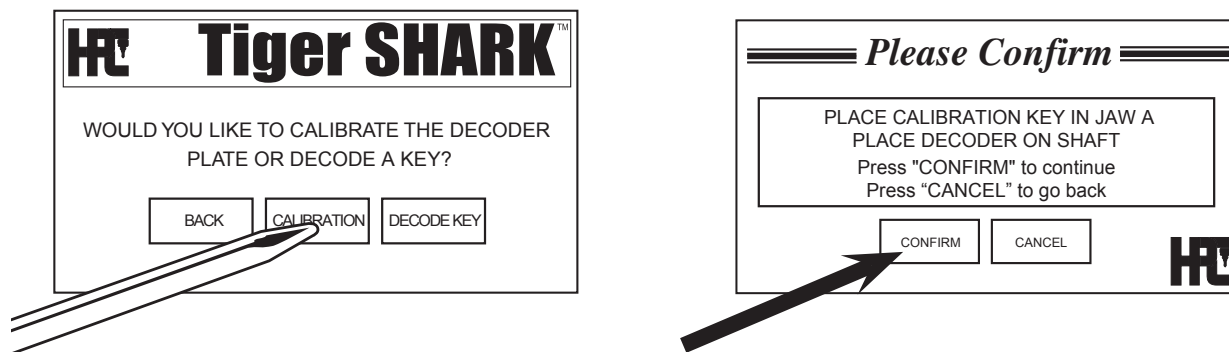
The differences in the depths of a cut are only thousandths of an inch (or hundredths of a millimeter). While the Decoder Plate is produced to very tight tolerances, a change of even a .001" (.025mm) can result in an incorrect decode.

Because of this, the machine needs to calculate from a known starting point. Therefore, it is imperative to calibrate the Decoder Plate prior to decoding a key. NOTE: this operation does not calibrate the machine.

1. To calibrate the Decoder Plate, select the TOOLS button from the main menu and select the DECODE button.



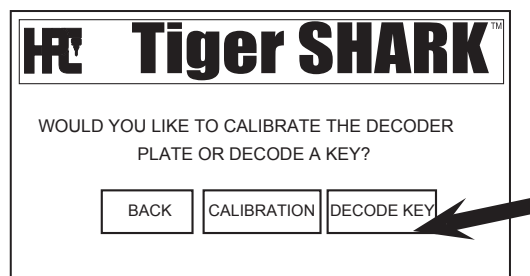
2. At this point you have the choice between calibrating the Decoder Plate and decoding a key. Select Decoder Plate CALIBRATION.



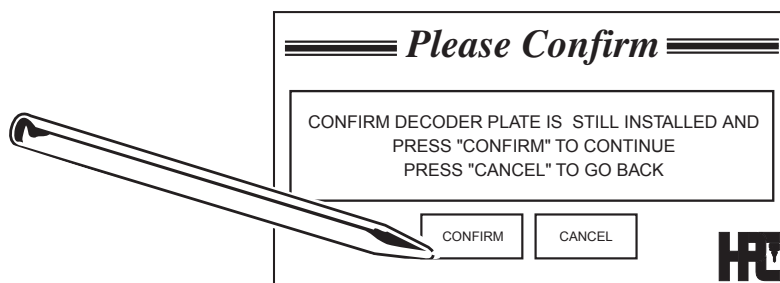
5. The Decoder will touch off on the Calibration Key blank. The screen will display a new confirmation screen. Select CONFIRM to save this calibration.



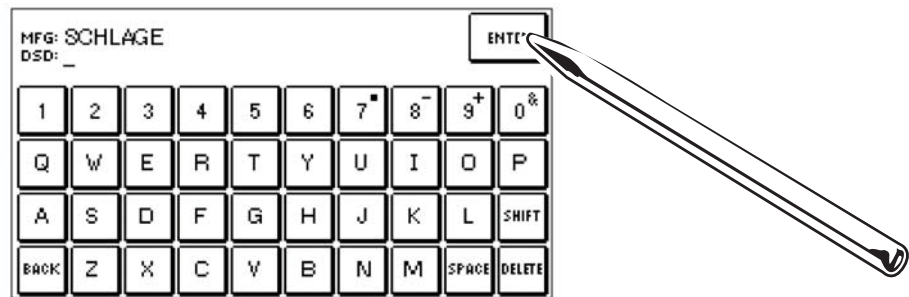
6. The screen will now display the CALIBRATE/DECODE window. Select DECODE KEY.



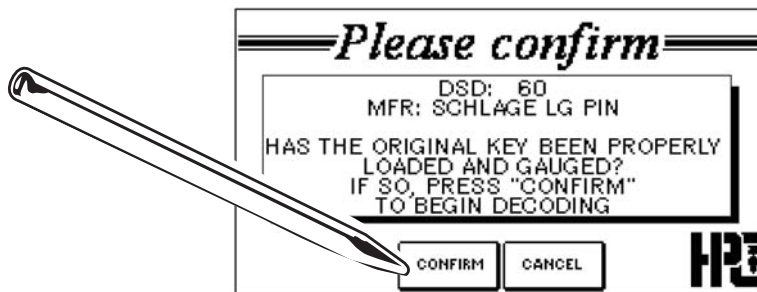
7. You will now be prompted to confirm the Decoder Plate is still installed, and to load and gauge the key to be decoded. Select CONFIRM. NOTE: on some tip-gauged keys it may be necessary to first move the carriage to the Service Position in order to gauge the key. In this case, select CANCEL, then BACK. The TOOLS menu will be displayed. Select SERVICE POSITION. Then select DECODE, followed by DECODE KEY.



8. You need to select the appropriate DSD number for the key to be decoded. You can search by Manufacturer by typing in the lock manufacturer's name. Select ENTER. If there is more than 1 DSD listing for the manufacturer entered, a list will be displayed. Select the appropriate DSD. If you know the appropriate DSD number, simply enter it in the DSD field, and select ENTER.



9. A confirmation screen will appear displaying the DSD and Manufacturer. If the original key has been properly loaded and gauged, select CONFIRM to decode the key.



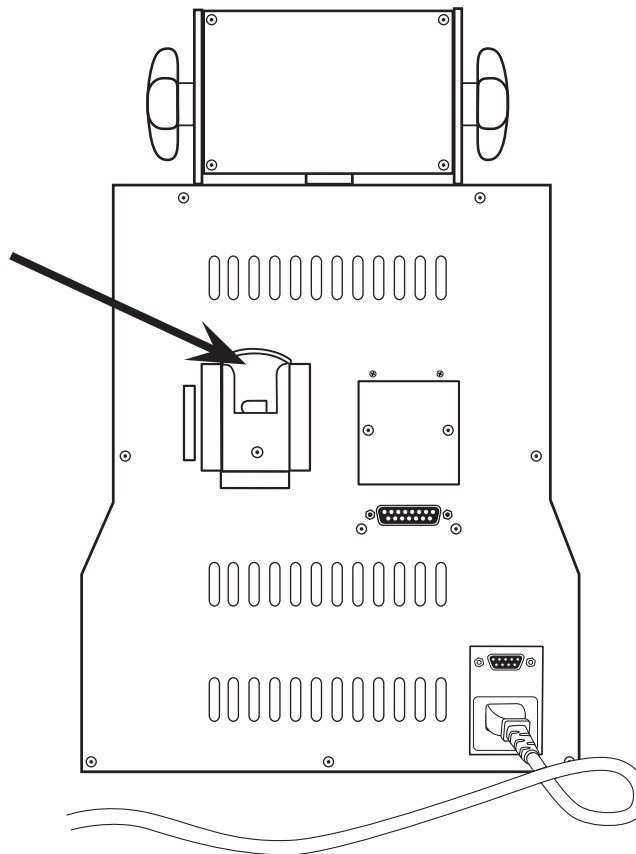
10. The Tiger SHARK™ will now begin to decode the key. The Decoder Plate will touch off on each cut 3 times. The following screen will appear until the key has been decoded.



11. After the key has been decoded, the CUT SCREEN will be displayed with the bitting that was decoded.



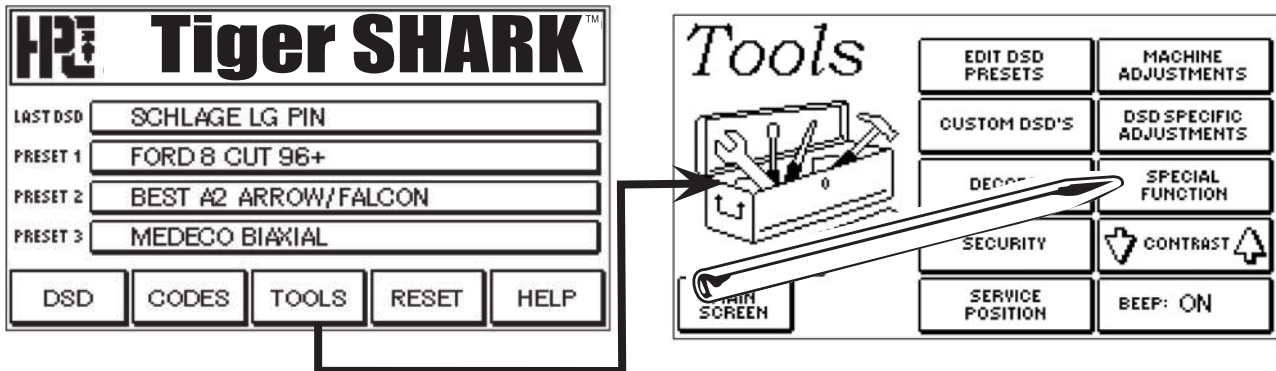
12. Once the machine has stopped and the key has been decoded, remove the Decoder Plate from the cutter shaft and return to the storage compartment. NOTE: The Decoder Plate must be seated correctly in the storage compartment for the cutter motor to switch on.



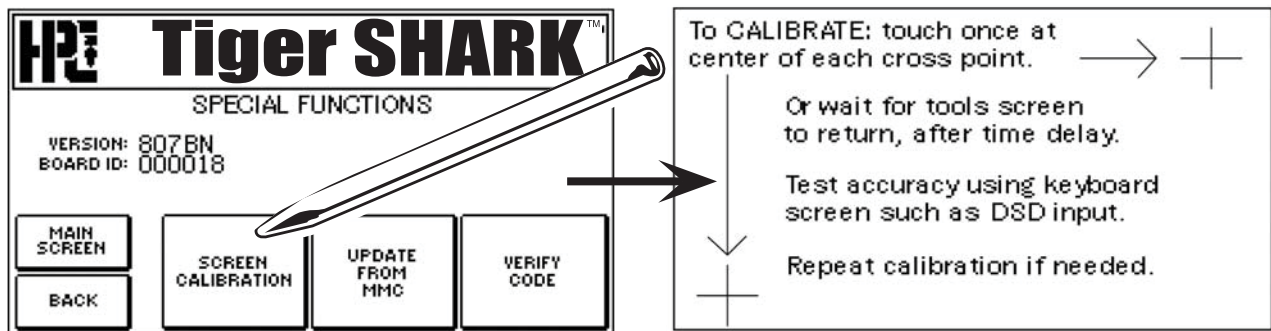
5.6 Special Function

The SPECIAL FUNCTION button accesses several operations and displays the version number of your machine

From the Main Menu, select TOOLS. From the TOOLS Screen select SPECIAL FUNCTION.

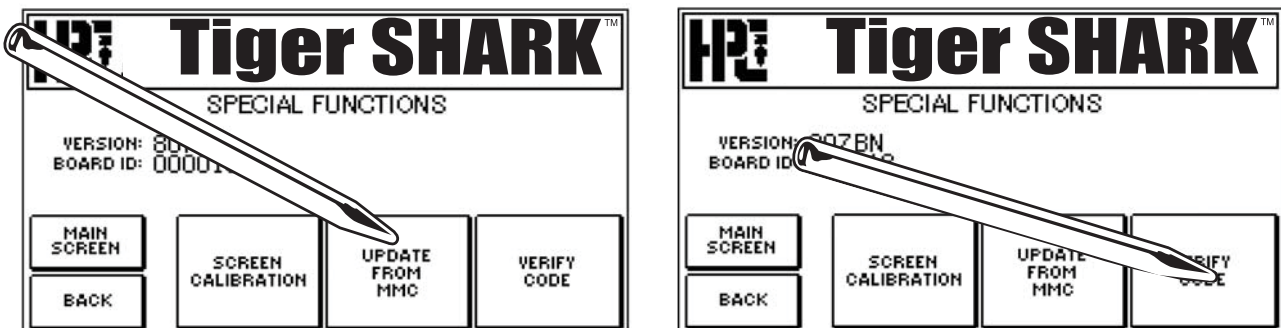


1. Selecting SCREEN CALIBRATION will display the Screen Calibration window. The screen has been calibrated during production of the machine. However, if you notice that the accuracy of your stylus taps have diminished (you do not get the results expected from a particular key) this indicates the screen requires re-calibration to align the image on the screen with the touch-sensitive coating.



Tap or touch the 2 cross points to calibrate the screen. The display will return to the SPECIAL FUNCTION screen.

2. UPDATE FROM MMC (multi-media card) is used when updating the code information in the machine. Complete directions will be provided with each update. Selecting this button will not affect your machine (unless you have a new update to install).

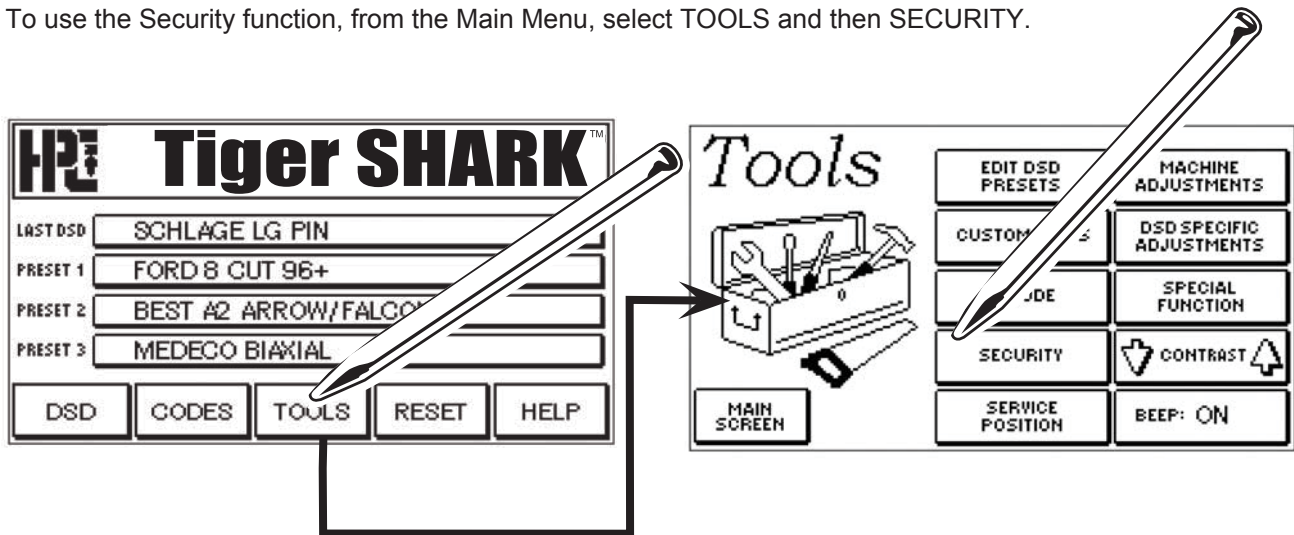


3. VERIFY CODE is used during assembly to check initial installation. Selecting this button will not affect your machine.

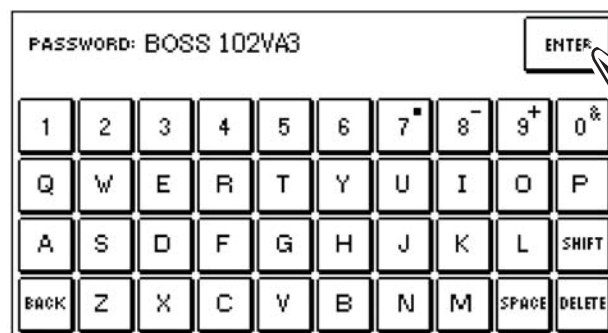
5.7 Security

The DSD Adjustment and the Tools Screens can be password protected so only authorized personnel can access these screens. Code retrieval and key cutting are not affected by this security feature.

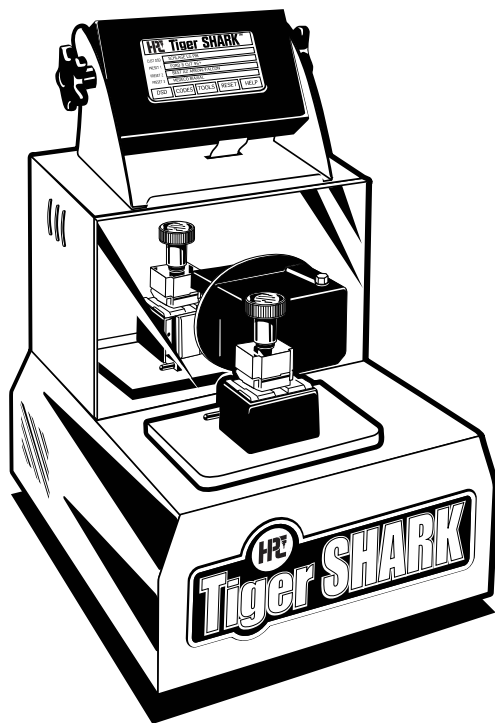
1. To use the Security function, from the Main Menu, select TOOLS and then SECURITY.



2. Type in a 10-character alpha-numeric password, and select ENTER. To change the password, use the DELETE key. To use the special characters over the 7, 8, 9, and 0 keys, first select SHIFT. To eliminate the password protection, delete the entire password, and select ENTER.



Tiger SHARK™

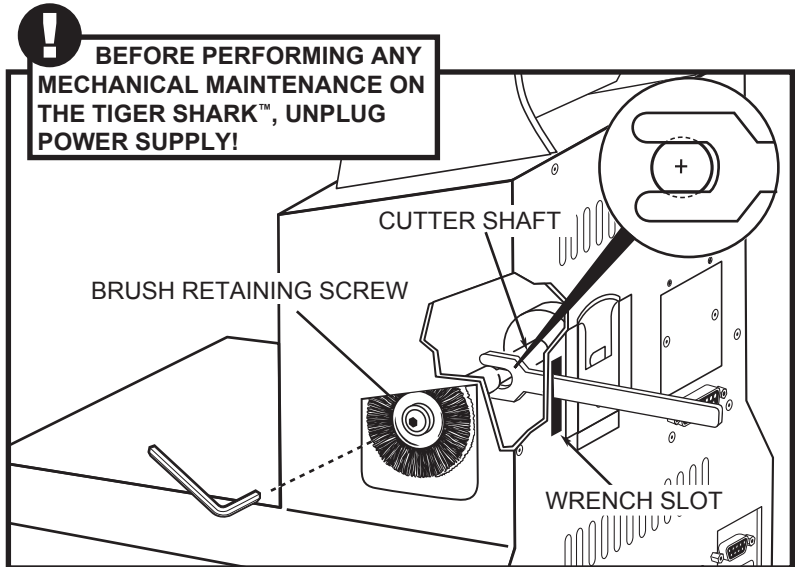


MAINTENANCE

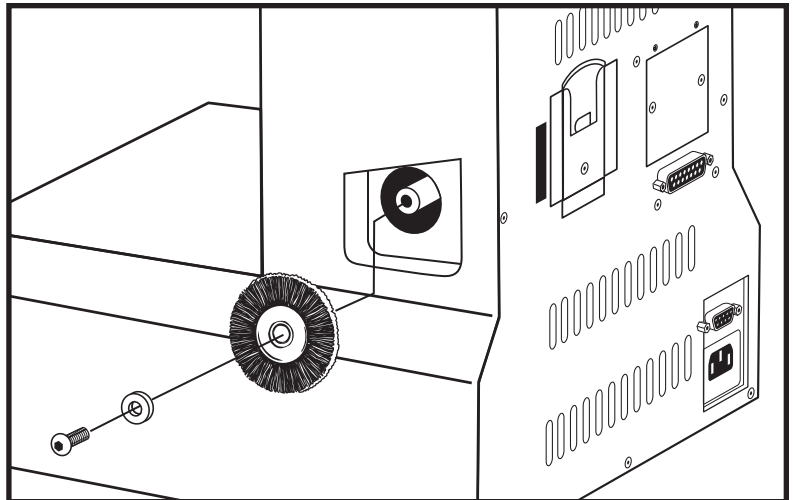
- 6.1** Replacement of Deburring Brush
- 6.2** Replacement of Cutter Belt
- 6.3** Replacement of Drive Belt
- 7.** Troubleshooting
- 8.** Parts Listing
- 9.** Warranty / Repair Information

6.1 Replacement of Deburring Brush

1. **REMOVAL:** Using Adjustment Wrench provided, locate the wrench slot on back of machine. Insert Adjustment Wrench into slot, and align onto flat section of cutter shaft. (You may have to turn shaft manually to align flat area to wrench). Hold wrench to secure shaft from turning, while unscrewing Brush Retaining Screw with Allen Wrench supplied.
NOTE: If you are installing a new Deburring Brush at this time, you can leave Wrench affixed in place on cutter shaft.

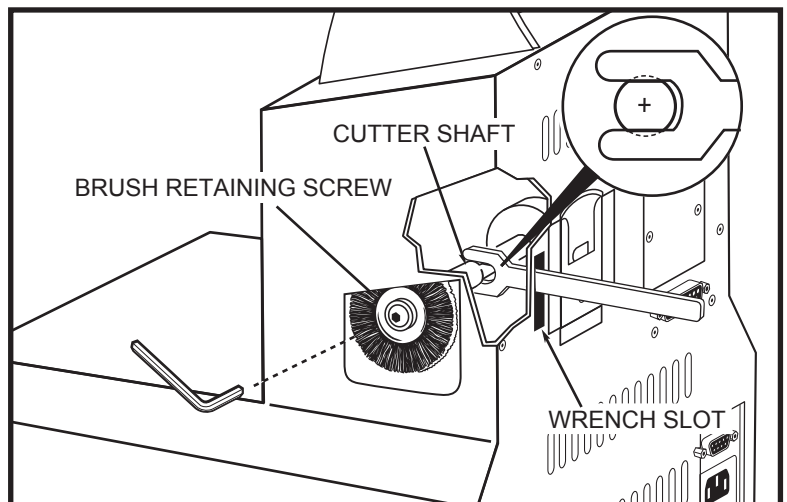


2. Remove worn Deburring Brush by pulling brush toward you and then down and out of machine recess.



3. **INSTALLATION:** Install new Deburring Brush into recess and place onto cutter shaft.

4. Re-insert Adjustment Wrench into wrench slot if required and align with flat area of cutter shaft. While holding wrench to secure shaft from turning, insert washer and Allen Screw. Tighten Allen Screw with supplied Allen Wrench.

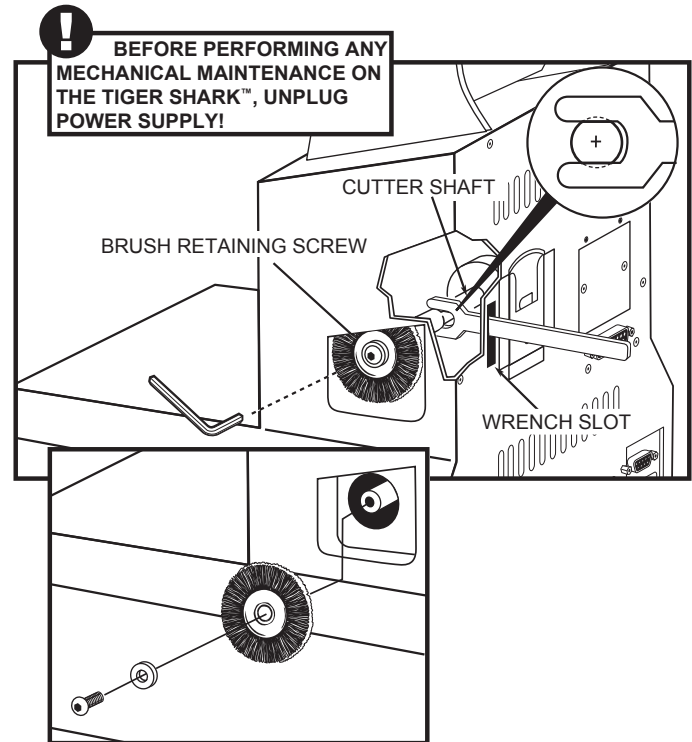


6.2 Replacement of Cutter Belt

PREPARATION: To replace the Cutter Belt, you must first remove the Deburring Brush, the lower chassis cover, the Cutter Head Housing and the Shaft Lock Button Assembly.

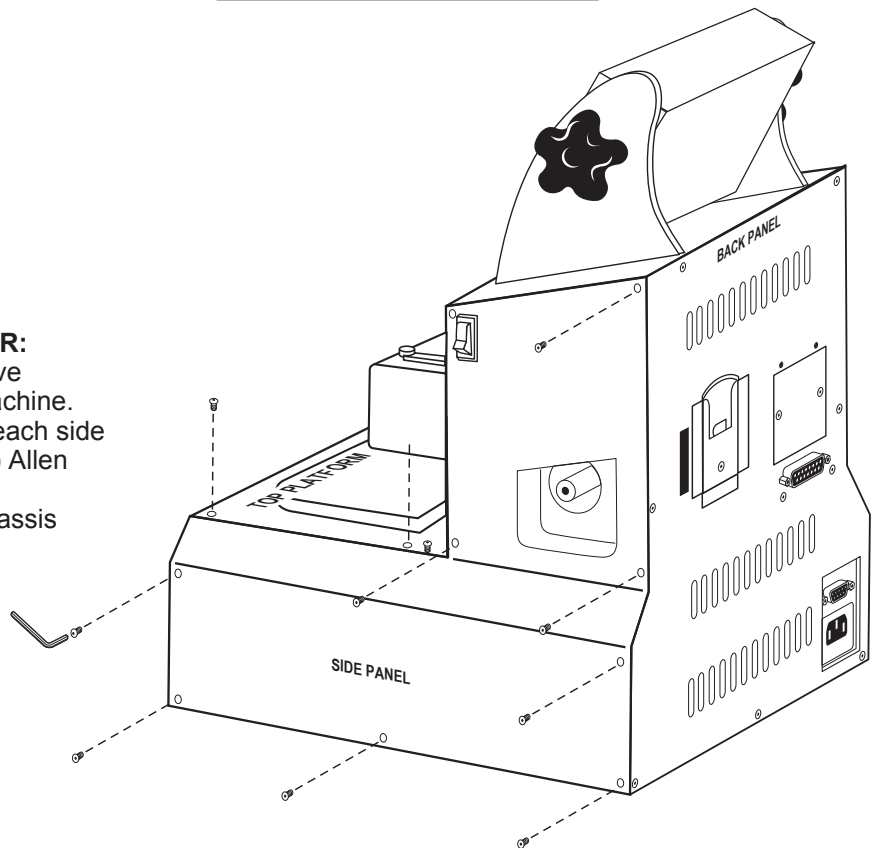
1. REMOVE DEBURRING BRUSH:

Using Adjustment Wrench provided, locate the wrench slot on back of machine (Fig 1). Insert Adjustment Wrench into slot, and align onto flat section of cutter shaft. (You may have to turn shaft manually to align flat area to wrench). Hold wrench to secure shaft from turning, while unscrewing Brush Retaining Screw with Allen Wrench provided. Remove Allen Screw and Washer. Remove Deburring Brush by pulling brush toward you and then down and out of brush recess (Fig. 2).



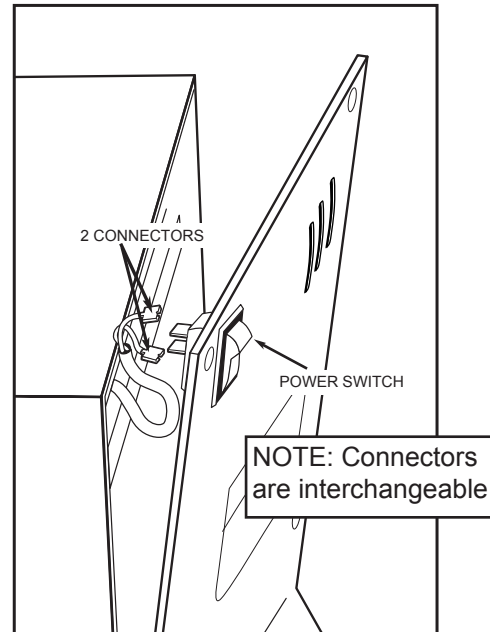
2. LOOSEN LOWER CHASSIS COVER:

Using Allen Wrench provided, remove Allen Screws from side panels of machine. There are nine (9) Allen Screws on each side of the chassis. Next, remove four (4) Allen Screws from top of front platform. Do not attempt to remove Lower Chassis Cover until after the next step.

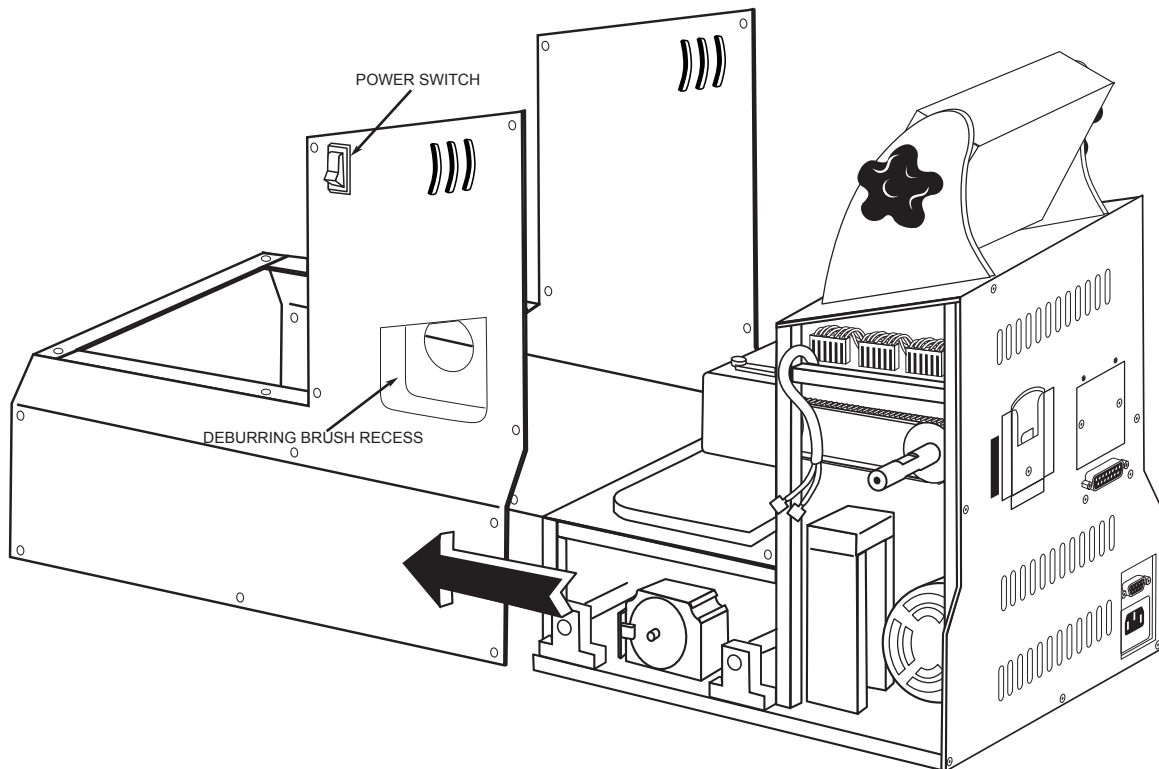


6.2 Replacement of Cutter Belt

3. **DETACH POWER SWITCH WIRES:**
Pulling right side panel slightly outward, you will see the power switch connectors on rear of power switch. **(CAUTION! Please be sure you have unplugged the machine from any power source)** Disconnect the two (2) wire tabs from the power switch as shown.



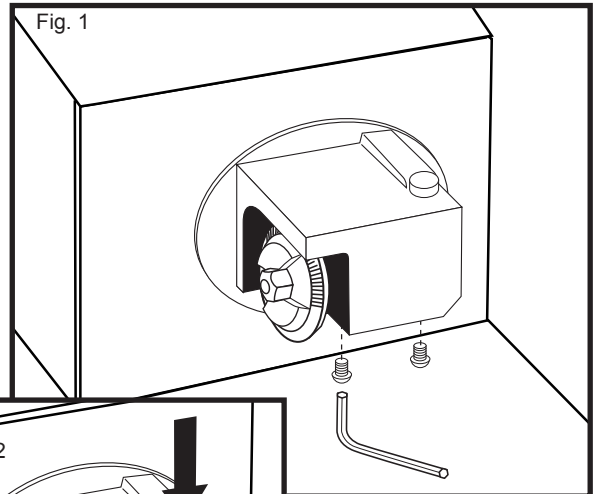
4. **REMOVE LOWER CHASSIS COVER:**
You can now remove the lower chassis cover. Grasping the cover by the top side panels, spread the panels slightly and move cover carefully away from the machine. NOTE: The top right panel, (the side with the power switch) will need to be spread away from the machine a little more, to clear the Deburring Brush Recess. Set Lower Chassis Cover to the side.



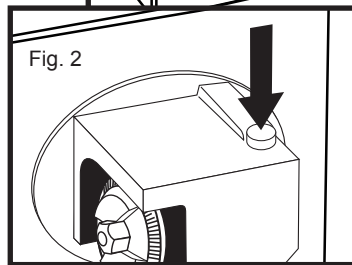
6.2 Replacement of Cutter Belt

4. **REMOVE CUTTER HEAD HOUSING:**

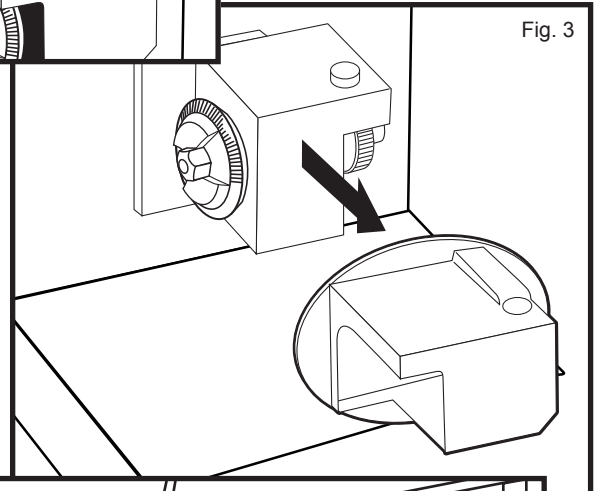
Using the Allen Wrench provided, remove the two Allen Screws located underneath the Cutter Head Housing (Fig. 1).



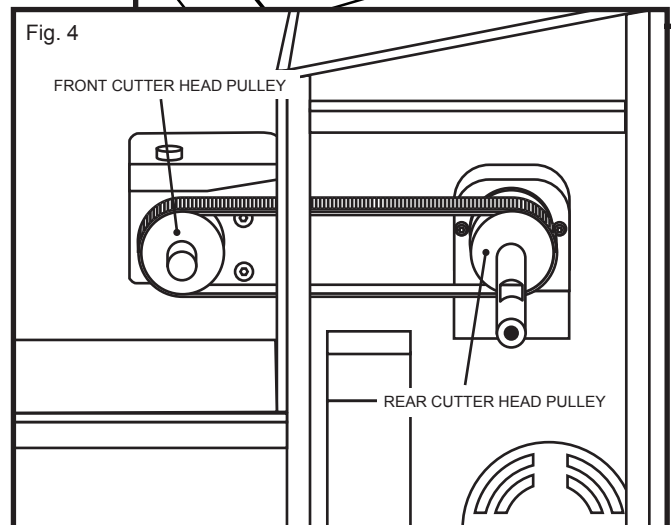
5. Depress the Shaft-Lock Button (Fig. 2).



6. You can now remove the Cutter Head Housing (Fig. 3).

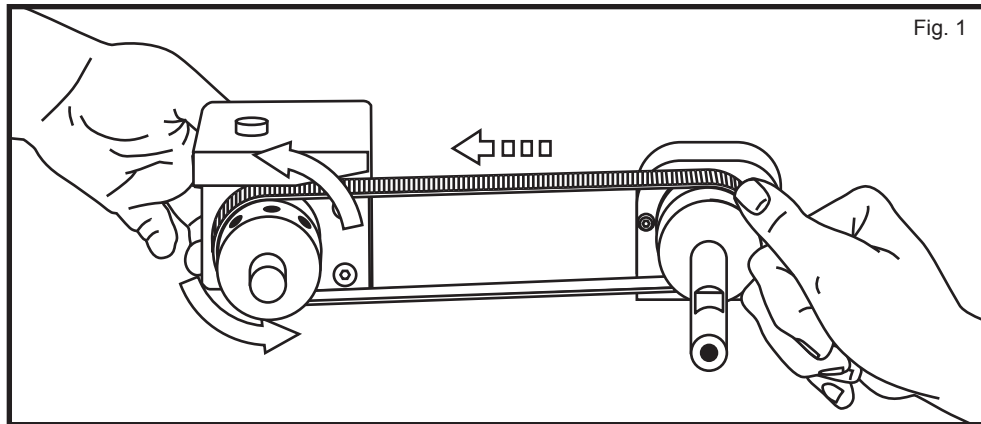


7. You should now be able to identify and access both of the Cutter Head Pulleys, and the Cutter Head Belt (Fig. 4).

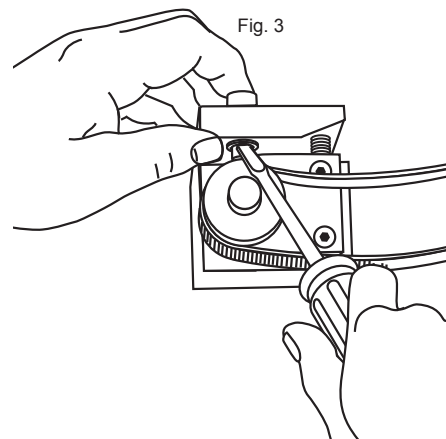
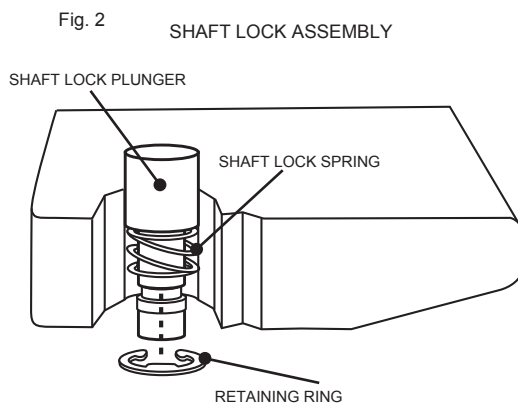


6.2 Replacement of Cutter Belt

8. Rotate the front Cutter Pulley, by turning the Cutter Wheel from right to left. At the same time, push the belt off of the rear pulley with your thumb. The belt will slide off the rear pulley and go limp (Fig. 1).



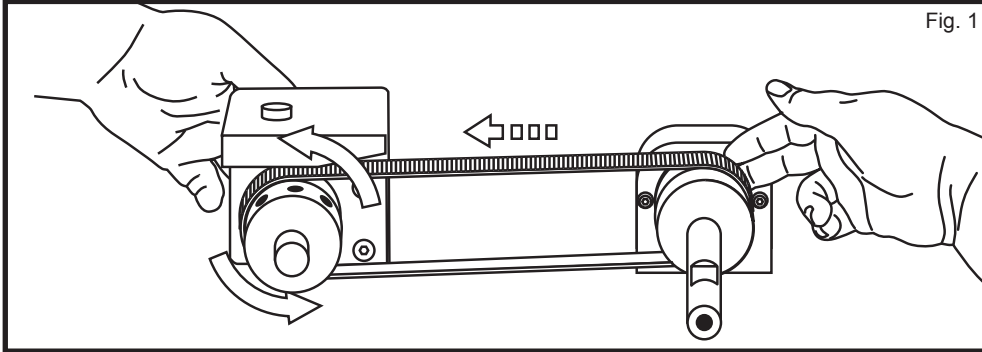
9. To remove the old belt, you need to remove the Shaft Lock Button Assembly from the Cutter Block. Identify the arc ring located underneath the Cutter Block as shown (Fig. 2). Push the Shaft Lock Plunger down and with a small flat blade screwdriver, pry the Retaining Ring off of the assembly (Fig. 3). Do this carefully as the Shaft Lock is spring loaded. Remove Shaft Lock Plunger, Shaft Lock Plunger Spring and Retaining Ring, and set aside.



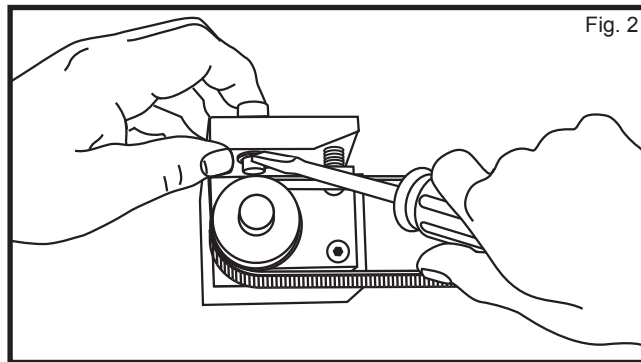
10. You can now remove the worn belt, by sliding slack belt through the front of the machine. You are also ready to install the new belt.
11. Refer again to the diagram for step 7 and thread the new belt into front of machine. First, place rear of belt behind the Rear Cutter Pulley. Next, align and mount front of belt onto Front Cutter Pulley.

6.2 Replacement of Cutter Belt

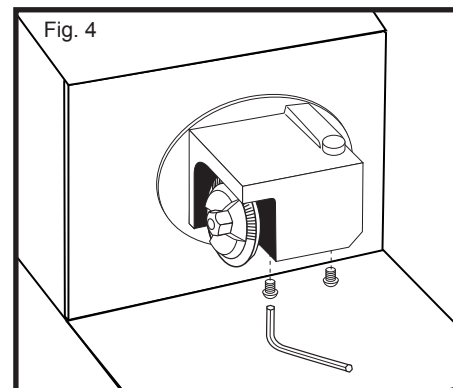
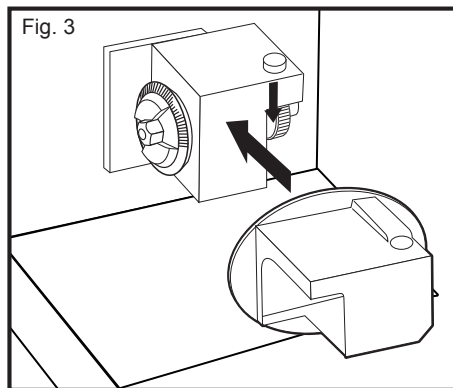
12. Rotate the front Cutter Pulley, by turning the Cutter Wheel from right to left. At the same time, pull the belt onto the rear pulley with your fingers. The belt will slide onto the rear pulley and tighten (Fig. 1).



13. Next, re-install the Shaft Lock Plunger Assembly. First, insert Plunger and Spring into hole at top of Cutter Block. Hold Plunger down and line up arc ring to slot in plunger. Now, press Retaining Ring onto Plunger with screwdriver until it snaps into place (Fig. 2).



14. Next, re-install Cutter Head Housing. Line up Housing with Shaft Lock Button. Press button down while sliding the Housing over Cutter Block (Fig. 3). Housing will snap into place, and Button will pop up when Housing is properly mounted. Next, secure with Allen Screws (Fig. 4).



15. Installation of the Cutter Head Belt is now complete. If you are not replacing the Drive Belt at this time, then re-attach the Lower Chassis Cover, re-connect the Power Wires to Switch, and re-attach the Deburring Brush. Re-connect power supply and test the machine. If you are installing a new Drive Belt at this time, read **6.3** "Replacement of Drive Belt." beginning on the next page.

6.3 Replacement of Drive Belt

PREPARATION: To replace the Drive Belt in the Tiger SHARK™ you must remove both the Deburring Brush, the Lower Chassis Cover and the Back Cover. **Unplug the Tiger SHARK™ from electrical source and disconnect all computer cables!**

1. REMOVE DEBURRING BRUSH:

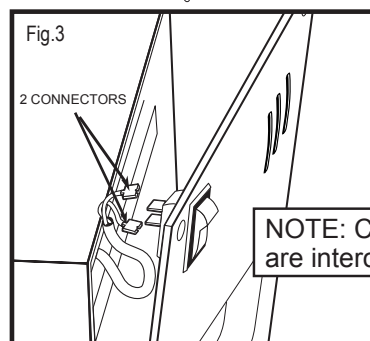
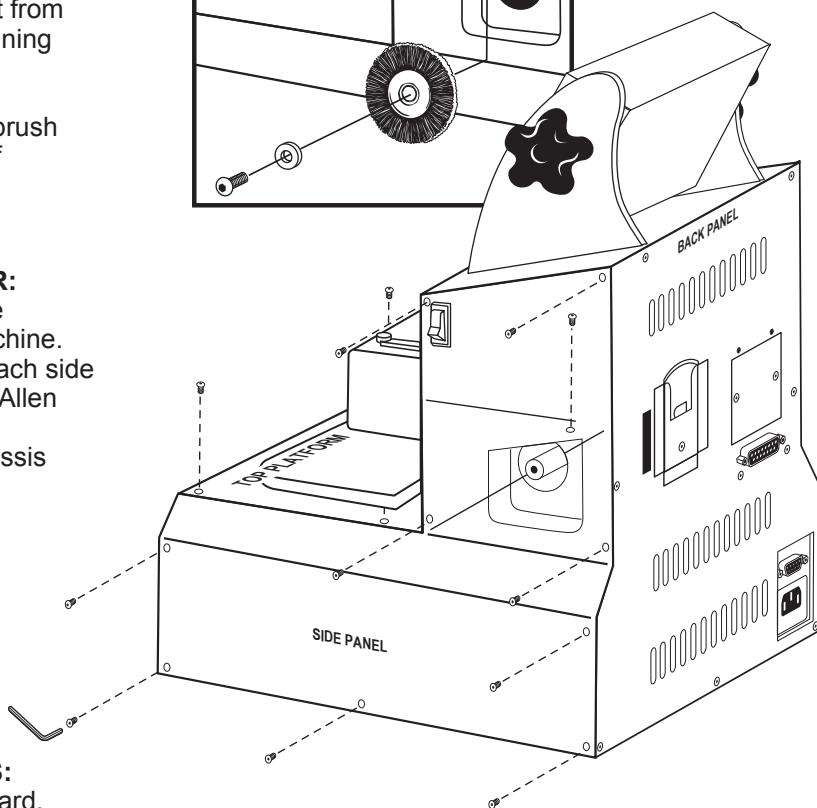
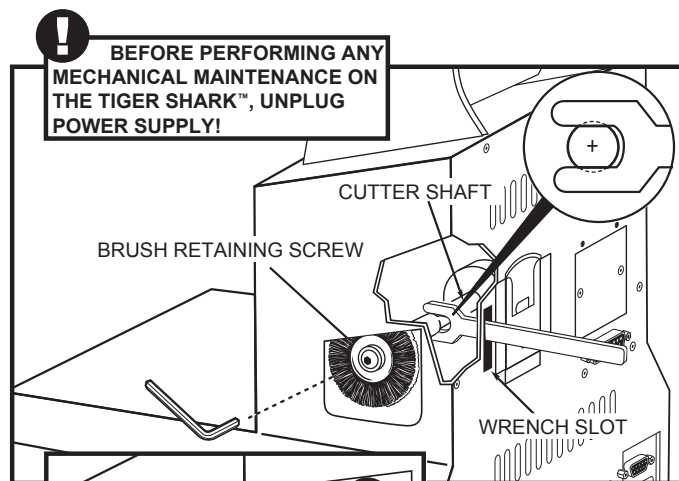
Using Adjustment Wrench provided, locate the wrench slot on back of machine (Fig. 1). Insert Adjustment Wrench into slot, and align onto flat section of cutter shaft. (You may have to turn shaft manually to align flat area to wrench). Hold wrench to secure shaft from turning, while unscrewing Brush Retaining Screw with Allen Wrench provided. Remove Allen Screw and Washer. Remove Deburring Brush by pulling brush toward you and then down and out of brush recess (Fig 2.).

2. LOOSEN LOWER CHASSIS COVER:

Using Allen Wrench provided, remove Allen Screws from side panels of machine. There are nine (9) Allen Screws on each side of the chassis. Next, remove four (4) Allen Screws from top of front platform. Do not attempt to remove Lower Chassis Cover until after the next step.

3. DETACH POWER SWITCH WIRES:

Pulling right side panel slightly outward, you will see the power switch connectors on rear of power switch. **(CAUTION! Please be sure you have unplugged the machine from any power source)** Disconnect the two (2) wire tabs from the power switch as shown (Fig. 3).



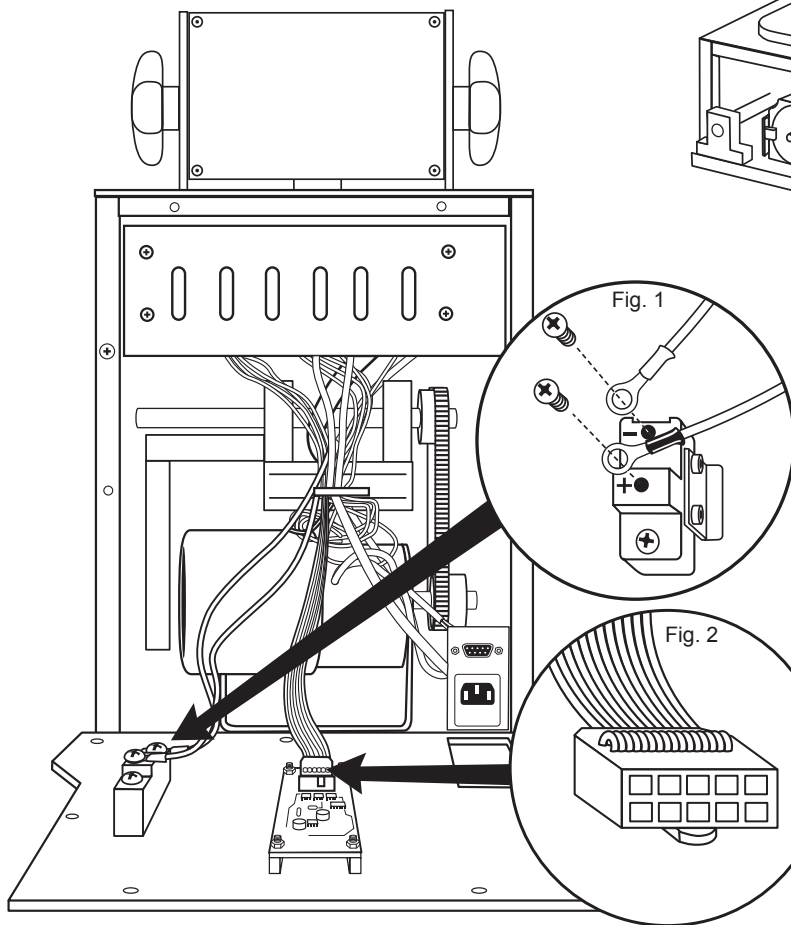
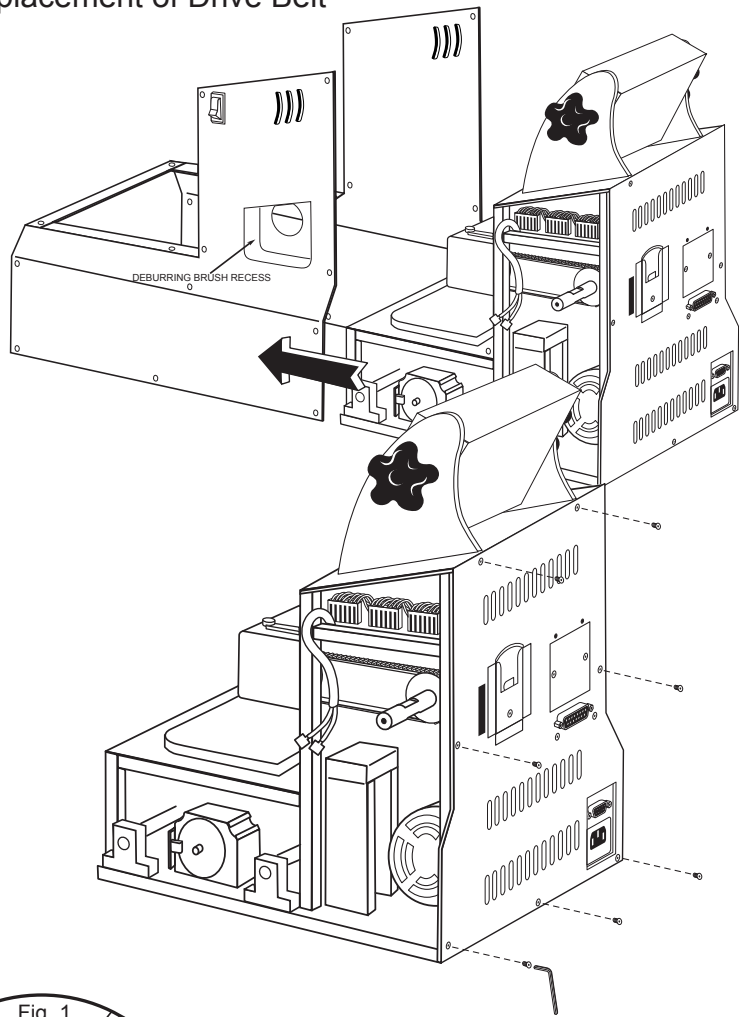
6.3 Replacement of Drive Belt

4. REMOVE LOWER CHASSIS COVER:

You can now remove the lower chassis cover. Grasping the cover by the top side panels, spread the panels slightly and move cover carefully away from the machine. NOTE: The top right panel, (the side with the power switch) will need to be spread away from the machine a little more, to clear the Deburring Brush Recess. Set Lower Chassis Cover to the side.

5. LOOSEN BACK COVER:

Using Allen Wrench provided, remove Allen Screws from back cover of machine. There are seven (7) Allen Screws.



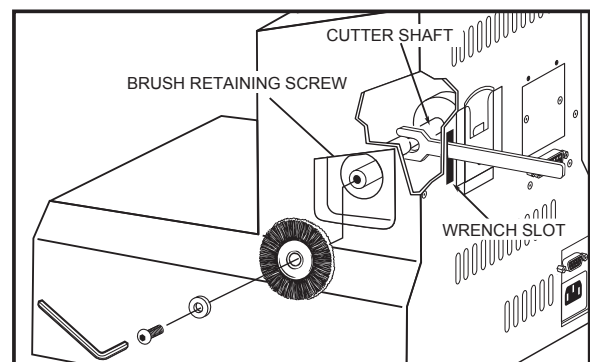
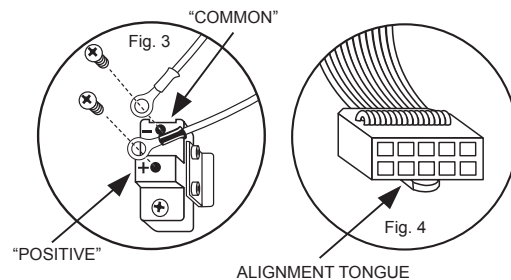
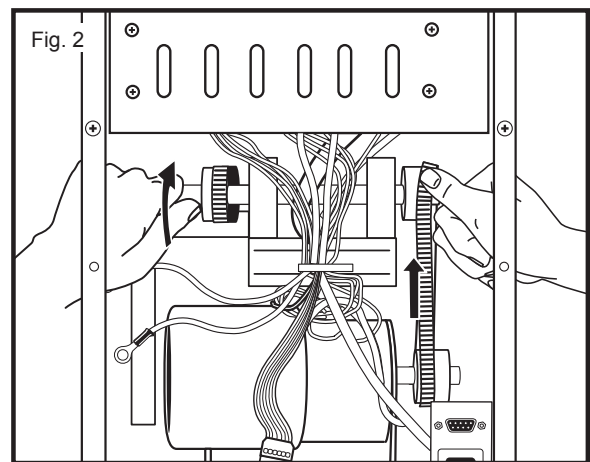
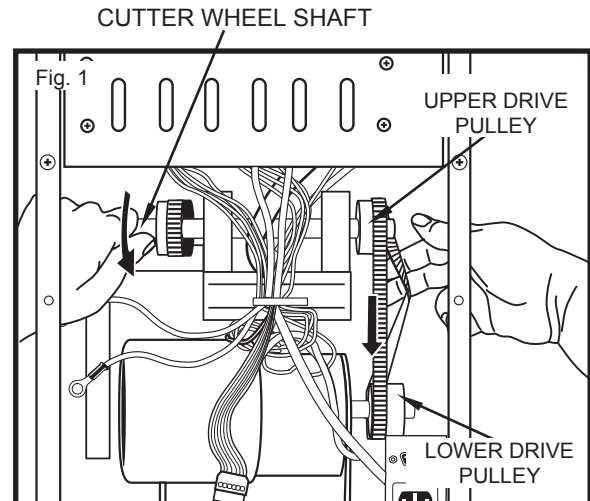
6. **DISCONNECT DECODER PLATE POWER TERMINAL:** Using a Phillips Screwdriver, unscrew the Connector screws from the Decoder Plate Terminal to release Connector wires (Fig. 1).

7. **UNPLUG CIRCUIT BOARD CONNECTOR:** Grasp and carefully pull black plastic connector from the circuit board.

8. You can now remove and set aside the back panel (Fig.2).

6.3 Replacement of Drive Belt

9. **REMOVE OLD DRIVE BELT:** With the left hand, turn Cutter Wheel Shaft rearward (toward you) and with the right hand, grasp rear belt with forefingers and twist belt as it moves upward. Guide the belt off of the pulley (Fig. 1).
10. **INSTALL NEW DRIVE BELT:** Place Belt on Lower Drive Pulley (Motor Shaft). Align top of belt with top pulley. With the left hand, turn Cutter Wheel Shaft forward (away from you) and with the right thumb, press belt onto upper pulley. Check to make sure the Belt is seated properly in each pulley (Fig. 2).
11. **COMPLETION-STEP ONE:** First, re-connect the Decoder Plate Terminal Block by attaching power wires to terminals with phillips screwdriver (Fig.1). "Positive" wire and terminal position is identified by red color. The top terminal is "Common". Next re-connect the Computer Circuit Board Ribbon to the receptacle on the Circuit Board. This connector fits only one way. NOTE: Tongue on lower side aligns with lower slot in receptacle.
12. **COMPLETION-STEP TWO:** Re-attach back panel using Allen Wrench and seven (7) screws. (Refer to Step 5 for screw locations).
13. **COMPLETION-STEP THREE:** Re-attach Lower Chassis Cover. Grasping the cover by the top side panels, spread the panels slightly and move cover carefully over the machine chassis. The top right panel will need to be spread away from the machine a little more to clear the Deburring Brush recess. (Refer to Step 2 for Allen Screw locations).
14. **COMPLETION-STEP FOUR:** Re-attach Deburring Brush. Insert and place Deburring Brush onto Cutter Shaft and attach washer and Brush Retaining Screw and thread loosely by hand. Using the Adjustment Wrench provided, locate the wrench slot on rear of machine and align wrench onto flat section of the Cutter Shaft. Hold Wrench to prevent shaft from turning and tighten Brush retaining Screw with Allen Wrench.



7. Troubleshooting

Problem: The machine does not switch on / power up.

Solution: Check cord at machine inlet and at power outlet.
Check fuse (located in the power inlet on the back of the machine)

Problem: Display on screen is garbled or is all white (no characters shown) .

Solution: Turn machine off. Wait 10 seconds. Turn machine on.
This operation acts as a re-set.

Problem: Buttons do not display expected result, for example selecting “S” displays “X”.

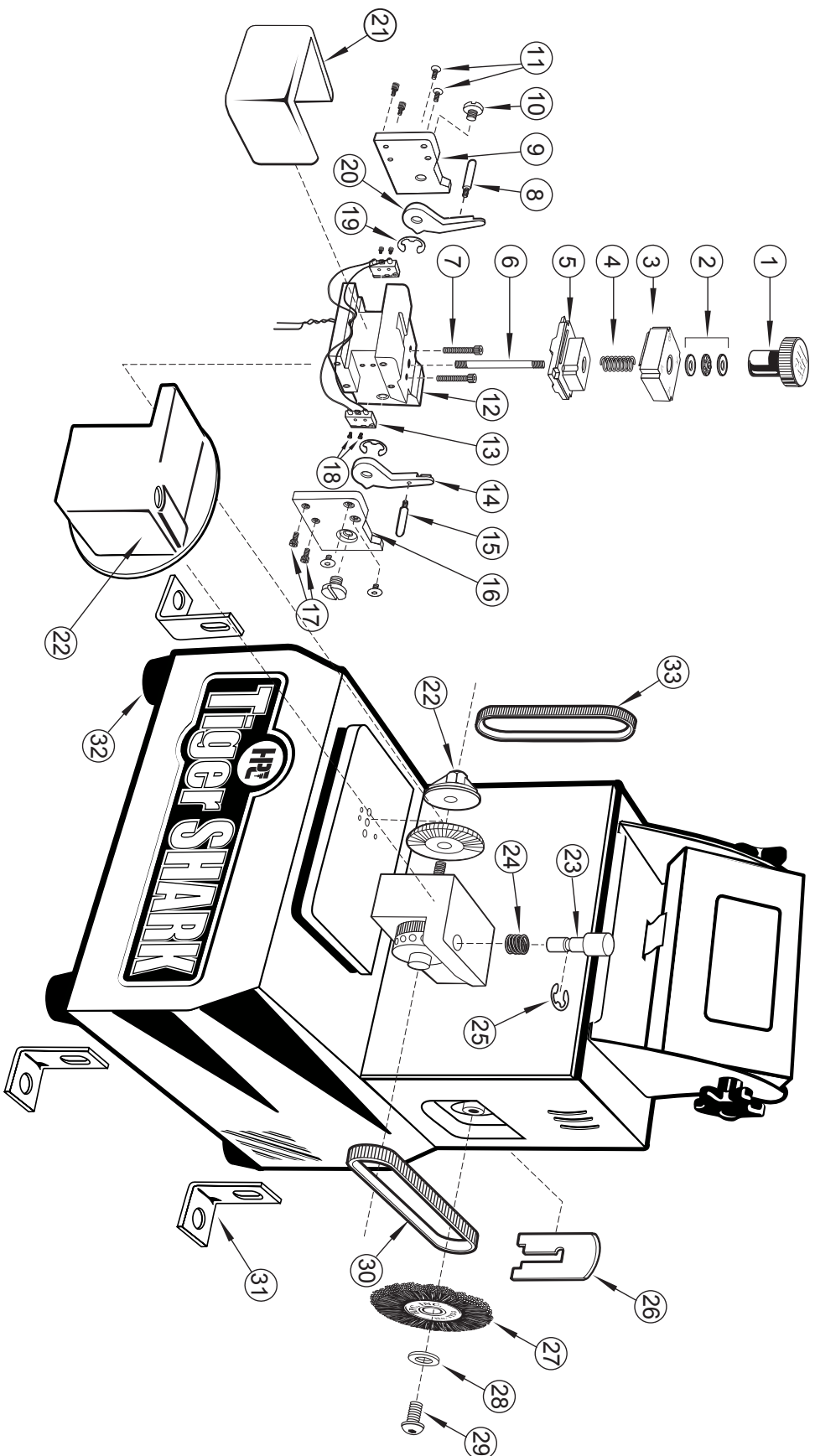
Solution: Calibrate screen (refer to section 5.6). If this does not solve the problem, switch machine off, then while pressing the bottom left corner of the screen, switch machine on.

Problem: Cutter motor does not engage / power up.

Solution: Verify shoulder gauge and tip gauge are all the way down.
Verify Decoder Plate is fully seated in the storage compartment.

Problem: Machine is jammed

Solution: Clean work area thoroughly of all keydust and debris.
A hand vacuum or small brush is recommended.



1. Wing Nut
2. Ball Bearing Washer
3. Top Jaw
4. Spring
5. Bottom Jaw
6. Stud
7. Screws
8. Tip Gauge Handle

9. Jaw Pedestal Plate - Left
10. Housing Screw
11. Retaining Screws
12. Block
13. Microswitch (2)
14. Tip Gauge
15. Tip Gauge Handle
16. Jaw Pedestal Plate - Right

17. Retaining Screws
18. Microswitch Screws
19. E Clip
20. Shoulder Gauge
21. Jaw Pedestal Shroud
22. Quick Nut
23. Shaft Lock Plunger
24. Shaft Lock Spring

25. Shaft Lock Arc Ring
26. Decoder Plate
27. Softie™ Deburring Brush
28. Washer
29. Retaining Screw (Allen)
30. Cutter Belt
31. Hold-Down Brackets (4)
32. Feet (4)
33. Drive Belt

9. Warranty, Maintenance, Cleaning, and Repair

Warranty

The Tiger SHARK™ machine is fully warranted for 2 years from the date of purchase, against factory defects in material and workmanship. Please complete and return the Registration Card to validate your warranty.

Maintenance

There is no regular maintenance required. The motor and cutter head are equipped with sealed bearings that require no lubrication. All bearings and sliding surfaces have been lubricated during assembly.

In the event the jaws do not easily separate when the wing nut is loosened, they require lubrication. Remove the wing nut, washer set, top jaw, and spring. Clean the bottom jaw, stud, and top jaw with a soft cloth. Place a small amount (pea-size) of Super Lube® or similar synthetic grease lubricant in the inside cavity of the top jaw and spread it evenly around the cavity. Take care to not put lubricant on the key clamping surfaces. Replace the spring, top jaw, washer set, top jaw and wing nut.

Cleaning

It is important to keep the machine clean. Remove all brass chips and dirt from the cutting area with a soft bristle brush. Do not use compressed air to blow the brass chips away, as this may force the chips inside the machine. It is best to use a vacuum to clean the machine and area. The Touch Screen should be cleaned with a commercial glass cleaner sprayed on a soft cloth. Do not spray the screen directly.

Factory Repairs

The HPC Key Machine Service Department is available to offer prompt service on your machine and to order replacement parts.

The hours of operation are 7:00am - 3:30pm Central time, Monday - Friday.

The toll-free telephone number is 800.323.3295 from America and Canada, or 847.671.6280 from other countries.

In the event you need to return your machine for service please contact the service department to obtain a repair order number prior to shipping the machine.

It is imperative the Tiger SHARK™ be packed in the original carton as originally packed. HPC assumes no liability for damage to machines that are not properly packed.

Payment for non-warranty repairs can be made by check in advance of repair work, Visa or Mastercard, or billed through an authorized HPC Distributor.

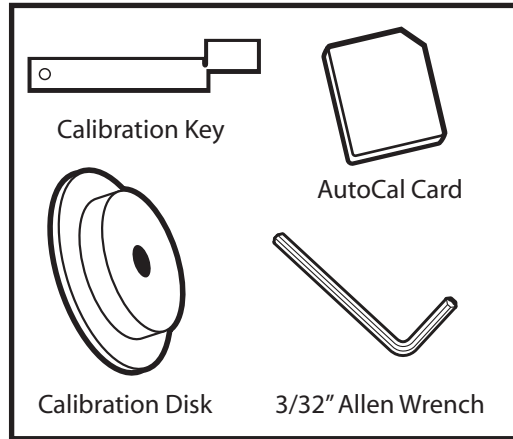
Key Machine Service Dept.
HPC, Inc.
3999 N. 25th Avenue
Schiller Park, IL 60176
U.S.A.
Tel: 800.323.3295 (from U.S.A. and Canada)
Tel: 847.671.6280 (from all other countries)
Fax: 847.671.6343
Email: hpc@hpcworld.com





Instructions

Tiger SHARK™ Auto-Calibration



Items needed for auto-calibration:

AutoCal Card, Calibration Key, Calibration Disk and 3/32" Allen Wrench.

NOTE: The use of auto calibration is dependent on the Tiger SHARK™ using the electronic touch off feature. If the electronic touch off feature is not functioning properly, do not use the auto calibration program. Contact HPC Key Machine Service.

The following operations are performed with the Tiger SHARK™ turned on at the main menu. Certain features will not be available while using the Auto Calibration software.

1. Using the 3/32" Allen Wrench, remove the plate covering the Update Card Receptacle. Next, remove the Update Card by sliding card up and out of receptacle (Fig. 1).
2. Insert AutoCal Card into receptacle. Make sure the AutoCal Card is properly inserted (Fig. 2).
3. Click "**TOOLS**" on your Tiger SHARK™ screen.
4. Click "**SPECIAL FUNCTION**".
5. Click "**UPDATE FROM MMC CARD**", then "**CONFIRM**". The screen will turn white for a period of time (approximately 7 minutes), then the screen will turn black for a shorter period, and then beep. The beep indicates that the AutoCal program is loaded.

(continued)

080209 36123-102-00

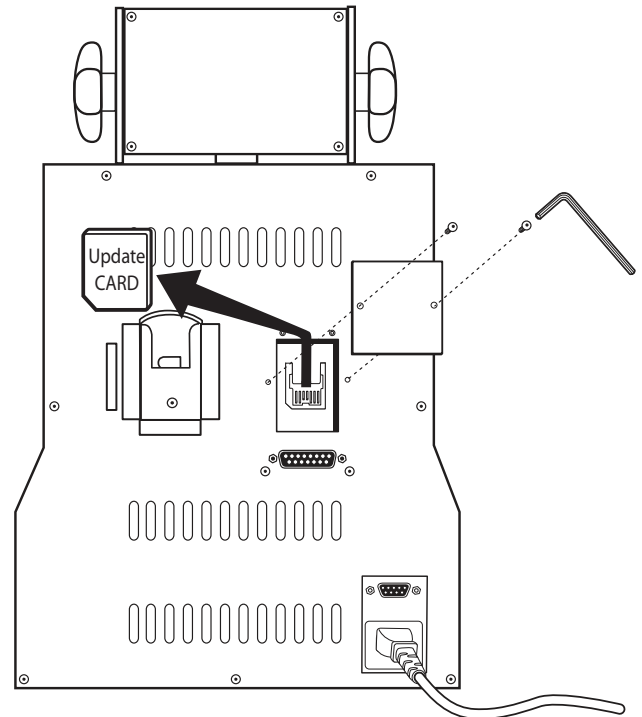


Fig. 1

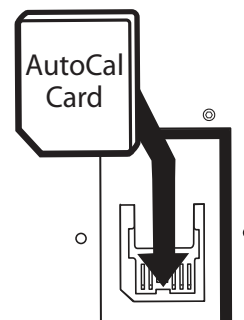


Fig. 2

CAUTION:

Do not turn off the machine when updating from the Update Card or AutoCal Card!

Tiger SHARK™ Auto-Calibration (continued)

6. Remove the cutter from Tiger SHARK™ and install the Calibration Disk. Place the Calibration Key in jaw A and align with the shoulder gauge. After aligning Calibration Key, lower the shoulder gauge to the rest position (Fig. 1).
7. The screen will now indicate "**AUTO CALIBRATION**". Click the "**CALIBRATE**" button. The next menu will read "*****Mount Shoulder Gauge Tool*****". Press "**Continue**". The carriage will now slowly move in toward the Calibration Disk. The disk will make contact at a number of points on the Calibration Key. This phase of the program takes about 60 seconds. When this phase is completed the Tiger SHARK™ will stop and beep 3 times while changing screens.
8. Remove the key and turn it around to gauge it with the tip gauge (fig. 2). The screen will read "***Set tool for tip adjustment***". Press the "**DO TIP**" button. The Tiger SHARK™ will continue to self-calibrate by repeating the touch off routines it did for the shoulder gauge. This phase will take about 3 seconds. After it finishes the Tiger SHARK™ will beep 4 times to tell you it has completed the self-calibration. After clicking "**Confirm**" it will move to the main menu.
9. Remove the Calibration Key and Calibration Disk. Mount a CW-14MC cutter and cut a shoulder gauge key (such as Schlage, DSD 60). Cut 5 depths in all six positions. Use a key micrometer to measure the depths and compare to the depths listed in the HPC Depth & Spacing Guide or another reliable source. All cuts should be within .002" (.05mm). In most cases no further adjustments will be needed (do not cut a key using a DSD where you have done DSD specific depth or space adjustments as these adjustments will not be a true reading of the machine's current state of calibration). If there is a significant difference, do the calibration again. If you find a small adjustment is needed use the "**Machine Adjustments**" function under "**TOOLS**". The auto-calibrate information is held in a special location and not shown in the "**Machine Adjustments**" screen. Also note the "**Machine Adjustments**" screen will be cleared by the auto calibration but can be used if minor or additional adjustments are needed now or in the future.
10. Replace the AutoCal Card with the Update Card you removed at the beginning of this procedure. Click "**TOOLS**", then Click "**SPECIAL FUNCTIONS**", then Click "**UPDATE FROM MMC CARD**". Click "**CONFIRM**" to begin the update process. Again, the screen will go white for a period of time (approximately 7 minutes) then turn black for a shorter period and beep to let you know the machine has been updated.

