

**AUTOTRONIK**  
Fertigungssysteme für die Elektronikindustrie

# Fully Automatic SMD Pick & Place Machine

## Vision Machine USER Manual (*Version 1.5*)

Edition by: AUTOTRONIK-SMT

### INDEX

**1.0 START THE MACHINE**

**2.0 MAIN MENU**

**3.0 FILE MENU** (file management)

- 3.1 FILE MENU - Load
- 3.2 FILE MENU - Save
- 3.3 FILE MENU - New
- 3.4 FILE MENU - Delete
- 3.5 FILE MENU - P&P File details
- 3.6 FILE MENU - Import
- 3.7 FILE MENU – Export

- 3.8 FILE MENU - set printer
- 3.9 FILE MENU - print preview
- 3.10 FILE MENU - Exit

#### **4.0 SETUP MENU (PCB set up for Auto Production)**

- 4.1 SETUP MENU - Learn PCB
- 4.2 SETUP MENU - Learn Reference Point
- 4.3 SETUP MENU - Learn Feeder I.D.
- 4.5 SETUP MENU - Learn Place
- 4.6 SETUP MENU - Learn All Placement Offset
- 4.7 SETUP MENU - Change Feeder Location
- 4.8 SETUP MENU - Create Production Index Table
- 4.9 SETUP MENU - Learn Dispense
- 4.10 SETUP MENU - Learn Vision Inspection
- 4.11 SETUP MENU - Sort Place record
- 4.12 SETUP MENU - Components Library
- 4.13 SETUP MENU - Load Default Feeder co-ordinates**
- 4.14 SETUP MENU - PCB Load/Unload (Conveyor system used only)
- 4.15 SETUP MENU - Feeder Overview
- 4.16 SETUP MENU - PCB Overlay

#### **5.0 PRODUCTION MENU**

- 5.1 PRODUCTION MENU - Auto Production
- 5.2 PRODUCTION MENU - Auto Dispense
- 5.3 PRODUCTION MENU - Vision Inspection
- 5.4 PRODUCTION MENU - Vision Before Production
- 5.5 PRODUCTION MENU - Manual Mode
- 5.6 PRODUCTION MENU - Select Board

#### **6.0 CALIBRATE MENU (mechanism calibration)**

- 6.1 CALIBRATE MENU - System Calibration
- 6.2 CALIBRATE MENU - Dispenser Calibration
- 6.3 CALIBRATE MENU - Mechanism Delay
- 6.4 CALIBRATE MENU - Nozzle Change Parameters

#### **7.0 UTILITY MENU**

- 7.1 UTILITY MENU - Reset Feeder
- 7.2 UTILITY MENU - Home
- 7.3 UTILITY MENU - Brow
- 7.4 UTILITY MENU - Diagnostic
- 7.5 UTILITY MENU - Back Up SYST file
- 7.6 UTILITY MENU - Vacuum
- 7.7 UTILITY MENU - Language

#### **8.0 HELP MENU**

- 8.1 HELP MENU - Help Topics
- 8.2 HELP MENU - About
- 8.3 HELP MENU - I/O card Driver Version
- 8.4 HELP MENU - Software History

**APPENDIX A**  
**HARDWARE INSTALLATION**

**APPENDIX B**  
**AUTO LEARN HEIGHT FEATURE**

**APPENDIX C**  
**MAKE LIBRARY FOR COMPONENT**

**APPENDIX D**  
**RELEARN PLACEMENT LOCATION AFTER PRODUCTION**

**APPENDIX E**  
**HOW TO USE SMART FEEDER AND SMART FEEDER I.D.**

**APPENDIX F**  
**ANGLE DIRECTION DEFINITION**

**APPENDIX G**  
**PRODUCTION 0201**

**APPENDIX H**  
**NOTES ON PCB SET UP FOR PRODUCTION**

**APPENDIX I**  
**AUTO LEARN REFERENCE POINT FEATURE**

**APPENDIX J**  
**BAD MARK FEATURE**

**APPENDIX K**  
**DISPENSER LIBRARY**

**APPENDIX L**  
**OPTION: UNIVERSAL CAD ACCESS - WCAD380**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

**APPENDIX M**  
**OPTIMIZE FOR AUTO PRODUCTION (FOR DOUBLE HEAD)**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

**APPENDIX N**  
**OPTION: CONVEYOR SETTING**

**APPENDIX O**  
**OPTION: CUT SCRIP TAPE HOLDER**

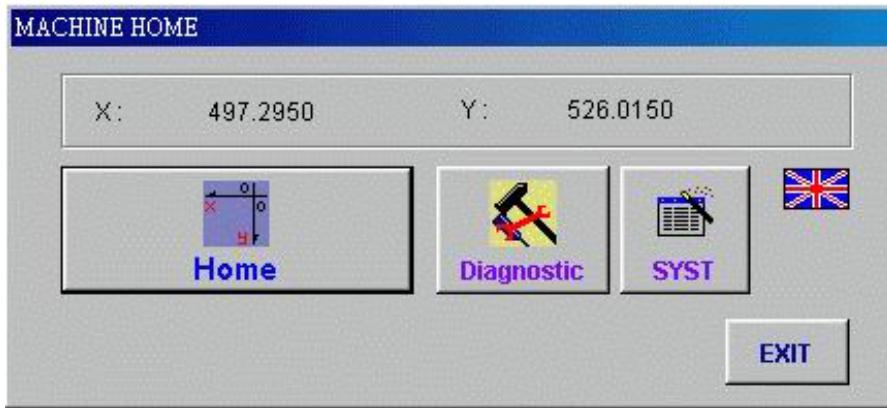
**APPENDIX P**  
**How to use Alignment-G/H**

**APPENDIX Q**  
**How to use CHECK MODE in production**

**APPENDIX R**  
**OPTION: Universal CAD ACCESS-UCAD**

## 1.0 START THE MACHINE

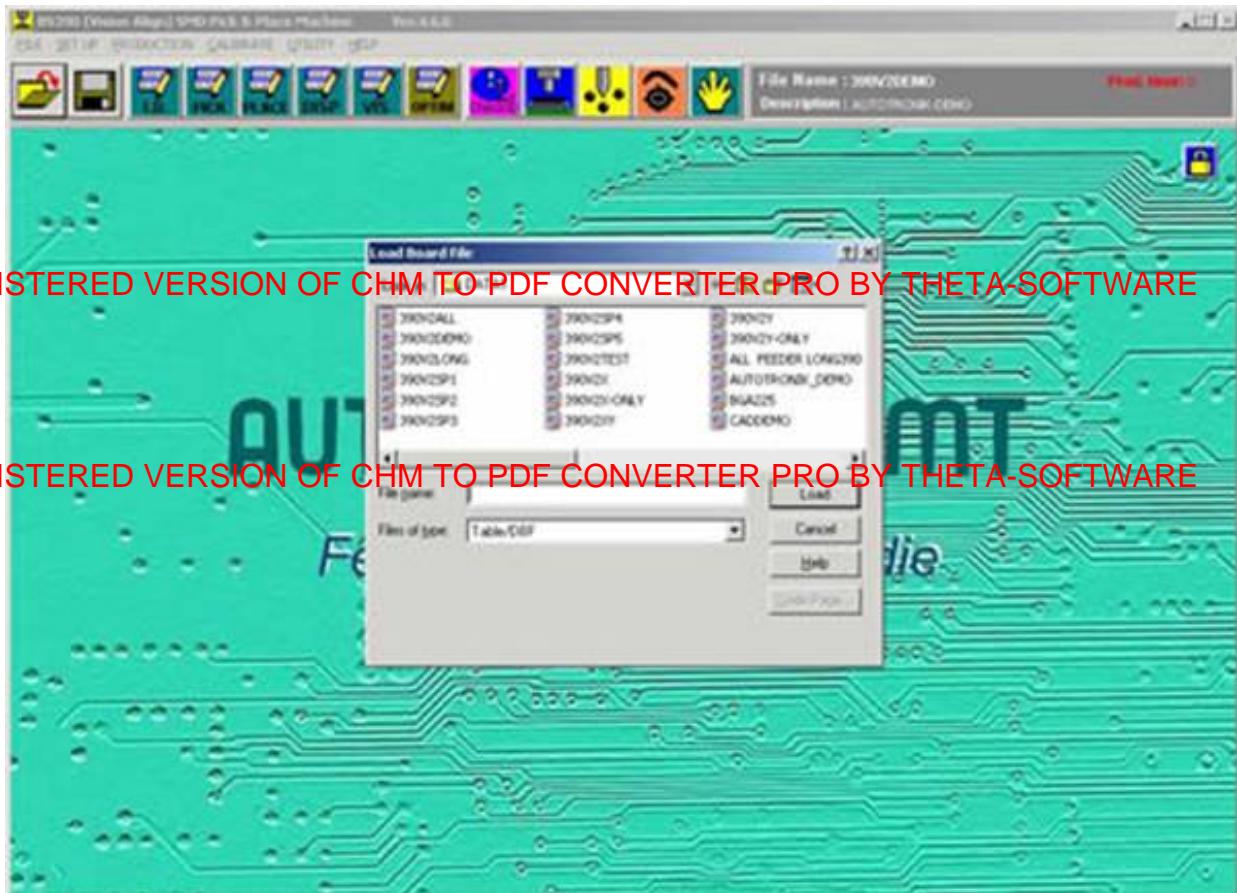
Upon the software start, the machine need to define the HOME position (zero position of X, Y, Z axis):



- Click the  button to start to define the HOME position
- Click  button for the diagnostic testing
- Click  button to modify machine system data (manufacturer used only)
- Click  can select language, after selected, you need to exit and restart software
- Click  button to exit the software

Then you to select the P&P data file (all the data files will be shown in a box)

**From software version 6.0.0, the data base change to 6.0 version, old data base is 3.1 version**



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Or, you can click <Cancel> to open a new file



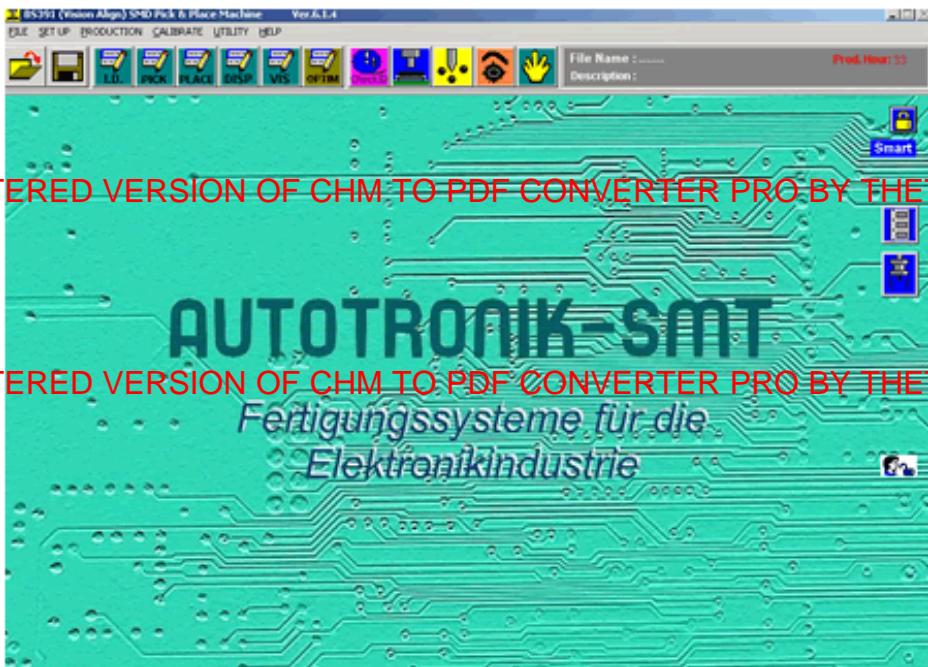
If you click <No> means not to new a P&P file, you can select load the last edit P&P file (back up file).

It is useful if you are programming a P&P file and the machine sudden power down, you can do this to recall the back up file, but the very important that this step must be done as the first step (you cannot load or new the P&P file before this step) otherwise the backup file will be missed.



- The data file must be stored in DATA1 subdirectory otherwise error may be occurred.
- The data file in DOS version can also be selected, and the software will auto do the conversion

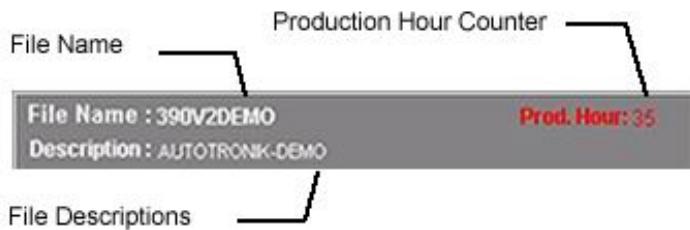
## 2.0 MAIN MENU



You can use of the pull down menu to select the following items:

- **FILE MENU** (file management)
- **SETUP MENU** (PCB set up for auto production)
- **PRODUCTION MENU** (auto/manual production)
- **CALIBRATE MENU** (machine calibration)
- **UTILITY MENU** (special function)
- **HELP MENU** (view help file and software history)

The Production Hour Counter, the P&P file name & the description of the file will be displayed at the upper right of the screen.



- click  for edit Smart Feeder
- click  for unlock Nozzle change tools

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 3.0 FILE MENU (file management)



**Remarks:** Data files are stored in 8 sub-directories named DATA1 to DATA8

DATA1 storing the board file -- pick & place locations and the board information (the file name is named by users, max. 7 characters)

DATA2 storing the dispense file -- dispense locations (the file name is same as board file but with a underscore character in front of the file name. e.g. \_abc.dbf)

DATA3 storing the 1<sup>st</sup> reference point image file

DATA4 storing the vision inspection file

DATA5 storing the dispenser library files

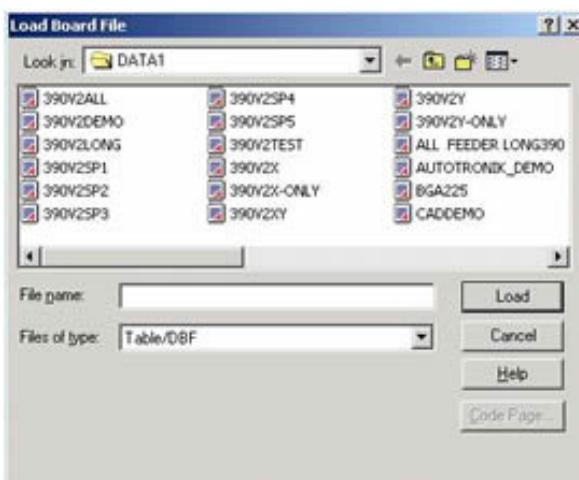
DATA6 storing Production Index table information for each P&P file (Mix production information)

DATA7 storing Cognex Image file for each Component Library

DATA8 storing ALL Placements offset for each P&P file (Learn ALL Placement Offset mode information)

#### 3.1 FILE MENU - Load

Select this item to down load a data file from diskette. The screen will show all the data files in DATA1 sub-directory and you can select the desire data.





Or, you can click <Cancel> to open a new file

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

If you click <No> means not to new a P&P file, you can select load the last edit P&P file (back up file).

It is useful if you are programming a P&P file and the machine sudden power down, you can do this to recall the back up file, but the very important that this step must be done as the first step (you cannot load or new the P&P file before this step) otherwise the backup file will be missed.

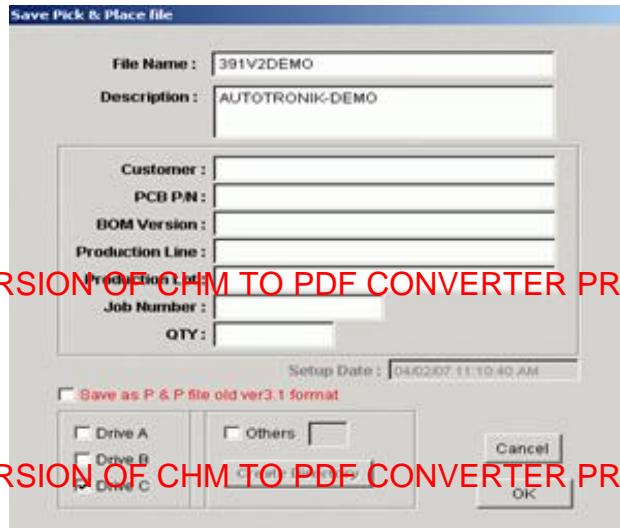


- Different sub-directories and different drive can be selected, if the data file is in different sub-directories or different drive, please select the file name of the data file in '.....\DATA1\' sub-directory otherwise error may be occurred.
- The data file format in DOS version can be auto converted into windows format, and the computer will ask for the code page selection, you can select **MS-DOS** in platform then click select button and this code page will not be shown again.



### 3.2 FILE MENU - Save

Select this item to save a data file to diskette. The software will ask for the file name and the file descriptions that you want to save as, and if the file name is existed on the diskette, the software will ask for reconfirm.

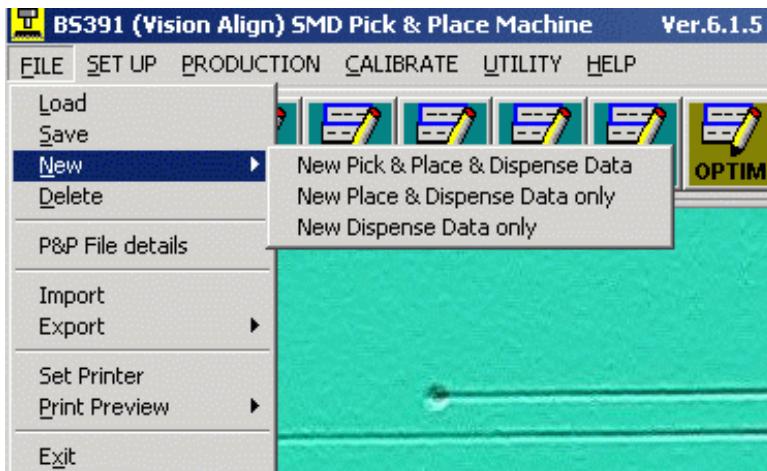


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 3.3 FILE MENU - New

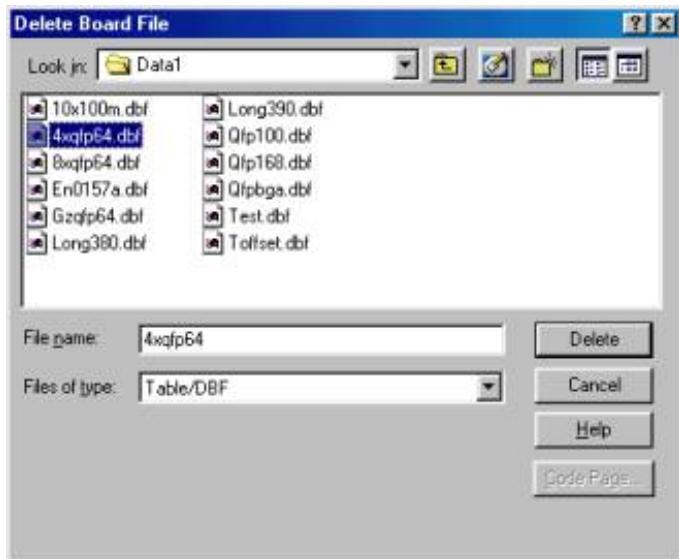
Select this item to clear all the data and ready for the new data entry. Once you select this item, the following message will be shown:



You can select clear the current P&P data, or clear the current placement data & dispense data only, or clear the current dispense data only.

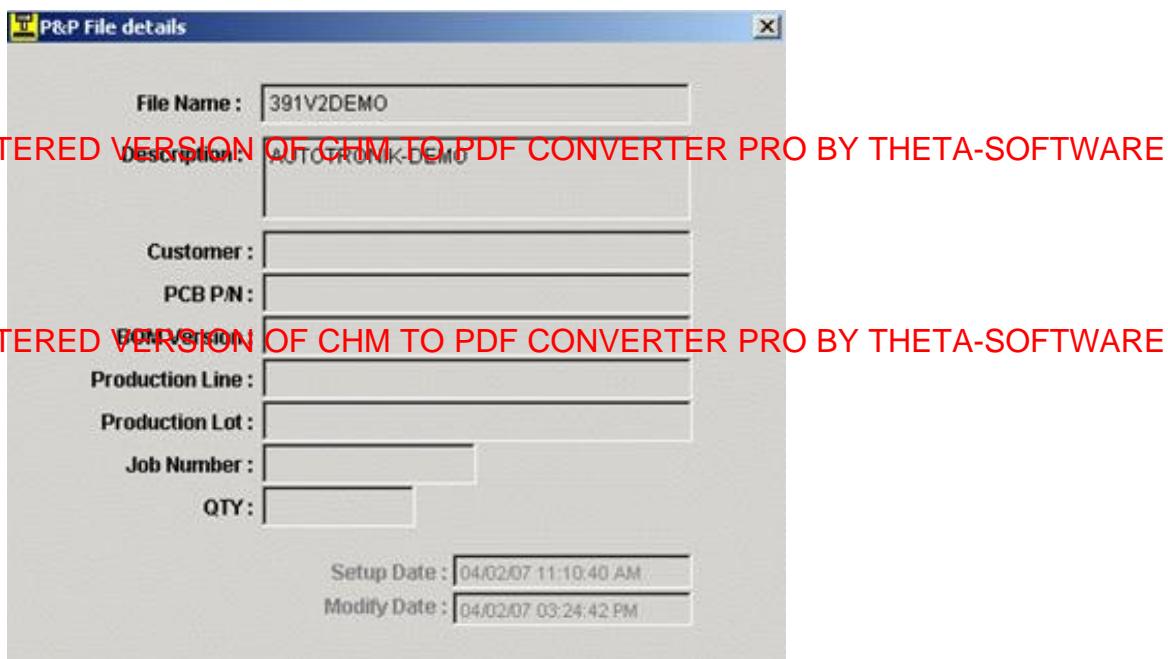
### 3.4 FILE MENU - Delete

Select this item to delete the unused P&P data file on the diskette.



### 3.5 FILE MENU - P&P File details

Select this item to check the details of P&P file



### 3.6 FILE MENU - Import

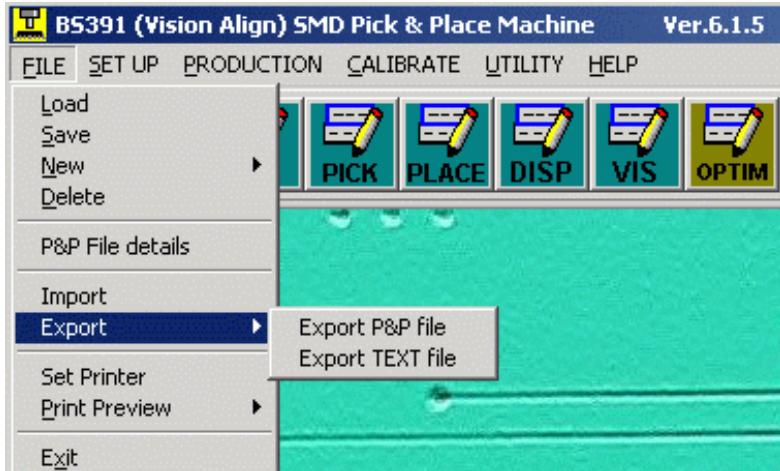
Select this item to Import the P&P DATE file (filename must \*. export or \*.smdzip)



Remark: Import P&P file can import from laser single head machine or laser double head machine

### 3.7 FILE MENU - Export

Select this item to Export P&P DATE file, then can use of this file for storage or email



Can select P&P file or TEXT file to export.

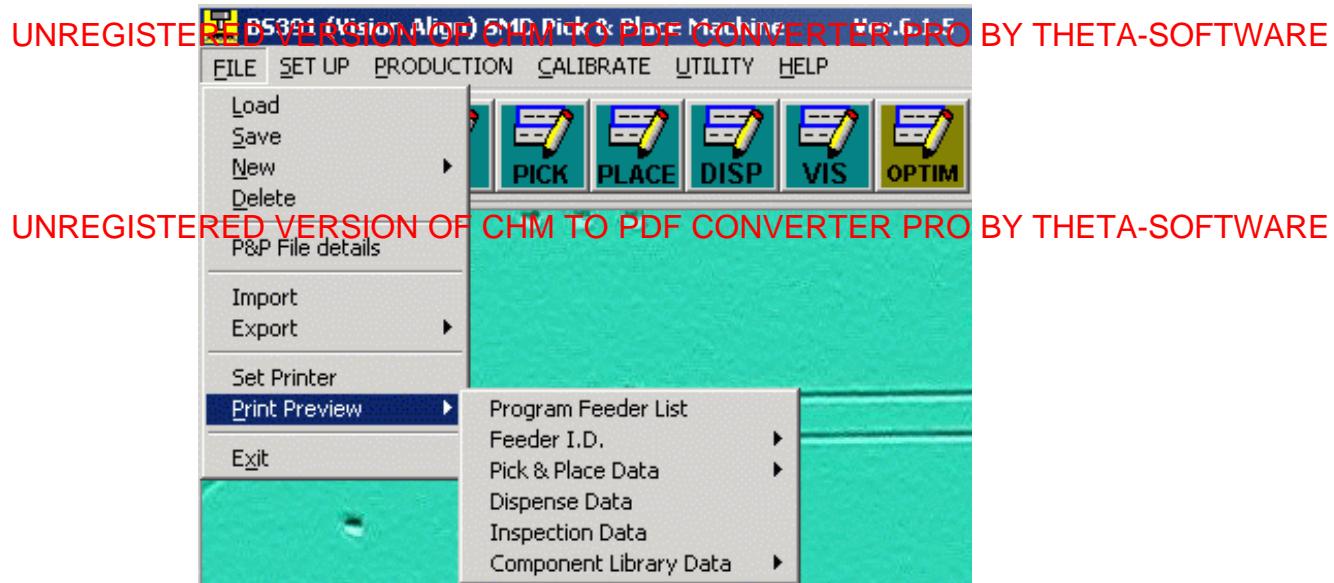


### 3.8 FILE MENU - Set Printer

Select this item for set printer

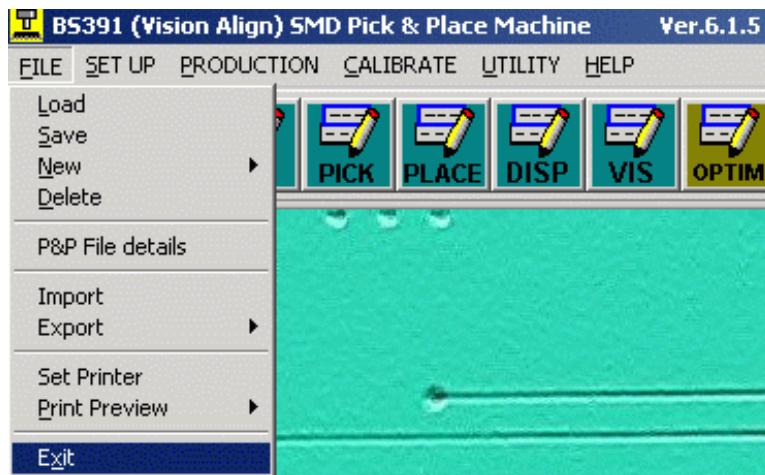
### 3.9 FILE MENU - Print Preview

Select this item to print the current Feeder I.D data file, P&P data file, dispenser file, inspection file or component library file to printer.



### 3.10 FILE MENU - Exit

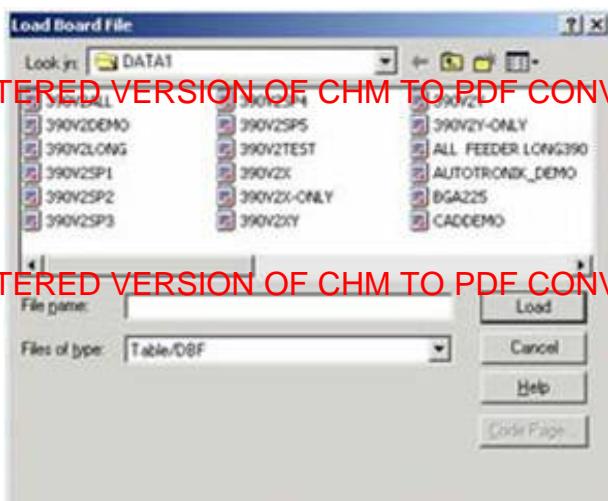
Select this item to exit the software.





### 3.1 FILE MENU - Load

Select this item to down load a data file from diskette. The screen will show all the data files in DATA1 sub-directory and you can select the desire data.



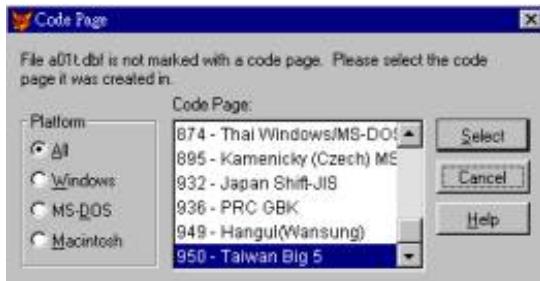
Or, you can click <Cancel> to open a new file

If you click <No> means not to new a P&P file, you can select load the last edit P&P file (back up file).

It is useful if you are programming a P&P file and the machine sudden power down, you can do this to recall the back up file, but the very important that this step must be done as the first step (you cannot load or new the P&P file before this step) otherwise the backup file will be missed.

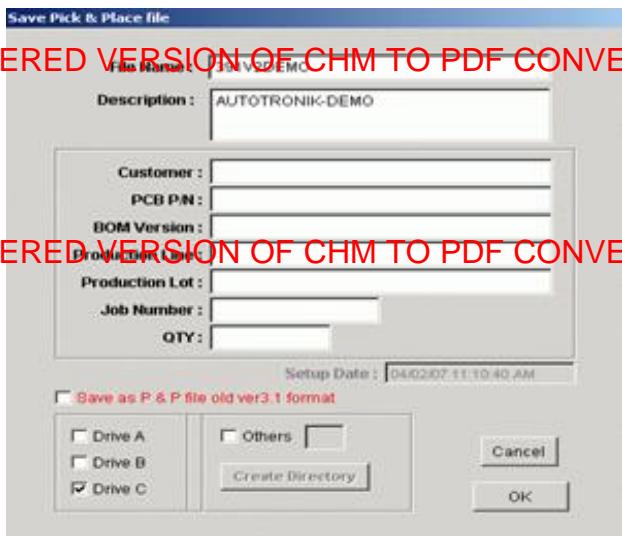


- Different sub-directories and different drive can be selected, if the data file is in different sub-directories or different drive, please select the file name of the data file in '..\DATA1' sub-directory otherwise error may be occurred.
- The data file format in DOS version can be auto converted into windows format, and the computer will ask for the code page selection, you can select MS-DOS in platform then click select button and this code page will not be shown again.



### 3.2 FILE MENU - Save

Select this item to save a data file to diskette. The software will ask for the file name and the file descriptions that you want to save as, and if the file name is existed on the diskette, the software will ask for reconfirm.

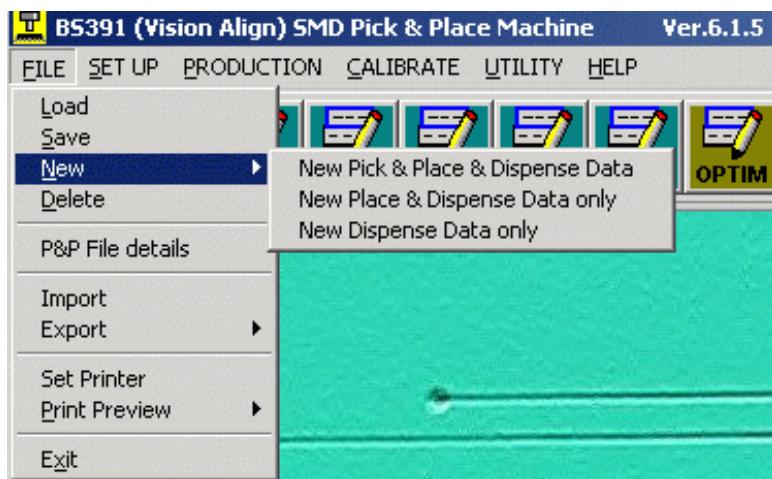


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 3.3 FILE MENU - New

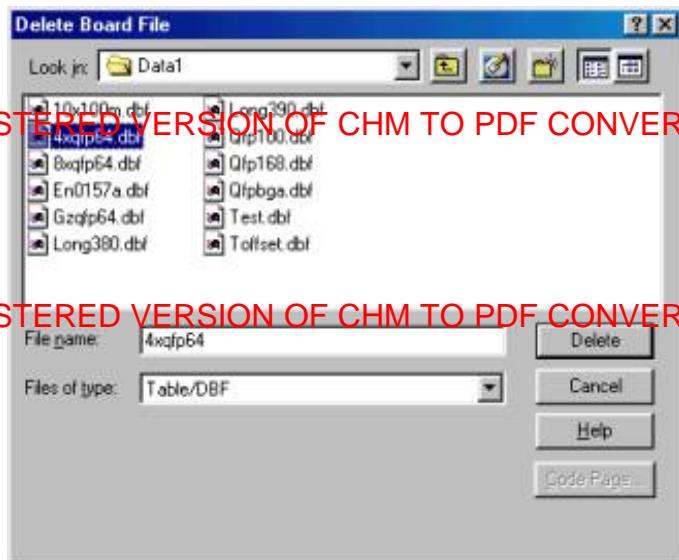
Select this item to clear all the data and ready for the new data entry.  
Once you select this item, the following message will be shown:



You can select clear the current P&P data, or clear the current placement data & dispense data only, or clear the current dispense data only.

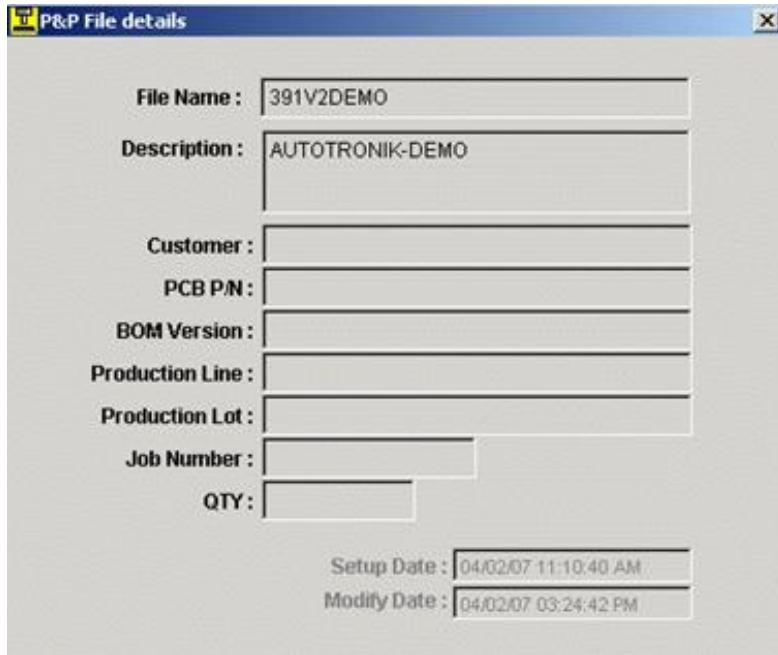
### 3.4 FILE MENU - Delete

Select this item to delete the unused P&P data file on the diskette.



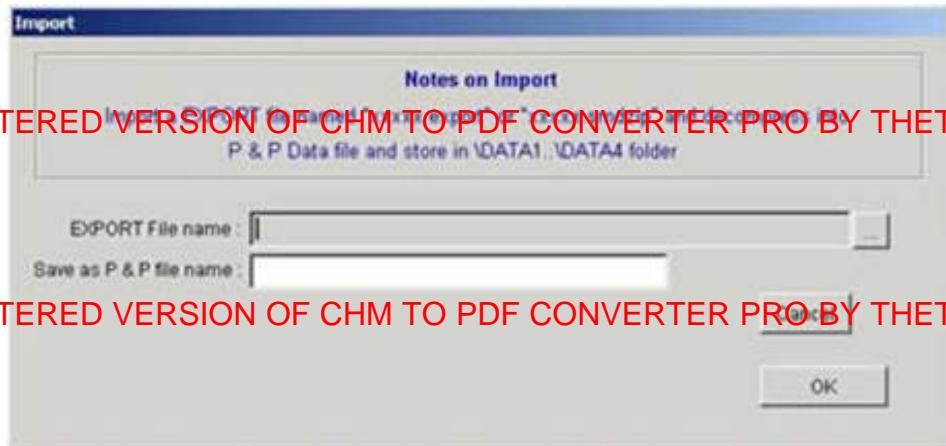
### 3.5 FILE MENU - P&P File details

Select this item to check the details of P&P file



### 3.6 FILE MENU - Import

Select this item to Import the P&P DATE file (filename must \*. export or \*.smdzip)



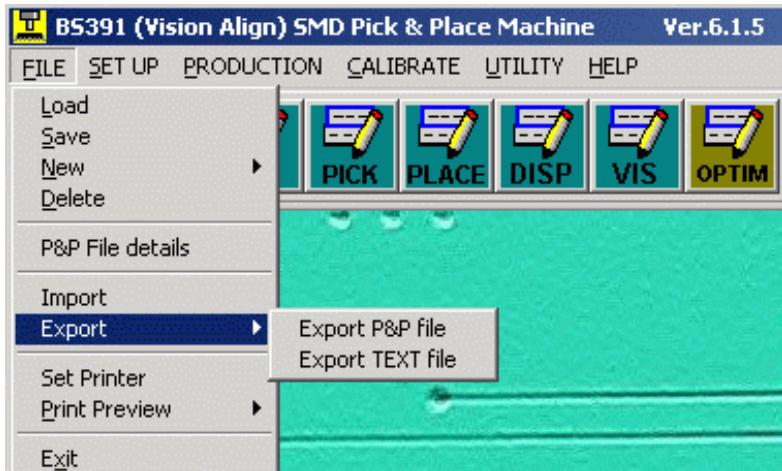
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Remark: Import P&P file can import from laser single head machine or laser double head machine

### 3.7 FILE MENU - Export

Select this item to Export P&P DATE file, then can use of this file for storage or email



Can select P&P file or TEXT file to export.



### **3.8 FILE MENU - Set Printer**

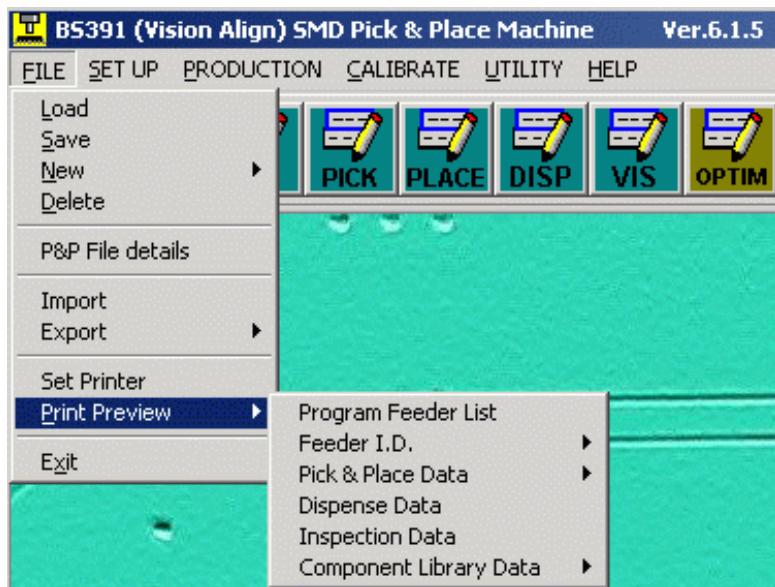
Select this item for set printer

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

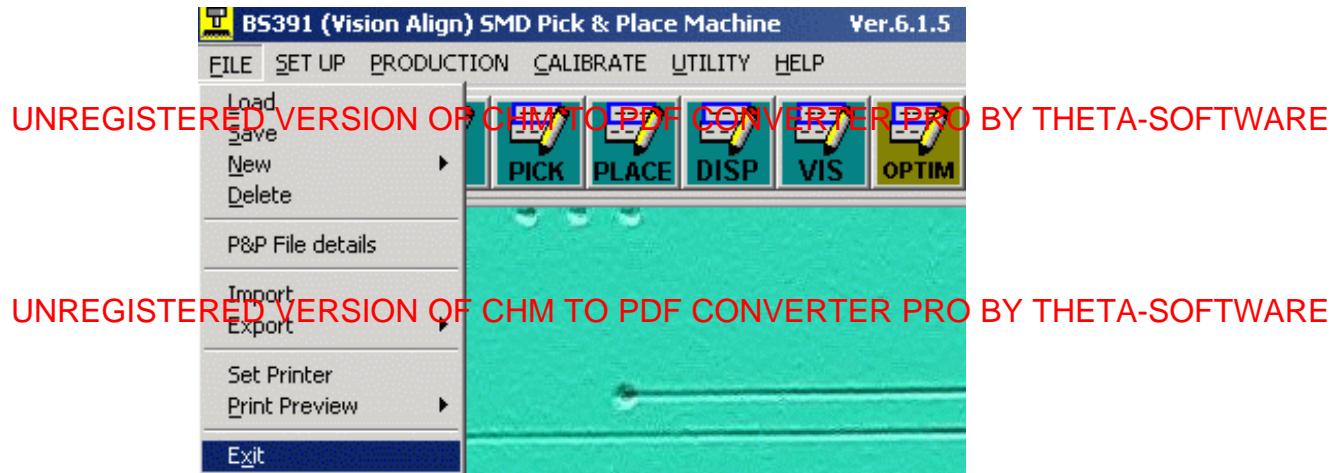
### 3.9 FILE MENU - Print Preview

Select this item to print the current Feeder I.D data file, P&P data file, dispenser file, inspection file or component library file to printer.



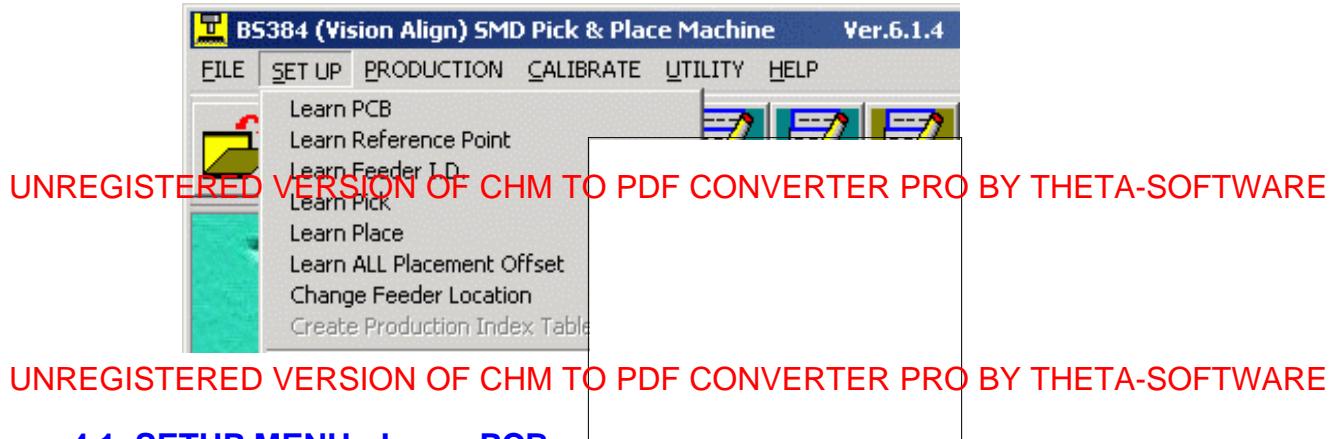
### 3.10 FILE MENU - Exit

Select this item to exit the software.



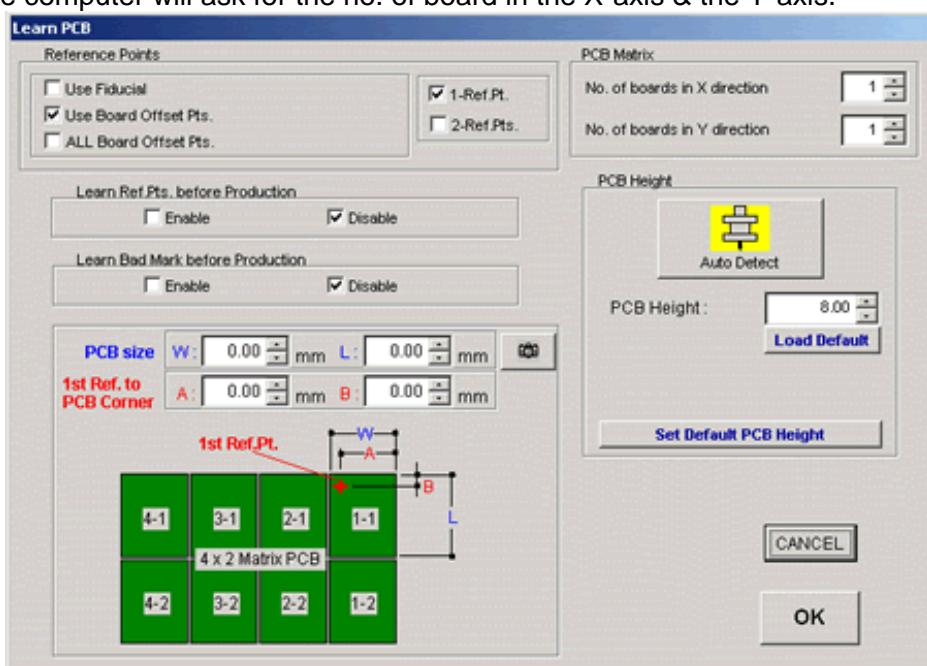


## 4.0 SETUP MENU (PCB set up for auto production)



### 4.1 SETUP MENU - Learn PCB

This is to select the PCB matrix information during production.  
The computer will ask for the no. of board in the X-axis & the Y-axis.



(A) Select 1 or 2 reference point(s)

**1-Ref.Pt.** - select this only if you haven't install the conveyor system and the PCB is well aligned on the datum plate and parallel to the machine X-axis (the software will not do any angle compensation for the PCB during Auto Production)

**2-Ref.Pts** . - select this the software will do the angle compensation for the PCB including the adjustment on the placement angle and the placement position (2-Ref.Pt. is recommended to be used)

(B) Select method of reference point for recognition

**Use Fiducial** - select this if your board is a matrix PCB and with the Fiducial mark on the board

**Use Board Offset Pts** . - select this if your board is not a matrix PCB or the matrix PCB without the

Fiducial mark on the board

**ALL Board Offset Pts** . - select this if your board is a matrix PCB and you need the excellent placement accuracy on each small board (e.g. one or more very fine pitch IC on each small board). The machine will do the reference points recognition for all small boards and re-adjust all the placement positions before Auto Production.

(C) Set PCB matrix - If your board is a matrix PCB, please set the no. of board in X direction and the no. of board in Y direction.

If your board is a single PCB :

no . of board in X direction = 1 no. of board in Y direction = 1

(D) Select enable / disable the Learn Ref.Pts . before Production feature

(E) Select enable / disable the Learn Bad Mark before Production feature

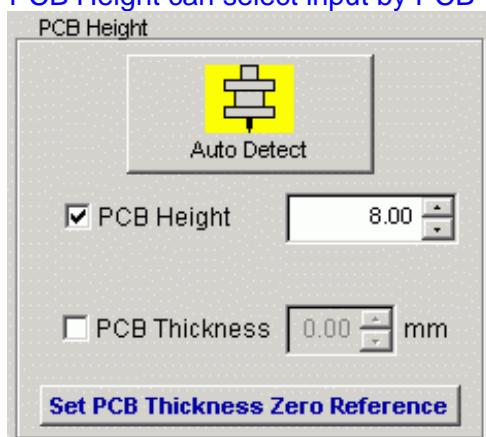
(F) Set the PCB height, this parameter is recommended to be learn by auto detect

(click the  button to do the auto detection)

**Remarks** : The PCB height is not the PCB thickness, it is the height reference to the machine.

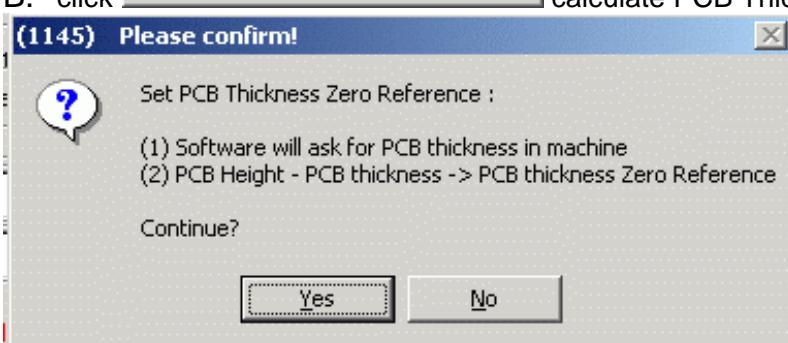
For the auto detect height feature, please refer to the **APPENDIX B**

PCB Height can select input by PCB Thickness in mm (no conveyor used only)

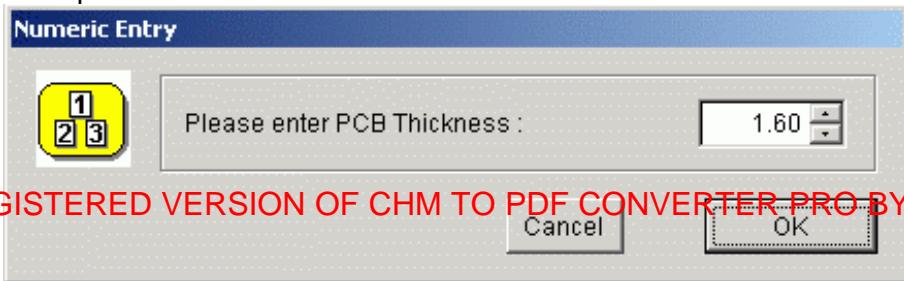


A. click  detect PCB height

B. click **Set PCB Thickness Zero Reference** calculate PCB Thickness Zero Reference



C. input PCB thickness

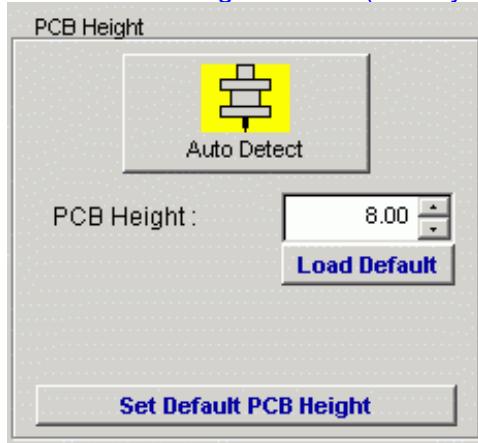


D. get PCB Thickness Zero Reference

E. when load or create a new P&P file, please direct input the PCB Thickness, then you will get the PCB height, no need to detect again.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

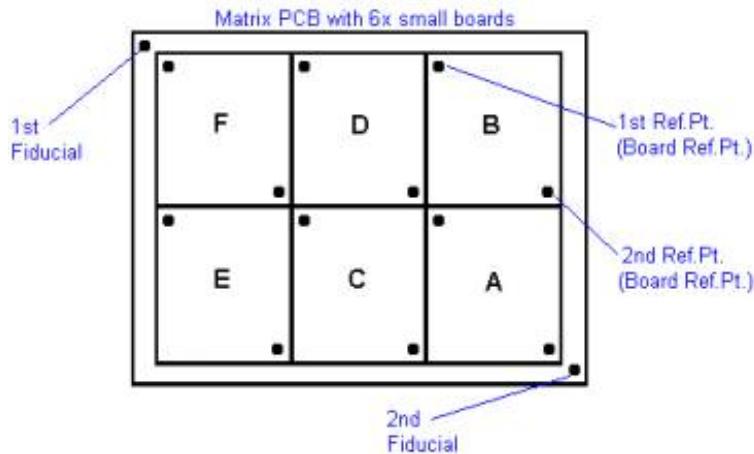
Default PCB Height feature (conveyor used only)



- A. click detect PCB Height
- B. click **Set Default PCB Height** to set the detect PCB height is default height
- C. when load or create a new P&P file, please click **Load Default**, then you will get the PCB height, no need to detect again

**Board definition:** An example of a matrix PCB 3 X 2

- use of Fiducial , 2-reference point
- No. of boards in X direction = 3, Y direction = 2
- Board 1-1 = Board A
- Board 1-2 = Board B
- Board 2-1 = Board C
- Board 2-2 = Board D
- Board 3-1 = Board E
- Board 3-2 = Board F

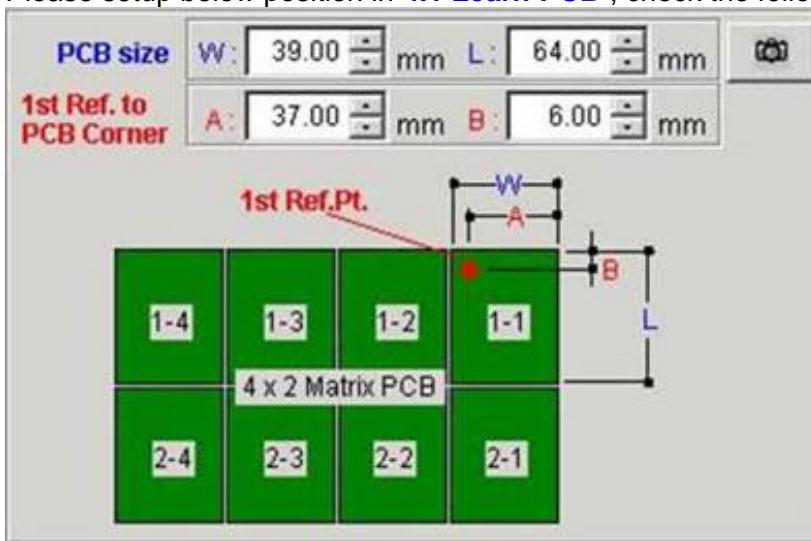


**Remarks :** - the board information must be defined before program the placement data.

- max. no . of board is 200 for 1-reference point, 100 for 2-reference point.

#### (D) Setup PCB size

Please setup below position in [4.1 Learn PCB](#) , check the follow frame



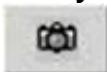
**PCB Size (W)** --- The 1-1 PCB Width

**PCB Size (L)** --- The 1-1 PCB Length

**1st Ref. to PCB Corner( A)** --- The Width for first reference to PCB Corner

**1st Ref. to PCB Corner( B)** --- The Length for first reference to PCB Corner

#### Auto Learn by Camera

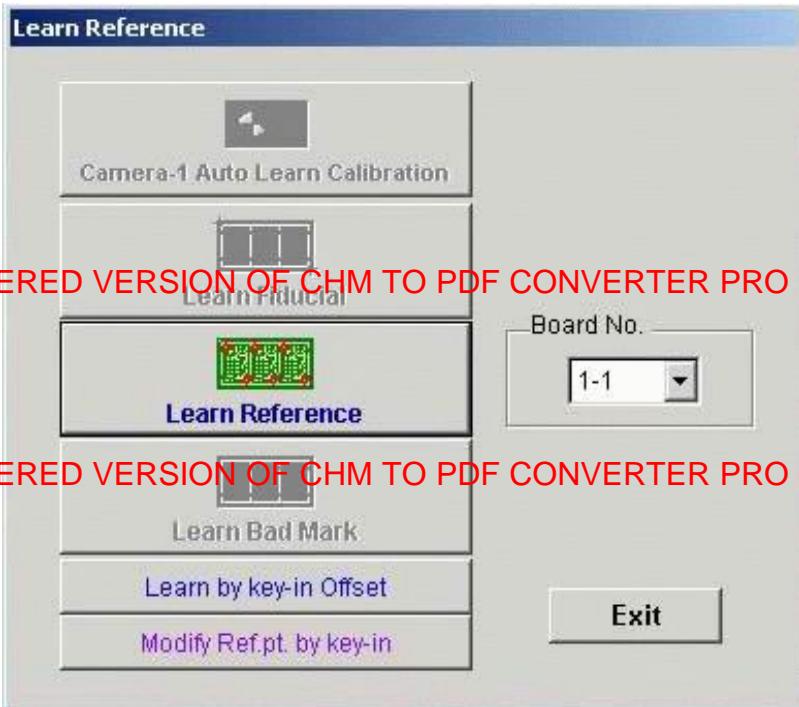


1) Click learn Upper-Right corner of Board 1-1

2) Learn Lower-Left corner of Board 1-1

3) Learn 1st Ref.Pt of Board 1-1

## 4.2 SETUP MENU - Learn Reference Point

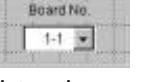


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

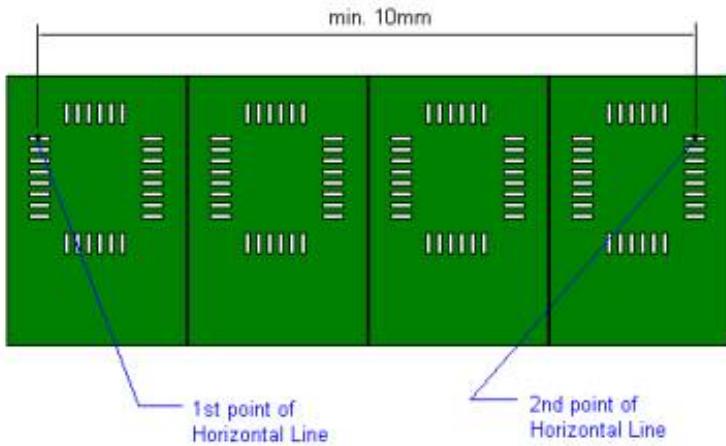
- Click  **Auto Learn Camera-1 Calibration**, please refer **6.1.6 Auto Learn Camera-1 Calibration**.

**NOTE: For Manual Production( no conveyor), when production a new PCB must do this Calibration**

- Click  to learn Fiducial Ref.Pts . of the PCB if you've selected **Use Fiducial** in the Learn PCB mode.  
You need to choose use of **Auto Learn** or **Manual Learn** the Ref.Pts . For the **Auto Learn Ref.Pts .**, please refer to **APPENDIX I**
- Click  to learn Board Ref.Pts . (please select the correct board no.  )  
If you've selected **Use Board Offset Pts** or **ALL Board Offset Pts** , you need to choose use of **Auto Learn** or **Manual Learn** the Ref.Pts . For the **Auto Learn Ref.Pts .**, please refer to **APPENDIX I**

If you've selected 2-Ref.Pts. method , after learn the Board 1-1 Ref.Pt ., you need to learn the Horizontal Line for the PCB. It is recommended to learn this Horizontal Line especially if you want the high placement accuracy.

Normally use of the pad of the IC for the learning point of Horizontal Line and the distance between 2 points should be as long as possible.



continue to click  button until learned all the boards Ref.Pts .

Remark: PCB rotate 90 or 270 degree after re-learn reference points, Horizontal line will be cleared.

- Click  to learn the Bad Mark information if you've enabled the Bad Mark feature. You need to learn the Bad Mark position in Board 1-1 and adjust the IM.Filter for the recognition of the Bad Mark. Please refer to **APPENDIX J** for more details.
- Click  to calculate all boards Ref.Pts . for your matrix PCB by computer. You need to learn the Board 1-1 Ref.Pts . then enter the distance between board and board of your matrix PCB.
- Click  to modify the boards Ref.Pts . by manual key-in.

#### 4.3 SETUP MENU - Learn Feeder I.D.

Please refer to **APPENDIX E** for more details in Feeder I.D. usage.

Select this item to create or modify the Feeder I.D.

- Click  to create a new Feeder I.D.
  - Click  to modify Feeder I.D.
  - Click  to delete a Feeder I.D.
  - Click  to recall a deleted Feeder I.D.
  - Click  to scan all smart feeder in machine

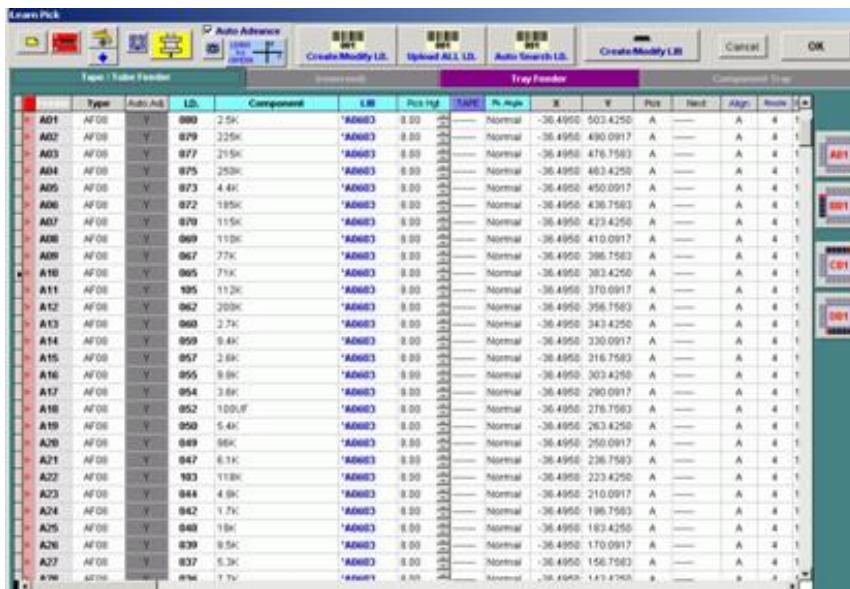
Click Header of "COMPONENT" or "I.D." etc.. can do sorting

**Remarks :** The Feeder column indicates which Feeder Location is selected this Feeder I.D. in **Lear Pick** mode.

**Enable “Error message for feeders without I.D. “will show an error message if not select I.D in learn pick**

## 4.4 SETUP MENU - Learn Pick

Select this item to program the pick information



There are 4 types of Pick information to be selected:

**Feeder A,B,C,D** - feeder location A01-A22, B01-B22, C01-C22, D01-D22 (for BS380 model)  
feeder location A01-A16, B01-B16, C01-C16, D01-D16 (for BS390 model)

**Feeder E,F** - feeder location E01-E22, F01-F22 (for BS390 model only)

**Tray Feeder** - feeder location for QFP Tray Q01-Q 4 0

**Component Tray** - All the K01-K20 Feeder name will automatic convert to Q21-Q40

The following buttons can help you program the pick information:

- Click to clear the selected feeder location information
- Click to advance the Feeder on the machine one step (important to do this before learn pick up position)
- Click to learn the thickness of the component by auto detect
- Click will auto calculate the Pick Height (only for already Calibrate Default Pick Height)
- Click to learn the pick height by auto detect (manual adjust button for 0.5mm )
- Click to learn all used feeder X,Y by camera
- Click to go A01(or B01, C01, D01)
- Click to scan all smart feeder in machine
- Click go next problem feeder

- Click  **Create/Modify I.D.** create new feeder I.D.

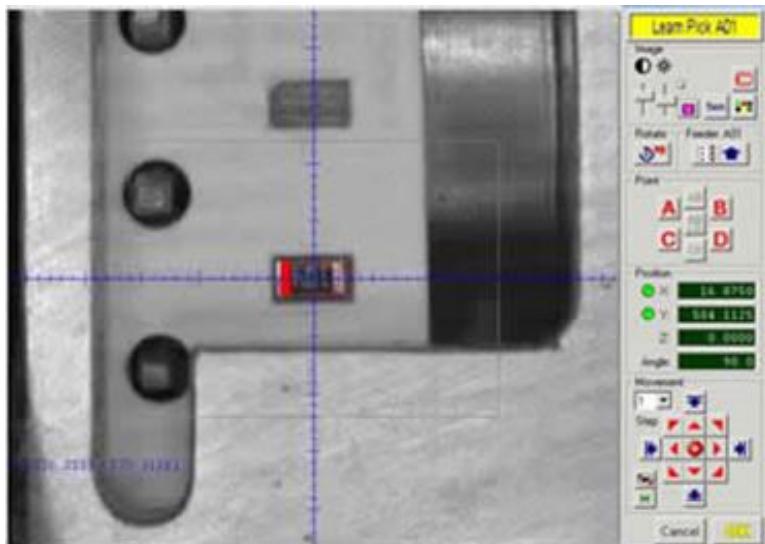
- Click  **Upload ALL I.D.** Copy all feeder I.D. information to feeder I.D. table

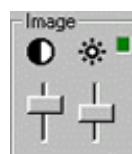
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- Click  **Match I.D.** to auto compare COMPONENT & Library and select I.D. if same component value & library name

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- Click  **Create/Modify LIB** create new component library
- Click  **LEARN by CAMERA** to learn the pick up position (XY co-ordinate) by Camera-1



(i) Use of  scroll bar to adjust the brightness and contrast

(ii) Click  turn component on / off

(iii) Click  turn overlay on / off

(iv) Click  change overlay color

(v) Click  to change the Pk\_Angle (rotate 90 degrees)

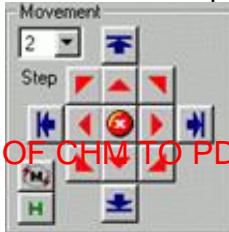
(vi) Click  to advance the feeder one step



(vii) use of

to find the center of a big component (e.g. SOIC, QFP, BGA, CSP ...)

- (viii) Click  turn X and Y axis off  
 (ix) Click  set motor speed fast or slow



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- (x) Click  Adjust the cross mark to the center of the tape container (not the center of the component), then click  to save the pick up position.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

#### 4.4.1 Feeder A,B,C,D

- FEEDER (Feeder Location Name)
- TYPE (Type of Feeder used)
- Auto.Adj (Auto Adjust Pick up location)
- I.D. (Feeder I.D.)
- COMPONENT (Component name or value)
- LIB. (Components library)
- PICK HGT (Component pick up height)
- TAPE (Component Tape)
  - PK\_ANGLE (Component package angle)
  - X (Pick up position in X)
  - Y (Pick up position in Y)
  - PICK (Pick up method)
  - NEXT (Next Feeder if no component detected)
  - ALIGN (Alignment method)
  - NOZZLE (Nozzle)
  - SPEED (Up/Down speed)
  - Vs (Vacuum pass percentage)
  - L (Component size in X)
  - W (Component size in Y)
  - H (Component thickness)
  - POLARITY (Component polarity)

##### 4.4.1a FEEDER

This is the Feeder Location name & is defined by computer :

Model BS380 : A01 ~ A22 (right side of the machine)

B01 ~ B22 (left side of the machine)

C01 ~ C22 (back of the machine, this is the optional device AD22)

D01 ~ D22 (front of the machine, this is the optional device AD16)

Model BS390 : A01 ~ A16 (front left of the machine)

B01 ~ B16 (front right of the machine)

C01 ~ C16 (back right of the machine)

D01 ~ D16 (back left of the machine)

#### 4.4.1 b TYPE

Type of Feeder used, select the Feeder type as follows:

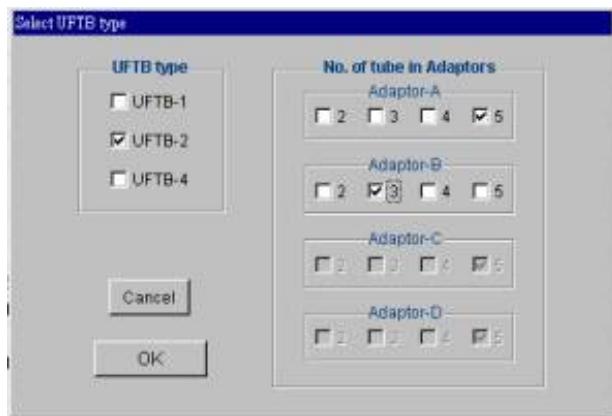
- AF08 - AFTA-08 Auto Tape form feeder
- AF12 - AFTA-12 Auto Tape form feeder
- AF12H - AFTA-12H Auto Tape form feeder (for the thickness component)
- AF16 - AFTA-16 Auto Tape form feeder
- AF16H - AFTA-16H Auto Tape form feeder (for the thickness component)
- AF24 - AFTA-24 Auto Tape form feeder
- AF24H - AFTA-24H Auto Tape form feeder (for the thickness component)
- AF 32 - AFTA- 32 Auto Tape form feeder
- AF32H - AFTA-32H Auto Tape form feeder (for the thickness component)
- AF 44 - AFTA- 44 Auto Tape form feeder
- AF44H - AFTA-44H Auto Tape form feeder (for the thickness component)

**NOTE : Please select the right feeder TYPE; otherwise the machine nozzle will be damaged during pick up.**

- UFTB - Universal Tube form feeder

If 'UFTB' is selected, you need to select which kind of UFTB installed (UFTB-1, UFTB-2, UFTB -4) and the number of component tubes installed in the Adaptor of the UFTB. The Feeder Location will be re-generated by computer.

Example : A UFTB-2 is installed in Feeder Location A03 with 2 tubes in Adaptor-A and 3 tubes in Adaptor-B



The A03 Feeder Location will be re-generated by computer and the new Feeder Location will be appeared : A03-A1, A03-A2, A03-B1, A03-B2, A03-B3

	Type	Auto Adj	ID.	Component	LIB	Pick Hgt	TAPE	Pk Angle	X
	A01	AF08	Y			0.00	Normal	592.0000	57
	A02	AF08	Y			0.00	Normal	572.0000	57
	A03-A1	UFTB	N			0.00	Normal	552.0000	57
	A03-A2	UFTB	N			0.00	Normal	527.0000	57
	A03-B1	UFTB	N			0.00	Normal	502.0000	57
	A03-B3	UFTB	N			0.00	Normal	468.6667	57
	A04	AF08	Y			0.00	Normal	532.0000	57

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Appendix1: Universal Tube Adapter

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UTA – 0223 ---- 2 tube / @ 23mm width

UTA – 0315 ---- 3 tube / @ 15mm width

UTA – 0410 ---- 4 tube / @ 10mm width

UTA – 0509 ---- 5 tube / @ 9mm width

## Appendix2: UFTB can be installed between feeder rack A&B or C&D location

### 4.4.1 c Auto.Adj

Auto Adjust Pick up location to Default Feeder location (enable/disable in Mechanism Setting-Production Setting menu)

### 4.4.1 d I.D.

This is the Feeder I.D. You can select from the Feeder I.D. table or create a new Feeder I.D. by clicking the



button. Feeder I.D. is designed for more easy to re-locate the feeders, especially the tape feeders (AFxx), please refer to **APPENDIX E**

### 4.4.1 e COMPONENT

This is the component name or value, you can key-in any characters here.  
e.g . R-30K, C-5nF,.....,etc.

### 4.4.1 f LIB.

This is the components library name. You can select from the Component Library table or create a new User Component Library by clicking the



button.  
e.g. R0603, C1206

**Remarks** : If the pitch of the component tape is 2mm and using standard AFTA-08L 1 feeder, you should select [H]0402 or [H]0603 or built up your own user library with the first characters of the library name is '\*[H]'.  
e.g. \*[H]0402

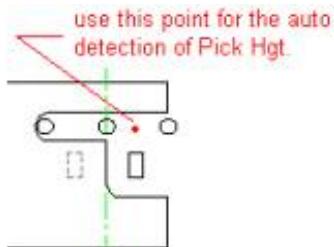
It is recommend that to use ( option ) AFTA-08L 1-HS half step feeder for a better performance of picking up 0402.

When using AFTA-08L 1-HS, there is no need to select [H]0402 in the library as the feeder is automatic moving in 2 mm pitch, you should select 0402 in library.

For picking up 0201, it must use (option) NZ4-0201 nozzle and AFTA-08L 1-HS half step feeder.

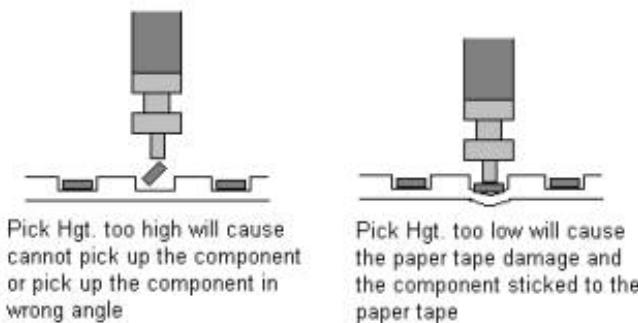
#### 4.4.1 g PICK HGT

This is the components pick up height from the Feeders during in auto production. It is recommended to learn by auto detect.



For small components, don't use the component position for the auto detection, since the vacuum will pick up the small component and detect the wrong Pick Hgt .

This is an important parameter during pick up the component.



#### 4.4.1 h TAPE

This is select the Paper tape or Plastic tape component, after finished Calibrate Default Pick Height, select TAPE in this column, and click Set ALL Default Pick Height button will get all feeder pick height.

#### 4.4.1 i PK\_ANGLE

This is the component package angle. Please refer to **APPENDIX F** for the selection.

Or, you can select by click <90> button in image mode during pick up position learning by camera-1. The component shape will also displayed on the screen.

#### 4.41j X

This is the X co-ordinate of the pick up position.

#### 4.4.1 k Y

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

This is the Y co-ordinate of the pick up position.

**Remarks :** The X, Y co-ordinate of the pick up position can be learned by camera-1

Please click  button to advance the feeder to make sure the feeder stop position is corrected.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

#### 4.4.1 l PICK

This is the pick up method selection

(1) A

Select "A" indicates the machine do the '**Auto**' picks up components for this Feeder.

(2) S

Select "S" indicates the machine do the '**Semi -Auto**' picks up components for this Feeder.

'**Semi-Auto**' means the machine Head will move to this feeder and wait for user pressing a button key then do the pick up component.

(3) M

Select "M" indicates the machine do the '**Manual**' picks up components for this Feeder.

'**Manual**' means the machine Head will move this feeder and change to Manual Mode and allow user to control pick up the component manually.

This mode is mostly used when you are using a Component Tray. You need to control the camera (by arrow buttons) and points to the component and click the <Pick Up> button to pick up the component then the machine will do the placement automatically

#### 4.4.1 m NEXT

This is the next feeder location name. The machine will go to this feeder to do pick up if no component is detected.

e.g. "A02", or '-----' to indicate no next feeder.

#### 4.4.1 n ALIGN

This is the Alignment method.

**Alignment- A** is the alignment system at the bottom of the machine Head, it is to locate the pick up component to the center position.

Max. component size of **Alignment-A** :

- (a) Vision on the fly alignment = 16 mm x 14 mm
- (b) Bottom Vision Alignment = 38 mm x 38 mm

(i) A

Select [A] indicate using the **Alignment-A** to do the auto alignment after pick up the component.  
Mechanical Jaw model: align X-direction then Y-direction of the component

(ii) a (Mechanical Jaw model only)

Select [a] indicate using the **Alignment-A** to do the auto alignment after pick up the component.  
Mechanical Jaw model: align Y-direction then X-direction of the component

(iii) G

Select [ G ] indicate using the **Alignment- G** to do the auto alignment.

**Remarks** : You need to use the Component Library or set up a User Component Library for select this alignment method.

It is recommended to use this alignment if the IC pitch > 1.6 mm or the component size is bigger than **Alignment-A** .

No Image Processing

(iv) N

Select [N] indicate no alignment for this component.

#### 4.4.1 o NOZZLE

This is the Nozzle number used, different components size use different nozzle number .

There are 5 types of standard nozzle.

- Nozzle 1/2 mainly for resistor, capacitor & transistor.
- Nozzle 3 for small size IC.
- Nozzle 4 reserved for special made nozzle.
- Nozzle 5 for medium size IC.
- Nozzle 6 for QFP

- Nozzle G special for **Alignment- G** used.

#### 4.4.1p SPEED

This is the Head up/down speed.

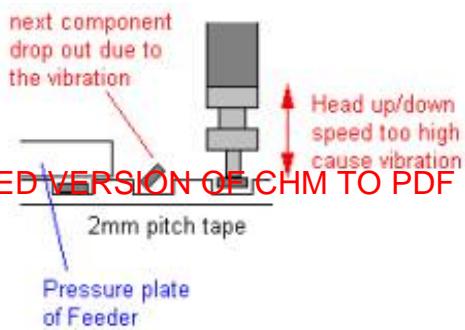
Speed-[1] is the highest speed and speed-[5] is the slowest speed.

Speed-[0] is the high speed with damping (up/down motor use of stepping motor model only. For servo motor model, speed-[0] is equal to speed-[3].)

**Remarks** : Normally all the resistor/capacitor/transistor use of speed-[1], IC use of speed-[0] or speed-[3]. If you find that the component drops down during pick up, that means the speed is too high or the nozzle is too small for this component.

**IMPORTANT:** For the 2mm pitch tape form components when using standard AFTA-08L 1 feeder, you need to set the up/down speed to speed-[3] to decrease vibration to the next component on the tape during pick up.

It is possible to using speed 1 for 0402 if use ( option ) AFTA-08L 1-HS feeder



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

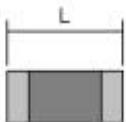
#### 4.4.1 q Vs

This is to set the vacuum detect pass percentage during pick up a component. (ZSE4 Vacuum Sensor used only, normally is 70%). When pick up some non-uniform component such as diode, you needs to set lower percentage value such as 50%.

**Remarks** : If use of Laser for the alignment, the component detection will be done by the Laser and the VS setting will be no used.

#### 4.4.1 r L

This is the length of the component (size in X).



#### 4.4.1 s W

This is the width of the component (size in Y).



#### 4.4.1 t H

This is the thickness/height of the component.

#### 4.4.1 u POLARITY

This is the polarity of the component. You can select 'Yes' or 'No'.  
e.g . Resistors & small capacitors has no polarity, diodes, ICs has polarity.

#### 4.4.2 Feeder E,F : (BS390 model only)

disable since 4.9.7 software

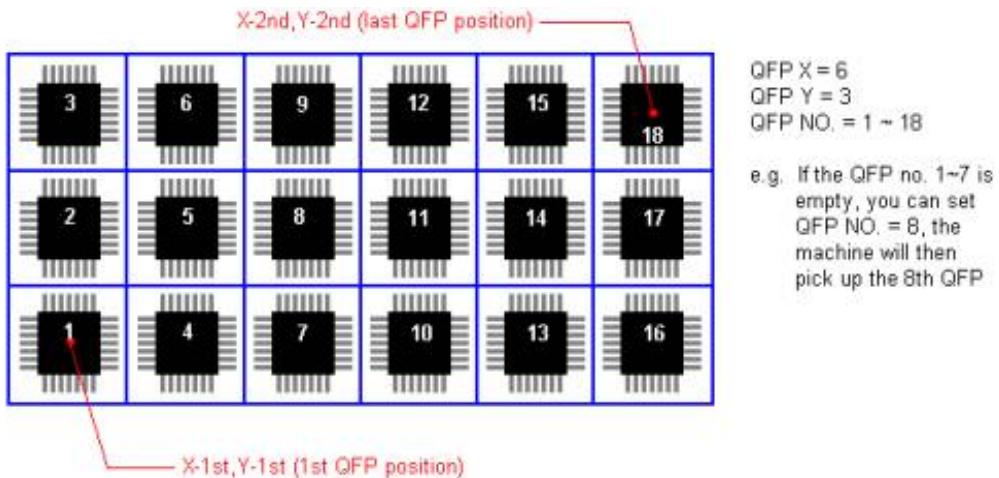
#### 4.4.3 T RAY FEEDER :

- FEEDER (QFP Tray name Q01 ~ Q40)
  - COMPONENT (Component name or value)
  - LIB. (Components library)
  - PICK HGT (QFP pick up height)
  - PK\_ANGLE (Component package angle)
  - X-1st (1st QFP position)
  - Y-1st
  - X-2nd (last QFP position)
  - Y-2nd
  - QFP X (QFP Tray matrix)
  - QFP Y
  - QFP NO. (QFP Pick up number)
  - PICK (Pick up method)
  - ALIGN (Alignment method)
  - NOZZLE (Nozzle)
  - SPEED (Up/down speed)

- Vs	(Vacuum pass percentage)
- L	(QFP size in X)
- W	(QFP size in Y)
- H	(QFP height/thickness)
- POLARITY	(Component polarity)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

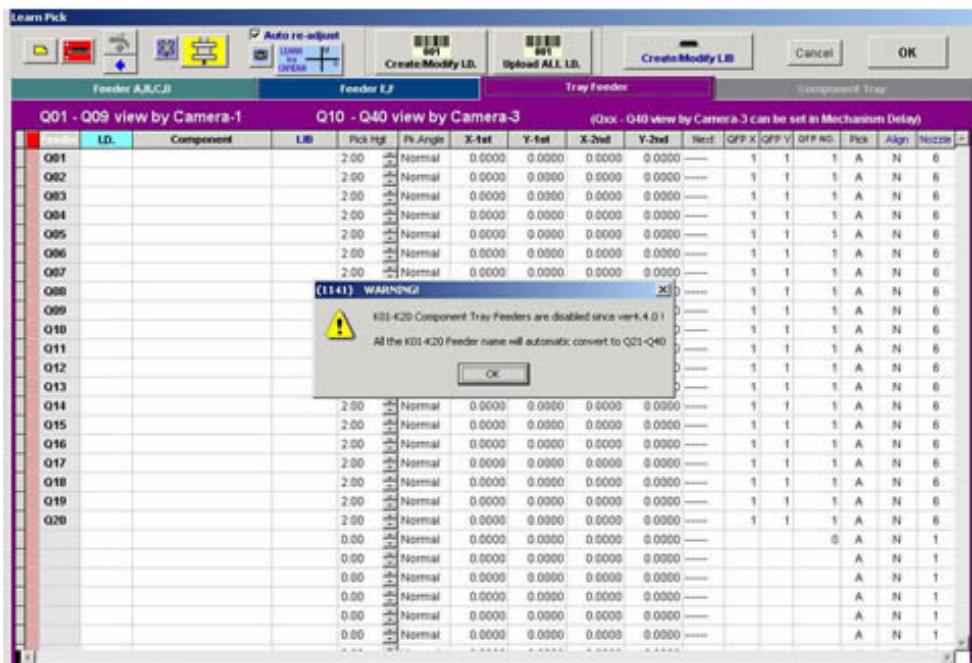


QFP X = 6  
QFP Y = 3  
QFP NO. = 1 ~ 18

e.g. If the QFP no. 1~7 is empty, you can set QFP NO. = 8, the machine will then pick up the 8th QFP

**Tip: Q1 – Q 9 view by camera-1, Q10- Q40 view by camera-3, (Qxx-Q40 view by camera-3 can be set in Mechanism Delay)**

#### 4.4.4 COMPONENT TRAY:



K01-K20 Component Tray Feeders are disabled since ver4.4.0 !

All the K01-K20 Feeder name will automatic convert to Q21-Q40

#### 4.5 SETUP MENU - Learn Place

Select this item to enter Learn Place mode, all the components placement records can be programmed in this mode.

- The maximum number of components placement records is 9999, you can enter all the components information of your board here.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

No	Location	Component	I.D.	Feeder	Angle	X	Y	Remarks	Align	Skip
1	100K		002	D14	0.0	178.6050	445.1100	f	A	
2	100K		002	D14	0.0	175.6125	445.1175	f	A	
3	20K		003	D15	90.0	178.5600	445.1550	2	A	
4	2.2K		004	D16	90.0	169.5525	448.1050	2	A	
5	5K		005	D17	90.0	166.0425	448.1625	2	A	
6	3K		005	D17	90.0	163.0725	448.1475	2	A	
7	9015		006	D18	180	190.8975	435.7125	2	A	
8	9015		006	D18	320	186.1200	429.6000	2	A	
9	9015		006	D18	40.0	195.7275	429.5625	2	A	
10	9013		007	D19	0.0	190.8975	427.3725	2	A	
11	9013		007	D19	145	195.4550	424.9175	2	A	
12	10R		001	D13	0.0	174.7125	452.5350	4	A	
13	10R		001	D13	0.0	177.2025	452.5500	4	A	
14	TOPLINE45B		009	Q02	90.0	182.2950	465.5475	3	A	
15	TOPLINE100B		010	Q03	0.0	191.3100	464.9025	5	A	
16	TOPLINE64Q		008	Q01	0.0	169.5975	433.5375	6	A	

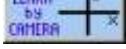
- NO. (Record number)
- LOCATION (Location name)
- COMPONENT (copy from feeder record)
- I.D. (Feeder I.D.)
- FEEDER (Pick up Feeder name)
- ANGLE (Component rotate angle)
- X (Placement X position)
- Y (Placement Y position)
- NOZZLE (copy from feeder record)
- ALIGN (copy from feeder record)
  - Remark s (click of [Remarks] header can select auto fill-in all remarks with Feeder, ID, Angle, Value )

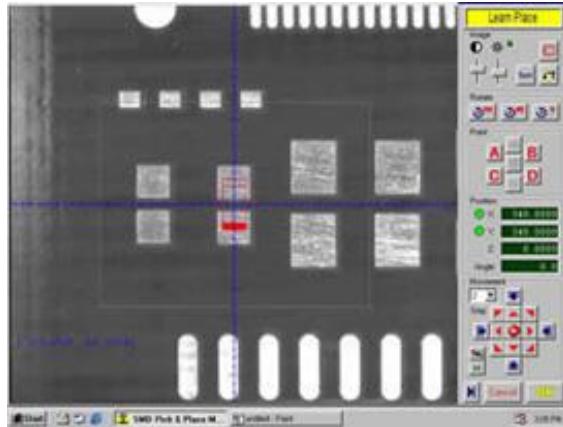
Remark: click Header for sorting.

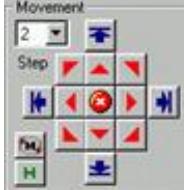
Remark: can set all placement angle offset while click ANGLE Header.

The following buttons can help you to program the placement records:

- Click  to insert one record
- Click  to append one record at the end
- Click  to copy one previous record
- Click  to delete one record

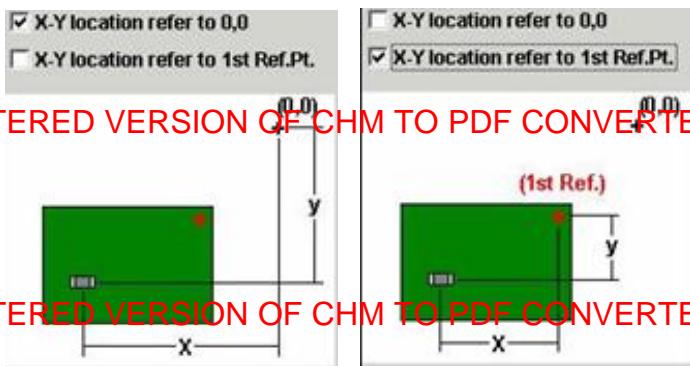
- Click  to undelete a deleted record
- Click  to search records by words in the Location name
- Click  to learn placement position (in co-ordinate) by camera



- Use of  scroll bar to adjust the brightness and contrast
- Click  turn component on / off
- Click  turn overlay on / off
- Click  change overlay on / off
- Click  to change the placement angle in 5/45/90 degree resolution.  
**Remarks :** If the placement angle is smaller than 5 degree, you need to key-in directly in the Angle column of the Learn Place mode.
- use of  to find the center of a big component (e.g. SOIC,QFP,BGA,CSP...)
- Click  turn X and Y axis off
- Click  set motor speed fast / slow
- Click  browse next record
- Click  Adjust the cross mark to the center of the component pads, then click  to save the placement position.

**Remarks :** If the Library name is entered, the component shape will be shown on the screen.

- Click  to re-learn placement position after Auto Production , Please refer to **APPENDIX D**



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

X-Y co-ordinate can select refer to 0,0 or 1st Ref.pt .

- Click  to temporary disable all placements
- Click  to enable all placements
- Click  to auto compare COMPONENT & Library and select I.D. if same component value & library name

#### 4.5a NO.

This is the Placement Record number. (Record 1 ~ record 9999)

- Set by computer automatically

#### 4.5b LOCATION

This is the placement location name, you can key-in any characters here.

e.g. R101, R102, ..., C10, ..., U1, U2, ..., etc.

*If you want to temporary disable this placement record, you can input a " \* " in front of the location name.*

e.g. \*R101, \*R102.

#### 4.5 c COMPONENT

This is the component name or value (set in Learn Pick mode)

#### 4.5 d I.D.

This is the Feeder I.D.

If you've created this component's Feeder I.D. and set to the correct Feeder Location in Learn Pick mode, you can use of this I.D. and no need to take care the FEEDER (in 4.5 e )

#### **4.5 e FEEDER**

This is the Pick Location name.

e.g. A01 ~ A22, B01 ~ B22, C01 ~ C22, D01 ~ D22, E01 ~ E22, F01 ~ F22, Axx -xx, Bxx -xx, Cxx -xx  
Dxx -xx (UFTB Feeder), Q01 ...Q40

#### **4.5 f ANGLE**

This is the components placement angle on the PCB.

You can enter angle 0 ~ 359.9 here, normally is 0,90,180 or 270.

Please refer to **APPENDIX F** ; the rotation direction is the same as PK\_ANGLE.

#### **4.5 g X**

This is the X co-ordinate of the placement position.

#### **4.5 h Y**

This is the Y co-ordinate of the placement position.

**Remarks** : The placement position can be learned by Camera-1

#### **4.5i NOZZLE**

This is the type of nozzle used for this component (set in Learn Pick mode)

#### **4.5j Remarks**

Remark

#### **4.5 k ALIGN**

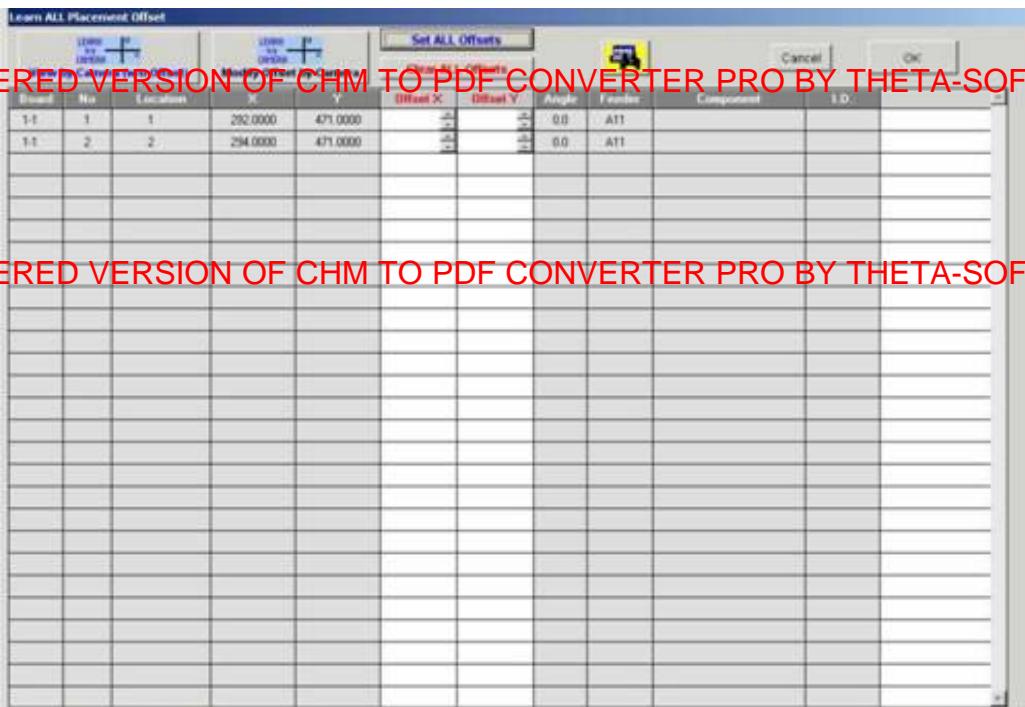
This is the Alignment method used (set in Learn Pick mode)

#### **4.5l Skip**

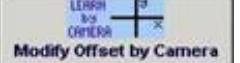
This is for temporary disable placement

#### 4.6 SETUP MENU - Learn All Placement Offset

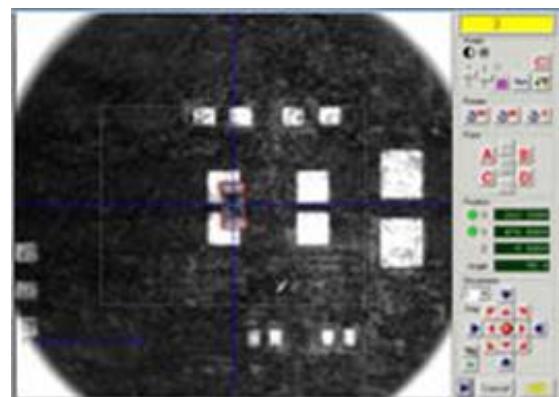
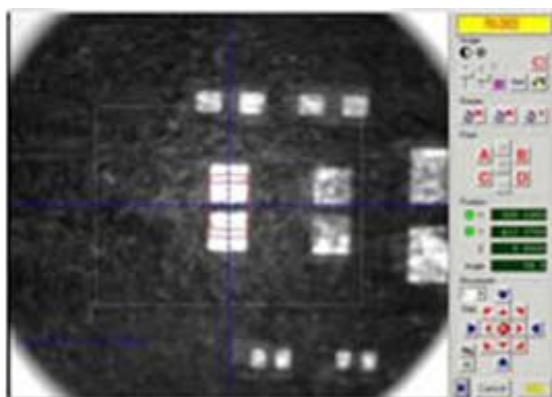
This function use for 1) View any component place position, 2) modify any component place position. Please refer to **APPENDIX D**



Click  to view any component place position, for PCB matrix can view the same position component in any matrix, and then modify the offset.

Click  modify any component place position,

Move X-Y to shifted component center for offset calibration, then SMD software will calculate the offset value for next placement



Need to Place

Modify Offset( X -Y shifted component center)

Click **Clear ALL Offsets** clear all offset

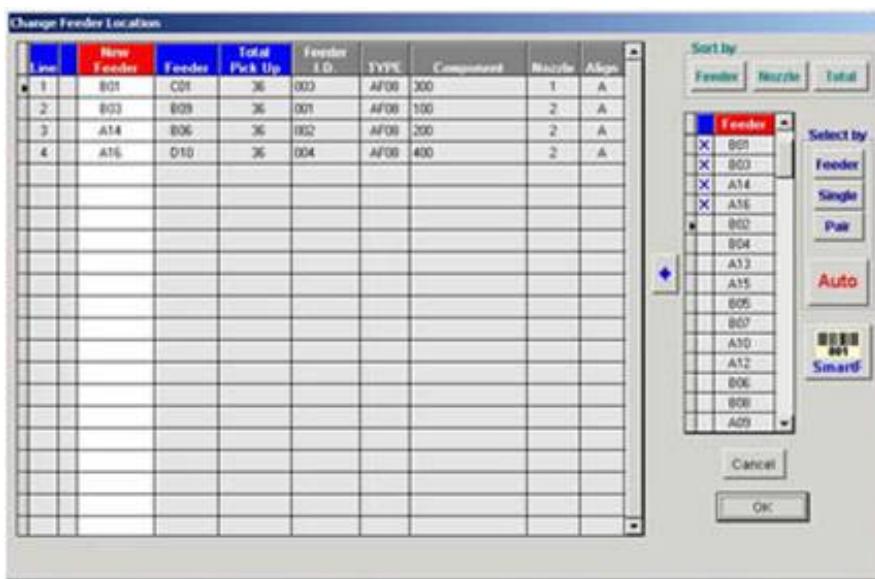
Click **Set ALL Offsets** set all offset in x & y by key-in

#### 4.7 SETUP MENU - Change Feeder Location

In order to obtain the highest efficiency of the machine in Auto Production, the software provided a very useful feature to easy change of Feeder locations and the main propose is to get the shortest distance between the frequencies pick up components to placement locations. And this is also the pre-setup for the Production Index Table.

Only Feeders Axx , Bxx , Cxx & Dxx can be re-located in this mode

**Remark: if the board is stopped at the center of conveyor to do components placement every time, then the feeder at location of A16 and B01 are the shortest distance for components pick up.**



- LINE (All Feeder number)
- NEW FEEDER (New Feeder Location Name)
- FEEDER (copy from feeder record)
- TOTAL PICK UP (copy from feeder record)
- ID (copy from feeder record)
- TYPE (copy from feeder record)
- COMPONENT (copy from feeder record)
- NOZZLE (copy from feeder record)
- ALIGN (copy from feeder record)

- LOCATION (copy from feeder record)
  - Click  to re-sequence the feeder name that to be used inside the left frame, e.g. A01, A02 ...
  - Click  to sort the feeder name that to be used inside the left frame by the number of nozzle

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE**  
 Click  to sort the feeder name that to be used inside the left frame by the total quantity for components pick up.

- Click  to re-sequence the feeder name that to be used inside the right frame, e.g. A01, A02 ...

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE**  
 Click  to sort the feeder name that to be used inside the right frame by the less distance for components pick up.

- Click  to sort the feeder name that to be used inside the right frame by used with two head for components pick up (dual head for components pick up is the best choice)

Please choose the feeder name inside the left frame (a black arrow is appeared at left side) after completed ordering, then choose the feeder name that needed to be changed (a black arrow is appeared at left side), finally click  to show all the feeder name in the column of "NEW FEEDER".

-  is equivalent to  of automation. Firstly, click , and then click , computer will sort the feeder name that inside the left frame according to the total pick up at the highest efficiency automatically. (Please see the above diagram)

Finally, click the button of "OK" to save and exit.

#### 4.8 SETUP MENU - Create Production Index Table

This item is the best mode to pick up components for dual head setting.

Dual Head Mix Production Index													
Original Feeder					1st Mix Feeder			2nd Mix Feeder					
Feeder	1st Mix Head	2nd Mix Head	Pick	Nozzle	Align	Total	Feeder	Head	Times	Feeder	Head	Times	Remarks
A13	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	1	A	3	A15	2 $\frac{1}{2}$	0		2 $\frac{1}{2}$	0	0
A14	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	4	A	8	A14	2 $\frac{1}{2}$	4		2 $\frac{1}{2}$	0	0
A15	2 $\frac{1}{2}$	1 $\frac{1}{2}$	A	1	A	3	A13	1 $\frac{1}{2}$	0		2 $\frac{1}{2}$	0	0
A16	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	1	A	3	B02	2 $\frac{1}{2}$	8		2 $\frac{1}{2}$	0	0
B01	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	2	A	12	B03	2 $\frac{1}{2}$	12		2 $\frac{1}{2}$	0	0
B02	2 $\frac{1}{2}$	1 $\frac{1}{2}$	A	2	A	8	A16	1 $\frac{1}{2}$	8		2 $\frac{1}{2}$	0	0
B03	2 $\frac{1}{2}$	1 $\frac{1}{2}$	A	2	A	12	B01	1 $\frac{1}{2}$	12		2 $\frac{1}{2}$	0	0
B05-A1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	1	A	4	B05-A1	2 $\frac{1}{2}$	2		2 $\frac{1}{2}$	0	0
B05-A2	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	5	A	4	B05-A2	2 $\frac{1}{2}$	2		2 $\frac{1}{2}$	0	0
B05-A3	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	5	A	4	B05-A3	2 $\frac{1}{2}$	2		2 $\frac{1}{2}$	0	0
Q01	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	6	A	4	Q01	2 $\frac{1}{2}$	2		2 $\frac{1}{2}$	0	0
Q02	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	3	A	4	Q02	2 $\frac{1}{2}$	2		2 $\frac{1}{2}$	0	0
Q03	1 $\frac{1}{2}$	1 $\frac{1}{2}$	A	5	A	4	Q03	2 $\frac{1}{2}$	2		2 $\frac{1}{2}$	0	0

## Original Feeder

- F eeder (copy from feeder record)
  - 1<sup>ST</sup> M ix Head (The Original Pick up Head)
  - 2<sup>ND</sup> M ix Head (The Original Pick up Head)
  - Pick ( copy from feeder record )
  - N ozzle (copy from feeder record)
  - A lign (copy from feeder record)
  - T otal (copy from feeder record)

## 1<sup>ST</sup> Mix Feeder

- Feeder ( The first Mix Feeder)
  - Head ( The first Mix Pick up Head)
  - Times (Pick up Times - By software calculate)

## 2<sup>ND</sup> Mix Feeder

- Feeder ( The second Mix Feeder)
  - Head ( The second Mix Pick up Head)
  - Times (Pick up Times - By software calculate)

- R remainder (The Remainder Pick up Number after MIX - By Software calculate)

**Remark : For production sorting base on 0201 thickness feature please do not use mix production with other feeders (Manually remove Mix feeders for 0201 components feeders, or manually program to mix production with original feeder)**

**Example 1:** 14 pieces of components (2 different kinds) to be placed in a PCB (10 pieces are the same component and installed in Feeder B01, another 4 pieces of component are installed in Feeder B04)

Enter Create Production Index Table and the below diagram will be shown:

Dual Head Mix Production Index									
				1st Pair		2nd Pair			
		Orginal Feeder				1st Mix Feeder		2nd Mix Feeder	
Feeder	Head	Feeder	Head	Feeder	Head	Feeder	Head	Feeder	Head
B01	1	1	1	A	1	N	10	2	0
B04	1	1	1	A	1	N	4	2	0
								2	0
								2	0
									10
									4

Firstly, we can choose another head to pick up B04 in 1<sup>st</sup> Mix, computer will calculate how many times that needed for pick up automatically.

1st Mix Feeder		
Feeder	Head	Times
B04	2	4
B01	1	4

Secondly, the number of "6" will be shown in Remainder (still has six times left to pick up components at this feeder with single head)

1st Mix Feeder			2nd Mix Feeder			Remainder
Feeder	Head	Times	Feeder	Head	Times	
B04	2	4		2	0	6
B01	1	4		2	0	0

We choose another head to do pick up from B01 in 2<sup>nd</sup> Mix simultaneously, then both head can do pick up components from B01 before do placement.

2nd Mix Feeder			
Feeder	Head	Times	Remainder
B01	2	3	0
	2	0	0

The following shows the machine P&P sequence for the above example in Auto Production:

- Head 1 pick up from B01, Head 2 pick up from B04 at the same time
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, Head 2 pick up from B04 at the same time
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, Head 2 pick up from B04 at the same time
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, Head 2 pick up from B04 at the same time
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, then Head 2 pick up from B01
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, then Head 2 pick up from B01
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, then Head 2 pick up from B01
- Head 1 do placement, then Head 2 do placement
- Production completed

**Example 2:** There are three Feeders, the first one is needed to do pick up for 2 times, the second one is needed to do pick up for 10 times, the last one is needed to do pick up for 8 times. We put the feeders to the location of B01, B04 & B07 in sequence, then enter **Create Production Index Table** and the below diagram will be shown:

Dual Head Mix Production Index													
1st Pair					2nd Pair								
Original Feeder					1st Mix Feeder			2nd Mix Feeder					
Feeder	1st Mix Head	2nd Mix Head	Pick	Nozzle	Align	Total	Feeder	Head	Times	Feeder	Head	Times	Remainder
B01	1 <input type="button" value="↑"/>	1 <input type="button" value="↑"/>	A	1	N	2		2 <input type="button" value="↑"/>	0		2 <input type="button" value="↑"/>	0	2
B04	1 <input type="button" value="↑"/>	1 <input type="button" value="↑"/>	A	1	N	10		2 <input type="button" value="↑"/>	0		2 <input type="button" value="↑"/>	0	10
B07	1 <input type="button" value="↑"/>	1 <input type="button" value="↑"/>	A	1	N	8		2 <input type="button" value="↑"/>	0		2 <input type="button" value="↑"/>	0	8

Firstly, we can choose another head to pick up B04 in 1<sup>st</sup> Mix, computer will calculate how many times that needed for pick up automatically.

1st Mix Feeder		
Feeder	Head	Times
B04	2 <input type="button" value="↑"/>	2
B01	1 <input type="button" value="↑"/>	2
	2 <input type="button" value="↑"/>	0

Secondly, the number of "0" is shown in Remainder (pick up is completed for this feeder)

1st Mix Feeder			2nd Mix Feeder			Remainder
Feeder	Head	Times	Feeder	Head	Times	
B04	2	2		2	0	0
B01	1	2		2	0	8
	2	0		2	0	8

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

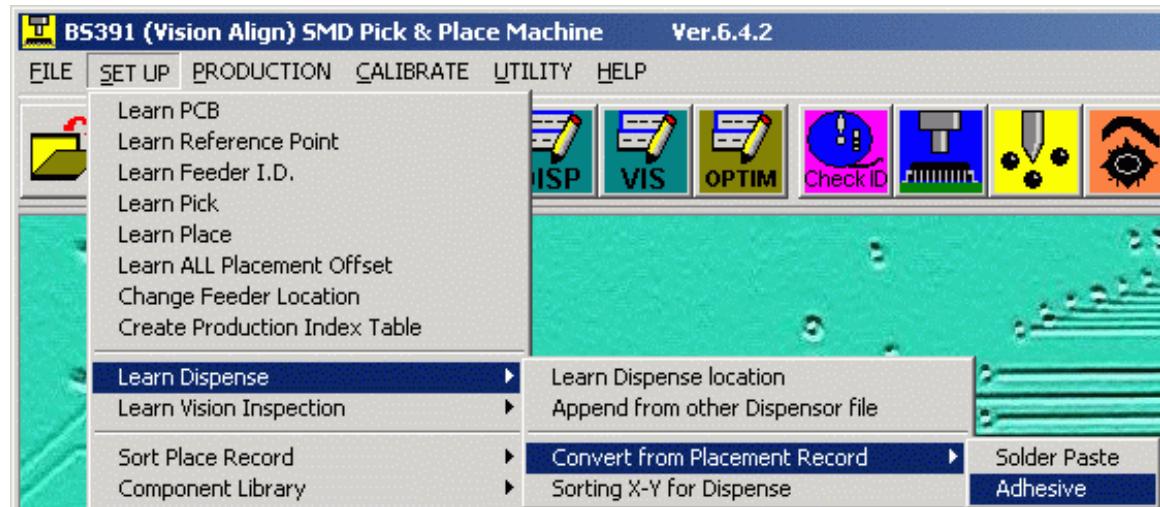
We choose another head from B04 in 2<sup>nd</sup> Mix to do pick up from B07 simultaneously, computer will calculate how many times that needed for pick up automatically.

2nd Mix Feeder		
Feeder	Head	Times
	2	0
B07	2	8
B04	1	8

When the number of "0" is shown in Feeder of Remainder, explain all pick up are completed. Dual head pick up mode is decent and fast.

2nd Mix Feeder			
Feeder	Head	Times	Remainder
	2	0	0
B07	2	8	0
B04	1	8	0

#### 4.9 SETUP MENU - Learn Dispense



#### 4. 9.1 Learn Dispense location

This is to program the dispense records (maximum number of dispense record is 9999)

Learn Dispense

No	Location	Head	Code	Time (ms)	Volume (cc)	X	Y
1	TEST DOT	1		150	2.000	200.0000	200.0000
2		1	C	0	0.100	202.0000	349.5250
3		1	C	0	0.100	206.7350	334.8700
4		1	C	0	0.100	207.9700	331.7400
5		1	C	0	0.100	208.5700	324.1600
6		1	C	0	0.100	190.0550	329.1850
7		1	C	0	0.100	190.8000	327.1350
8	1	2	c	80	0.000	192.0350	323.2850
9	2	2	c	80	0.000	192.0350	324.8850
10	1	2	c	80	0.000	210.6250	315.5700
11	2	2	c	80	0.000	210.6250	317.1700
12	1	2	c	80	0.000	212.6150	310.6750
13	2	2	c	80	0.000	212.6150	312.2750
14	1	2	c	80	0.000	213.7250	307.9000
15	2	2	c	80	0.000	213.7250	309.5000
16	1	2	c	80	0.000	203.7150	304.3750
17	2	2	c	80	0.000	203.7150	305.9750
18	1	2	c	80	0.000	205.3000	300.4550
19	2	2	c	80	0.000	205.3000	302.0550
20	1	2	c	80	0.000	207.9100	288.0950
21	2	2	c	80	0.000	207.9100	289.6950
22	1	2	c	80	0.000	192.0350	323.2850
23	2	2	c	80	0.000	192.0350	324.8850
24	1	2	c	80	0.000	210.6250	315.5700
25	2	2	c	80	0.000	210.6250	317.1700
26	1	2	c	80	0.000	212.6150	310.6750
27	2	2	c	80	0.000	212.6150	312.2750

- NO. (Dispenser records number, set by computer)
- LOCATION (Dispenser records location name)
- HEAD (Dispenser use Head)
- CODE (Time/Volume Code)
- TIME (ms) [DP-x Dispenser only] (Dispense time in msec)
- VOLUME [MP-x Dispenser only] (Dispense volume in cc)
- XY (Dispense position in XY co-ordinate)

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

The following buttons can help you to program the dispenser records:

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- Click  to insert one record
- Click  to append one record at the end
- Click  to copy one previous record
- Click  to delete one record
- Click  to undelete a deleted record
- Click  to search records by words in the Location name
- Click  to modify the Timing/Volume Code value.
- Click  to modify the Martin Dispenser Unit setting (use MP-x Dispenser only)
- Click  to learn one dispense position by camera
- Click  to learn dispense positions in a line by camera
- Click  to learn dispense positions in a matrix (BGA IC) by camera
- Click  to learn dispense positions in a SOIC by camera
- Click  to learn dispense positions in a SOIC by camera
- Click  to learn dispense position (in co-ordinate) by camera

**Dispense Code Setting:**

Dispense Code Setting

Dispense Dots Code Setting

Code	Volume (cc)
A	40
B	60
C	80
D	100
E	120
F	140
G	160
H	180
I	200
J	220

For different pad size of components in the P.C.B. need different volume of 'soldering cream' / 'SMD adhesive', it is necessary to control the dispensing timing. Longer dispensing timing has bigger volume of 'soldering cream' / 'SMD adhesive'.

This is the special code for the programming the dispense timing, it is 'A' ~ 'J' totally 8 difference codes and each code represent a timing in msec and is adjustable.

### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE

You can set/modify the dispense timing for the code 'A' ~ 'J' at any time, and the timing/volume setting in Learn Dispense mode will be updated automatically.

**Martin Dispenser Setting** : (use MP-x dispenser only)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE

MP-2 Dispenser Setting

Medium No.	Display	Material (typical samples)
1	Paste	metal-filled adhesives
2	100000 mPas	epoxy resin adhesives
3	50000 mPas	thin epoxy adhesives
4	10000 mPas	coatings potting compounds
5	1000 mPas	castor oil lubricant oil
6	500 mPas	watchmakers oil heating oil
7	100 mPas	cyanoacrylate adhesives (gap > 0.1mm)
8	10 mPas	cyanoacrylate adhesives (gap < 0.1mm)
9	1 mPas	watery solutions
10	0.3 mPas	alcohols
* 12	Glue SMD	MARTIN SMD adhesive
* 13	Paste SFP	MARTIN SFP solder paste
* 14	Paste FP	MARTIN FP solder paste

**SET MATERIN**

Medium No.

Temperature

Viscosity

**Cancel**

**OK**

\* - For new model only

This is to set the special parameters of the MARTIN Dispenser:

- Medium number
- Temperature range
- Viscosity number

For the best setting of the parameters, please refer to the MARTIN Dispenser User's Manual.



#### 4. 9 .1a NO.

This is the Dispense Record number (max. 9999 records), set by computer.

#### 4. 9 .1 b LOCATION

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

This is the location name, you can key-in any characters here.

e.g . R101-1, R101-2, C22-1, C22-2, ...

#### 4. 9 .1 c HEAD

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

This is the dispenser use machine head, user can select the head if use dual dispenser .

#### 4. 9 .1 d CODE

This is the dispensing timing/volume code.

You can key-in A ~ J to set the dispensing timing/volume according to the “Dispenser Code Setting ”.

e.g . Time Code 'A' set to 40msec, Time Code 'B' set to 100msec

Once you key-in 'A', the Time will change to 40msec automatically.

If you key-in 'B', the Time will change to 100msec automatically.

Click **Code Setting** button to enter “Dispenser Code Setting ”, you can adjust the timing/volume in this mode.

#### 4. 9 .1 e TIME (DP-x Dispenser used only)

This is the dispensing timing.

You can key-in 1 ~ 9999 to control the dispensing time in msec .

#### 4. 9 .1 f VOLUME (MP-x Dispenser used only)

This is the dispensing volume.

You can key-in the volume of the dispensing dot in cc (mm<sup>3</sup> )

#### 4. 9 .1 g X

This is the X co-ordinate of the dispense position.

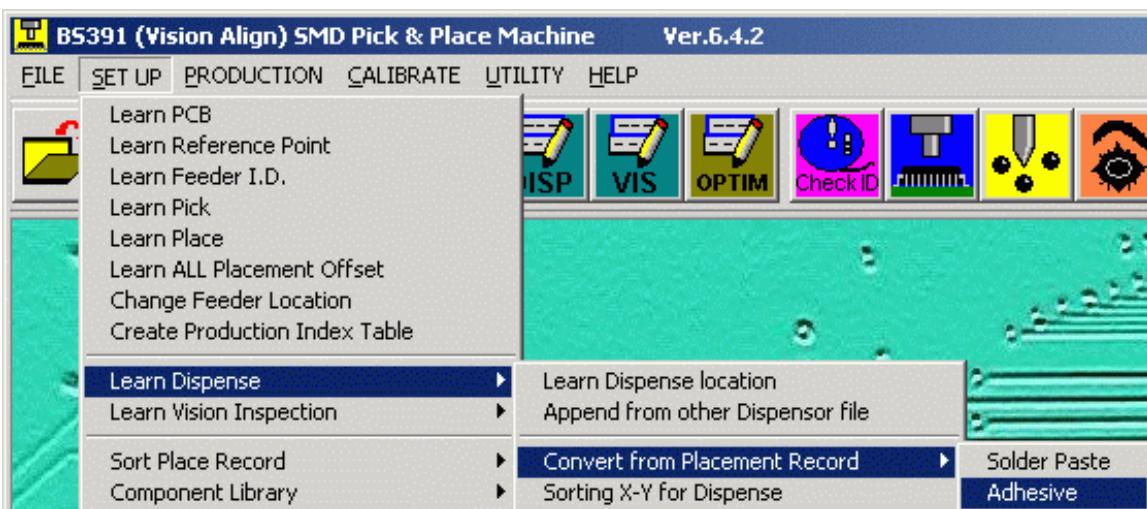
#### 4. 9 .1 h Y

This is the Y co-ordinate of the dispense position.

### 4.9.2 Append from other Dispenser file

This can allow you to recall the old P&P file with the useful dispenser records.

#### 4.9.3 Convert from Placement Record



Select this item to convert the placement records to Solder Paste / Adhesive records by computer



For the conversion of Placement records to Dispenser solder paste records, the computer will only convert the components of placement record that has the Component Library & Dispenser Library. (Please refer to [4.12 Component Library](#) )



Below frame will be shown:



Start Record number --- the first number that need to convert  
End Record number --- the last number that need to convert  
Add TEST DOT in 1 st record --- add test dot before dispense  
Clear old record before convert --- clear the before convert record

**Example:**

Number 1-19 need to convert, click "OK" for save



The result - Learn Dispense

Learn Dispense

No	Location	Code	Time (ms)	X	Y
1	R1 1	B	60	254.2575	420.8925
2	R1 2	B	60	255.2550	420.8925
3	R5 1	B	60	251.2575	420.8925
4	R5 2	B	60	252.2550	420.8925
5	R6 1	C	80	254.7150	423.2100
6	R6 2	C	80	254.7075	424.8075
7	R65 1	C	80	251.7075	423.1875
8	R65 2	C	80	251.7090	424.7825
9	R44 1	D	100	248.6850	422.9700
10	R44 2	D	100	248.6775	424.9725
11	R34 1	D	100	245.6700	422.9550
12	R34 2	D	100	245.6625	424.9575
13	R21 1	D	100	242.1525	422.3250
14	R21 2	D	100	242.1450	425.5275
15	R42 1	D	100	239.6550	422.2250
16	R42 2	D	100	239.1450	425.5275
17	Q12 1	A	40	266.7750	410.9925
18	Q12 2	A	40	267.4350	410.9925
19	Q12 3	A	40	267.0975	412.2900
20	Q2 1	A	40	263.0925	405.7650
21	Q2 2	A	40	262.5900	408.1850
22	Q2 3	A	40	262.0050	404.9775
23	Q5 1	A	40	271.7025	406.2375
24	Q5 2	A	40	271.2000	405.8175
25	Q5 3	A	40	272.2875	405.0300
26	Q7 1	A	40	267.6600	403.9575
27	Q7 2	A	40	266.7000	403.9575

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Code Setting

Automatic do Sorting before Dispense

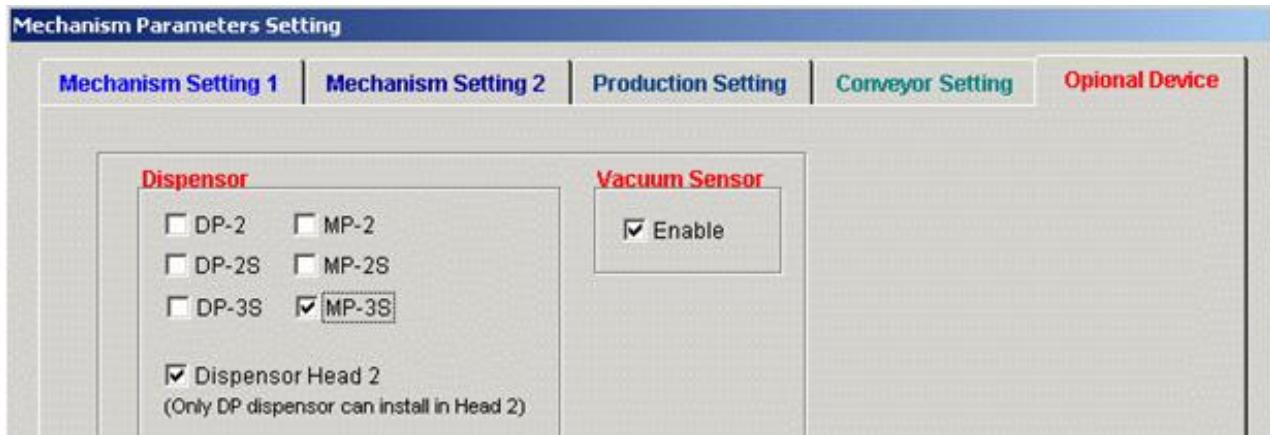
Cancel

OK

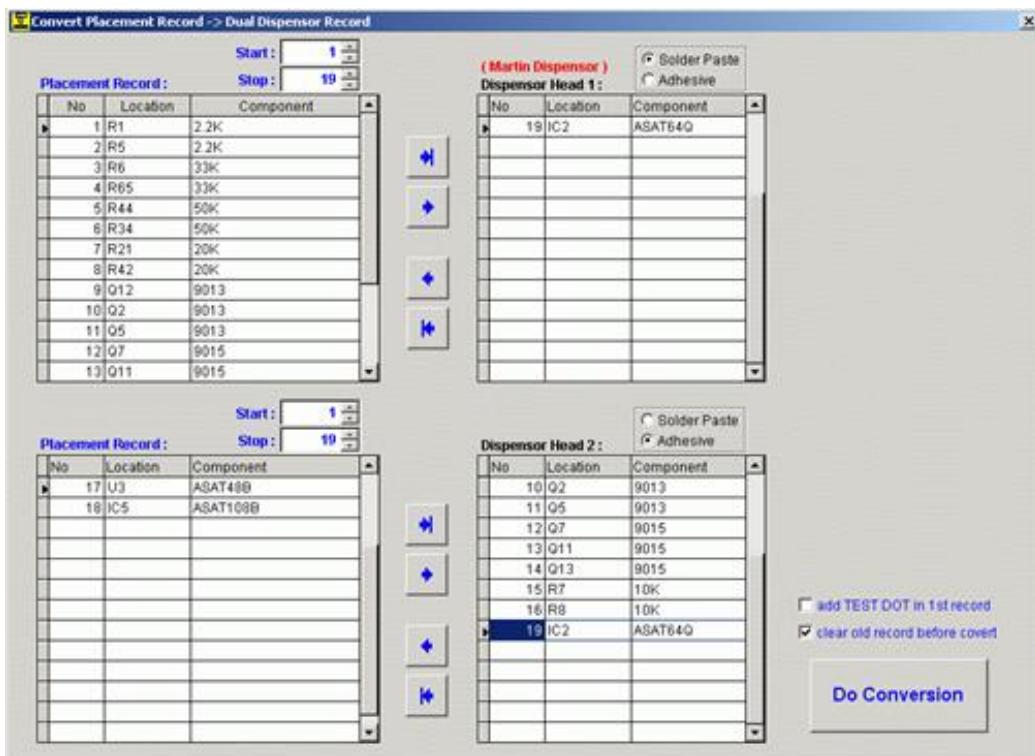
Code Setting Buttons: Insert, Append, Copy, Delete, Undo, Redo, Grid, Dot, Line, Crosshair, Text, Selection, Zoom In, Zoom Out.

## Remark: Dual Dispenser setting

When a machine setup 2pcs of dispenser, enter 6.3 mechanism parameters setting - optional device to select the dispenser



The convert frame will be change as below



Start : 1  
Stop : 19

can select the number that need to be converted

Placement Record :		Stop :	19
No	Location	Component	
1	R1	2.2K	
2	R5	2.2K	
3	R6	33K	
4	R65	33K	
5	R44	50K	
6	R21	50K	
7	R21	20K	
8	R42	20K	
9	Q12	9013	
10	Q2	9013	
11	Q5	9013	
12	Q7	9015	
13	Q11	9015	

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

show all the number that can be selected



all select number go to convert ready mode



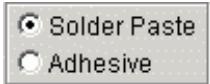
single select number go to convert ready mode



single select number exit the convert ready mode



all select number exit the convert ready mode

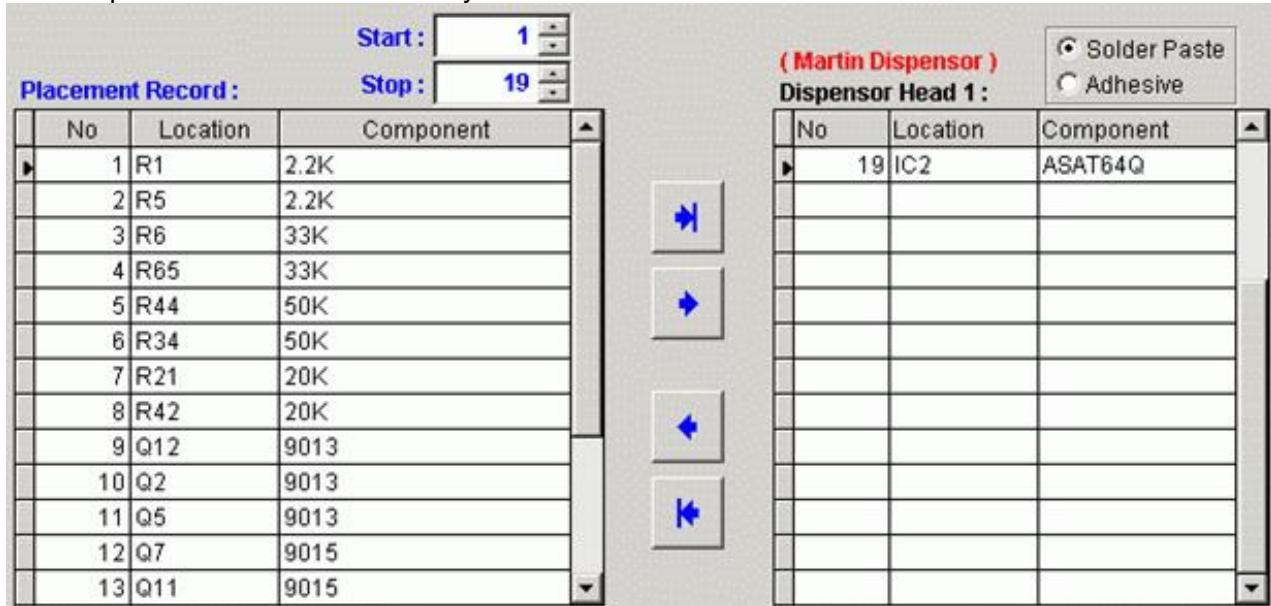


select dispense solder paste or dispense adhesive

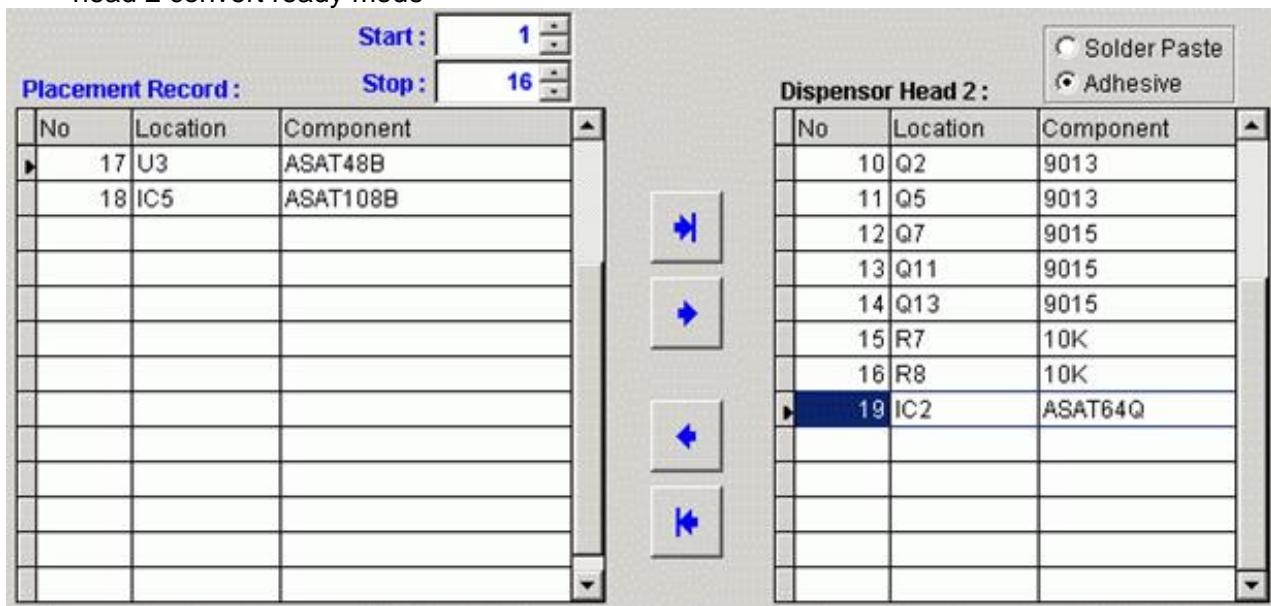
dispenser convert ready mode

**Example:**

1. Dispenser Head 1 convert the number 19, select number 19, click  the number 19 will go to dispenser head 1 convert ready mode



2. Dispenser Head 2 convert number 1~16, select 1~16, click  number 1~16 will go to dispenser head 2 convert ready mode



3. If number 19 need to dispense adhesive also, we can select number 19 and click  the number 19 will go to dispenser head 2 convert ready mode

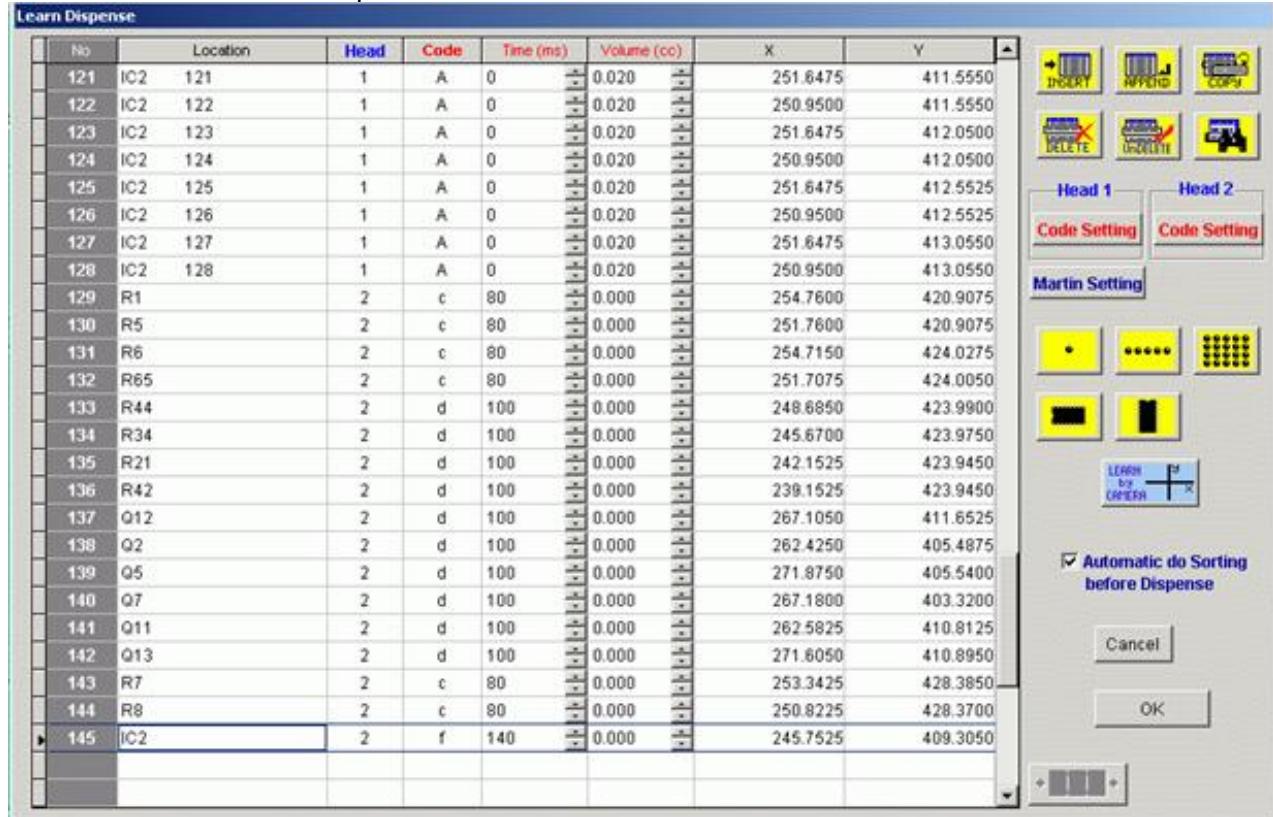
### Do Conversion

4. click **Do Conversion** to do the conversion, software will show the tips



### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

5. The result - Learn Dispense



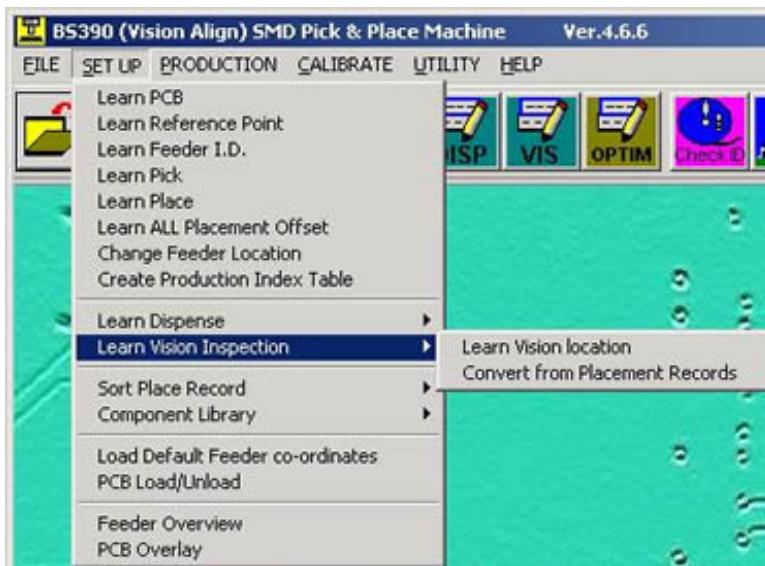
No	Location	Head	Code	Time (ms)	Volume (cc)	X	Y
121	IC2	121	1	A	0	251.6475	411.5550
122	IC2	122	1	A	0	250.9500	411.5550
123	IC2	123	1	A	0	251.6475	412.0500
124	IC2	124	1	A	0	250.9500	412.0500
125	IC2	125	1	A	0	251.6475	412.5525
126	IC2	126	1	A	0	250.9500	412.5525
127	IC2	127	1	A	0	251.6475	413.0550
128	IC2	128	1	A	0	250.9500	413.0550
129	R1	2	c	80	0.000	254.7600	420.9075
130	R5	2	c	80	0.000	251.7600	420.9075
131	R6	2	c	80	0.000	254.7150	424.0275
132	R65	2	c	80	0.000	251.7075	424.0050
133	R44	2	d	100	0.000	248.8850	423.9900
134	R34	2	d	100	0.000	245.6700	423.9750
135	R21	2	d	100	0.000	242.1525	423.9450
136	R42	2	d	100	0.000	239.1525	423.9450
137	Q12	2	d	100	0.000	267.1050	411.6525
138	Q2	2	d	100	0.000	262.4250	405.4875
139	Q5	2	d	100	0.000	271.8750	405.5400
140	Q7	2	d	100	0.000	267.1800	403.3200
141	Q11	2	d	100	0.000	262.5825	410.8125
142	Q13	2	d	100	0.000	271.6050	410.8950
143	R7	2	c	80	0.000	253.3425	428.3850
144	R8	2	c	80	0.000	250.8225	428.3700
145	IC2	2	f	140	0.000	245.7625	409.3050

6. Do dispense production

#### 4.9.4 Sorting X-Y for Dispense

It is recommended to sort the dispensing records after programming.

#### 4.10 SETUP MENU - Learn Vision Inspection



#### 4. 10 .1 Learn Vision location

This is to program the vision inspection records

No.	Location	X	Y	NAME
1	R002	200N	379.3589	283.5982 PASS
2	R1	75N00	378.8389	283.6444 PASS
3	R2	75N00	379.3387	280.4492 PASS
4	R3	75N00	378.8187	280.4994 PASS
5	R002	200N	340.0354	284.2347 PASS
6	R1	75N00	337.5155	284.2807 PASS
7	R2	75N00	340.0142	281.0847 PASS
8	R3	75N00	337.4943	281.1357 PASS
9	R002	200N	300.7198	284.8840 PASS
10	R1	75N00	298.1988	284.9079 PASS
11	R2	75N00	300.7012	281.7140 PASS
12	R3	75N00	299.1812	281.7029 PASS
13	R002	200N	261.3958	285.4972 PASS
14	R1	75N00	259.8658	285.5410 PASS
15	R2	75N00	261.3674	282.3472 PASS
16	R3	75N00	258.8474	282.3960 PASS

##### 4. 10 .1a No.

This is the record number.

##### 4. 10 .1 b Location

This is the Location name, you can key-in any characters here. If the record is converted by computer, this column will be the same content of the Location name of Placement records.

#### 4. 10 .1 c Component

This is the component name or value of the placed component.  
This is set by computer during conversion from placement records.

#### 4. 10 .1 d X

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

This is the X co-ordinate of the inspection point.

#### 4. 10 .1 e Y

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

#### 4. 10 .1 f MARK

Set by computer. It indicates the record is pass or fail after inspection.

### 4.10.2 Convert from Placement Record



This is to auto convert the inspection record from the Placement/ Dispenser Records.

The Viewing Size is the camera viewing size in mm, or you can set this value smaller as you like.

Set the Viewing Size smaller, more inspection records will be generated during conversion.

## 4.11 SETUP MENU - Sort Place record



### 4.11.1 Production Sorting

This is to sort the Placement Records in order to get the highest performance in Auto Production.

### 4.11.2 Location Sorting

This is to sort the Location name of Placement Records in order.

This is used when you want to verify/modify the location name of the placement records.

## 4.12 SETUP MENU - Components Library

Please refer appendix C to create the library for Resistor, IC, SOT/ Transistor



#### 4.12.1 Modify Component Library



- Click to create a new User Component Library
  - Click to modify a User Component Library
  - Click to delete a User Component Library
  - Click to recall a deleted User Component Library
  - Click to create or modify the Dispenser Library of the selected Library
- The **D** column with the 'D' indicator indicates that Component Library has the Dispenser Library. Please refer to **APPENDIX K** for more details.

Click  to create a new User Component Library, or select a User Component Library and click  to modify.



#### - LIB. NAME

You can key-in the Library name here, if a similar Library name is found, the setting parameter will be auto loaded.

The software will special handle the QFP, PQFP, TQFP & BGA IC, for these kind of components, please create the Library with the name as follows:

QFP-IC --- \*QFP XXXX  
 PQFP-IC --- \*PQFP XXX  
 TQFP-IC --- \*TQFP XXX  
 BGA-IC --- \*BGA XXXX

e.g. \*R0805, \*SOP22P, \*QFP64L ,...

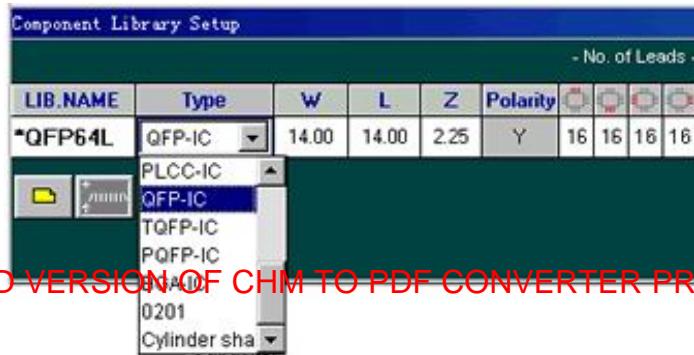
**Remarks** : For the User Component Library name, there will be a star '\*' in front of the name.



#### - Type

Type of the component, you can select one of the followings:

None, Resistor, Capacitor, Diode, SOT/Transistor,  
 SOP-IC, TSOP-IC, SOJ-IC, PLCC-IC,  
 QFP-IC, PQFP-IC, TQFP-IC, BGA-IC,  
 Cylinder Shape



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- **L**  
Component size in X direction (in mm)
- **W**  
Component size in Y direction (in mm)
- **Z**  
Component height/thickness (in mm)
- **Polarity**  
Component polarity (Y/N)
-   
Number of leads of the IC at upward
-   
Number of leads of the IC at downward
-   
Number of leads of the IC at left
-   
Number of leads of the IC at right
- **IC Pitch**  
Pitch of leads in mm if it is IC
- **ALIGN**  
Alignment method.  
About Alignment-G/H please refer appendix P
- **LASER** *(Laser Alignment used only)*  
Laser alignment detect level
- **Nozzle**  
Nozzle number
- **Speed**  
Head up/down speed
- **Vs %**  
Vacuum sensor detection percentage
- **Remark**  
Remarks for this component  
**Remark: standard library not allowed to modify train image**

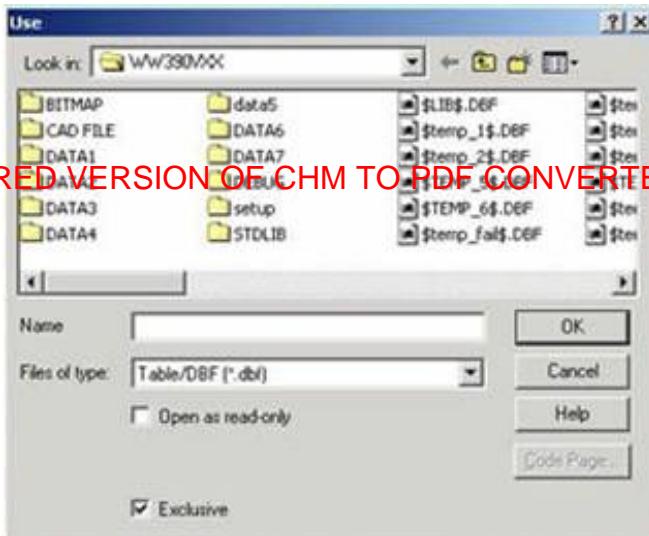
#### 4.12.2 Copy from old User Library

This mode allowed you to recall the old User Component Library that you'd created in the past.

e.g. Recall the old User Component Library from the old DOS version software:

- select the old DOS version software sub-directory (WW390VXX)
- select LIB.DBF file

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



The old User Component Library will be copied and displayed as follows:



#### 4.12.3 Update Standard Component Library

The manufacturer provides a Standard Component Library (e.g. R0402, R0805, R1206,...).

While you are set up or upgrade new version software, the computer will ask for update the Standard Component Library & the Standard Dispenser Library. If you've updated the Libraries, you don't need to update again.

**Remarks :** It is recommended to do this update while you upgrade new version software, since these Libraries may be changed with different software version.

#### 4.12.4 Update Standard Dispenser Library

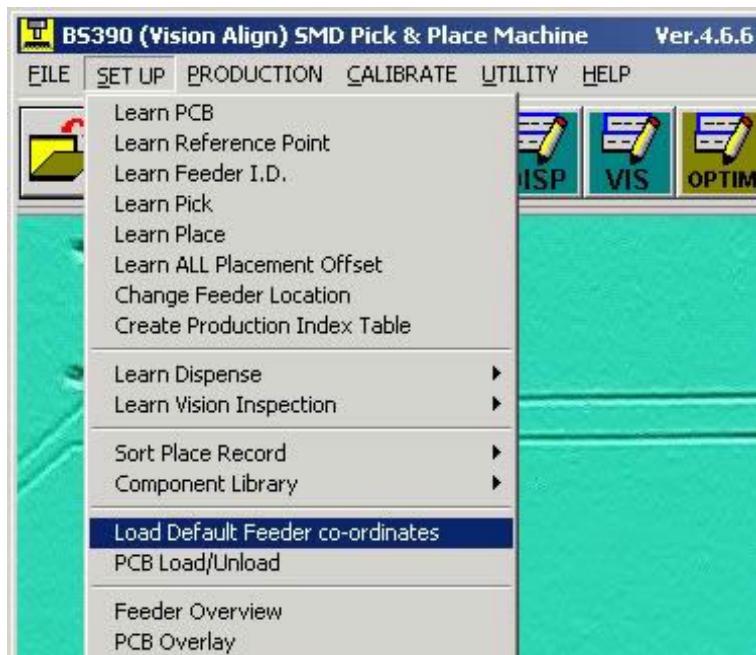
The manufacturer also provides a Standard Dispenser Library for the Standard Component Library. While you are set up or upgrade new version software, the computer will ask for update the Standard

Component Library & the Standard Dispenser Library. If you've updated the Libraries, you don't need to update again.

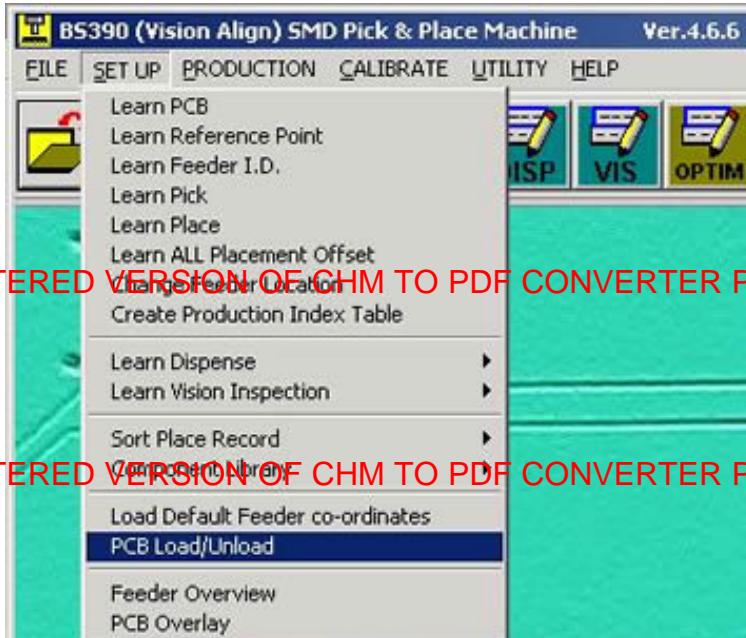
**Remarks** : It is recommended to do this update while you upgrade new version software, since these Libraries may be changed with different software version.

#### 4.13 SETUP MENU - Load Default Feeder co-ordinates

Select this to load all the Feeders default XY co-ordinates to the Learn Pick data



#### 4.14 SETUP MENU - PCB Load/Unload (Conveyor system used only)



Select this mode to activate some function of the Conveyor system:

- **PCB Load**

Load the PCB to the datum plate by Conveyor system. This function is useful while you want to set up a board for learning Ref.Pt. & Placement records.

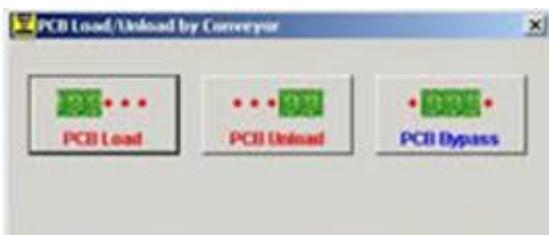
- **PCB Unload**

Unload the PCB from the datum plate by Conveyor system.

- **PCB Bypass**

Bypass the PCB for this machine. This function is useful while you've set up a Production Line with this machine in the middle and don't need this machine for production temporary but you don't want to move the machine or transfer the boards from one side to other side manually, you can use of this PCB Bypass function.

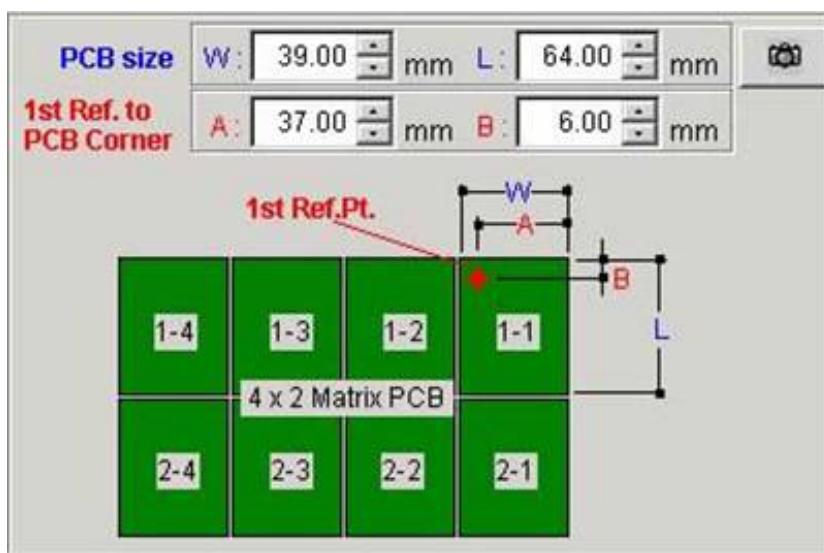
During enter this mode, the Conveyor system will wait for PCB input and then transfer the PCB to the next machine.



#### 4.15 SETUP MENU - Feeder Overview



Please setup below position in **4.1 Learn PCB** , check the follow frame



**PCB Size (W)** --- The 1-1 PCB Width

**PCB Size (L)** --- The 1-1 PCB Length

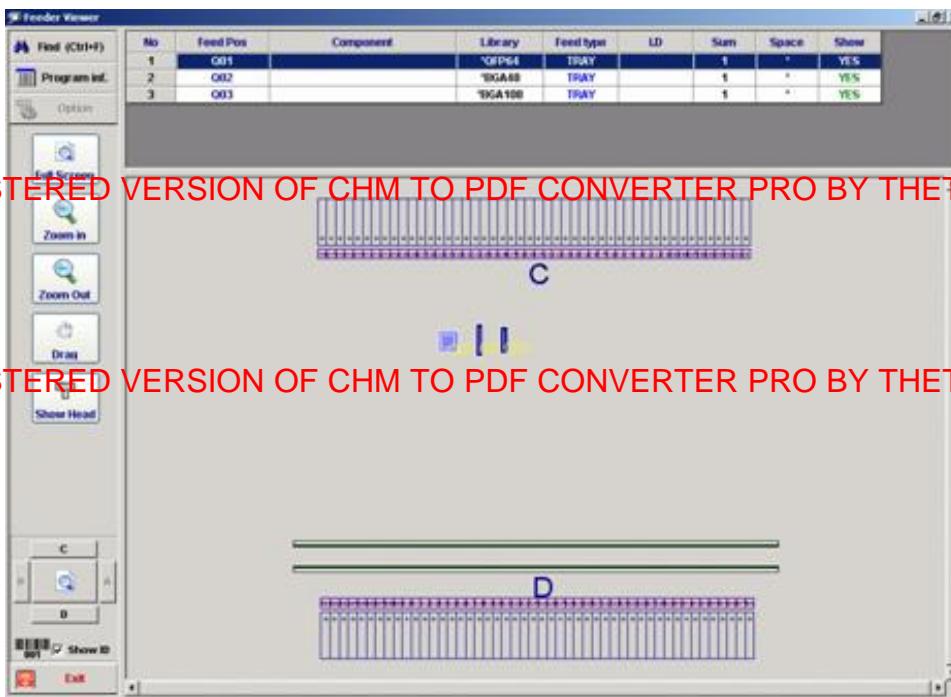
**1st Ref. to PCB Corner( A)** --- The Width for first reference to PCB Corner

**1st Ref. to PCB Corner( B)** --- The Length for first reference to PCB Corner

#### Auto Learn by Camera

- 1) Click  learn Upper-Right corner of Board 1-1
- 2) Learn Lower-Left corner of Board 1-1
- 3) Learn 1st Ref.Pt of Board 1-1

After setup ok and click the Feeder Overview button, user can view the feeder placement for SMD pick program.



#### 4.16 SETUP MENU – PCB Overlay

Ibid, after setup ok and click the Feeder Overview button, user can view the PCB placement for SMD place program

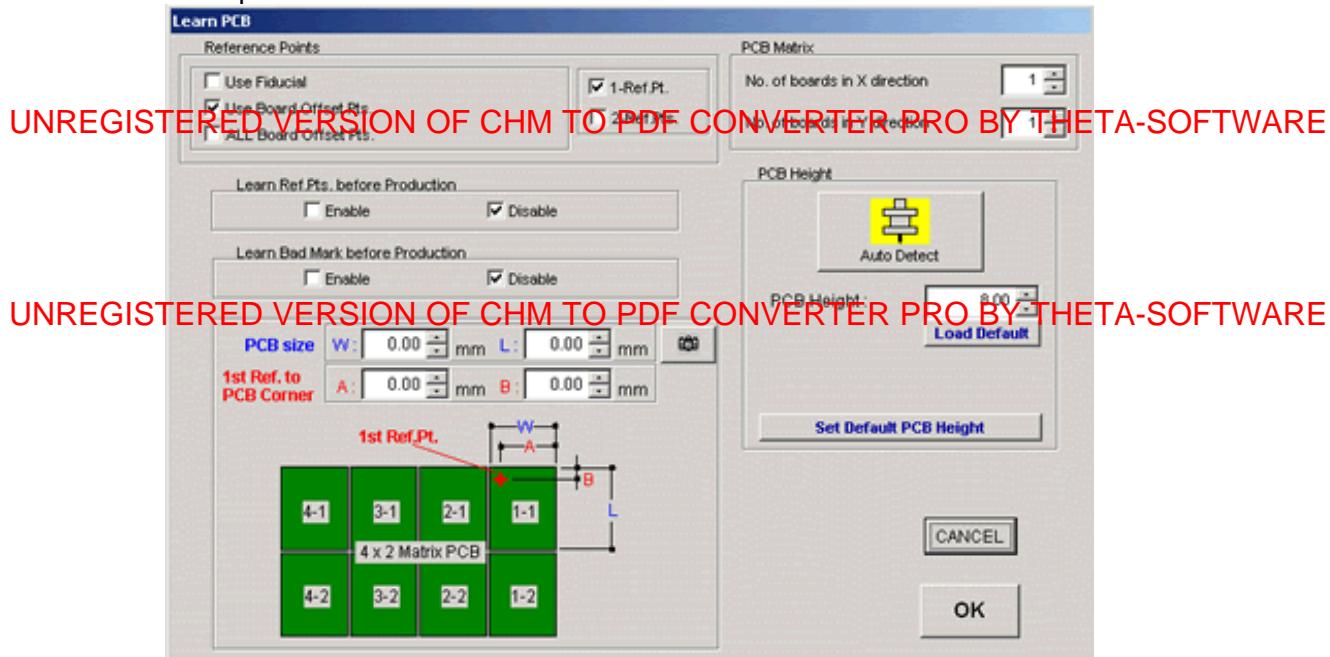


This function is very useful for check the correct feeder placement and PCB placement, in order to modify and program.

## 4.1 SETUP MENU - Learn PCB

This is to select the PCB matrix information during production.

The computer will ask for the no. of board in the X-axis & the Y-axis.



(A) Select 1 or 2 reference point(s)

**1-Ref.Pt.** - select this only if you haven't install the conveyor system and the PCB is well aligned on the datum plate and parallel to the machine X-axis (the software will not do any angle compensation for the PCB during Auto Production)

**2-Ref.Pts.** - select this the software will do the angle compensation for the PCB including the adjustment on the placement angle and the placement position (2-Ref.Pt. is recommended to be used)

(B) Select method of reference point for recognition

**Use Fiducial** - select this if your board is a matrix PCB and with the Fiducial mark on the board

**Use Board Offset Pts.** - select this if your board is not a matrix PCB or the matrix PCB without the Fiducial mark on the board

**ALL Board Offset Pts.** - select this if your board is a matrix PCB and you need the excellent placement accuracy on each small board (e.g. one or more very fine pitch IC on each small board). The machine will do the reference points recognition for all small boards and re-adjust all the placement positions before Auto Production.

(C) Set PCB matrix - If your board is a matrix PCB, please set the no. of board in X direction and the no. of board in Y direction.

If your board is a single PCB :

no. of board in X direction = 1 no. of board in Y direction = 1

(D) Select enable / disable the Learn Ref.Pts. before Production feature

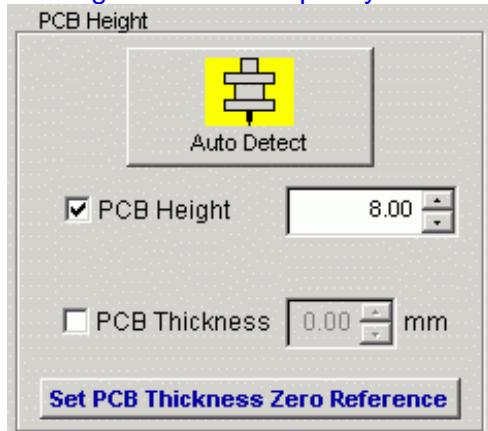
(E) Select enable / disable the Learn Bad Mark before Production feature

(F) Set the PCB height, this parameter is recommended to be learn by auto detect

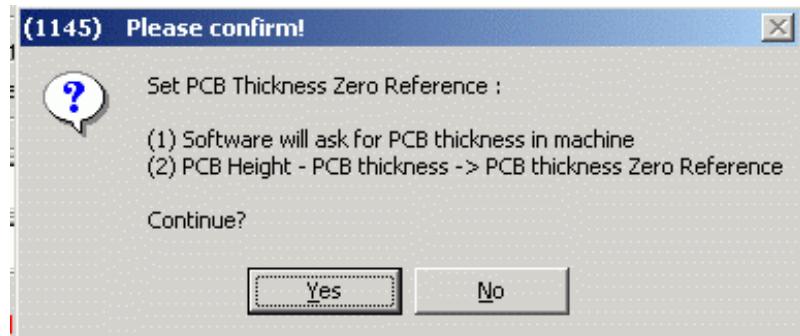
(click the  button to do the auto detection)

**Remarks:** The PCB height is not the PCB thickness, it is the height reference to the machine. For the auto detect height feature, please refer to the **APPENDIX B**

PCB Height can select input by PCB Thickness in mm (no conveyor used only)



- A. click  detect PCB height
- B. click **Set PCB Thickness Zero Reference** calculate PCB Thickness Zero Reference



- A. input PCB thickness

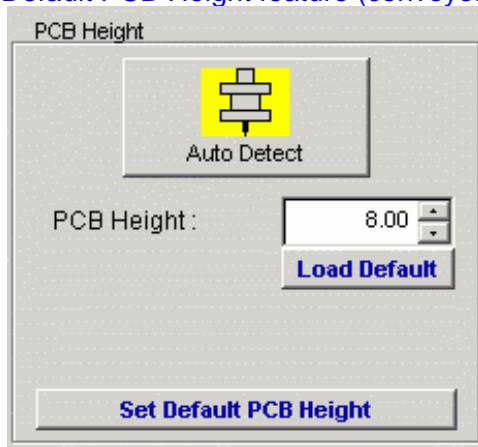


- B. get PCB Thickness Zero Reference

- C. when load or create a new P&P file, please direct input the PCB Thickness, then you will get the PCB height, no need to detect again

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

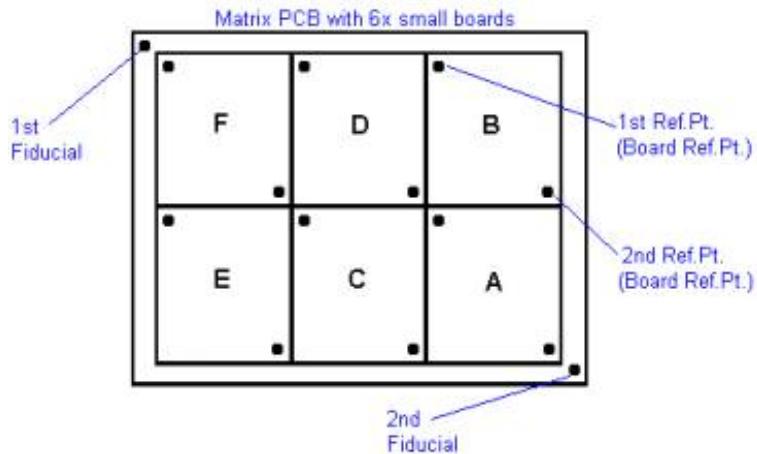
Default PCB Height feature (conveyor used only)



- A. click detect PCB Height
- B. click **Set Default PCB Height** to set the detect PCB height is default height
- C. when load or create a new P&P file, please click **Load Default**, then you will get the PCB height, no need to detect again

**Board definition:** An example of a matrix PCB 3 X 2

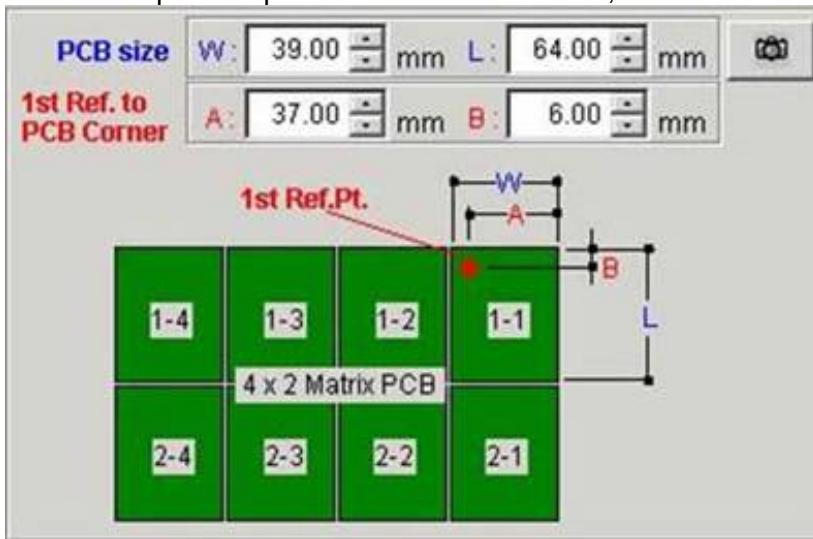
- use of Fiducial, 2-reference point
- No. of boards in X direction = 3, Y direction = 2
- Board 1-1 = Board A
- Board 1-2 = Board B
- Board 2-1 = Board C
- Board 2-2 = Board D
- Board 3-1 = Board E
- Board 3-2 = Board F



**Remarks:** - the board information must be defined before program the placement data.  
 - max. no. of board is 200 for 1-reference point, 100 for 2-reference point.

(D) Setup PCB size

Please setup below position in [4.1 Learn PCB](#), check the follow frame



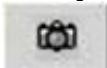
**PCB Size (W)** --- The 1-1 PCB Width

**PCB Size (L)** --- The 1-1 PCB Length

**1st Ref. to PCB Corner(A)** --- The Width for first reference to PCB Corner

**1st Ref. to PCB Corner(B)** --- The Length for first reference to PCB Corner

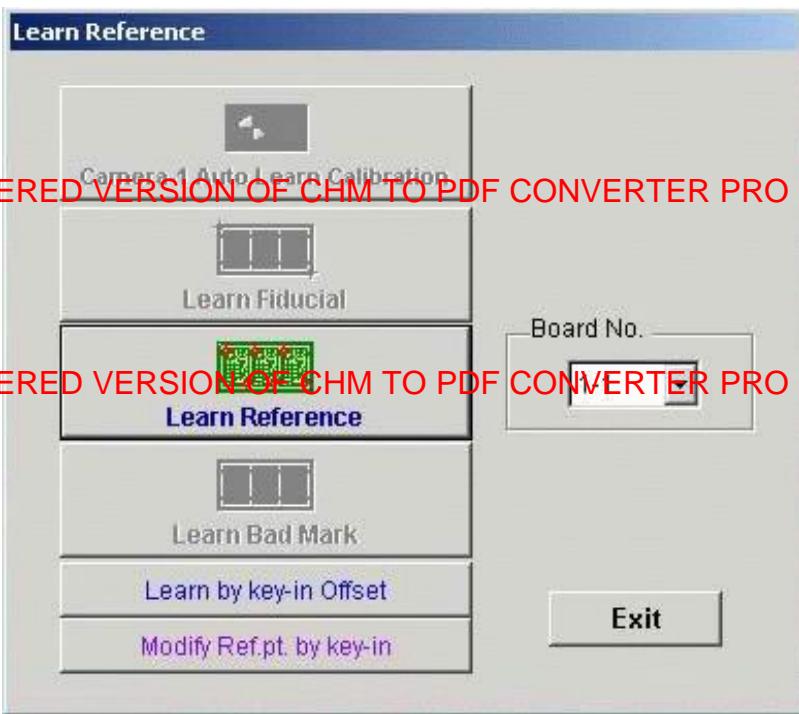
**Auto Learn by Camera**



- 1) Click learn Upper-Right corner of Board 1-1
- 2) Learn Lower-Left corner of Board 1-1
- 3) Learn 1st Ref.Pt of Board 1-1

## 4.2 SETUP MENU - Learn Reference Point

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- Click Auto Learn Camera-1 Calibration, please refer **6.1.6 Auto Learn Camera-1 Calibration**.

**NOTE: For Manual Production(no conveyor), when production a new PCB must do this Calibration**

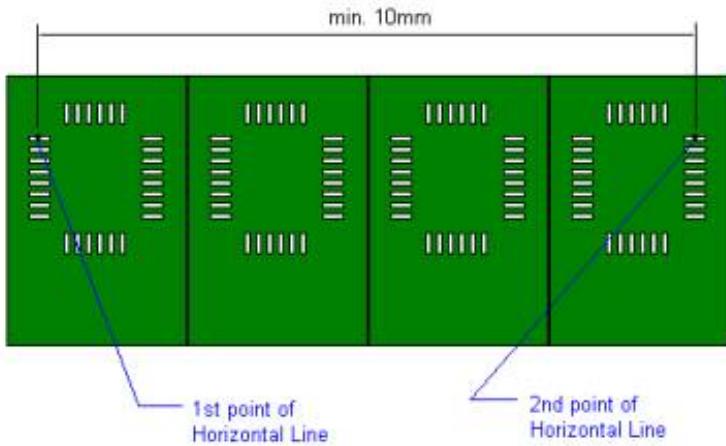
- Click to learn Fiducial Ref.Pts. of the PCB if you've selected **Use Fiducial** in the Learn PCB mode.

You need to choose use of **Auto Learn** or **Manual Learn** the Ref.Pts. For the **Auto Learn Ref.Pts.**, please refer to **APPENDIX I**

- Click to learn Board Ref.Pts. (please select the correct board no. )  
If you've selected **Use Board Offset Pts** or **ALL Board Offset Pts**, you need to choose use of **Auto Learn** or **Manual Learn** the Ref.Pts. For the **Auto Learn Ref.Pts.**, please refer to **APPENDIX I**

If you've selected 2-Ref.Pts. method, after learn the Board 1-1 Ref.Pt., you need to learn the Horizontal Line for the PCB. It is recommended to learn this Horizontal Line especially if you want the high placement accuracy.

Normally use of the pad of the IC for the learning point of Horizontal Line and the distance between 2 points should be as long as possible.



continue to click  button until learned all the boards Ref.Pts.

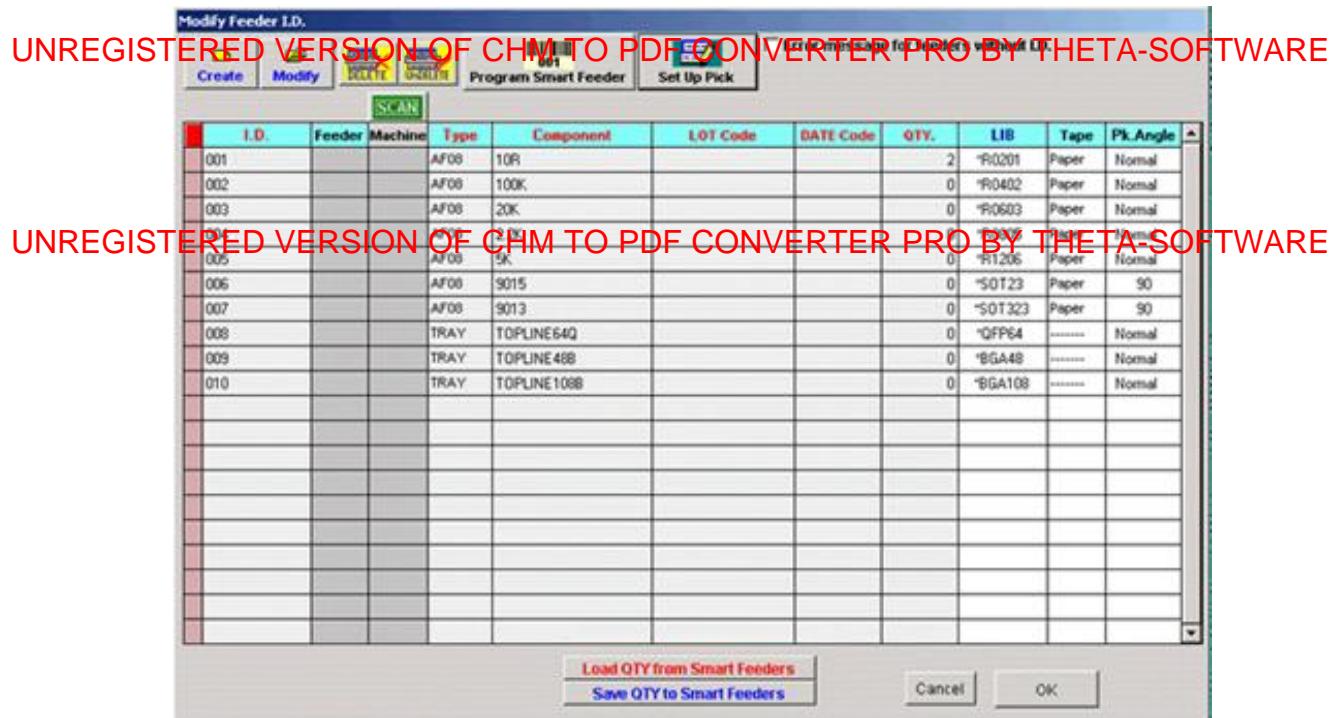
Remark: PCB rotate 90 or 270 degree after re-learn reference points, Horizontal line will be cleared.

- Click  to learn the Bad Mark information if you've enabled the Bad Mark feature. You need to learn the Bad Mark position in Board 1-1 and adjust the IM.Filter for the recognition of the Bad Mark. Please refer to **APPENDIX J** for more details.
- Click  to calculate all boards Ref.Pts. for your matrix PCB by computer. You need to learn the Board 1-1 Ref.Pts. then enter the distance between board and board of your matrix PCB.
- Click  to modify the boards Ref.Pts. by manual key-in.

#### 4.3 SETUP MENU - Learn Feeder I.D.

Please refer to **APPENDIX E** for more details in Feeder I.D. usage.

Select this item to create or modify the Feeder I.D.



- Click to create a new Feeder I.D.
- Click to modify Feeder I.D.
- Click to delete a Feeder I.D.
- Click to recall a deleted Feeder I.D.
- Click to scan all smart feeder in machine

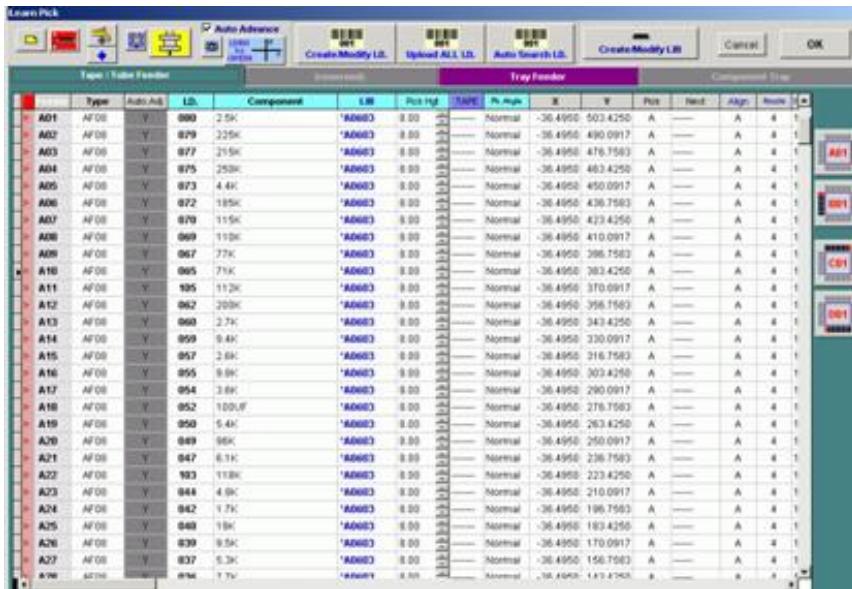
Click Header of "COMPONENT" or "I.D." etc.. can do sorting

**Remarks:** The Feeder column indicates which Feeder Location is selected this Feeder I.D. in **Learn Pick** mode.

Enable "Error message for feeders without I.D. "will show an error message if not select I.D in learn pick

## 4.4 SETUP MENU - Learn Pick

Select this item to program the pick information



There are 4 types of Pick information to be selected:

- Feeder A,B,C,D** - feeder location A01-A22, B01-B22, C01-C22, D01-D22 (for BS380 model)  
feeder location A01-A16, B01-B16, C01-C16, D01-D16 (for BS390 model)
- Feeder E,F** - feeder location E01-E22, F01-F22 (for BS390 model only)
- Tray Feeder** - feeder location for QFP Tray Q01-Q40
- Component Tray** - All the K01-K20 Feeder name will automatic convert to Q21-Q40

The following buttons can help you program the pick information:

- Click to clear the selected feeder location information
- Click to advance the Feeder on the machine one step (important to do this before learn pick up position)
- Click to learn the thickness of the component by auto detect
- Click will auto calculate the Pick Height (only for already Calibrate Default Pick Height)
- Click to learn the pick height by auto detect (manual adjust button for 0.5mm)
- Click to learn all used feeder X,Y by camera
- Click to go A01(or B01, C01, D01)
- Click to scan all smart feeder in machine
- Click go next problem feeder



- Click **Create/Modify I.D.** create new feeder I.D.



- Click **Upload ALL I.D.** Copy all feeder I.D. information to feeder I.D. table

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- Click **Match I.D.** to auto compare COMPONENT & Library and select I.D. if same component value & library name

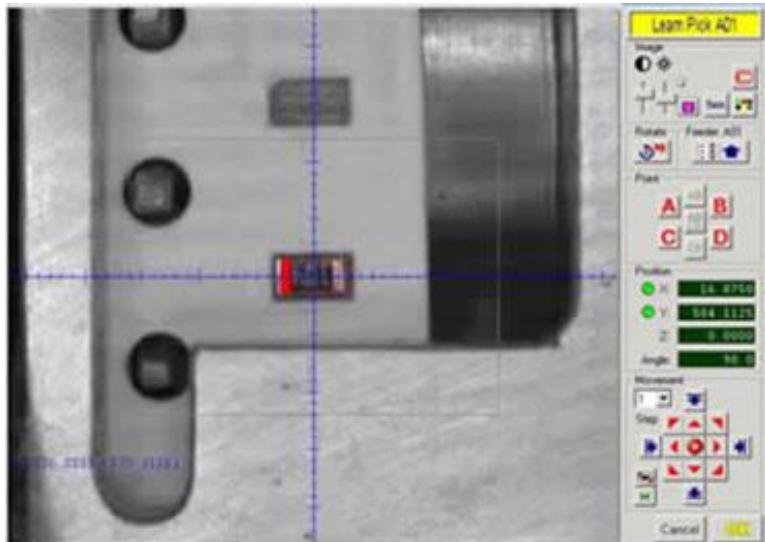
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- Click **Create/Modify LIB** create new component library



- Click **LEARN by CAMERA** to learn the pick up position (XY co-ordinate) by Camera-1



- (i) Use of **Image** scroll bar to adjust the brightness and contrast



- (ii) Click **Text** turn component on / off



- (iii) Click **Text** turn overlay on / off



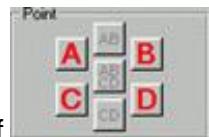
- (iv) Click **Text** change overlay color



- (v) Click **Text** to change the Pk\_Angle (rotate 90 degrees)



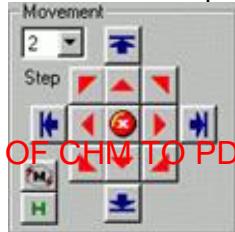
- (vi) Click **Text** to advance the feeder one step



(vii) use of

to find the center of a big component (e.g. SOIC, QFP, BGA, CSP...)

- (viii) Click  turn X and Y axis off  
 (ix) Click  set motor speed fast or slow



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- (x) Click  Adjust the cross mark to the center of the tape container (not the center of the component), then click  to save the pick up position.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE  
 Remarks: If the library name is entered, the component shape will be shown on the screen.

#### 4.4.1 Feeder A,B,C,D

- FEEDER (Feeder Location Name)
- TYPE (Type of Feeder used)
  - Auto.Adj (Auto Adjust Pick up location)
  - I.D. (Feeder I.D.)
- COMPONENT (Component name or value)
- LIB. (Components library)
- PICK HGT (Component pick up height)
- TAPE (Component Tape)
  - PK\_ANGLE (Component package angle)
  - X (Pick up position in X)
  - Y (Pick up position in Y)
  - PICK (Pick up method)
  - NEXT (Next Feeder if no component detected)
  - ALIGN (Alignment method)
  - NOZZLE (Nozzle)
  - SPEED (Up/Down speed)
  - Vs (Vacuum pass percentage)
  - L (Component size in X)
  - W (Component size in Y)
  - H (Component thickness)
  - POLARITY (Component polarity)

##### 4.4.1a FEEDER

This is the Feeder Location name & is defined by computer :

Model BS380 : A01 ~ A22 (right side of the machine)

B01 ~ B22 (left side of the machine)

C01 ~ C22 (back of the machine, this is the optional device AD22)

D01 ~ D22 (front of the machine, this is the optional device AD16)

Model BS390 : A01 ~ A16 (front left of the machine)

B01 ~ B16 (front right of the machine)  
C01 ~ C16 (back right of the machine)  
D01 ~ D16 (back left of the machine)

#### 4.4.1b TYPE

Type of Feeder used, select the Feeder type as follows:

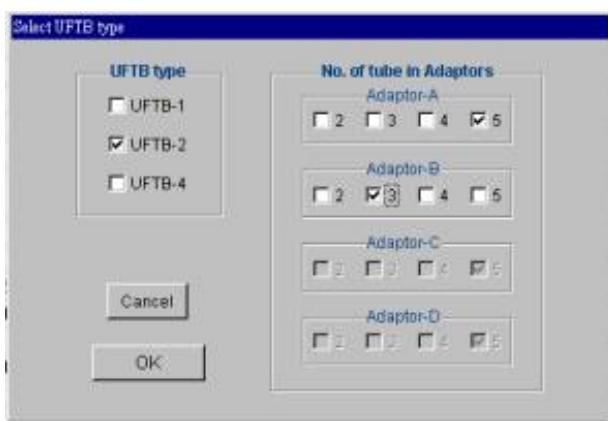
- AF08 - AFTA-08 Auto Tape form feeder
- AF12 - AFTA-12 Auto Tape form feeder
- AF12H - AFTA-12H Auto Tape form feeder (for the thickness component)
- AF16 - AFTA-16 Auto Tape form feeder
- AF16H - AFTA-16H Auto Tape form feeder (for the thickness component)
- AF24 - AFTA-24 Auto Tape form feeder
- AF24H - AFTA-24H Auto Tape form feeder (for the thickness component)
- AF32 - AFTA-32 Auto Tape form feeder
- AF32H - AFTA-32H Auto Tape form feeder (for the thickness component)
- AF44 - AFTA-44 Auto Tape form feeder
- AF44H - AFTA-44H Auto Tape form feeder (for the thickness component)

**NOTE: Please select the right feeder TYPE; otherwise the machine nozzle will be damaged during pick up.**

- UFTB - Universal Tube form feeder

If 'UFTB' is selected, you need to select which kind of UFTB installed (UFTB-1, UFTB-2, UFTB-4) and the number of component tubes installed in the Adaptor of the UFTB. The Feeder Location will be re-generated by computer.

Example : A UFTB-2 is installed in Feeder Location A03 with 2 tubes in Adaptor-A and 3 tubes in Adaptor-B



The A03 Feeder Location will be re-generated by computer and the new Feeder Location will be appeared : A03-A1, A03-A2, A03-B1, A03-B2, A03-B3

	Type	Auto Adj	ID	Component	LIB	Pick Hgt	TAPE	Pk Angle	X
	A01	AF08	Y			0.00	Normal	592.0000	57
	A02	AF08	Y			0.00	Normal	572.0000	57
▶	A03-A1	UFTB	N			0.00	Normal	552.0000	57
	A03-A2	UFTB	N			0.00	Normal	527.0000	57
	A03-B1	UFTB	N			0.00	Normal	502.0000	57
	A03-B3	UFTB	N			0.00	Normal	468.6667	57
X	A04	AF08	Y			0.00	Normal	532.0000	57

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Appendix1: Universal Tube Adapter

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UTA – 0223 ---- 2 tube / @ 23mm width

UTA – 0315 ---- 3 tube / @ 15mm width

UTA – 0410 ---- 4 tube / @ 10mm width

UTA – 0509 ---- 5 tube / @ 9mm width

## Appendix2: UFTB can be installed between feeder rack A&B or C&D location

### 4.4.1c Auto.Adj

Auto Adjust Pick up location to Default Feeder location (enable/disable in Mechanism Setting-Production Setting menu)

### 4.4.1d I.D.

This is the Feeder I.D. You can select from the Feeder I.D. table or create a new Feeder I.D. by clicking the



button. Feeder I.D. is designed for more easy to re-locate the feeders, especially the tape feeders (AFxx), please refer to [APPENDIX E](#)

### 4.4.1e COMPONENT

This is the component name or value, you can key-in any characters here.

e.g. R-30K, C-5nF,.....,etc.

### 4.4.1f LIB.

This is the components library name. You can select from the Component Library table or create a

new User Component Library by clicking the



button.

e.g. R0603, C1206

**Remarks:** If the pitch of the component tape is 2mm and using standard AFTA-08L1 feeder, you should select [H]0402 or [H]0603 or built up your own user library with the first characters of the library name is \*[H].

e.g. \*[H]0402

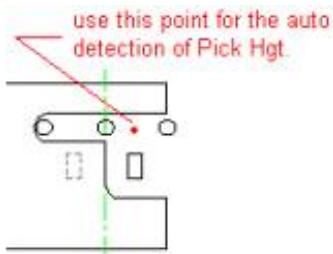
It is recommend that to use ( option ) AFTA-08L1-HS half step feeder for a better performance of picking up 0402.

When using AFTA-08L1-HS, there is no need to select [H]0402 in the library as the feeder is automatic moving in 2 mm pitch, you should select 0402 in library.

For picking up 0201, it must use (option) NZ4-0201 nozzle and AFTA-08L1-HS half step feeder.

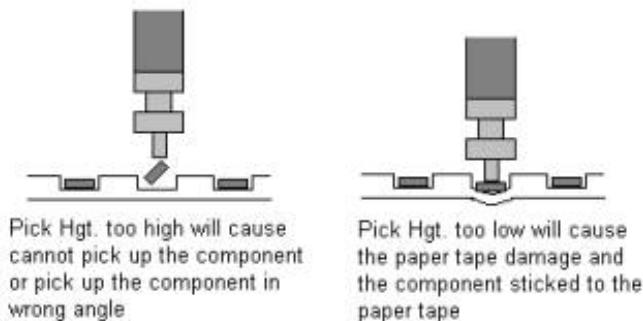
#### 4.4.1g PICK HGT

This is the components pick up height from the Feeders during in auto production.  
It is recommended to learn by auto detect.



For small components, don't use the component position for the auto detection, since the vacuum will pick up the small component and detect the wrong Pick Hgt.

This is an important parameter during pick up the component.



#### 4.4.1h TAPE

This is select the Paper tape or Plastic tape component, after finished Calibrate Default Pick Height, select TAPE in this column, and click Set ALL Default Pick Height button will get all feeder pick height.

#### 4.4.1i PK\_ANGLE

This is the component package angle. Please refer to **APPENDIX F** for the selection.  
Or, you can select by click <90> button in image mode during pick up position learning by camera-  
1. The component shape will also displayed on the screen.

#### 4.41j X

This is the X co-ordinate of the pick up position.

#### 4.4.1k Y

This is the Y co-ordinate of the pick up position.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

**Remarks:** The X, Y co-ordinate of the pick up position can be learned by camera-1

Please click  button to advance the feeder to make sure the feeder stop position is corrected.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

#### 4.4.1l PICK

This is the pick up method selection

(1) A

Select "A" indicates the machine do the '**Auto**' picks up components for this Feeder.

(2) S

Select "S" indicates the machine do the '**Semi-Auto**' picks up components for this Feeder.

'**Semi-Auto**' means the machine Head will move to this feeder and wait for user pressing a button key then do the pick up component.

(3) M

Select "M" indicates the machine do the '**Manual**' picks up components for this Feeder.

'**Manual**' means the machine Head will move this feeder and change to Manual Mode and allow user to control pick up the component manually.

This mode is mostly used when you are using a Component Tray. You need to control the camera (by arrow buttons) and points to the component and click the <Pick Up> button to pick up the component then the machine will do the placement automatically

#### 4.4.1m NEXT

This is the next feeder location name. The machine will go to this feeder to do pick up if no component is detected.

e.g. "A02", or '-----' to indicate no next feeder.

#### 4.4.1n ALIGN

This is the Alignment method.

**Alignment- A** is the alignment system at the bottom of the machine Head, it is to locate the pick up component to the center position.

Max. component size of **Alignment-A** :

- (a) Vision on the fly alignment = 16mm x 14mm
- (b) Bottom Vision Alignment = 38mm x 38mm
- (i) A
  - Select [A] indicate using the **Alignment-A** to do the auto alignment after pick up the component.
  - Mechanical Jaw model: align X-direction then Y-direction of the component
- (ii) a (Mechanical Jaw model only)
  - Select [a] indicate using the **Alignment-A** to do the auto alignment after pick up the component.
  - Mechanical Jaw model: align Y-direction then X-direction of the component
- (iii) G
  - Select [G] indicate using the **Alignment-G** to do the auto alignment.
  - Remarks:** You need to use the Component Library or set up a User Component Library for select this alignment method.
  - It is recommended to use this alignment if the IC pitch > 1.6mm or the component size is bigger than **Alignment-A**.
  - No Image Processing
- (iv) N
  - Select [N] indicate no alignment for this component.

#### 4.4.1o NOZZLE

This is the Nozzle number used, different components size use different nozzle number.

There are 5 types of standard nozzle.

- Nozzle 1/2 mainly for resistor, capacitor & transistor.
- Nozzle 3 for small size IC.
- Nozzle 4 reserved for special made nozzle.
- Nozzle 5 for medium size IC.
- Nozzle 6 for QFP
- Nozzle G special for **Alignment-G** used.

#### 4.4.1p SPEED

This is the Head up/down speed.

Speed-[1] is the highest speed and speed-[5] is the slowest speed.

Speed-[0] is the high speed with damping (up/down motor use of stepping motor model only. For servo motor model, speed-[0] is equal to speed-[3].)

**Remarks:** Normally all the resistor/capacitor/transistor use of speed-[1], IC use of speed-[0] or speed-[3]. If you find that the component drops down during pick up, that means the speed is too high or the nozzle is too small for this component.

**IMPORTANT:** For the 2mm pitch tape form components when using standard AFTA-08L1 feeder, you need to set the up/down speed to speed-[3] to decrease vibration to the next component on the tape during pick up.

It is possible to using speed 1 for 0402 if use ( option ) AFTA-08L1-HS feeder



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

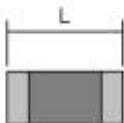
#### 4.4.1q Vs

This is to set the vacuum detect pass percentage during pick up a component. (ZSE4 Vacuum Sensor used only, normally is 70%). When pick up some non-uniform component such as diode, you needs to set lower percentage value such as 50%.

**Remarks:** If use of Laser for the alignment, the component detection will be done by the Laser and the VS setting will be no used.

#### 4.4.1r L

This is the length of the component (size in X).



#### 4.4.1s W

This is the width of the component (size in Y).



#### 4.4.1t H

This is the thickness/height of the component.

#### 4.4.1u POLARITY

This is the polarity of the component. You can select 'Yes' or 'No'.  
e.g. Resistors & small capacitors has no polarity, diodes, ICs has polarity.

#### 4.4.2 Feeder E,F: (BS390 model only)

disable since 4.9.7 software

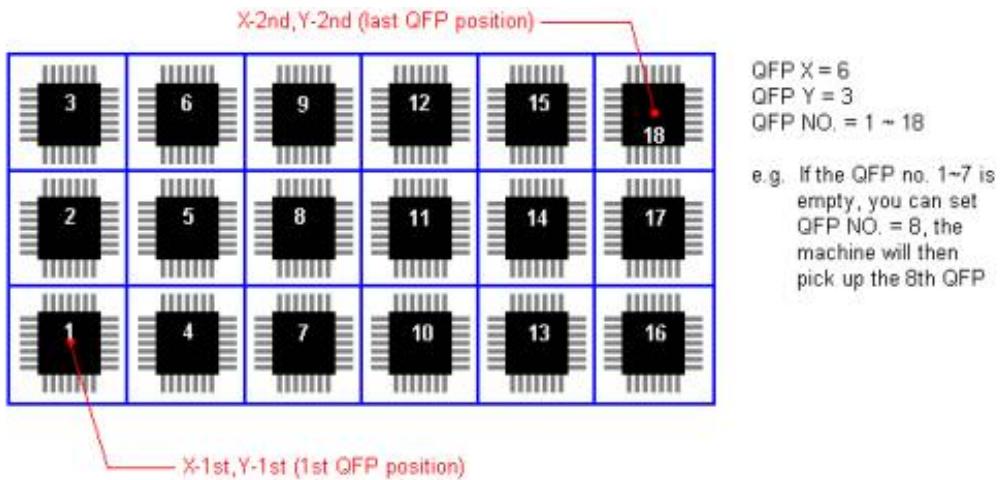
#### 4.4.3 TRAY FEEDER:

- FEEDER (QFP Tray name Q01 ~ Q40)
  - COMPONENT (Component name or value)
  - LIB. (Components library)
  - PICK HGT (QFP pick up height)
  - PK\_ANGLE (Component package angle)
  - X-1st (1st QFP position)
  - Y-1st
  - X-2nd (last QFP position)
  - Y-2nd
  - QFP X (QFP Tray matrix)
  - QFP Y
  - QFP NO. (QFP Pick up number)
  - PICK (Pick up method)
  - ALIGN (Alignment method)
  - NOZZLE (Nozzle)
  - SPEED (Up/down speed)
  - Vs (Vacuum pass percentage)
  - L (QFP size in X)

- W (QFP size in Y)  
- H (QFP height/thickness)  
- POLARITY (Component polarity)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

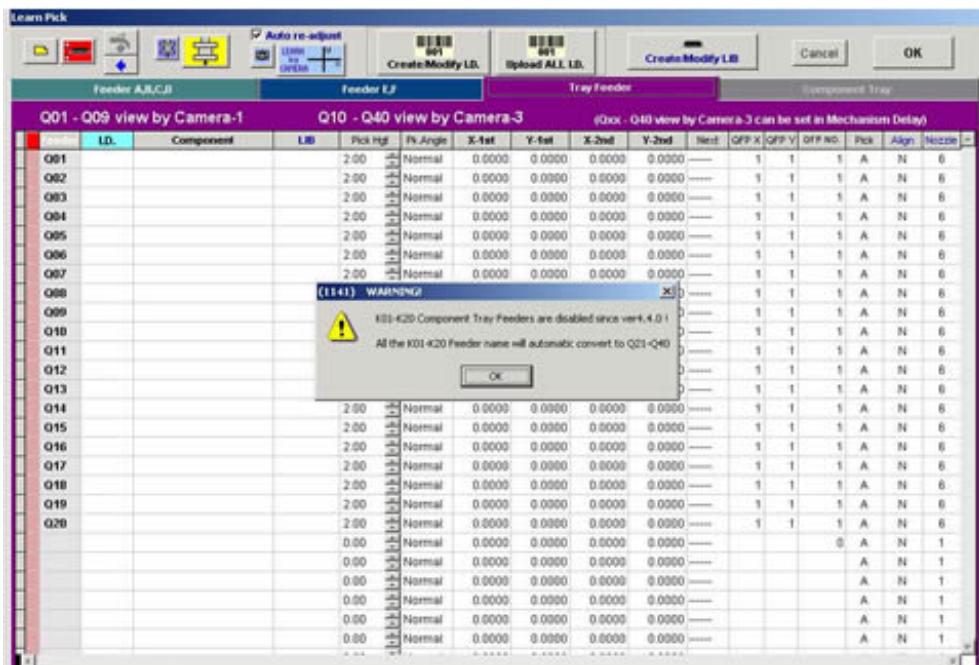


QFP X = 6  
QFP Y = 3  
QFP NO. = 1 ~ 18

e.g. If the QFP no. 1~7 is empty, you can set QFP NO. = 8, the machine will then pick up the 8th QFP

**Tip: Q1 – Q9 view by camera-1, Q10- Q40 view by camera-3, (Qxx-Q40 view by camera-3 can be set in Mechanism Delay)**

#### 4.4.4 COMPONENT TRAY:



K01-K20 Component Tray Feeders are disabled since ver4.4.0 !

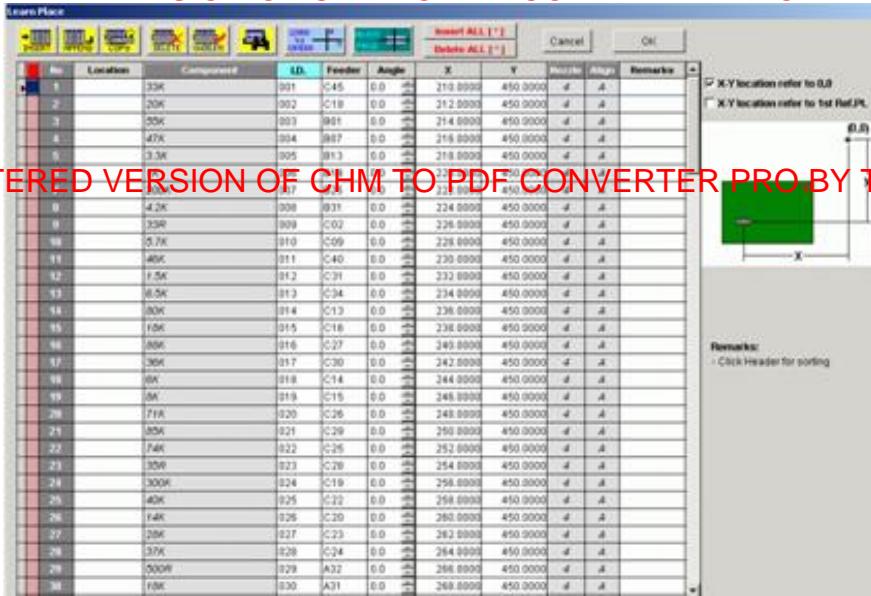
All the K01-K20 Feeder name will automatic convert to Q21-Q40

## 4.5 SETUP MENU - Learn Place

Select this item to enter Learn Place mode, all the components placement records can be programmed in this mode.

- The maximum number of components placement records is 9999, you can enter all the components information of your board here.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



The screenshot shows a software interface titled 'Learn Place' with a toolbar at the top. The main area is a table with columns: No, Location, Component, ID, Feeder, Angle, X, Y, Nozzle, Align, and Remarks. The table contains 34 rows of data. To the right of the table is a schematic diagram of a component with a green outline, showing X and Y coordinates. A checkbox at the top right of the table header is checked, with the label 'X-Y location refer to 0,0'. Below the table, a note says 'Remarks: Click Header for sorting'.

No	Location	Component	ID	Feeder	Angle	X	Y	Nozzle	Align	Remarks
1	33K	001	C46	0.0	210.0000	450.0000		d	d	
2	20K	002	C18	0.0	212.0000	450.0000		d	d	
3	25K	003	941	0.0	214.0000	450.0000		d	d	
4	47K	004	887	0.0	216.0000	450.0000		d	d	
5	3.3K	005	813	0.0	218.0000	450.0000		d	d	
6	4.2K	006	831	0.0	220.0000	450.0000		d	d	
7	33K	007	C02	0.0	225.0000	450.0000		d	d	
8	0.7K	010	C09	0.0	228.0000	450.0000		d	d	
9	46K	011	C49	0.0	230.0000	450.0000		d	d	
10	7.5K	012	C21	0.0	233.0000	450.0000		d	d	
11	8.5K	013	C34	0.0	234.0000	450.0000		d	d	
12	80K	014	C13	0.0	236.0000	450.0000		d	d	
13	1.6K	015	C16	0.0	238.0000	450.0000		d	d	
14	8.6K	016	C27	0.0	240.0000	450.0000		d	d	
15	36K	017	C30	0.0	242.0000	450.0000		d	d	
16	8K	018	C14	0.0	244.0000	450.0000		d	d	
17	8K	019	C15	0.0	246.0000	450.0000		d	d	
18	71K	020	C26	0.0	248.0000	450.0000		d	d	
19	85K	021	C29	0.0	250.0000	450.0000		d	d	
20	74K	022	C25	0.0	252.0000	450.0000		d	d	
21	35K	023	C26	0.0	254.0000	450.0000		d	d	
22	300K	024	C19	0.0	256.0000	450.0000		d	d	
23	40K	025	C22	0.0	258.0000	450.0000		d	d	
24	14K	026	C20	0.0	260.0000	450.0000		d	d	
25	28K	027	C23	0.0	262.0000	450.0000		d	d	
26	37K	028	C24	0.0	264.0000	450.0000		d	d	
27	5000R	029	A32	0.0	266.0000	450.0000		d	d	
28	68K	030	A31	0.0	268.0000	450.0000		d	d	
29										

- NO. (Record number)
- LOCATION (Location name)
- COMPONENT (copy from feeder record)
- I.D. (Feeder I.D.)
- FEEDER (Pick up Feeder name)
- ANGLE (Component rotate angle)
- X (Placement X position)
- Y (Placement Y position)
- NOZZLE (copy from feeder record)
- ALIGN (copy from feeder record)
- Remarks (click of [Remarks] header can select auto fill-in all remarks with Feeder, ID, Angle, Value)

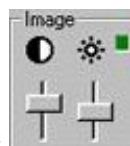
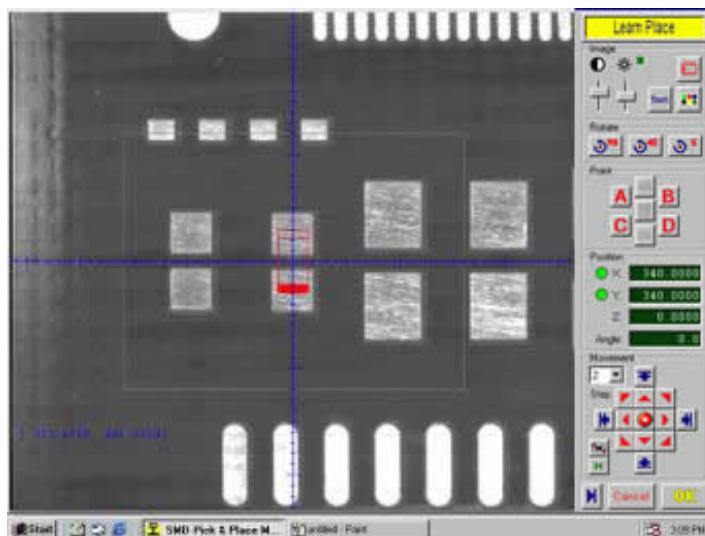
Remark: click Header for sorting.

Remark: can set all placement angle offset while click ANGLE Header.

The following buttons can help you to program the placement records:

- Click  to insert one record
- Click  to append one record at the end

- Click  to copy one previous record
- Click  to delete one record
- Click  to undelete a deleted record
- Click  to search records by words in the Location name
- Click  to learn placement position (in co-ordinate) by camera

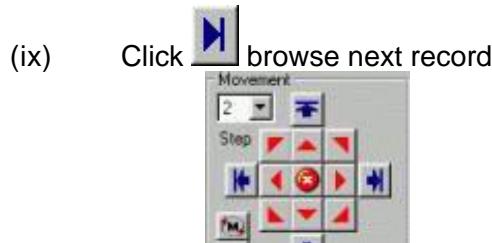


- Use of  sliding bars can adjust the brightness & contrast of the camera
- Click  turn component on / off
- Click  turn overlay on / off
- Click  change overlay on / off
- Click  to change the placement angle in 5/45/90 degree resolution.

**Remarks:** If the placement angle is smaller than 5 degree, you need to key-in directly in the Angle column of the Learn Place mode.



- You can use of  to find the center of a big component (e.g. SOIC, QFP, ...)
- Click  turn X and Y axis off
- Click  set motor speed fast / slow

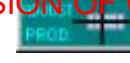


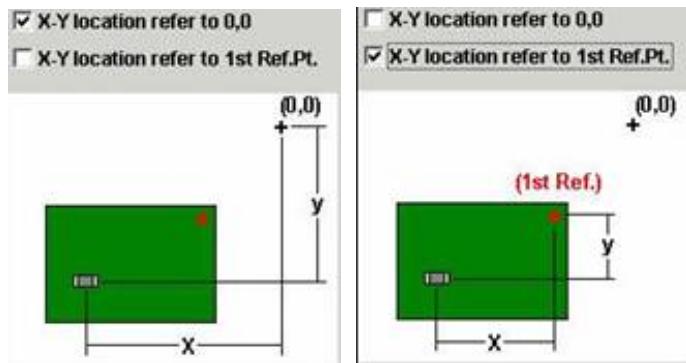
**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

(x) Click  to save the placement position.

**Remarks:** If the Library name is entered, the component shape will be shown on the screen.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- Click  to re-learn placement position after Auto Production. Please refer to **APPENDIX D**



X-Y co-ordinate can select refer to 0,0 or 1st Ref.pt.

- Click  to temporary disable all placements
- Click  to enable all placements

#### 4.5a NO.

This is the Placement Record number. (Record 1 ~ record 9999)

- Set by computer automatically

#### 4.5b LOCATION

This is the placement location name, you can key-in any characters here.

e.g. R101, R102, ..., C10, ..., U1, U2, ..., etc.

*If you want to temporary disable this placement record, you can input a " \* " in front of the location name.*

e.g. \*R101, \*R102.

#### 4.5c COMPONENT

This is the component name or value (set in Learn Pick mode)

#### 4.5d I.D.

This is the Feeder I.D.

If you've created this component's Feeder I.D. and set to the correct Feeder Location in Learn Pick mode, you can use of this I.D. and no need to take care the FEEDER (in 4.5e)

#### 4.5e FEEDER

This is the Pick Location name.

e.g. A01 ~ A22, B01 ~ B22, C01 ~ C22, D01 ~ D22, E01 ~ E22, F01 ~ F22, Axx-xx, Bxx-xx, Cxx-xx, Dxx-xx(UFTB Feeder), Q01,...Q40

#### 4.5f ANGLE

This is the components placement angle on the PCB.

You can enter angle 0 ~ 359.9 here, normally is 0,90,180 or 270.

Please refer to **APPENDIX F**, the rotation direction is the same as PK\_ANGLE.

#### 4.5g X

This is the X co-ordinate of the placement position.

#### 4.5h Y

This is the Y co-ordinate of the placement position.

**Remarks:** The placement position can be learned by Camera-1

#### 4.5i NOZZLE

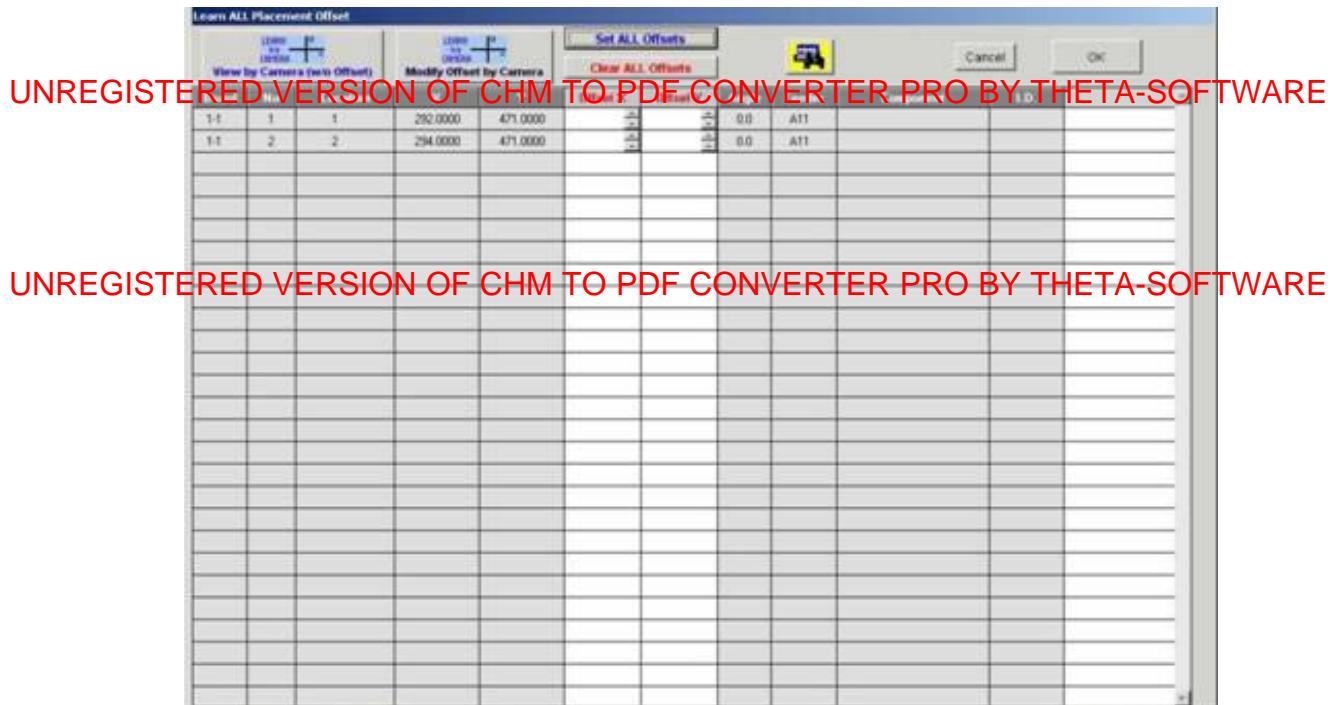
This is the type of nozzle used for this component (set in Learn Pick mode)

#### 4.5j ALIGN

This is the Alignment method used (set in Learn Pick mode)

## 4.6 SETUP MENU - Learn All Placement Offset

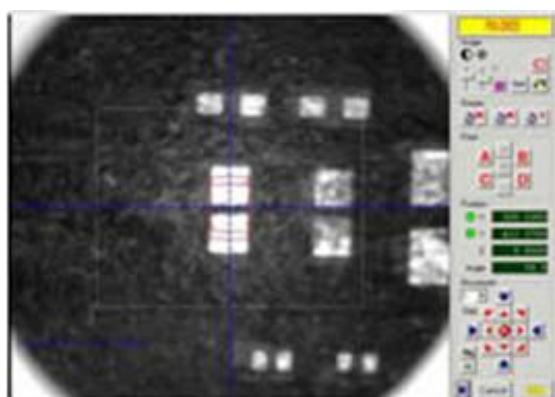
This function use for 1) View any component place position, 2) modify any component place position.  
Please refer to **APPENDIX D**



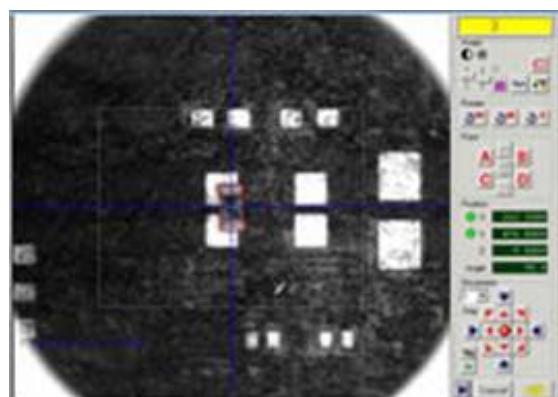
Click **View by Camera (w/o Offset)** to view any component place position, for PCB matrix can view the same position component in any matrix, and then modify the offset .

Click **Modify Offset by Camera** modify any component place position,

Move X-Y to shifted component center for offset calibration, then SMD software will calculate the offset value for next placement



Need to Place



Modify Offset( X-Y shifted component center)

Click **Clear ALL Offsets** clear all offset

Click **Set ALL Offsets** set all offset in x & y by key-in

## 4.7 SETUP MENU - Change Feeder Location

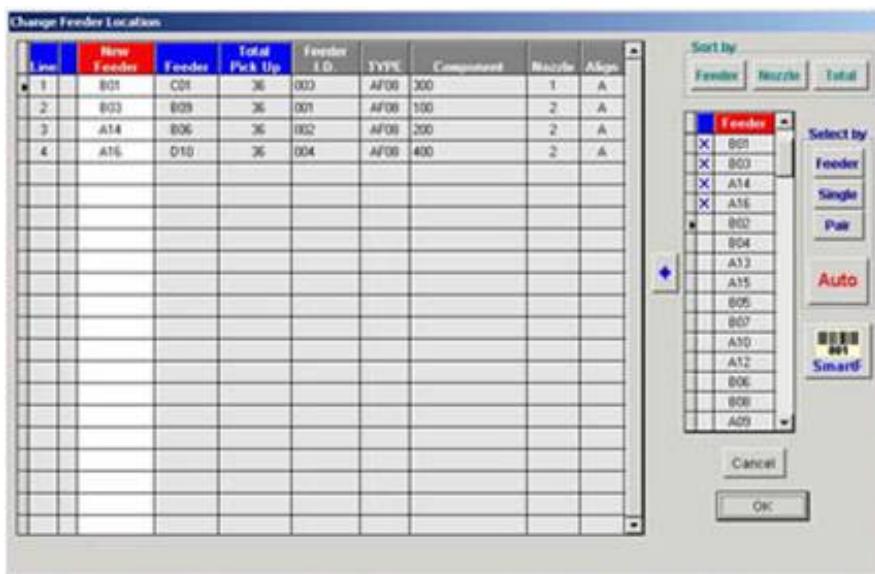
In order to obtain the highest efficiency of the machine in Auto Production, the software provided a very useful feature to easy change of Feeder locations and the main propose is to get the shortest distance between the frequencies pick up components to placement locations. And this is also the pre-setup for the Production Index Table.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Only Feeders Axx, Bxx, Cxx & Dxx can be re-located in this mode

**Remark: if the board is stopped at the center of conveyor to do components placement every time, then the feeder at location of A16 and B01 are the shortest distance for components pick up.**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- LINE (All Feeder number)
- NEW FEEDER (New Feeder Location Name)
- FEEDER (copy from feeder record)
- TOTAL PICK UP (copy from feeder record)
- ID (copy from feeder record)
- TYPE (copy from feeder record)
- COMPONENT (copy from feeder record)
- NOZZLE (copy from feeder record)
- ALIGN (copy from feeder record)
- LOCATION (copy from feeder record)

- Click **Feeder** to re-sequence the feeder name that to be used inside the left frame, e.g. A01, A02 ...
- Click **Nozzle** to sort the feeder name that to be used inside the left frame by the number of nozzle

- Click  to sort the feeder name that to be used inside the left frame by the total quantity for components pick up.
- Click  to re-sequence the feeder name that to be used inside the right frame, e.g. A01, A02 ...
- Click  to sort the feeder name that to be used inside the right frame by the less distance for components pick up.
- Click  to sort the feeder name that to be used inside the right frame by used with two head for components pick up (dual head for components pick up is the best choice)

Please choose the feeder name inside the left frame (a black arrow is appeared at left side) after completed ordering, then choose the feeder name that needed to be changed (a black arrow is appeared at left side), finally click  to show all the feeder name in the column of “NEW FEEDER”.

-  is equivalent to  of automation. Firstly, click , and then click , computer will sort the feeder name that inside the left frame according to the total pick up at the highest efficiency automatically. (Please see the above diagram)

Finally, click the button of “OK” to save and exit.

## 4.8 SETUP MENU - Create Production Index Table

This item is the best mode to pick up components for dual head setting.

## Original Feeder

- F eeder (copy from feeder record)
  - 1<sup>ST</sup> M ix Head (The Original Pick up Head)
  - 2<sup>ND</sup> M ix Head (The Original Pick up Head)
  - Pick ( copy from feeder record )
  - N ozzle (copy from feeder record)
  - A lign (copy from feeder record)
  - T otal (copy from feeder record)

## 1<sup>ST</sup> Mix Feeder

- F eeder ( The first M ix Feeder)
  - H ead ( The first M ix Pick up Head)
  - T imes (Pick up Times - By software calculate)

## 2<sup>ND</sup> Mix Feeder

- F eeder ( The second M ix Feeder)
  - H ead ( The second M ix Pick up Head)
  - T imes (Pick up Times - By software calculate)
  - R emainder (The Remainder Pick up Number after MIX)

**Remark : For production sorting base on 0201 thickness feature please do not use mix production with other feeders (Manually remove Mix feeders for 0201 components feeders, or manually program to mix production with original feeder)**

**Example 1:** 14 pieces of components (2 different kinds) to be placed in a PCB (10 pieces are the same component and installed in Feeder B01, another 4 pieces of component are installed in Feeder B04)

Enter **Create Production Index Table** and the below diagram will be shown:

Dual Head Mix Production Index															
Feeder	1st Mix Head		2nd Mix Head		Pick	Nozzle	Align	Total	1st Mix Feeder			2nd Mix Feeder			
	Original Feeder	1st Pair	Feeder	Head					Feeder	Head	Times	Feeder	Head	Times	Remainder
B01	1	2	B01	2	A	1	N	10		2	0		2	0	10
B04	1	2	B04	2	A	1	N	4		2	0		2	0	4

Firstly, we can choose another head to pick up B04 in 1<sup>st</sup> Mix, computer will calculate how many times that needed for pick up automatically.

1st Mix Feeder		
Feeder	Head	Times
B04	2	4
B01	1	4

Secondly, the number of "6" will be shown in Remainder (still has six times left to pick up components at this feeder with single head)

1st Mix Feeder			2nd Mix Feeder				Remainder
Feeder	Head	Times	Feeder	Head	Times	Remainder	
B04	2	4		2	0	6	
B01	1	4		2	0	0	

We choose another head to do pick up from B01 in 2<sup>nd</sup> Mix simultaneously, then both head can do pick up components from B01 before do placement.

2nd Mix Feeder			
Feeder	Head	Times	Remainder
B01	2	3	0
	2	0	0

### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

The following shows the machine P&P sequence for the above example in Auto Production:

- Head 1 pick up from B01, Head 2 pick up from B04 at the same time
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, Head 2 pick up from B04 at the same time
- Head 1 do placement, then Head 2 do placement

### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- Head 1 pick up from B01, Head 2 pick up from B04 at the same time
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, Head 2 pick up from B04 at the same time
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, then Head 2 pick up from B01
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, then Head 2 pick up from B01
- Head 1 do placement, then Head 2 do placement
- Head 1 pick up from B01, then Head 2 pick up from B01
- Head 1 do placement, then Head 2 do placement
- Production completed

**Example 2:** There are three Feeders, the first one is needed to do pick up for 2 times, the second one is needed to do pick up for 10 times, the last one is needed to do pick up for 8 times. We put the feeders to the location of B01, B04 & B07 in sequence, then enter **Create Production Index Table** and the below diagram will be shown:

Dual Head Mix Production Index											
1st Pair						2nd Pair					
Original Feeder						1st Mix Feeder			2nd Mix Feeder		
Feeder	1st Mix Head	2nd Mix Head	Pick	Nozzle	Align	Total	Feeder	Head	Times	Feeder	Head
B01	1	1	A	1	N	2		2	0		2
B04	1	1	A	1	N	10		2	0		2
B07	1	1	A	1	N	8		2	0		2

Firstly, we can choose another head to pick up B04 in 1<sup>st</sup> Mix, computer will calculate how many times that needed for pick up automatically.

1st Mix Feeder		
Feeder	Head	Times
B04	2	2
B01	1	2
	2	0

Secondly, the number of "0" is shown in Remainder (pick up is completed for this feeder)

1st Mix Feeder			2nd Mix Feeder			Remainder
Feeder	Head	Times	Feeder	Head	Times	
B04	2	2		2	0	0
B01	1	2		2	0	8
	2	0		2	0	8

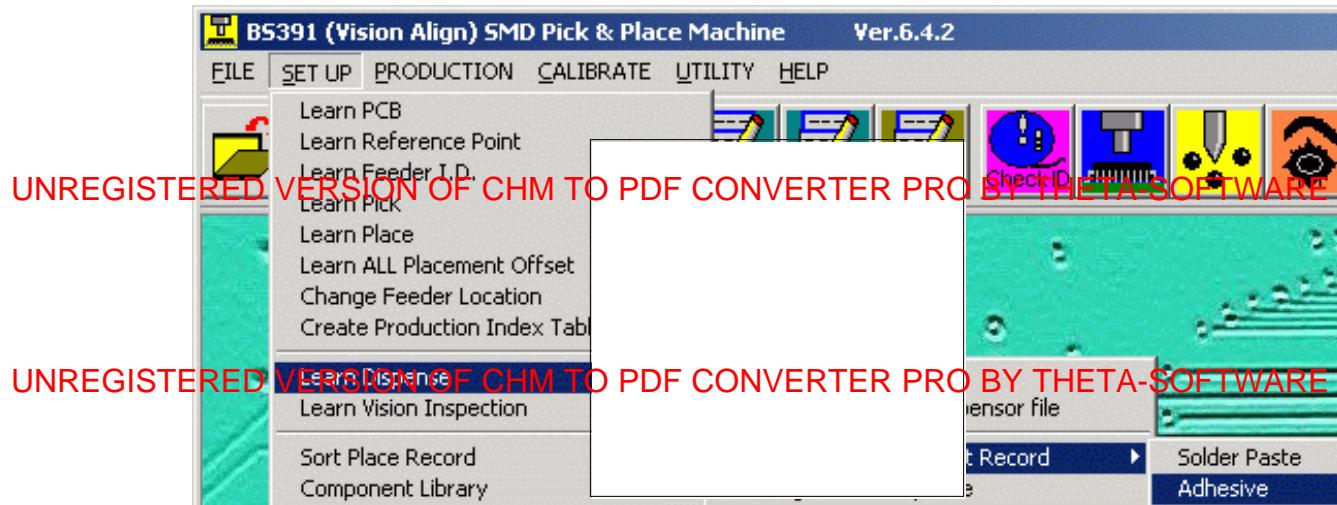
We choose another head from B04 in 2<sup>nd</sup> Mix to do pick up from B07 simultaneously, computer will calculate how many times that needed for pick up automatically.

2nd Mix Feeder		
Feeder	Head	Times
	2	0
B07	2	8
B04	1	8

When the number of "0" is shown in Feeder of Remainder, explain all pick up are completed. Dual head pick up mode is decent and fast.

2nd Mix Feeder			
Feeder	Head	Times	Remainder
	2	0	0
B07	2	8	0
B04	1	8	0

## 4.9 SETUP MENU - Learn Dispense



### 4.9.1 Learn Dispense location

This is to program the dispense records (maximum number of dispense record is 9999)

Learn Dispense

No	Location	Head	Code	Time (ms)	Volume (cc)	X	Y
1	TEST DOT	1		150	2.000	200.0000	200.0000
2		1	C	0	0.100	202.0000	349.5250
3		1	C	0	0.100	206.7350	334.8700
4		1	C	0	0.100	207.9700	331.7400
5		1	C	0	0.100	208.5700	324.1600
6		1	C	0	0.100	190.0550	329.1850
7		1	C	0	0.100	190.8000	327.1350
8	1	2	c	80	0.000	192.0350	323.2850
9	2	2	c	80	0.000	192.0350	324.8850
10	1	2	c	80	0.000	210.6250	315.5700
11	2	2	c	80	0.000	210.6250	317.1700
12	1	2	c	80	0.000	212.6150	310.6750
13	2	2	c	80	0.000	212.6150	312.2750
14	1	2	c	80	0.000	213.7250	307.9000
15	2	2	c	80	0.000	213.7250	309.5000
16	1	2	c	80	0.000	203.7150	304.3750
17	2	2	c	80	0.000	203.7150	305.9750
18	1	2	c	80	0.000	205.3000	300.4550
19	2	2	c	80	0.000	205.3000	302.0550
20	1	2	c	80	0.000	207.9100	288.0950
21	2	2	c	80	0.000	207.9100	289.6950
22	1	2	c	80	0.000	192.0350	323.2850
23	2	2	c	80	0.000	192.0350	324.8850
24	1	2	c	80	0.000	210.6250	315.5700
25	2	2	c	80	0.000	210.6250	317.1700
26	1	2	c	80	0.000	212.6150	310.6750
27	2	2	c	80	0.000	212.6150	312.2750

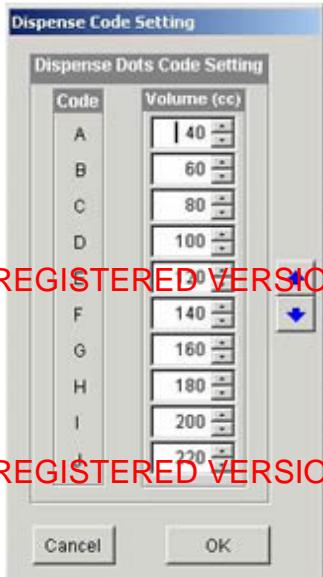
Buttons and settings on the right side of the dialog box include: INSERT, APPEND, COPY, DELETE, UNDELETE, Head 1, Head 2, Code Setting, Martin Setting, a grid icon, a crosshair icon, a checkbox for 'Automatic do Sorting before Dispense', a Cancel button, an OK button, and a status bar showing '0.000'.

- NO. (Dispenser records number, set by computer)
- LOCATION (Dispenser records location name)
- HEAD (Dispenser use Head)
- CODE (Time/Volume Code)
- TIME (ms) [DP-x Dispenser only] (Dispense time in msec)
- VOLUME [MP-x Dispenser only] (Dispense volume in cc)
- X (Dispense position in XY co-ordinate)
- Y

The following buttons can help you to program the dispenser records:

- Click  to insert one record
- Click  to append one record at the end
- Click  to copy one previous record
- Click  to delete one record
- Click  to undelete a deleted record
- Click  to search records by words in the Location name
- Click  to modify the Timing/Volume Code value.
- Click  to modify the Martin Dispenser Unit setting (use MP-x Dispenser only)
- Click  to learn one dispense position by camera
- Click  to learn dispense positions in a line by camera
- Click  to learn dispense positions in a matrix (BGA IC) by camera
- Click  to learn dispense positions in a SOIC by camera
- Click  to learn dispense position (in co-ordinate) by camera

#### **Dispense Code Setting:**



For different pad size of components in the P.C.B. need different volume of 'soldering cream' / 'SMD adhesive', it is necessary to control the dispensing timing. Longer dispensing timing has bigger volume of 'soldering cream' / 'SMD adhesive'.

This is the special code for the programming the dispense timing, it is 'A' ~ 'J' totally 8 difference codes and each code represent a timing in msec and is adjustable.

You can set/modify the dispense timing for the code 'A' ~ 'J' at any time, and the timing/volume setting in Learn Dispense mode will be updated automatically.

#### Martin Dispenser Setting: (use MP-x dispenser only)

MP-2 Dispensor Setting

Medium No.	Display	Material (typical samples)
1	Paste	metal-filled adhesives
2	100000 mPas	epoxy resin adhesives
3	50000 mPas	thin epoxy adhesives
4	10000 mPas	coatings potting compounds
5	1000 mPas	castor oil lubricant oil
6	500 mPas	watchmakers oil heating oil
7	100 mPas	cyanoacrylate adhesives (gap > 0.1mm)
8	10 mPas	cyanoacrylate adhesives (gap < 0.1mm)
9	1 mPas	watery solutions
10	0.3 mPas	alcohols
* 12	Glue SMD	MARTIN SMD adhesive
* 13	Paste SFP	MARTIN SFP solder paste
* 14	Paste FP	MARTIN FP solder paste

**SET MATOR**

Cancel

OK

\* - For new model only

This is to set the special parameters of the MARTIN Dispenser:

- Medium number
- Temperature range
- Viscosity number

For the best setting of the parameters, please refer to the MARTIN Dispenser User's Manual.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

#### 4.9.1a NO.

This is the Dispense Record number (max. 9999 records), set by computer.

#### 4.9.1b LOCATION

This is the location name, you can key-in any characters here.  
e.g. R101-1, R101-2, C22-1, C22-2, ...

#### 4.9.1c HEAD

This is the dispenser use machine head, user can select the head if use dual dispenser .

#### 4.9.1d CODE

This is the dispensing timing/volume code.

You can key-in A ~ J to set the dispensing timing/volume according to the “**Dispenser Code Setting**”.  
e.g. Time Code 'A' set to 40msec, Time Code 'B' set to 100msec  
Once you key-in 'A', the Time will change to 40msec automatically.  
If you key-in 'B', the Time will change to 100msec automatically.

Click **Code Setting** button to enter “**Dispenser Code Setting**”, you can adjust the timing/volume in this mode.

#### 4.9.1e TIME (DP-x Dispenser used only)

This is the dispensing timing.  
You can key-in 1 ~ 9999 to control the dispensing time in msec.

#### 4.9.1f VOLUME (MP-x Dispenser used only)

This is the dispensing volume.  
You can key-in the volume of the dispensing dot in cc (mm<sup>3</sup>)

#### 4.9.1g X

This is the X co-ordinate of the dispense position.

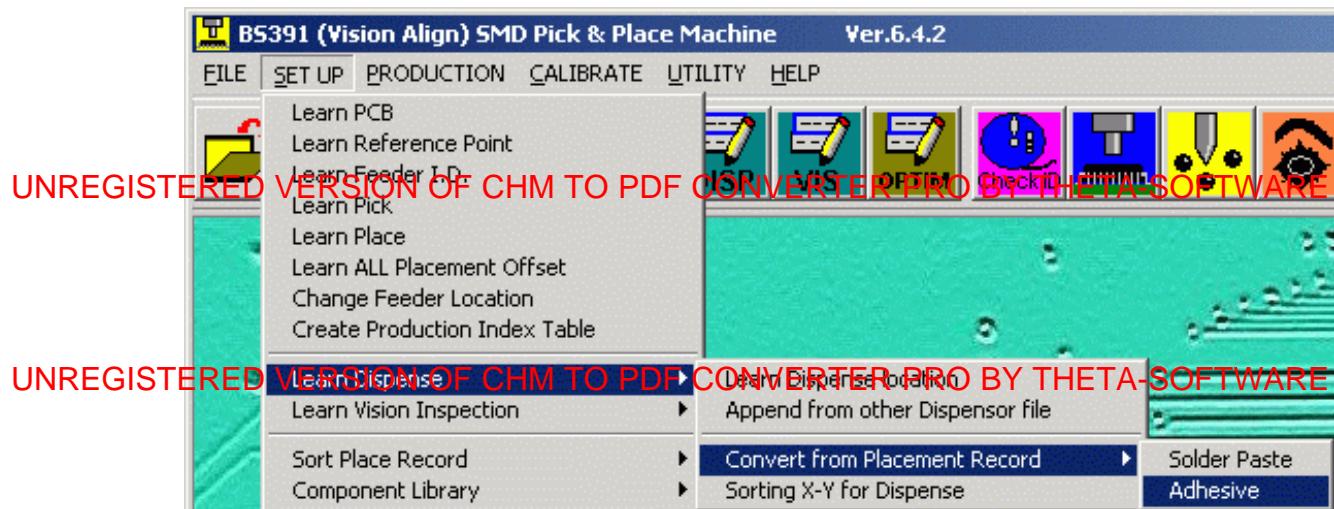
#### 4.9.1h Y

This is the Y co-ordinate of the dispense position.

### 4.9.2 Append from other Dispenser file

This can allow you to recall the old P&P file with the useful dispenser records.

#### 4.9.3 Convert from Placement Record



Select this item to convert the placement records to Solder Paste / Adhesive records by computer



For the conversion of Placement records to Dispenser solder paste records, the computer will only convert the components of placement record that has the Component Library & Dispenser Library. (Please refer to [4.12 Component Library](#))



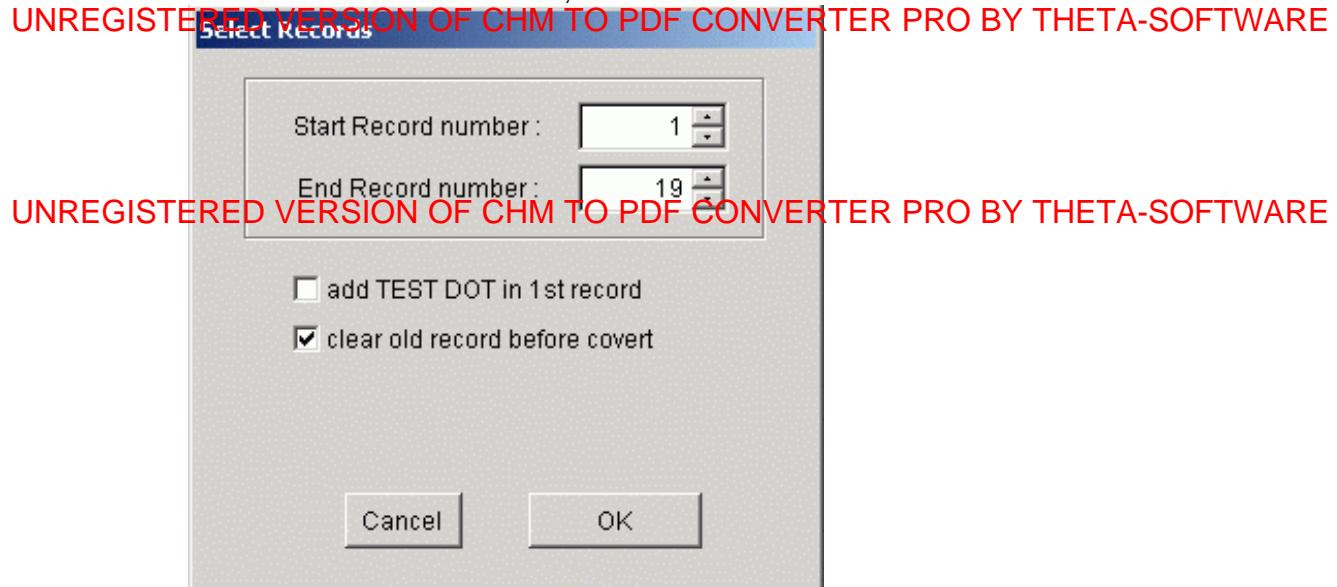
Below frame will be shown:



Start Record number --- the first number that need to convert  
End Record number --- the last number that need to convert  
Add TEST DOT in 1 st record --- add test dot before dispense  
Clear old record before convert --- clear the before convert record

**Example:**

Number 1-19 need to convert, click "OK" for save



The result - Learn Dispense

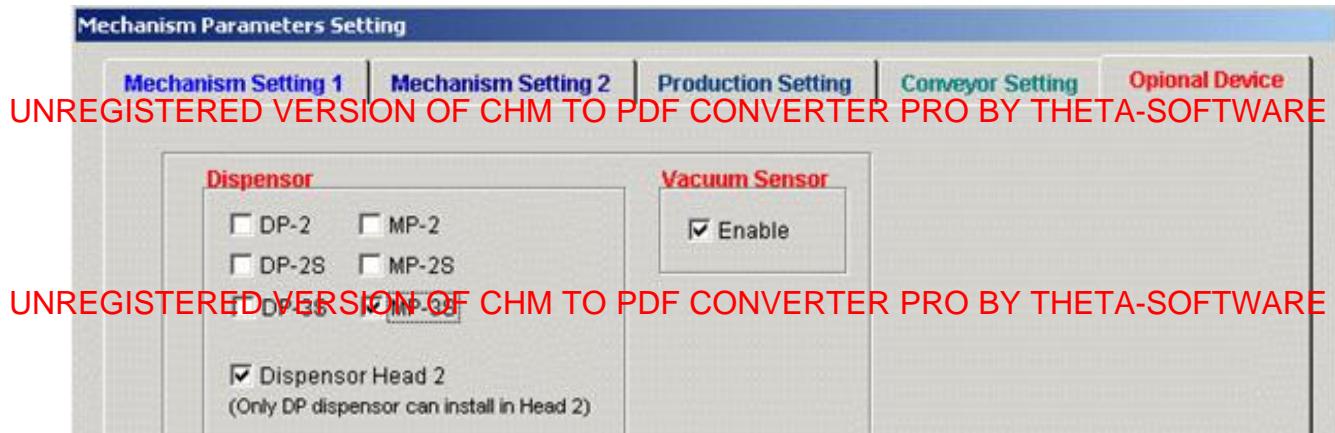
Learn Dispense

No	Location	Code	Time (ms)	X	Y
1	R1 1	B	60	254.2575	420.8925
2	R1 2	B	60	255.2550	420.8925
3	R5 1	B	60	251.2575	420.8925
4	R5 2	B	60	252.2550	420.8925
5	R6 1	C	80	254.7150	423.2100
6	R6 2	C	80	254.7075	424.8075
7	R65 1	C	80	251.7075	423.1875
8	R65 2	C	80	251.7000	424.7850
9	R44 1	D	100	248.6850	422.9700
10	R44 2	D	100	248.6775	424.9725
11	R34 1	D	100	245.6700	422.9550
12	R34 2	D	100	245.6625	424.9575
13	R21 1	D	100	242.1525	422.3250
14	R21 2	D	100	242.1450	425.5275
15	R42 1	D	100	239.1525	422.3250
16	R42 2	D	100	239.1450	425.5275
17	Q12 1	A	40	266.7750	410.9925
18	Q12 2	A	40	267.4350	410.9925
19	Q12 3	A	40	267.0975	412.2900
20	Q2 1	A	40	263.0925	405.7650
21	Q2 2	A	40	262.5900	406.1850
22	Q2 3	A	40	262.0050	404.9775
23	Q5 1	A	40	271.7025	406.2375
24	Q5 2	A	40	271.2000	405.8175
25	Q5 3	A	40	272.2875	405.0300
26	Q7 1	A	40	267.6600	403.9575
27	Q7 2	A	40	266.7000	403.9575

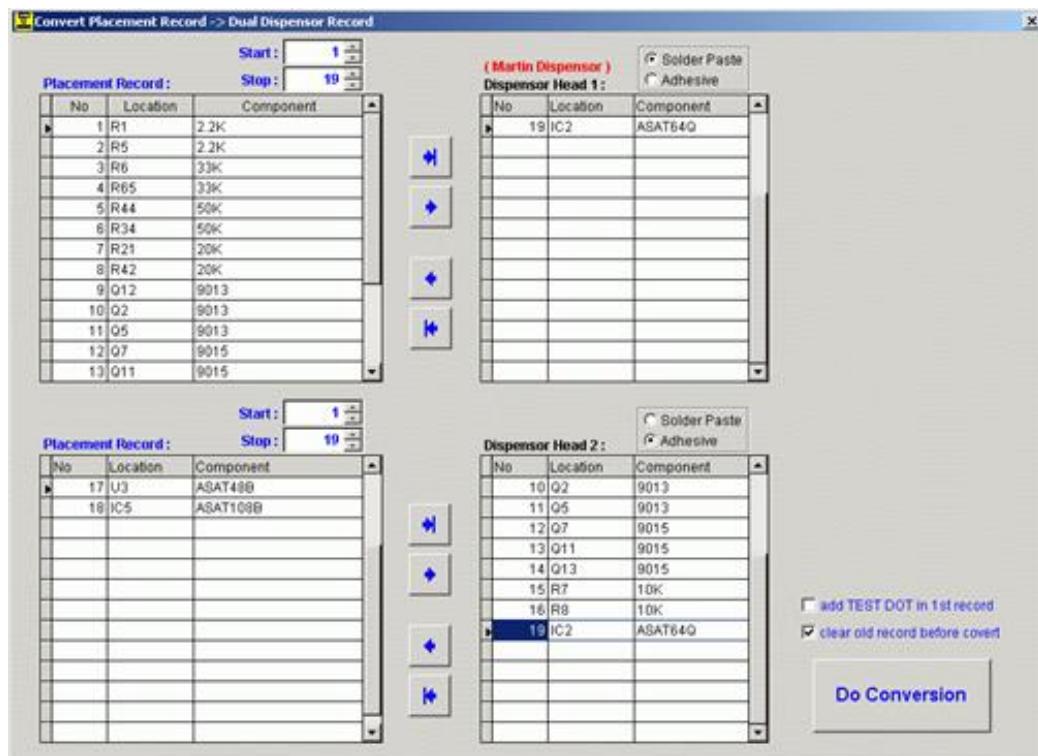
INSERT APPEND COPY  
DELETE UPDATE PRINT  
Code Setting  
  
• \*\*\*\*\* ████████  
█ █  
SEARCH ORDER  
  
 Automatic do Sorting before Dispense  
  
Cancel OK  
+ -

## Remark: Dual Dispenser setting

When a machine setup 2pcs of dispenser, enter 6.3 mechanism parameters setting - optional device to select the dispenser



The convert frame will be change as below



Start : 1  
Stop : 19 can select the number that need to be converted

Placement Record :		Stop :	19
No	Location	Component	
1	R1	2.2K	
2	R5	2.2K	
3	R6	33K	
4	R65	33K	
5	R44	50K	
6	R34	50K	
7	R21	20K	
8	R42	20K	
9	Q12	9013	
10	Q2	9013	
11	Q5	9013	
12	Q7	9015	
13	Q11	9015	

show all the numbers that can be selected



all select number go to convert ready mode



single select number go to convert ready mode



single select number exit the convert ready mode



all select number exit the convert ready mode

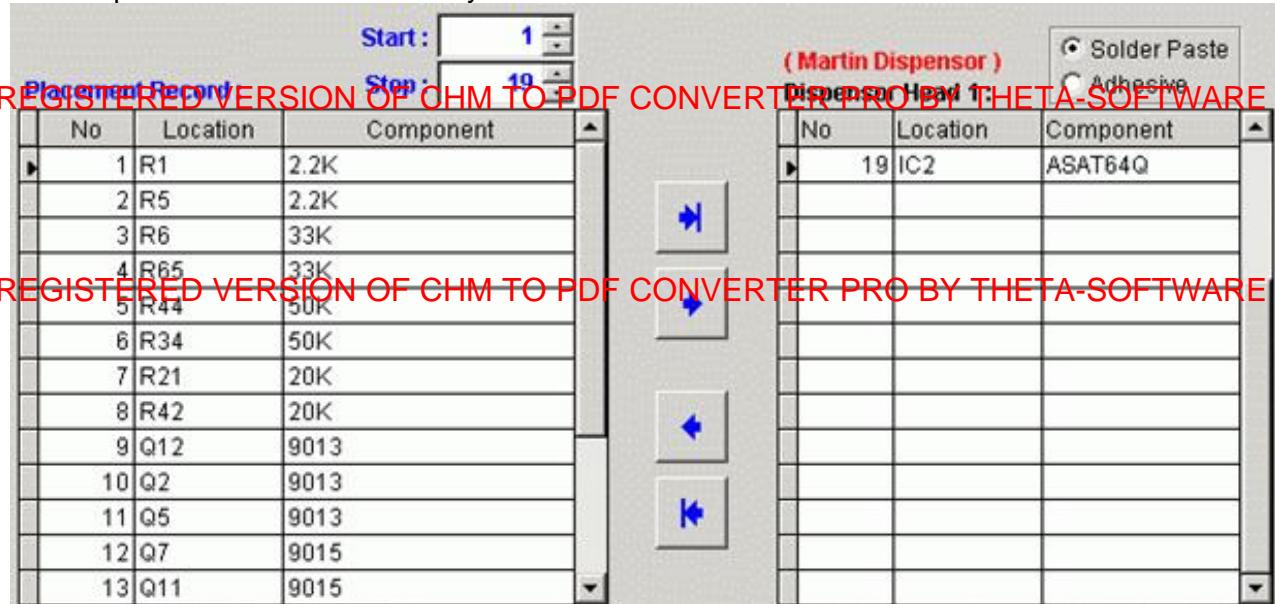
- Solder Paste
- Adhesive

select dispense solder paste or dispense adhesive

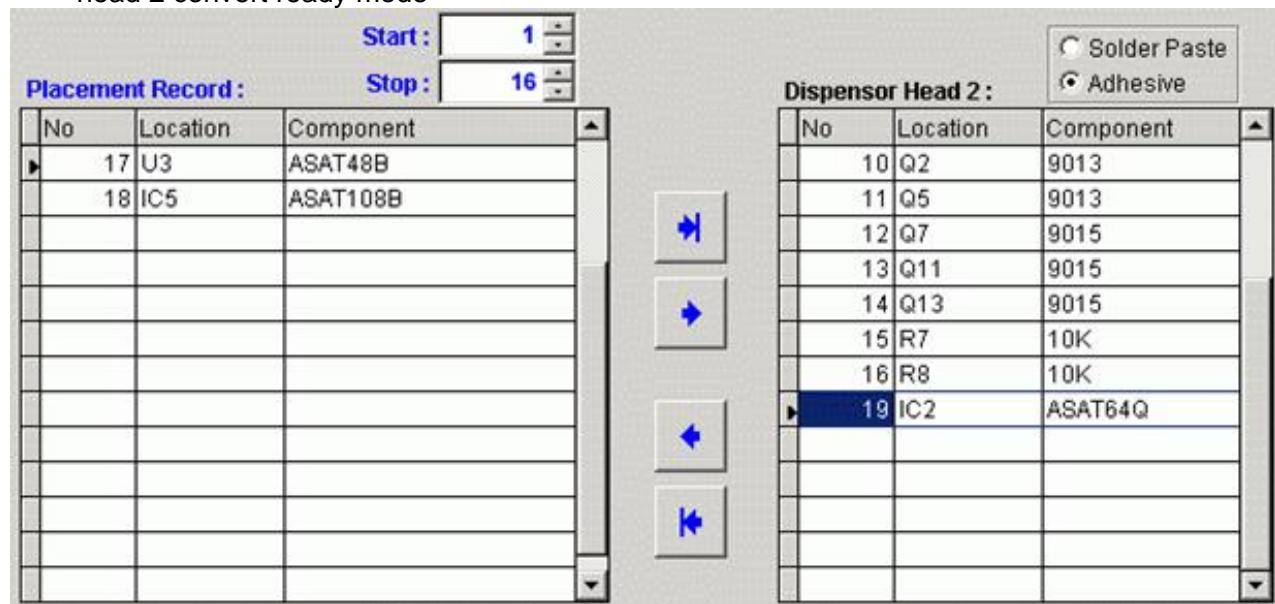
dispenser convert ready mode

**Example:**

1. Dispenser Head 1 convert the number 19, select number 19, click , the number 19 will go to dispenser head 1 convert ready mode



2. Dispenser Head 2 convert number 1~16, select 1~16, click , number 1~16 will go to dispenser head 2 convert ready mode



3. If number 19 need to dispense adhesive also, we can select number 19 and click , the number 19 will go to dispenser head 2 convert ready mode

### Do Conversion

4. click **Do Conversion** to do the conversion, software will show the tips



### 5. The result - Learn Dispense

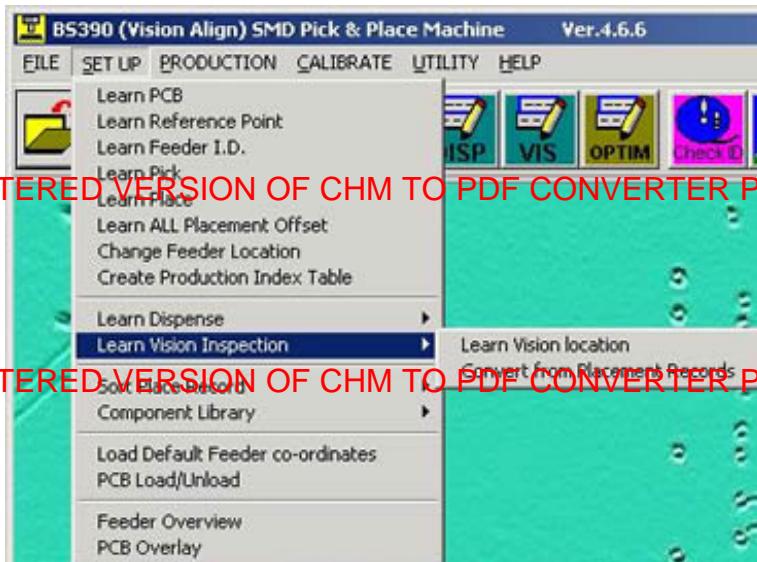
No	Location	Head	Code	Time (ms)	Volume (cc)	X	Y
121	IC2 121	1	A	0	0.020	251.6475	411.5550
122	IC2 122	1	A	0	0.020	250.9500	411.5550
123	IC2 123	1	A	0	0.020	251.6475	412.0500
124	IC2 124	1	A	0	0.020	250.9500	412.0500
125	IC2 125	1	A	0	0.020	251.6475	412.5525
126	IC2 126	1	A	0	0.020	250.9500	412.5525
127	IC2 127	1	A	0	0.020	251.6475	413.0550
128	IC2 128	1	A	0	0.020	250.9500	413.0550
129	R1	2	c	80	0.000	254.7600	420.9075
130	R5	2	c	80	0.000	251.7600	420.9075
131	R6	2	c	80	0.000	254.7150	424.0275
132	R65	2	c	80	0.000	251.7075	424.0050
133	R44	2	d	100	0.000	248.8850	423.9900
134	R34	2	d	100	0.000	245.6700	423.9750
135	R21	2	d	100	0.000	242.1525	423.9450
136	R42	2	d	100	0.000	239.1525	423.9450
137	Q12	2	d	100	0.000	267.1050	411.6525
138	Q2	2	d	100	0.000	262.4250	405.4875
139	Q5	2	d	100	0.000	271.8750	405.5400
140	Q7	2	d	100	0.000	267.1800	403.3200
141	Q11	2	d	100	0.000	262.5825	410.8125
142	Q13	2	d	100	0.000	271.6050	410.8950
143	R7	2	c	80	0.000	253.3425	428.3850
144	R8	2	c	80	0.000	250.8225	428.3700
145	IC2	2	f	140	0.000	245.7625	409.3050

### 6. Do dispense production

#### 4.9.4 Sorting X-Y for Dispense

It is recommended to sort the dispensing records after programming.

## 4.10 SETUP MENU - Learn Vision Inspection



### 4.10.1 Learn Vision location

This is to program the vision inspection records



No.	Location		X	Y	Name
1	R002	200W	379.3689	283.9992	P426
2	R1	70W00	378.8389	283.6444	P427
3	R2	75W00	379.3387	280.4492	P428
4	R3	70W00	378.6187	280.4994	P429
5	R002	200W	340.0354	284.2147	P430
6	R1	75W00	337.5155	284.2807	P431
7	R2	75W00	340.0142	281.0847	P432
8	R3	70W00	337.4943	281.1357	P433
9	R002	200W	300.7198	284.8840	P434
10	R1	75W00	298.1998	284.0079	P435
11	R2	70W00	300.7012	281.7149	P436
12	R3	70W00	299.1812	281.7029	P437
13	R002	200W	281.3898	285.4972	P438
14	R1	70W00	258.8658	285.5410	P439
15	R2	75W00	281.3674	282.3472	P440
16	R3	70W00	258.8474	282.3960	P441

#### 4.10.1a No.

This is the record number.

#### 4.10.1b Location

This is the Location name, you can key-in any characters here. If the record is converted by

computer, this column will be the same content of the Location name of Placement records.

#### 4.10.1c Component

This is the component name or value of the placed component.

This is set by computer during conversion from placement records.

#### 4.10.1d X

This is the X co-ordinate of the inspection point.

#### 4.10.1e Y

This is the Y co-ordinate of the inspection point.

#### 4.10.1f MARK

Set by computer. It indicates the record is pass or fail after inspection.

### 4.10.2 Convert from Placement Record

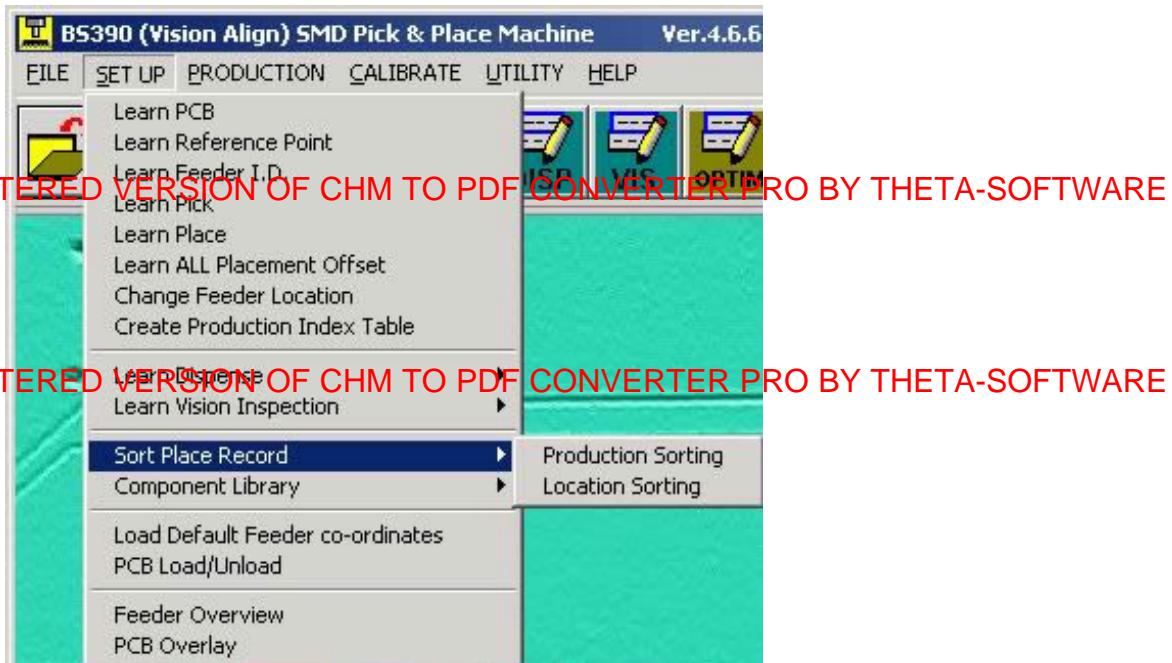


This is to auto convert the inspection record from the Placement/ Dispenser Records.

The Viewing Size is the camera viewing size in mm, or you can set this value smaller as you like.

Set the Viewing Size smaller, more inspection records will be generated during conversion.

## 4.11 SETUP MENU - Sort Place record



### 4.11.1 Production Sorting

This is to sort the Placement Records in order to get the highest performance in Auto Production.

### 4.11.2 Location Sorting

This is to sort the Location name of Placement Records in order.

This is used when you want to verify/modify the location name of the placement records.

## 4.12 SETUP MENU - Components Library

Please refer appendix C to create the library for Resistor, IC, SOT/ Transistor



### 4.12.1 Modify Component Library

The screenshot shows the 'Component Library' dialog box. The table lists various components with the following columns: LIB NAME, Type, W, L, Z, Polarity, C, Pitch/Align, Speed, Vz, Nozzle S/W, Light, Remark, D, and Y. The data includes entries for capacitors (C0201, C0402, C0603, C0603.2, C0805, C0805.2, C1005, C1206, C1608, C2125, C3216, C4726, C6032, C7343) and diodes (D0604, D0605, D1406, D1610, D2125, D2308, D2514, D5022). The 'Light' column shows values 0 or 1, and the 'Remark' column shows descriptions like 'FRONT LOT Capacitor' or 'FRONT LOT Diode'.

LIB NAME	Type	W	L	Z	Polarity	C	Pitch/Align	Speed	Vz	Nozzle S/W	Light	Remark	D	Y
C0201	Capacitor	0.60	0.30	0.30	N	0	0	1	1	0.000	A	3	50	4
C0402	Capacitor	1.00	0.50	0.35	N	0	0	1	1	0.000	A	1	50	1
C0603	Capacitor	1.60	0.80	0.45	N	0	0	1	1	0.000	A	1	70	1
C0603.2	Capacitor	1.60	0.80	0.45	N	0	0	1	1	0.000	A	1	70	2
C0805	Capacitor	2.00	1.25	0.50	N	0	0	1	1	0.000	A	1	70	1
C0805.2	Capacitor	2.00	1.25	0.50	N	0	0	1	1	0.000	A	1	70	2
C1005	Capacitor	1.00	0.50	0.35	N	0	0	1	1	0.000	A	1	50	1
C1206	Capacitor	3.20	1.60	0.60	N	0	0	1	1	0.000	A	1	70	2
C1608	Capacitor	1.60	0.80	0.45	N	0	0	1	1	0.000	A	1	70	1
C2125	Capacitor	2.00	1.25	0.50	Y	0	0	1	1	0.000	A	1	70	1
C3216	Capacitor	3.20	1.60	0.60	Y	0	0	1	1	0.000	A	1	70	2
C4726	Capacitor	4.70	2.60	2.10	Y	0	0	1	1	0.000	A	1	70	3
C6032	Capacitor	6.00	3.20	2.50	Y	0	0	1	1	0.000	A	1	70	3
C7343	Capacitor	7.30	4.30	2.80	Y	0	0	1	1	0.000	A	1	70	3
D0604	Diode	1.60	1.00	1.00	Y	0	0	1	1	0.000	A	1	50	1
D0605	Diode	2.00	1.25	1.25	Y	0	0	1	1	0.000	A	1	50	2
D1406	Diode	3.50	1.40	1.40	Y	0	0	1	1	0.000	A	1	50	2
D1610	Diode	1.60	1.00	1.00	Y	0	0	1	1	0.000	A	1	50	1
D2125	Diode	2.00	1.25	1.25	Y	0	0	1	1	0.000	A	1	50	2
D2308	Diode	5.90	2.20	2.20	Y	0	0	1	1	0.000	A	1	50	3
D2514	Diode	3.50	1.40	1.40	Y	0	0	1	1	0.000	A	1	50	2
D5022	Diode	5.90	2.20	2.20	Y	0	0	1	1	0.000	A	1	50	3

- Click to create a new User Component Library
- Click to modify a User Component Library
- Click to delete a User Component Library

- Click  to recall a deleted User Component Library
- Click  to create or modify the Dispenser Library of the selected Library  
The **D** column with the 'D' indicator indicates that Component Library has the Dispenser Library. Please refer to **APPENDIX K** for more details.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Click  to create a new User Component Library, or select a User Component Library and click  to modify.



- **LIB. NAME**

You can key-in the Library name here, if a similar Library name is found, the setting parameter will be auto loaded.

The software will special handle the QFP, PQFP, TQFP & BGA IC, for these kind of components, please create the Library with the name as follows:

QFP-IC --- \*QFPXXXX  
 PQFP-IC --- \*PQFPXXX  
 TQFP-IC --- \*TQFPXXX  
 BGA-IC --- \*BGAXXXX

e.g. \*R0805, \*SOP22P, \*QFP64L,...

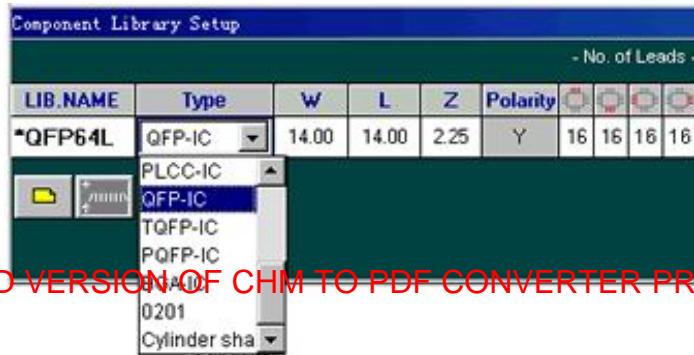
**Remarks:** For the User Component Library name, there will be a star '\*' in front of the name.



- **Type**

Type of the component, you can select one of the followings:

None, Resistor, Capacitor, Diode, SOT/Transistor,  
 SOP-IC, TSOP-IC, SOJ-IC, PLCC-IC,  
 QFP-IC, PQFP-IC, TQFP-IC, BGA-IC,  
 Cylinder Shape



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

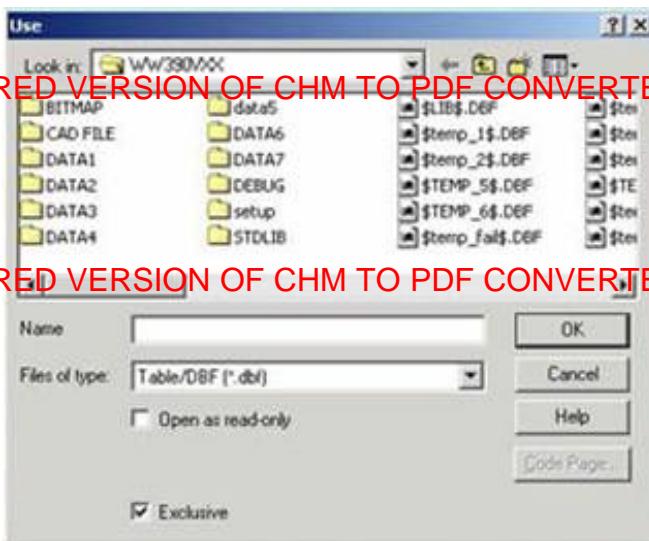
- **L**  
Component size in X direction (in mm)
- **W**  
Component size in Y direction (in mm)
- **Z**  
Component height/thickness (in mm)
- **Polarity**  
Component polarity (Y/N)
-   
Number of leads of the IC at upward
-   
Number of leads of the IC at downward
-   
Number of leads of the IC at left
-   
Number of leads of the IC at right
- **IC Pitch**  
Pitch of leads in mm if it is IC
- **ALIGN**  
Alignment method.  
About Alignment-G/H please refer appendix P
- **LASER** (*Laser Alignment used only*)  
Laser alignment detect level
- **Nozzle**  
Nozzle number
- **Speed**  
Head up/down speed
- **Vs %**  
Vacuum sensor detection percentage
- **Remark**  
Remarks for this component  
**Remark: standard library not allowed to modify train image**

#### 4.12.2 Copy from old User Library

This mode allowed you to recall the old User Component Library that you'd created in the past.

e.g. Recall the old User Component Library from the old DOS version software:

- select the old DOS version software sub-directory (WW390VXX)
- select LIB.DBF file



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

The old User Component Library will be copied and displayed as follows:



#### 4.12.3 Update Standard Component Library

The manufacturer provides a Standard Component Library (e.g. R0402, R0805, R1206,...).

While you are set up or upgrade new version software, the computer will ask for update the Standard Component Library & the Standard Dispenser Library. If you've updated the Libraries, you don't need to update again.

**Remarks:** It is recommended to do this update while you upgrade new version software, since these Libraries may be changed with different software version.

#### 4.12.4 Update Standard Dispenser Library

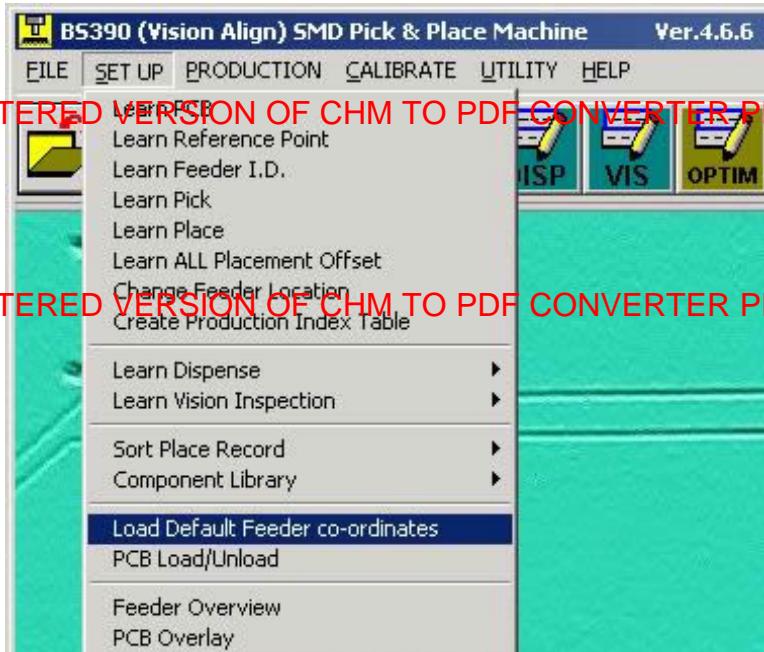
The manufacturer also provides a Standard Dispenser Library for the Standard Component Library.

While you are set up or upgrade new version software, the computer will ask for update the Standard Component Library & the Standard Dispenser Library. If you've updated the Libraries, you don't need to update again.

**Remarks:** It is recommended to do this update while you upgrade new version software, since these Libraries may be changed with different software version.

#### 4.13 SETUP MENU - Load Default Feeder co-ordinates

Select this to load all the Feeders default XY co-ordinates to the Learn Pick data



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 4.14 SETUP MENU - PCB Load/Unload (Conveyor system used only)



Select this mode to activate some function of the Conveyor system:

- **PCB Load**

Load the PCB to the datum plate by Conveyor system. This function is useful while you want to set up a board for learning Ref.Pt. & Placement records.

- **PCB Unload**

Unload the PCB from the datum plate by Conveyor system.

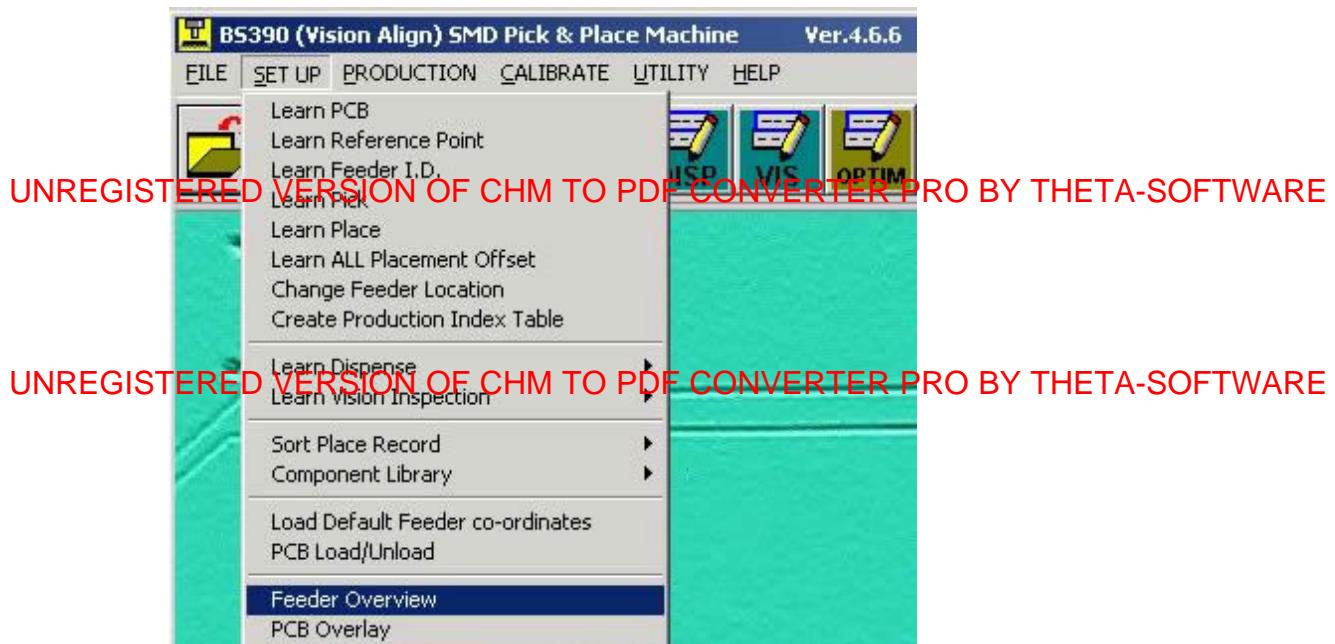
- **PCB Bypass**

Bypass the PCB for this machine. This function is useful while you've set up a Production Line with this machine in the middle and don't need this machine for production temporary but you don't want to move the machine or transfer the boards from one side to other side manually, you can use of this PCB Bypass function.

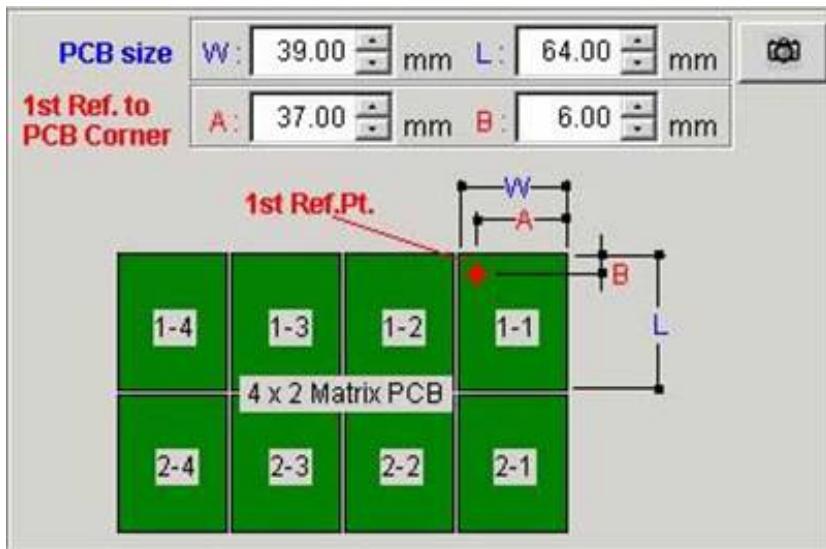
During enter this mode, the Conveyor system will wait for PCB input and then transfer the PCB to the next machine.



## 4.15 SETUP MENU - Feeder Overview



Please setup below position in [4.1 Learn PCB](#) , check the follow frame



**PCB Size (W)** --- The 1-1 PCB Width

**PCB Size (L)** --- The 1-1 PCB Length

**1st Ref. to PCB Corner(A)** --- The Width for first reference to PCB Corner

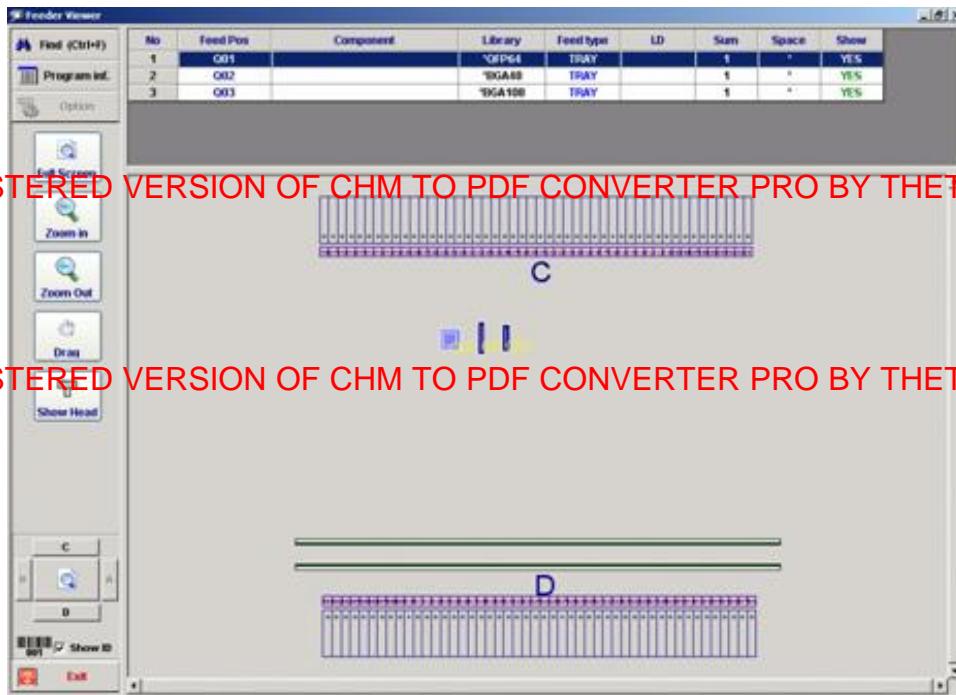
**1st Ref. to PCB Corner(B)** --- The Length for first reference to PCB Corner

### Auto Learn by Camera

- 1) Click  learn Upper-Right corner of Board 1-1
- 2) Learn Lower-Left corner of Board 1-1

3) Learn 1st Ref.Pt of Board 1-1

After setup ok and click the Feeder Overview button, user can view the feeder placement for SMD pick program.

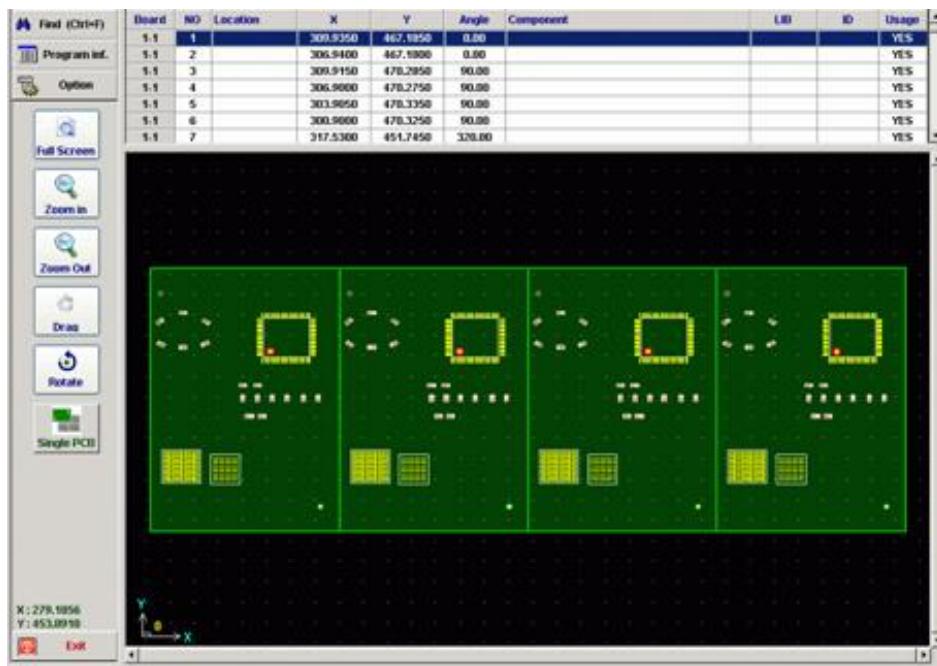


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

#### 4.16 SETUP MENU – PCB Overlay

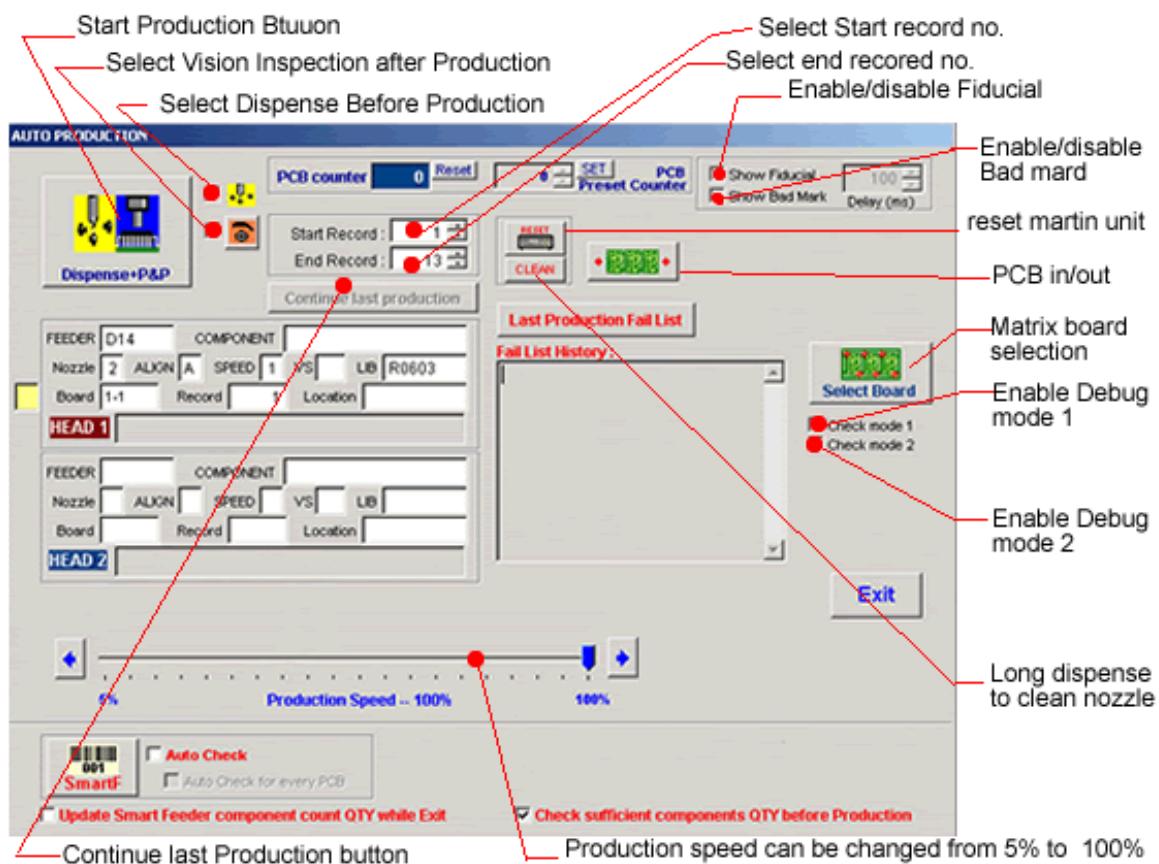
Ibid, after setup ok and click the Feeder Overview button, user can view the PCB placement for SMD place program



This function is very useful for check the correct feeder placement and PCB placement, in order to modify and program.

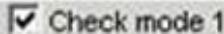
## 5.0 PRODUCTION MENU

### 5.1 PRODUCTION MENU - Auto Production

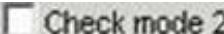


- You can select the Starting Record & the Ending Record number for Auto Production
- Click to select do Auto Dispense before Auto Production
- Click to select do Vision Inspection after Auto Production

- Click  **Show Fiducial** to enable **Show Fiducial** , default is disable
- Click  **Show Bad Mark** to enable **Show Bad Mark** , default is disable

- Click  **Check mode 1** to enable **Debug Mode 1** feature : Machine stop after components align failure.

This feature also available in Alignment-G Debug bit image

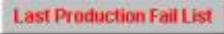
- Click  **Check mode 2** to enable **Debug Mode 2** feature : Machine stop after pick up component after components aligned failure.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- Click  to start Auto Production

- Click  to continue last stopped production

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

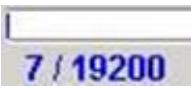
- Click  to list last Production fail record

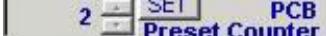
- Click  to reset martin unit

- Click  to long dispense to clean nozzle

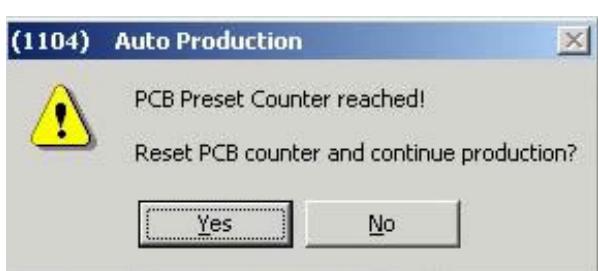
- Click  to PCB in/out

- Click  to matrix board selection

-  show placement complete status

- User can set the counter that need to production by 

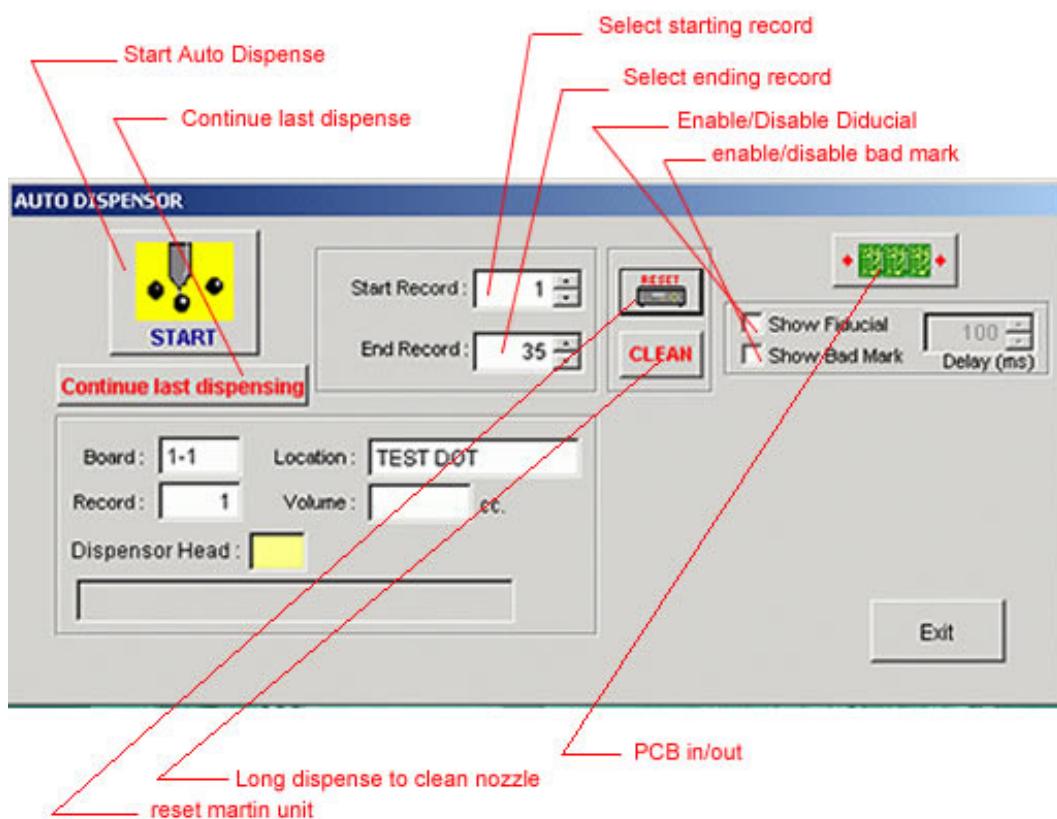
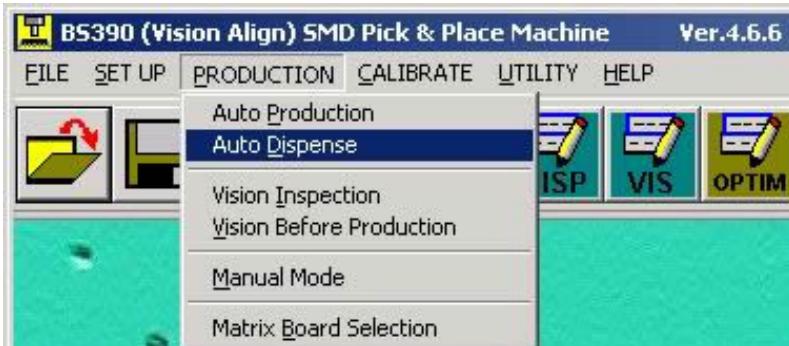
- When reached the number of PCB Preset Counter, below frame will be shown, please reset the Preset Counter number or set to 0(0=production forever)



- Click  to exit

During the machine is in Auto Production, you can press of <Esc> key to stop or abort the production.

## 5.2 PRODUCTION MENU - Auto Dispense



- You can select the Starting Record & the Ending Record number for Auto Production
- Click  to start Auto Dispense
- Click **Continue last dispensing** to continue last stopped dispense
- Click **Exit** to exit

During the machine is in Auto Dispense, you can press of **<Esc>** key to stop or abort the dispensing.

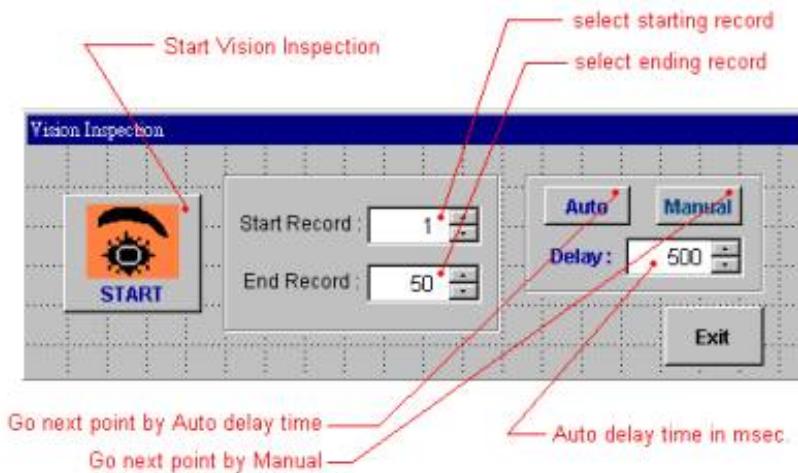
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

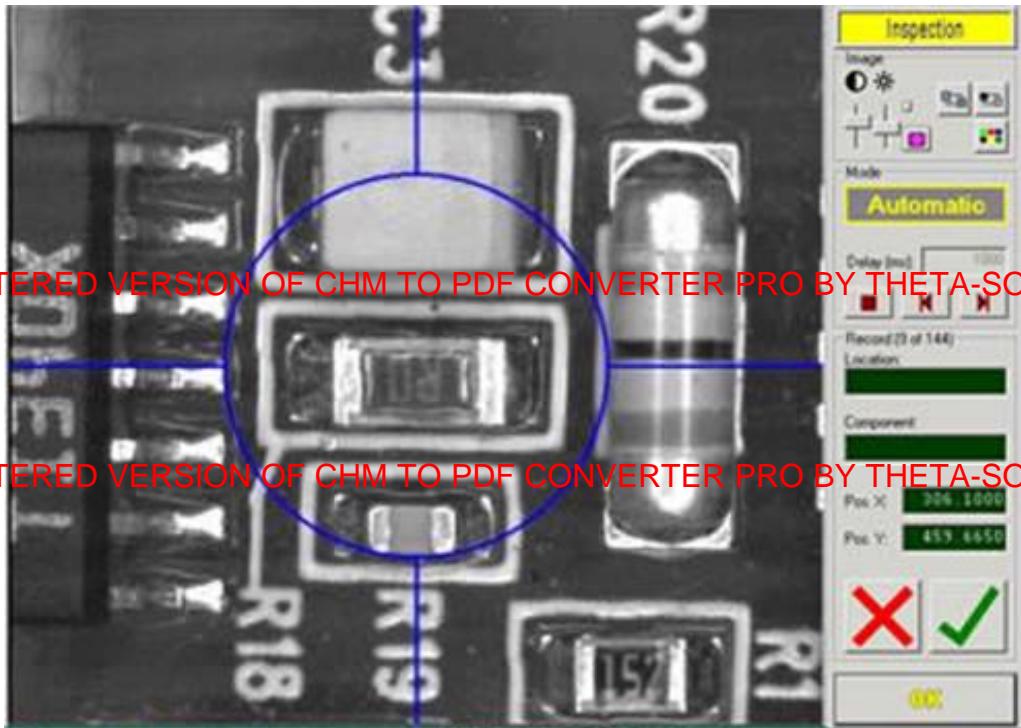
## 5.3 PRODUCTION MENU - Vision Inspection



You need to create the Vision Inspection data in Learn Vision Inspection mode or convert by placing records or dispensing records.



- You can select the Starting Record & the Ending Record number for Vision Inspection
- Click **Auto** to select **Go next point by Auto delay time**, the delay time can be set in msec .
- Click **Manual** to select **Go next point by Manual**
- Click **START** to start Vision Inspection
- Click **Exit** to exit



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

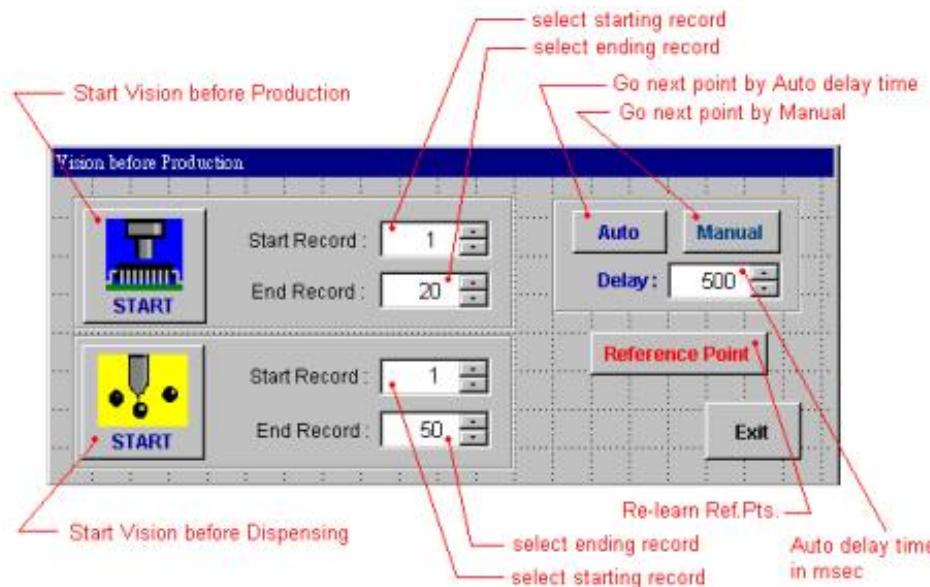
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- Click indicate the record is inspected and pass ( in **Go next point by Auto delay time** computer will assume pass if you haven't click any button within the delay time )
- Click indicate the record is failure
- Click to go next inspection point immediately
- Click to go back previous inspection point immediately
- Click to switch between **Auto** and **Manual** go next point
- You can click button at any time to stop and exit

#### 5.4 PRODUCTION MENU - Vision Before Production

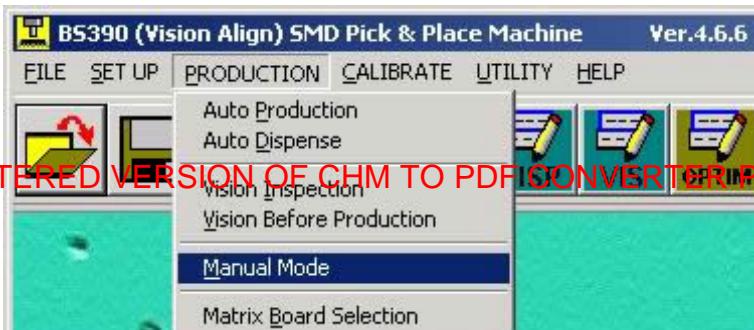


This is to view each placement position or dispense position in Board 1-1 with computer simulation and check if the setting is corrected or not.



- You can select the Starting Record & the Ending Record number for Vision before Production
- Click **Auto** to select **Go next point by Auto delay time** , the delay time can be set in msec .
- Click **Manual** to select **Go next point by Manual**
- Click **Reference Point** to re-learn the Fiducial or Board Ref.Pts .
- Click  to start Vision before Production
- Click  to start Vision before Dispensing
- Click **Exit** to exit

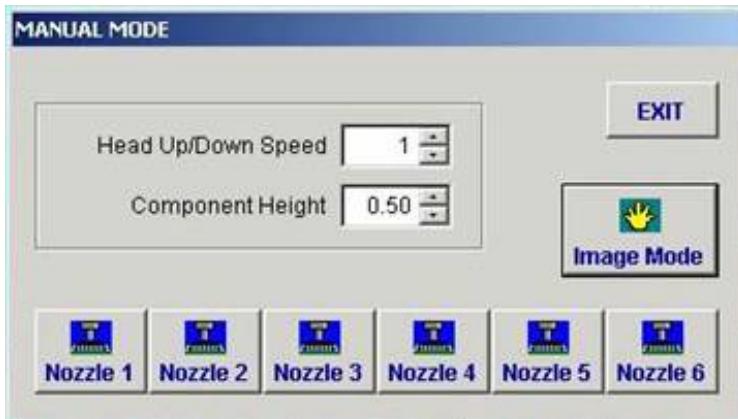
## 5.5 PRODUCTION MENU - Manual Mode



### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

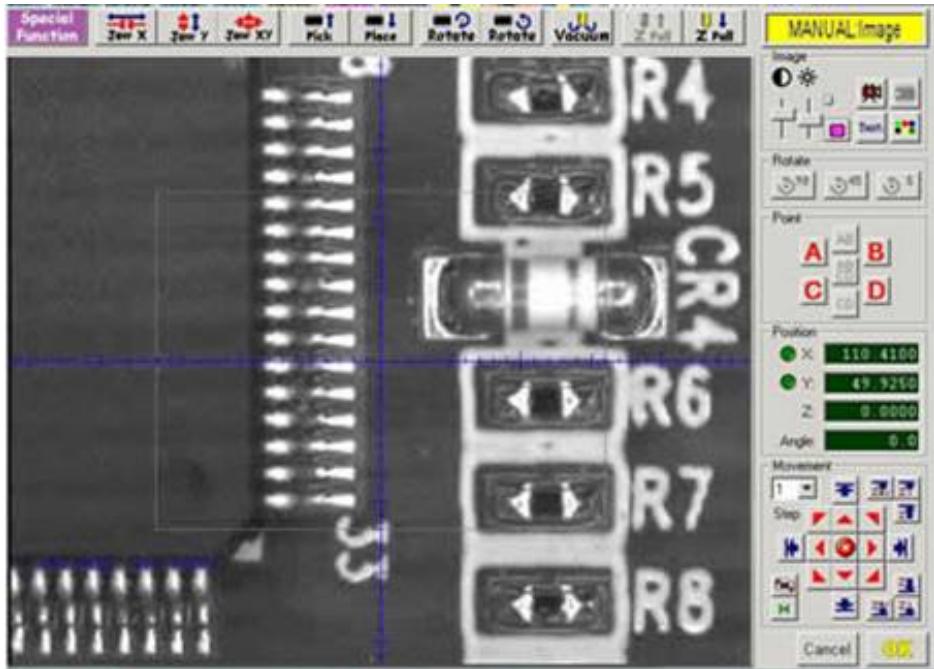
This is the Manual Production mode for the sample making.

When you enter this mode, the following message will be shown:



- You can select the Head Up/Down Speed from 1 to 5
- Set the component height/thickness
- Set the Dispenser On delay time in msec .
- Click to enter Manual mode with installed nozzle #1
- Click to enter Manual mode with installed nozzle #2
- Click to enter Manual mode with installed nozzle #3
- Click to enter Manual mode with installed nozzle #4
- Click to enter Manual mode with installed nozzle #5

- Click  to enter Manual mode with installed nozzle #6
- Click  to enter Manual mode without installed nozzle



Key functions in Manual mode:

- Click  for the Jaw X testing open/close (Mechanical Jaw model only)
- Click  for the Jaw Y testing open/close (Mechanical Jaw model only)
- Click  to align component by Jaw (Mechanical Jaw model only)
- Click  to pick up a component and align component by Jaw
- Click  to place the component to PCB
- Click  to rotate in clockwise
- Click  to rotate in anti-clockwise
- Click  for vacuum on/off testing
- Click   for Z-axis up/down testing
- Use of  sliding bars can adjust the brightness & contrast of the camera
- Click  to select use of Camera-1 or Camera-2 or Camera-3
- Click  to select text on/off on the image screen

- Click  to select the text colour on the image screen
- Use of  buttons you can learn max. 4 positions, and you can find out the center of t positions by clicking  button.
- Click  for Z-axis up/down 0.1mm testing
- Click  for Z-axis up/down 1mm testing

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- Click  for Z-axis up/down testing
- Click  to unlock the X, Y axis
- Click  to select Fast/Slow constant movement when using arrow keys/buttons

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- Click  move cross mark for location
- Use of  you can select the steps movement when using arrow keys/buttons

## 5.6 PRODUCTION MENU - Matrix Board Selection



This mode is to select which small boards of the PCB matrix will do the production

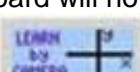
LEARN  
BY  
CAMERA  
1st Ref. Pl.

LEARN  
by  
CARMEN

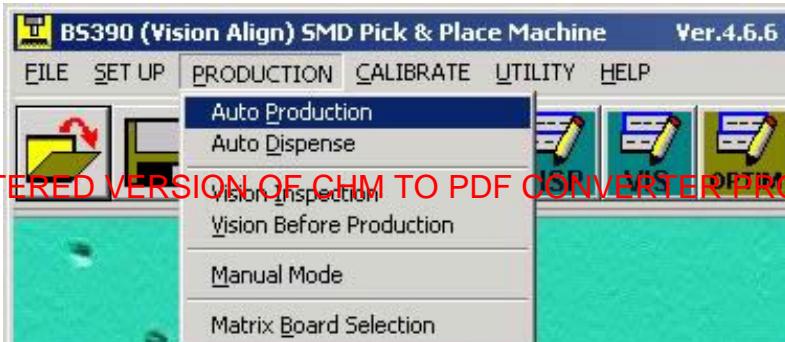
**Enabled**

Cancel |

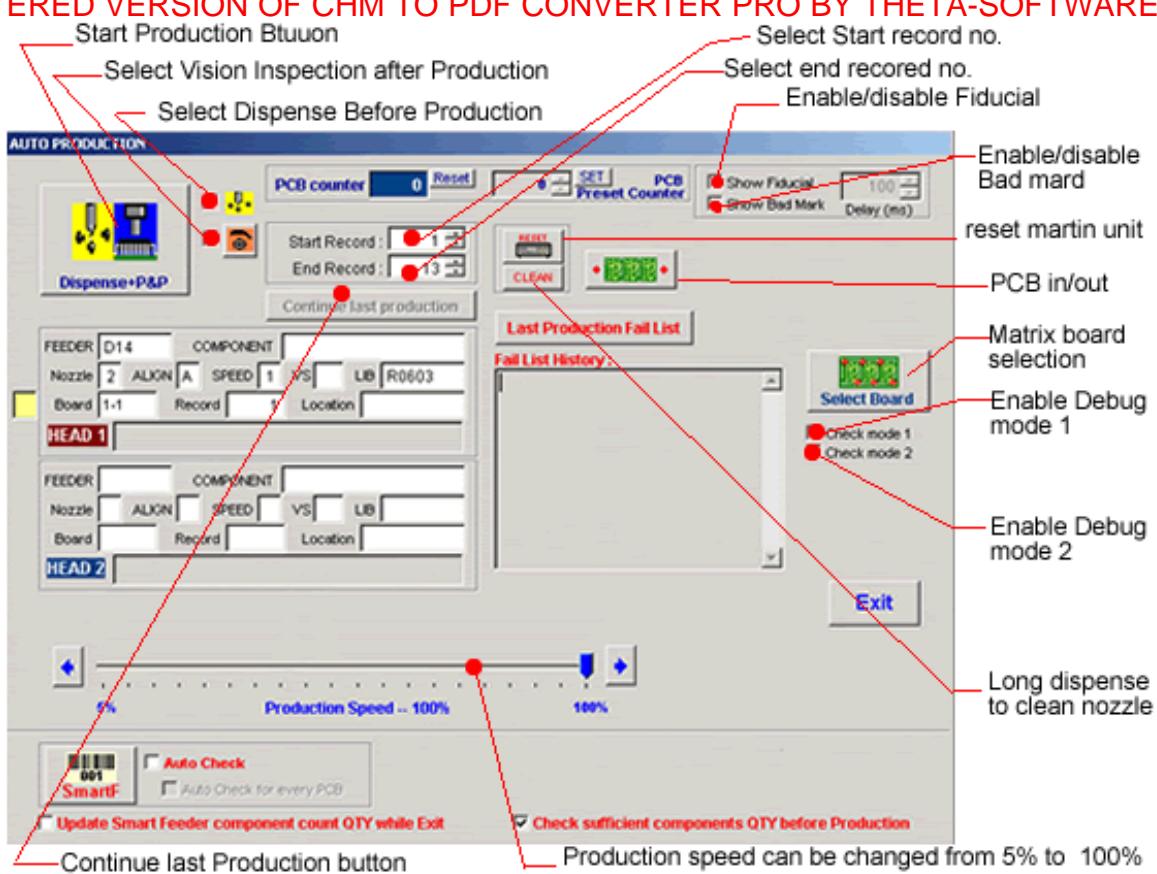
OK

- The board will do the production if select **Enable** in the Select column
  - The board will not do the production if select **XXXXXX** in the Select column
  - Click **1st Ref.Pt.** to view/modify the 1<sup>st</sup> Ref.Pt . position by camera
  - Click **2nd Ref.Pt.** to view/modify the 1<sup>st</sup> Ref.Pt . position by camera
  - Click **Enabled** to enable all Matrix Board
  - Click **XXXXXX** to disable all Matrix Board

## 5.1 PRODUCTION MENU - Auto Production

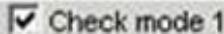


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

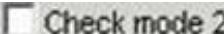


- You can select the Starting Record & the Ending Record number for Auto Production
- Click to select do Auto Dispense before Auto Production
- Click to select do Vision Inspection after Auto Production
- Click  **Show Fiducial** to enable **Show Fiducial**, default is disable

- Click  **Show Bad Mark** to enable **Show Bad Mark**, default is disable

- Click  **Check mode 1** to enable **Debug Mode 1** feature : Machine stop after components aligned failure.

This feature also available in Alignment-G Debug bit image

- Click  **Check mode 2** to enable **Debug Mode 2** feature : Machine stop after pick up component and after components aligned failure

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- Click  to start Auto Production

- Click  to continue last stopped production

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- Click  to list last Production fail record

- Click  to reset martin unit

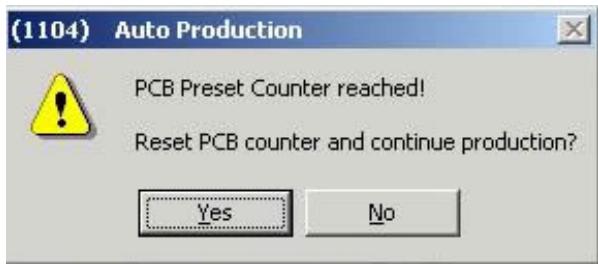
- Click  to long dispense to clean nozzle

- Click  to PCB in/out

- Click  to matrix board selection

-  show placement complete status

- User can set the counter that need to production by 
- When reached the number of PCB Preset Counter, below frame will be shown, please reset the Preset Counter number or set to 0(0=production forever)

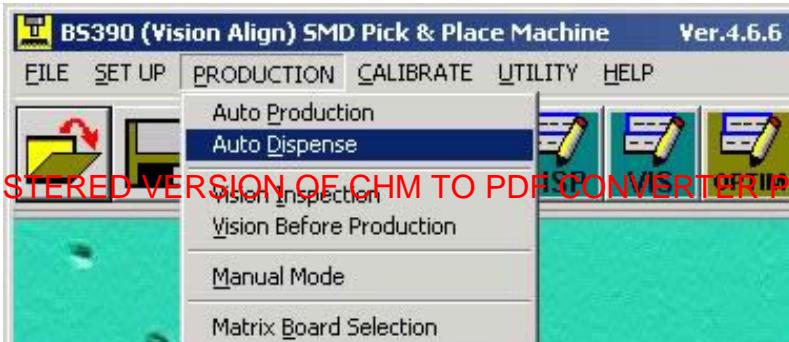


- Click  to exit

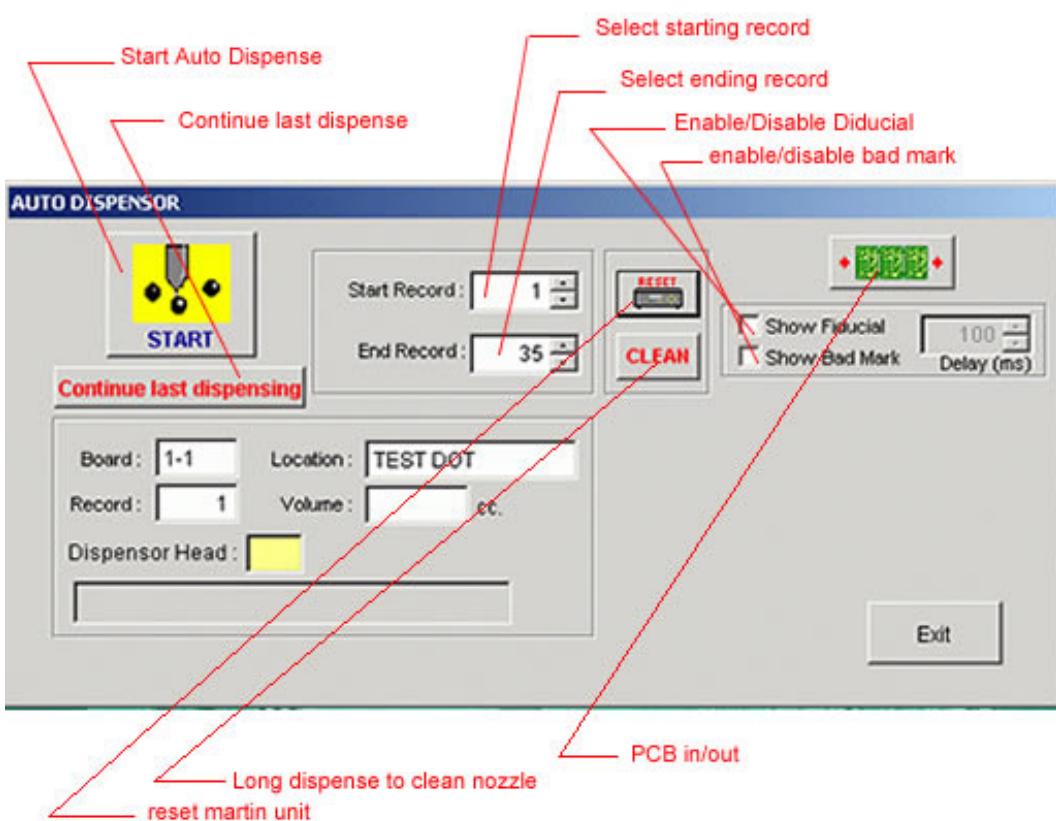
During the machine is in Auto Production, you can press of **<Esc>** key to stop or abort the

production.

## 5.2 PRODUCTION MENU - Auto Dispense



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- You can select the Starting Record & the Ending Record number for Auto Production
- Click  to start Auto Dispense
- Click  to continue last stopped dispense
- Click  to exit

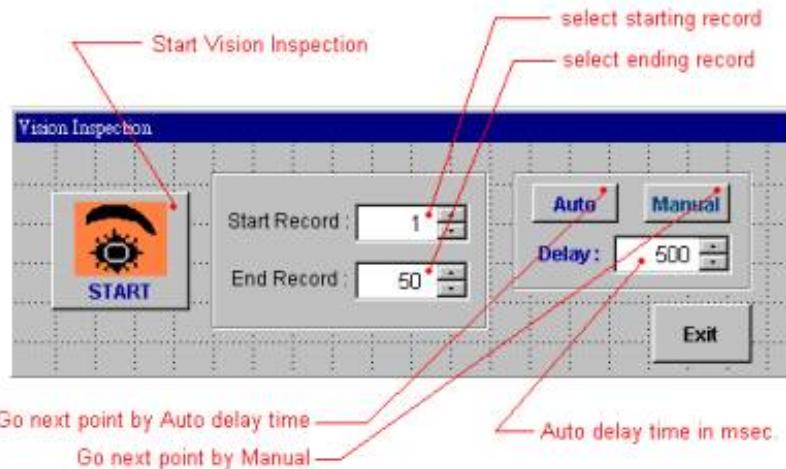
During the machine is in Auto Dispense, you can press of <Esc> key to stop or abort the

dispensing.

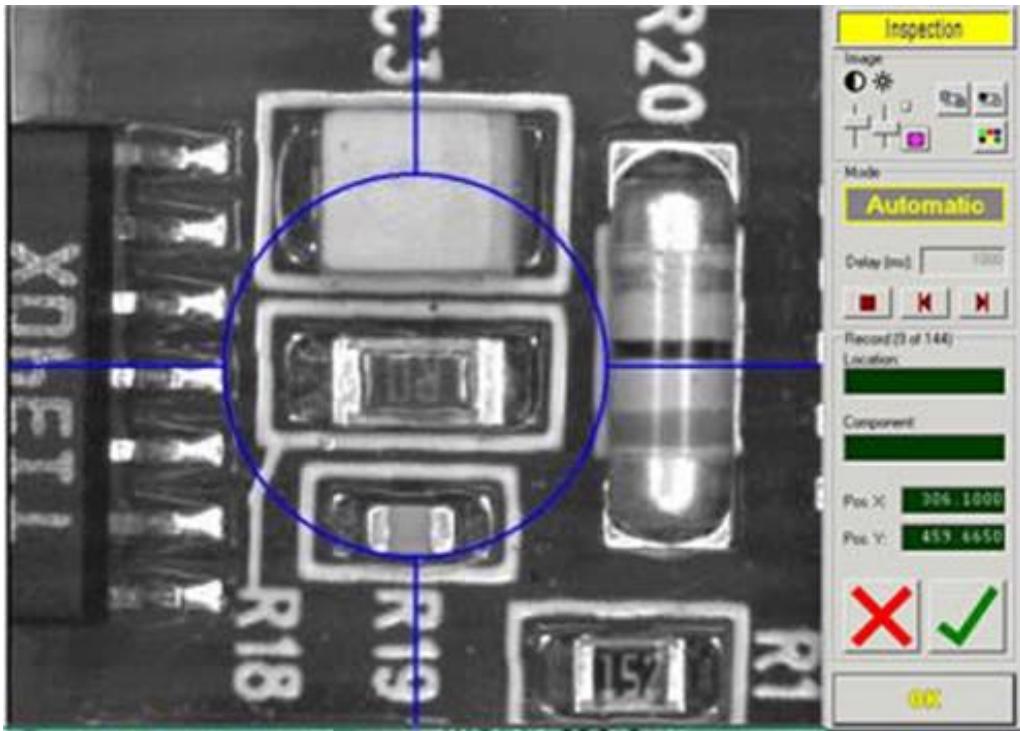
### 5.3 PRODUCTION MENU - Vision Inspection



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE  
You need to create the Vision inspection data in Learn Vision Inspection mode or convert by placement records or dispensing records.

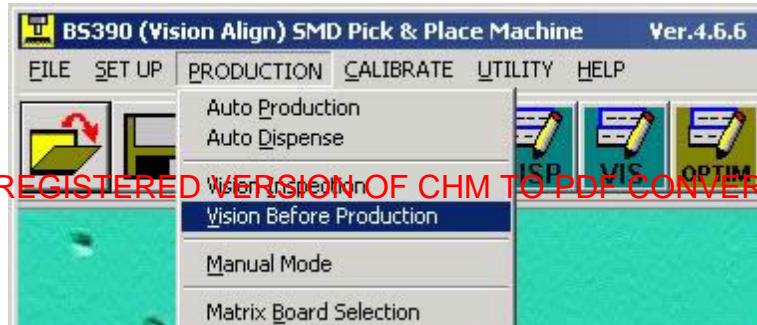


- You can select the Starting Record & the Ending Record number for Vision Inspection
- Click **Auto** to select **Go next point by Auto delay time**, the delay time can be set in msec.
- Click **Manual** to select **Go next point by Manual**
- Click **START** to start Vision Inspection
- Click **Exit** to exit



- Click indicate the record is inspected and pass ( in **Go next point by Auto delay time** , the computer will assume pass if you haven't click any button within the delay time )
- Click indicate the record is failure
- Click to go next inspection point immediately
- Click to go back previous inspection point immediately
- Click to switch between **Auto** and **Manual** go next point
- You can click button at any time to stop and exit

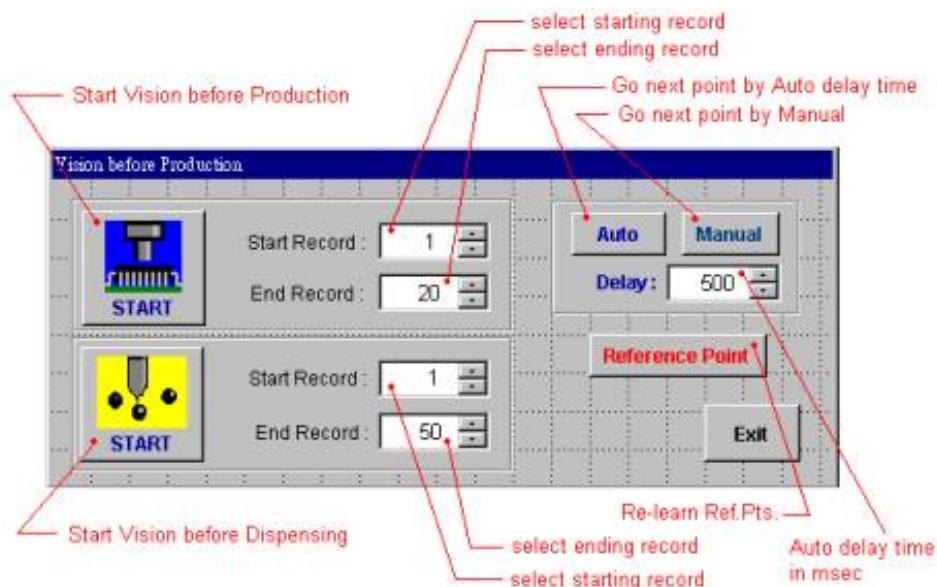
## 5.4 PRODUCTION MENU - Vision Before Production



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

This is to view each placement position or dispense position in Board 1-1 with computer simulation | and check if the setting is corrected or not.



- You can select the Starting Record & the Ending Record number for Vision before Production

- Click **Auto** to select **Go next point by Auto delay time** , the delay time can be set in msec .

- Click **Manual** to select **Go next point by Manual**

- Click **Reference Point** to re-learn the Fiducial or Board Ref.Pts .

- Click  to start Vision before Production

- Click  to start Vision before Dispensing

-Click  to exit

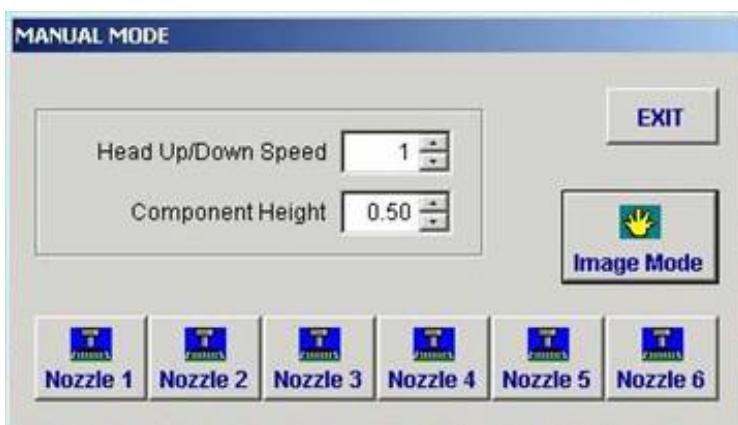
## 5.5 PRODUCTION MENU - Manual Mode



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

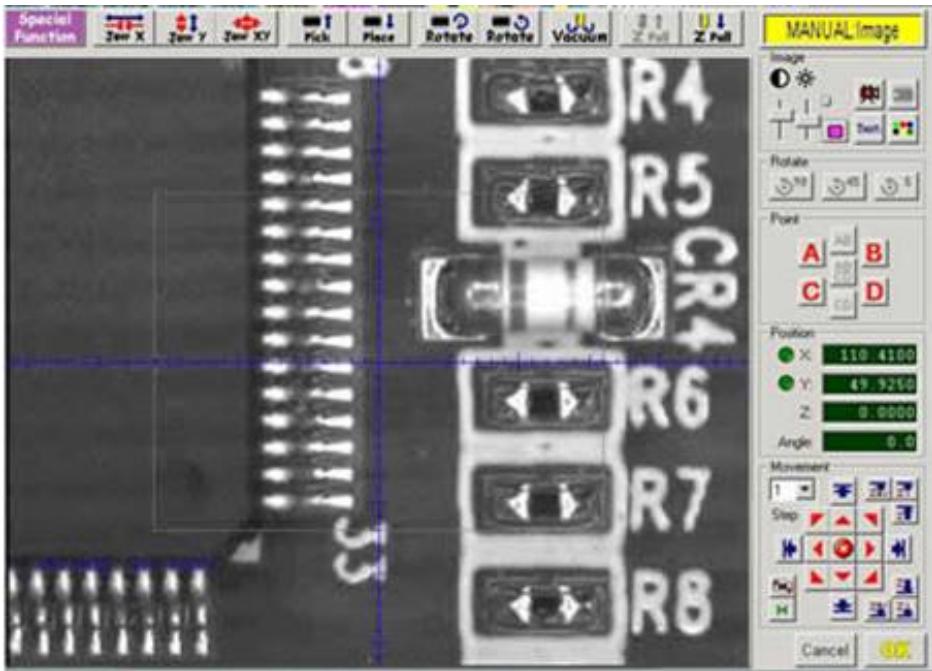
This is the Manual Production mode for the sample making.

When you enter this mode, the following message will be shown:



- You can select the Head Up/Down Speed from 1 to 5
- Set the component height/thickness
- Set the Dispenser On delay time in msec.
- Click to enter Manual mode with installed nozzle #1
- Click to enter Manual mode with installed nozzle #2
- Click to enter Manual mode with installed nozzle #3
- Click to enter Manual mode with installed nozzle #4
- Click to enter Manual mode with installed nozzle #5

- Click  to enter Manual mode with installed nozzle #6
- Click  to enter Manual mode without installed nozzle



Key functions in Manual mode:

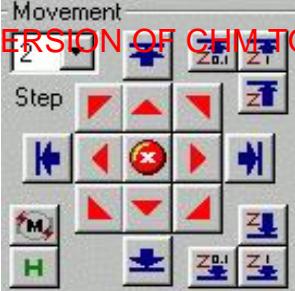
- Click  for the Jaw X testing open/close (Mechanical Jaw model only)
- Click  for the Jaw Y testing open/close (Mechanical Jaw model only)
- Click  to align component by Jaw (Mechanical Jaw model only)
- Click  to pick up a component and align component by Jaw
- Click  to place the component to PCB
- Click  to rotate in clockwise
- Click  to rotate in anti-clockwise
- Click  for vacuum on/off testing
- Click  for Z-axis up/down testing
- Use of  sliding bars can adjust the brightness & contrast of the camera
- Click  to select use of Camera-1 or Camera-2 or Camera-3
- Click  to select text on/off on the image screen

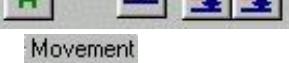
- Click  to select the text colour on the image screen
- Use of  buttons you can learn max. 4 positions, and you can find out the center of these 4 positions by clicking  button.
- Click  for Z-axis up/down 0.1mm testing
- Click  for Z-axis up/down 1mm testing

**UNREGISTERED VERSION OF GHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- Click  for Z-axis up/down testing
- Click  to unlock the X, Y axis
- Click  to select Fast/Slow constant movement when using arrow keys/buttons

**UNREGISTERED VERSION OF GHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

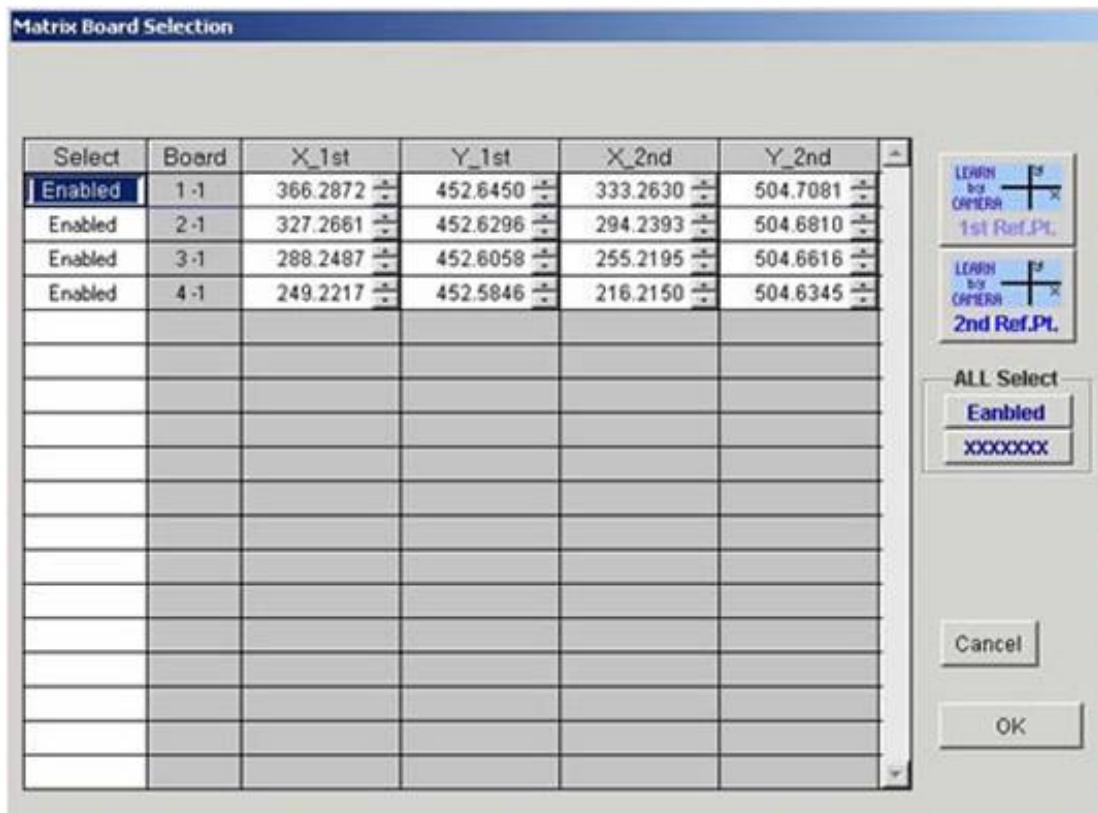


- Click  move cross mark for location
- Use of  you can select the steps movement when using arrow keys/buttons

## 5.6 PRODUCTION MENU - Matrix Board Selection



This mode is to select which small boards of the PCB matrix will do the production



- The board will do the production if select **Enable** in the Select column
- The board will not do the production if select **XXXXXX** in the Select column
- Click to view/modify the 1<sup>st</sup> Ref.Pt. position by camera
- Click to view/modify the 2<sup>nd</sup> Ref.Pt. position by camera
- Click **Enabled** to enable all Matrix Board

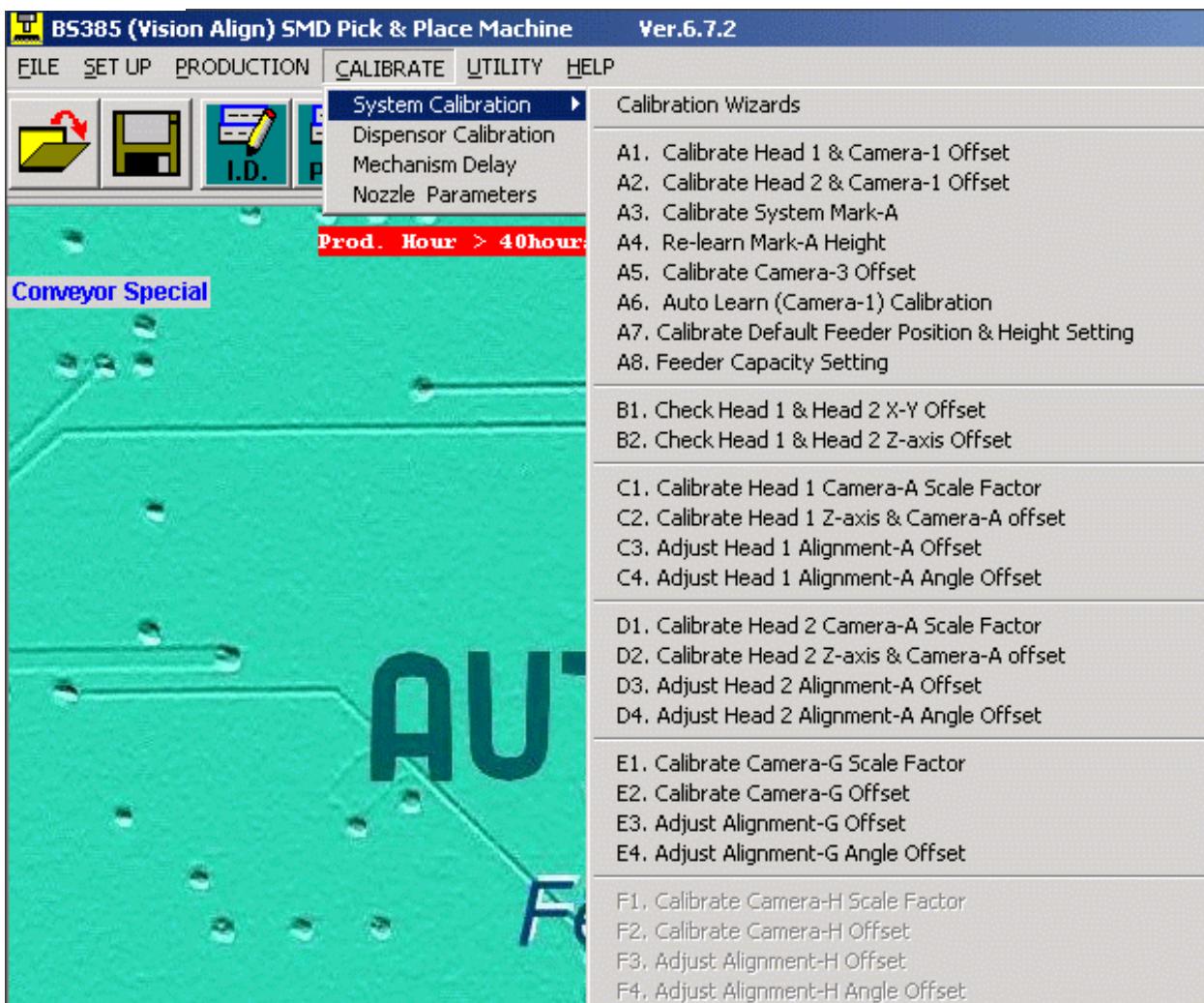
- Click  to disable all Matrix Board

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 6.0 CALIBRATE MENU (mechanism calibration)

### 6.1 ( MENU - System Calibration



There are 7 calibrations procedure in this menu: (default calibration use of Black nozzle-1)

- 6.1.1 A1. Calibrate Head 1 & Camera-1 Offset
- 6.1.2 A2. Calibrate Head 2 & Camera-1 Offset
- 6.1.3 A3. Calibrate System Mark-A
- 6.1.4 A4. Re-learn Mark A Height
- 6.1.5 A5. Calibrate Camera-3 Offset (if Camera-3 is installed)
- 6.1.6 A6. Auto Learn (Camera 1) Calibration
- 6.1.7 A7. Calibrate Default Pick Height
- 6.1.8 A8 Feeder Capacity Setting

### 6.1.1 A1 Calibrate Head 1 & Camera-1 Offset

This is to calibrate the offset between Camera-1 & the Z-axis of Head 1. This offset and **Calibrate Head 2 & Camera-1 Offset** all a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping

- Camera-1 position changed

- Camera-1 status changed

- Component placement not accurate

UNREGISTERED VERSION OF GFM TO PDF CONVERTER PRO BY THETA-SOFTWARE

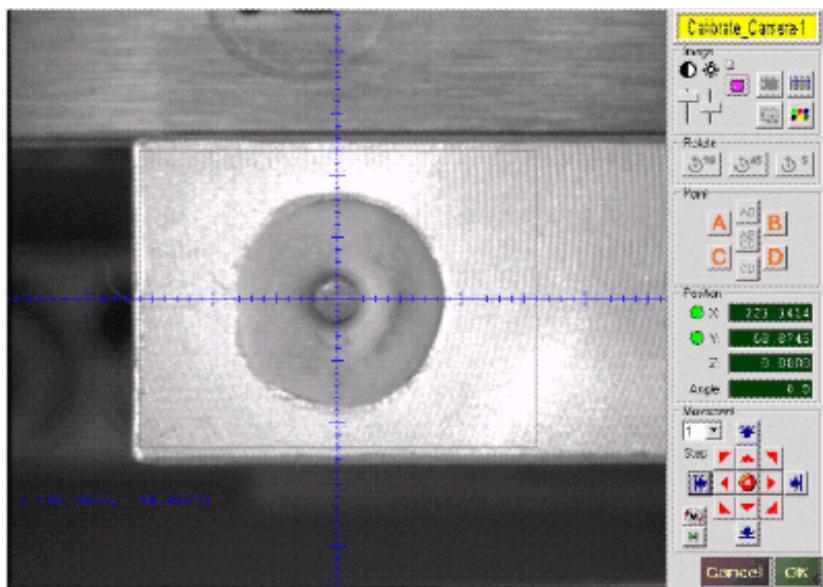
**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner of the anchor point, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode.



Adjust the cross mark to the center of the hole and click  button.  
The machine will auto remove nozzle #1 and the complete the **Calibrate Head 1 & Camera-1 Offset** procedure.

### 6.1.2 A2 Calibrate Head 2 & Camera-1 Offset

This is to calibrate the offset between Camera-1 & the Z-axis of Head 2. This offset and **Calibrate Head 1 & Camera-1 Offset** all a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping

- Camera-1 position changed

- Camera-1 focus changed

- Component placement not accurate

UNREGISTERED VERSION OF GFM TO PDF CONVERTER PRO BY THETA-SOFTWARE

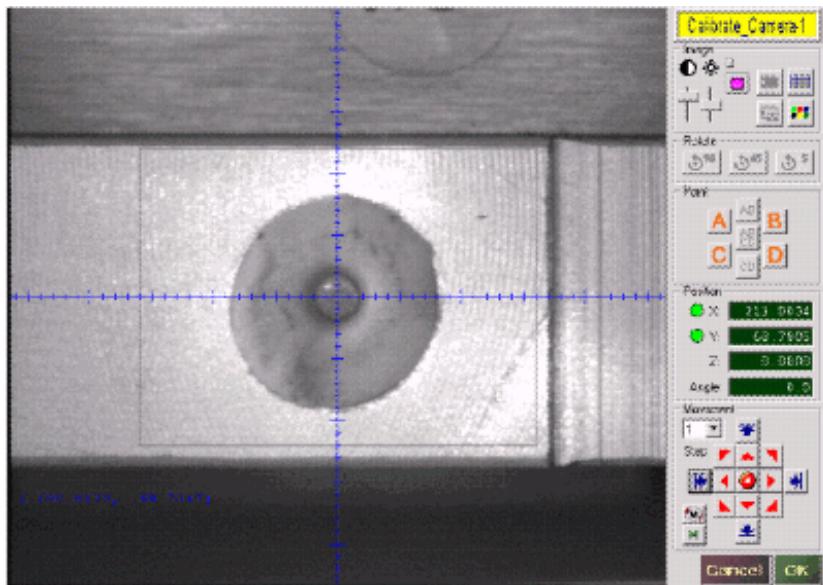
**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner of the anchor point, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode.



Adjust the cross mark to the center of the hole and click  button.

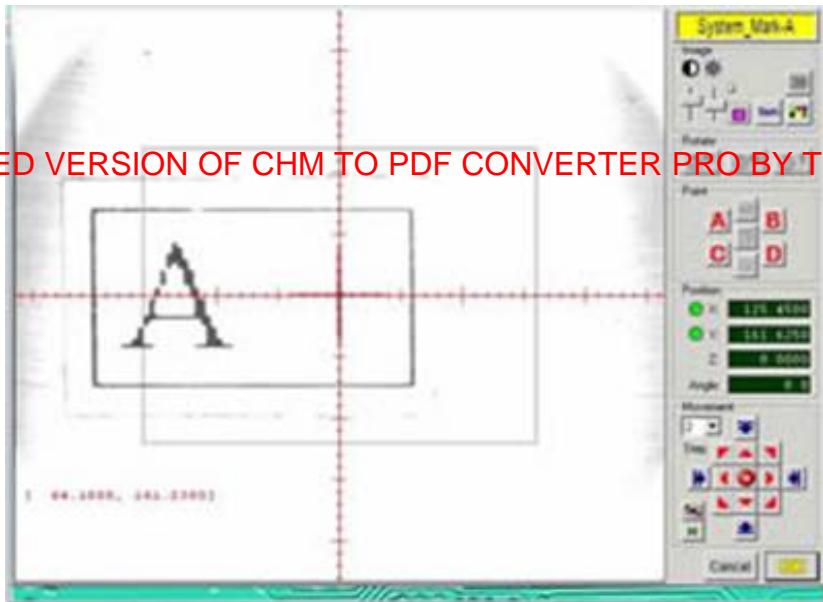
The machine will auto remove nozzle #1 and the complete the **Calibrate Head 2 & Camera-1 Offset** procedure.

### 6.1.3 A3 Calibrate System Mark-A

This is to calibrate the machine **Mark-A** position. Every time if you install the machine in a new location, you should do this calibration.

The screen will switch to image mode while it is entered, adjust the cross on the screen to the cross of **Mark-A** and click **OK** button.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



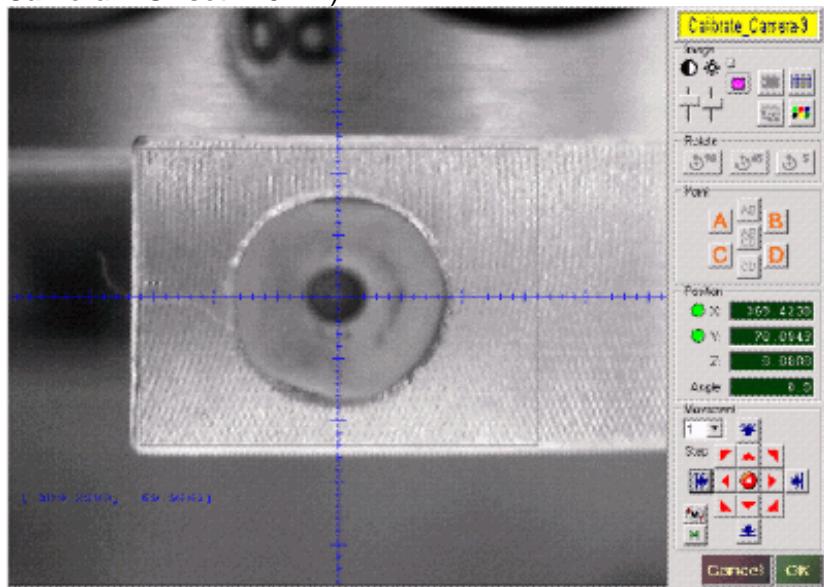
**IMPORTANT:** Calibrate Head 1 & Camera-1 Offset must be done before this calibration.

### 6.1.4 A4 Re-learn Mark A Height:

This is to re-learn the height of the Mark-A, the machine will automatically install nozzle #1 and learn the height of the Mark-A by vacuum detection.

### 6.1.5 A5 Calibrate Camera-3 Offset (if Camera-3 is installed)

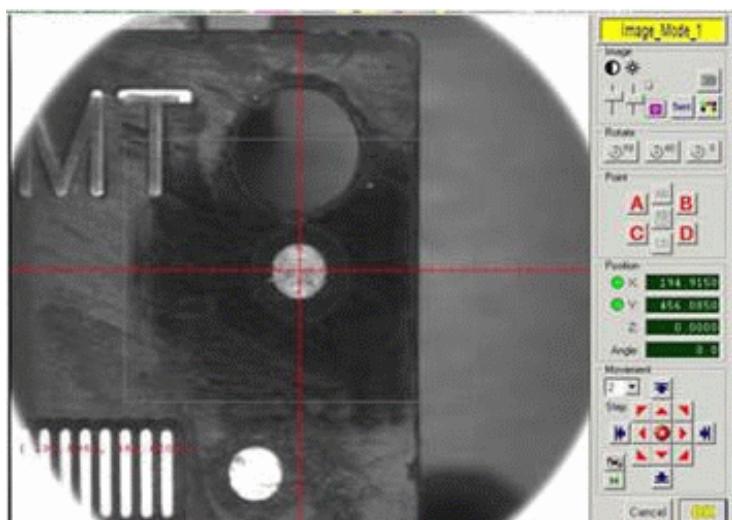
This is to calibrate the offset between Camera-3 & the Z-axis. When you enter this mode, the screen will switch to image mode, you can adjust the cross mark to the center of the hole on the **Blue Tape** and click **OK** button. (the hole on the **Blue Tape** is the same as **Calibrate Head 1 & Camera-1 Offset** in 6.1.1).



### 6.1.6 A6 Auto Learn (Camera 1) Calibration

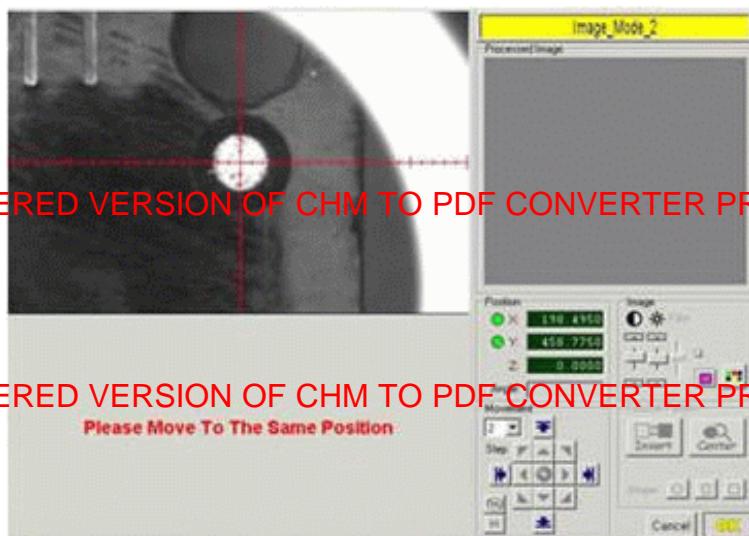
This is to calibrate the Camera-1 Auto Learn feature offset.

Image mode will be entered, select a point or a pad on a PCB, adjust the cross mark to the center and click **OK** button.



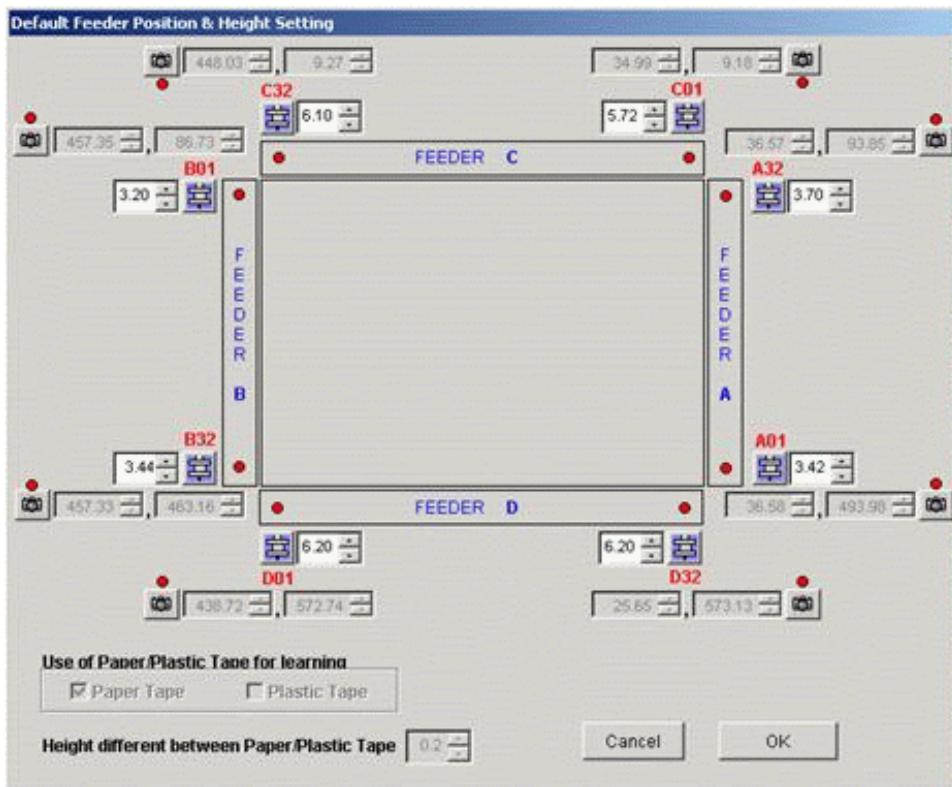
Then Image mode-2 will be entered, adjust the cross mark to the same position on the PCB and click

**OK** button.

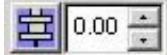


### 6.1.7 A7 Calibrate Default Pick Height

Remark: default pick height +5mm=the true pick height of learn pick



Install 4x Feeders in A01,B16,C01,D16 and click  learn Pick Height, the height will auto show



in  , then go to Learn Pick and select TAPE column use of Paper tape or Plastic tape component, machine will auto calculate the Pick Height for all feeder. This function is useful for fast production

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

	Type	LD.	Component	LIB	Pick Hgt	Tape	% Angle	X	Y	Pick	Next	Align	Res
A07	AF08				0.00		Normal	535.8000	574.8000	A	-----	N	1
A08	AF08				0.00		Normal	515.8000	574.8000	A	-----	N	1
A09	AF08				0.00		Normal	495.8000	574.8000	A	-----	N	1
A10	AF08				0.00		Normal	475.8000	574.8000	A	-----	N	1
A11	AF08				0.00		Normal	455.8000	574.8000	A	-----	N	1
A12	AF08				0.00		Normal	435.8000	574.8000	A	-----	N	1
A13	AF08			C0201	4.44	Paper	Normal	409.9750	570.8500	A	-----	A	2
A14	AF08			PO442	4.42	Paper	Normal	389.0350	570.8500	A	-----	A	1
A15	AF08			RD663	5.52	Paper	Normal	371.0350	570.8300	A	-----	A	1
A16	AF08			RD805	5.50	Paper	Normal	350.9050	571.0850	A	-----	A	1
B01	AF08			R1206	5.38	Plastic	Normal	330.9750	571.0500	A	-----	A	2
B02	AF08			SOT323	5.16	Plastic	90	311.1200	570.8500	A	-----	X	2
B03	AF08			SOT23	5.20	Plastic	270	291.1800	570.8050	A	-----	X	2
B04	AF08				0.00		Normal	275.8000	574.8000	A	-----	N	1
B05	A1	UFTB		SOP14P	5.50	Plastic	270	253.8500	586.7500	A	-----	A	3
B06	A1	UFTB		SOP14W	6.30	Plastic	270	234.0300	586.7800	A	-----	A	3
B07	AF08			PLCC8	4.00	Plastic	Normal	235.8000	574.8000	A	-----	N	1
B08	AF08				0.00		Normal	215.8000	574.8000	A	-----	N	1
					0.00		Normal	195.8000	574.8000	A	-----	N	1

#### Use of Paper/Plastic Tape for learning

Paper Tape

Plastic Tape

Use of Paper/Plastic Tape for Learning. (only for SFTA)

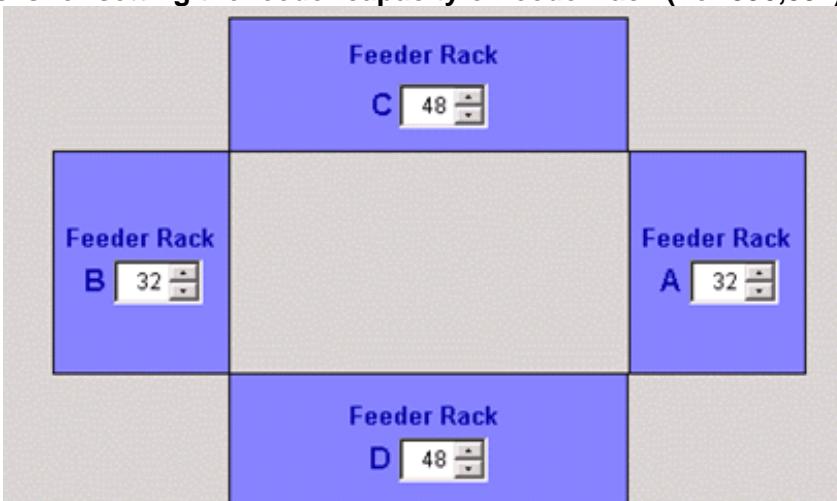
Height different between Paper/Plastic Tape

Height different between Paper/Plastic Tape. (only for SFTA)

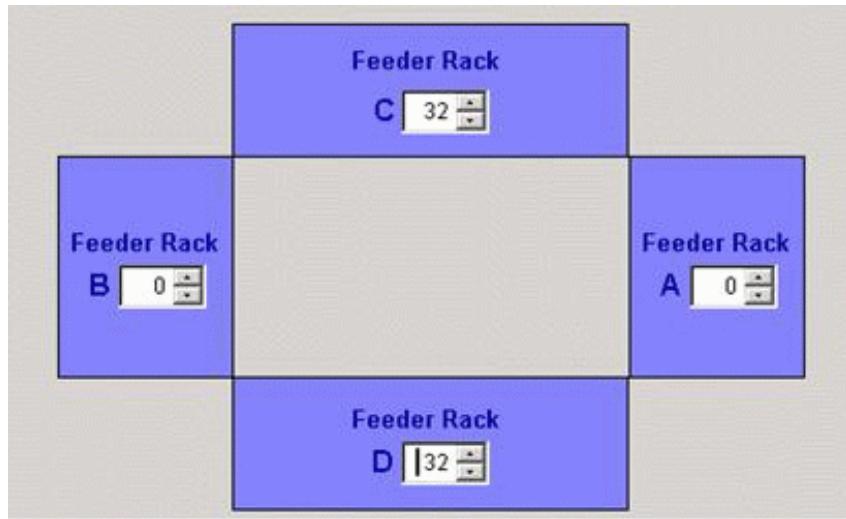
If use KFTA feeder, then user can't change above, and the height different between paper/plastic tape will be 0.2mm default.

#### 6.1.8 A8 Feeder Capacity Setting

This is for setting the feeder capacity of feeder rack (For 390,391)



This is for setting the feeder capacity of feeder rack (For 384,385,387)



**IMPORTANT: The B,C,D,E,F calibrate used only by manufacturer.**

advance System Calibration

6.1.9 B1 Check Head 1 & Head 2 X-Y Offset

6.1.10 B2 Check Head 1 & Head 2 Z-axis Offset

6.1.11 C1 Calibrate Head 1 Camera-A Scale Factor

6.1.12 C2 Calibrate Head 1 Z-axis & Camera-A Offset

6.1.13 C3 Adjust Head 1 Alignment-A Offset

6.1.14 C4 Adjust Head 1 Alignment-A Angle Offset

6.1.15 D1 Calibrate Head 2 Camera-A Scale Factor

6.1.16 D2 Calibrate Head 2 Z-axis & Camera-A Offset

6.1.17 D3 Adjust Head 2 Alignment-A Offset

6.1.18 D4 Adjust Head 2 Alignment-A Angle Offset

6.1.19 E1 Calibrate Camera-G Scale Factor

6.1.20 E2 Calibrate Camera-G Offset

6.1.21 E3 Adjust Alignment-G Offset

6.1.22 E4 Adjust Alignment-G Angle Offset

6.1.23 F1 Calibrate Camera-H Scale Factor

6.1.24 F2 Calibrate Camera-H Offset

6.1.25 F3 Adjust Alignment-H Offset

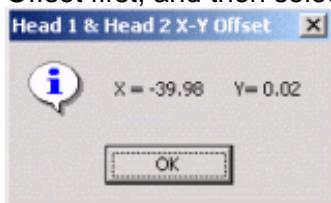
6.1.26 F4 Adjust Alignment-H Angle Offset

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

### **6.1.9 B1 Check Head 1 & Head 2 X-Y Offset**

Please Calibrate A1, Calibrate Head 1 & Camera-1 Offset and A2. Calibrate Head 2 & Camera-2 Offset first, and then select B1. Check Head 1 & Head 2 X-Y offset.

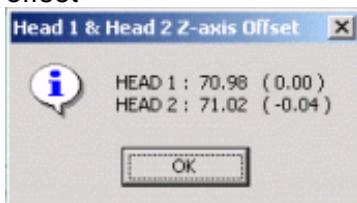


For 391 machine, X direction is  $40 \pm 0.04$ . Y direction is  $0 \pm 0.04$

For 384 machine, X direction is  $40 \pm 0.04$ . Y direction unavailable.

### **6.1.10 B2 Check Head 1 & Head 2 Z-axis Offset**

Please calibrate A4. Re-learn mark A Height first, and then elect B2 check Head 1 & 2 Z-axis offset

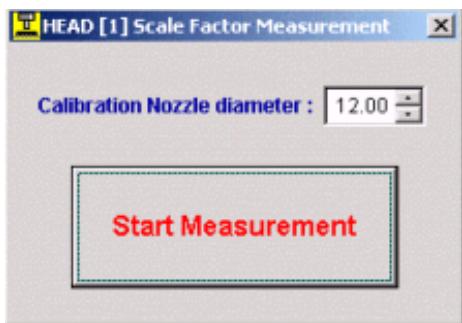


Normally, the offset is control in 0.06..

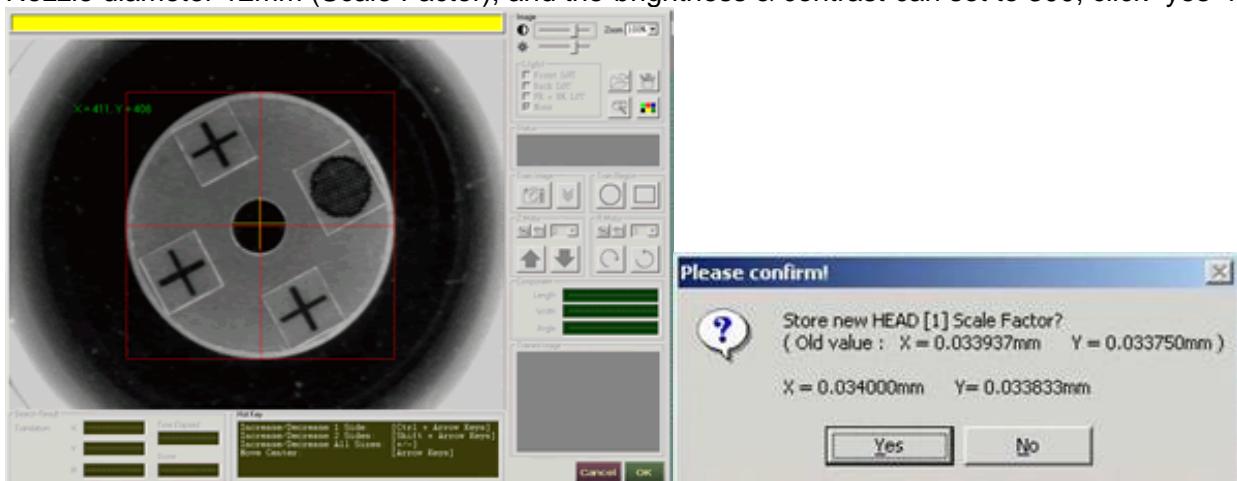
### 6.1.9 C1 Calibrate Head 1 Camera-A Scale Factor

This is to calibrate Camera-A Scale Factor, and then use this Scale Factor to calibrate Z-axis, (This calibration just for hard disk DATA error or instead of Camera-A, usually machine already calibrated finish in the factory, so no need to calibrate again)

First setup the Nozzle diameter (Scale Factor), and then click **Start Measurement** for calibration (please install the Calibration Nozzle (P/N: NZ-CAL02))



Use "田" to select the edge of Calibration Nozzle (P/N: NZ-CAL02), make sure the "田" diameter is the Nozzle diameter 12mm (Scale Factor), and the brightness & contrast can set to 300, click "yes" for save.

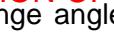


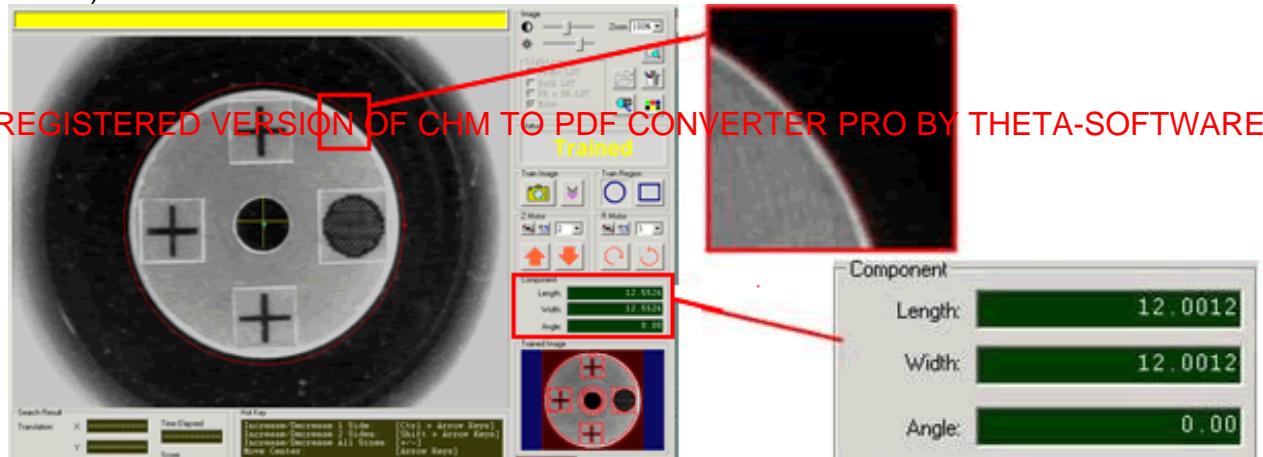
### 6.1.10 C2 Calibrate Head 1 Z-axis & Camera-A Offset

This is to use the Calibration Nozzle (P/N: NZ-CAL02) to learn the Head 1 Z-axis & Camera-A offset

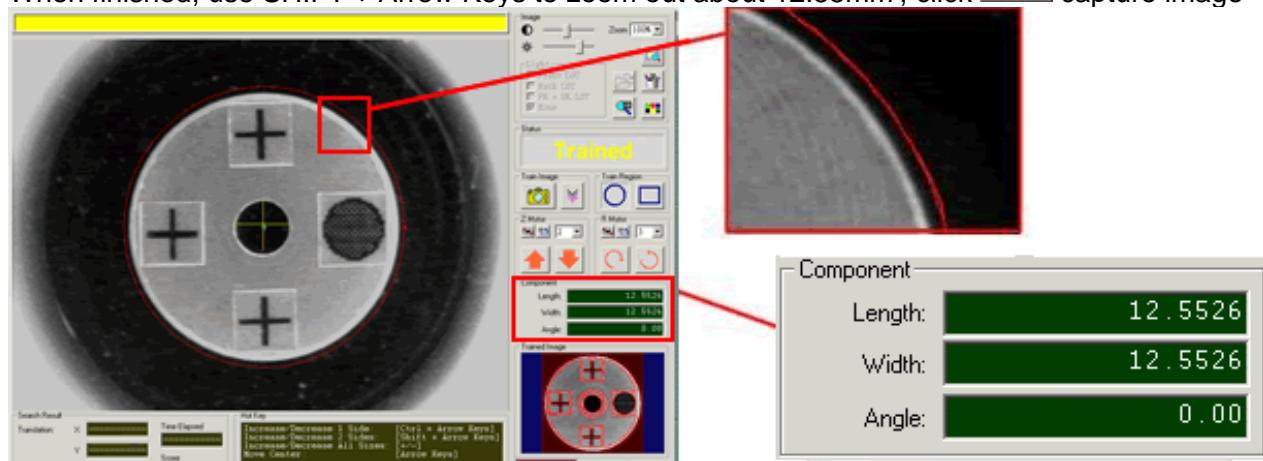
- a. select this head 1 will auto down, manual Install the Nozzle and click  below frame will be show. (only for new Calibration Nozzle (P/N: NZ-CAL02), if have old nozzle image please go to "b" )

#### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Click  for change angle, Use  select the Nozzle and check the diameter whether 12mm (Scale Factor)

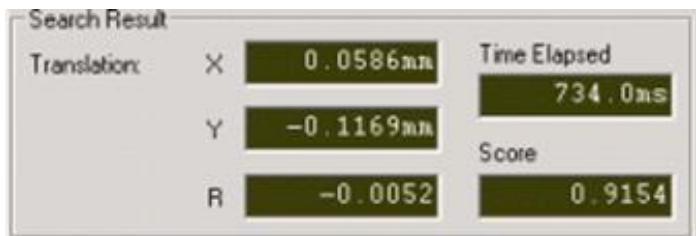
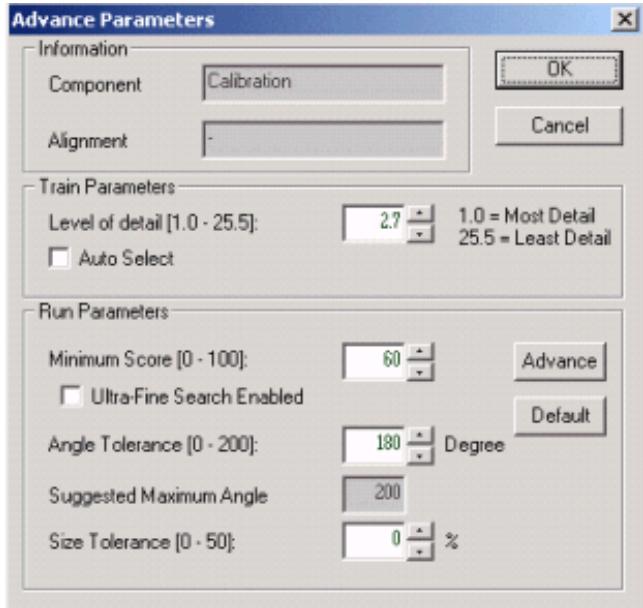


When finished, use SHIFT + Arrow Keys to zoom out about 12.55mm , click  capture image

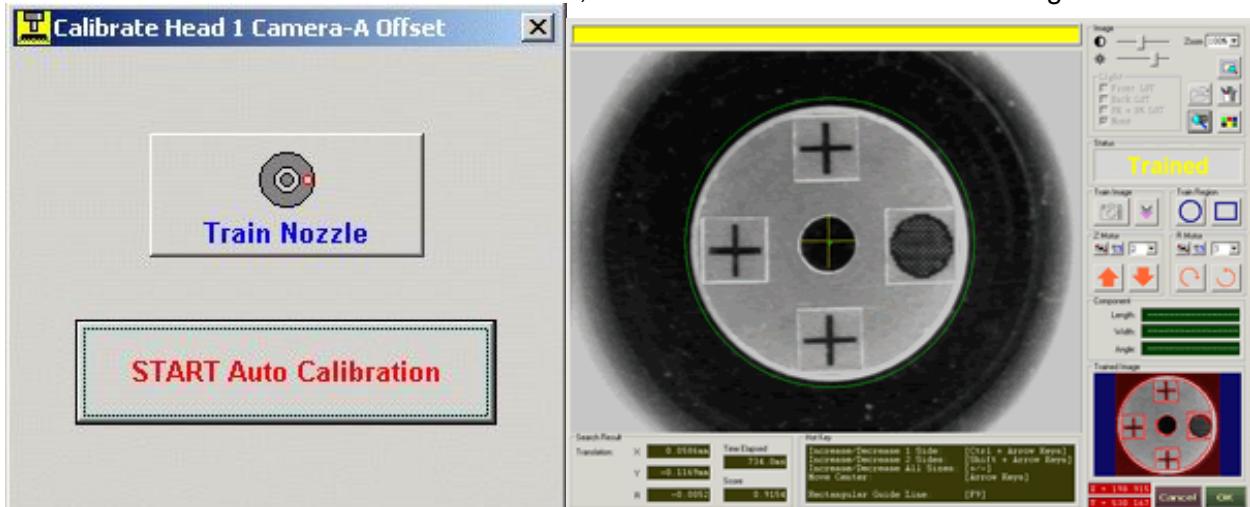


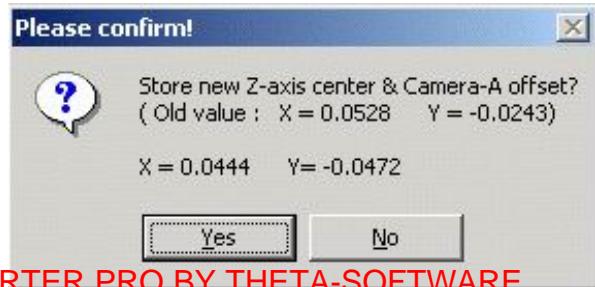
 to test the train image , at the same time , must adjust the brightness & contrast 

 parameter, without fail to let <img alt="nozzle image" data-bbox="355 765 445 825} <img alt="crosshair image" data-bbox="455 765 545 825} <img alt="circle image" data-bbox="555 765 645 825} <img alt="plus image" data-bbox="655 765 745 825} four reference point can clear to show in the image , the Time Elapsed must 500-1000ms , R is about +/-0.01</p>



b. Select **START Auto Calibration** for auto calibration, nozzle will auto circumrotate 360degree for trained.

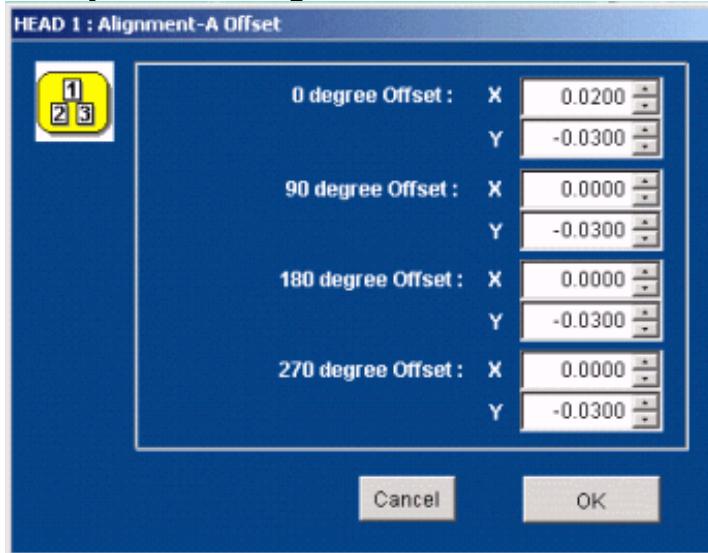




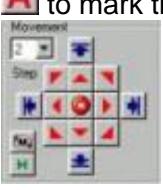
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

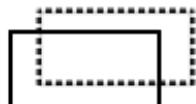
### 6.1.11 C3 Adjust Head 1 Alignment-A Offset



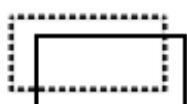
- 1) Program a P&P file for IC.
- 2) Production
- 3) In learn place frame click  to check the component position
- 4) Click  to mark the point that need to production

- 5) Click  to check the offset, on left upper will show the offset.
- 6) Record, the offset.

For examples:



X=0.04 + offset  
Y=0.01 + offset



X=0.04 - offset  
Y=0.01 + offset



X=0.04 - offset  
Y=0.01 - offset



X=0.04 + offset  
Y=0.01 - offset

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

position for component  
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE  
position for need to production

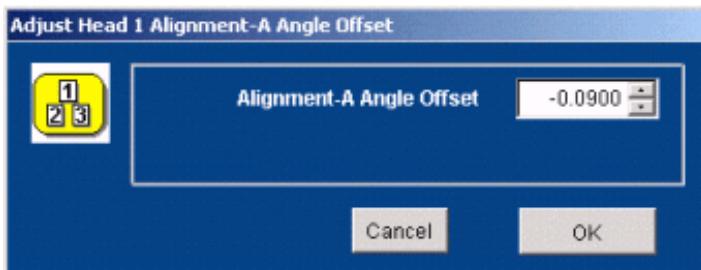
0.04 is the previous X offset

0.01 is the previous Y offset

Remark: Production more times for check the offset, all offset please Control in +/-0.18. 90 degree, 180 degree, 270 degree offset can set after calibrate C4. Adjust Head 1 Alignment – A Angle offset

#### 6.1.12 C4 Adjust Head 1 Alignment-A Angle Offset

This is to Adjust Head 1 Alignment - A Angle offset, can calibrate with C3. adjust Head 1 Alignment -A offset.



Base 0.09 to adjust the offset, don't over 1.00

Clock wise adjust -0.09. counter dock wise adjust then +0.09

If already calibrate angle offset, then the 90 degree, 180 degree, 270 degree offset for C3 do not need to calibrate..

#### 6.1.13 D1 Calibrate Head 2 Camera-A Scale Factor

Please refer C1 for calibration.

#### 6.1.14 D2 Calibrate Head 2 Z-axis & Camera-A Offset

Please refer C2 for calibration

#### 6.1.15 D3 Adjust Head 2 Alignment-A Offset

Please refer C3 for calibration

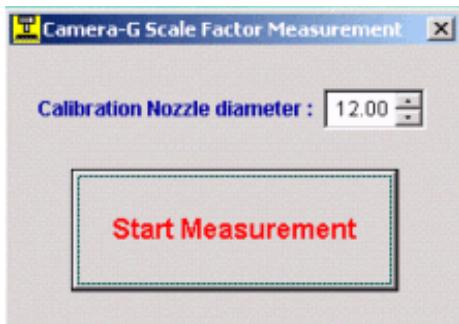
#### 6.1.16 D4 Adjust Head 2 Alignment-A Angle Offset

Please refer C4 for calibration

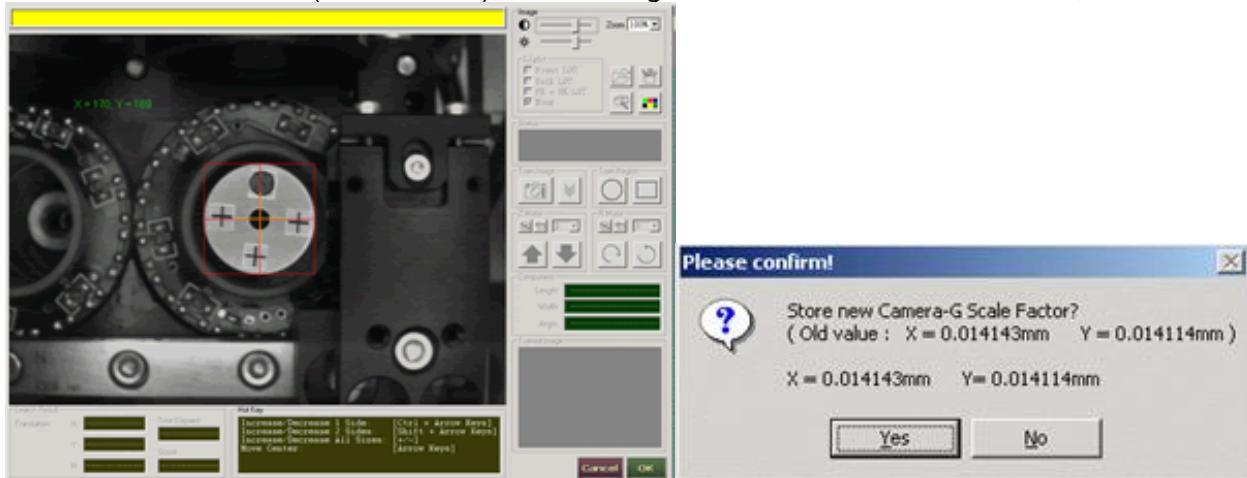
### 6.1.17 E1 Calibrate Camera-G Scale Factor

This is to calibrate Camera-G Scale Factor (This calibration just for hard disk DATA error or instead of Camera-A, usually machine already calibrated finish in the factory, so no need to calibrate again)

First setup the Nozzle diameter (Scale Factor), and then click  for calibration (please install the Calibration Nozzle (P/N: NZ-CAL02))



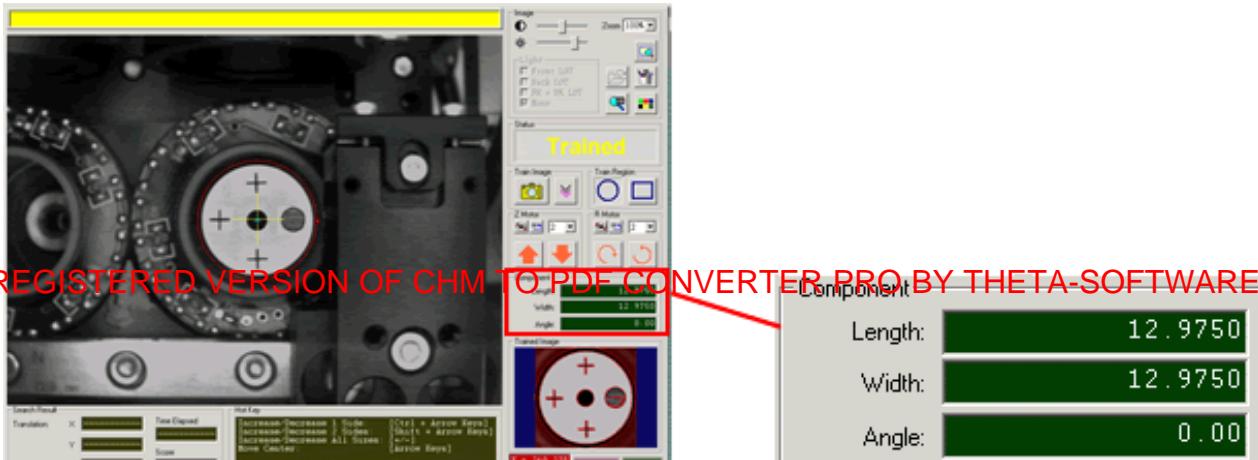
Use "田" to select the edge of Calibration Nozzle (P/N: NZ-CAL02), make sure the "田" diameter is the Nozzle diameter 12mm (Scale Factor), and the brightness & contrast can set to 300, click "ok" for save.



### 6.1.18 E2 Calibrate Camera-G Offset

a. select this head 1 will auto down, manual Install the Nozzle and click  below frame will be show. (only for new Calibration Nozzle (P/N: NZ-CAL02), if have old nozzle image please go to "b" )

Click  for change angle, Use  select the Nozzle and check the diameter whether 12.97mm (Scale Factor)



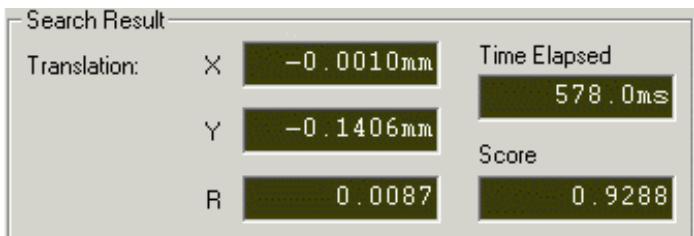
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

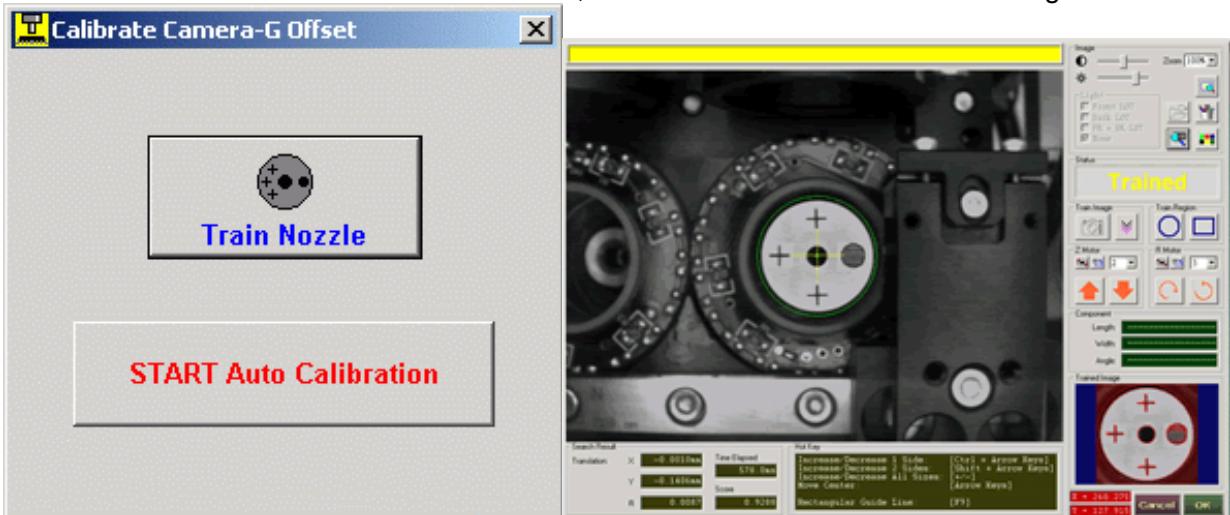
use



to test the train image, at the same time, must adjust the brightness & contrast  , usually brightness is set between 200~300, contrast is set between 500~600, the Time Elapsed must 500-1000ms , R is about +/-0.01

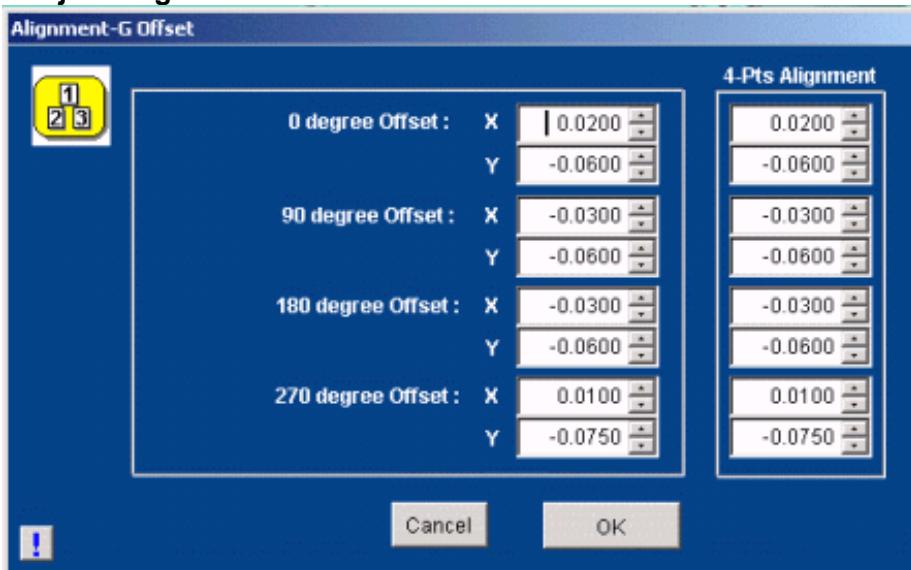


b. Select **START Auto Calibration** for auto calibration, nozzle will auto circumrotate 360degree for trained.

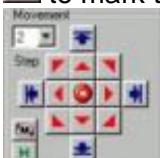


c. After auto calibration, please click "YES" button to save

#### 6.1.19 E3 Adjust Alignment-G Offset



- 1) Program a P&P file for IC.
- 2) Production
- 3) In learn place frame click to check the component position
- 4) Click to mark the point that need to production



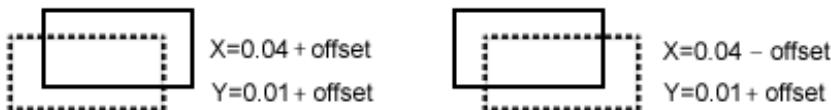
- 5) Click to check the offset, on left upper will show the offset.

6) Record the offset.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

For example: (opposite with the alignment-A)



----- position for component

\_\_\_\_\_ position for need to production

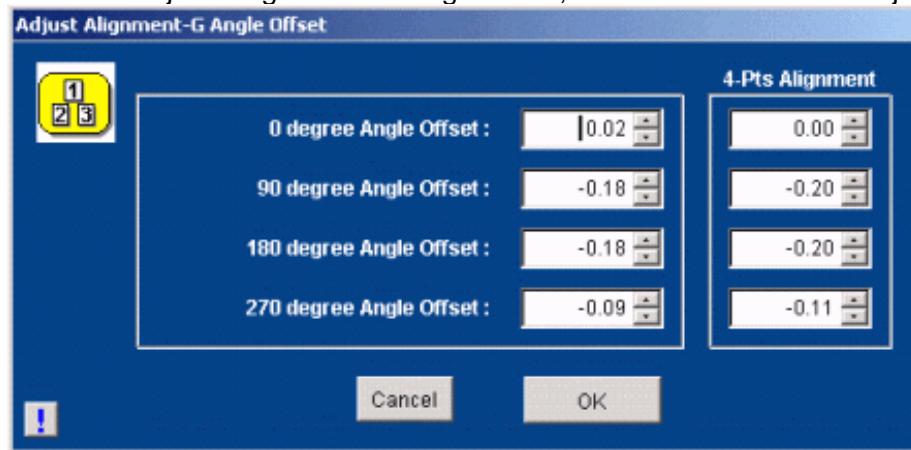
0.04 is the previous X offset

**0.01 is the previous Y offset**

Remark: Production more times for check the offset, all offset please Control in +/-0.18. 90 degree, 180 degree, 270 degree offset can set after calibrate C4. Adjust Head 1 Alignment -A Angle offset.

#### 6.1.20 E4 Adjust Alignment-G Angle Offset

This is to Adjust Alignment -G Angle offset, can calibrate with E3. adjust Alignment -A offset.



Base 0.09 to adjust the offset, don't over 1.00

Clock wise adjust -0.09. counter dock wise adjust then +0.09

If already calibrate angle offset, then the 90 degree, 180 degree, 270 degree offset for C3 do not need to calibrate.

#### 6.1.21 F1 Calibrate Camera-H Scale Factor

Please refer E1 for calibration

#### 6.1.22 F2 Calibrate Camera-H Offset

Please refer E2 for calibration

#### 6.1.23 F3 Adjust Alignment-H Offset

Please refer E3 for calibration

#### 6.1.24 F4 Adjust Alignment-H Angle Offset

Please refer E4 for calibration

### 6.2 CALIBRATE MENU - Dispenser Calibration

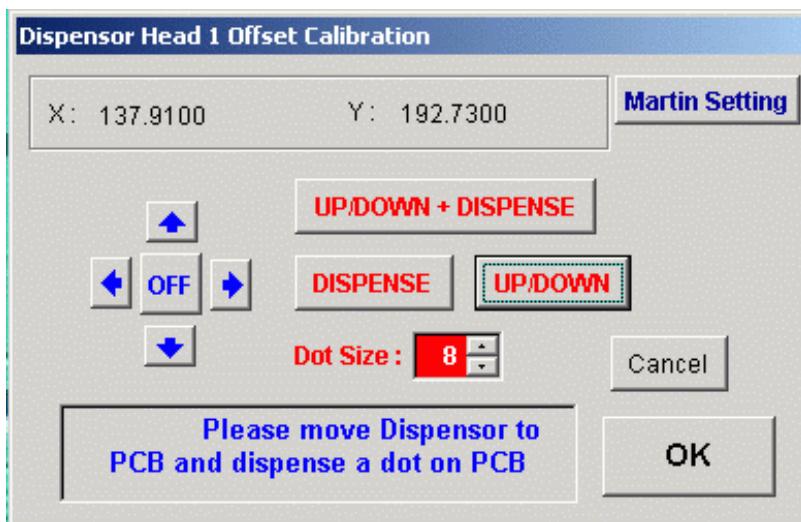
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

This is to calibrate the offset between the Dispenser & the Camera-1.

Dispenser Head 1 setting



**1st step is to calibrate the dispenser position:**

- Prepare the Dispenser Unit and a PCB
- Move the Dispenser Head to any point on the PCB and ready to dispense a small dot
- Click **UP/DOWN + DISPENSE** button to dispense a dot with Up/Down control
- Click **UP/DOWN** button to move down the Dispenser
- Adjust the dot size from 1(smallest) to 9(largest)
- Click **DISPENSE** button to dispense a dot
- Click **Martin Setting** for check the MP-3S setting
- Click **OK** to exit and the screen will switch to image mode

**Martin Dispenser Setting: (use MP-x dispenser only)**

**MP-2 Dispensor Setting**

Medium No.	Display	Material (typical samples)
1	Paste	metal-filled adhesives
2	100000 mPas	epoxy resin adhesives
3	50000 mPas	thin epoxy adhesives
4	10000 mPas	coatings potting compounds
5	1000 mPas	castor oil lubricant oil
6	500 mPas	watchmakers oil heating oil
7	100 mPas	cyanoacrylate adhesives (gap > 0.1mm)
8	10 mPas	cyanoacrylate adhesives (gap < 0.1mm)
9	1 mPas	watery solutions
10	0.3 mPas	alcohols
* 12	Glue SMD	MARTIN SMD adhesive
* 13	Paste SFP	MARTIN SFP solder paste
* 14	Paste FP	MARTIN FP solder paste

**\* - For new model only**

Medium No.  Temperature  Viscosity

**SET MATRIN**

**Cancel**

**OK**

**2nd step is to calibrate the offset between the Dispenser & the Camera 1:**

- Adjust the cross mark to the center of the dot on the PCB then click **OK** to exit



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

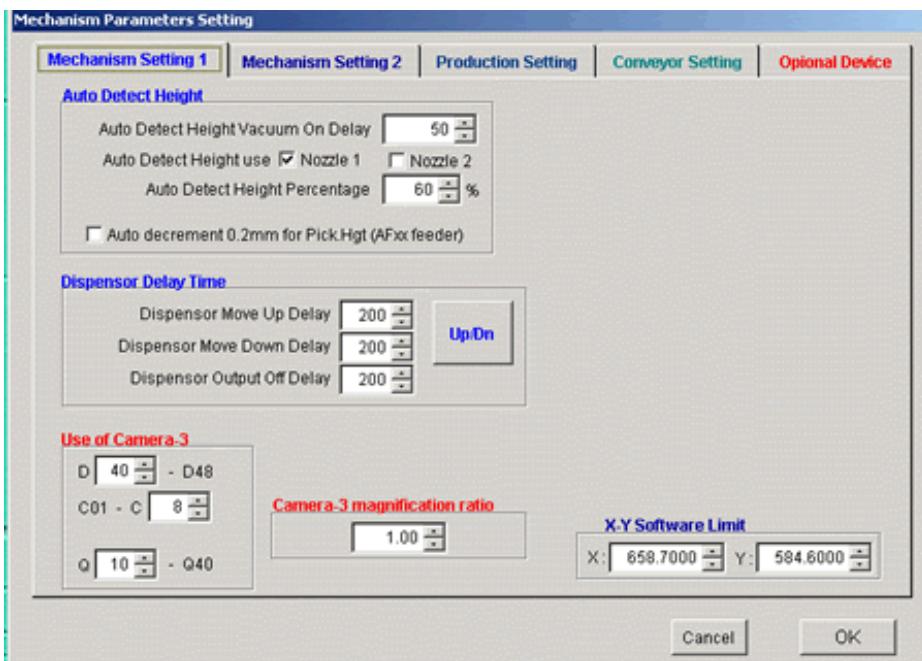
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Dispenser Head 2 is same

## 6.3 CALIBRATE MENU - Mechanism Delay



### Mechanism Setting - 1



- (1) **Auto Detect Height Vacuum On Delay:** Delay time between move down Z-axis one step and detect the vacuum sensor in Auto Detecting height feature.
- (2) **Auto Detect Height use nozzle:** select use nozzle 1 or 2 for the Auto Detecting height feature.
- (3) **Auto Detect Height Percentage:** set the vacuum sensor detection %
- (4) **Dispenser Move Up Delay:** Delay time for dispenser move up
- (5) **Dispenser Move Down Delay:** Delay time for dispenser move down
- (6) Click **Up/On** button can test the Dispenser Move Up/Down Delay time  
**Dispenser Output Off Delay:** Delay time between dispenser output turn off and dispenser move up  
(DP-2 Dispenser option only)
- (7) In **X-Y Software Limit** set the X,Y software limit

- (8) **Camera-3 magnification ratio** set camera-3 magnification
- (9) **Use of Camera-3** set which feeder use camera-3 to learn

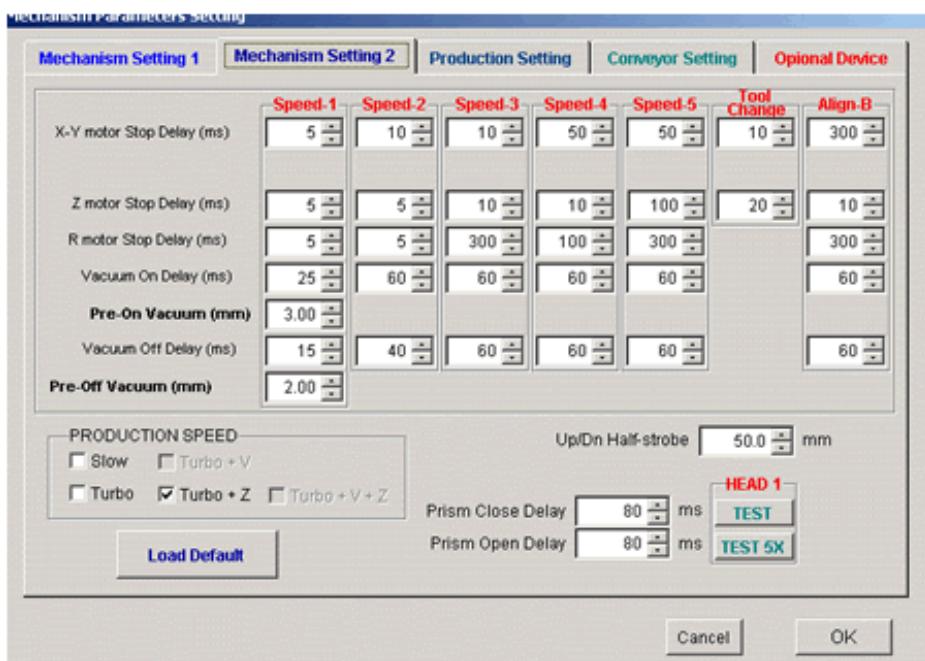
**Remarks:** The mechanical Jaw & the Dispenser Up/Down are designed using of pneumatic cylinder, and the speed of the cylinder is controlled by the Air Flow Switches. Once the Air Flow Switch is adjusted, the software delay time has to be changed.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE

## Mechanism Setting - 2

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE

This is to set the mechanical delay time in **Production Speed-1 & Production Speed-2~5 (Head Up/Down speed set in Learn Pick mode)**

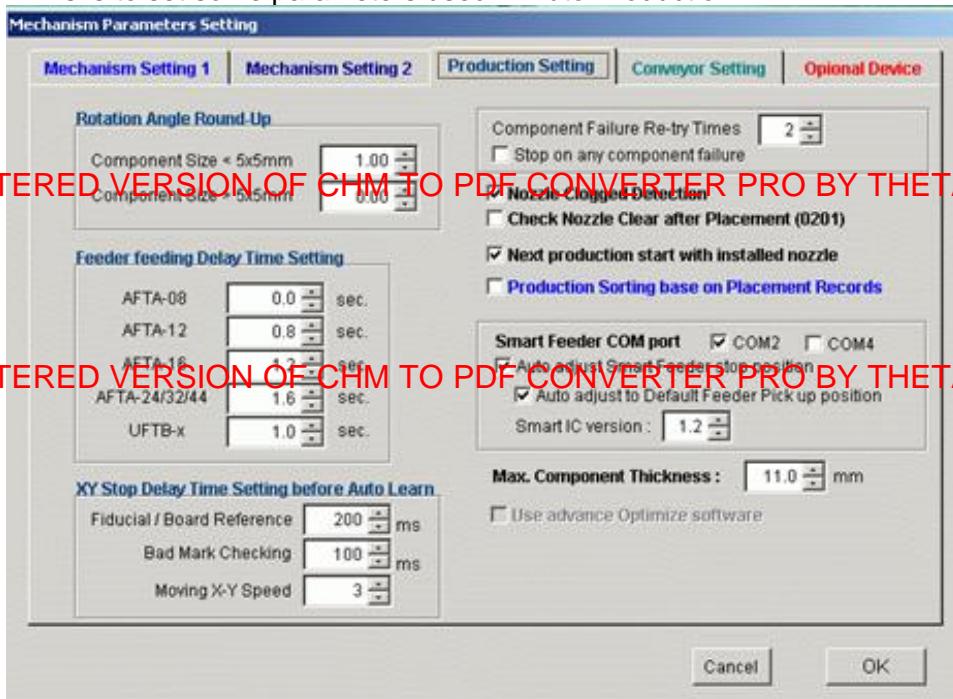


- (1) **X-Y motor Stop Delay:** Delay time after X-Y motor stop
- (2) **2nd Placement Stop Delay:** Delay time after turn off vacuum to place component
- (3) **Z motor Stop Delay:** Delay time after Z axis motor stop
- (4) **R motor Stop Delay:** Delay time after rotate motor stop
- (5) **Vacuum On Delay:** Delay time after turn on vacuum to pick component
- (6) **Pre-on Vacuum (mm):** Vacuum on before Z reach component (set 0 to disable this feature)
- (7) **Vacuum Off Delay:** Delay time after turn off vacuum to pick component
- (8) **Pre-off Vacuum (mm):** Vacuum off before Z reach PCB (set 0 to disable this feature)

- (9) **PRODUCTION SPEED:** Slow speed used in case of X-Y axis motors get problems
- (10) **Up/Dn Half-strobe:** In Auto Production, after place the component on the PCB, the Z-axis will move up to this level (not the most upper level) and move to the feeder position to pick up next component. This is used to increase the production speed.
- (11) **Prism Close Delay:** Delay time for Prism close
- (12) **Prism open Delay:** Delay time for Prism open

## Mechanism Setting - 3

This is to set some parameters used in Auto Production



### (1) Rotation Angle Round-Up (Component Size < 5 X 5):

For components size < 5x5mm: The machine do the reference point recognition before Auto Production, if the PCB has the angle shifted > set angle (e.g. 1.00 degree), the machine will place the component with adding this PCB shifted angle, otherwise the machine will not take care this PCB shifted angle for the placement.

### (2) Rotation Angle Round-Up (Component Size > 5 X 5)

For components size > 5x5mm: The machine do the reference point recognition before Auto Production, if the PCB has the angle shifted > set angle (e.g. 1.00 degree), the machine will place the component with adding this PCB shifted angle, otherwise the machine will not take care this PCB shifted angle for the placement.

**Remarks:** - 2 points reference used only

- This rotation angle round up normally is set to 1 degree for small components & 0 degree for IC, since the IC components need high placement accuracy. If you set 0 degree also for small components, the production speed may be slow down, due to the machine needs to take care the small angle rotation for every component placement.

### (3) Component Failure Re-try Times

For the Feeder programmed with next feeder: In Auto Production, pick up failure or align failure, the machine will re-try to pick up the component again, and this parameter is to set how many re-try times.

### (4) Stop on any component

Enable stop on any component function will stop when pick up fail, if not select, machine will auto pick up next feeder, will back to pick up the error feeder until program finish, this function only for 0201 production.

**(5) Nozzle Clogged Detection**

This is to enable/disable the machine detect nozzle clog after install a nozzle

**(6) Check Nozzle Clear after Placement(0201)**

Set Check Nozzle Clear after Placement (0201), this will auto check whether it still have component stick on the nozzle after placement. In case the component sticking in the nozzle, it will go to the (Nozzle 4) waste Component Location to clear the nozzle by SPONGE and then do the next pick up.

**(7) Next Production start with installed nozzle**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

If enable this, Next production will start with the installed nozzle

If disable this, next production will start with the smallest nozzle

Since our nozzle 4 (for 0201) size is smaller than the other nozzle, and must place 0201 component first otherwise will place fail due to height or position wrong of other component.

**(8) Production sorting base on placement records**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

VL machine only

**(9) Smart feeder COM port**

When enable Smart Feeder function in software, direct select COM2 can setup and production smart feeder, COM4 port only for laser machine and must install COM port card.

**(10) Auto adjust Smart Feeder stop position ( For Smart Feeder only )**

This is to enable the auto correction of the pick up position due to the movement of component inside the paper tape during advancing the feeder.

**(11) Auto re-adjust to default feeder pick up position (For Smart Feeder only)**

This is to re-adjust the feeder pick up position when install a new feeder

**(12) Smart IC Version (For Smart Feeder only)**

This is to set the Smart IC version for Smart Feeder

**(13) Max. Component Thickness**

This is to setup the component thickness.

**(14) Feeder feeding Delay Time Setting**

This is to set the different type of feeders feeding time.

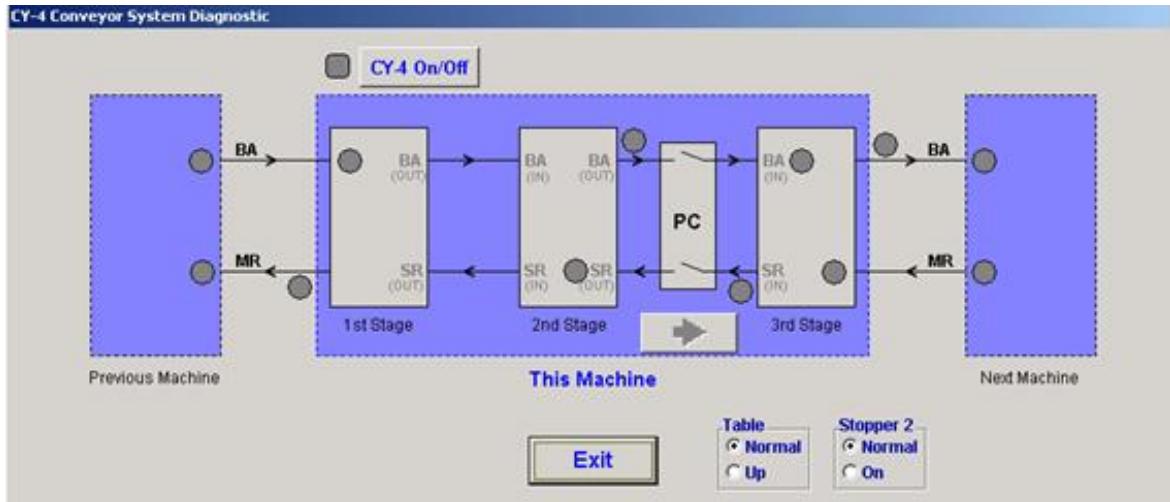
**Remarks:** If this parameter is set too small, the machine may not pick up the component due to the next component on the feeder is not in the standby position.

**(15) XY Stop Delay Time Setting before auto learn**

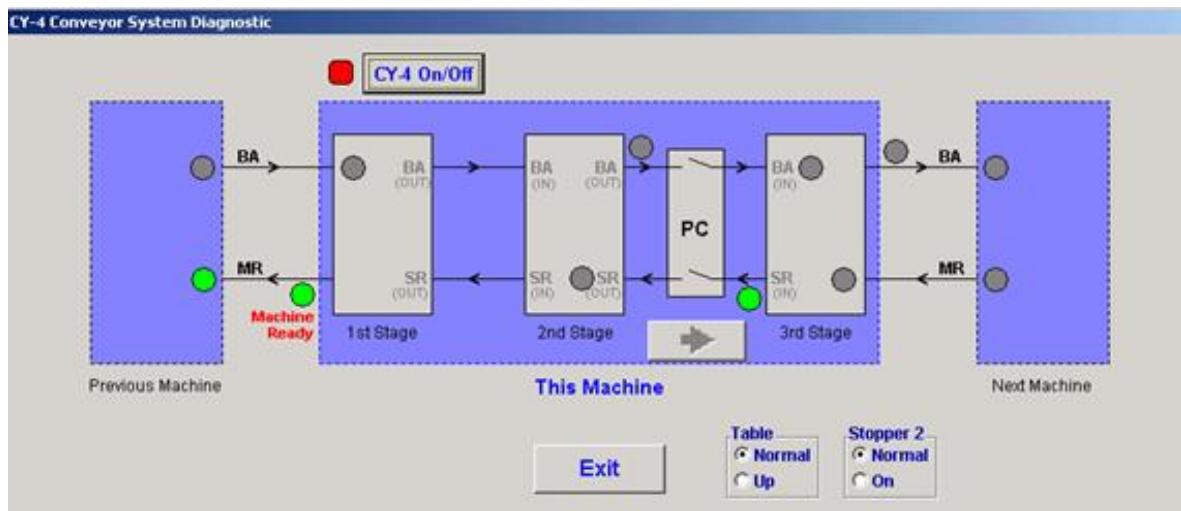
This is to set the time for learn reference and bad mark check during production, this is for change the speed for Auto learn reference

## Mechanism Setting – 4

This is the diagnostic testing of the conveyor system.



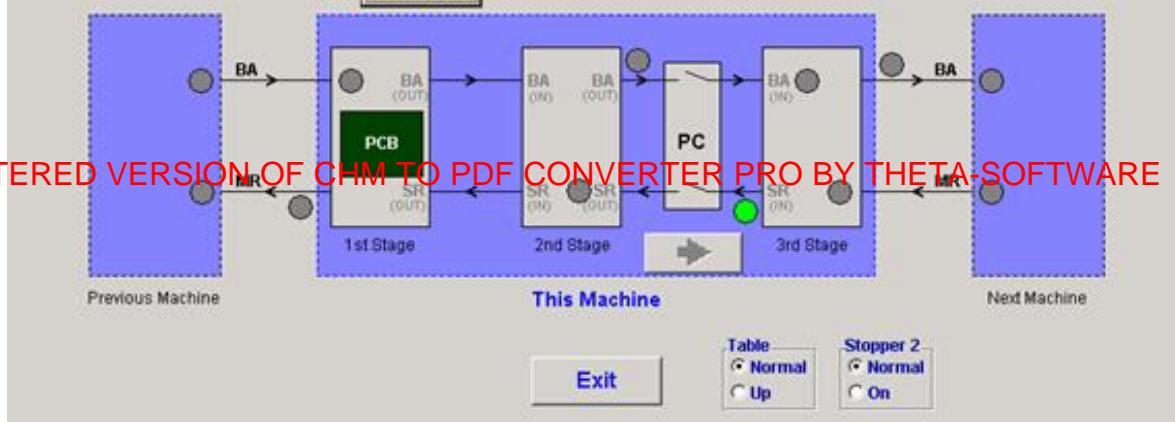
Click "CY-4 On / Off" for enable, green LED means can load PCB



Black PCB means the 1<sup>st</sup> stage has PCB board, and the sensor is available

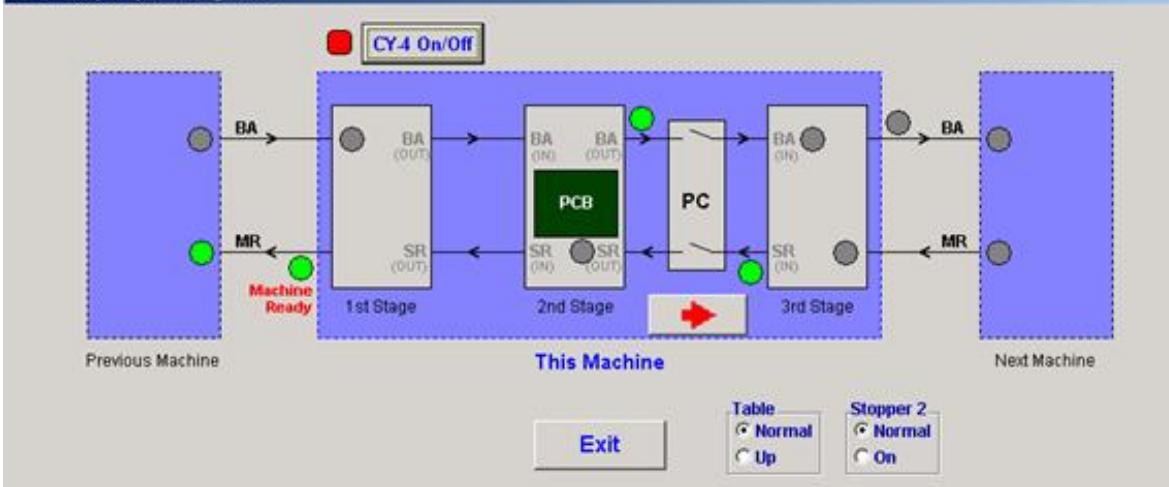
CY-4 Conveyor System Diagnostic

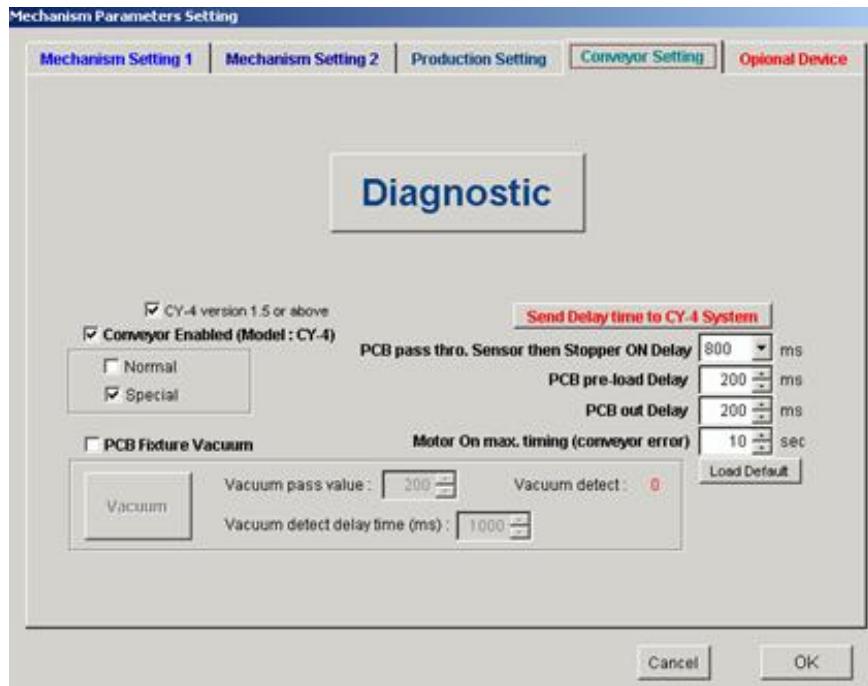
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



Click for advance the PCB

CY-4 Conveyor System Diagnostic





- Conveyor Enabled (Model : CY-4)**
- Normal  
 Special
- Select Conveyor system Normal or Special  
Conveyor Special is a special feature to temporary unused Conveyor system and the datum plate will always at the upper level.

- Remarks:** Set up PCB for Conveyor System, please refer to **APPENDIX N**
- PCB pass thro.Sensor then Stopper On Delay in mesc  
This is to set the delay time when PCB passes through sensor then stopper

- (Sensor 1 & 2) PCB pre-load Delay  
This is to set sensor 1 & sensor 2 pre-load PCB delay time
- (Sensor 3) PCB out Delay  
This is to set sensor 3 let PCB out delay time

- Motor on max. timing(conveyor error)  
This is to set motor running max timing

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

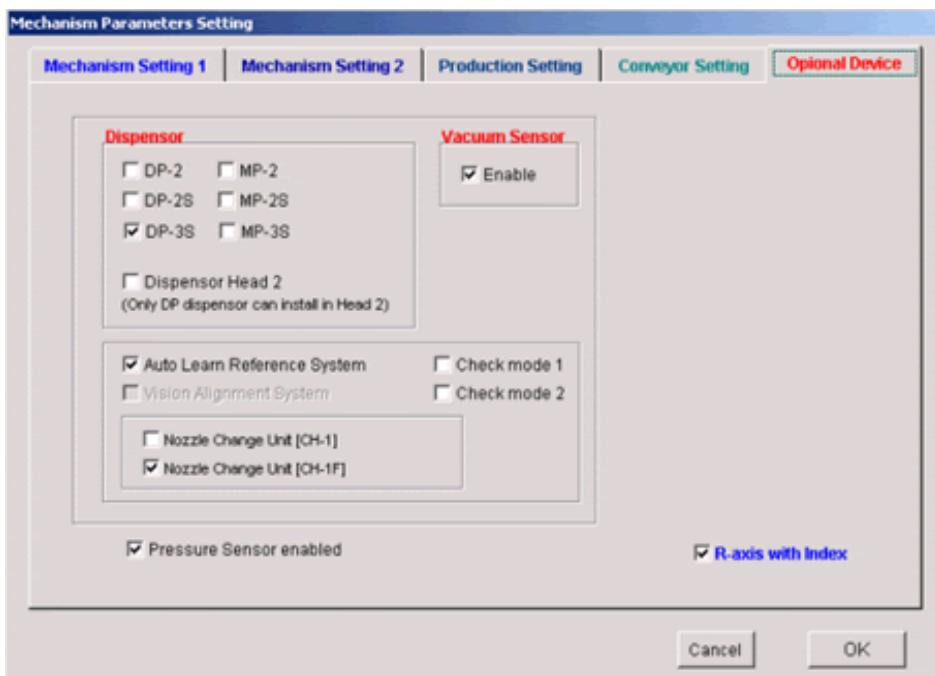
After setting the delay time, please click **Send Delay time to CY-4 System** to record the setting

- PCB Fixture Vacuum

PCB Fixture Vacuum is selected after setup fixture PCB vacuum value and vacuum detect delay time, press vacuum button for check

## Mechanism Setting – 5

This is to enable/disable some optional device



**R-axis with Index** Enable R-axis with index function  
-Enable R-axis Index, please do the followings;  
-Train R Home Image in Home Machine mode  
-Calibrate Alignment-G 90/180/270 angle offset

## 6.4 CALIBRATE MENU - Nozzle Parameters



This is to set the White Nozzle parameters including the Nozzle pin length, Nozzle vacuum detect parameter & Nozzle change location.(White Nozzle use back light for pick & place)

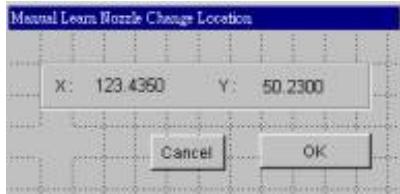
Nozzle Parameter Setting									
WHITE NOZZLE					BLACK NOZZLE		Alignment-G/H (Nozzle 7)		
HEAD 1		Length			Vacuum Sensor Analog Reading		Nozzle Change Location		
Nozzle 1	(0.7mm)	6.00			OPEN	CLOSE	X	Y	A
Nozzle 2	(1.2mm)	6.00			214.9	234.9	181.5850	79.4900	Camera
Nozzle 3	(2.0mm)	5.00			185.6	235.4	161.5730	79.4740	Manual
Nozzle 4		6.00			113.4	235.4	101.5370	79.4260	Test
Nozzle 5	(4.7mm)	4.50			229.8	235.2	81.5250	79.4100	Camera
HEAD 2		Length			102.2	233.1	191.5798	93.5064	Manual
Nozzle 1	(0.7mm)	6.00			215.1	232.4	181.5560	79.4480	Test
Nozzle 2	(1.2mm)	6.00			177.9	235.2	161.5440	79.4320	Camera
Nozzle 3	(2.0mm)	5.00			110.1	235.1	490.2100	107.7400	Manual
Nozzle 4		6.00			229.8	234.4	81.4960	79.3680	Test
Nozzle 5	(4.7mm)	4.50			101.0	232.8	191.5508	93.4644	Camera
0201									
Manual Nozzle Change Location 104.7400 261.6300 Manual Test									
Waste Component Location 104.7350 261.6300 Manual Test									
(Nozzle 4) Waste Component Location 119.7350 261.6300 Test									
DP2-2s/MP2-2s Standby Location 50.0000 50.0000 Manual Test									
<input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading Z axis Position 70.74 mm <input type="button" value="Manual"/> <input type="button" value="ALL Vacuum Reading"/>									
X-Y Location 201.8700 76.7350 <input type="button" value="Manual"/>									
<input type="button" value="EXIT"/>									

Click <camera>button use of camera-1 to view if camera-1 can views the nozzle position, if not then use of camera-3

### How to learn Nozzle Change Location by Manual

Steps:

- (1) Remove all the nozzles from the Tool Changer
- (2) Install the nozzle #6 to the Z-axis manually & carefully
- (3) Click **Manual** button



- (4) Move Z-axis up & move the SMD Head near the nozzle change location of the Tool Changer manually & carefully

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- (5) Move Z-axis up & down to the nozzle change location to try and find the fitness location for nozzle change location

- (6) Click  button

- (7) Repeat step 3 to step 6 to find the fitness location for Nozzle change location 1 ~ 6

- (8) Remove the nozzle #6 from the Z-axis manually

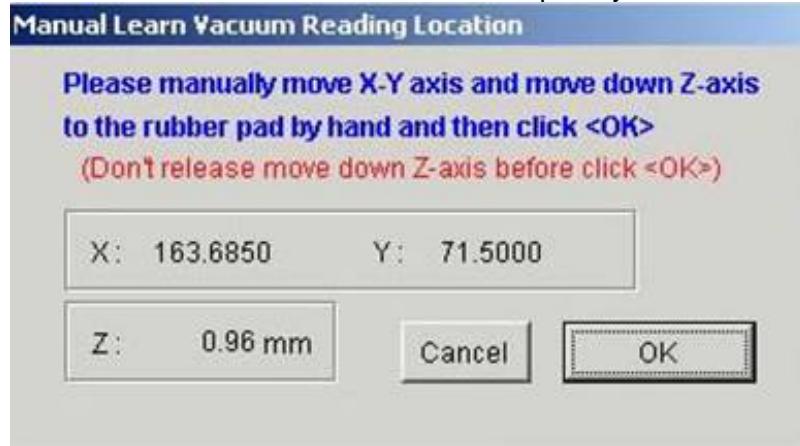
- (9) Install all nozzles to the Tool Changer manually

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- Manual Nozzle Change Location  
This is to set the location for manual change nozzle
- Waste Component Location  
This is to set the location for waste component
- (Nozzle 4) Waste Component Location (for 0201 only)  
This is to set the location for (Nozzle 4) waste component, please check the (Nozzle 4) Waste Component Location which should set to the top of SPONGE. The position of (Nozzle 4) Waste Component location is default 15mm next to the Waste Component Location.
- DP2-2s / MP2-2s Standby Location  
This is to set the location for DP2-2s / MP2-2s dispenser standby

### Automatic Calibrate

(1) Enable Auto Learn Vacuum Sensor Analog Reading, click **Manual** button, manually move X-Y axis and move down Z-axis to the rubber pad by hand, this is for confirm the calibrate location.



(2) Click **ALL Vacuum Reading** button, machine will start to detect the reading with no component, and

auto move to the rubber pad to detect the reading that is to simulate a component is pick up, and then software will auto detect the other nozzles

This is to set the Black Nozzle parameters including the Nozzle pin length, Nozzle vacuum detect parameter & Nozzle change location.(Black Nozzle use front light for pick & place)



This is to set the G Nozzle parameters including the Nozzle vacuum detect parameter & Nozzle change location.(G Nozzle use for fine pitch QFP & BGA)

Nozzle Parameter Setting

WHITE NOZZLE	BLACK NOZZLE	Alignment-G/H (Nozzle 7)																				
Nozzle Pin Length : <input type="text" value="5.50"/>		<input checked="" type="checkbox"/> White Nozzle-7 option enable																				
<input type="button" value="OPEN"/> <input type="button" value="CLOSE"/> <input type="button" value="Learn"/>		 (10.0mm)																				
Nozzle Change Location : <input type="text" value="56.3350"/> X <input type="text" value="159.9650"/> Y <input type="button" value="Camera"/> <input type="button" value="Manual"/> <input type="button" value="Test"/>		WHITE NOZZLE-7																				
<input type="text" value="5.50"/> <input type="button" value="OPEN"/> <input type="button" value="CLOSE"/> <input type="button" value="Learn"/> Nozzle Change Location : <input type="text" value="127.5950"/> X <input type="text" value="159.8650"/> Y <input type="button" value="Camera"/> <input type="button" value="Manual"/> <input type="button" value="Test"/>		 (10.0mm) BLACK NOZZLE-7																				
<table border="1"> <tr> <td>Manual Nozzle Change Location</td> <td><input type="text" value="104.7400"/> X <input type="text" value="261.6300"/> Y</td> <td><input type="button" value="Manual"/> <input type="button" value="Test"/></td> </tr> <tr> <td>Waste Component Location</td> <td><input type="text" value="104.7350"/> X <input type="text" value="261.6300"/> Y</td> <td><input type="button" value="Manual"/> <input type="button" value="Test"/></td> </tr> <tr> <td>(Nozzle 4) Waste Component Location</td> <td><input type="text" value="119.7350"/> X <input type="text" value="261.6300"/> Y</td> <td><input type="button" value="Test"/></td> </tr> <tr> <td>DP2-2s/MP2-2s Standby Location</td> <td><input type="text" value="50.0000"/> X <input type="text" value="50.0000"/> Y</td> <td><input type="button" value="Manual"/> <input type="button" value="Test"/></td> </tr> </table> <p><input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading</p> <table border="1"> <tr> <td>Z axis Position</td> <td><input type="text" value="70.74"/> mm</td> <td><input type="button" value="Manual"/></td> <td> ALL Vacuum Reading</td> </tr> <tr> <td>X-Y Location</td> <td><input type="text" value="201.8700"/> X <input type="text" value="78.7350"/> Y</td> <td></td> <td></td> </tr> </table>			Manual Nozzle Change Location	<input type="text" value="104.7400"/> X <input type="text" value="261.6300"/> Y	<input type="button" value="Manual"/> <input type="button" value="Test"/>	Waste Component Location	<input type="text" value="104.7350"/> X <input type="text" value="261.6300"/> Y	<input type="button" value="Manual"/> <input type="button" value="Test"/>	(Nozzle 4) Waste Component Location	<input type="text" value="119.7350"/> X <input type="text" value="261.6300"/> Y	<input type="button" value="Test"/>	DP2-2s/MP2-2s Standby Location	<input type="text" value="50.0000"/> X <input type="text" value="50.0000"/> Y	<input type="button" value="Manual"/> <input type="button" value="Test"/>	Z axis Position	<input type="text" value="70.74"/> mm	<input type="button" value="Manual"/>	 ALL Vacuum Reading	X-Y Location	<input type="text" value="201.8700"/> X <input type="text" value="78.7350"/> Y		
Manual Nozzle Change Location	<input type="text" value="104.7400"/> X <input type="text" value="261.6300"/> Y	<input type="button" value="Manual"/> <input type="button" value="Test"/>																				
Waste Component Location	<input type="text" value="104.7350"/> X <input type="text" value="261.6300"/> Y	<input type="button" value="Manual"/> <input type="button" value="Test"/>																				
(Nozzle 4) Waste Component Location	<input type="text" value="119.7350"/> X <input type="text" value="261.6300"/> Y	<input type="button" value="Test"/>																				
DP2-2s/MP2-2s Standby Location	<input type="text" value="50.0000"/> X <input type="text" value="50.0000"/> Y	<input type="button" value="Manual"/> <input type="button" value="Test"/>																				
Z axis Position	<input type="text" value="70.74"/> mm	<input type="button" value="Manual"/>	 ALL Vacuum Reading																			
X-Y Location	<input type="text" value="201.8700"/> X <input type="text" value="78.7350"/> Y																					
<input type="button" value="EXIT"/>																						

## 6.1 CALIBRATE MENU - System Calibration



There are 7 calibrations procedure in this menu: (default calibration use of Black nozzle-1)

- 6.1.1 A1. Calibrate Head 1 & Camera-1 Offset
- 6.1.2 A2. Calibrate Head 2 & Camera-1 Offset
- 6.1.3 A3. Calibrate System Mark-A
- 6.1.4 A4. Re-learn Mark A Height
- 6.1.5 A5. Calibrate Camera-3 Offset (if Camera-3 is installed)
- 6.1.6 A6. Auto Learn (Camera 1) Calibration
- 6.1.7 A7. Calibrate Default Pick Height
- 6.1.8 A8 Feeder Capacity Setting

### 6.1.1 A1 Calibrate Head 1 & Camera-1 Offset

This is to calibrate the offset between Camera-1 & the Z-axis of Head 1. This offset and **Calibrate Head 2 & Camera-1 Offset** all a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed
- Camera-1 focus changed
- Component placement not accurate

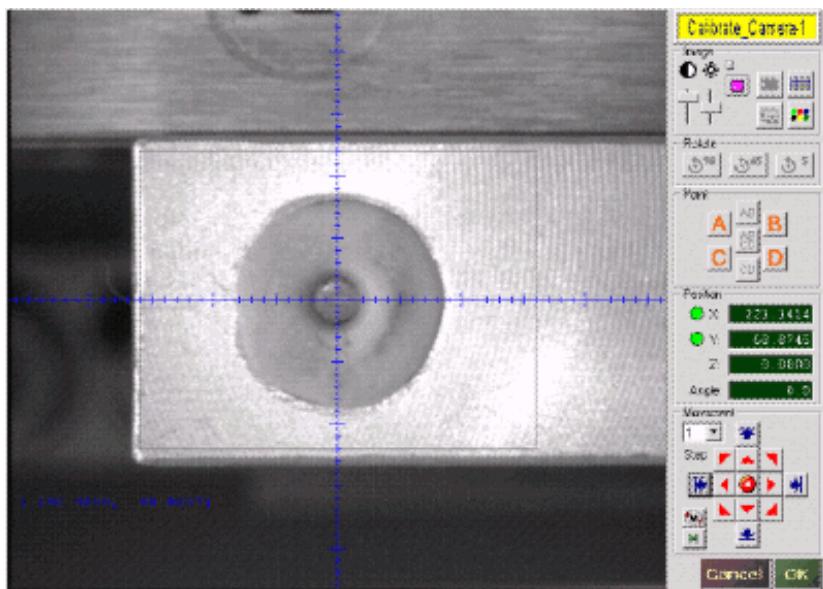
**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner of the anchor point, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode.



Adjust the cross mark to the center of the hole and click  button.  
The machine will auto remove nozzle #1 and the complete the **Calibrate Head 1 & Camera-1 Offset** procedure.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 6.1.2 A2 Calibrate Head 2 & Camera-1 Offset

This is to calibrate the offset between Camera-1 & the Z-axis of Head 2. This offset and **Calibrate Head 1 & Camera-1 Offset** all a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed
- Camera-1 focus changed
- Component placement not accurate

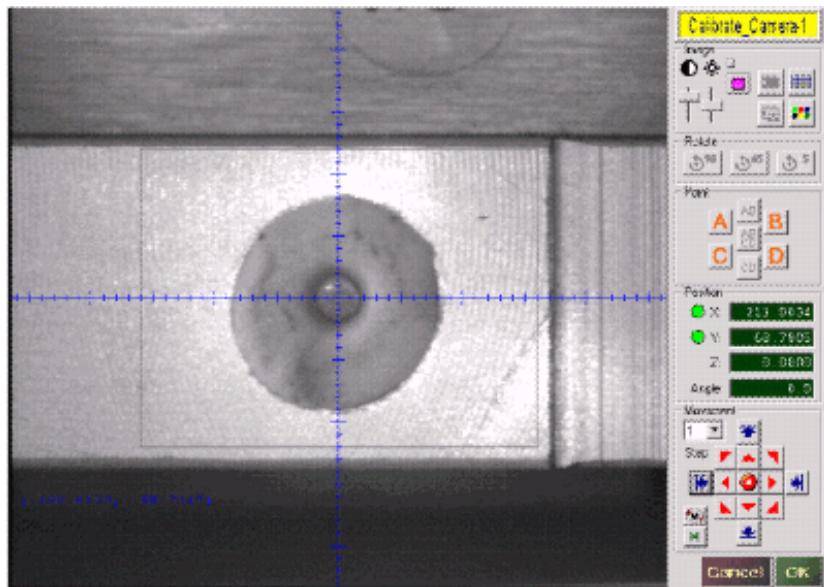
**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner of the anchor point, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode.



Adjust the cross mark to the center of the hole and click  button.  
The machine will auto remove nozzle #1 and the complete the **Calibrate Head 2 & Camera-1 Offset** procedure.

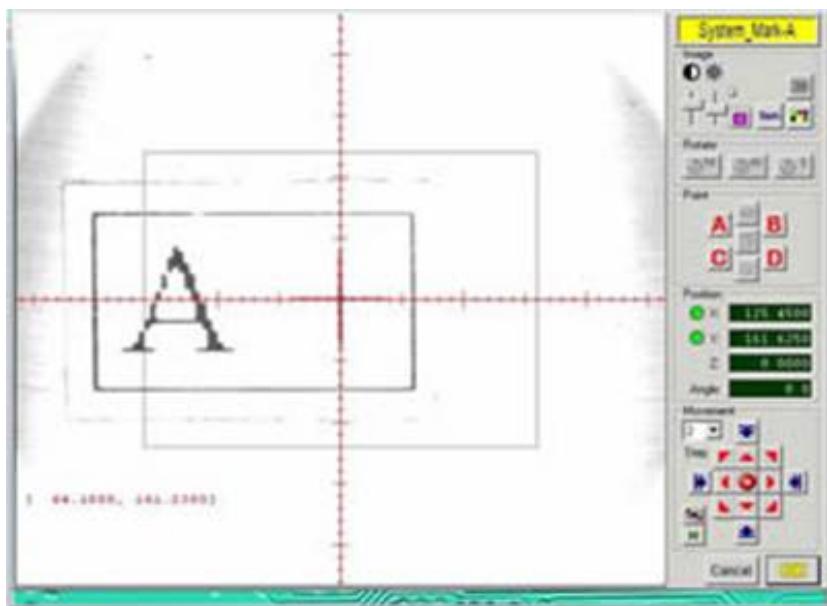
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 6.1.3 A3 Calibrate System Mark-A

This is to calibrate the machine **Mark-A** position. Every time if you install the machine in a new location, you should do this calibration.

The screen will switch to image mode while it is entered, adjust the cross on the screen to the cross of **Mark-A** and click **OK** button.



**IMPORTANT:** Calibrate Head 1 & Camera-1 Offset must be done before this calibration.

### 6.1.4 A4 Re-learn Mark A Height:

This is to re-learn the height of the Mark-A, the machine will automatically install nozzle #1 and learn the height of the Mark-A by vacuum detection.

### 6.1.5 A5 Calibrate Camera-3 Offset (if Camera-3 is installed)

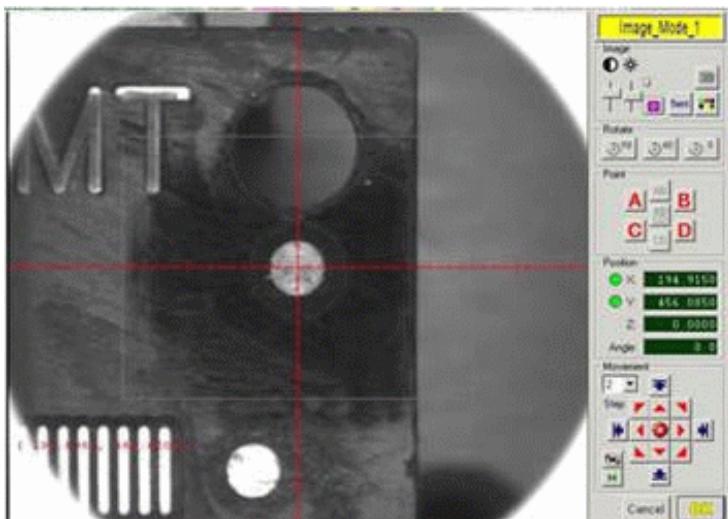
This is to calibrate the offset between Camera-3 & the Z-axis. When you enter this mode, the screen will switch to image mode, you can adjust the cross mark to the center of the hole on the **Blue Tape** and click **OK** button. (the hole on the **Blue Tape** is the same as **Calibrate Head 1 & Camera-1 Offset** in 6.1.1).



### 6.1.6 A6 Auto Learn (Camera 1) Calibration

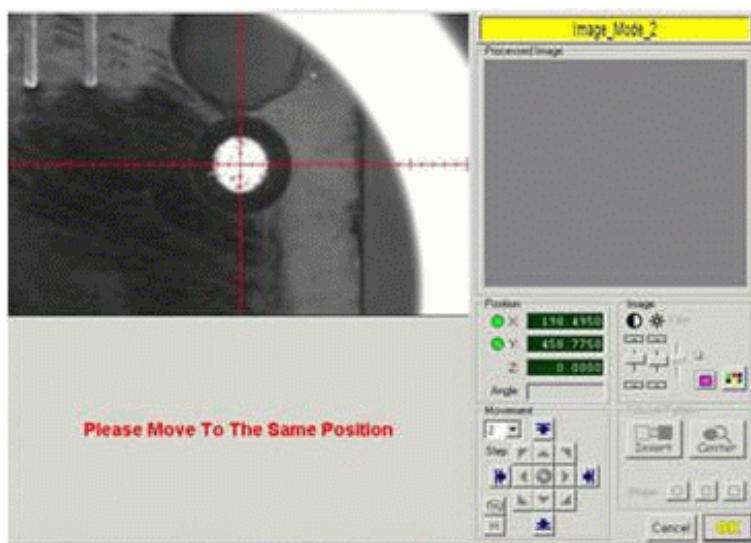
This is to calibrate the Camera-1 Auto Learn feature offset.

Image mode will be entered, select a point or a pad on a PCB, adjust the cross mark to the center and click **OK** button.



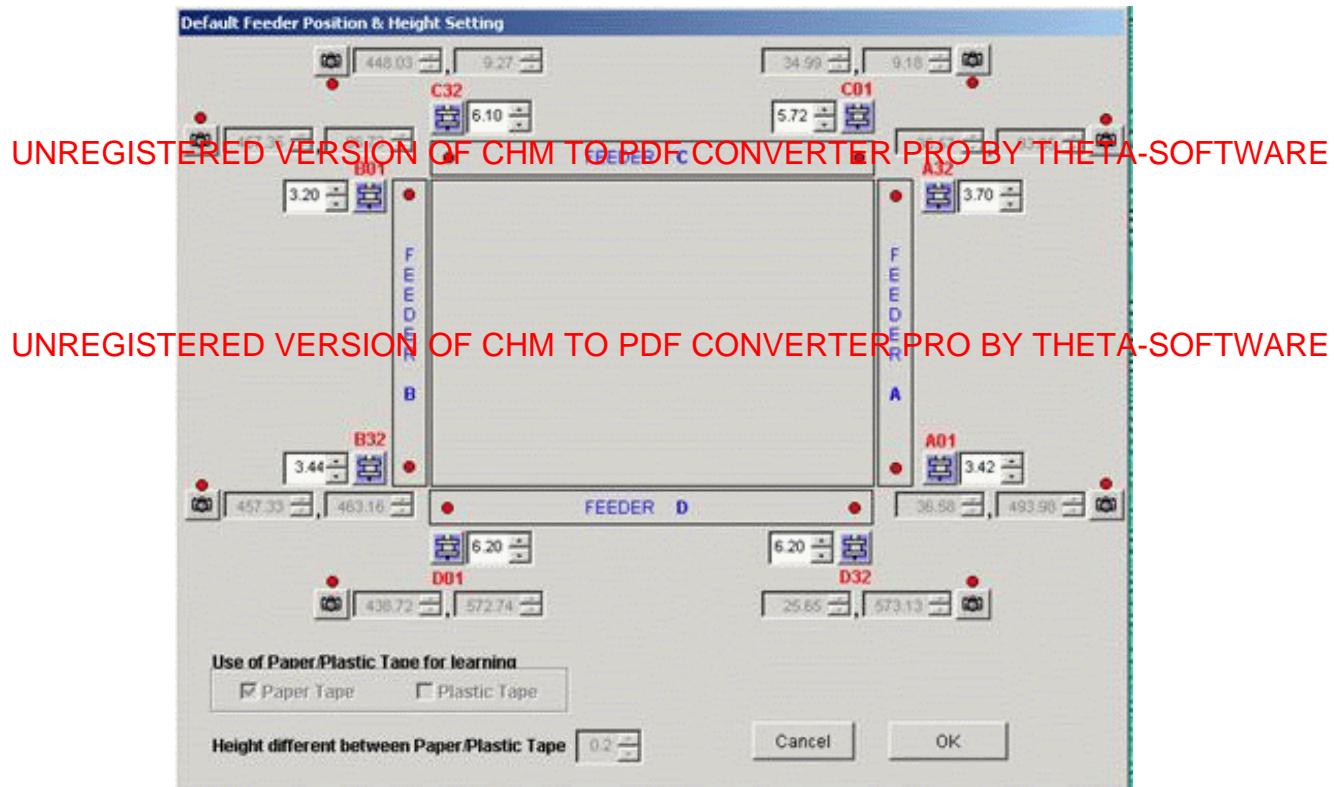
Then Image mode-2 will be entered, adjust the cross mark to the same position on the PCB and click

**OK** button.



### 6.1.7 A7 Calibrate Default Pick Height

Remark: default pick height +5mm=the true pick height of learn pick



Install 4x Feeders in A01,B16,C01,D16 and click learn Pick Height, the height will auto show



in A01, then go to Learn Pick and select TAPE column use of Paper tape or Plastic tape component, machine will auto calculate the Pick Height for all feeder. This function is useful for fast production

Learn Pick

ID	Type	LD	Component	LB	Pick Hgt	Tape	% Angle	X	Y	Pick	Next	Align	Next
A07	AF08				0.00	Normal	535.8000	574.8000	A	-----	N	1	
A08	AF08				0.00	Normal	515.8000	574.8000	A	-----	N	1	
A09	AF08				0.00	Normal	495.8000	574.8000	A	-----	N	1	
A10	AF08				0.00	Normal	475.8000	574.8000	A	-----	N	1	
A11	AF08				0.00	Normal	455.8000	574.8000	A	-----	N	1	
A12	AF08				0.00	Normal	435.8000	574.8000	A	-----	N	1	
A13	AF08		C0201	4.44	Paper	Normal	409.9750	570.8500	A	-----	A	4	
A14	AF08		R0402	5.72	Paper	Normal	391.0850	571.1050	A	-----	A	1	
A15	AF08		R0603	5.52	Paper	Normal	371.0350	570.6300	A	-----	A	1	
A16	AF08		R0805	5.50	Paper	Normal	350.9050	571.0850	A	-----	A	1	
B01	AF08		R1206	5.38	Plastic	Normal	330.9750	571.0500	A	-----	A	2	
B02	AF08		SOT323	5.16	Plastic	90	311.1200	570.8500	A	-----	X	2	
B03	AF08		SOT23	5.20	-----	270	291.1800	570.8050	A	-----	X	2	
B04	AF08			0.00	-----	Normal	275.8000	574.8000	A	-----	N	1	
B05-A1	UFTB		SOP14P	5.50	-----	270	253.8500	586.7500	A	-----	A	3	
B05-A2	UFTB		SOP18W	6.30	-----	270	234.8300	586.7850	A	-----	A	3	
B05-A3	UFTB		PLCC28P	7.80	-----	270	217.4500	587.7450	A	-----	A	5	
B06	AF08			0.00	-----	Normal	235.8000	574.8000	A	-----	N	1	
B07	AF08			0.00	-----	Normal	215.8000	574.8000	A	-----	N	1	
B08	AF08			0.00	-----	Normal	195.8000	574.8000	A	-----	N	1	

#### Use of Paper/Plastic Tape for learning

Paper Tape

Plastic Tape

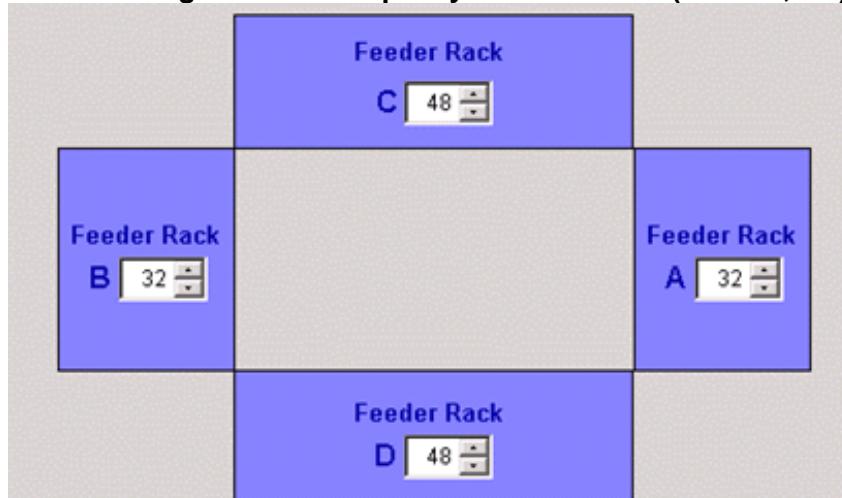
Use of Paper/Plastic Tape for Learning. (only for SFTA)

Height different between Paper/Plastic Tape  Height different between Paper/Plastic Tape. (only for SFTA)

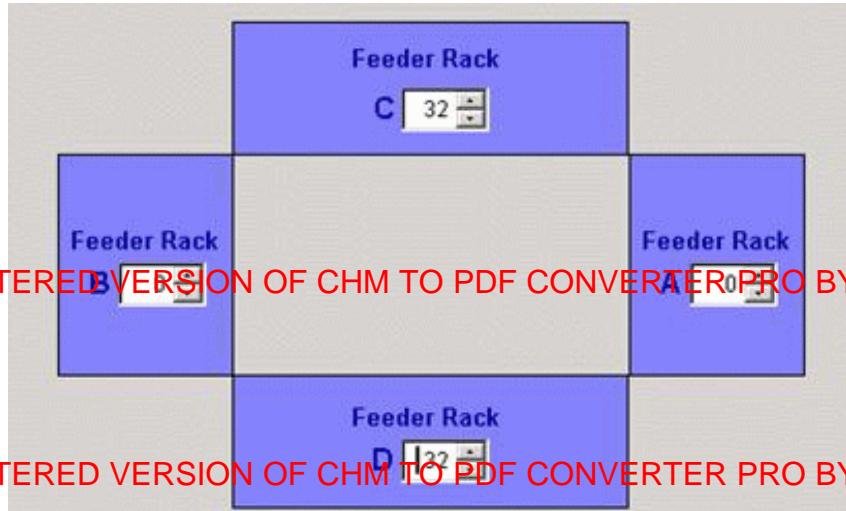
If use KFTA feeder, then user can't change above, and the height different between paper/plastic tape will be 0.2mm default.

#### 6.1.8 A8 Feeder Capacity Setting

This is for setting the feeder capacity of feeder rack (For 390,391)



This is for setting the feeder capacity of feeder rack (For 384,385,387)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

**IMPORTANT: The B,C,D,E,F calibrate used only by manufacturer.**

advance System Calibration

- 6.1.9 B1 Check Head 1 & Head 2 X-Y Offset
- 6.1.10 B2 Check Head 1 & Head 2 Z-axis Offset
- 6.1.11 C1 Calibrate Head 1 Camera-A Scale Factor
- 6.1.12 C2 Calibrate Head 1 Z-axis & Camera-A Offset
- 6.1.13 C3 Adjust Head 1 Alignment-A Offset
- 6.1.14 C4 Adjust Head 1 Alignment-A Angle Offset
- 6.1.15 D1 Calibrate Head 2 Camera-A Scale Factor
- 6.1.16 D2 Calibrate Head 2 Z-axis & Camera-A Offset
- 6.1.17 D3 Adjust Head 2 Alignment-A Offset
- 6.1.18 D4 Adjust Head 2 Alignment-A Angle Offset
- 6.1.19 E1 Calibrate Camera-G Scale Factor
- 6.1.20 E2 Calibrate Camera-G Offset
- 6.1.21 E3 Adjust Alignment-G Offset
- 6.1.22 E4 Adjust Alignment-G Angle Offset
- 6.1.23 F1 Calibrate Camera-H Scale Factor
- 6.1.24 F2 Calibrate Camera-H Offset
- 6.1.25 F3 Adjust Alignment-H Offset
- 6.1.26 F4 Adjust Alignment-H Angle Offset

#### **6.1.9 B1 Check Head 1 & Head 2 X-Y Offset**

Please Calibrate A1, Calibrate Head 1 & Camera-1 Offset and A2. Calibrate Head 2 & Camera-2 Offset first, and then select B1. Check Head 1 & Head 2 X-Y offset.

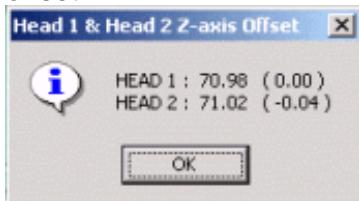


For 391 machine, X direction is  $40 \pm 0.04$ . Y direction is  $0 \pm 0.04$

For 384 machine, X direction is  $40 \pm 0.04$ . Y direction unavailable.

#### **6.1.10 B2 Check Head 1 & Head 2 Z-axis Offset**

Please calibrate A4. Re-learn mark A Height first, and then elect B2 check Head 1 & 2 Z-axis offset



Normally, the offset is control in 0.06..

### 6.1.9 C1 Calibrate Head 1 Camera-A Scale Factor

This is to calibrate Camera-A Scale Factor, and then use this Scale Factor to calibrate Z-axis, (This calibration just for hard disk DATA error or instead of Camera-A, usually machine already calibrated finish in the factory, so no need to calibrate again)

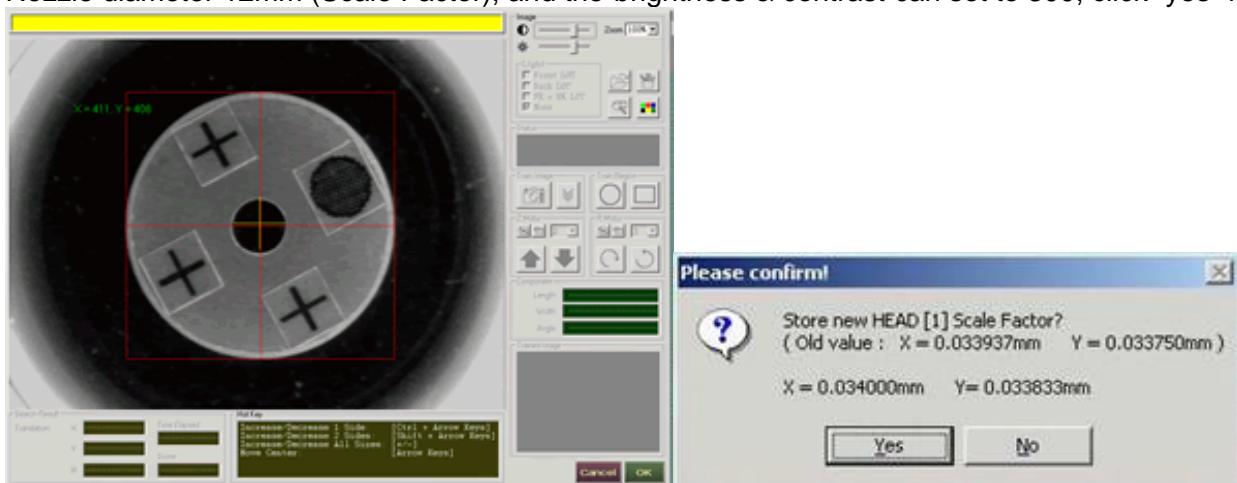
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

First setup the Nozzle diameter (Scale Factor), and then click  for calibration (please install the Calibration Nozzle (P/N: NZ-CAL02))



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Use "田" to select the edge of Calibration Nozzle (P/N: NZ-CAL02), make sure the "田" diameter is the Nozzle diameter 12mm (Scale Factor), and the brightness & contrast can set to 300, click "yes" for save.

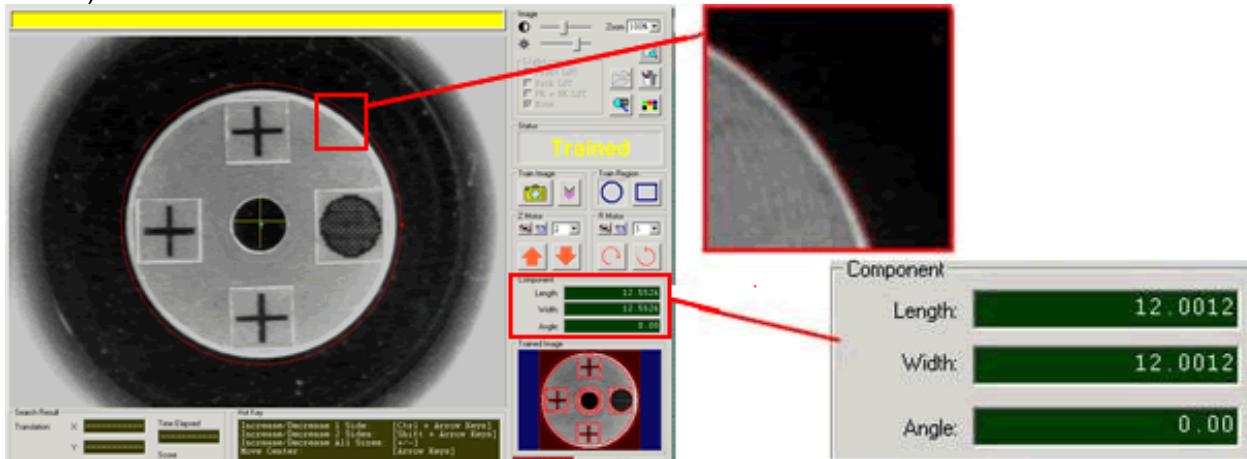


### 6.1.10 C2 Calibrate Head 1 Z-axis & Camera-A Offset

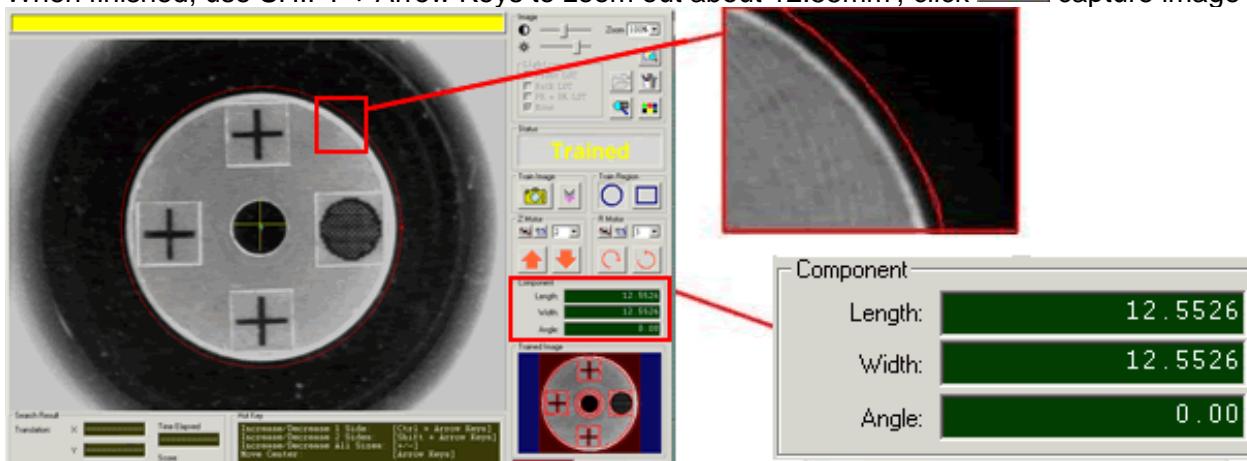
This is to use the Calibration Nozzle (P/N: NZ-CAL02) to learn the Head 1 Z-axis & Camera-A offset

a. select this head 1 will auto down, manual Install the Nozzle and click  below frame will be show. (only for new Calibration Nozzle (P/N: NZ-CAL02), if have old nozzle image please go to "b" )

Click  for change angle, Use  select the Nozzle and check the diameter whether 12mm (Scale Factor)



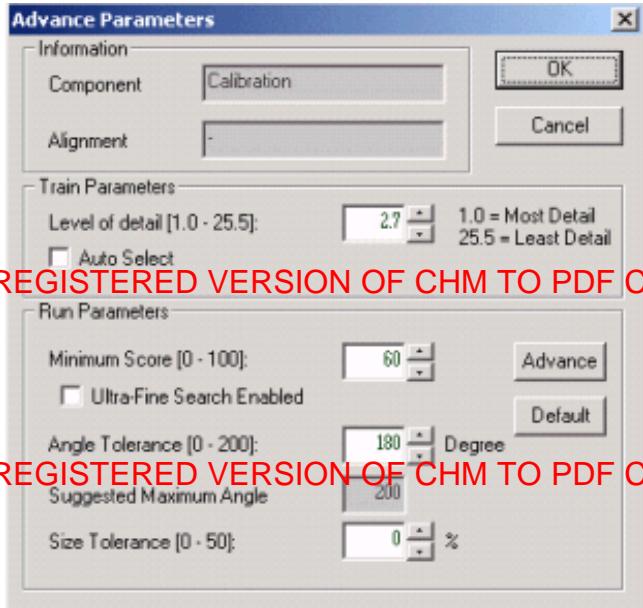
When finished, use SHIFT + Arrow Keys to zoom out about 12.55mm , click  capture image



use

 to test the train image , at the same time , must adjust the brightness & contrast 

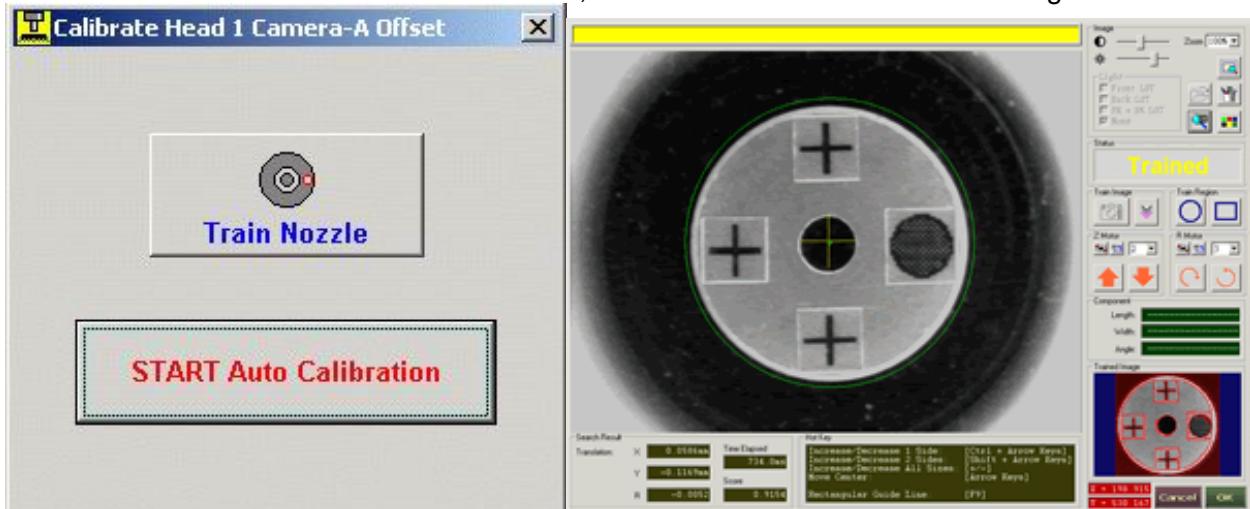

parameter, without fail to let <img alt="Four reference point icons" data-bbox="355 765 715 825} four reference point can clear to show in the image , the Time Elapsed must 500-1000ms , R is about +/-0.01</p>

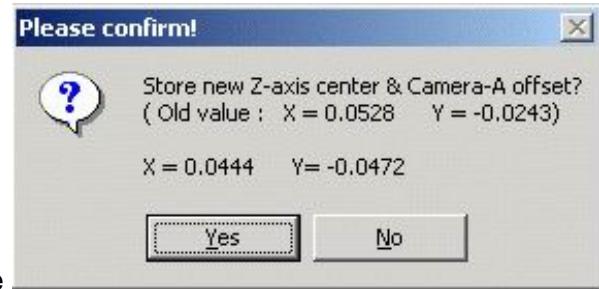


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



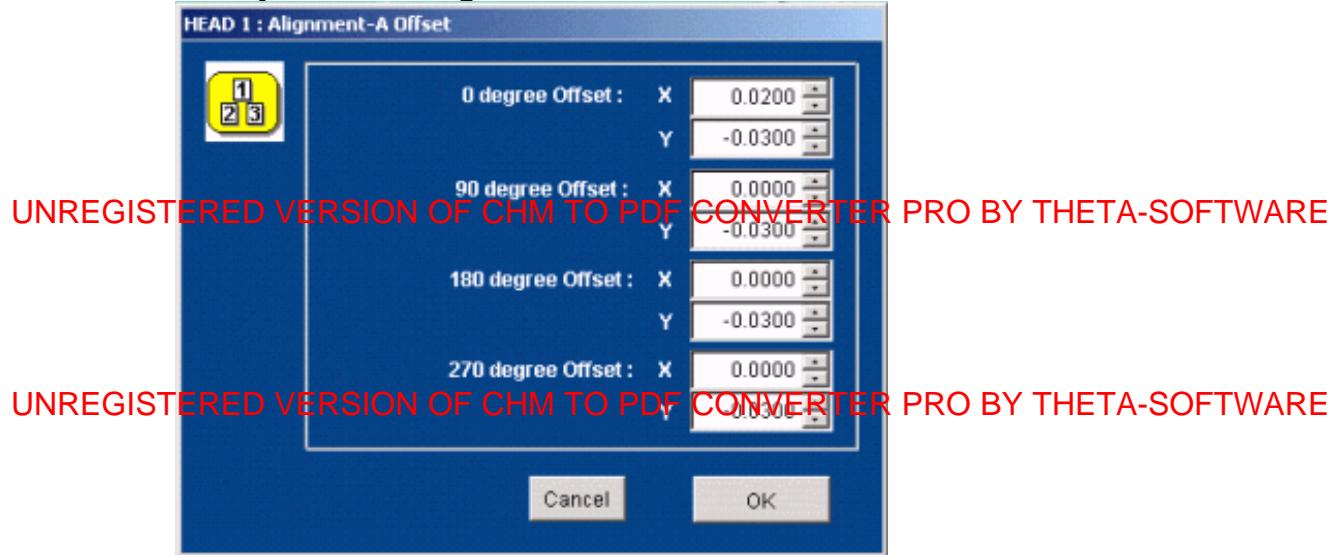
b. Select **START Auto Calibration** for auto calibration, nozzle will auto circumrotate 360degree for trained.





c. After auto calibration, please click "YES" button to save

### 6.1.11 C3 Adjust Head 1 Alignment-A Offset

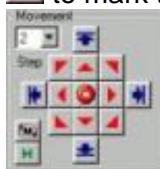


1) Program a P&P file for IC.

2) Production

3) In learn place frame click  to check the component position

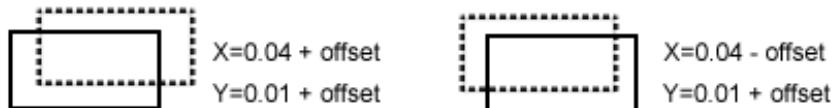
4) Click  to mark the point that need to production



5) Click  to check the offset, on left upper will show the offset.

6) Record, the offset.

For examples:



----- position for component

\_\_\_\_\_ position for need to production

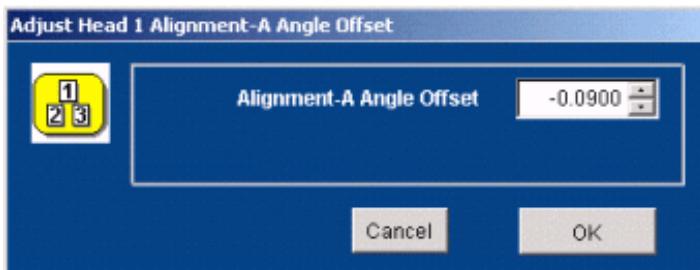
0.04 is the previous X offset

0.01 is the previous Y offset

Remark: Production more times for check the offset, all offset please Control in +/-0.18. 90 degree, 180 degree, 270 degree offset can set after calibrate C4. Adjust Head 1 Alignment – A Angle offset

#### 6.1.12 C4 Adjust Head 1 Alignment-A Angle Offset

This is to Adjust Head 1 Alignment -A Angle offset, can calibrate with C3. adjust Head 1 Alignment -A offset.



Base 0.09 to adjust the offset, don't over 1.00

Clock wise adjust -0.09. counter dock wise adjust then +0.09

If already calibrate angle offset, then the 90 degree, 180 degree, 270 degree offset for C3 do not need to calibrate..

#### 6.1.13 D1 Calibrate Head 2 Camera-A Scale Factor

Please refer C1 for calibration.

#### 6.1.14 D2 Calibrate Head 2 Z-axis & Camera-A Offset

Please refer C2 for calibration

#### 6.1.15 D3 Adjust Head 2 Alignment-A Offset

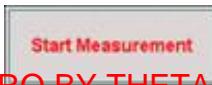
Please refer C3 for calibration

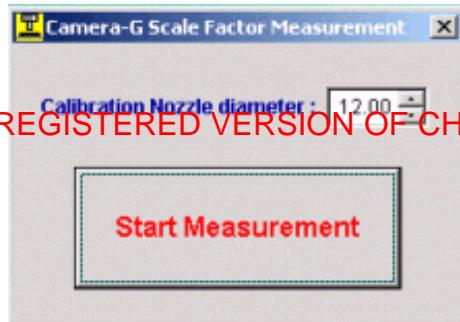
#### 6.1.16 D4 Adjust Head 2 Alignment-A Angle Offset

Please refer C4 for calibration

### 6.1.17 E1 Calibrate Camera-G Scale Factor

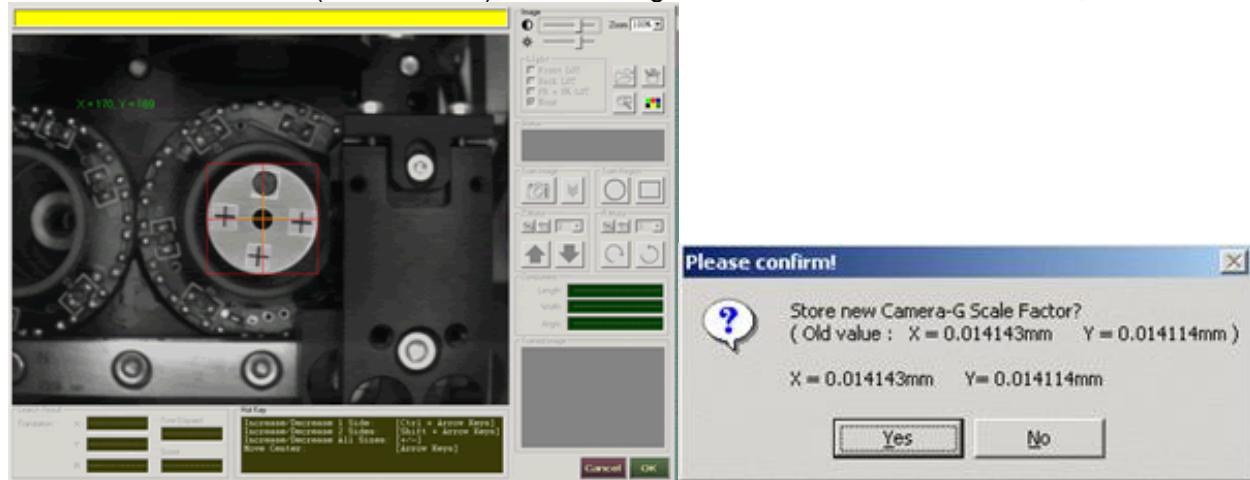
This is to calibrate Camera-G Scale Factor (This calibration just for hard disk DATA error or instead of Camera-A, usually machine already calibrated finish in the factory, so no need to calibrate again)

First setup the Nozzle diameter (Scale Factor), and then click  for calibration (please install the Calibration Nozzle (P/N: NZ-CAL02))



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

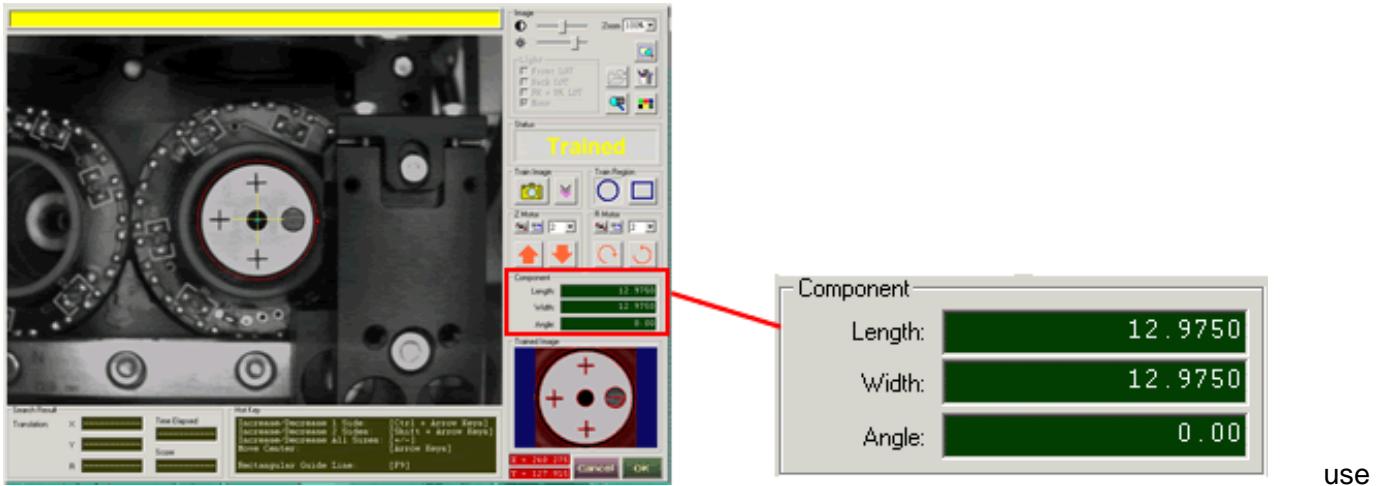
Use "田" to select the edge of Calibration Nozzle (P/N: NZ-CAL02), make sure the "田" diameter is the Nozzle diameter 12mm (Scale Factor), and the brightness & contrast can set to 300, click "ok" for save.



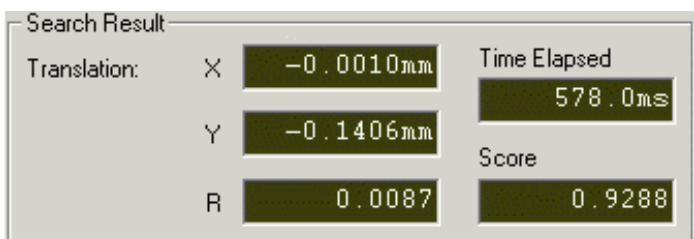
### 6.1.18 E2 Calibrate Camera-G Offset

a. select this head 1 will auto down, manual Install the Nozzle and click  below frame will be show. (only for new Calibration Nozzle (P/N: NZ-CAL02), if have old nozzle image please go to "b")

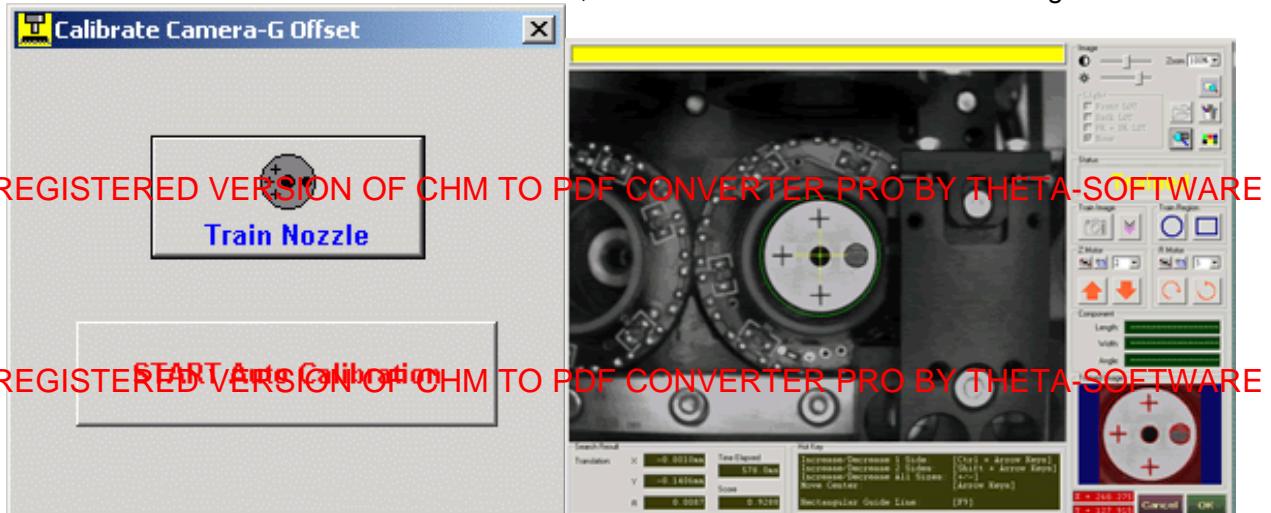
Click  for change angle, Use  select the Nozzle and check the diameter whether 12.97mm (Scale Factor)



to test the train image, at the same time, must adjust the brightness & contrast , usually brightness is set between 200~300, contrast is set between 500~600, the Time Elapsed must 500-1000ms , R is about +/-0.01

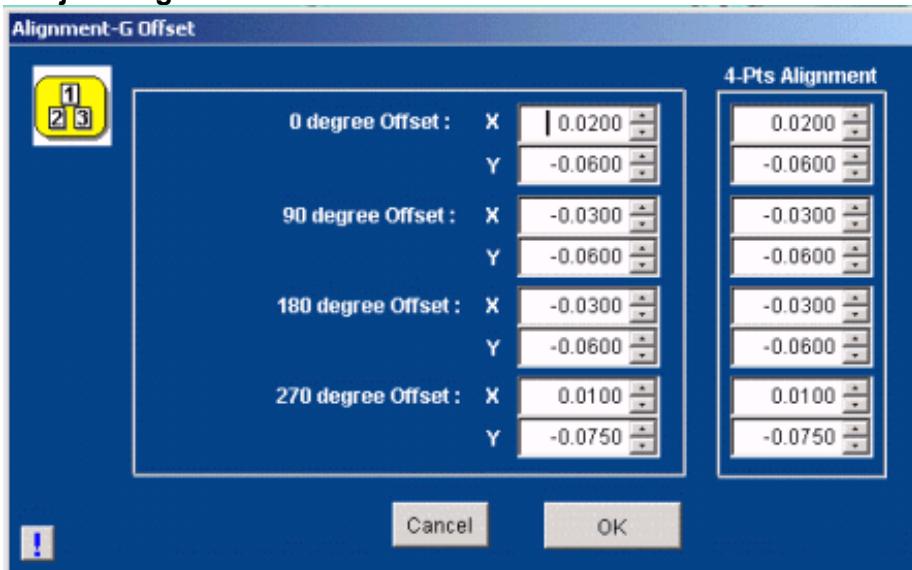


b. Select **START Auto Calibration** for auto calibration, nozzle will auto circumrotate 360degree for trained.

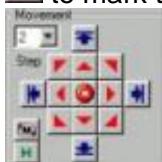


c. After auto calibration, please click "YES" button to save

#### 6.1.19 E3 Adjust Alignment-G Offset



- 1) Program a P&P file for IC.
- 2) Production
- 3) In learn place frame click to check the component position
- 4) Click to mark the point that need to production



- 5) Click to check the offset, on left upper will show the offset.

6) Record the offset.

For example: (opposite with the alignment-A)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

----- position for component  
\_\_\_\_\_ position for need to production

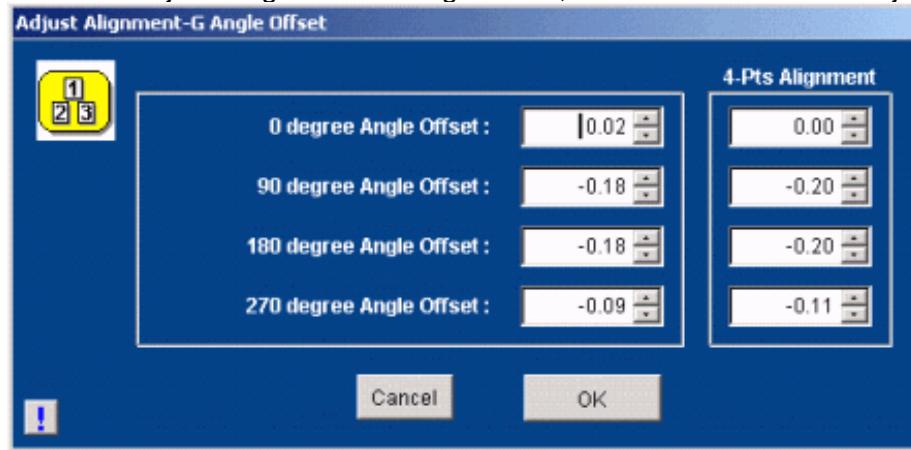
0.04 is the previous X offset

**0.01 is the previous Y offset**

Remark: Production more times for check the offset, all offset please Control in +/-0.18. 90 degree, 180 degree, 270 degree offset can set after calibrate C4. Adjust Head 1 Alignment -A Angle offset.

#### 6.1.20 E4 Adjust Alignment-G Angle Offset

This is to Adjust Alignment -G Angle offset, can calibrate with E3. adjust Alignment -A offset.



Base 0.09 to adjust the offset, don't over 1.00

Clock wise adjust -0.09. counter dock wise adjust then +0.09

If already calibrate angle offset, then the 90 degree, 180 degree, 270 degree offset for C3 do not need to calibrate.

#### 6.1.21 F1 Calibrate Camera-H Scale Factor

Please refer E1 for calibration

#### 6.1.22 F2 Calibrate Camera-H Offset

Please refer E2 for calibration

**6.1.23 F3 Adjust Alignment-H Offset**

Please refer E3 for calibration

**6.1.24 F4 Adjust Alignment-H Angle Offset**

Please refer E4 for calibration

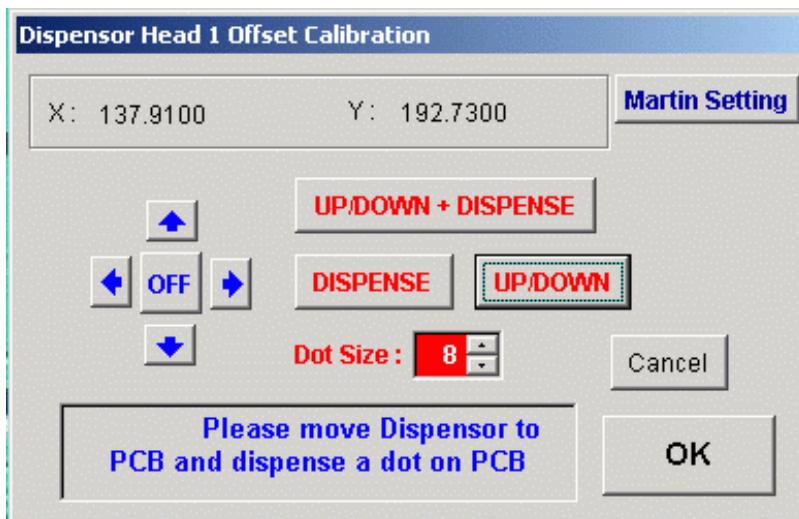
## 6.2 CALIBRATE MENU - Dispenser Calibration



This is to calibrate the offset between the Dispenser & the Camera-1.

Dispenser Head 1 setting

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



**1st step is to calibrate the dispenser position:**

- Prepare the Dispenser Unit and a PCB
- Move the Dispenser Head to any point on the PCB and ready to dispense a small dot
- Click **UP/DOWN + DISPENSE** button to dispense a dot with Up/Down control
- Click **UP/DOWN** button to move down the Dispenser
- Adjust the dot size from 1(smallest) to 9(largest)
- Click **DISPENSE** button to dispense a dot
- Click **Martin Setting** for check the MP-3S setting
- Click **OK** to exit and the screen will switch to image mode

**Martin Dispenser Setting: (use MP-x dispenser only)**

**MP-2 Dispensor Setting**

Medium No.	Display	Material (typical samples)
1	Paste	metal-filled adhesives
2	100000 mPas	epoxy resin adhesives
3	50000 mPas	thin epoxy adhesives
4	10000 mPas	coatings potting compounds
5	1000 mPas	castor oil lubricant oil
6	500 mPas	watchmakers oil heating oil
7	100 mPas	cyanoacrylate adhesives (gap > 0.1mm)
8	10 mPas	cyanoacrylate adhesives (gap < 0.1mm)
9	1 mPas	watery solutions
10	0.3 mPas	alcohols
* 12	Glue SMD	MARTIN SMD adhesive
* 13	Paste SFP	MARTIN SFP solder paste
* 14	Paste FP	MARTIN FP solder paste

**\* - For new model only**

Medium No.  Temperature  Viscosity

**SET MATRIN**

**Cancel**

**OK**

**2nd step is to calibrate the offset between the Dispenser & the Camera 1:**

- Adjust the cross mark to the center of the dot on the PCB then click **OK** to exit



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

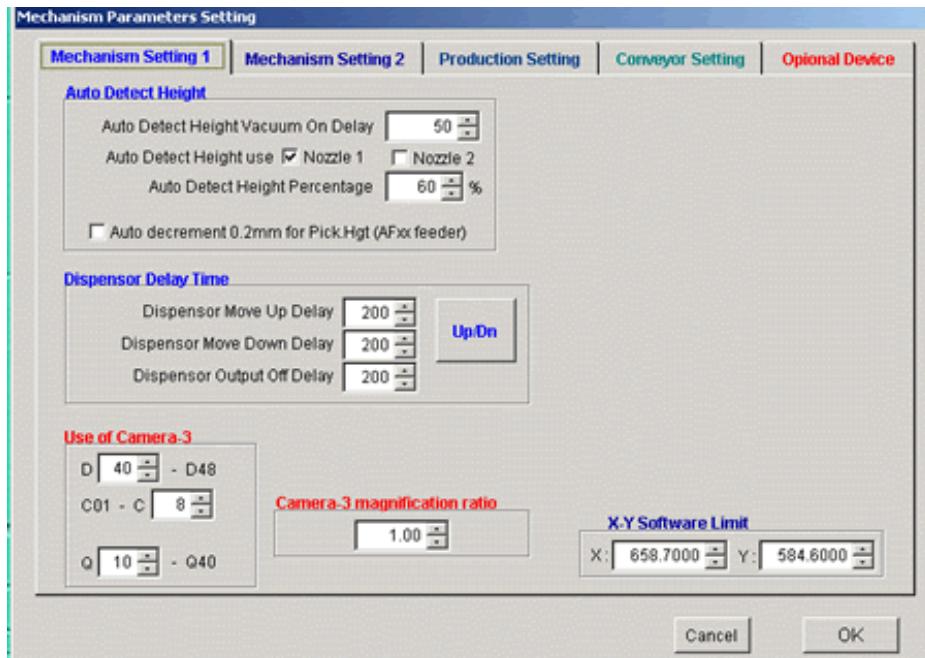
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Dispenser Head 2 is same

## 6.3 CALIBRATE MENU - Mechanism Delay



### Mechanism Setting - 1



- (1) **Auto Detect Height Vacuum On Delay:** Delay time between move down Z-axis one step and detect the vacuum sensor in Auto Detecting height feature.
- (2) **Auto Detect Height use nozzle:** select use nozzle 1 or 2 for the Auto Detecting height feature.
- (3) **Auto Detect Height Percentage:** set the vacuum sensor detection %
- (4) **Dispenser Move Up Delay:** Delay time for dispenser move up
- (5) **Dispenser Move Down Delay:** Delay time for dispenser move down
- (6) Click **Up/On** button can test the Dispenser Move Up/Down Delay time  
**Dispenser Output Off Delay:** Delay time between dispenser output turn off and dispenser move up  
(DP-2 Dispenser option only)
- (7) In **X-Y Software Limit** set the X,Y software limit

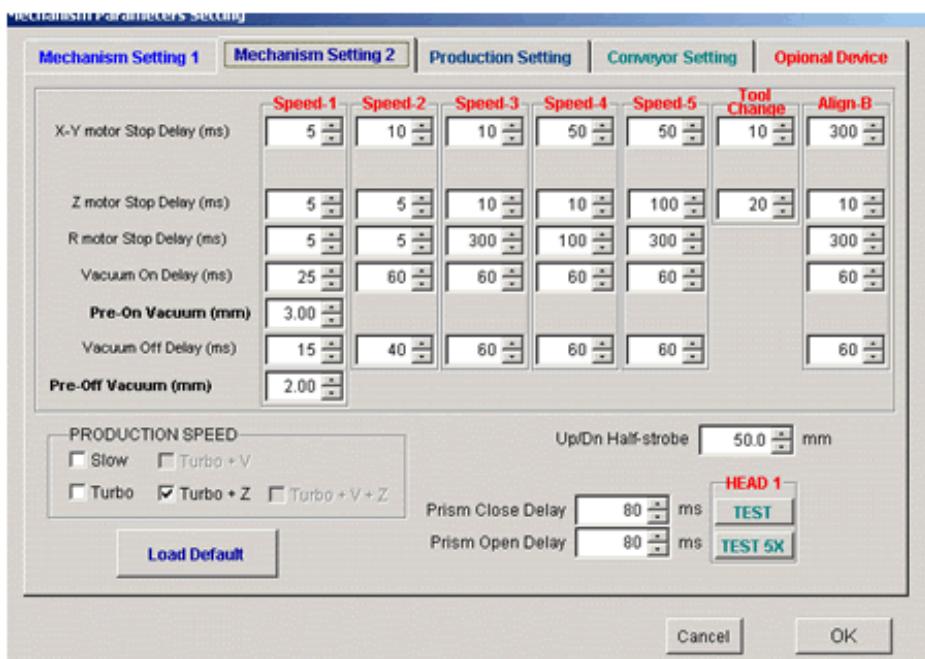
- (8) **Camera-3 magnification ratio** set camera-3 magnification
- (9) **Use of Camera-3** set which feeder use camera-3 to learn

**Remarks:** The mechanical Jaw & the Dispenser Up/Down are designed using of pneumatic cylinder, and the speed of the cylinder is controlled by the Air Flow Switches. Once the Air Flow Switch is adjusted, the software delay time has to be changed.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Mechanism Setting - 2

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE  
This is to set the mechanical delay time in **Production Speed-1 & Production Speed-2~5 (Head Up/Down speed set in Learn Pick mode)**

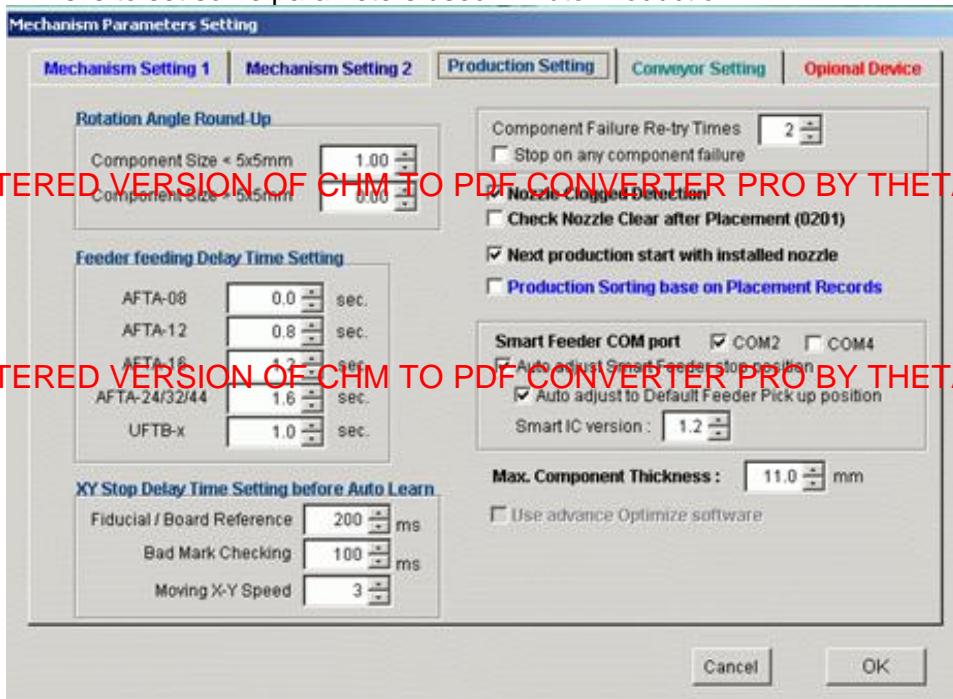


- (1) **X-Y motor Stop Delay:** Delay time after X-Y motor stop
- (2) **2nd Placement Stop Delay:** Delay time after turn off vacuum to place component
- (3) **Z motor Stop Delay:** Delay time after Z axis motor stop
- (4) **R motor Stop Delay:** Delay time after rotate motor stop
- (5) **Vacuum On Delay:** Delay time after turn on vacuum to pick component
- (6) **Pre-on Vacuum (mm):** Vacuum on before Z reach component (set 0 to disable this feature)
- (7) **Vacuum Off Delay:** Delay time after turn off vacuum to pick component
- (8) **Pre-off Vacuum (mm):** Vacuum off before Z reach PCB (set 0 to disable this feature)
- (9) **PRODUCTION SPEED:** Slow speed used in case of X-Y axis motors get problems

- (10)**Up/Dn Half-strobe:** In Auto Production, after place the component on the PCB, the Z-axis will move up to this level (not the most upper level) and move to the feeder position to pick up next component. This is used to increase the production speed.
- (11)**Prism Close Delay:** Delay time for Prism close
- (12)**Prism open Delay:** Delay time for Prism open

## Mechanism Setting - 3

This is to set some parameters used in Auto Production



### (1) Rotation Angle Round-Up (Component Size < 5 X 5):

For components size < 5x5mm: The machine do the reference point recognition before Auto Production, if the PCB has the angle shifted > set angle (e.g. 1.00 degree), the machine will place the component with adding this PCB shifted angle, otherwise the machine will not take care this PCB shifted angle for the placement.

### (2) Rotation Angle Round-Up (Component Size > 5 X 5)

For components size > 5x5mm: The machine do the reference point recognition before Auto Production, if the PCB has the angle shifted > set angle (e.g. 1.00 degree), the machine will place the component with adding this PCB shifted angle, otherwise the machine will not take care this PCB shifted angle for the placement.

**Remarks:** - 2 points reference used only

- This rotation angle round up normally is set to 1 degree for small components & 0 degree for IC, since the IC components need high placement accuracy. If you set 0 degree also for small components, the production speed may be slow down, due to the machine needs to take care the small angle rotation for every component placement.

### (3) Component Failure Re-try Times

For the Feeder programmed with next feeder: In Auto Production, pick up failure or align failure, the machine will re-try to pick up the component again, and this parameter is to set how many re-try times.

### (4) Stop on any component

Enable stop on any component function will stop when pick up fail, if not select, machine will auto pick up next feeder, will back to pick up the error feeder until program finish, this function only for 0201 production.

**(5) Nozzle Clogged Detection**

This is to enable/disable the machine detect nozzle clog after install a nozzle

**(6) Check Nozzle Clear after Placement(0201)**

Set Check Nozzle Clear after Placement (0201), this will auto check whether it still have component stick on the nozzle after placement. In case the component sticking in the nozzle, it will go to the (Nozzle 4) waste Component Location to clear the nozzle by SPONGE and then do the next pick up.

**(7) Next Production start with installed nozzle**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

If enable this, Next production will start with the installed nozzle

If disable this, next production will start with the smallest nozzle

Since our nozzle 4 (for 0201) size is smaller than the other nozzle, and must place 0201 component first otherwise will place fail due to height or position wrong of other component.

**(8) Production sorting base on placement records**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

VL machine only

**(9) Smart feeder COM port**

When enable Smart Feeder function in software, direct select COM2 can setup and production smart feeder, COM4 port only for laser machine and must install COM port card.

**(10) Auto adjust Smart Feeder stop position ( For Smart Feeder only )**

This is to enable the auto correction of the pick up position due to the movement of component inside the paper tape during advancing the feeder.

**(11) Auto re-adjust to default feeder pick up position (For Smart Feeder only)**

This is to re-adjust the feeder pick up position when install a new feeder

**(12) Smart IC Version (For Smart Feeder only)**

This is to set the Smart IC version for Smart Feeder

**(13) Max. Component Thickness**

This is to setup the component thickness.

**(14) Feeder feeding Delay Time Setting**

This is to set the different type of feeders feeding time.

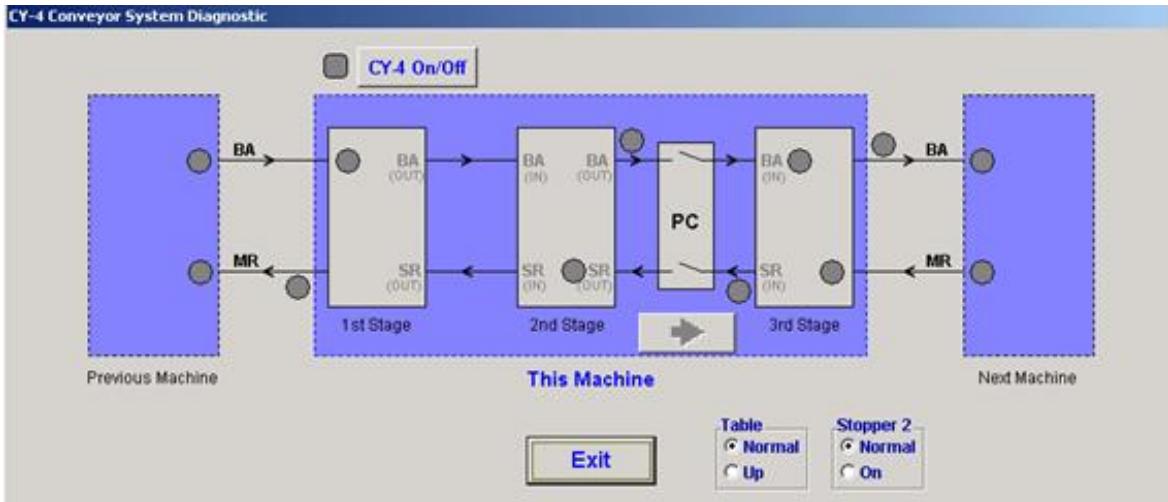
**Remarks:** If this parameter is set too small, the machine may not pick up the component due to the next component on the feeder is not in the standby position.

**(15) XY Stop Delay Time Setting before auto learn**

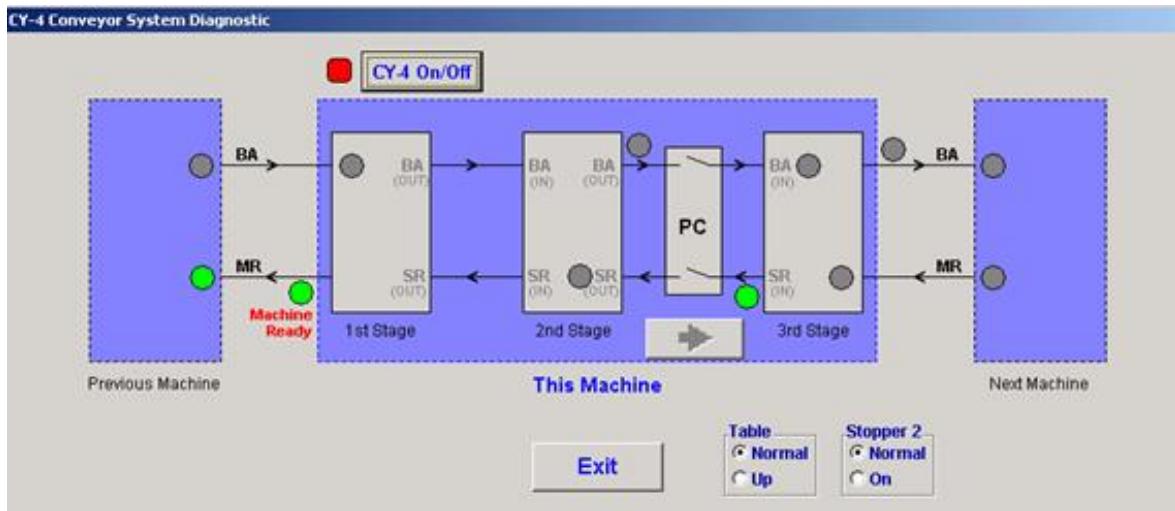
This is to set the time for learn reference and bad mark check during production, this is for change the speed for Auto learn reference

## Mechanism Setting – 4

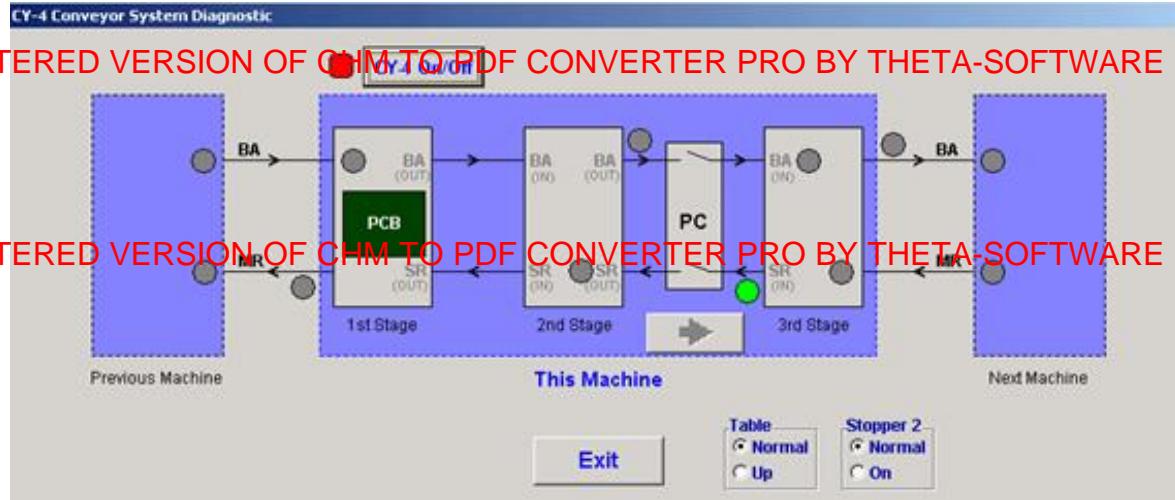
This is the diagnostic testing of the conveyor system.



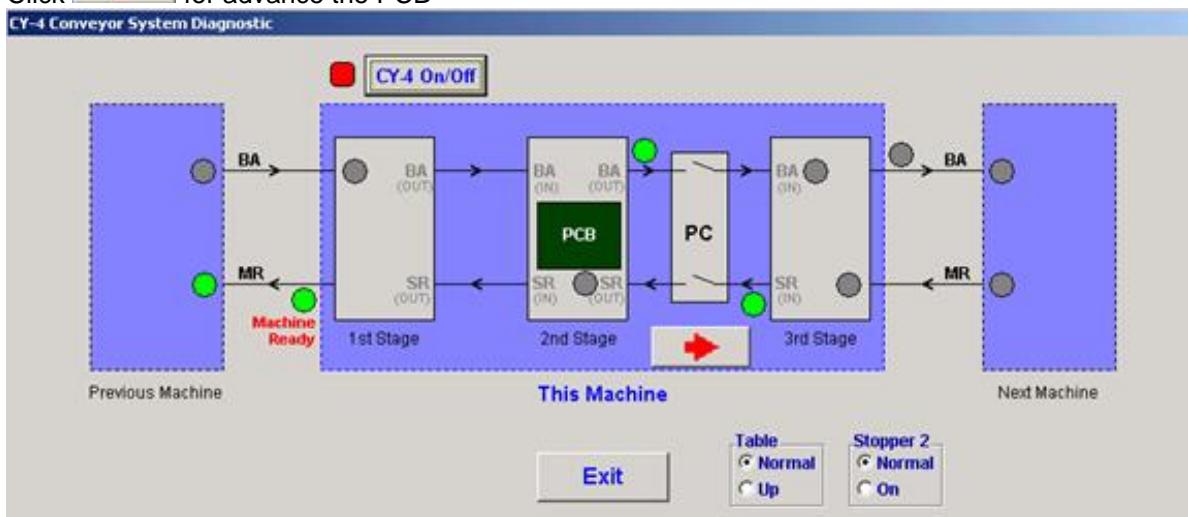
Click "CY-4 On / Off" for enable, green LED means can load PCB

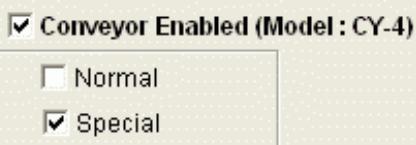
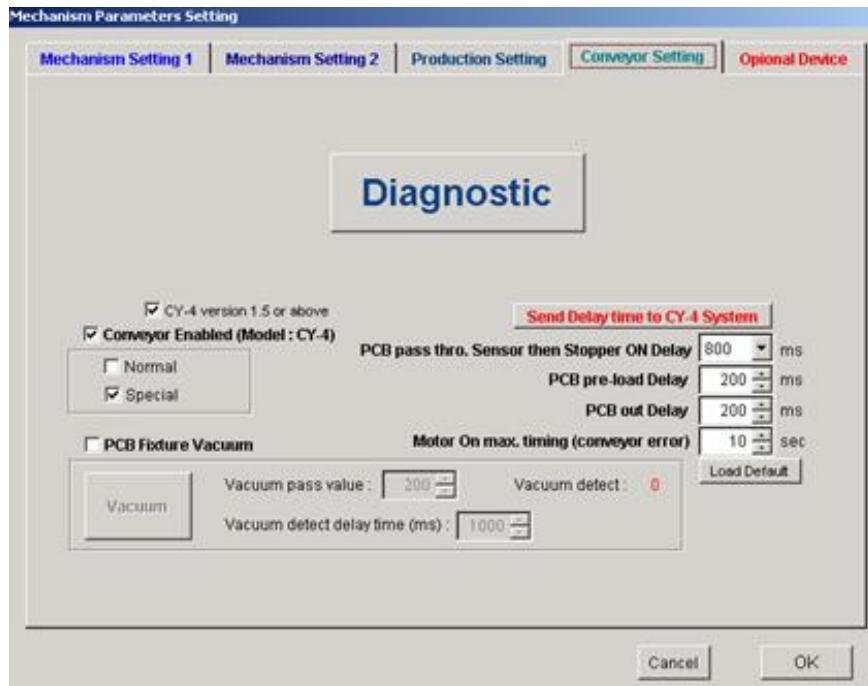


Black PCB means the 1<sup>st</sup> stage has PCB board, and the sensor is available



Click  for advance the PCB





Select Conveyor system Normal or Special

Conveyor Special is a special feature to temporary unused Conveyor system and the datum plate will always at the upper level.

**Remarks:** Set up PCB for Conveyor System, please refer to **APPENDIX N**

- PCB pass thro.Sensor then Stopper On Delay in mesc  
This is to set the delay time when PCB passes through sensor then stopper

- (Sensor 1 & 2) PCB pre-load Delay  
This is to set sensor 1 & sensor 2 pre-load PCB delay time
- (Sensor 3) PCB out Delay  
This is to set sensor 3 let PCB out delay time

- Motor on max. timing(conveyor error)  
This is to set motor running max timing

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

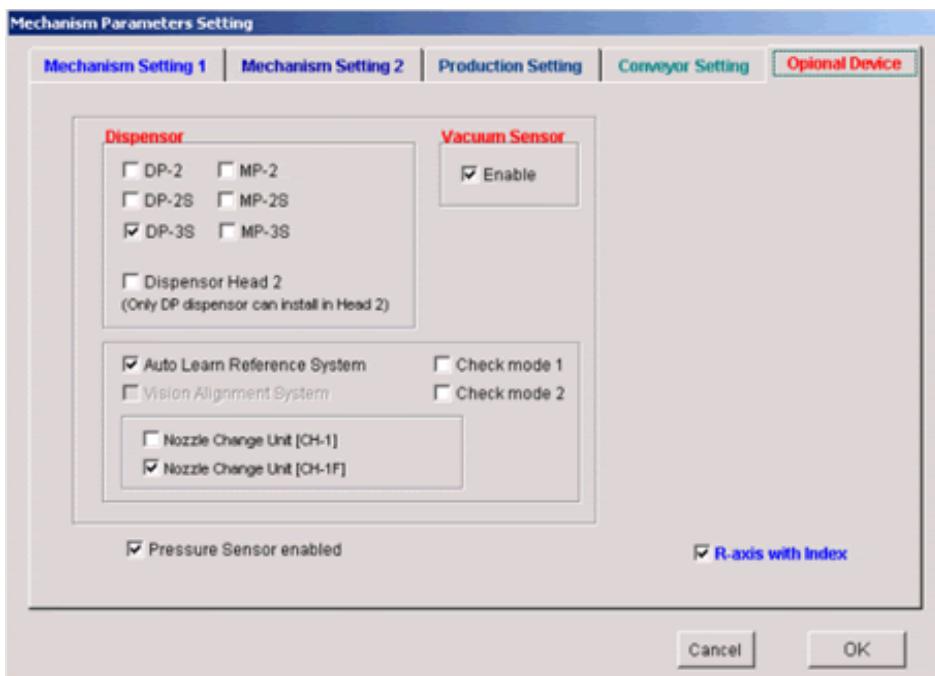
After setting the delay time, please click **Send Delay time to CY-4 System** to record the setting

- PCB Fixture Vacuum

PCB Fixture Vacuum is selected after setup fixture PCB vacuum value and vacuum detect delay time, press vacuum button for check

## Mechanism Setting – 5

This is to enable/disable some optional device



**R-axis with Index** Enable R-axis with index function  
-Enable R-axis Index, please do the followings;  
-Train R Home Image in Home Machine mode  
-Calibrate Alignment-G 90/180/270 angle offset



## 6.4 CALIBRATE MENU - Nozzle Parameters



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

This is to set the White Nozzle parameters including the Nozzle pin length, Nozzle vacuum detect parameter & Nozzle change location (White Nozzle use back light for pick & place).

Nozzle Parameter Setting

WHITE NOZZLE		BLACK NOZZLE		Alignment-G/H (Nozzle 7)			
<b>HEAD 1</b>	Length	Vacuum Sensor Analog Reading	Nozzle Change Location	X	Y	Camera	Manual
Nozzle 1 (0.7mm)	6.00	OPEN 214.9 CLOSE 234.9	Learn	181.5850	79.4900	Camera	Manual
Nozzle 2 (1.2mm)	6.00	185.6 235.4	Learn	161.5730	79.4740	Camera	Manual
Nozzle 3 (2.0mm)	5.00	113.4 235.4	Learn	101.5370	79.4260	Camera	Manual
Nozzle 4	6.00	229.8 235.2	Learn	81.5250	79.4100	Camera	Manual
Nozzle 5 (4.7mm)	4.50	102.2 233.1	Learn	191.5798	93.5064	Camera	Manual
<b>HEAD 2</b>	Length	OPEN 215.1 CLOSE 232.4	Learn	181.5560	79.4480	Camera	Manual
Nozzle 1 (0.7mm)	6.00	177.9 235.2	Learn	161.5440	79.4320	Camera	Manual
Nozzle 2 (1.2mm)	6.00	110.1 235.1	Learn	490.2100	107.7400	Camera	Manual
Nozzle 3 (2.0mm)	5.00	229.8 234.4	Learn	81.4960	79.3680	Camera	Manual
Nozzle 4	6.00	101.0 232.8	Learn	191.5508	93.4644	Camera	Manual
		Manual Nozzle Change Location	104.7400 261.6300	Manual	Test		
		Waste Component Location	104.7350 261.6300	Manual	Test		
		(Nozzle 4) Waste Component Location	119.7350 261.6300	Test			
		DP2-2s/MP2-2s Standby Location	50.0000 50.0000	Manual	Test		
		<input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading	Z axis Position 70.74 mm	Manual			
		X-Y Location 201.8700 76.7350	ALL Vacuum Reading				

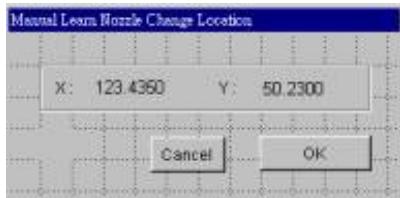
**EXIT**

Click <camera>button use of camera-1 to view if camera-1 can views the nozzle position, if not then use of camera-3

### How to learn Nozzle Change Location by Manual

Steps:

- (1) Remove all the nozzles from the Tool Changer
- (2) Install the nozzle #6 to the Z-axis manually & carefully
- (3) Click **Manual** button



- (4) Move Z-axis up & move the SMD Head near the nozzle change location of the Tool Changer manually & carefully
- (5) Move Z-axis up & down to the nozzle change location to try and find the fitness location for nozzle change location
- (6) Click **OK** button
- (7) Repeat step 3 to step 6 to find the fitness location for Nozzle change location 1 ~ 6
- (8) Remove the nozzle #6 from the Z-axis manually
- (9) Install all nozzles to the Tool Changer manually

- Manual Nozzle Change Location  
This is to set the location for manual change nozzle

- Waste Component Location  
This is to set the location for waste component

- (Nozzle 4) Waste Component Location (for 0201 only)

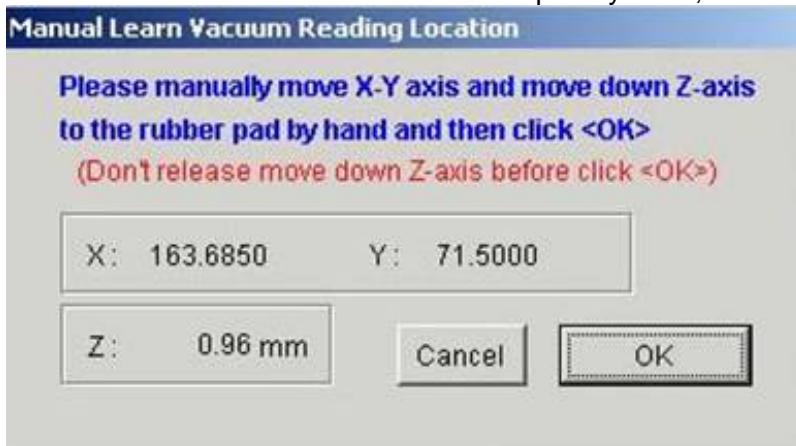
This is to set the location for (Nozzle 4) waste component, please check the (Nozzle 4) Waste Component Location which should set to the top of SMT. The position of (Nozzle 4) Waste Component location is default 15mm next to the Waste Component Location.

- DP2-2s / MP2-2s Standby Location  
This is to set the location for DP2-2s / MP2-2s dispenser standby

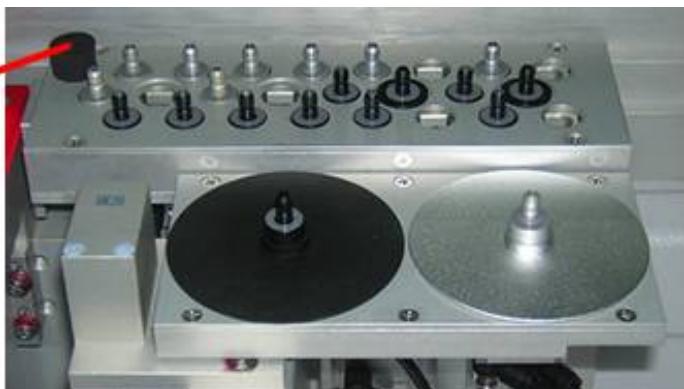
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### Automatic Calibrate

- (1) Enable Auto Learn Vacuum Sensor Analog Reading, click **Manual** button, manually move X-Y axis and move down Z-axis to the rubber pad by hand, this is to confirm the calibrate location.



黑胶



- (2) Click **All Vacuum Reading** button, machine will start to detect the reading with no component, and auto move to the rubber pad to detect the reading that is to simulate a component is pick up,

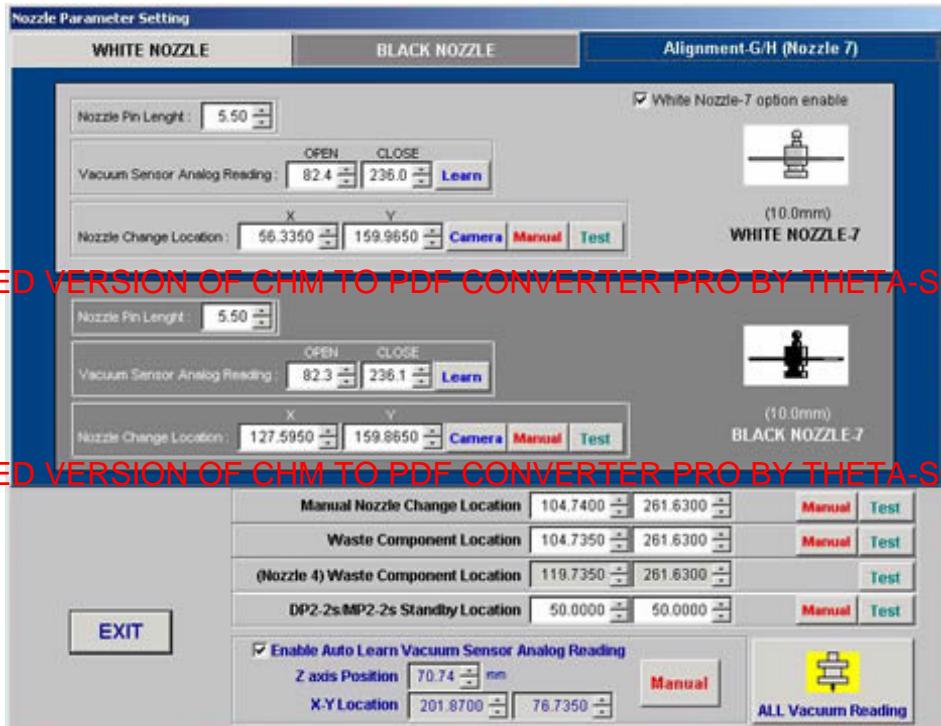
and then software will auto detect the other nozzles

This is to set the Black Nozzle parameters including the Nozzle pin length, Nozzle vacuum detect parameter & Nozzle change location.(Black Nozzle use front light for pick & place)

Nozzle Parameter Setting

WHITE NOZZLE		BLACK NOZZLE		Alignment G/H (Nozzle 7)			
<b>HEAD 1</b>		Vacuum Sensor Analog Reading		Nozzle Change Location			
Nozzle 1 (0.7mm)	Length	OPEN	CLOSE	Learn	X	Y	
6.00		214.3	236.3		181.5626	107.5068	Camera
6.00		189.1	235.2	Learn	161.5506	107.4908	Camera
5.00		109.9	235.8	Learn	101.5146	107.4428	Camera
6.00	✓ 0201	231.0	235.5	Learn	81.5026	107.4268	Camera
4.50		101.9	235.3	Learn	111.5318	93.4424	Camera
6.00		82.2	236.3	Learn	91.5198	93.4264	Camera
<b>HEAD 2</b>		OPEN CLOSE		X Y			
Nozzle 1 (0.7mm)	Length	215.9	235.8	Learn	181.5336	107.4648	Camera
6.00		177.6	235.1	Learn	161.5216	107.4488	Camera
5.00		109.0	235.5	Learn	101.4856	107.4008	Camera
6.00	✓ 0201	230.3	232.5	Learn	81.4736	107.3848	Camera
4.50		102.3	234.3	Learn	111.5028	93.4004	Camera
6.00		84.8	235.9	Learn	91.4908	93.3844	Camera
		Manual Nozzle Change Location		Manual Test			
		Waste Component Location		Manual Test			
		(Nozzle 4) Waste Component Location		Test			
		DP2-2s/MP2-2s Standby Location		Manual Test			
		<input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading		Z axis Position: 70.74 mm X-Y Location: 201.8700 76.7350			
				<input type="button" value="Manual"/>		 ALL Vacuum Reading	
<input type="button" value="EXIT"/>							

This is to set the G Nozzle parameters including the Nozzle vacuum detect parameter & Nozzle change location.(G Nozzle use for fine pitch QFP & BGA)



## 7.0 UTILITY MENU

### 7.1 UTILITY MENU - Reset Feeder



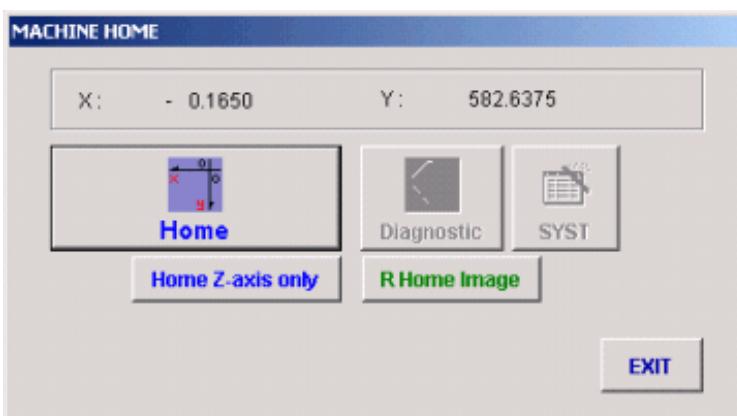
This is to reset the half pitch feeders (Library name with [H] in the front, e.g. [H] 0402)

### 7.2 UTILITY MENU - Home

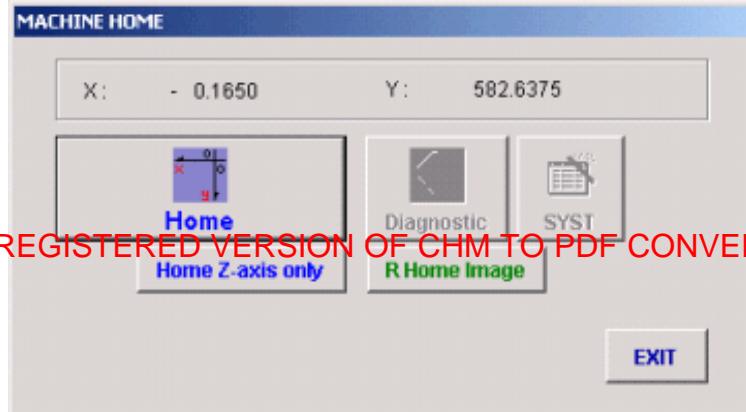


This is to Home the machine (to find the zero position of X, Y, Z axis)

Upon the software start, the machine will enter this mode to define the HOME position. Normally you don't need to home the machine again.



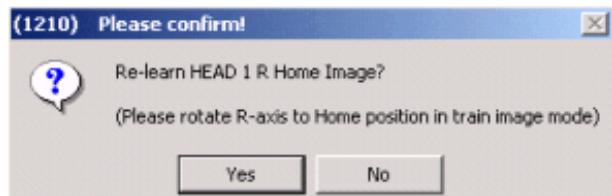
## Calibrate of R axis-index



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Train R axis with R axis please refer 163 machine setting

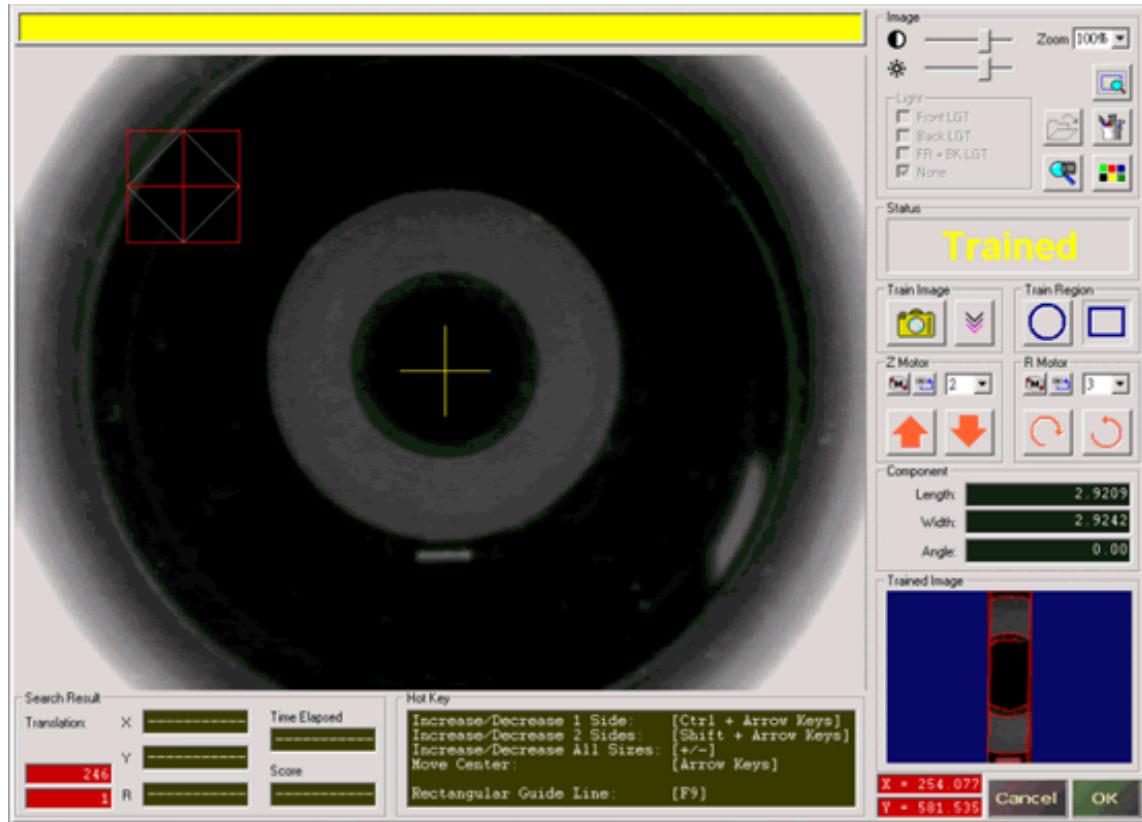
- Enable R-axis Index, please do the followings;
- Train R Home Image in Home Machine mode
- Calibrate Alignment-G 90/180/270 angle offset



Click **R Home Image** below frame will be shown

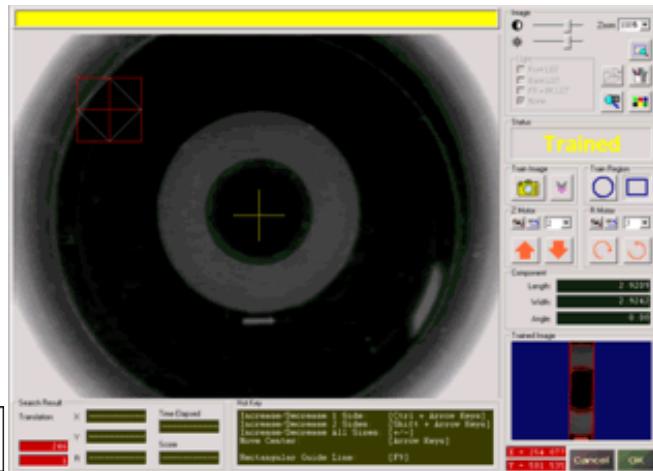
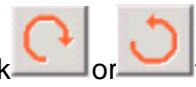
please click

**Yes** to enter



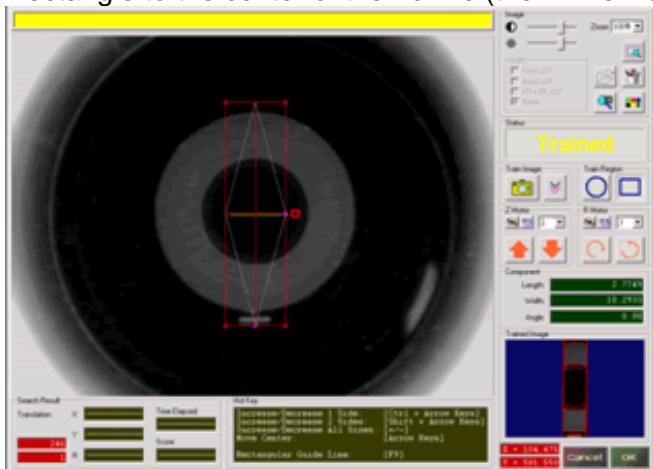


1. Use the brightness and contrast controls to adjust the brightness and contrast, click or to turn the index to the bottom



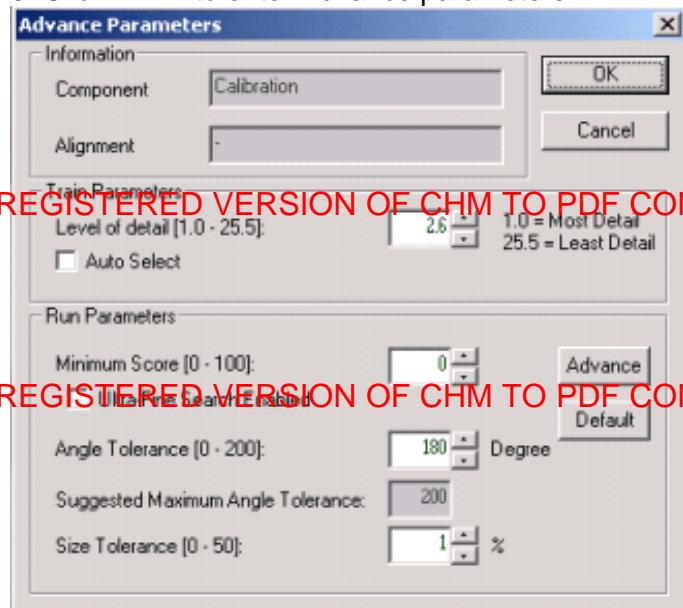
Index

2. Use mouse to move the Affine Rectangle to the middle of Nozzle, and then let the cross of Affine Rectangle to the center of the nozzle (the Affine Rectangle will cover the index)





3. Click  to enter Advance parameters



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

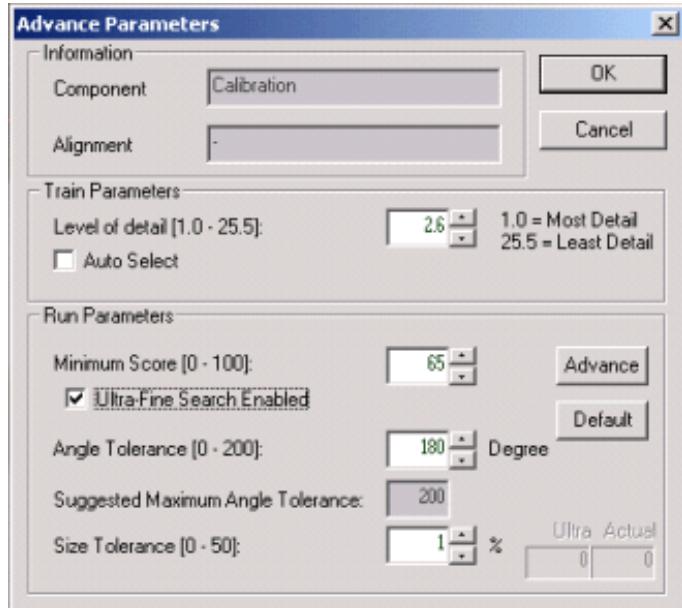
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

3.1 Set level of detail about 2.6

3.2 Enable  Ultra-Fine Search Enabled

3.3 Set score for Minimum score about 60-70





Click **OK** for save



4. Click capture image



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

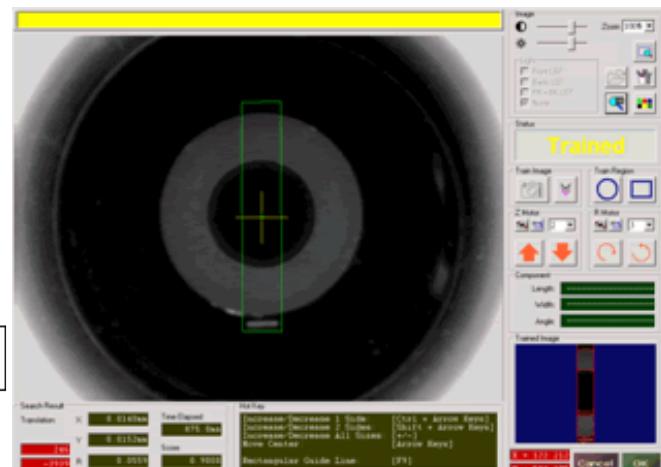


5. Click to test train

Score

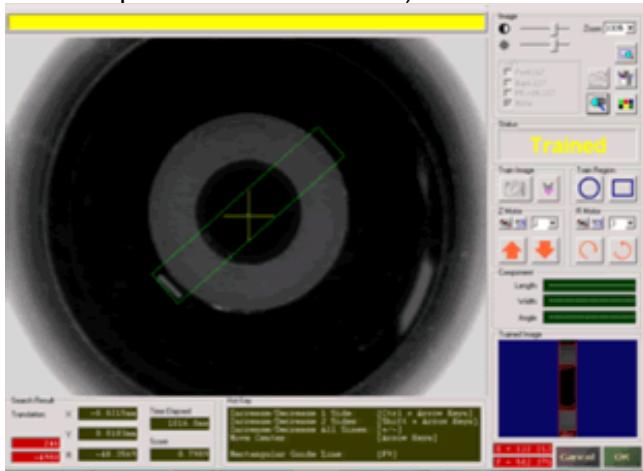
Time Elapse

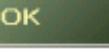
the score will move then 0.65 and the Time Elapsed is about 100ms then OK.



If

6. Click  or  to rotate the Angle of R motor and the click  to test train (Score will over 0.65 Time Elapsed will about 100ms)



7. Click  for save



8. Manually turn the R-index and the click  to home the machine, check the R-index will auto return the before location or not, if yes then OK, if no please re-calibrate.

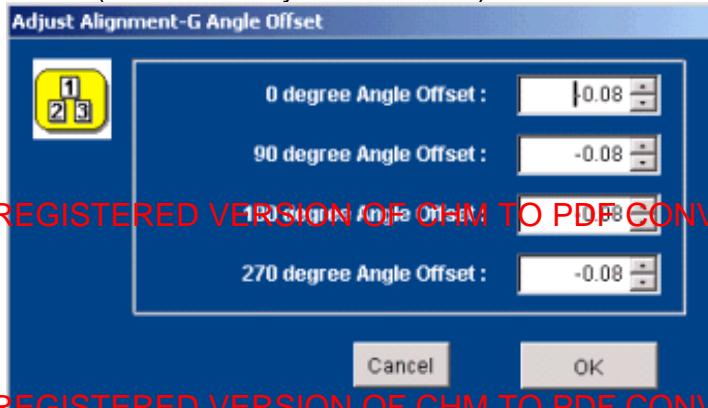
9.



Enable  Rotate only in one direction for IC after alignment (IC pitch non-zero in LIB), for IC component, R motor will rotate by single directory

Disable  Rotate only in one direction for IC after alignment (IC pitch non-zero in LIB), for IC component, R motor will rotate by clockwise or counter clockwise (Do not suggest)

10. When update the software please re-calibrate the Camera-G Angle and offset, Camera-A Angle and offset. (Camera-A only check head-1)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 7.3 UTILITY MENU - Brow



#### Last Production Counter:

Show the last Auto Production used time in sec.

#### Reset Production Hour Counter:

Clear the Production hour counter to zero

Production hour counter

File Name: 10CHIPS      Prod. Hour: 105.4  
Description: 0603DEMOa123456789b123456789c

#### View Log File:

Check the Log file, this file record down the problems occurred in Auto Production.

#### Modify User Password-1:

This is to change the User Password-1, this password is used in the SET UP menu to avoid worker to modify the User Library and some important data. This password can be disabled if you change to 4 x Spaces (default User Password-1 : 9182)

#### Off-line mode:

This is to select this software to Off-line mode. Set to Off-line mode, you can install

the software to another PC for he off-line programming the P&P data.

#### **Manufacturer Setting:**

This is the machine advance setting and user don't need to modify.

### **7.4 UTILITY MENU - Diagnostic**



#### **Machine Diagnostic:**

In case the machine get problems, you can enter this mode for the trouble shooting. Most of the mechanisms can be individual control.

#### **Feeder Burn-in Testing:**

This feature used only by manufacturer.

#### **Mechanism Burn-in Testing:**

This feature used only by manufacturer.

### **7.5 UTILITY MENU - Back Up SYST file**

The SYST.DBF file in \WW390VXX sub-directory storing the machine system data, this is the very important information for this machine. This mode is to back up this SYST.DBF file to a floppy diskette.

It is recommended to do this back up every time you've re-calibrated the machine.

### **7.6 UTILITY MENU - Vacuum**

This is to enable/disable vacuum in Auto Production mode.

This feature is no used for user.

### **7.7 UTILITY MENU - Language**

This is to select which kind of the language.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

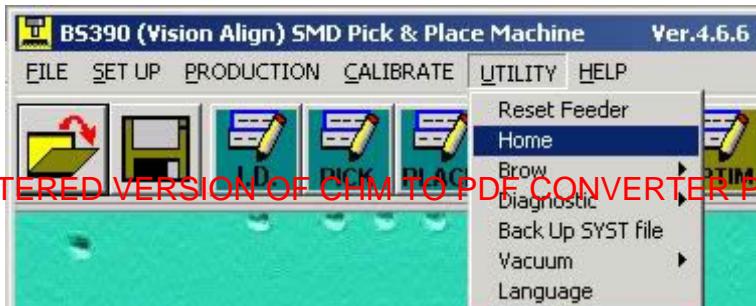
Remarks: After change of language selection, you have to restart the SMD software so as to active the new language selected.

## 7.1 UTILITY MENU - Reset Feeder

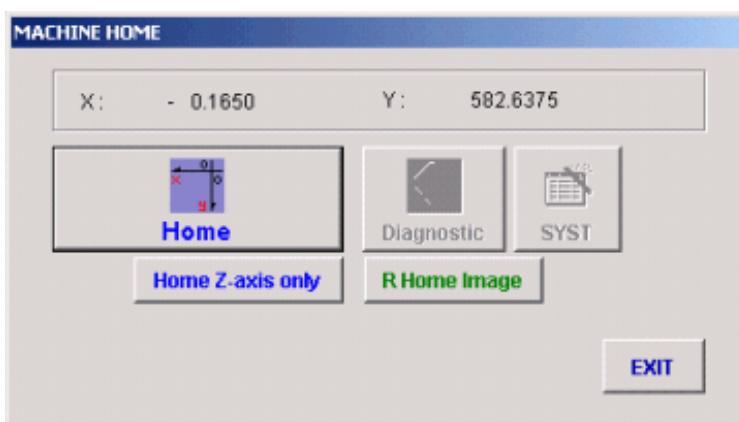


This is to reset the half pitch feeders (Library name with [H] in the front, e.g. [H] 0402)

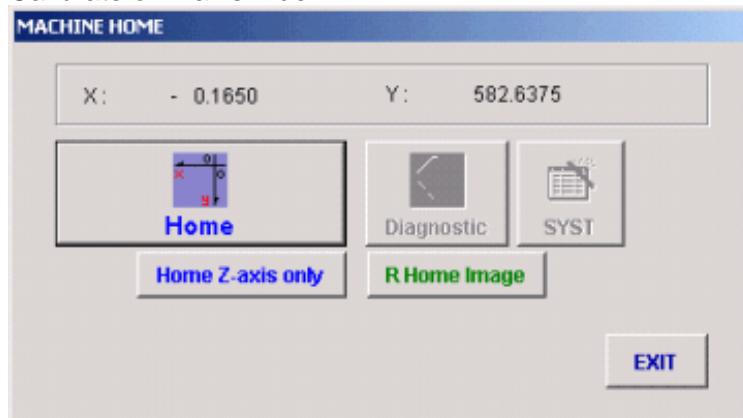
## 7.2 UTILITY MENU - Home



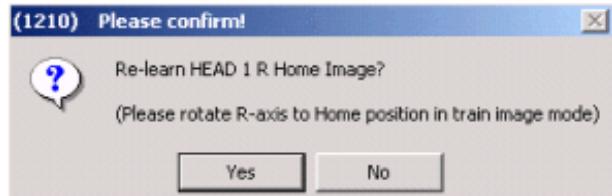
This is to Home the machine (to find the zero position of X, Y, Z axis).  
Upon the software start, the machine will enter this mode to define the HOME position. Normally you don't need to home the machine again.



### Calibrate of R axis-index



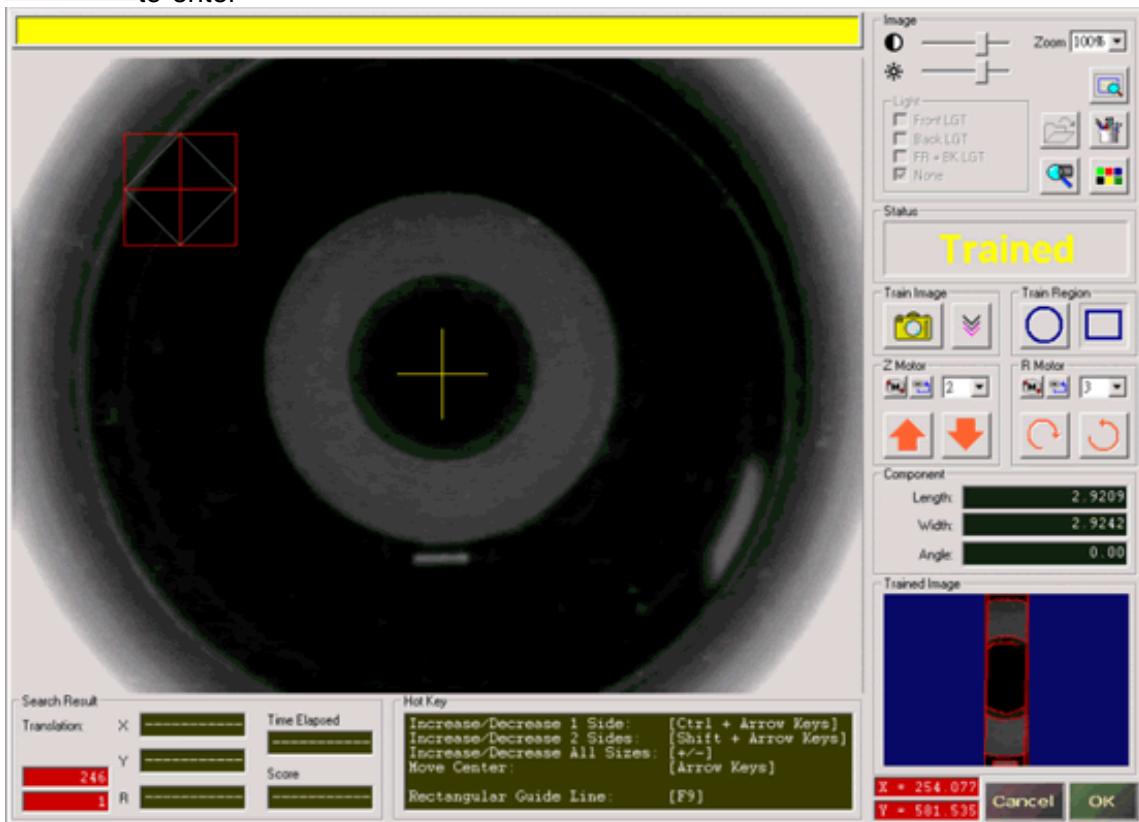
Enable R axis with index please refer 6.3 mechanism setting-5  
-Enable R-axis Index, please do the followings;  
-Train R Home Image in Home Machine mode  
-Calibrate Alignment-G 90/180/270 angle offset



Click **R Home Image** below frame will be shown

**Yes** to enter

please click





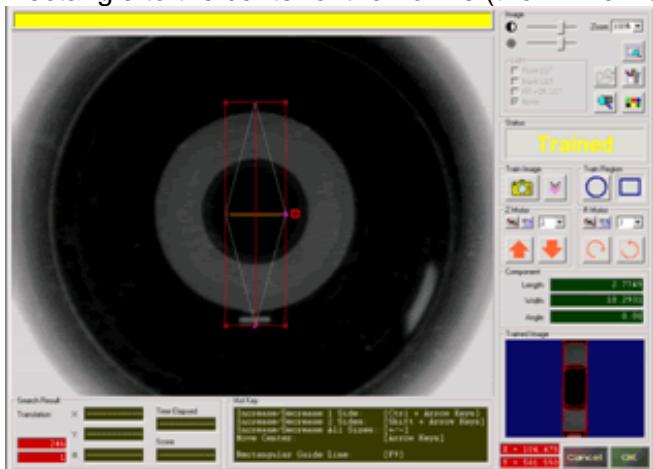
1. Use the brightness and contrast sliders to adjust the brightness and contrast, click or to turn the index to the bottom



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

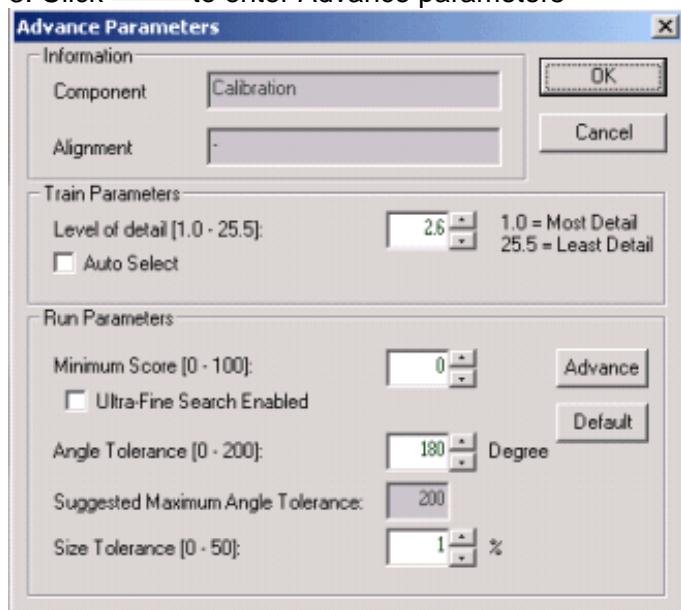


2. Use mouse to move the Affine Rectangle to the middle of Nozzle, and then let the cross of Affine Rectangle to the center of the nozzle (the Affine Rectangle will cover the index)





3. Click  to enter Advance parameters

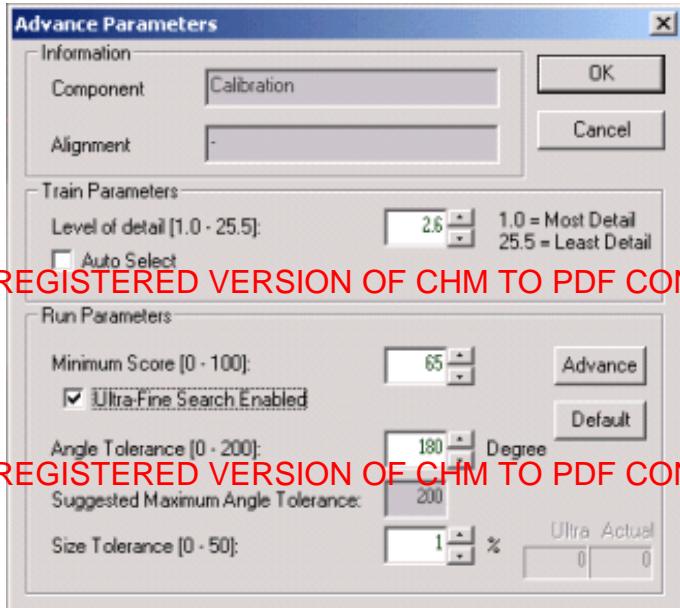


3.1 Set level of detail about 2.6

3.2 Enable  Ultra-Fine Search Enabled

3.3 Set score for Minimum score about 60-70

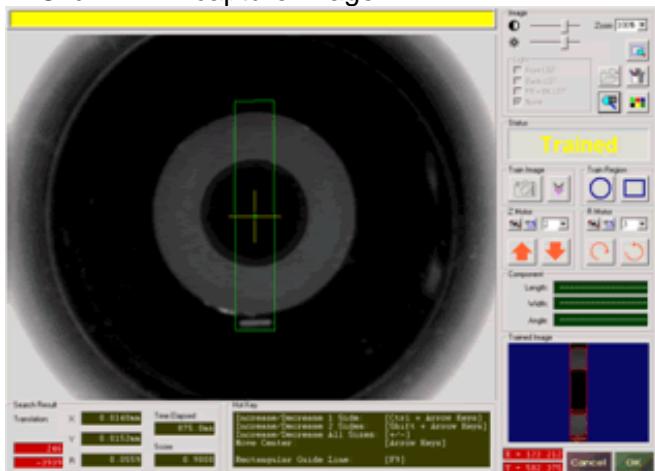




Click **OK** for save



4. Click  capture image

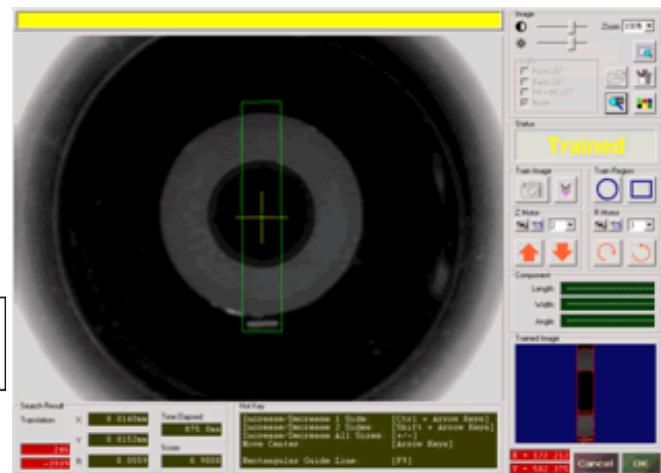


5. Click  to test train

Score

Time Elapse

the score will move then 0.65 and the Time Elapsed is about 100ms then OK.



If

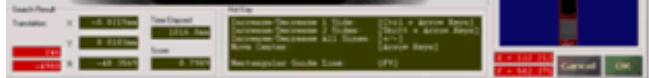


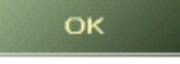
6. Click  or  to rotate the Angle of R motor and the click  to test train (Score will over 0.65 Time Elapsed will about 100ms)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

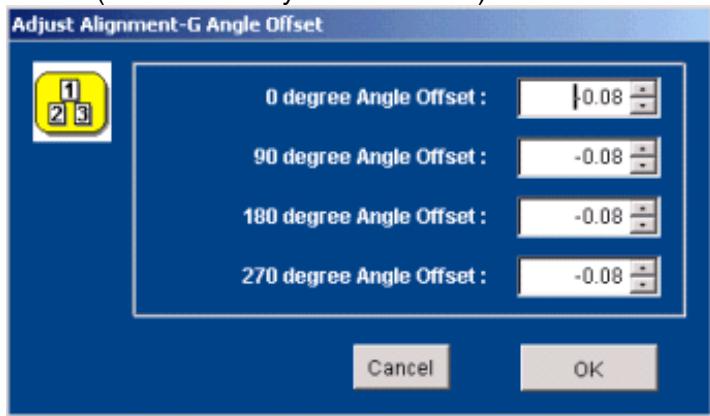


7. Click  for save

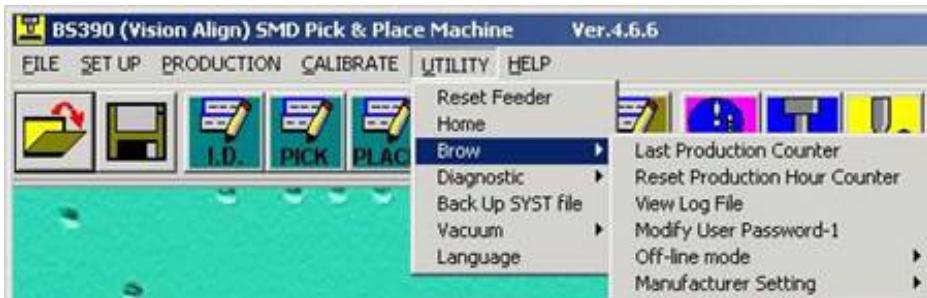


8. Manually turn the R-index and the click  to home the machine, check the R-index will auto return the before location or not, if yes then OK, if no please re-calibrate.

9. When update the software please re-calibrate the Camera-G Angle and offset, Camera-A Angle and offset. (Camera-A only check head-1)



## 7.3 UTILITY MENU - Brow



### Last Production Counter:

Show the last Auto Production used time in sec.

### Reset Production Hour Counter:

Clear the Production hour counter to zero



### View Log File:

Check the Log file, this file record down the problems occurred in Auto Production.

### Modify User Password-1:

This is to change the User Password-1, this password is used in the SET UP menu to avoid worker to modify the User Library and some important data. This password can be disabled if you change to 4 x Spaces (default User Password-1 : 9182)

### Off-line mode:

This is to select this software to Off-line mode. Set to Off-line mode, you can install the software to another PC for the off-line programming the P&P data.

### Manufacturer Setting:

This is the machine advance setting and user don't need to modify.

## 7.4 UTILITY MENU - Diagnostic



### Machine Diagnostic:

The last version can get problems, you can enter this mode for the troubleshooting. Most of the mechanisms can be individual control.

### Feeder Burn-in Testing:

This feature used only by manufacturer.

### Mechanism Burn-in Testing:

This feature used only by manufacturer.

## **7.5 UTILITY MENU - Back Up SYST file**

The SYST.DBF file in \WW390VXX sub-directory storing the machine system data, this is the very important information for this machine. This mode is to back up this SYST.DBF file to a floppy diskette.

It is recommended to do this back up every time you've re-calibrated the machine.

## 7.6 UTILITY MENU - Vacuum

This is to enable/disable vacuum in Auto Production mode.  
This feature is no used for user.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 7.7 UTILITY MENU - Language

This is to select which kind of the language.



**Remarks:** After change of language selection, you have to restart the SMD software so as to active the new language selected.

## 8.0 HELP MENU

### 8.1 HELP MENU - Help Topics



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Show this software user manual in computer.  
If need view, user must copy the file "manual. Chm" from CD-ROM to  
C:\WW390VXX\, then this item will be useful.

### 8.2 HELP MENU - About



Show software information

### 8.3 HELP MENU - I/O Card Driver Version



Show the I/O card driver version.

### 8.4 HELP MENU - Software History



Show this software change what then before



## 8.1 HELP MENU - Help Topics



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Show this software user manual in computer.

If need view, user must copy the file "manual. Chm" from CD-ROM to C:\WW390VXX\, then this item will be useful.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 8.2 HELP MENU - About



Show software information

### 8.3 HELP MENU - I/O Card Driver Version



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Show the I/O card driver version.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 8.4 HELP MENU – Software History



Show this software change what then before

# APPENDIX A

## HARDWARE INSTALLATION

### Environment Requirement

#### 1.1 Space Requirement

#### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

The BS390 must be installed in a rigid and strong ground floor. The space is at least 2.5M x 2.5M

#### 1.2 ELECTRICAL POWER

#### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

The operating voltage is 220V A.C.

### 1.3 AIR SUPPLY

It requires 80psi(5.5 bar ) for air supply. and the air flow is 150L/min

**WARNING:** MAKE SURE THE X & Y AXIS ARE UNLOCKED BEFORE TURN ON THE POWER

### 1.4 UNLOCK THE AXIS

When remove the machine from the carton/wooden case, you must follow the below steps:

- a) Take out the polyfoam package carefully
- b) Unlock the interim system for the machine fixed during transportation.
- c) Remove all the locked head kit
- d) Remove all the locked Z-axis kit
- e) Install the air-filter  
- Adjust the pressure meter to 5.5bar

**IMPORTANT:** The min. pressure out of your AIR COMPRESSOR must be 6 bars, that means if the pressure is less than 6 bars, the AIR COMPRESSOR shouldn't be switch on.

### 1.5 PHYSICAL CALIBRATION

Use a level meter to calibrate the front and the rear X-axis, and then the Y-AXIS, by adjusting the four adjustable feet.

**IMPORTANT:** This calibration should be performed for each time of relocation of the machine.

After the physical calibration, you must re-learn the Mark-A in the SYSTEM CALIBRATION of the software.

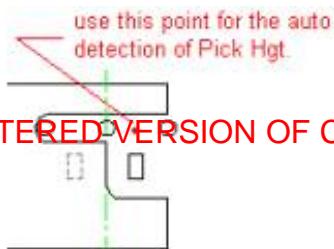
## APPENDIX B

### AUTO LEARN HEIGHT FEATURE

This feature is use of the vacuum sensor and the Z-axis for the height detection

#### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

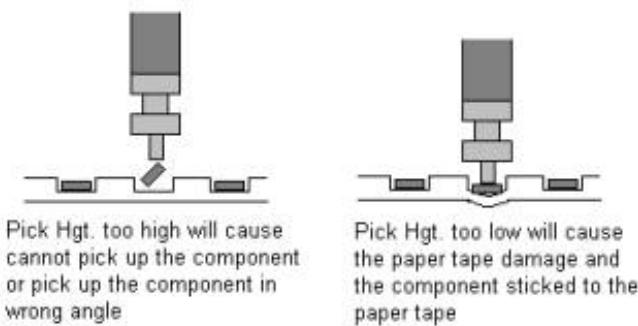
##### 1.1 Auto learn pick height



#### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

For small components, don't use the component position for the auto detection, since the vacuum will pick up the small component and detect the wrong Pick Hgt.

This is an important parameter during pick up the component.



Click in Learn Pick mode, the camera 1 image mode will be entered, locate the camera 1 to the tape of the Feeder or the center of the IC and click button, the machine will automatic install nozzle 1/2 and start to learn the height, the Z-axis will go downward till met the surface of the component and the pick up height is detected and show on the screen (you can fine adjust the height manually)

**Remarks:** For small components, please locate the camera 1 to the tape and not the center of the component. Since the vacuum is too strong for these small components and the nozzle will pick up the component before reach the surface of component and cause the height detection error.

##### 1.2 Auto learn PCB height

Click in Learn PCB mode, the camera 1 image mode will be entered, locate the camera 1 to the PCB (select a plate surface point on the PCB) and click button, the machine will automatic

install nozzle 1/2 and start to learn the height, the Z-axis will go downward till met the surface of the PCB and the PCB height is detected and show on the screen (manual adjust button for 0.5mm)

### 1.3 Auto learn component height/thickness

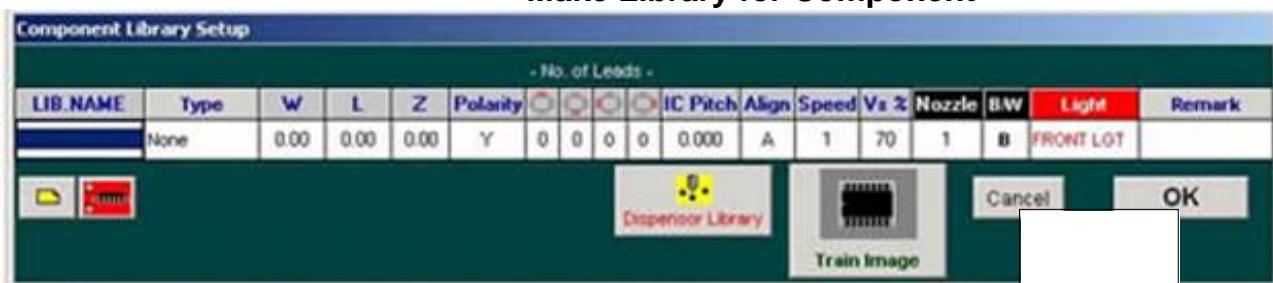
Click  in Learn Pick mode or in Component Library mode, the camera 1 image mode will be entered, place the component on the PCB (the PCB height must be well learned) and then locate the camera 1 to the center of the component and click  button, the machine will automatic install nozzle 1/2 and start to learn the height, the Z-axis will go downward till met the surface of the component (Component height is detected and show on the screen (you can fine adjust the height manually))

**Remarks:** This feature can only detect the plate surface components. For the other components (e.g. diode,..), please use the other measurement method or refer to the specification of your components to key-in the component height.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## APPENDIX C

### Make Library for Component



#### A. Select Lib.Name



B. Click **Train Image** and below frame will be shown



#### a) Semi-auto Pick up component

PCB Height is by test on learn PCB

click  to learn the component position (Semi-auto)

#### b) Pick up from feeder

Pick Height is by test on learn Pick

Click  to learn the component position by feeder (fully-auto)

#### c) Pick up component manually



for pick or place the component

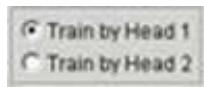


for open or close the vacuum

d) **Light**



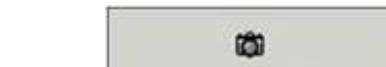
for select the Light source



for select Head

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



e) click [Train Image \(by camera or MsPaint\)](#) below frame will be shown



click to Toggle Search Area

click to Find Trained Component

click to Synthetic Train Image

click to Modify Train Image

click to change color

click Train component

click to set advance parameters

click to set train region to circle

click to set train region to affine rectangle

**Z Motor**  
Step 2

to move the Z motor

**R Motor**  
Step 3

to rotate the R motor

f) Trained image (for small component)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



click and select the component use the “田”, please check picture 1, turn wheel of the mouse zoom image, let the “田” tight enclosure the component. Please check picture 2

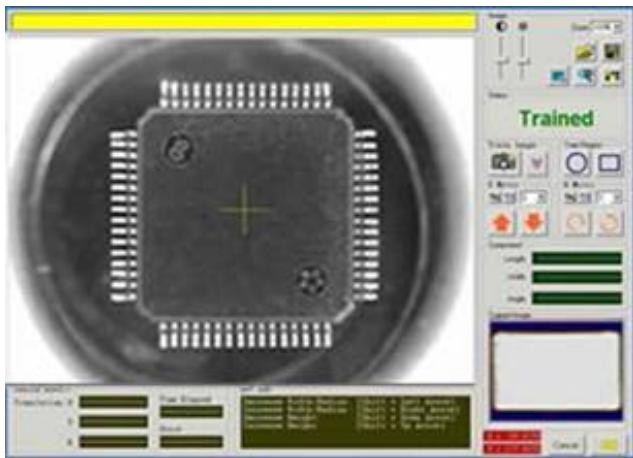


press “SHIFT” key, using arrow button let the “田” leave the same distance with the component , please

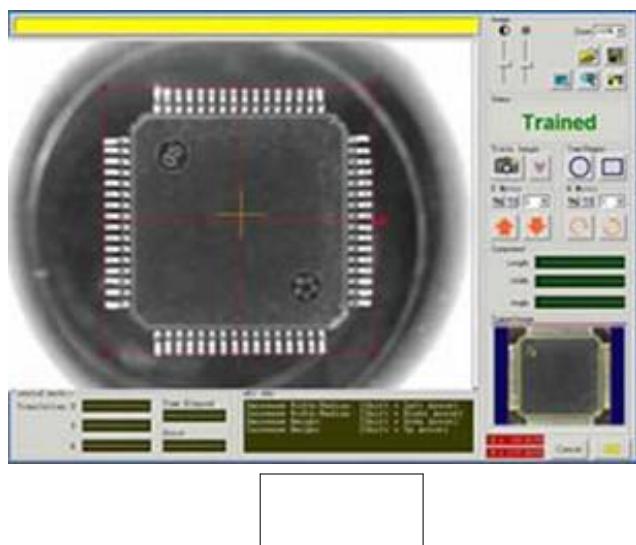


picture 3, turn wheel of the mouse, zoom out the image, click button, train the image, before can click for test train, until the accept threshold is satisfaction , please check picture 4, click “OK” will auto save image exit.

f) Trained image (for IC )



please refer Train image (for small component) to select the component's shape , turn wheel of the mouse, zoom the image , now maybe can't see the IC pitch, please click the right key of the mouse, the select menu show, please check picture 5 , select the "Pan" , now can found the mouse become hand shape, then car the image.



move the image, check the cross mark of the"田" whether in the middle of the IC pitch, please check pic

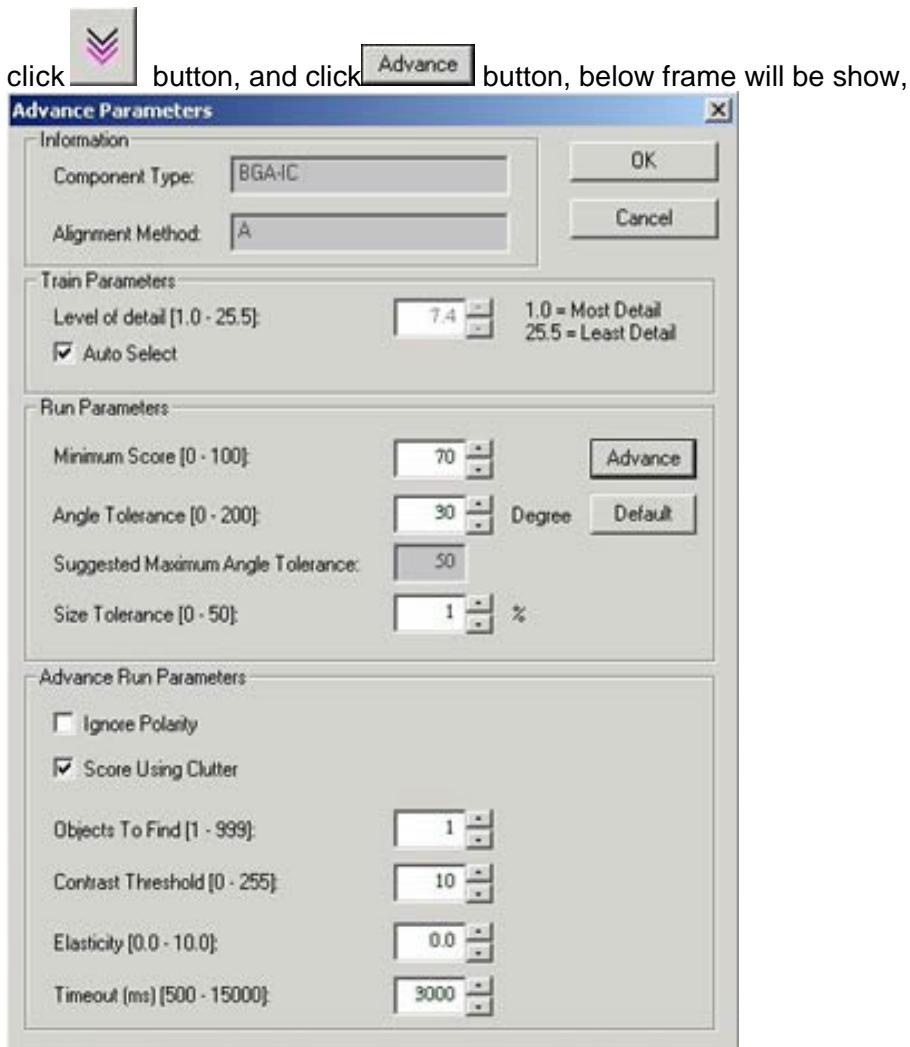
finally , turn wheel of the mouse, zoom out the image, click button, train image, please check picture 7 "OK" button will auto save and exit.

g) after trained finish , when pick and place next time, machine will auto contrast the image with the component is ok, then will pick & place the component

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

appendix :  setting



“information ” can show the Component Type and Alignment Method

#### “Train Parameters”

**level of detail** “ AUTO SELECT ” feature of Granularity is used for learning simple chip form comp  
When learning QFP or BGA, it should select manual.

The setting of **level of detail** is depend the repeat accuracy which needed during placement. When the setting is closed to “1”, the computer will learn more detail on the component, so that it will have more accuracy on position and angle but it will need more time to search.

When the setting is closed to 25.5 , the computer will only learn the rough outline of the component, the accuracy of position and angle is very rough, but the search time is very fast.

Therefore, when learning the QFP and BGA, we should select the setting closed to 1 and check the search time needed. The user can try different setting of Granularity ( e.g . 3, 2.5, 2, 1.5...), and check the search time,

search time should be about 300ms – 500ms for QFP.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## “ Run Parameters ”

Minimum Score ----- Minimum score of A Searched Object Allowed

Angle Tolerance ----- Maximum Angle of A Searched Object Differs From the Trained Object

**Remark:** For component have rotate angle when place

Due to **Alignment-A** is alignment first and then turns the angle for place, so must set the **Angle Tolerance** degree, suggest maximum Angle Tolerance is 50 degree.

Due to **Alignment-G** is turn the angle first and then do the alignment, so must set the **Angle Tolerance** degree, suggest maximum Angle Tolerance is 200 degree.

Size Tolerance ----- Maximum Size of A Searched Object Differs From the Trained Object

## “ Advance Run Parameters ”

Ignore Polarity ----- Enable this Box if the Polarity of the Trained Object can be Ignored

Score Using Clutter ----- Enable this Box if Video Noise May Exist

Object to find ----- Number of Objects Expected to find

Contrast Threshold ----- Minimum Contrast in Adjacent Pixels to be considered An Edge

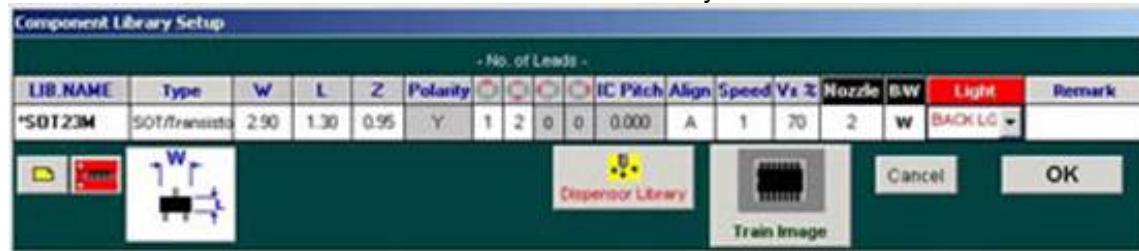
Elasticity ----- Maximum Elasticity of A searched Object Differs From the Trained Object

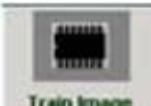
Timeout (ms) ----- Maximum Searched Time Allowed for the Vision system to locate A Searched Object

## How to create a library for SOTxx component.

Since the body of the SOTxx is color in black, it will be difficult to learn by computer when using Front Light. Therefore, we need to use Black Light and White Nozzle to capture the image of the SOT, below is an example learning the SOT23 :

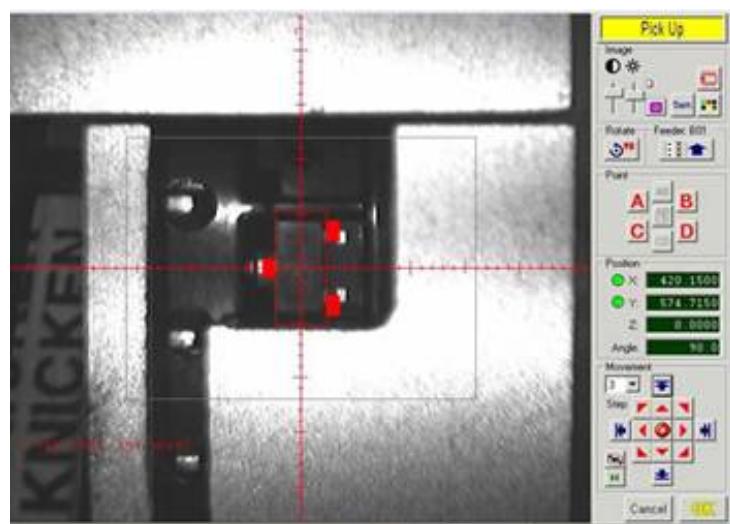
Select " SETUP" - "LIBRARY" create a new SOT library



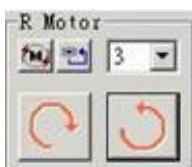
select "white nozzle" and "BACK LIGHT" and then click  enter train image



select FEEDER location and click  ,camera-1 will switch on



Click "OK" for pick the component, click [Train image \(by camera\)](#) to enter train image



please use let component turn

## ANGLE DIRECTION DEFINITION

### Angle direction definition table for 'Pk\_Angle' of Learn Pick mode:

(Tape form components & use of AFTA Feeder)

LIB NAME	Component	Pk_angle 0° / Normal	Pk_angle 90°	Pk_angle 180°	Pk_angle 270°
Txxx or SOTxxx	Transistor 				

Vision machine learn library must in 0 degree, other component angle direction definition please refer [Appendix](#)  
Angle Direction definition

Use and select region to Train, click to Train Image, click to open the Image use Paint

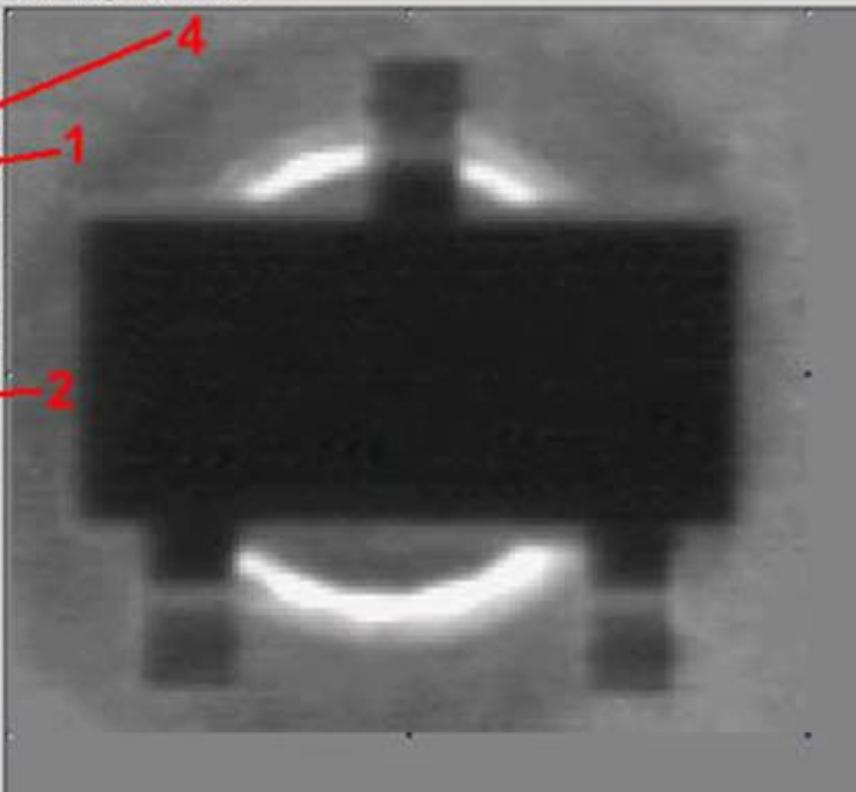




first select  , second select the big square, third select Gray colour ( can use  to zoom in the image)

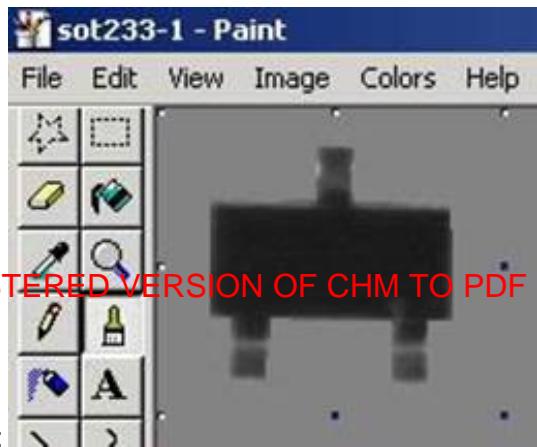
untitled - Paint

File Edit View Image Colors Help



3





UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

finish :

save to c:\www390vxx\bitmap\library

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



select  open the synthetic image that just save



The image file will show in the right corner , click OK for finish make standard component image

And the new SOT library also made finish, please select it for program.

## APPENDIX D

### RE-LEARN PLACEMENT LOCATION AFTER PRODUCTION

This is a very useful and practical feature, especially in pick & place a fine pitch QFP.

Since the set up for the Component Library for a fine pitch QFP needs an experience operator, if there is any mistake on the calibration of the QFP, some error will be occurred on the placement position. This feature is to re-adjust and solve this error to be zero by a simple procedure.

#### Procedure:

After you have set up the pick and place records, you can do the Auto Production and then enter the

Learn Place mode and select the desire placement record and click  button to enter this mode. The machine will move to the placement location and switch to camera 1 image mode, you can simply adjust the cross mark to the center of the component (for QFP: please move the cross mark to the left-up corner leads of the QFP) and click  to exit. On the next time Auto Production, the component placement will be re-adjusted to the correct position.

**Remarks:** This new X-Y position is stored in hidden, and will be cleared or modified if the placement position changed.

Difference point for "RE-LEARN PLACEMENT LOCATION AFTER PRODUCTION" and "LEARN ALL PLACEMENT OFFSET

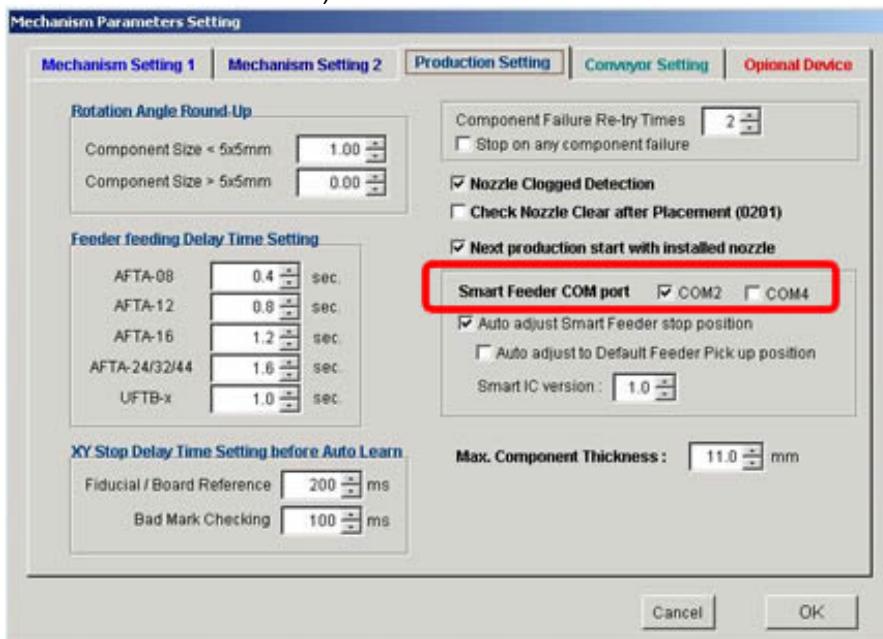
- 1) Both can modify place offset
- 2) Both modifiable offset base on before modify, will increase then before
- 3) Re-learn placement location after production only can view and modify board1-1 offset
- 4) Learn all placement offset can view and modify all matrix board offset

## APPENDIX E

### How to use Smart Feeder and Smart Feeder I.D.

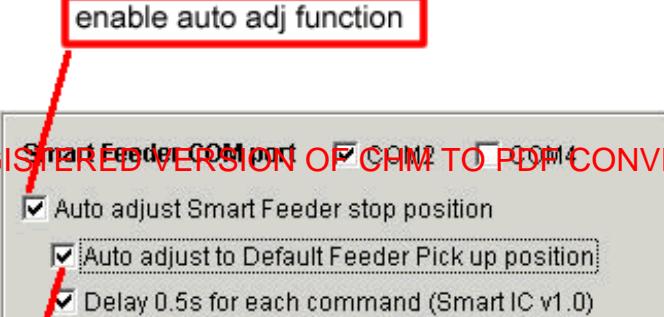
1

\ Pro  
ire tw  
ne of them,  
(Usually, vision machine use COM2 and laser machine use COM4, when use COM4,a extra COM  
PORT card is needed.)



2. Auto adjust smart feeder Pick up position (during production)

enable auto adj function



Smart Feeder COM port:  COM2  COM14

Auto adjust Smart Feeder stop position

Auto adjust to Default Feeder Pick up position

Delay 0.5s for each command (Smart IC v1.0)

Enable/Disable all Auto.Adj.

Feeder A,B,C,D		
Feeder	Type	Enable
A01	AF08	Y
A02	AF08	Y
A03	AF08	Y
A04	AF08	Y
A05	AF08	Y

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE

enable auto adjust to default feeder pick up position during production

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE

a) Auto adjust Smart Feeder stop position

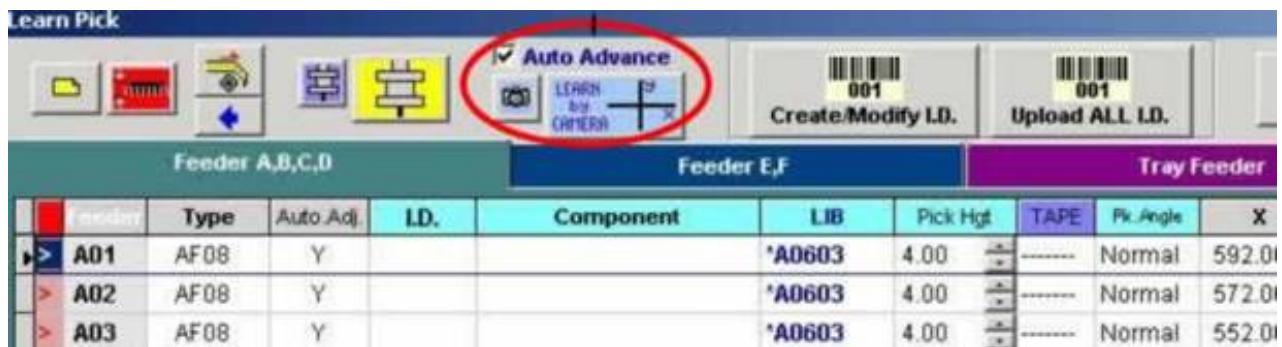
When enable this function, the feeder (tape) stop position will be adjust to the best position based on the user learn pick position. That means the component inside the tape will be stopped at the centre (cross mark) of the user learn pick position. This is a closed loop adjustment; the computer will calculate the pick up offset after doing vision alignment, and then control the feeder to stop at a position to reduce the pick up offset. This feature can reduce the pick up error for small component with bigger gap on the component tape.

b) Auto adjust to default feeder Pick up position

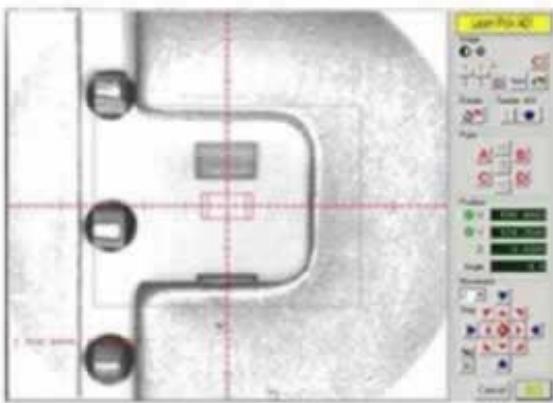
When enable this function, the tape stop position will be adjust to default feeder Pick up position. This feature will be used for double head machine to adjust the tape stop position for same pick up condition. (For both head pick up the component at the same time), the default pick up position is calculated by computer based on the calibration or Feeder Rack.

### 3. Auto Advance (for smart feeder loading position)

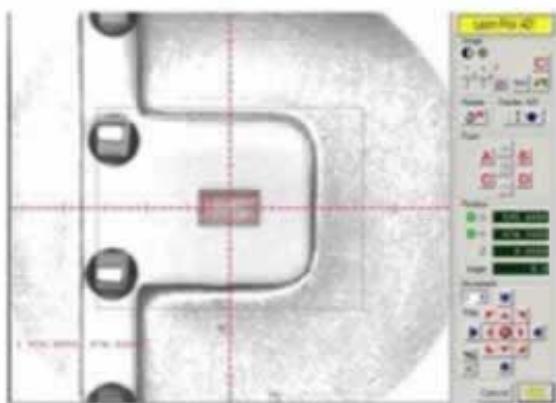
Auto Advance can be enabled in learn pick screen



Learn Pick									
Feeder A,B,C,D				Feeder E,F				Tray Feeder	
Feeder	Type	Auto.Adj.	ID.	Component	LIB	Pick Hgt	TAPE	Pk.Angle	X
> A01	AF08	Y			'A0603	4.00	-----	Normal	592.0
> A02	AF08	Y			'A0603	4.00	-----	Normal	572.0
> A03	AF08	Y			'A0603	4.00	-----	Normal	552.0



when install component to feeder, the position will not the default pick up position

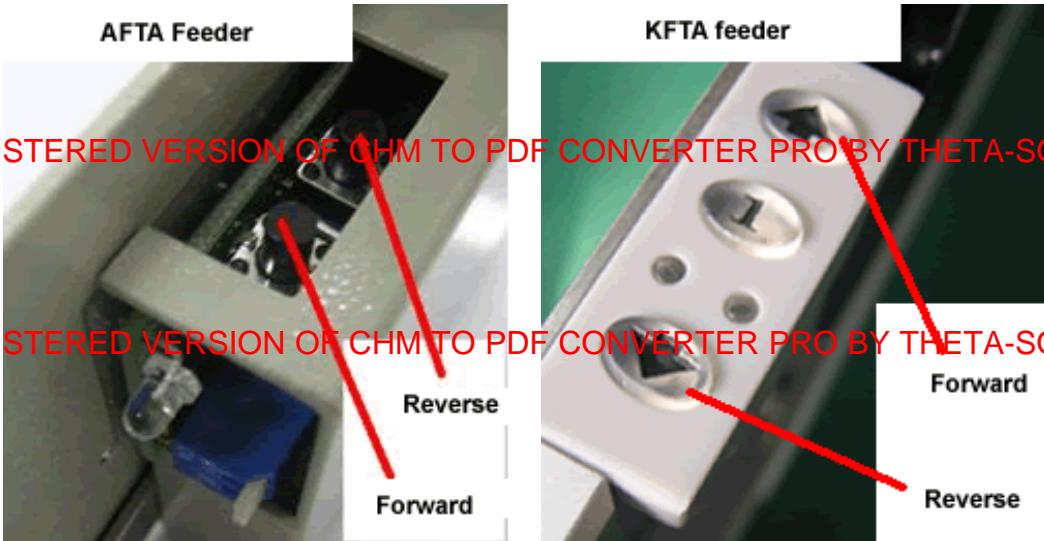


Enable auto advance  in learn pick, click  will auto find the default pick up position

If Auto Advance function is enabled, the Smart feeder will be advance one step (will be backward first) to do the synchronization ("HOME" the tape to a default position) when click  going to the learn pick position mode. Since the tape stop position will be changed when loading a new tape or when the tape move backward manually, it must do synchronization after plugged the feeder into the feeder rack.

There are several ways to control the feeder advance and backward (synchronization):

- a. Press the button that locate at the end of smart feeder



- b. Click  to advance in learn pick screen
  - c. Click  to backward in learn pick screen
  - d. Click  to advance in image mode

#### 4. Program smart feeder I.D.

#### 4.1 Create feeder I.D.

Feeder I.D. is designed for feeder quick location and easy programming.

When create a new I.D., enter learn pick screen to select.

- It is 3-digits code and can be defined by user (001 ~ 999 numbers)
- User can select the most frequently used components and load the components into Feeders and assign the different Feeder I.D. number for each feeders (e.g.001, 002 ...) and stick the label on the feeders.



Click to modify feeder I.D.



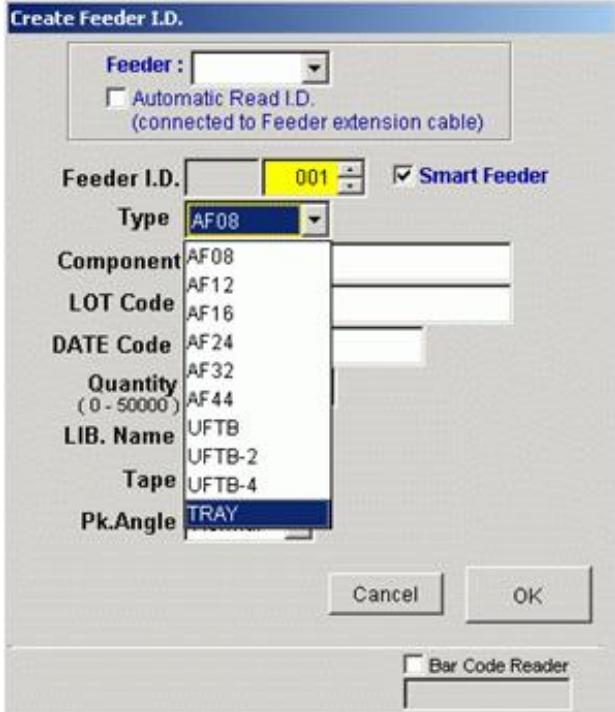
Click to delete feeder I.D.



Click to recall a deleted Feeder I.D.



Click to enter create Feeder I.D.manu.



##### **Feeder:**

Feeder port number that the Smart feeder installed

##### **Automatic Read I.D. (connected to Feeder extension cable)**

Automatic read I.D. from smart feeder through feeder extension cable

##### **Feeder I.D. (enable Smart Feeder)**

Select 3-digits code for feeder ID

(If not enable **Smart Feeder**, user can add 2 characters in the front of their stock code)

##### **Type**

Select feeder type

**Component**

Key-in the component name or scan by bar code reader (can input max. 50 characters)

**LOT Code**

Key-in the LOT code or scan by bar code reader

**DATE Code**

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

**Quantity (0-50000)**

Key-in the quantity or scan by bar code reader

**LIB. Name**

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

Select the component LIB. Name

**Tape**

Select the component package tape, paper tape or Plastic tape

**PK.Angle**

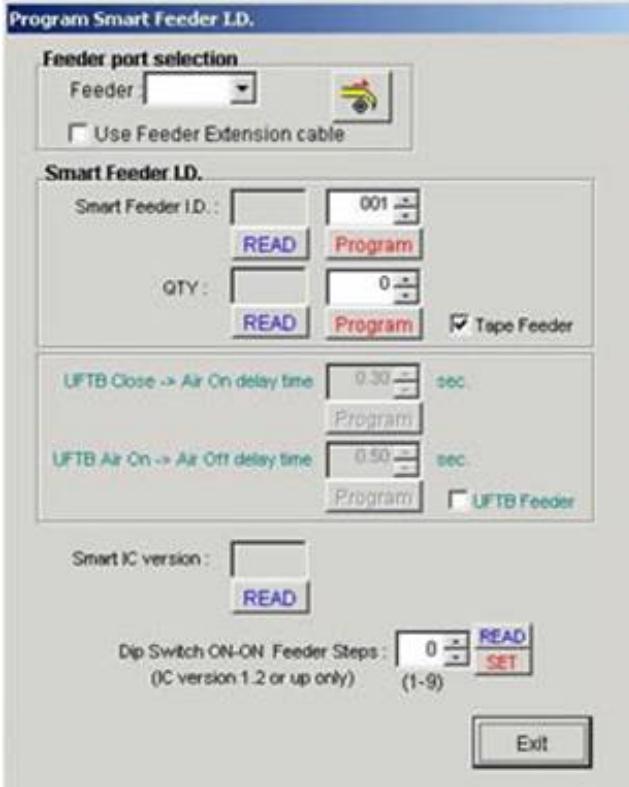
Select the component Package Angle (**Pk.Angle**), (the same as Pk.Angle in Learn Pick mode)

Please enable “automatic upload all I.D when loading P&P file” function, and then every feeder I.D you created can use it in any other P&P files

Click **Load QTY from Smart Feeders** load component quantity from all Smart feeder(s)

Click **Save QTY to Smart Feeders** save component quantity to all Smart feeder(s)

4.2 Click **Program Smart Feeder** and start program Smart feeder I.D. menu



#### **Feeder Port selection:**

- (1) Feeder  
Select feeder port where Smart feeder installed for programming.
- (2) Use Feeder Extension cable  
Use feeder extension cable to program Smart feeder.
- (3) Click  to advance feeder

#### **Smart Feeder I.D.**

- (1) Enable **Tape Feeder** to program smart feeder
- (2) Smart Feeder I.D.

Use up/down arrow to select feeder I.D. you want, click **Program** to program the I.D. to smart feeder, click **READ** to read I.D. from smart feeder.

- (3) QTY:

Use up/down arrow to select quantity of component,, click **Program** to program the quantity to smart feeder, click **READ** to read the quantity from smart feeder.

- (4) Enable **UFTB Feeder** to program smart UFTB
- (5) UFTB Close -> Air On delay time

- Use up/down arrow select the time you want, click **Program** to program the time to smart UFTB.
- (6) UFTB Air On -> Air off delay time

Use up/down arrow to select the time you want, click **Program** to program the time to Smart UFTB

## UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### Smart IC version

Click **READ** to read smart IC version of smart feeder

### Dip Switch On-On Feeder step:

## UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



To do this, the Dip switch must be set On-On first!! (only for AFTA feeder)



(Default) SFTA will be set OFF-OFF

Click **SET** to program the step number to smart feeder, you can select 1~9; click **READ** to read the step number from Smart feeder.

This setup is used for 32mm or 44mm smart feeder, when the component length is longer than the dip switch setting,(dip switch can set 1~4), user must do the advance setup in this menu.

Advanced distance	SW1	SW2	
4mm	Off	Off	1, default setting
8mm	On	Off	2
12mm	Off	On	3
16mm	On	On	4

Due to each distance of a component is 4mm, so

Set to 4 means the distance is  $4 \times 4 = 16$ mm, advance 4 components (for 0603)

Set to 5 means the distance is  $5 \times 4 = 20$ mm, advance 5 components (for 0603)

Set to 6 means the distance is  $6 \times 4 = 24$ mm, advance 6 components (for 0603)

Set to 7 means the distance is  $7 \times 4 = 28$ mm, advance 7 components (for 0603)

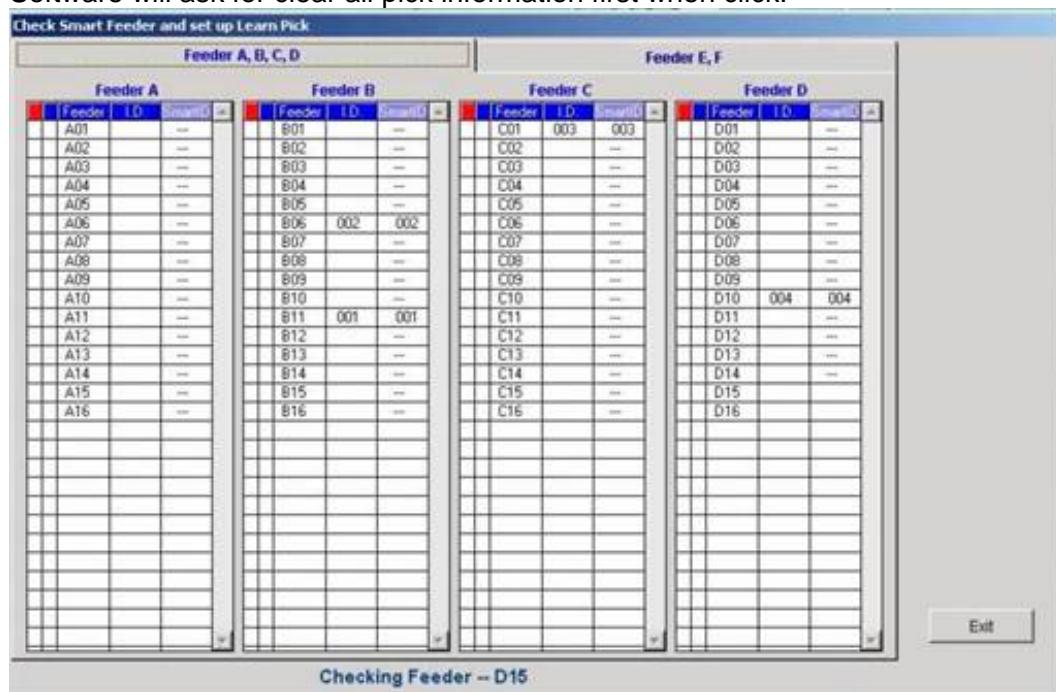
Set to 8 means the distance is  $8 \times 4 = 32$ mm, advance 8 components (for 0603)

Set to 9 means the distance is  $9 \times 4 = 36$ mm, advance 9 components (for 0603)

**KFTA feeder can set 1~9 on software, no need to set on feeder**

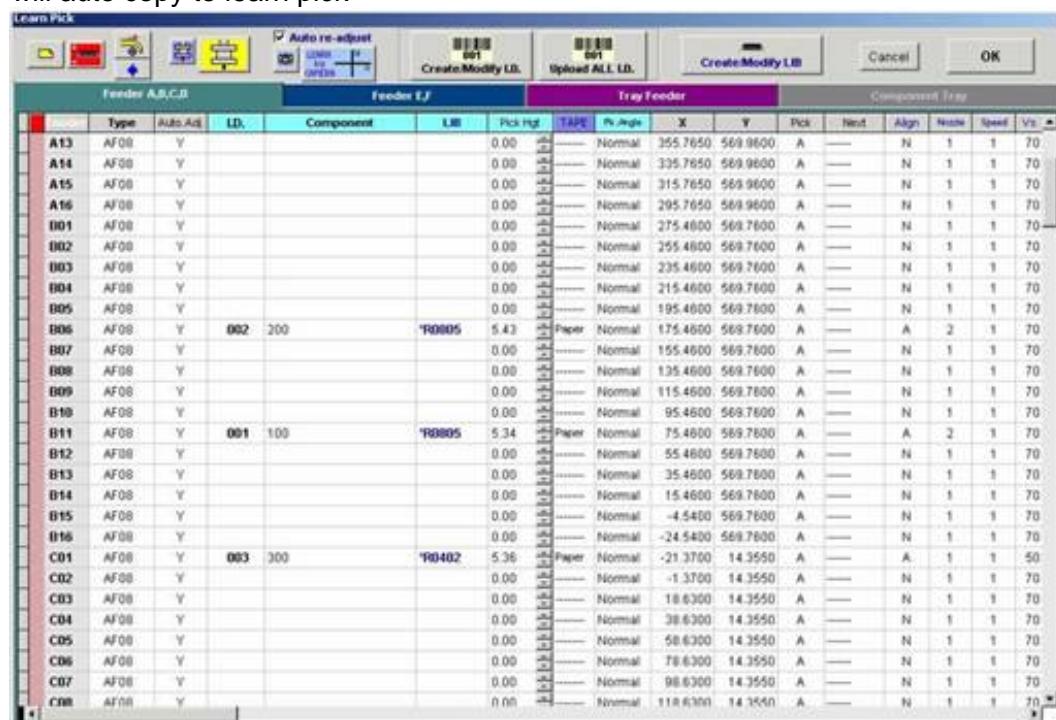
#### 4.3 set up feeder I.D. to learn pick after program

Click  to enter check smart feeder and set up learn pick menu. Software will ask for clear all pick information first when click.



software will auto detect the smart feeders I.D. that installed in feeder racks before, and Compare with feeders I.D., if both are same, software will ask "set up learn pick"?

If select "yes", all information that create for feeder I.D.(I.D. component, LIB, Pick Hgt, PK Angle) will auto copy to learn pick



**Remark: Setup Pick feature will not auto set SFTB feeders**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

#### 4.4 Auto detect smart feeders installed in feeder racks

This function is used for

- (1) P&P file already existed and loaded
- (2) Smart feeders already have smart I.D. and installed in feeder racks.

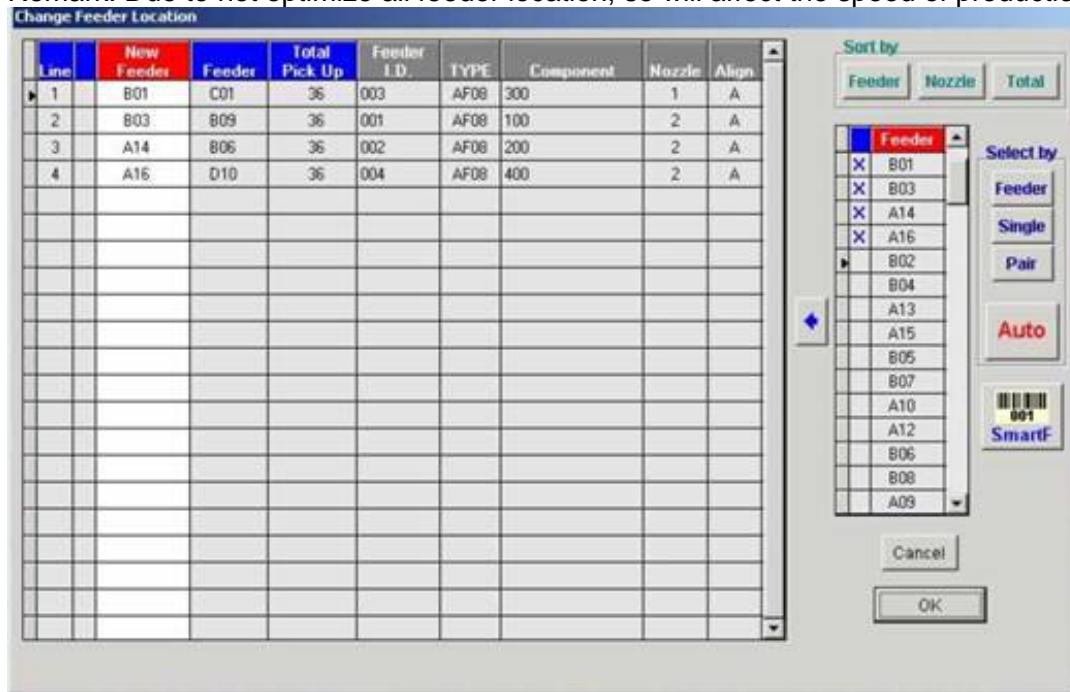


In "Change feeder location" click , let software auto detect smart feeders installed in feeder racks, at the same time, all feeder I.D. data will be copied to learn pick and learn place. Do auto production while detect finish..

##### Good:

- (1) Smart feeder install free, no need to re-program
- (2) Setup simple
- (3) Easy operation

Remark: Due to not optimize all feeder location, so will affect the speed of production.



#### 4.5 Automatic upload all I.D. when loading P&P file

This function is used for

- (1) Have some P&P file that programmed before
- (2) Each P&P file all used feeder I.D
- (3) Pick record and place record both learn by feeder I.D

When Enable "Automatic Upload All I.D. when loading P&P file" and load T1 P&P file (feeder I.D. information store in P&P file)  
Show in feeder I.D

Modify Feeder I.D.										
Create		Modify		DELETE		UNDELETE		Program Smart Feeder		Set Up Pick
				001						<input checked="" type="checkbox"/> Automatic Upload ALL I.D. when loading P&P file (base on Feeder I.D. setting in Pick & Place data)
I.D.	Type	Component	LOT Code	DATE Code	QTY.	LIB	Tape	Pk.Angle	Feeder	
001	AF08	11k			0	C0201	Paper	Normal	A01	
002	AF08	13k			0	R0402	Paper	Normal	A02	
003	AF08	10k			0	R0603	Paper	Normal	A03	

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Show in learn pick

Learn Pick

			<input checked="" type="checkbox"/> Auto Advance		001		001		Create/Modify I.D.		Upload ALL I.D.		Create/Modify LIB		Cancel		OK			
Feeder A,B,C,D			Feeder E,F			Tray Feeder			Component Tray											
Feeder	Type	Auto Adv.	I.D.	Component	LIB	Pick Hgt	Tape	Pk.Angle	X	Y	Next									
> A01	AF08	Y	001	11k	C0201	7.20	Paper	Normal	661.4850	566.9050	-----									
> A02	AF08	Y	002	13k	R0402	7.19	Paper	Normal	641.4850	566.9050	-----									
> A03	AF08	Y	003	10k	R0603	7.18	Paper	Normal	621.4850	566.9050	-----									

Show in learn place

Learn Place

			<input checked="" type="checkbox"/> X-Y location refer to 0,0		<input type="checkbox"/> X-Y location refer to 1st Ref.Pt.		Insert ALL [ * ]			Delete ALL [ * ]			Cancel			OK		
<input checked="" type="checkbox"/>	No	Location	Component		I.D.	Feeder	Angle	X	Y	Nozzle	Align							
> 1		11k			001	A01	0.0	345.5550	386.3650	4	A							
> 2		13k			002	A02	0.0	345.5700	380.4950	1	A							
> 3		10k			003	A03	0.0	345.5800	386.6700	1	A							

Load T2 P&P file

Show in feeder I.D

Modify Feeder I.D.

			<input checked="" type="checkbox"/> Create		<input checked="" type="checkbox"/> Modify		<input checked="" type="checkbox"/> DELETE		<input checked="" type="checkbox"/> UNDELETE		001		Program Smart Feeder		Set Up Pick		<input checked="" type="checkbox"/> Automatic Upload ALL I.D. when loading P&P file (base on Feeder I.D. setting in Pick & Place data)		
<input checked="" type="checkbox"/>	I.D.	Type	Component		LOT Code		DATE Code		QTY.		LIB		Tape		Pk.Angle		Feeder		
> 001		AF08	5k						3000		C0201		Paper		Normal		A04		
> 002		AF08	7k						3000		R0402		Paper		Normal		A05		
> 003		AF08	6k						3000		R0603		Paper		Normal		A06		

Show in learn pick

Learn Pick

			<input checked="" type="checkbox"/> Auto Advance		001		001		Create/Modify I.D.		Upload ALL I.D.		Create/Modify LIB		Cancel		OK			
Feeder A,B,C,D			Feeder E,F			Tray Feeder			Component Tray											
Feeder	Type	Auto Adv.	I.D.	Component	LIB	Pick Hgt	Tape	Pk.Angle	X	Y	Next									
> A01	AF08	Y				0.00	-----	Normal	661.4850	566.9050	-----									
> A02	AF08	Y				0.00	-----	Normal	641.4850	566.9050	-----									
> A03	AF08	Y				0.00	-----	Normal	621.4850	566.9050	-----									
> A04	AF08	Y	001	5k	C0201	7.17	Paper	Normal	601.4850	566.9050	-----									
> A05	AF08	Y	002	7k	R0402	7.16	Paper	Normal	581.4850	566.9050	-----									
> A06	AF08	Y	003	6k	R0603	7.15	Paper	Normal	561.4850	566.9050	-----									

Show in learn place

Learn Place										Remarks : Click Header for sorting	
										Remarks : Click Header for sorting	
										Remarks : Click Header for sorting	
No	Location	Component	I.D.	Feeder	Angle	X	Y	Nozzle	Align		
1	5K	001	A04	0.0		345.6000	386.5600	4	4		
2	7K	002	A05	0.0		345.5950	390.9850	1	4		
		003	A06	0.0		345.5950	390.9850	1	4		

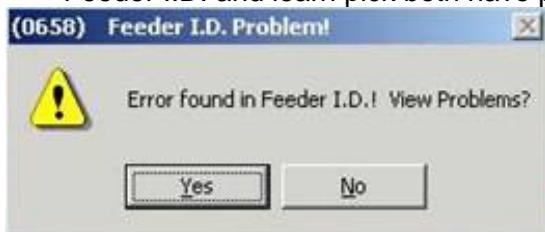
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Now we can know, when enable “Automatic Upload All I.D when loading P&P file”, each time we load the P&P file that programmed before, software will auto upload all I.D. information that fit for this P&P file, and upgrade pick record and place record at the same time, user just need re-plug the feeder and press “start” to do production.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

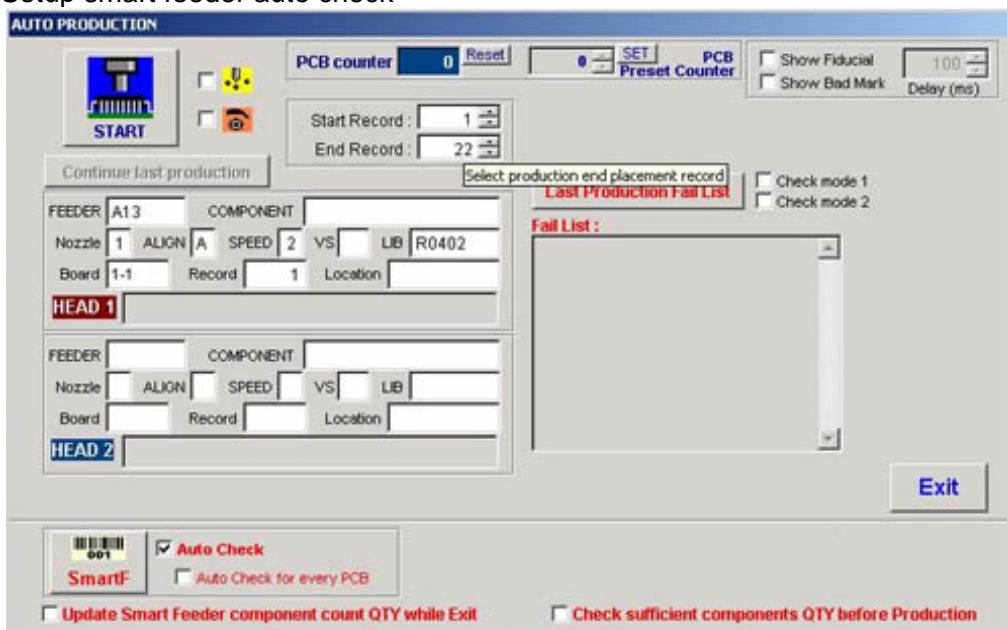
When disable “Automatic Upload All I.D. when loading P&P file”, load T2 P&P file to replace T1

Feeder I.D. and learn pick both have problem Tips



We do not need to fix the problem, just re-plug the feeders and press “start” to do production

## 1. Setup smart feeder auto check



When enable smart feeder function, user can select smart feeder auto check in auto production.  
(Check the smart feeder I.D. whether the same to saved feeder I.D.)

### (1) Auto Check

Auto check smart feeder I.D

### (2) Auto Check for every PCB

Auto check smart feeder I.D. for every PCB

### (3) Update Smart Feeder component count QTY while Exit

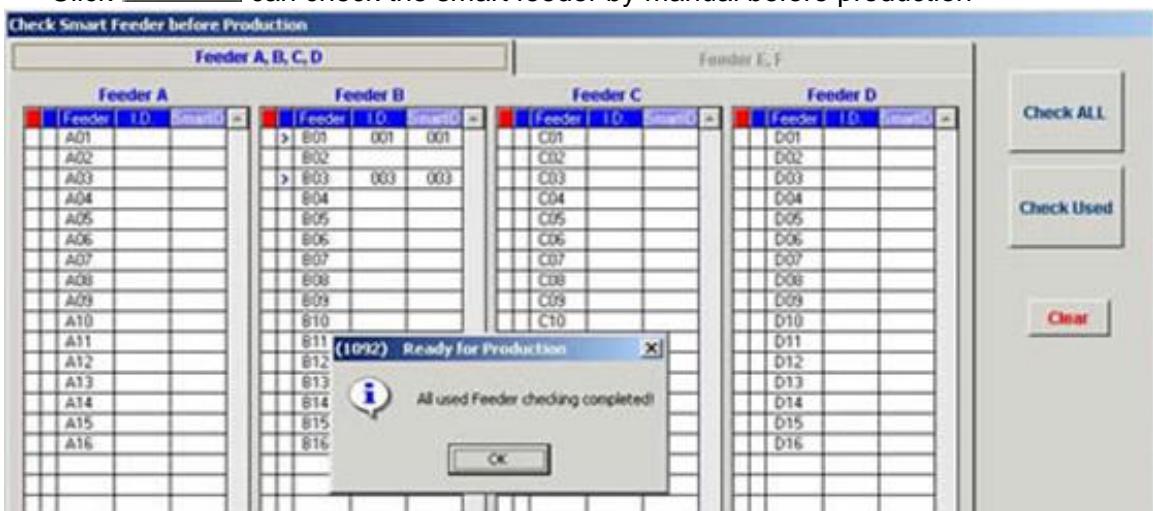
Select this, software will auto up date the quantity of component while exit.

### (4) Check sufficient component QTY before Production

Select this, software will auto check whether the feeder have enough component for production



Click **SmartF** can check the smart feeder by manual before production



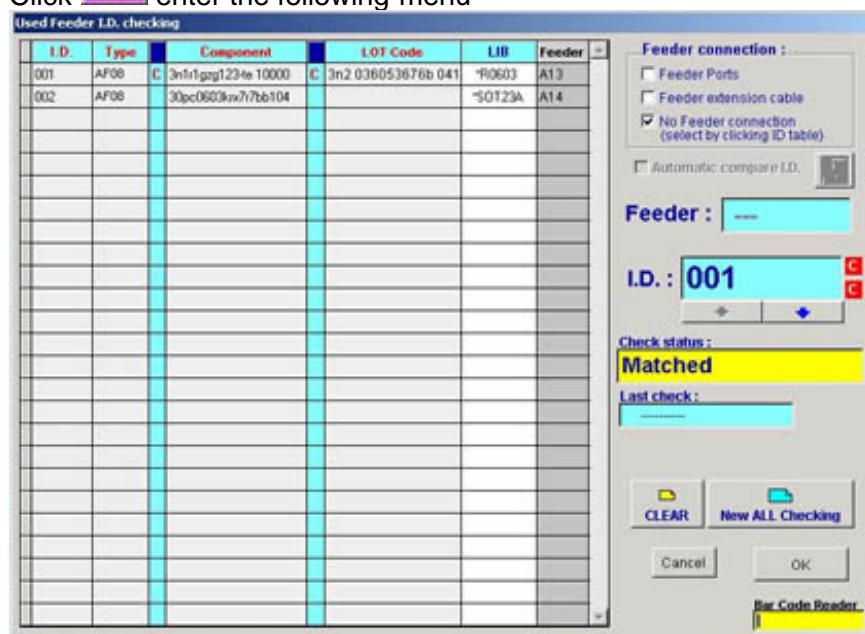
2. Do auto production

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Appendix 1: how to use Check ID (only for smart feeder that have I.D. programmed)

Click  enter the following menu



### Feeder connection:

Feeder Ports ----- feeder connect to feeder port  
 Feeder extension cable ----- feeder connect to extension cable  
 No Feeder connection (select by clicking ID table)

### Automatic compare I.D.

When enable automatic compare feeder I.D., software will read the feeders I.D and compare to the saved feeder I.D.

### Feeder:

Show the feeder rack port location that used by the smart feeder showing in I.D. text box.

### I.D.

Show the feeder I.D. that selected (click up/down button for selection)

### Check status:

Compare the data of selected smart feeder to saved feeder I.D. and show the result.

### Last check

Show the feeder I.D. that checked before

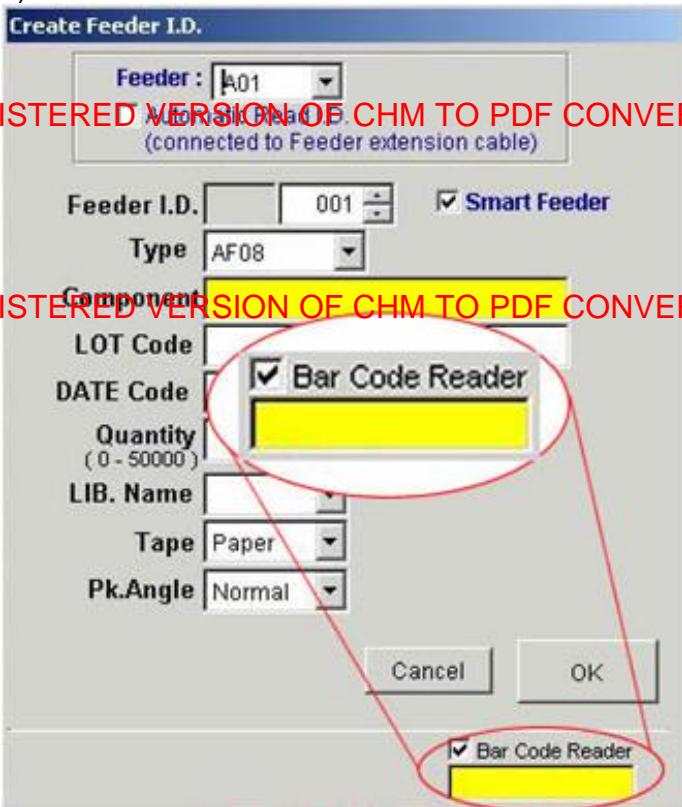
Click  to clear all information

Click  to compare all feeder data to saved feeder I.D.

## Appendix 2: how to use bar code reader

Bar code reader can input feeder information quickly and corporation

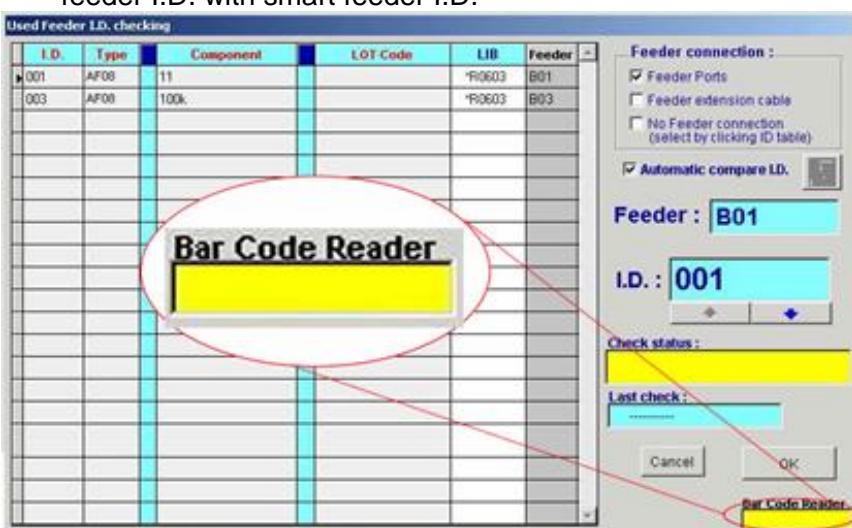
- 1) Use the bar code reader in create feeder I.D.



Enable Bar Code Reader and then scan the code of feeder label, the result will be show in the yellow column

- 2) Use the bar code reader in Check I.D.

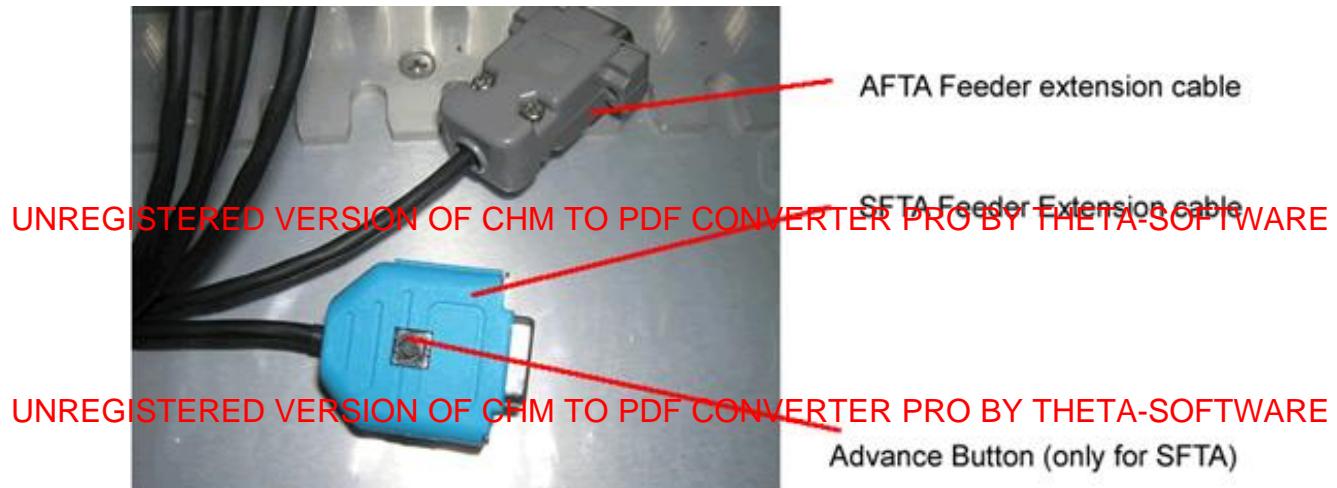
Select a feeder I.D. and then scan the code of feeder label, software will auto compare the saved feeder I.D. with smart feeder I.D.



When match, check status will show "Matched"

When not match, check status will show "Not Matched"

### Appendix 3: Feeder extension cable



There are two type of feeder extension cable, one for Smart Feeder, one for Normal Feeder.

1. When connected with blue SFTA Feeder Extension Cable:

The Smart Feeder can be programmed or doing ID checking.

The advance button of Smart Feeder will be disable when connected to this extension cable but it can be advanced by pressing advance button or cable.

2. when connected with standard AFTA Feeder Extension Cable:

The smart feeder will only be able to load the tape, no programming or ID checking will be allowed.

3. When connect the cable, please click  for set feeder steps on the menu screen



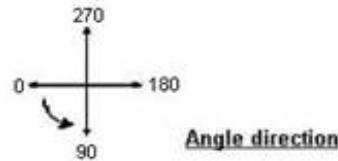
## APPENDIX F

### ANGLE DIRECTION DEFINITION

**Angle direction definition table for 'Pk\_Angle' of Learn Pick mode:**

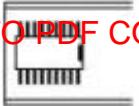
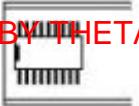
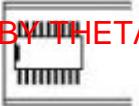
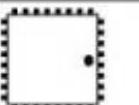
(Tape form components & use of AFTA Feeder)

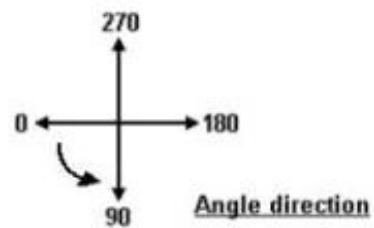
LIB. TYPE	Component	Pk_angle 0° / Normal	Pk_angle 90°	Pk_angle 180°	Pk_angle 270°
Resistor or Capacitor	Resistor/Capacitor	○ 	○ 	○ 	○ 
Capacitor+	Capacitor with polarity -  +	○ 	○ 	○ 	○ 
Diode	Diode	○ 	○ 	○ 	○ 
SOT/Transistor	Transistor	○ 	○ 	○ 	○ 
SOP-IC or TSOP-IC	SOIC	○ 	○ 	○ 	○ 
SOJ-IC	SOJ	○ 	○ 	○ 	○ 
PLCC-IC	PLCC	○ 	○ 	○ 	○ 
QFP-IC TQFP-IC PQFP-IC	QFP	○ 	○ 	○ 	○ 



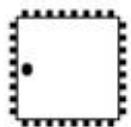
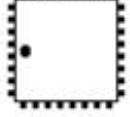
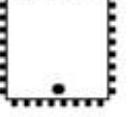
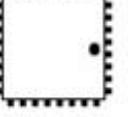
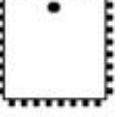
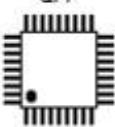
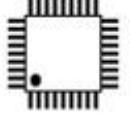
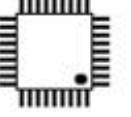
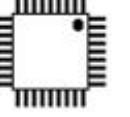
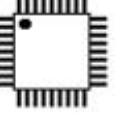
**Angle direction definition table for 'Pk\_Angle' of Learn Pick mode:**

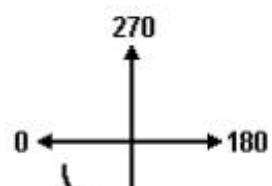
(Tube form components & use of UFTB Feeder)

Component	Pk_angle 0° / Normal	Pk_angle 90°	Pk_angle 180°	Pk_angle 270°
SOIC				
SOJ				
PLCC				



Angle direction definition table for Placement Angle of Learn Place mode:

Component	Pk_angle 0° / Normal	Pk_angle 90°	Pk_angle 180°	Pk_angle 270°
Resistor/Capacitor 				
Capacitor 				
Diode 				
Transistor 				
SOIC 				
SOJ 				
PLCC 				
QFP 				





Angle direction

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## APPENDIX G

### production 0201

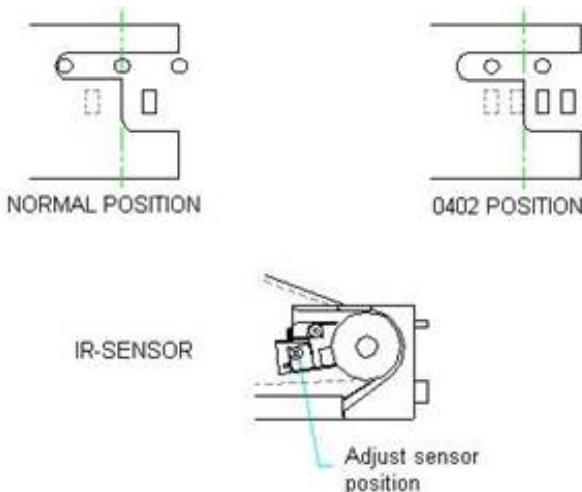
#### APPLICATION NOTES FOR 0201/0402 COMPONENT ON AFTA-08L FEEDER

**NOTE:** Please select the right feeder TYPE; otherwise the machine nozzle will be damaged during pick up.

1. Since most of the 0201/0402 is come with 2mm pitch, it need special feeder to handle. The feeder model with 2mm pitch is **AFTA-08HS**. ( For 0201 application , it must use AFTA-08HS)

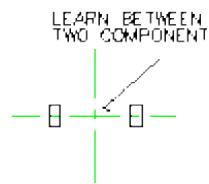
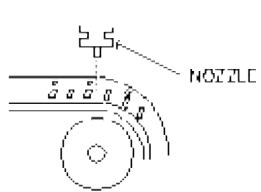
it also need NZ-0201B ( Black nozzle ) for most of 0201 application. For some special 0201 component, it might need NZ-0201 ( White Nozzle )

2. There is another method to use standard AFTA-08L for 0402 application. , we need to calibrate the starting position of the feeder by adjust the IR-sensor of the feeder. ( For more stable application of 0402, AFTA-08HS is recommended )



The above adjustment is only necessary when using AFTA-08L standard feeder for 0402 application ( No need to adjust when using AFTA-08HS )

3. Since the weight of 0402 is very light, we need to learn the "component pick up height" from the top of the paper in order to get a more accuracy height.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

4. We need to slow down the pick up speed to "3" in order to reduce the pick up vibration on the feeder.
5. We need to adjust the vacuum value usually from "70%" to "50%" because the size of the 0402 is a little bit smaller than the nozzle.

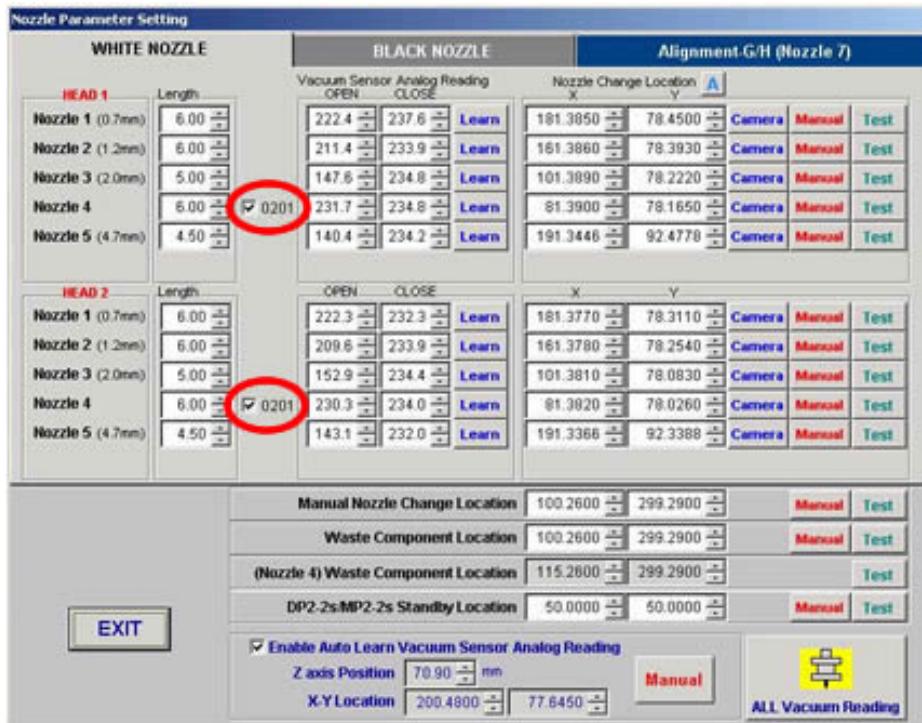
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 0201 setting in software for 383Vxx / 390Vxx machine

### 1) Production placement with 0201 first: priority:

The 0201 nozzle must be installed on nozzle position 4

In CALIBRATE MENU - Nozzle Parameters set Nozzle 4 for 0201 production



### 2) Remove waste 0201 component from nozzle:

Set up the optional waste station ( TS-WASTE-01 ) for 0201 and press **Test** button to check the (Nozzle 4) Waste Component Location which should be set to the top of SPONGE. The position of (Nozzle 4) Waste Component location is default 15mm next to the Waste Component Location.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 3) Problem Checking:

Use "Check 1" on production in case of problem, it might have 3 major problems:

- i) Pick Up problem - can't pick up component

Solve method:

- Relearn pick up height in pick menu
- Relearn pick location in pick menu
- In CALIBRATE MENU - Mechanism Delay - Mechanism Setting -2  
(Use Speed 2-5 for 0201 library; longer delay time will have more stable pick up)
  - a. Increase the **Z motor stop delay** of speed 2-5 from 50, 75, 100, 125, 150...
  - b. Increase the **Vacuum ON delay** of speed 2-5 from 100, 125, 150....
  - c. Increase the **X-Y Stop delay** of speed 2-5 from 30, 60, 90, 120...

- ii) Alignment problem - can't find component

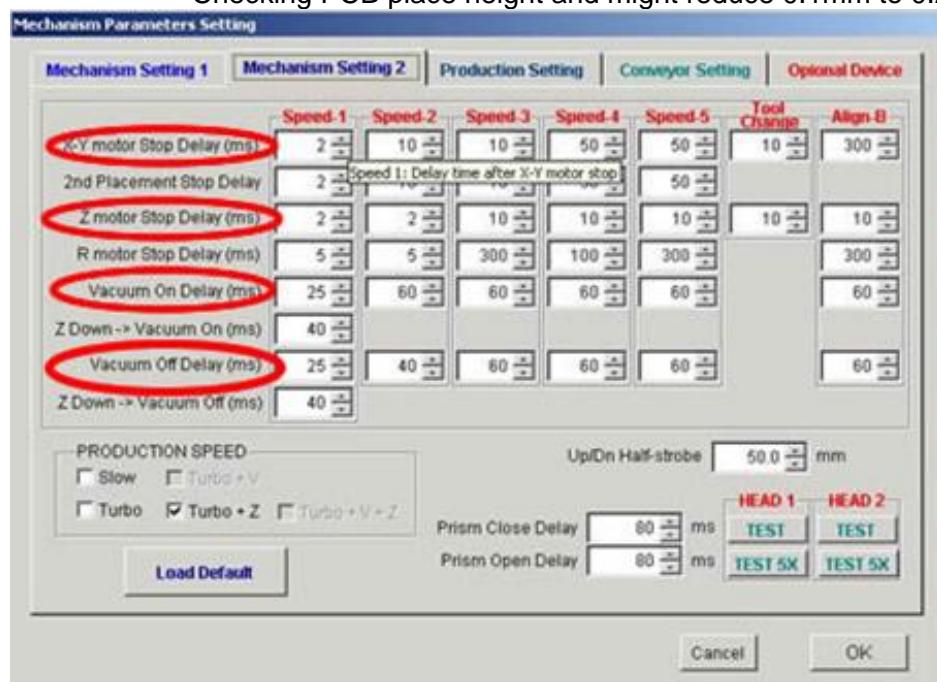
Solve method:

- relearn the image library, or edit the image by PAINT

- iii) Placement problem - can't place component on PCB and component stick on nozzle
  - Component stick on other component

Solve method:

- Clear the nozzle by SPONGE in case component stick on it
- Increase the **VACUUM OFF** delay time to have more time to place component on PCB
- Checking the solder paste, it might be too dry
- Checking PCB place height and might reduce 0.1mm to 0.2mm



### 4) Stop on any component (default is disable)

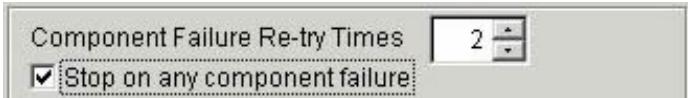
In CALIBRATE MENU - Mechanism Delay - Mechanism Setting -3  
Enable stop on any component function will stop when pick up fail,

If disable this, machine will not stop when pick up fail, it will auto pick up the next feeder, will pick the fail feeder after finish production the last feeder,

If enable this, machine will stop when pick up fail, and will give user to check the bug, will pick the next feeder until finish production this feeder

This function is used for 0201, because 0201 component must be place first, otherwise will place fail due to height or position wrong of other component.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

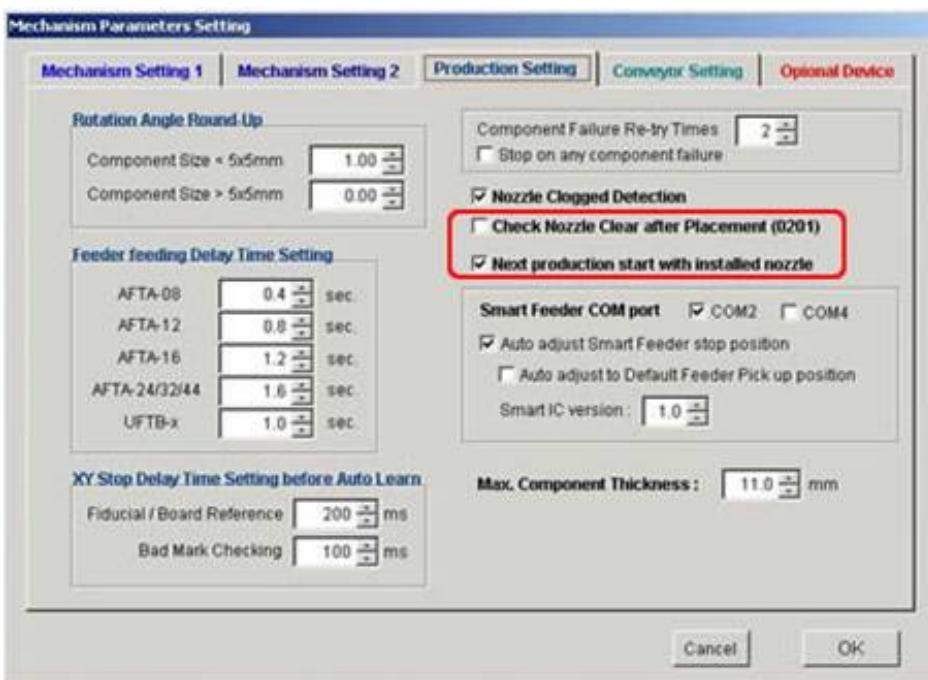


**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

##### 5) Checking Nozzle Clear after production (0201)(default is disable)

In CALIBRATE MENU - Mechanism Delay - Mechanism Setting -3

set Check Nozzle Clear after Placement (0201), this will auto check whether it still have component stick on the nozzle after placement. In case the component sticking in the nozzle, it will go to the (Nozzle 4) waste Component Location to clear the nozzle by SPONGE and then go to next pick up.



##### 1) Next production start with installed nozzle (default is enable)

If enable this, next production will start with last installed nozzle

If disable this, next production will start with the smallest nozzle

Since our nozzle 4 (for 0201) size is smaller than the other nozzle, and must place 0201 component first otherwise will place fail due to height or position wrong of other component.

## APPENDIX H

### NOTES ON PCB SET UP FOR PRODUCTION (w/o conveyor)

#### Steps:

##### (1) a (without conveyor)

Set up datum pins and support pins for your PCB, remember to adjust your PCB nearly parallel to the X-axis of the machine. (Enter Manual Mode to use camera 1 to view your PCB, move of X-axis of the machine, adjust your PCB and lock the screws of the datum pins)

**Remarks:** If you are using 1-Reference Point or download CAD access conversion data, you need to fine adjust your PCB parallel to the X-axis of the machine.

##### b (with conveyor)

Please refer appendix-N for setting conveyor

##### (2) Enter **Learn PCB** mode

- Set PCB matrix
- Select use of Fiducial or Board Ref.Pt.
- Select use of 1 or 2 Reference Points
- Learn PCB Height
- Setup PCB size

##### (3) Enter **Learn Reference Point** mode

- Learn Fiducial (if you selected use of Fiducial)
- Learn Board 1-1 Ref.Pts.
- Learn Horizontal line of the PCB (if selected 2 Reference Points)
- Learn Ref.Pts. for all other boards (if it is a matrix PCB. Board 1-2, 1-3, ...)

##### (4) Enter **Learn Feeder I.D.** mode

- Set up all components to the Feeders
- Check if the Feeder I.D. labeled on each Feeders
- Create Feeder I.D. for each Feeder

##### (5) Enter **Learn Place** mode

- Key-in Location name
- Learn the placement position and the placement angle (if using the download CAD access data, it is recommended to re-learn or check all the placement locations)
- Select the correct Feeder I.D.
- If not using the Feeder I.D. feature, you need to program the Pick information in Learn Pick mode first, and then select the correct Feeder
- Repeat until all the placement records are programmed (no need to select feeder)

##### 6) Enter Optimize mode

- Click Auto Button to change feeder location (software will auto set A01, A02, A03 for feeder)
- Place feeder to the correct location
- Click Auto Button to optimize production index table

(7) Enter Learn feeder I.D. mode

- Check feeder I.D. with component information

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

(8) Enter Auto Production mode

- Enable "check mode"
- Test production and debug

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

(9) Ready to do Auto Production

# APPENDIX I

## AUTO LEARN REFERENCE POINT FEATURE

### Auto Learn Specification:

- (i) Object shape : square or circle
- (ii) Object color : flat golden plate is the best
- (iii) Object size : 0.5 x 0.5mm ~ 2.5 x 2.5mm or  $\varnothing$ 0.5mm ~  $\varnothing$ 2.5mm
- (iv) Object condition : - w/o green silk at the edge of the object  
- w/o any layer out beside the object within 5 X 5mm
- (v) Object shift location tolerance : object center calculation can accept +/- 1mm location shift  
(if object shift >1mm, the center calculate may has more error or object may not be found)
- (vi) Auto Learn error tolerance : +/- 0.05mm max. (for a good object)

### How to use Auto Learn Reference Point:

- (i) Enable Auto Learn Feature in **Calibration Menu "C Option**
- (ii) Select use of Auto Learn Feature in Learn Fiducial or Learn Board 1-1 Ref.Pt. mode
- (iii) Set Auto Learn Tolerance

**Remark:** When the auto learn reference point function is selected, the position of the reference point will be captured and calculated by computer. Due to the stopped position of the PCB might have too error in the conveyer, and it might also have some solder pads too closed to the reference point, it can be some wrong recognition by the computer as a reference point. Therefore, we need to set up some parameter to prevent this kind of error.



#### a. Auto Learn tolerance in %

The value of this setting is percentage for the error in the size of reference point. This error is due to the reflection surface of reference point might be different in different PCB.

(The normal value is 80%)

b. Distance tolerance between Ref.1 & Ref.2

This is to enable the checking of the distance between two the reference points.

And the setting of the tolerance is programmable.

The normal value should be 0.2mm.

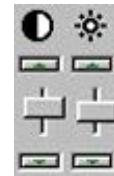
If the distance is out of the setting value, the computer will consider there is an error on auto learn reference and will ask for abort or learn the reference point manually.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

(iv) In Learn Board Ref.Pt. mode, move the camera-1 to view the object

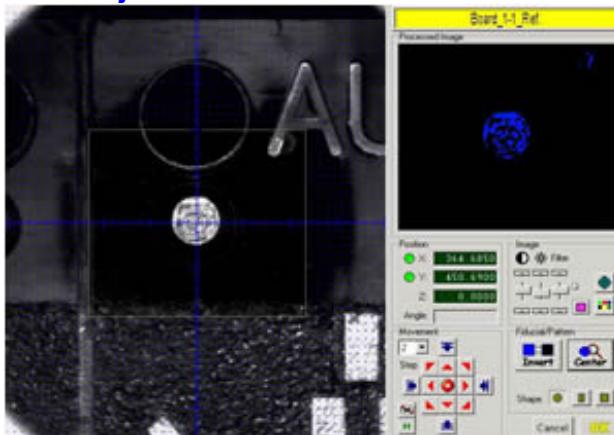
(v) Select NORMAL/INVERT color by  button, auto calculate object center by 

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**



Adjust the Filter , Contrast & Brightness for the pattern recognition, the upper right showing the filtering status. (Normally don't need to adjust the Contrast & Brightness)

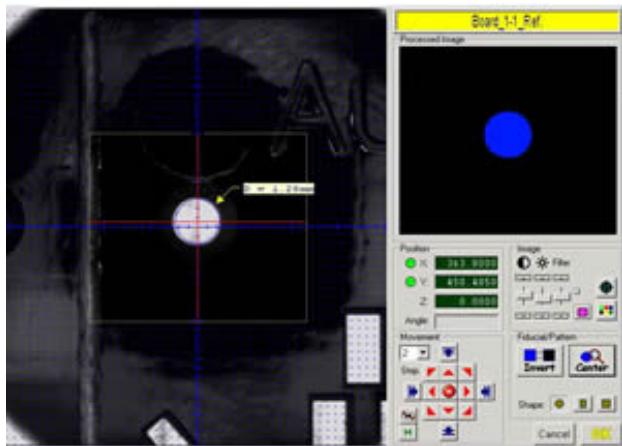
**Bad adjustment:**



**You need to adjust the Filter, contrast & brightness to obtain the following conditions:**

- In upper right showing the filtering status, the shape of object is well shown and the black/white color is a clear pattern
- The object is well outlined by blue color line
- A red color cross mark is shown in the center of the object

**Good adjustment:**



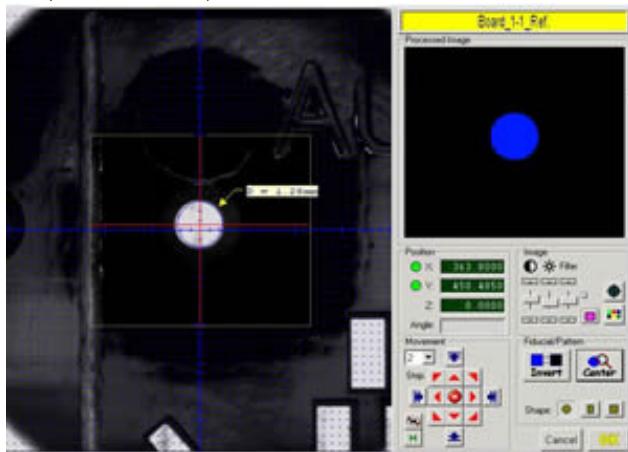
### \* Using Corner Light Source

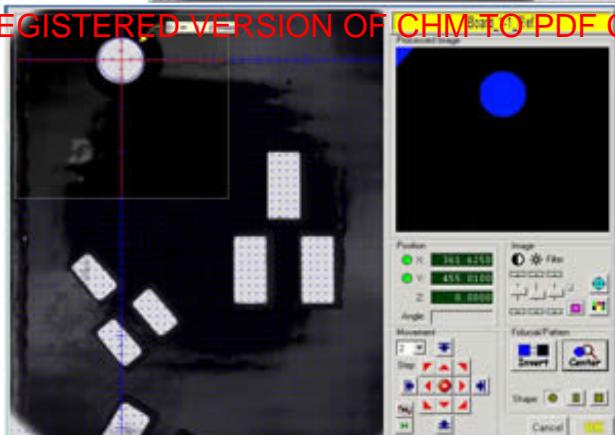
This function use for

- 1) Object not circinal when click auto calculate object center .
- 2) With any layer out beside the object,can't find the reference
- 3) Object lie on the center and bright is lower

**Tips:** Good adjustment a. w/o green silk at the edge of the object  
b. w/o any layer out beside the object within 5 X 5mm

(as follows)



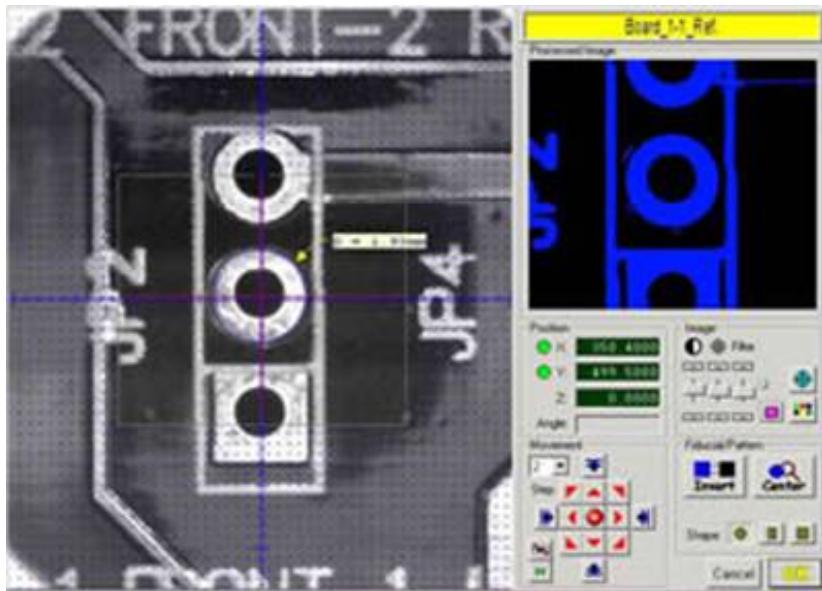


select "Enable Corner Light Source 1"

select "Enable Corner Light Source 2"

About the PCB didn't have the reference, we must select the object that without green silk at the edge of the object and without any layer out beside the object.

As follows :



**Notes:** Please let the software select the outside circularity for reference.

**If need press "invert" button for best recognise**

## APPENDIX J

### BAD MARK FEATURE

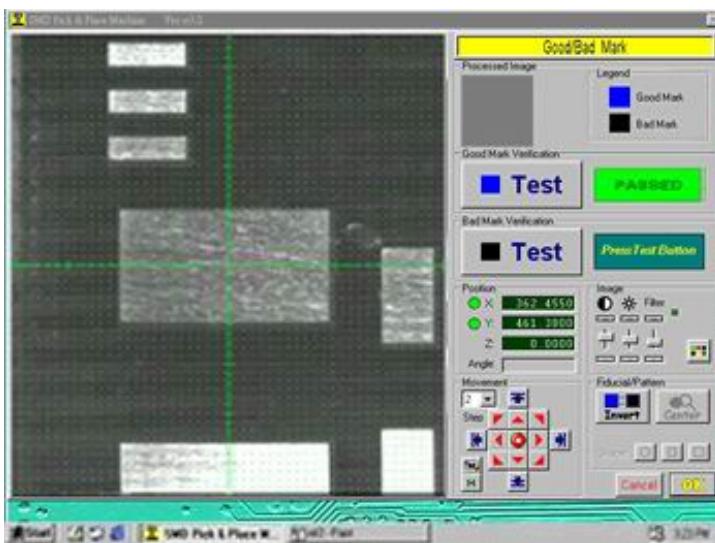
Bad Mark feature let the machine skip the production for the Bad Marked PCB in a PCB matrix.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- Enable Bad Mark in **Set Up Menu - Learn PCB**
- Click  button in **Learn Reference Point** mode

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- Set up the Bad Mark Filter



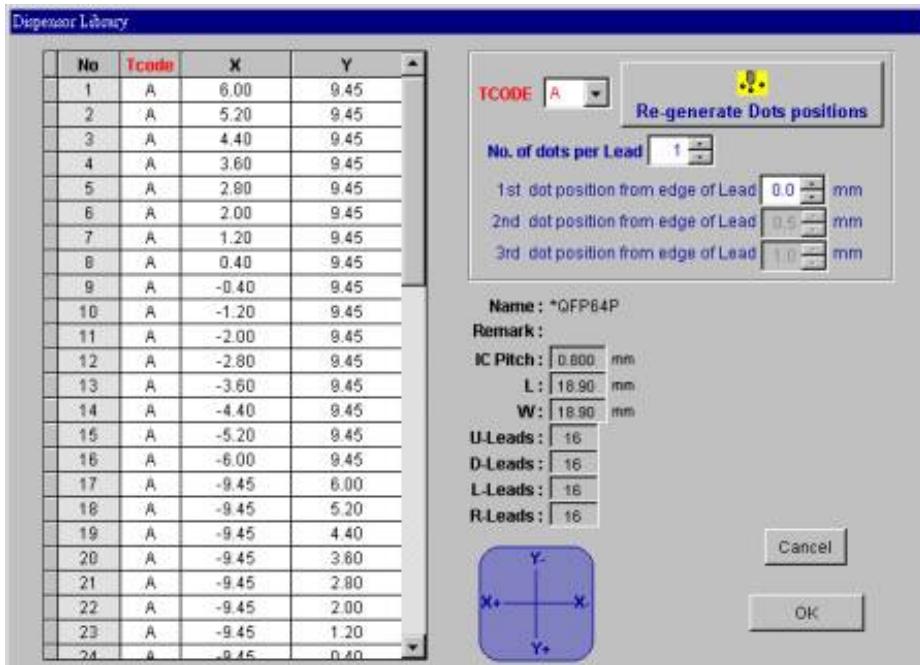
- Select NORMAL/INVERT by clicking  button
- Adjust the Filter  , Contrast & Brightness 
- View the Bad Mark position (Good board condition) and click  button to test the Good Mark. If it is failure, try to adjust the Filter until the  indicator turn on.
- View the Bad Mark position (Bad board condition, you can use of white color Correction Fluid to paint on the Bad Mark position) and click  button to test the Bad Mark. If it is failure, you need to adjust the Filter and do the test for Good Mark and then Bad Mark until both Good & Bad Marks are passed (both the  indicators of Good & Bad Marks are turn on).
- Once the Bad Mark feature is enabled and well set up, the machine will go to the Bad Mark position of each board to do the recognition before Auto Production. If any Bad Mark is in Bad board condition, the machine will skip doing production for that board.

## APPENDIX K

### DISPENSER LIBRARY

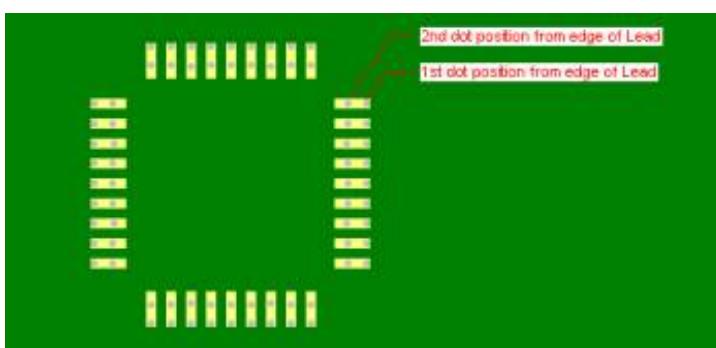
This is to set up the dispenser library for the conversion from placement record to dispensing records.

- Enter this mode by clicking  in Modify Component Library mode



- Select TCODE for the dispensing dot size
- Select number of dots per lead, you can select max. 3 dots per lead
- Enter the distance of the 1<sup>st</sup>/2<sup>nd</sup>/3<sup>rd</sup> dot position inside the edge of lead (in mm)

For the solder paste dispensing of the fine pitch IC (pitch < 0.5mm), you need to dispense at least 2x small dots per lead of the IC



- Click  button to generate the dispense dots by the computer
- You can modify the dots position in the table

**Remarks:** The dispense dots position is the X-Y co-ordinate to the center of the component.

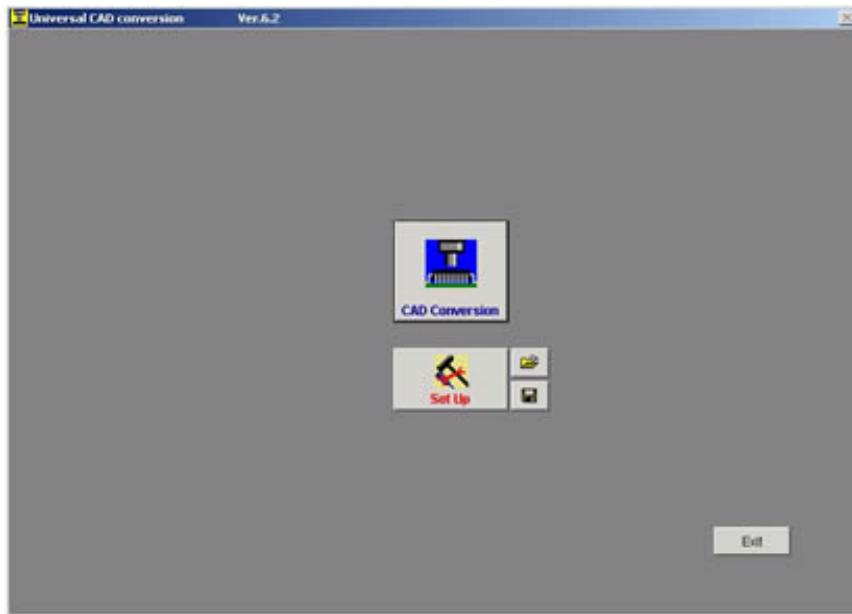
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

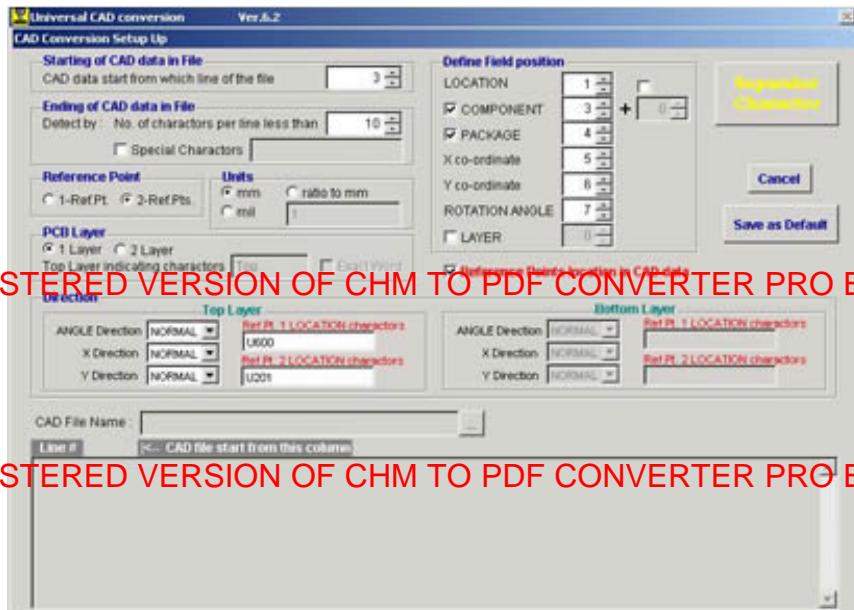
## APPENDIX L

### OPTION: UNIVERSAL CAD ACCESS - WCAD380

This is the Universal CAD access conversion software, it can auto convert different kinds of CAD file format to AutoTronik P&P data file format. To prepare a P&P data file, you can use of WCAD380 software to convert the CAD data of the PCB and then enter SMD software to relearn the Reference Points of the PCB and do Auto Production.

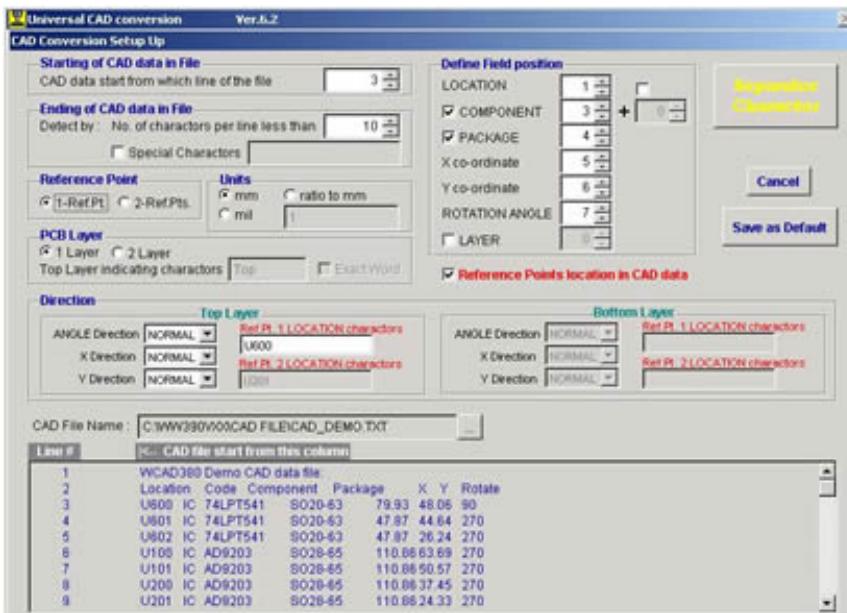


Click of  enter the WCAD380 set up mode to enter your PCB CAD file format.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

You can view the CAD file content at the same time, to select the CAD file by clicking the  button :



The following example is use of “CAD\_DEMO.TXT” CAD file :

#### Starting of CAD data in File

- enter the CAD data starting line in the file e.g. line 3

#### Ending of CAD data in File

- enter the minimum characters per line, this is used to detect the end of the CAD data in the file (normally is set to 10)
- you can select to detect the end of the CAD data in the file by matching special characters (e.g. click on [Special Characters] and enter “end of file” and make sure that the ending of your CAD data is included the characters of “end of file”)

#### Reference Point

- select 1-reference point or 2-reference points for your P&P file

#### Units

- enter the unit of the X-Y co-ordinate in the CAD data (mm, mil, or direct key-in the ratio to mm)

#### PCB Layer

- select 1-layer or 2-layer information in your CAD file, if the CAD file data including 2-layer information, you need to enter the TOP layer indication characters

#### Define Field position

- this is to enter the CAD information on each line of the file (e.g. the 1<sup>st</sup> column is LOCATION information, 3<sup>rd</sup> column is COMPONENT information, 4<sup>th</sup> column is PACKAGE information, ....)

**Location** is the Location in Learn Place

**Component** is the Component in Learn Pick

**Package** is the Lib in Learn Pick

**X co-ordinate** is the X in Learn Pick & Learn Place

**Y co-ordinate** is the Y in Learn Pick & Learn Place

**Rotation angle** is the Pk.angle in Learn Pick

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Direction

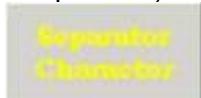
- this is to enter the ANGLE, X, Y direction to the HOME 0,0 co-ordinate of the CAD data (select NORMAL / INVERT, if you don't know the format of your CAD file, you can simple select NORMAL and try to convert and then enter SMD software to check whether the direction is correct or not, and then re-enter the WCAD380 to select the correct direction)

## Reference Points location in CAD data

- select this if the CAD file including the Reference points information (Reference points X-Y co-ordinates)

## Ref.Pt. 1 LOCATION charactors & Ref.Pt. 2 LOCATION charactors

- enter the characters in the LOCATION column of your CAD data that indicated the Reference Point 1 or 2 (e.g. U600 of LOCATION column in the file indicated the reference point 1, the software will store the X-Y co-ordinates of that line as the reference point position and will not store as the placement position)



button

- This is to enter all the difference kinds of characters between column and column in your CAD file, this is to tell the software how to separate each column in one line. ( normally the Separator Character only included [Space] & [Tab], max. 20 kinds of Separator Characters can be entered )

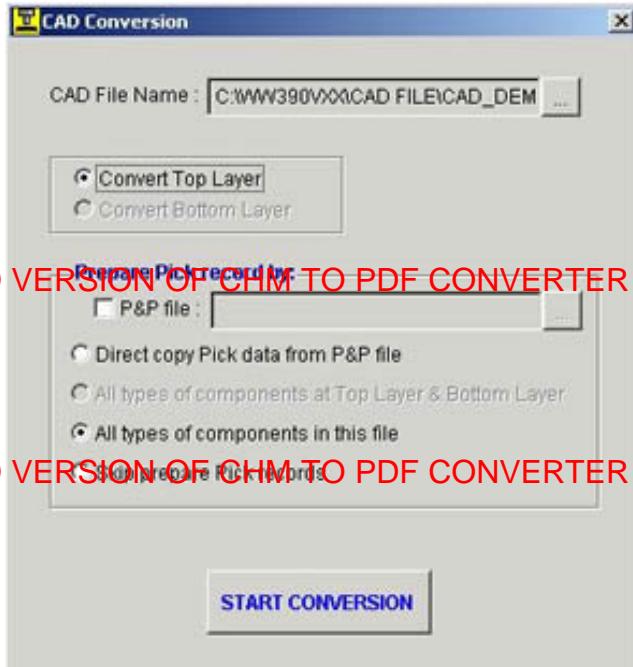


**Save as Default**

Click of **Save as Default** in Set Up mode to save the setting and exit Set Up mode



Click of **CAD Conversion** to enter conversion mode :

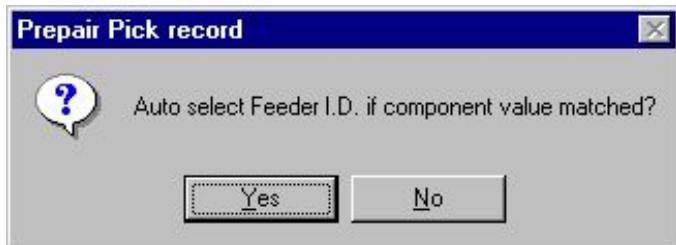


- **select CAD file to be converted**
- **select Top Layer or Bottom Layer to be converted if your CAD file including Top & Bottom Layer information together**

#### Prepare Pick record by

- (1) Direct copy Pick data from P&P file
  - you can select this item to skip prepare pick record and copy the pick information from an existing P&P data file
- (2) All types of components at Top Layer & Bottom Layer (if your CAD file including Top & Bottom Layer information together)
  - the software will sort out all difference kinds of components in Top Layer & Bottom Layer and enter Prepare Pick record mode after conversion
- (3) All types of components in this file / at this Layer
  - the software will sort out all difference kinds of components in this Layer and enter Prepare Pick record mode after conversion
- (4) Skip prepare Pick records
  - to skip enter Prepare Pick record mode after conversion (no pick information will be set in the converted P&P data file, you need to set the pick information in the SMD software)

- Click **START CONVERSION** button to start conversion



If you select Auto select Feeder ID if component value matched, the software will compare each kind of the component in the COMPONENT column and the Feeder ID information and auto selected the Feeder ID if it is matched.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Prepare Pick records										
No	Component	Package	Layer	Feeder	I.D.	Component	Lib	Polarity	Pk_angle	Offset
1	100nF	C0603		A01			C0603	N	Normal	0
2	10nF	C0603		A02			C0603	N	Normal	0
3	10uF/10V3	C3528		A03				Y	Normal	0
4	0R90	R0603		A04			R0603	N	Normal	0
5	10R0	R0603		A05			R0603	N	Normal	0
6	10k0	R0603		A06			R0603	N	Normal	0
7	1k0	R0603		A07			R0603	N	Normal	0
8	2k00	R0603		A08			R0603	N	Normal	0
9	470k5	R0603		A09			R0603	N	Normal	0
11	74LPT541	S020-63		A11				Y	Normal	0
12	AD1200	S028-65		A12				Y	Normal	0
13	74LPT116374	S048-5		A13				Y	Normal	0
14	K45540932C	S054-8		A14				Y	Normal	0

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

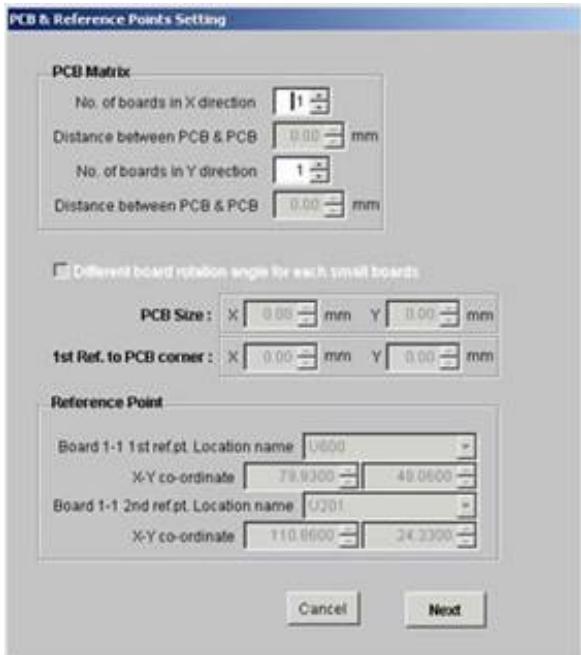
the software will sort out all kinds of components and enter Prepare Pick records mode, you can preset the use of which Feeder for each kind of component in this mode.

Or use **Assign ALL Feeders temporary** temporary assign all feeders, and then using [4.7 Change Feeder Location](#) to sort.

**Feeder, I.D., Component, Lib, Polarity, Pk\_angle** are the same meaning in the SMD software. **Offset** is used when component Placement Angle definition of your CAD file format is difference from the SMD software ( [APPENDIX F](#) )

e.g. 0 degree of your CAD format = 90 degree of SMD software, you can key-in 270 in this column, and the software will auto adjust the placement angle of this component during conversion.

- Click **Next** to exit Prepare Pick records mode and go next step



- Enter the **PCB matrix** information of your PCB
- **Reference Point** information entry let you preset reference points base on any placement component position if your CAD file doesn't has the reference points information. You can choose any 2 of placement LOCATION as the reference points, then after the conversion, you can re-learn the reference points to the center of that placement LOCATION in the SMD software and all the other placement position will auto adjust to the correct position on your PCB.
- Click **Next** to go next step to enter the P&P file name to save and completed.



## APPENDIX M

### Optimize for Auto production (only for double head)

This is for quick production

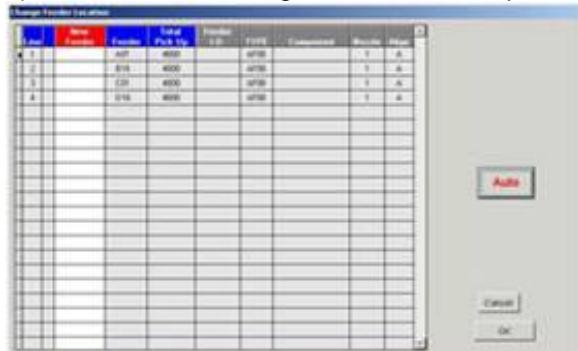
Load P&P file or import from other SMD machine



1) click **OPTIM** enter optimise mode



2) Click **Auto** change feeder location, place feeder by **New Feeder**



3) Click **Auto** optimise production index table



4) Click  for production

## OPTION: Conveyor S

Datum holes & Auto Learn Reference Mark requirement:



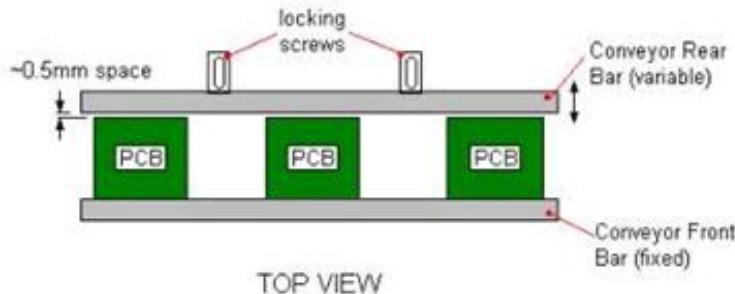
Auto Learn Reference Mark can be placed here.

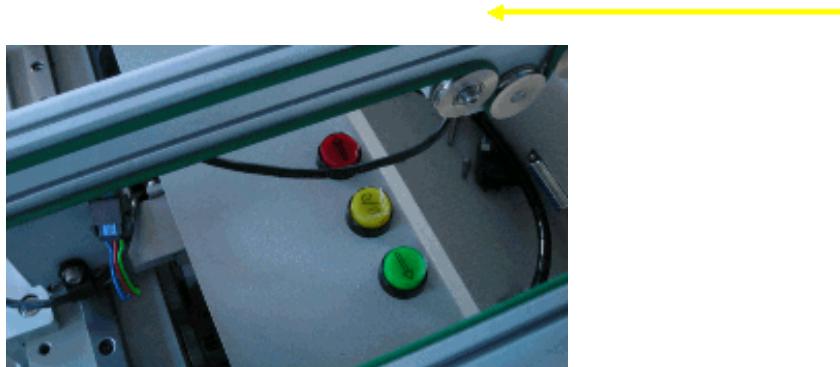
For the Auto Learn Reference Mark placement refer to the Auto Learn Specification in [APPENDIX I](#)

**Remarks:** Don't place the Auto Learn Reference Marks near the Datum holes or too close to the PCB edge, otherwise it may be blocked by the conveyor edge plates.

### Steps:

1. Adjust Conveyor Rear Bar (Using 3 PCBs)

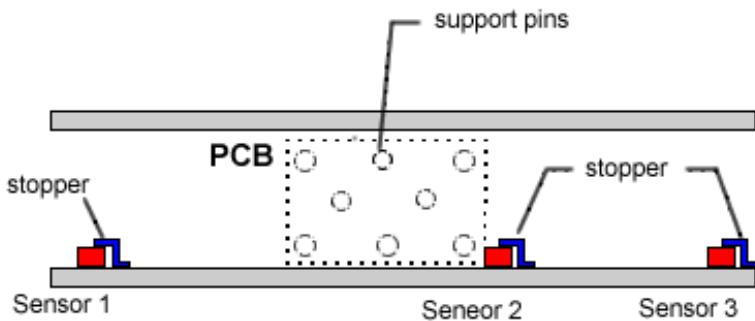


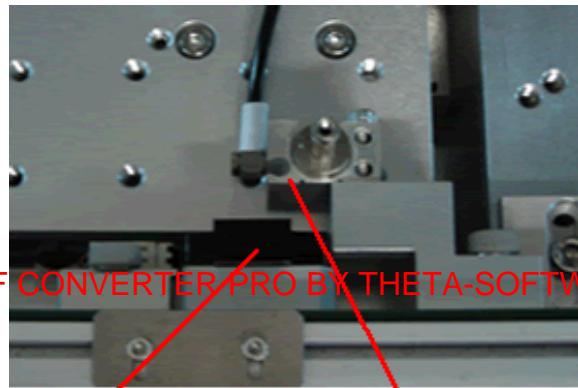


- (1) Click green button for close the conveyor (the rear of conveyor near the operator)
- (2) Click red button for open the conveyor (the rear of conveyor leave the operator)
- (3) Click yellow button forever can down the datum plate, release it then the table up

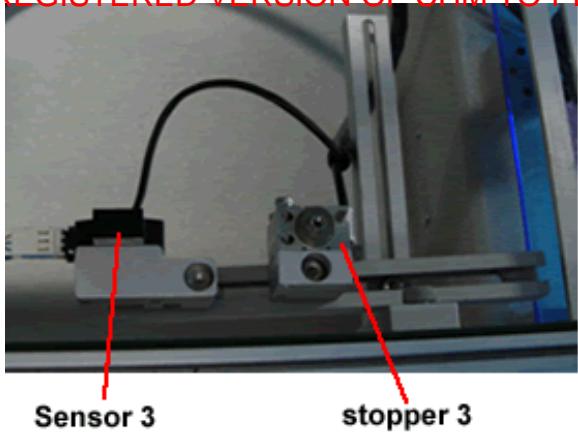
2. Install Conveyor Stopper and support pins:

- a) The datum plate can be push down by hand with a little bit force
- b) Set up the stopper and support pins as follow:

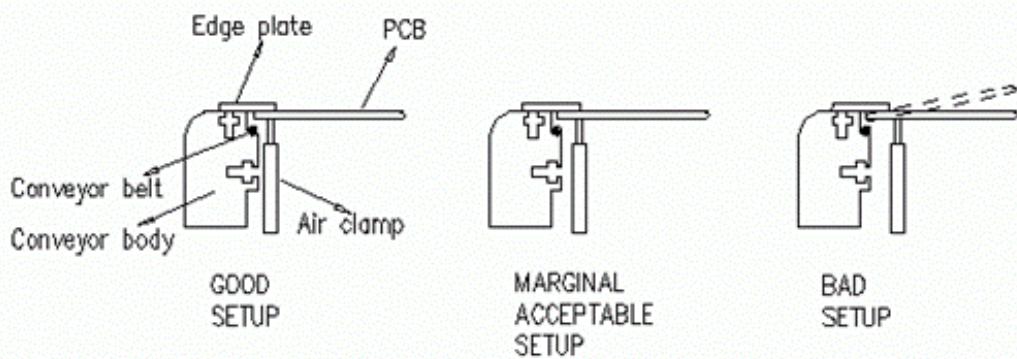
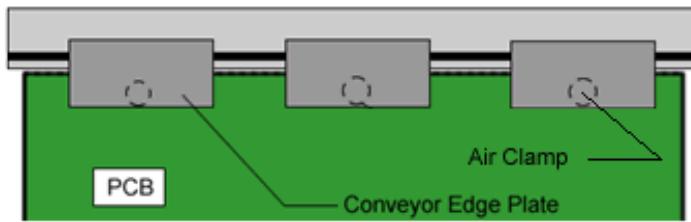




UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

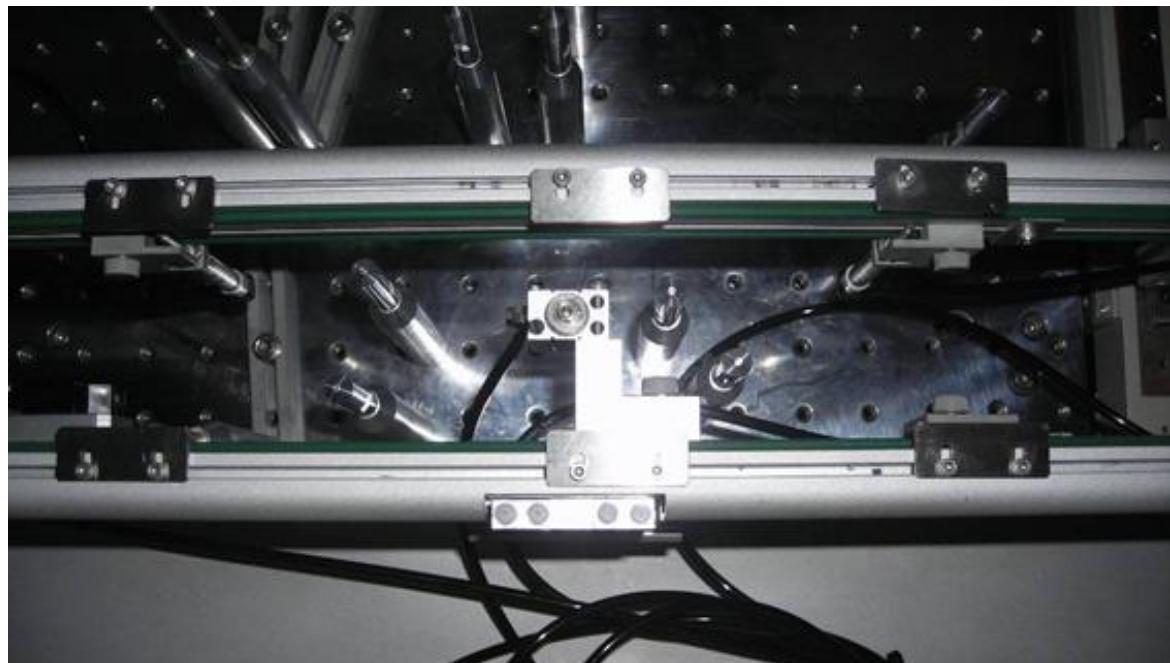


3. Install Conveyor Edge Plates as follow:



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

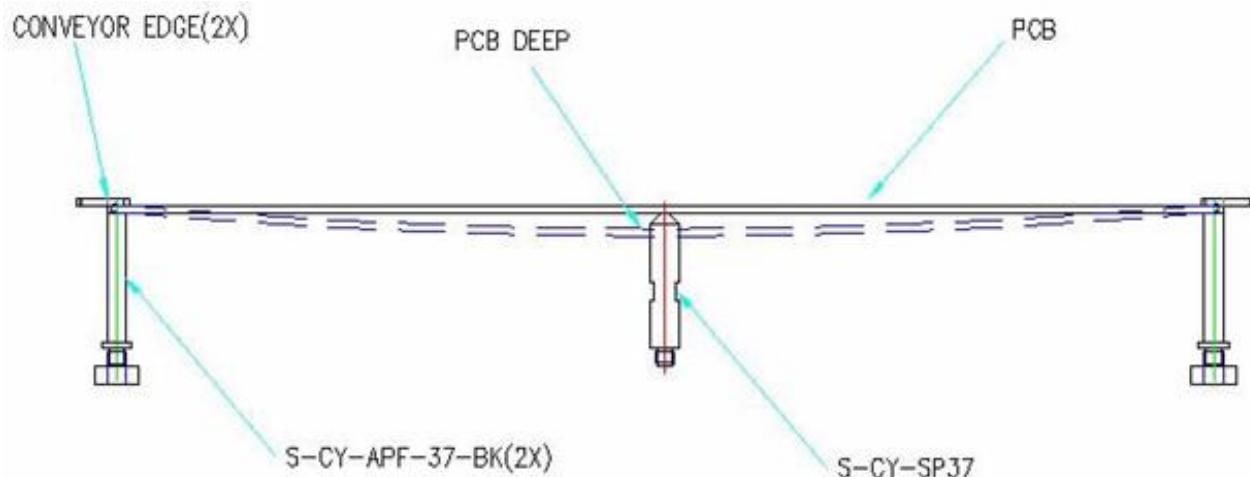
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



4. Can place some PCB Support Pin If the PCB so thin, please check below picture

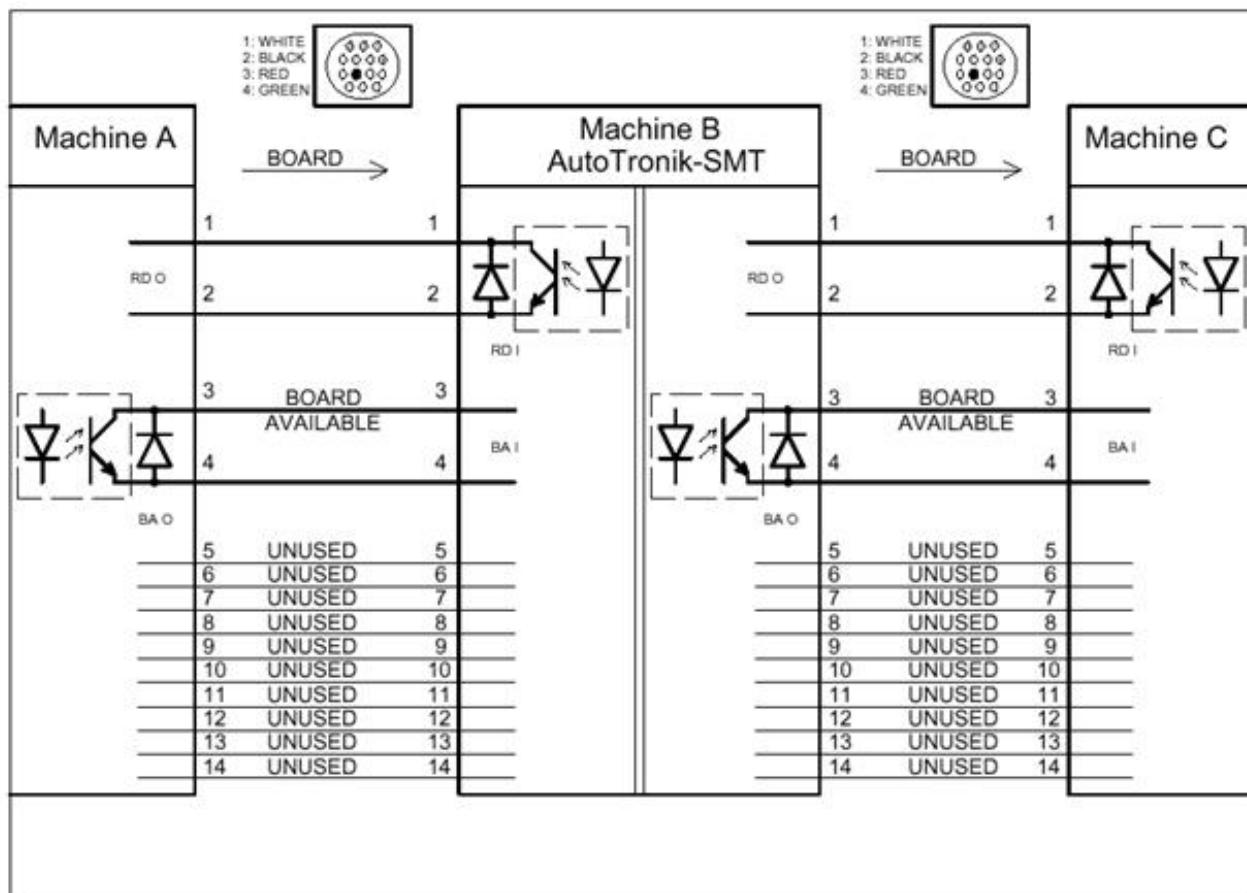
Please place some PCB support pin below the PCB to prevent placement error while the PCB is thin, if the PCB

so width then the part in the middle of PCB will go down, it will have a offset of height, so it is useful to place support pin



**Remark : Online Production Setting**

### Smema





UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## APPENDIX O

### OPTION : Cut Scrip Tape holder

1  TS-CST08-10

-8mm Cut Scrip Tape holder with 10 lane



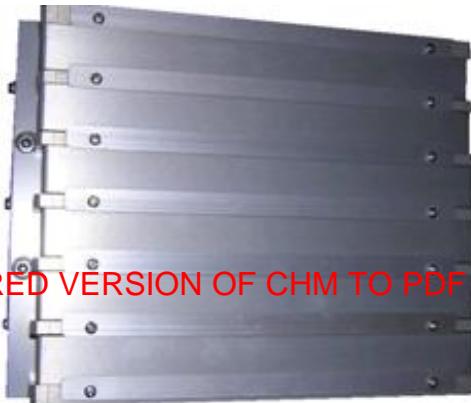
2  TS-CST12-7

-12mm Cut Scrip Tape holder with 7 lane



3  TS-CST16-6

-16mm Cut Scrip Tape holder with 6 lane



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

4 TS-CST24-4  
-24mm Cut Scrip Tape holder with 4 lane



5 TS-CST-STAND-01  
-stand for 8/12mm CST holder



6 TS-CST-STAND-02

-Stand for 16/24mm CST holder



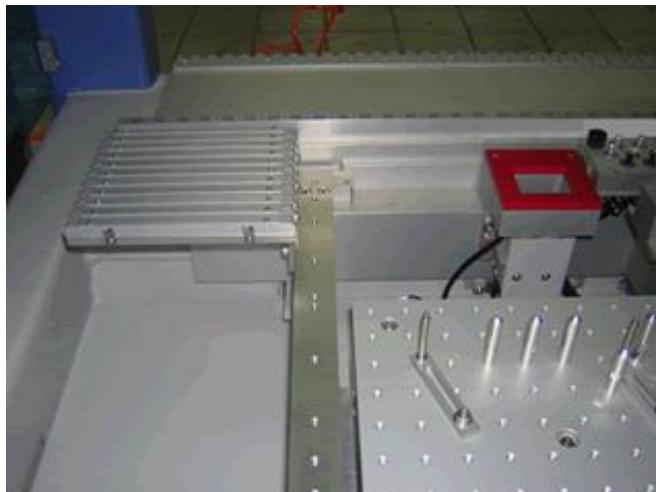
7  TS-CST08-10 with TS-1 installed on 390 machine



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

8  TS-CST08-10 with TS-CST-STAND-01 installed on 390 machine



9  TS-CST08-10 with TS-CST-STAND-01 installed on 383 machine



# Appendix P

## How to use Alignment –G/H

It is recommended to use this alignment if the IC pitch >1.6mm or the component size is bigger than 16mmx14mm but smaller than 38mmx38mm

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Alignment-G/H include camera G and Nozzle-7

NZ-7-D50 ( 70mm) for BS390

NZ-7-D40 ( 56mm) for BS383

NZ-7-D28 ( 40mm) for UFTB

Have Gray and black colour for Nozzle-7 for component

Gray colour for Nozzle -7 is used for BGA

Black colour for Nozzle-7 is used for IC, QFP

Alignment-G/H can select “pre-rotate” or “not rotate “to placement angle before vision alignment



For align TSOP or Rectangle QFP don't select “Pre-rotate” and set Angle Tolerance to 10 degree in Train Image mode

- (1) Disable “pre-rotate” to placement angle ( RECOMMEND)

Remarks: Angle Tolerance can set to 10 degree.

Since the searching image (the component angle) always similar to the trained image, the “level of detail” can set more detail; it will have higher accuracy and more stable search result.

- (2) Enable “pre-rotate” to placement angle ( NOT RECOMMEND )

Remarks: Angle Tolerance need to set to 100 degree or more

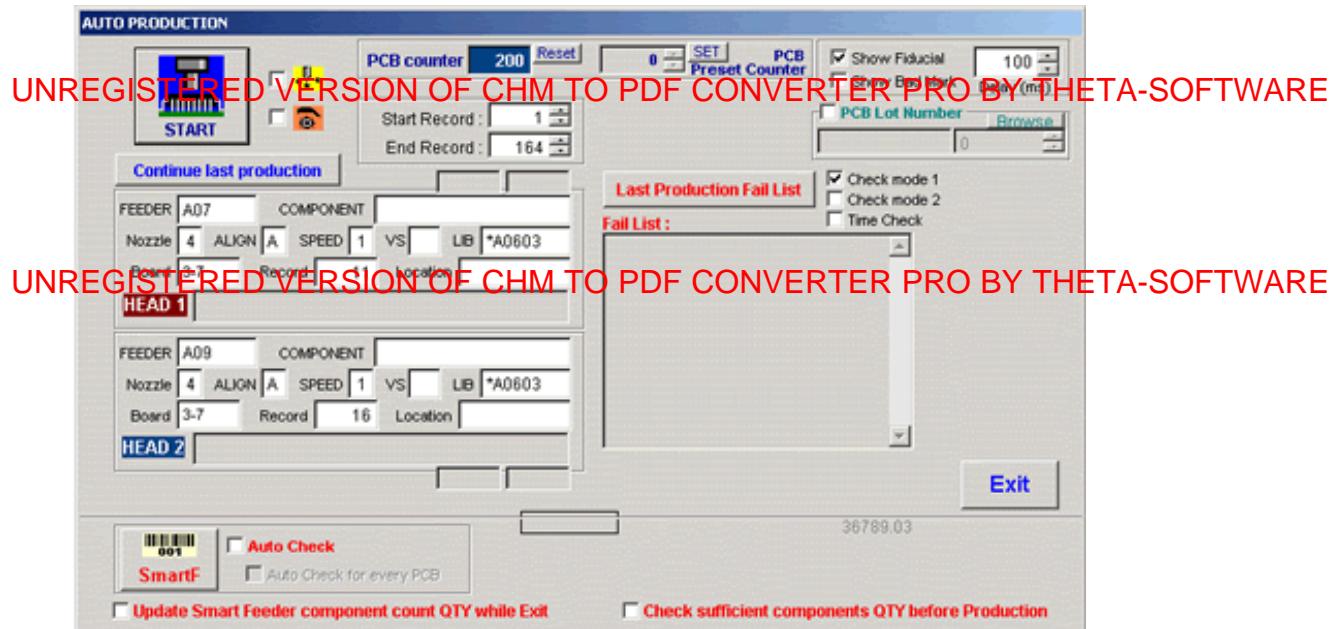
Since the search image might have 180 degree different with the trained image, it will take much longer search time. the “level of detail” can't set more detail, the search result will be not good

enough for TSOP and QFP.

It is an old alignment method in our software .It is not recommend to use for new library

# Appendix Q

## How to use CHECK MODE in production

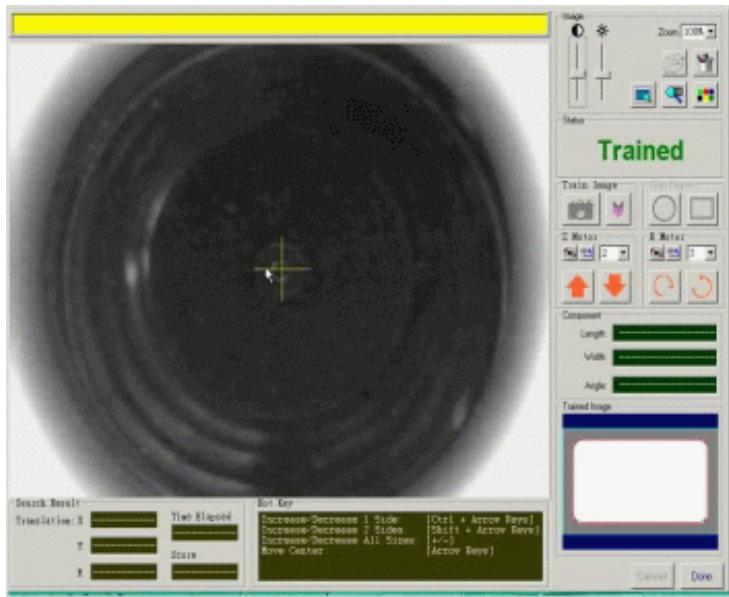


**Check mode 1** --- after pick up component failed, machine will stop on the waste component location, and then we can check the error

**Check mode 2** --- after pick up component, machine will stop on the waste component location. And then we can check the component location of pick up.

ERROR:

**VISION ERROR [64:NO COMPONENT]** -----



Problem:

- No component is picked up

Solution:

- Pick up height is not correct, relearn pick height
- Pick up position is not correct, relearn pick position
- Component jam at the feeder, check feeder

VISION ERROR [98:Detect Fail] -----

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



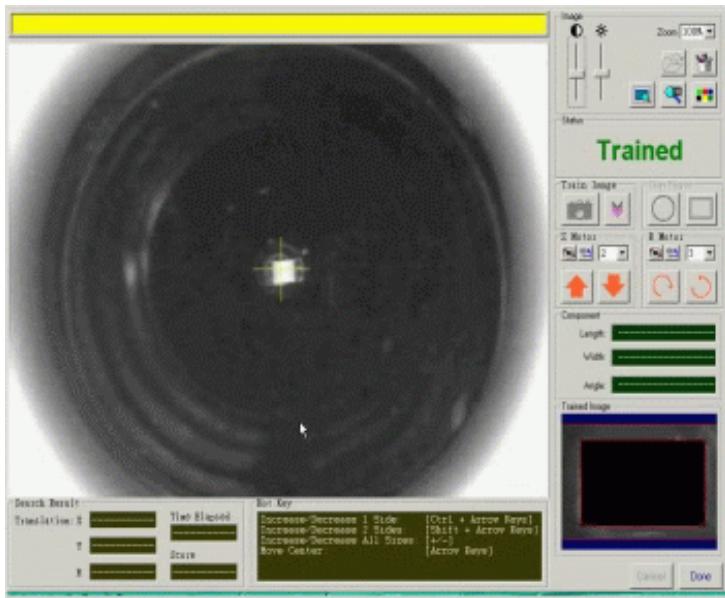
Problem:

- component can't align by Laser

Solution:

- Poor pick up position such as pick up the component at the corner, relearn pick position
- Pick up height is too margin, relearn pick height
- Vacuum on delay time is too short, increase vacuum on delay time
- Rotary Encoder error, check Rotary Encoder is losing
- Pulley is losing , screw the pulley tightly

## VISION ERROR [100:Dimension Fail] -----



Problem:

- The component is pick up vertically

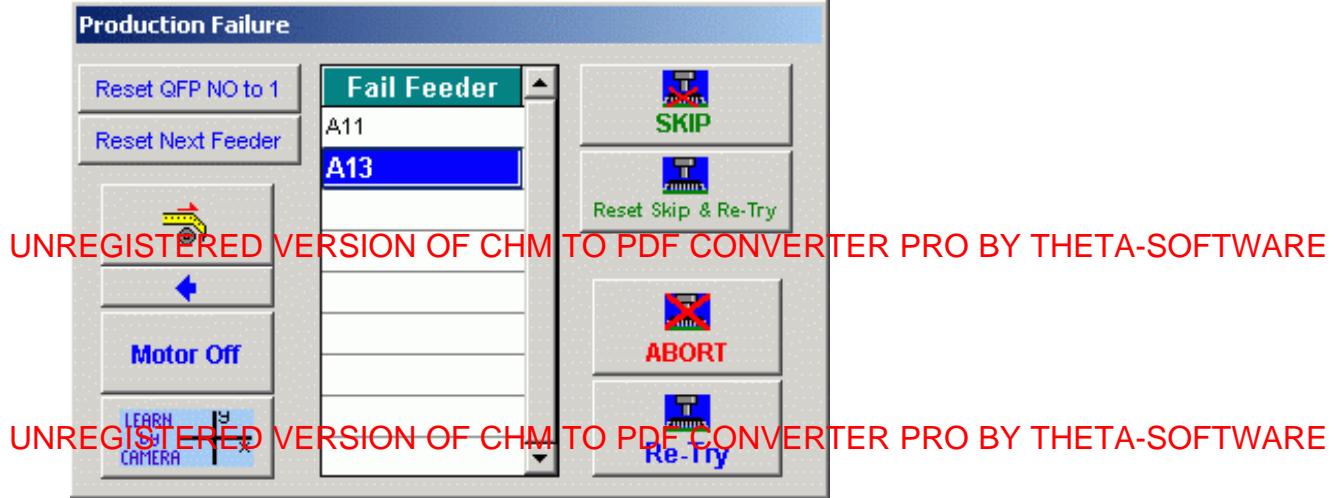
Solution:

- Pick up height is not correct, relearn pick height

- Pick up position is not correct, relearn pick position

- The size of the component is not correct check the library name, use custom make library

After error twice, have a tip will show for user



- Click  Reset QFP NO to 1 All Tray feeder QFP NO reset to 1
  - Click  Reset Next Feeder All Next feeder reset to Original
  - Click  Advance Feeder
  - Click  Smart feeder backward
  - Click  Motor Off X-Y power off
  - Click  LEARN by CAMERA modify Pick up location
  - Click  SKIP Skip this Record & continue production
  - Click  Reset Skip & Re-Try Re-try Pick-up continue production
  - Click  ABORT Abort production
  - Click  Re-Try Retry pick-up & continue production

## Appendix R

### OPTION: Universal CAD conversion\_V1.5

The CAD software accepts any ASCII file that has following information:

Location (Reference Designator)

Part Type

Package (optional)

X and Y center coordinates

Rotation

Layer (optional)

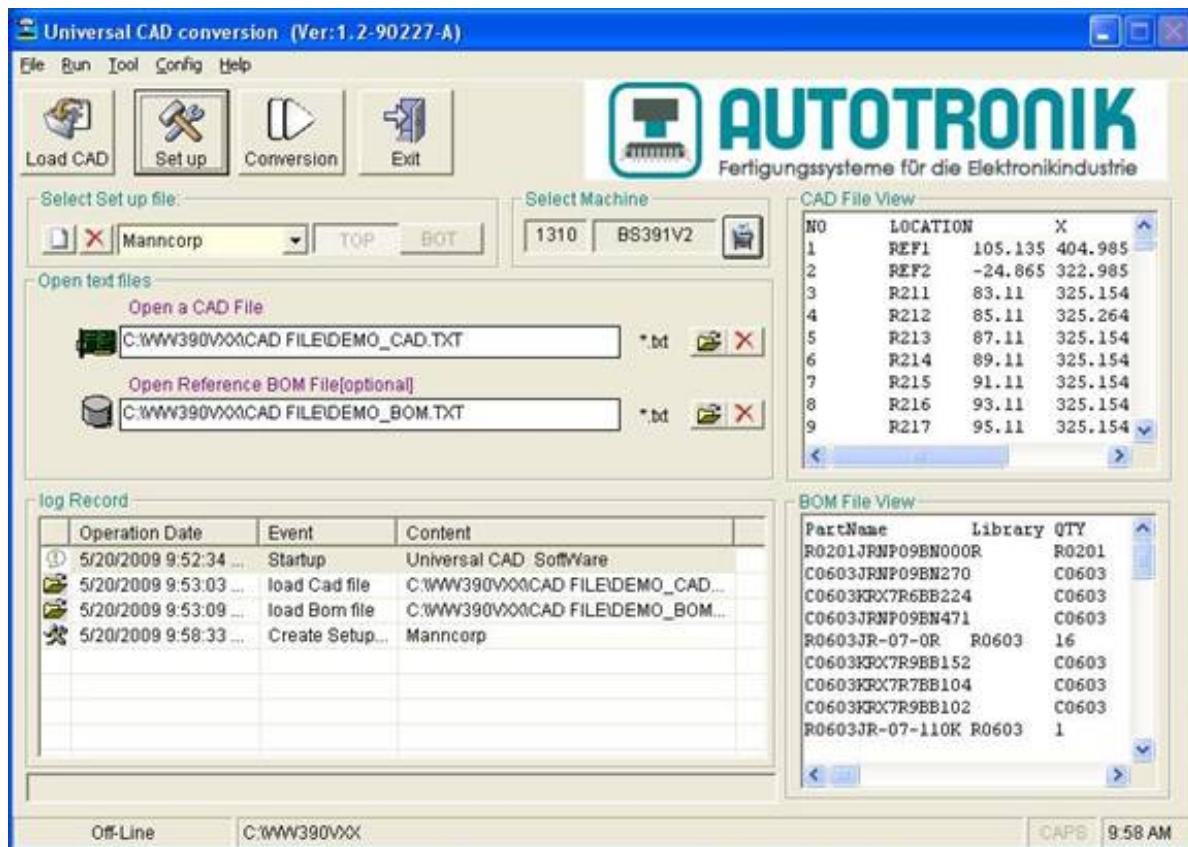
Remark (optional)

This information can be in one or in two separate files. If you have two file one file should have the Location (Reference Designator), X and Y and Rotation and the Layer top or bottom (for two sided boards).

The second file should be the BOM with the Part Type, Package (optional) and the Locations for each part type.

Below is an example of a conversion with two files:

Open the CAD program and open your CAD file in the  section of the screen. If your CAD file has all the information in one file you do not have to open a BOM file. In this example we also open a BOM file. Click on the  icon once you loaded your file(s).



Remark: when program the same CAD file, only need to select the same set up file on "select set up file"

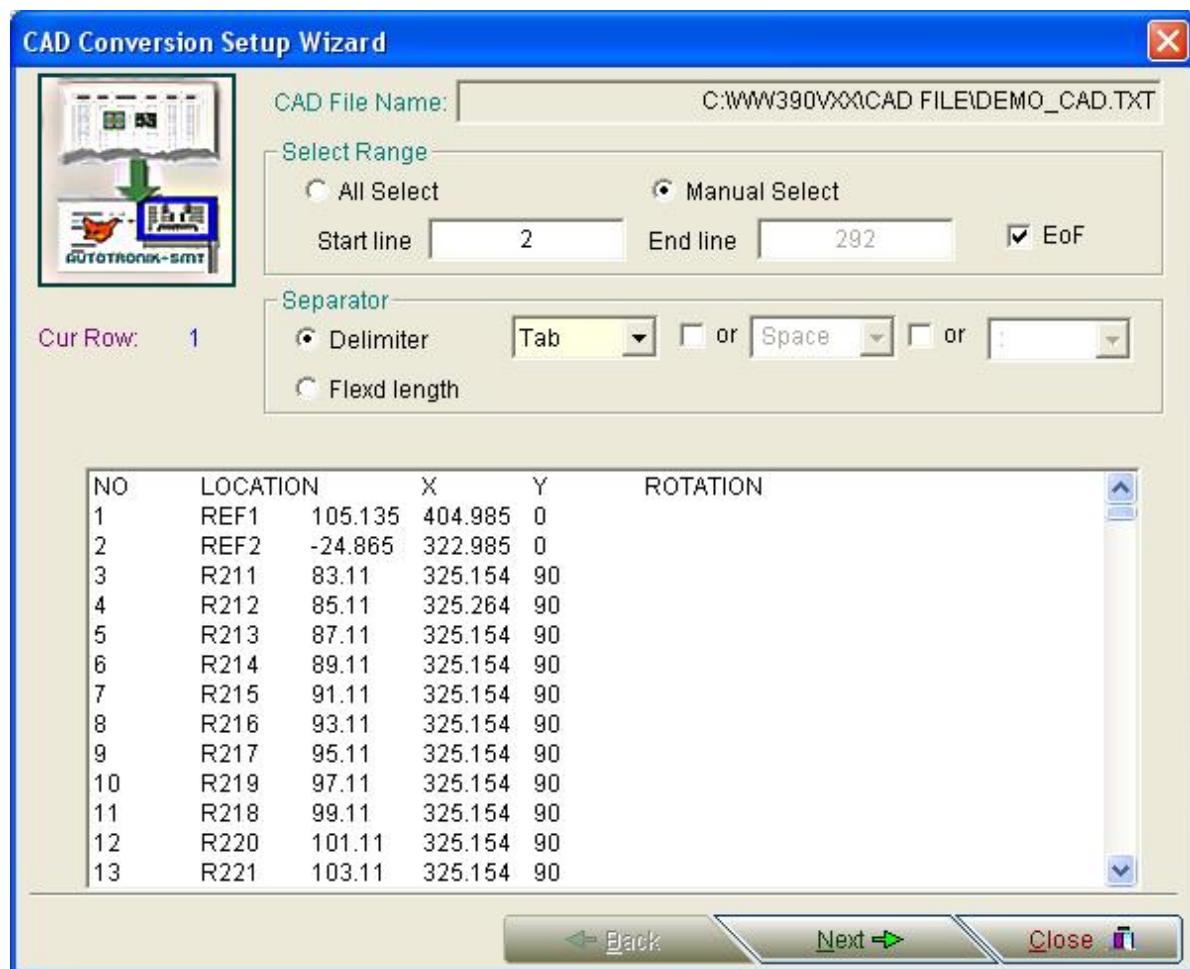
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## SETUP

The Setup Wizard opens and on the first screen you can select in which line the actual data starts. In our example it starts in line 2. You can also select the end line . The default is set to EoF (end of file) which detects the first empty line automatically. If you want to select your line by the line number you can uncheck the EoF box and type in the line number manually.

You also select the delimiter here that is used in your file. You can select multiple delimiters if necessary. In our example it is "Tab".



Some special file, user can input the character by manual, for example

CADTTT.txt - 记事本

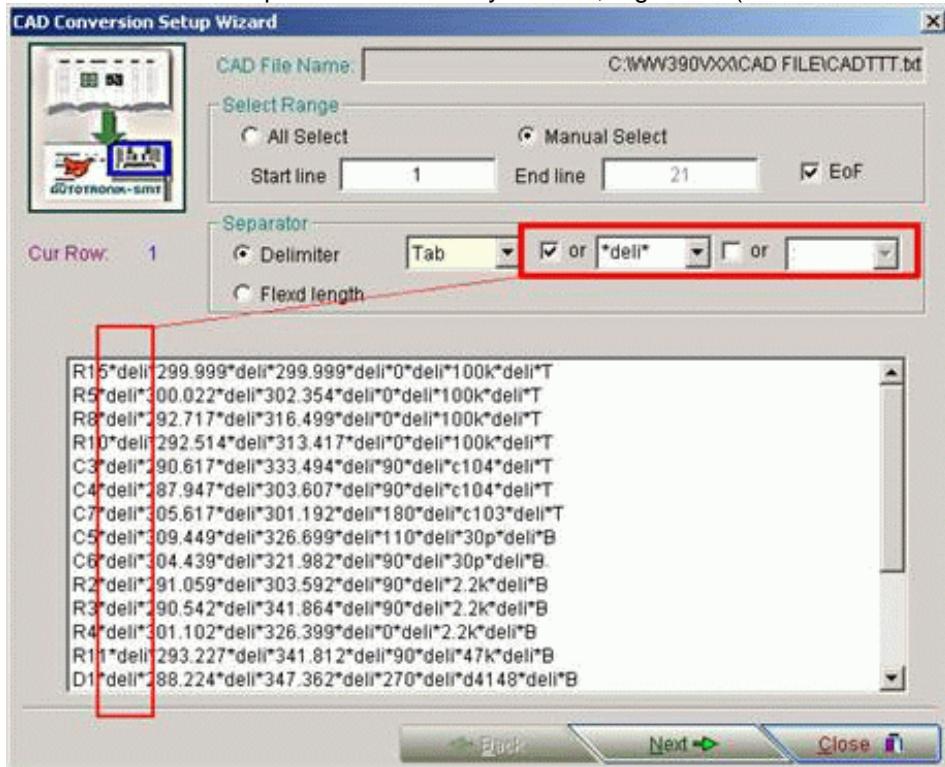
文件(E) 编辑(E) 格式(O) 帮助(H)

```
R15*deli*299.999*deli*299.999*deli*0*deli*100k*deli*T
R5*deli*300.022*deli*302.354*deli*0*deli*100k*deli*T
R8*deli*292.717*deli*316.499*deli*0*deli*100k*deli*T
R10*deli*292.514*deli*313.417*deli*0*deli*100k*deli*T
C3*deli*290.617*deli*333.494*deli*90*deli*c104*deli*T
C4*deli*287.947*deli*303.607*deli*90*deli*c104*deli*T
C7*deli*305.617*deli*301.192*deli*180*deli*c103*deli*T
C5*deli*309.449*deli*326.699*deli*110*deli*30p*deli*B
C6*deli*304.439*deli*321.982*deli*90*deli*30p*deli*B
R2*deli*291.059*deli*303.592*deli*90*deli*2.2k*deli*B
R3*deli*290.542*deli*341.864*deli*90*deli*2.2k*deli*B
R4*deli*301.102*deli*326.399*deli*0*deli*2.2k*deli*B
```

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Enable the "or" and input the character by manual, e.g. \*deli\* (Attention to case-sensitive)

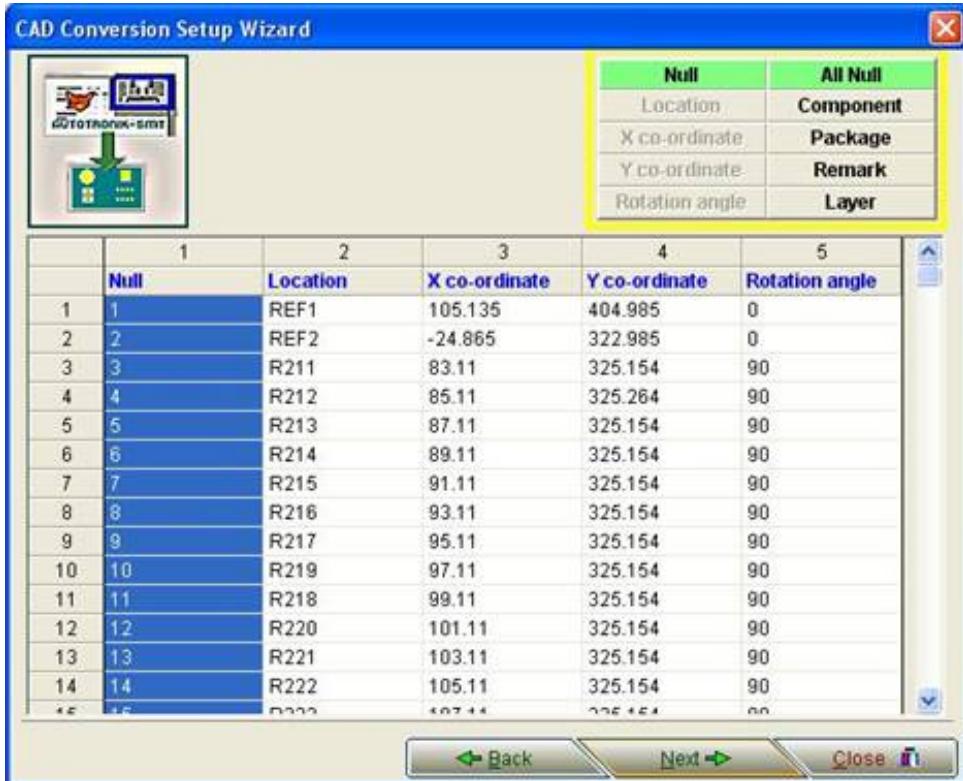


Press the "Next" button to go to the next screen.

On the next screen you select which information is in each column.

Highlight the column you want to change and click on the matching button in the list.

In our example we only have the Location, X, Y and Rotation. We also have a line number column which is useless for our conversion. This column will be assigned as "Null".

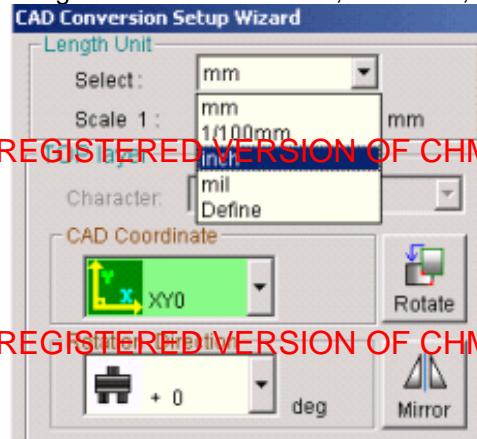


Press the "Next" button to go to the next screen.

In this screen with the drop down menu you select which units your CAD file uses (mills, mm, inch...). You can also define your scale manually in case your units are neither of the drop down menu.

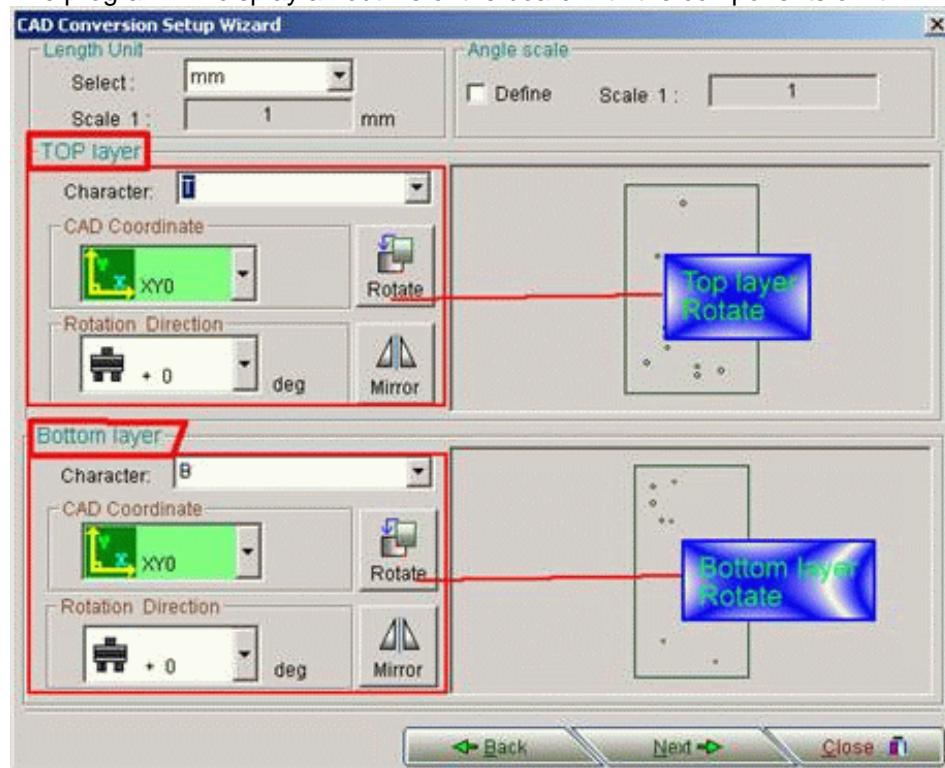
In our example our units are mm.

Length Unit: can select mm, 1/100mm, inch, mil, or Define by yourself



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

If you have a top and a bottom layer you will choose which character in your CAD file indicates the different layers. The program will display an outline of the board with the components on it.

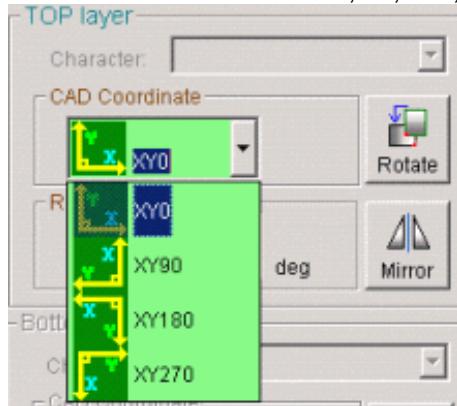


Click this button for CAD coordinate by counter-clockwise



Click this button for get a PCB mirror  
In most CAD files the bottom side of a board has to be mirrored.

CAD coordinate can select 0, 90, 180, 270 degree



Press the "Next" button to go to the next screen.

If you do not have a BOM file loaded software will go to save setup file.

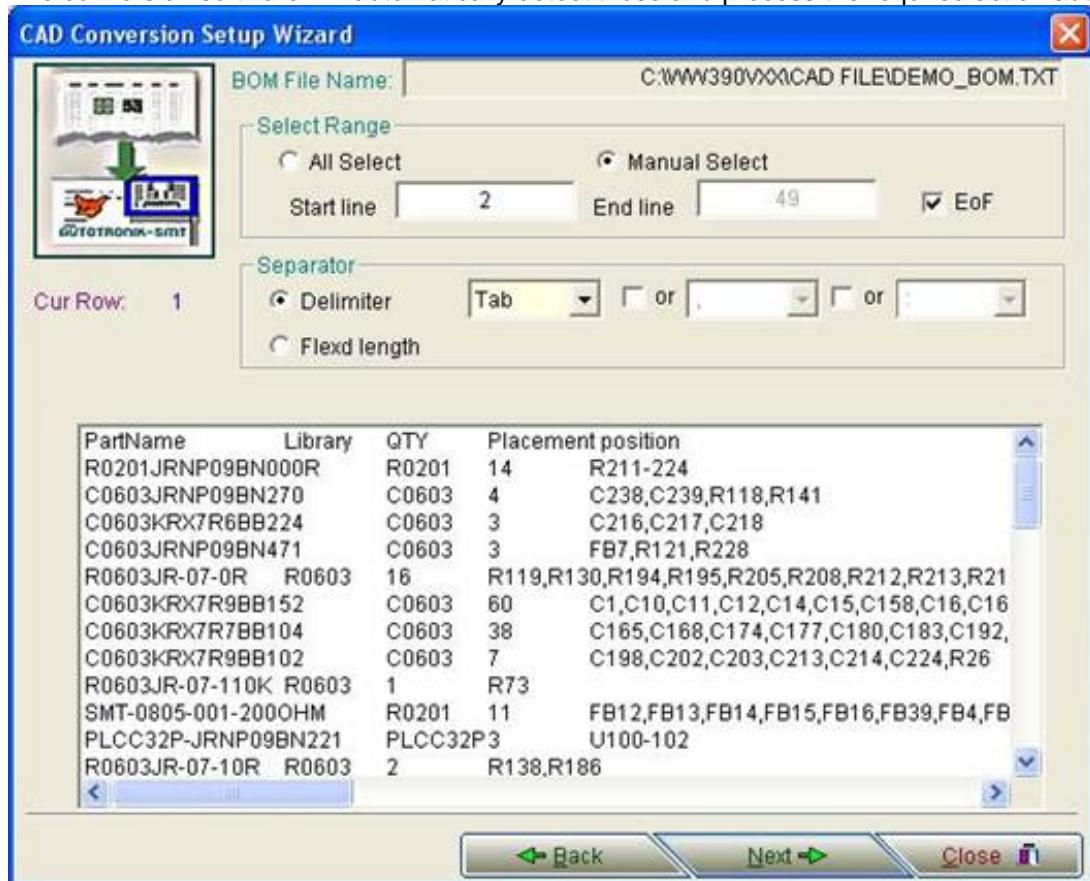
If you have a BOM file continue on the setup.

In this screen we select the start line and delimiters of the BOM file like we did with our CAD file.

In our example or first line with data is again 2 so we set the "Start Line" to 2 and our delimiter is Tab.

Notice that our BOM file lists the locations (reference designators) in different ways. In one line it assigns a range of locations to a part name and in other lines it assigns the locations individually separated by commas.

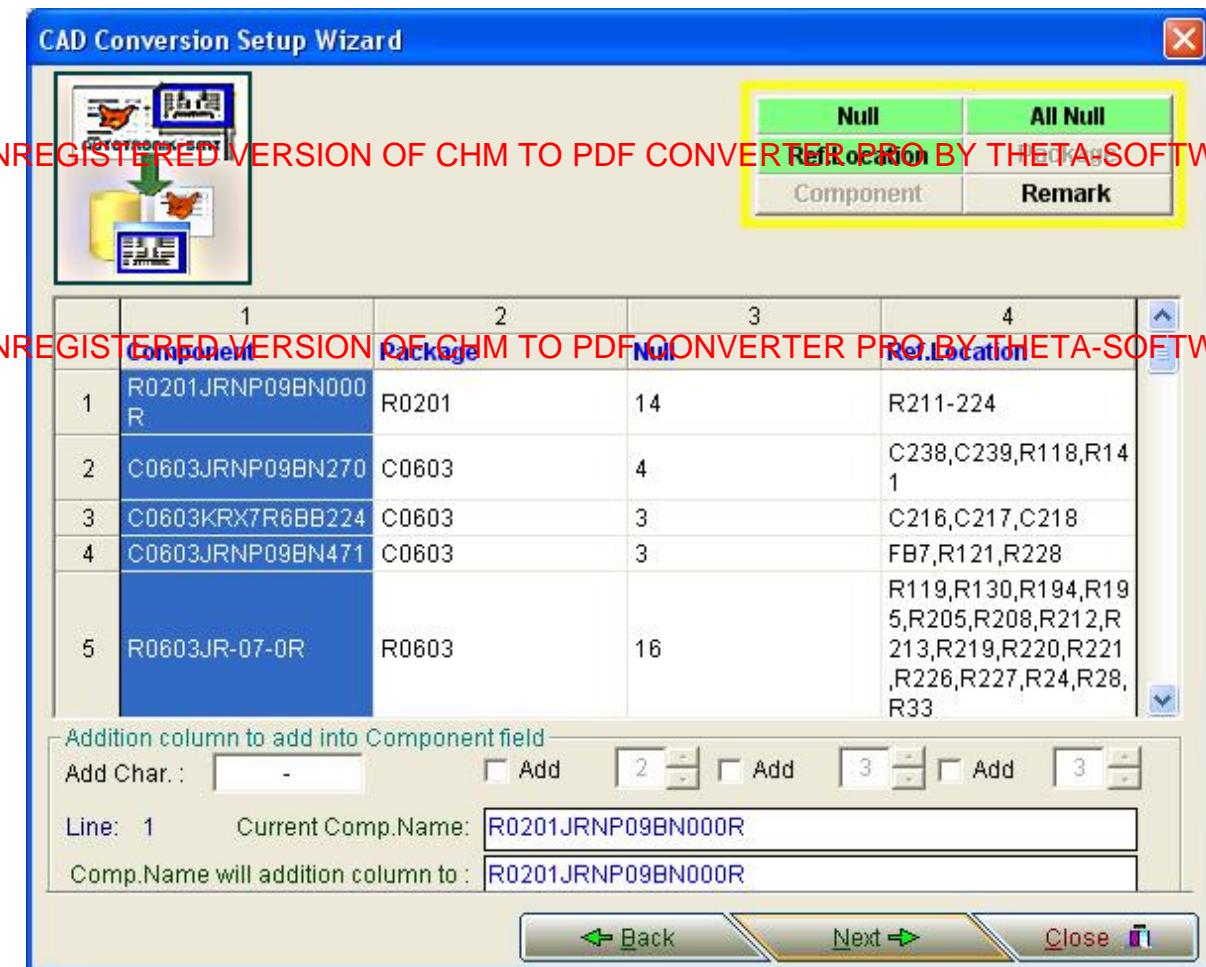
The conversion software will automatically detect those and process the required action automatically.



Press the "Next" button to go to the next screen.

In this screen we assign the different columns of the BOM file.

In our example our reference locations are all in one column. Depending on your BOM file you might have more columns that need to be assigned with the "Ref. Location".



Press the "Next" button to go to the next screen.

In this screen you have three different Tabs on the left side of the screen.  
 With the CAD tab you can verify that all the locations were assigned a component. Locations that were not assigned with any part type will have "UNKNOWN" in the "Component" column.  
 In our example only our fiducial marks have no part type assigned.

**CAD Conversion Setup Wizard**

**parameter**

**BOM**

**CAD**

**Table Data:**

NO	Location	X	Y	rotation ang	Component	Package	Remark	Layer
1	REF1	-105.1350	404.9850	180	UNKNOWN			
2	REF2	24.8650	322.9850	180	UNKNOWN			
3	R211	-83.1100	325.1540	90	J201JRNP09BN00C	R0201		
4	R212	-85.1100	325.2640	90	J201JRNP09BN00C	R0201		
5	R213	-87.1100	325.1540	90	J201JRNP09BN00C	R0201		
6	R214	-89.1100	325.1540	90	J201JRNP09BN00C	R0201		
7	R215	-91.1100	325.1540	90	J201JRNP09BN00C	R0201		
8	R216	-93.1100	325.1540	90	J201JRNP09BN00C	R0201		
9	R217	-95.1100	325.1540	90	J201JRNP09BN00C	R0201		
10	R219	-97.1100	325.1540	90	J201JRNP09BN00C	R0201		
11	R218	-99.1100	325.1540	90	J201JRNP09BN00C	R0201		
12	R220	-101.1100	325.1540	90	J201JRNP09BN00C	R0201		
13	R221	-103.1100	325.1540	90	J201JRNP09BN00C	R0201		
14	R222	-105.1100	325.1540	90	J201JRNP09BN00C	R0201		
15	R223	-107.1100	325.1540	90	J201JRNP09BN00C	R0201		
16	R224	-109.1100	325.1540	90	J201JRNP09BN00C	R0201		
17	C62	-47.8450	349.5450	180	0603KRX7R9BB15	C0603		
18	C76	-30.5700	360.2150	180	0603KRX7R9BB15	C0603		
19	C73	-34.6350	349.0400	90	0603KRX7R9BB15	C0603		
20	R209	-110.1400	391.9150	0	R0603JR-07-220R	C0402A		
21	R210	-110.1400	393.4350	0	R0603JR-07-220R	C0402A		
22	R98	-70.3150	334.5100	0	R0603JR-07-220R	C0402A		

**Buttons:**

- Back
- Next
- Close

See the next page for the BOM tab.

Here is the information in the BOM tab.

This screen just shows you the imported BOM list.

This is just for verification. You can not make any changes here.

**CAD Conversion Setup Wizard**

**parameter**

**BOM**

**CAD**

NO	Component	Ref.Location	Package	Remark
1	R0201JRNP09BN000R	R211,224	R0201	
2	C0603JRNP09BN270	C238,C239,R118,R141	C0603	
3	C0603KRX7R6BB224	C216,C217,C218	C0603	
4	C0603JRNP09BN471	FB7,R121,R228	C0603	
5	R0603JR-07-0R	R119,R130,R194,R195,R205,R208,R212,R213, R219,R220,R221,R226,R227,R24,R28,R33	R0603	
6	C0603KRX7R9BB152	C1,C10,C11,C12,C14,C15,C158,C16,C162,C163, C164,C19,C2,C20,C21,C23,C26,C27,C28,C3, C32,C34,C35,C36,C37,C39,C4,C42,C43,C44,C4 5,C52,C53,C54,C55,C57,C62,C63,C65,C68,C69 ,C7,C70,C71,C73,C74,C75,C76,C77,C78,C79,C 81,C82,C83,C84,C85,C86,C88,C89,C9	C0603	
7	C0603KRX7R7BB104	C165,C168,C174,C177,C180,C183,C182,C193, C194,C195,C196,C204,C205,C206,C207,C220, C233,C240,C242,C244,C269,C270,C271,C272, C273,C274,C275,C276,C277,C278,C279,C280, C281,C282,C283,C284,C289,C298	C0603	
8	C0603KRX7R9BB102	C198,C202,C203,C213,C214,C224,R26	C0603	
9	R0603JR-07-110K	R73	R0603	
10	SMT-0805-001-2000 HM	FB12,FB13,FB14,FB15,FB16,FB39,FB4,FB41,F B5,FB8,FB9	R0201	
11	PLCC32P-JRNP09BN2	U100-102	PLCC32P	
12	R0603JR-07-10R	R138,R186	R0603	
...		D1.D10.D12.D13.D14.D15.D16.D17.D19.D2.D25	-----	

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

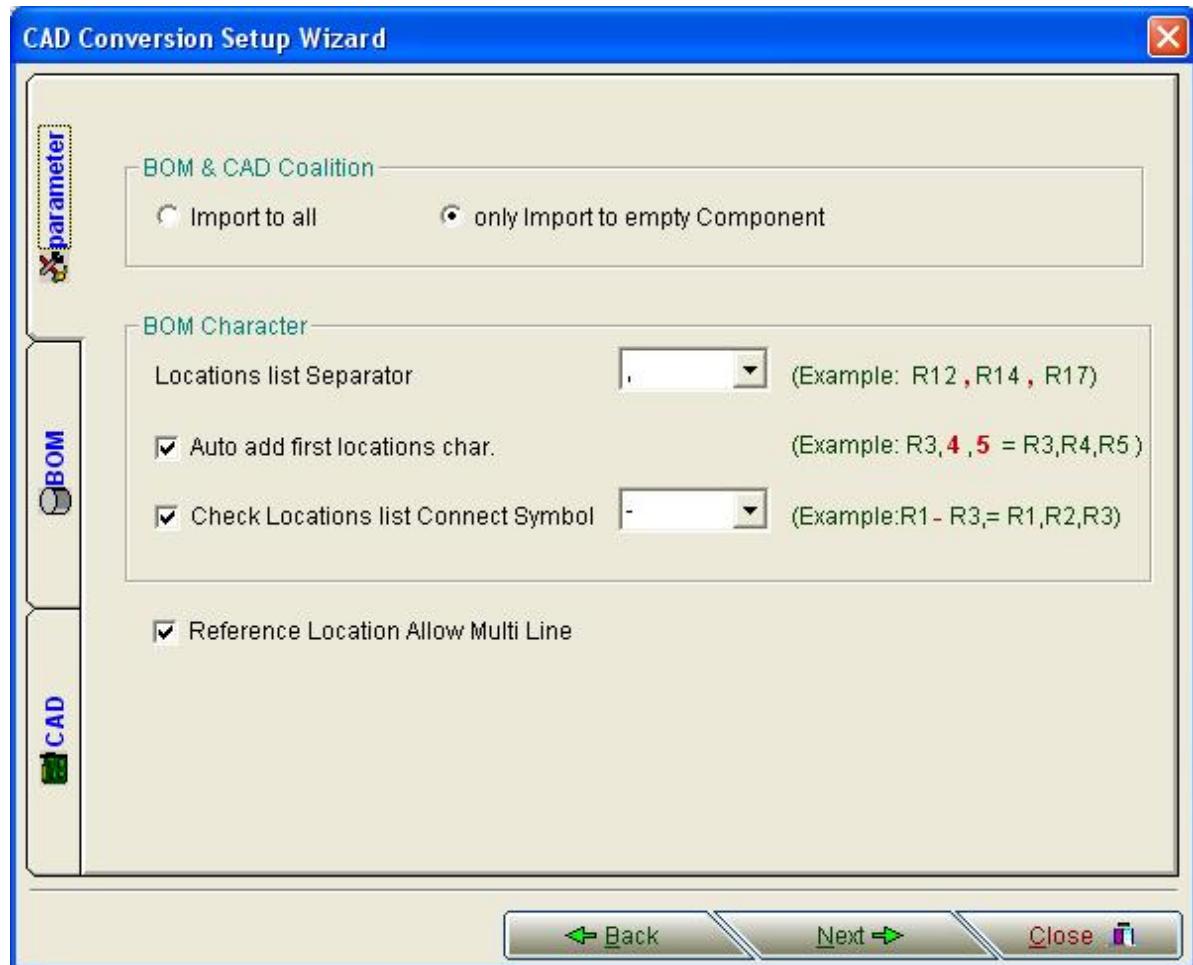
**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

**Back** **Next** **Close**

See the next page for the parameter tab.

In the parameter tab you can adjust the settings for the conversion of your BOM file. The default settings are applicable for most BOM files.

You can change the reference location separators in case they are different in your BOM file.



#### **“BOM & CAD Coalition”**

Import all --- import all the BOM data to CAD

Only import to empty component --- import the data while the component column of CAD file is empty.

**“BOM Character”** --- select the list separator for location column of BOM data

**“Reference location Allow Multi Line”** --- Reference location allow multi line, as below picture, Comment 103P and Components (Reference location) have multi line data

DEMO.DAT

File Edit Format help

Bill of Material for sg8062R3.PCB  
On 2007-1-17 at 15:21:01

Comment	Pattern	Quantity	Components(Reference location )
103P	SOT23	66	C3, C4, C5, C6, C7, C9, C11 C15, C21, C22, C26, C30, C32 C33, C34, C35, C37, C38, C44 C45, C56, C58, C59, C60, C61 C62, C64, C65, C67, C70, C77 C78, C95, C96, C97, C111
104P	603R	22	C25, C28, C42, C50, C83, C107 C109, C112, C116, C121, C124 C128, C130, C138, C139, C142 C144, C151, C184, C185, C194 C205
10K	603R	52	R17, R22, R26, R27, R29, R30 R45, R47, R49, R50, R51, R52 R53, R54, R55, R56, R57, R62

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Press the "Next" button to go to the next screen.

This is the last screen of the setup. Here you can save all the settings and use these settings on your next conversion if your CAD and BOM file structure is the same.

Type a name into the "Save setup file" box and click the Save icon next to it.

Another window will pop up to confirm the name. Click "OK" to confirm.



Remark: enable  **Delete 0 value coordinate** will delete all coordinate with 0 values.

Press the “Complete” button to go back to the main screen of the CAD conversion software.

# CONVERSION

After completing the setup you will do the actual conversion of the file.

Your CAD file is still loaded. If the setup was already done before, you need to load your CAD file in the main screen and if applicable the BOM file (see the before description).



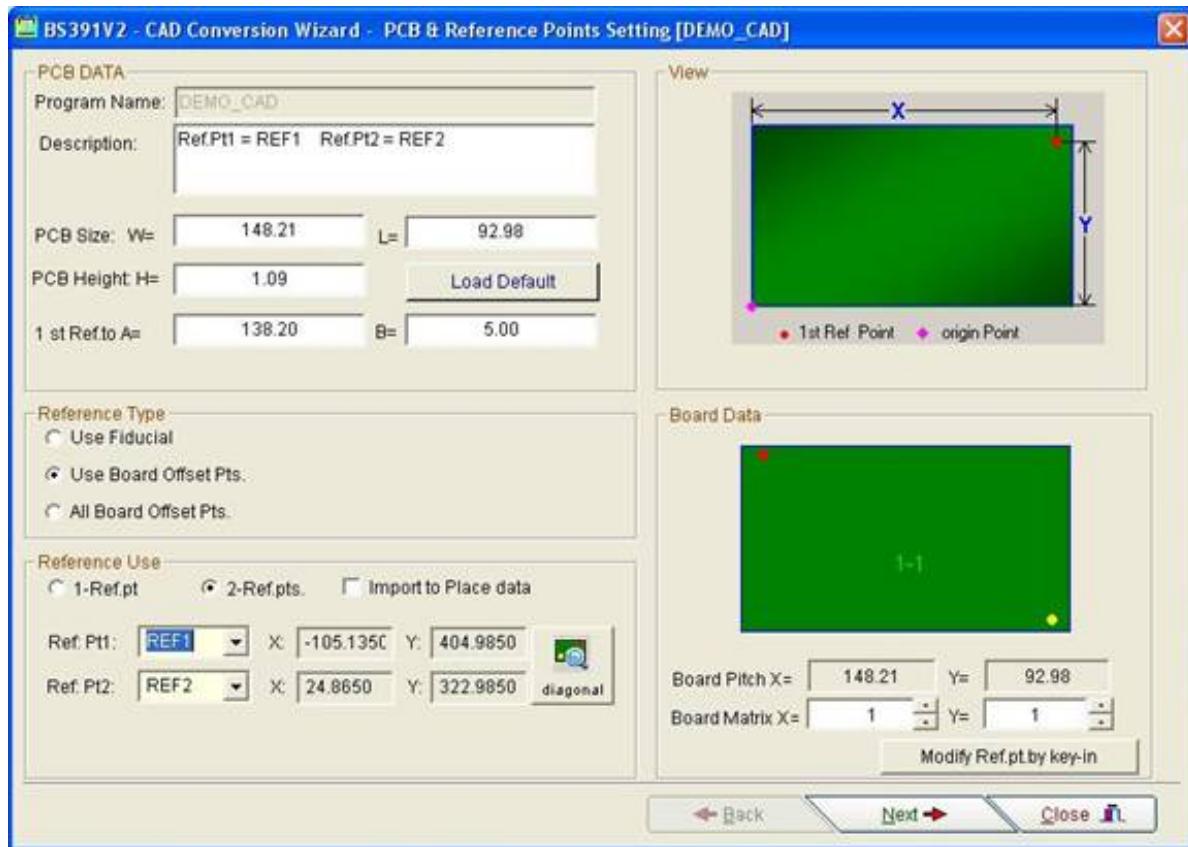
## UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Click on to start.

You can click on the "diagonal" button to let the program find two points that are furthest apart.

In our example we have dedicated reference points that we chose with the drop down menu. Since they are dedicated references we do not put a check mark besides "Import to Place data". If you use component locations as your references you have to put a check mark there.

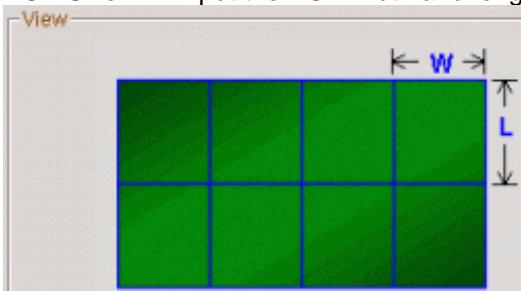
## UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



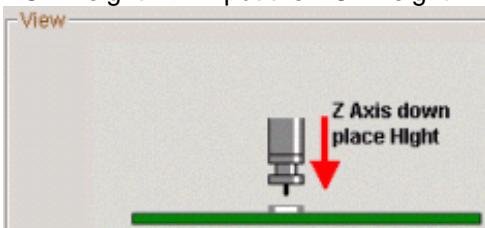
## PCB DATA

Description ----- input the PCB Description

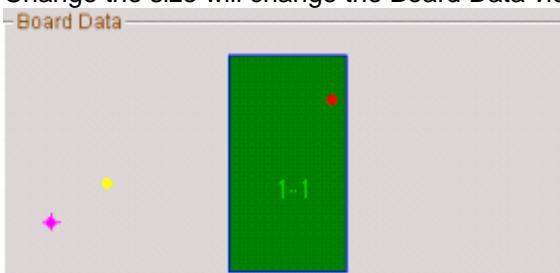
PCB Size ----- input the PCB width and length



PCB Height ----- input the PCB height

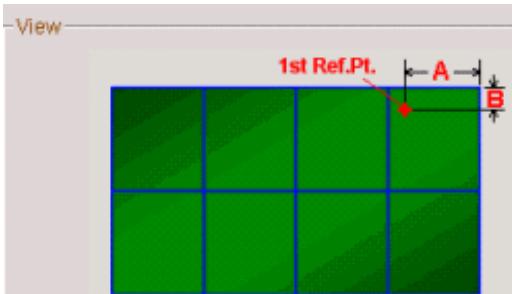


Change the size will change the Board Data view



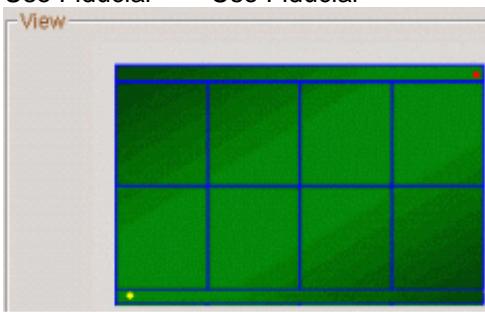
1<sup>st</sup> Ref.to A = distance of PCB to the 1<sup>st</sup> reference point that on PCB right corner

1<sup>st</sup> Ref.to B = distance of PCB to the 1<sup>st</sup> reference point that on PCB right corner



## Reference Type

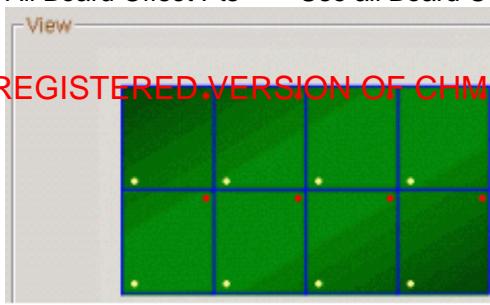
Use Fiducial ----- Use Fiducial



Use Board Offset Pts. ----- Use Board Offset Pts



All Board Offset Pts ----- Use all Board Offset Pts



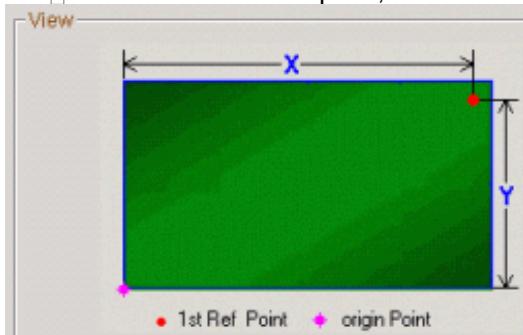
### Reference Use

1-Ref.pt  2-Ref.pts.  Import to Place data

Select use 1-reference point or 2-reference points for your P&P file

Ref. Pt1: R100 X: 115.3000 Y: 69.7300  
Ref. Pt2: U1302 X: 23.6700 Y: 18.0000

Ref Pt1 the 1<sup>st</sup> reference point, can be selected from pull down button



Ref Pt2 the 2<sup>nd</sup> reference point

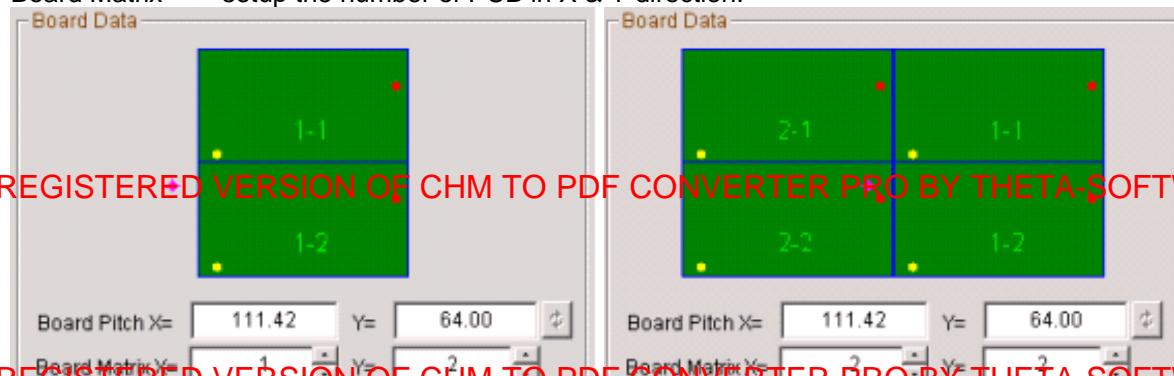


Click **diagonal** for select two points of cater-corner for reference points



## Board data

Board Matrix ----- setup the number of PCB in X & Y direction.

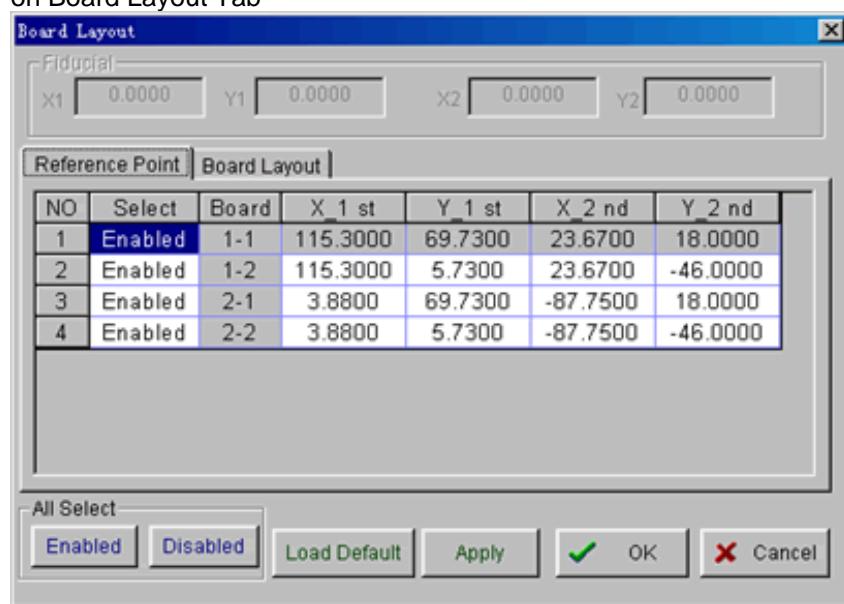


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Click  to modify the boards Ref. Pts. by manual key-in.

User can modify the reference point location on Reference Point Tab, or modify the coordinate and angle of Board on Board Layout Tab



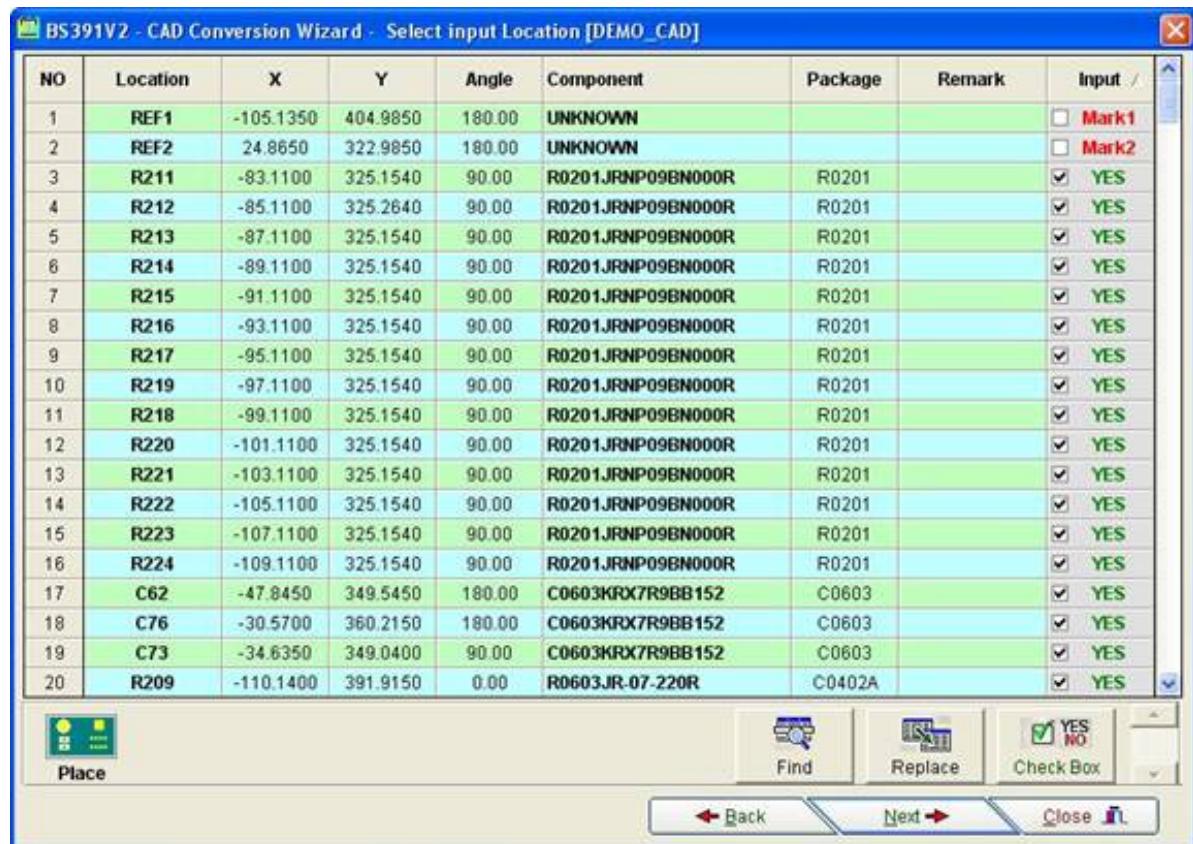
NO	Select	Board	X_1 st	Y_1 st	X_2 nd	Y_2 nd
1	Enabled	1-1	115.3000	69.7300	23.6700	18.0000
2	Enabled	1-2	115.3000	5.7300	23.6700	-46.0000
3	Enabled	2-1	3.8800	69.7300	-87.7500	18.0000
4	Enabled	2-2	3.8800	5.7300	-87.7500	-46.0000

In this screen you can choose placements that do not need to be downloaded by pressing on the "Check Box" button. Then you can remove the check mark in the "Input" column which will switch the "Yes" to a "No" and the program will not add this line to the output file.

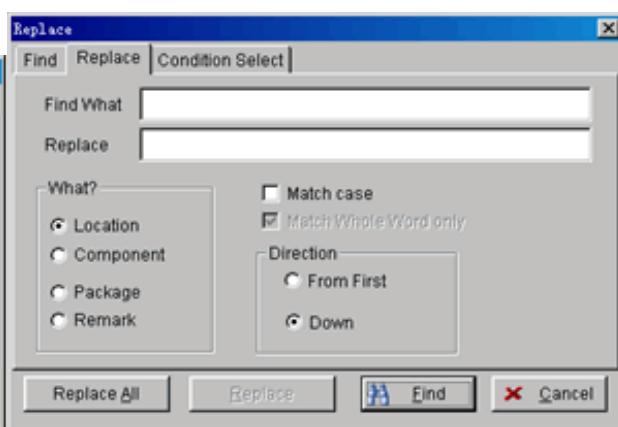
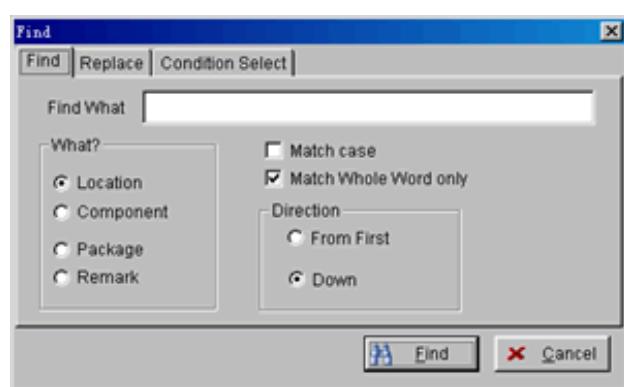
You can also replace component names, packages or location references.

For example you can type in the current component name and then the name you want to replace it with. Then you press "Replace All" and the program will find all the matching names and replace it with the new one.

With the "Find" button you can find a Location, a Component or Package.



Click  or  to find and replace.



Press the "Next" button to go to the next screen.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

In this screen you can match ID's that you already programmed in the pick & place software or match packages from the component library to the package name in your CAD file.

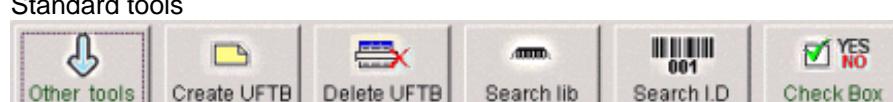
If the Component name and the Package name of your CAD file matches the component and package name in the pick & place software, the program will automatically fill in these fields.

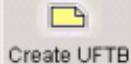
If they are not matching you can press the "Search lib" button which will give you the list of all packages in the library and the components in your CAD file.

In the "Feed" column you have to select the feeder type with the drop down menu for the different components.

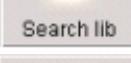
NO	Component	Package	Feed	ID	Lib	Input	Sum	Place Angle Offset
1	R0201JRNP09BN000R	R0201	AF08		R0201	<input checked="" type="checkbox"/> YES	14	0.00
2	C0603KRX7R9BB152	C0603	AF08		C0603	<input checked="" type="checkbox"/> YES	60	0.00
3	R0603JR-07-220R	C0402A	AF08		C0402A	<input checked="" type="checkbox"/> YES	3	0.00
4	C0603JRNP09BN270	C0603	AF08		C0603	<input checked="" type="checkbox"/> YES	4	0.00
5	C0603KRX6R0RB204	C0603	AF08		C0603	<input checked="" type="checkbox"/> YES	1	0.00
6	C0603KRX7R7BB104	C0603	AF08		C0603	<input checked="" type="checkbox"/> YES	38	0.00
7	C0603KRX7R9BB103	C0603	AF08		C0603	<input checked="" type="checkbox"/> YES	1	0.00
8	C0603JRNP09BN471	C0603	AF08		C0603	<input checked="" type="checkbox"/> YES	3	0.00
9	PLCC32P-JRNP09BN221	PLCC32P	AF08		PLCC32P	<input checked="" type="checkbox"/> YES	3	0.00
10	C0603KRX7R9BB102	C0603	AF08		C0603	<input checked="" type="checkbox"/> YES	7	0.00
11	C0603KRX7R6BB224	C0603	AF08		C0603	<input checked="" type="checkbox"/> YES	3	0.00
12	SMT-0805-001-2000OHM	R0201	AF08		R0201	<input checked="" type="checkbox"/> YES	11	0.00
13	IC-QFP-64Pin	QFP64P	AF08		QFP64P	<input checked="" type="checkbox"/> YES	2	0.00
14	RLS4148	D0805	AF08		D0805	<input checked="" type="checkbox"/> YES	19	0.00
15	R0603JR-07-510K	R0603	AF08		R0603	<input checked="" type="checkbox"/> YES	3	0.00
16	R0603JR-07-1K8	R0603	AF08		R0603	<input checked="" type="checkbox"/> YES	2	0.00
17	SPX1117-2.5	SOT89	AF08		SOT89	<input checked="" type="checkbox"/> YES	2	0.00
18	R0603JR-07-10K	R0603	AF08		R0603	<input checked="" type="checkbox"/> YES	6	0.00
19	R0603JR-07-10R	R0603	AF08		R0603	<input checked="" type="checkbox"/> YES	2	0.00
20	R0603JR-07-18K	R0603	AF08		R0603	<input checked="" type="checkbox"/> YES	1	0.00

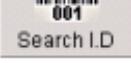
### Standard tools



Click  to create the UFTB feeder

Click  to delete the UFTB feeder

Click  to enter the Lib menu to search the library

Click  to search the I.D and load.



Click to lock all of "input" column for "YES" or set "NO" by manual.

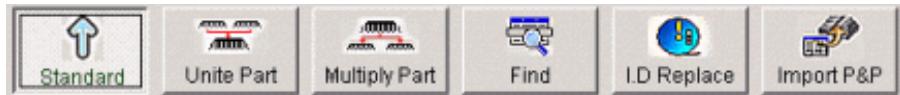


Click to change tools display

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Other tools



Click  to multiply the component

Remark: only the quantity of component more then 1pcs then this button can be used



Click  to Unite the component that multiply before



Click  to find



Click  to enter the replace

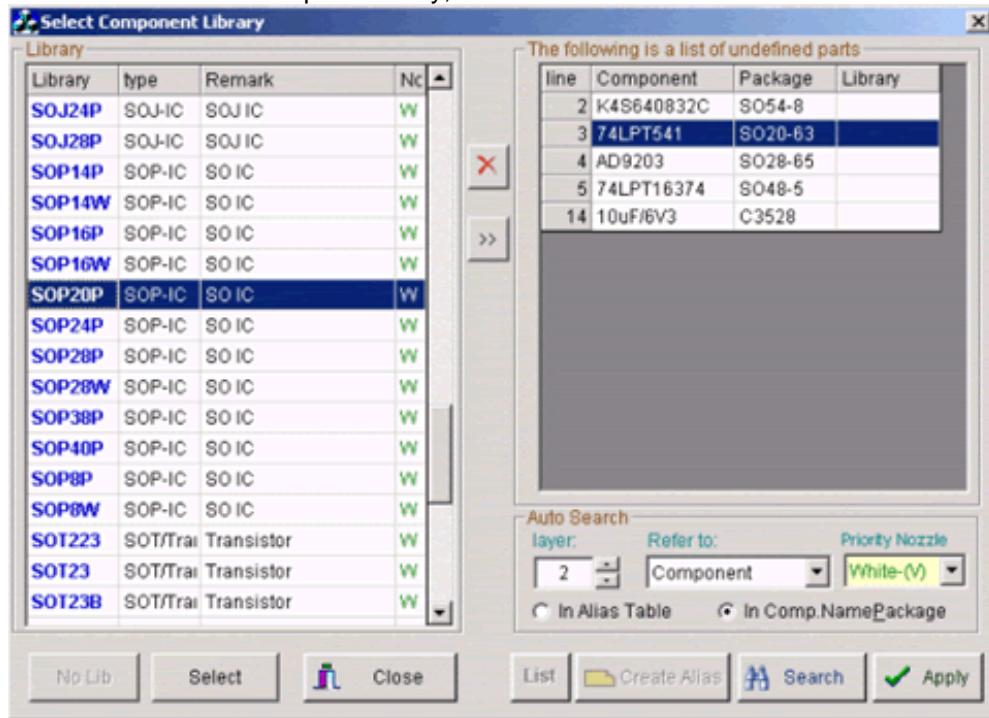


Click  to import the P&P data (import from DATA1 folder)

By pressing the "Import P&P" you can load the existing file and if the component and package matches the one of your CAD file it will automatically assign the feeder where the part is plugged in at the moment.



Click  to setup the library, below frame will be shown



Select the component at right side, and then select the library at left side, click  the library will auto fill in.

The following is a list of undefined parts			
line	Component	Package	Library
2	K4S640832C	S054-8	
3	74LPT541	S020-63	SOP20P
4	AD9203	S028-65	
5	74LPT16374	S048-6	
14	10uF/6V3	C3528	

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



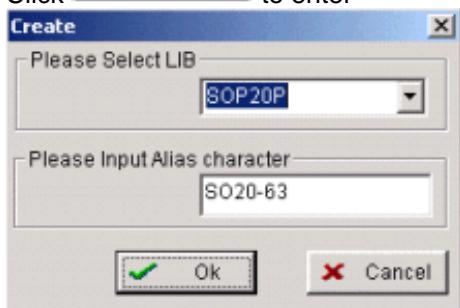
Layer is the layer for search, the higher is 4.

Refer to is what will refer. Now we refer to component.

Priority Nozzle is the type for Nozzle, now we search the white Nozzle.

In Alias Tables is for Mix the component and library, when enable this, will be enable also

Click to enter



select the mix library and component, then all component will select the library automatic.

Click will show all the data that Mix before



Press the "Next" button to go to the next screen.

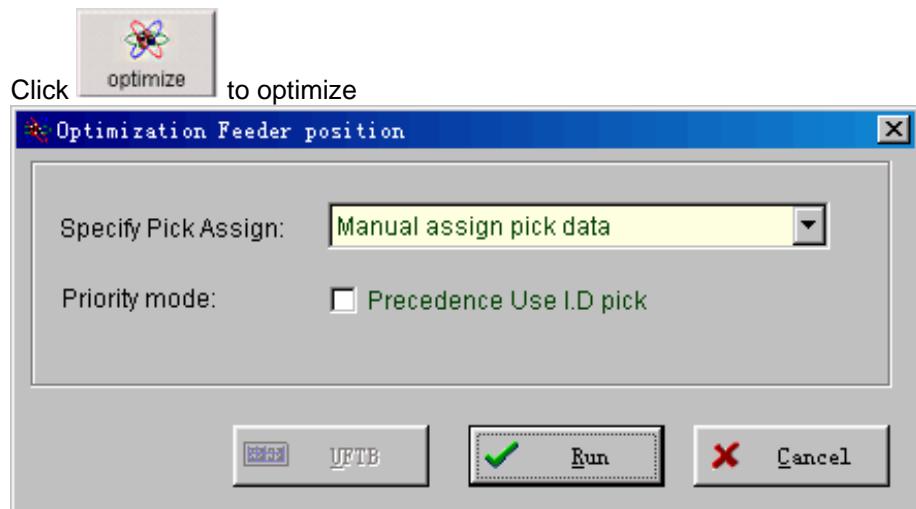
In this screen you can select the feeder locations. You can do this manually if you already loaded all the feeders into the machine or you can have the machine automatically assign the feeder locations by pressing the "optimize" button.

You can also look at a virtual image of the feeder layout or the PCB layout.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE

NO	Component	Library	Type	FeedPos	Modify	I.D.	Sum	Pick Hgt	Tape	Pk. Angle
2	C0603KRX7R9BB152	C0603	AF08	D24	<input checked="" type="checkbox"/> YES		60	2.62	Paper	Normal
3	R0603JR-07-220R	C0402A	AF08	D14	<input checked="" type="checkbox"/> YES		3	2.64	Paper	Normal
4	C0603JRNP09BN270	C0603	AF08	D32	<input checked="" type="checkbox"/> YES		4	2.61	Paper	Normal
5	C0603KRX6R0RB204	C0603	AF08	D43	<input checked="" type="checkbox"/> YES		1	2.59	Paper	Normal
6	C0603KRX7R7BB104	C0603	AF08	D23	<input checked="" type="checkbox"/> YES		38	2.62	Paper	Normal
7	C0603KRX7R9BB103	C0603	AF08	D04	<input checked="" type="checkbox"/> YES		1	2.65	Paper	Normal
8	C0603JRNP09BN471	C0603	AF08	D34	<input checked="" type="checkbox"/> YES		3	2.60	Paper	Normal
9	PLCC32P-JRNP09BN221	PLCC32P	AF08	D13	<input checked="" type="checkbox"/> YES		3	2.64	Paper	Normal
10	C0603KRX7R9BB102	C0603	AF08	D20	<input checked="" type="checkbox"/> YES		7	2.63	Paper	Normal
11	C0603KRX7R6BB224	C0603	AF08	D35	<input checked="" type="checkbox"/> YES		3	2.60	Paper	Normal
12	SMT-0805-001.2000OHM	R0201	AF08	D26	<input checked="" type="checkbox"/> YES		11	2.62	Paper	Normal
13	IC-QFP-64Pin	QFP64P	AF08	D11	<input checked="" type="checkbox"/> YES		2	2.64	Paper	Normal
14	RLS4148	D0805	AF08	D25	<input checked="" type="checkbox"/> YES		19	2.62	Paper	Normal
15	R0603JR-07-510K	R0603	AF08	D12	<input checked="" type="checkbox"/> YES		3	2.64	Paper	Normal
16	R0603JR-07-1K8	R0603	AF08	D37	<input checked="" type="checkbox"/> YES		2	2.60	Paper	Normal
17	SPX1117-2.5	SOT89	AF08	D10	<input checked="" type="checkbox"/> YES		2	2.64	Paper	Normal
18	R0603JR-07-10K	R0603	AF08	D18	<input checked="" type="checkbox"/> YES		6	2.63	Paper	Normal
19	R0603JR-07-10R	R0603	AF08	D38	<input checked="" type="checkbox"/> YES		2	2.60	Paper	Normal
20	R0603JR-07-18K	R0603	AF08	D44	<input checked="" type="checkbox"/> YES		1	2.59	Paper	Normal

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE



Specify pick Assign

Manual assign pick data --- Only optimize the component that set "YES" before on "INPUT" column, will not optimize the feeder position of "NO"

Auto assign all pick data --- will optimize all of component. A message will be shown for confirm "The current all pick data may change. are you sure you want to continue?"

Precedence Use I.D pick --- Precedence Use I.D that set in feeder before



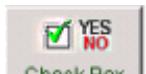
Click **PCB Image** to view the PCB overlay



Click **Feed layout** to view the feeder overview



Click **Find** to find



Click **Check Box** to lock all of input column for "YES" or set "NO" by manual

Press the "Next" button to go to the next screen.

This will be the last screen of the CAD conversion.

Here you can type in your file name and other information that you want to be associated with that particular board.

Click the "Save" button to save the file and it will save it into the default directory.

After saving the file close the CAD conversion software and open the pick & place software.

Load the converted file and go to PCB setup to learn the placement height.

Then learn the reference points.

Go to the place file and check the placement rotations.

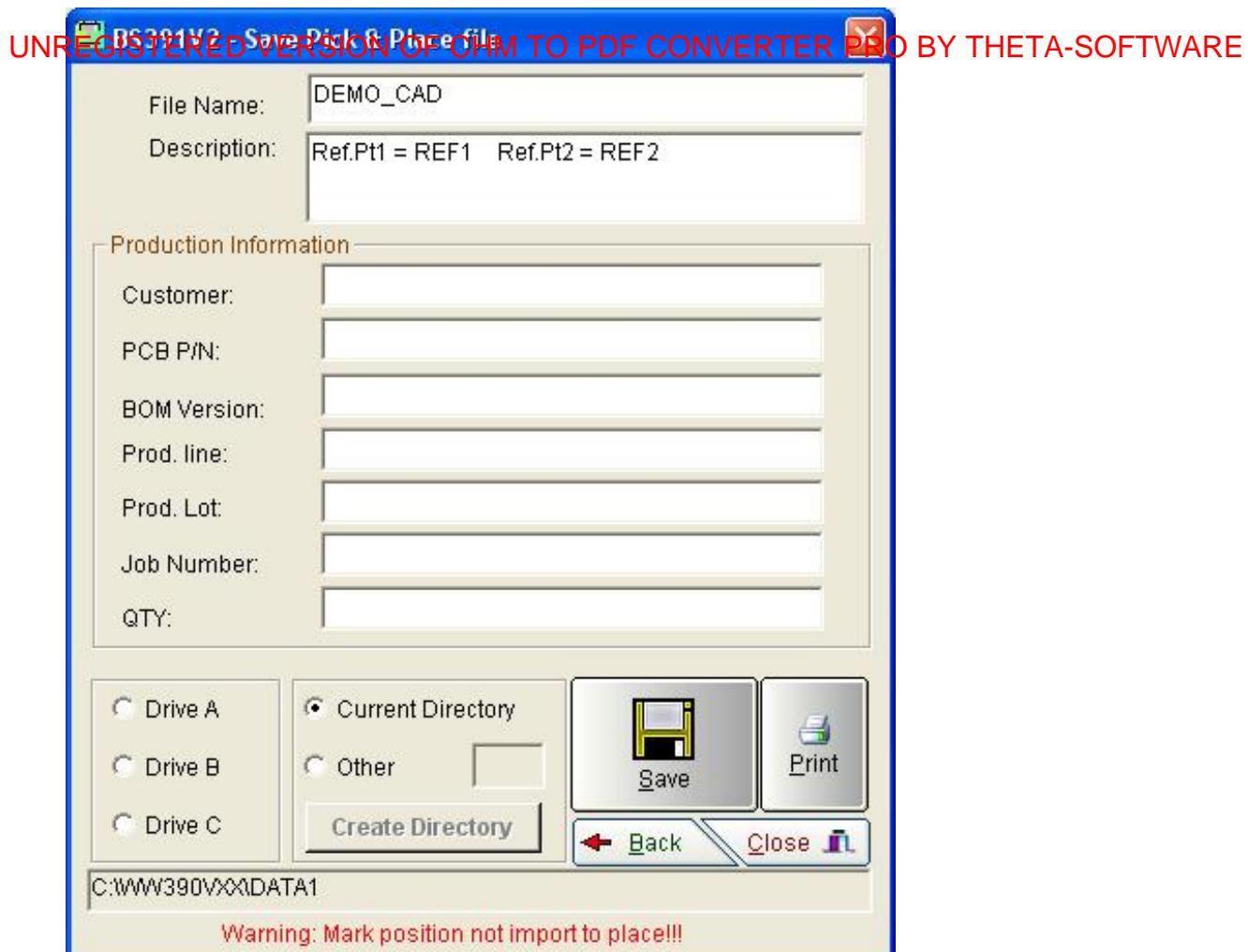
Go to the pick file and verify the pick locations. You will have to change the pick locations for feeders other than

BRICK FEEDERS

Create any components that are not in the library yet.

Now you are ready for the first production run.

Check the first board thoroughly for any faults.



# SERVICE Manual

## Table of Content

- 1a. Hardware and software (383V, 390V)**
- 1b. Hardware and software (383X, 384X, 386X, 387X, 390X, 391X)**
- 2. Download and install and remove Software**
- 3. Diagnostic I/O Test**
- 4. Fault Finding**
- 7. Maintenance and Adjustment for Spare Parts (383V1, V2, 383X1, X2)**
- 7. Maintenance and Adjustment for Spare Parts (384X1, X2)**
- 7. Maintenance and Adjustment for Spare Parts (386X1, X2)**
- 7. Maintenance and Adjustment for Spare Parts (387X1, X2)**
- 7. Maintenance and Adjustment for Spare Parts (390V1, V2, 390X1, X2)**
- 7. Maintenance and Adjustment for Spare Parts (391X1, X2)**
- 9. Machine Calibration**
- 10. Maintenance and Cleaning PRISM MODULE**
- 15. Packing List and Application Notes for KFTA Feeder**
- 16. Packing List and Application Notes for KFTB feeder**
- 16. Packing List and Application Notes for KFTB feeder (387)**

## Appendix

- A. How To Use Remote Service Kit**
- E. How to use GHOST to recover hard disk**

## 1. Hardware and Software (383V1,V2, 390V1,V2)

### 1.0 Photo for Hardware

There are 6 add on card come with the machine:

- a) P4 CPU card (for ISA long slot, built-in display card, network card)

**Part Number : PC-P4-175WIN50**



**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

- b) Motor I/O card -1 (330mm in length, for ISA short slot)

**Part Number : PC-MIO**



- c) Motor I/O card -2 (330mm in length, for ISA short slot)

- d) Motor I/O card -3 (330mm in length, for ISA short slot) (only for double head machine)

- e) I/O card (220mm in length, for ISA short slot)

**Part Number : PC-I/O**



f) Image card (120mm in length, for PCI bus)  
**Part Number : PC-IM-IDS**



g) Vision Image card (vision machine only, for PCI bus)  
**Part Number : PC-IM-COG**



**All the cards are already installed inside the machine correctly; there is no need for user to do the installation again.**

#### 1.01 Cable Connect

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

Please connect the power extend cable to the power-in socket that at the back of the machine

Please connect MONITOR cable to the VGA interface that extended from the machine

Please connect MONITOR POWER CABLE to the extended power cable from the machine

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

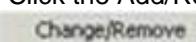
Two in one cable connected between Mouse and Keyboard (to make clear the respective socket) connect to the PS/2 interface of the machine

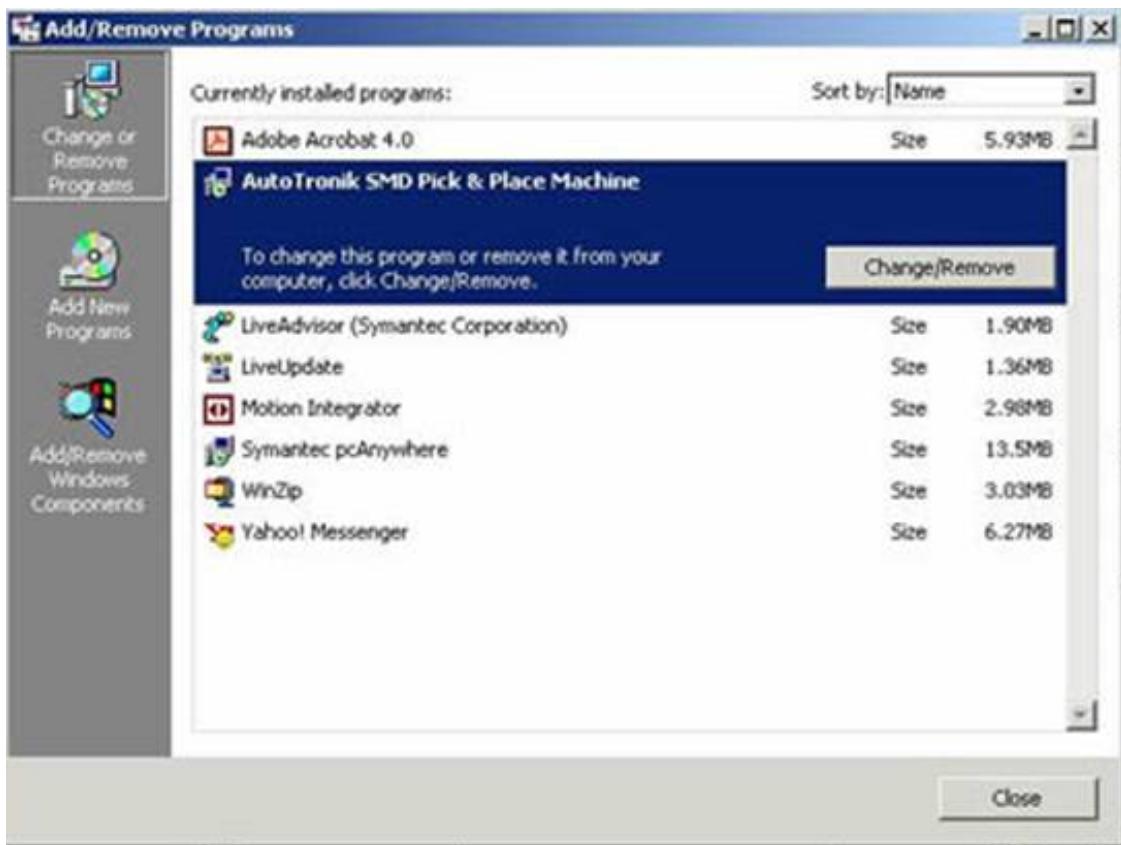
## 1.1 Software uninstall

All software and driver are already installed, there is no need for the user to re-install.

If that it need to upgrade the software, please follow the step below:

Software Upgrade:

- a) Exit software, reboot computer
- b) Click the Add/Remove Programs  Icon in Start menu - Settings - Control Panel, and click  button to remove the SMD Software.



- c) Choose 'Remove All' to remove the old version software



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

**Remark: User Component Library and Pick & Place data file won't be deleted if remove the old version software**

## 1.2 Driver installation

**For software upgrade from old verison 2.0 or below, please download the new driver first**

After uninstall the old version software, please put the CD disk to CD-ROM and below frame will be shown:



**AutoTronik driver** is the SMD machine's Driver, or can directly run the 'AutoTronik\_drv2000.exe' in Auto Tronik DRV 2.0 directory.

**AutoTronik software** is the SMD software, Please install it after finish installed the CPU Card Driver and Auto Tronik Driver, this software can directly run the 'smdwin\_3.exe' in Auto Tronik Software directory.

**Internet Explorer 6.0** Is for install Internet Explorer 6.0, please install IE6.0 first and then install the Vision Image card driver

**Vision Image Card Driver** Is for install Vision machine Vision Image card driver

**CPU crad driver** is the CPU Card Driver, include Display Card Driver and Network card Driver

Display Card Driver can click **Display crad driver** to install, or directly run the 'setup.exe' in CPU Card Drv 1715VN \ Display Card \ win2000 directory

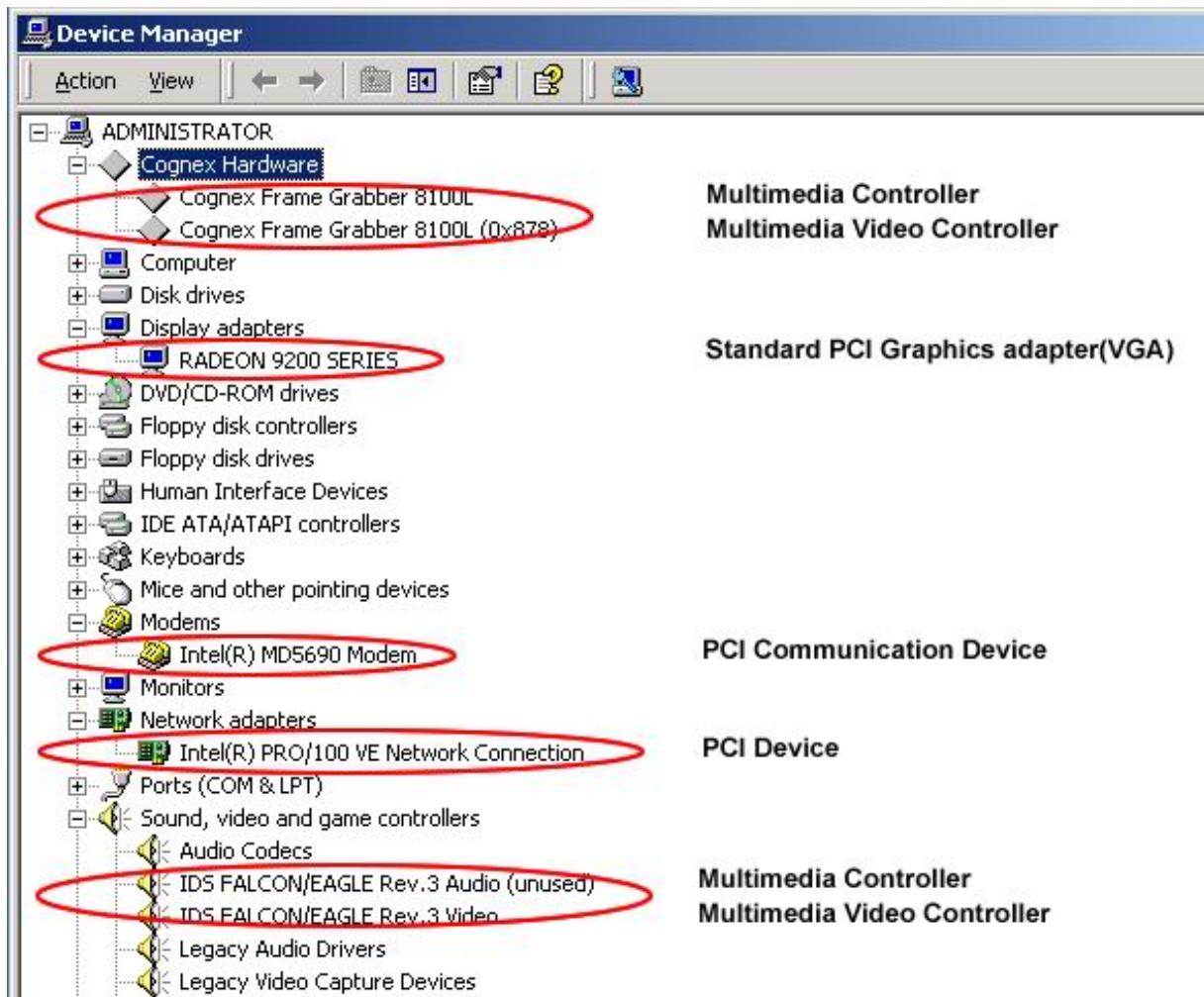
Network Card Driver can click **Network crad drive** to install, or directly run the 'autorun.exe' in CPU Card Drv

1715VN \ Network Card \ win2000 directory

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

After installed the windows2000, the un-detect Device will be show in 'Device Manager'



PCI Communication Device ----- Modem Card Driver (We can find the driver in Service\Modem Card\ from CD-ROM)

Multimedia Controller ----- SMD Driver (After installed the AutoTronik Driver and Cognex Card Driver, we can found the driver in C:\WINNT\system32)

Multimedia Video Controller ----- SMD Driver (After installed the AutoTronik Driver and Cognex Card Driver, we can found the driver in C:\WINNT\ \system32)

Standard PCI Graphics Adapter(VGA)----- Please install Display Card Driver

PCI Device ----- Please install Network Card Driver

Please click **AutoTronik driver** to install new AutoTronik driver, follow the instruction for the installation, when

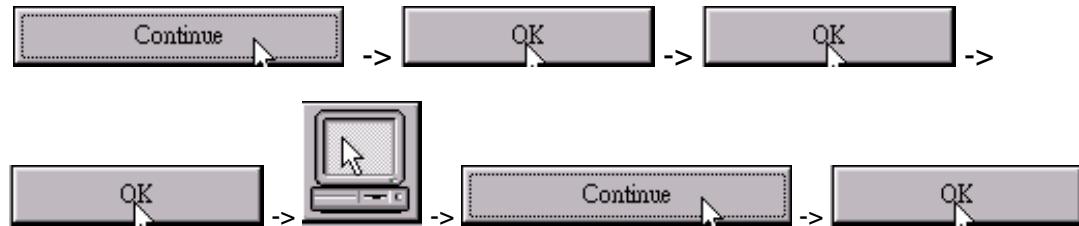
finished please reboot the SMD machine.

### 1.3 software installation

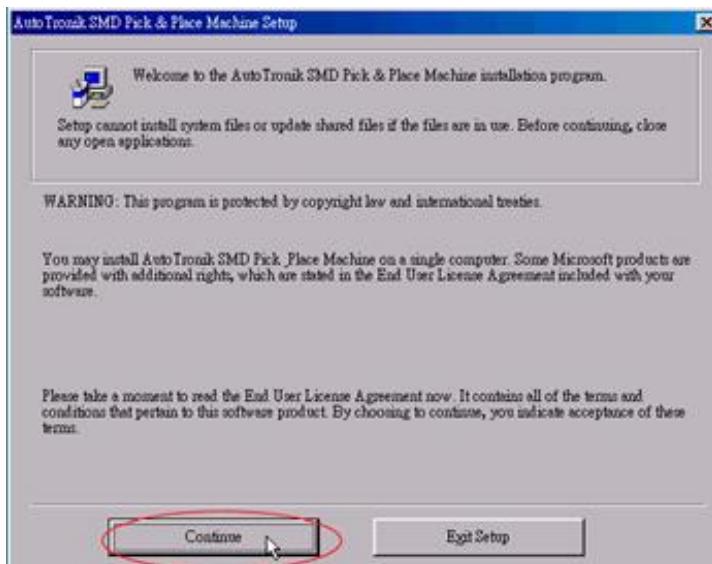
After reboot the SMD machine, please put the CD disk to CD-ROM, and click **AutoTronik software** or can directly **UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE** run the “smdwin\_3.exe” in AutoTronik Software directory, it will begin to install new version SMD software.

Easy installation as follow :

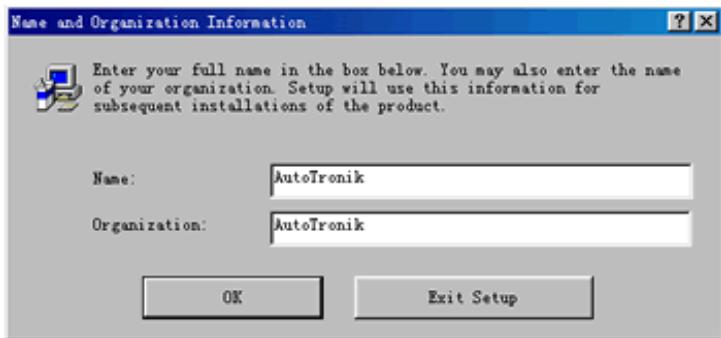
**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**



- d) Run the “smdwin\_3.exe” in AutoTronik Software\ from the CD-ROM

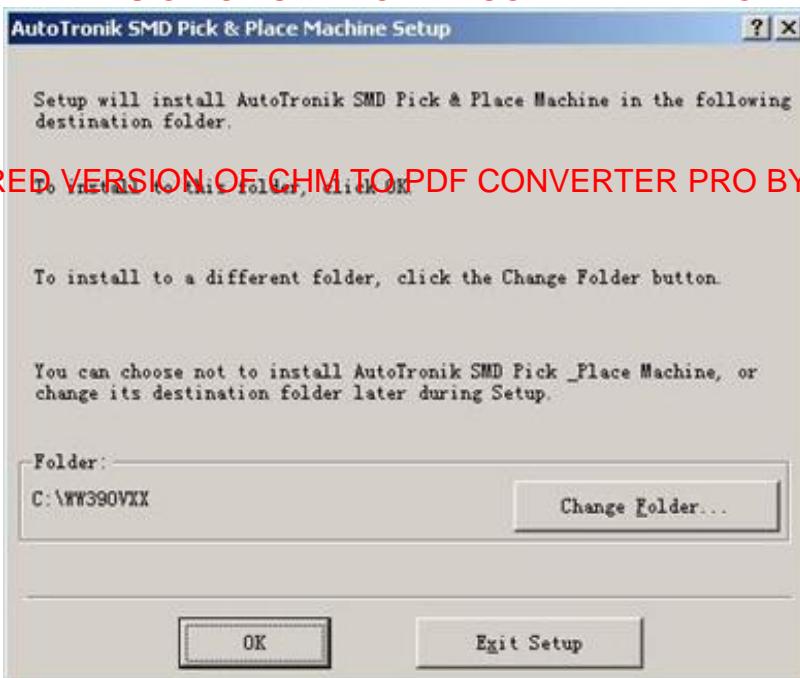


- e) User can either enter the name here or click ‘OK’ directly

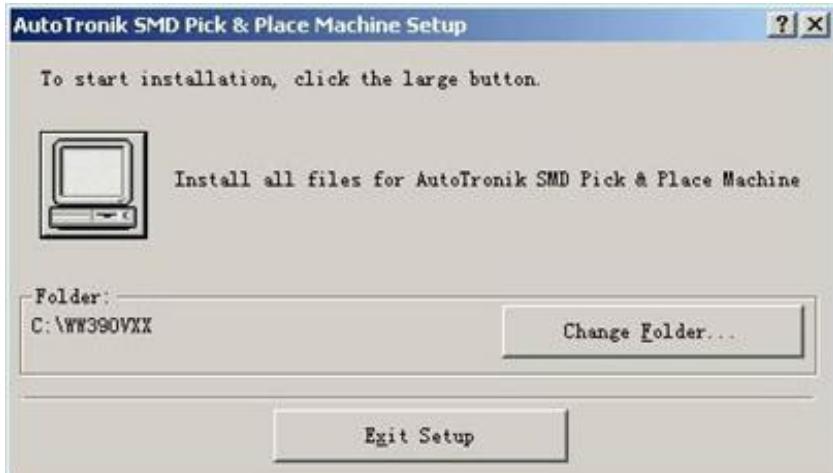


- f) Please don't change the original folder location WW390VXX for installation

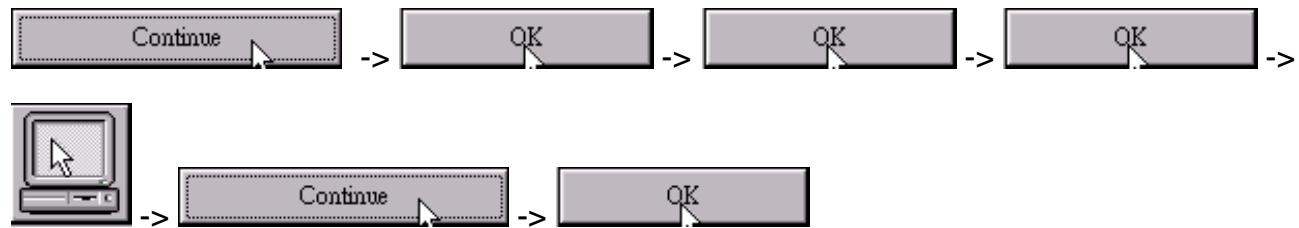
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- g) Click  to start software installation for AutoTronik SMD



\* Easy installation as follow :



## 1.4 Get Software from Website

The software for vision machine is SMDWIN\_3.EXE

1. Autotronik SMD Software can be downloading from below website:

[www.autotronik-smt.de](http://www.autotronik-smt.de)

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

2. please select the language from software update

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

AutoTronik-SMT GMBH  
Sulzbacher Strasse 111  
92224 Amberg  
Germany

- ▶ [\[HOME\]](#)
- ▶ [\[NEWS\]](#)
- ▶ [\[PRODUCTS\]](#)
- ▶ [\[CONTACT US\]](#)
- ▼ [\[SOFTWARE UPDATE\]](#)
  - ▶ [\[deutsch\]](#)
  - ▶ [\[english\]](#)

3. Please select the correct machine model and then click “Download” for enter.

Sulzbacher Strasse 111,  
92224 Amberg  
Germany



**Please use Internet Explorer 5.5 or above to view the follow  
webpage!**

---

**Pick & Place Machine**  
BS381,BS381L,BS381N,BS383N,BS390M1,BS390L1,BS390N1

**DownLoad**

---

**Pick & Place Machine BS390L2,BS390N2**

**DownLoad**

---

**Pick & Place Machine BS383V1,V2;BS390V1,V2;BS386V1,V2**

**DownLoad**

---

**Stencil Printer BS1300, BS1400**

**DownLoad**

---

**Pick & Place Machine DOS Version Software**

**DownLoad**

4. Must be input the machine CD-KEY and Serial Number and click "Submit" button to login, in that, user can download the SMD software, SMD Driver, SMD Manual

e.g. CD-Key: ABCDE-ABCDE-ABCDE-ABCDE.

Serial Number: 1234

Remark: All character that input into CD-Key must Capital letter, please don't forget the midline.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

CD-Key(XXXXXX-XXXXXX-XXXXXX-XXXXXX)

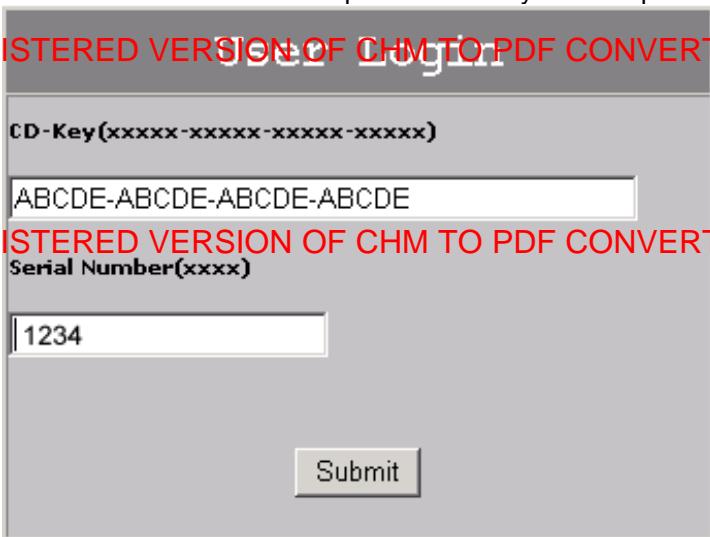
ABCDE-ABCDE-ABCDE-ABCDE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Serial Number(XXXX)

1234

Submit



5. for download page

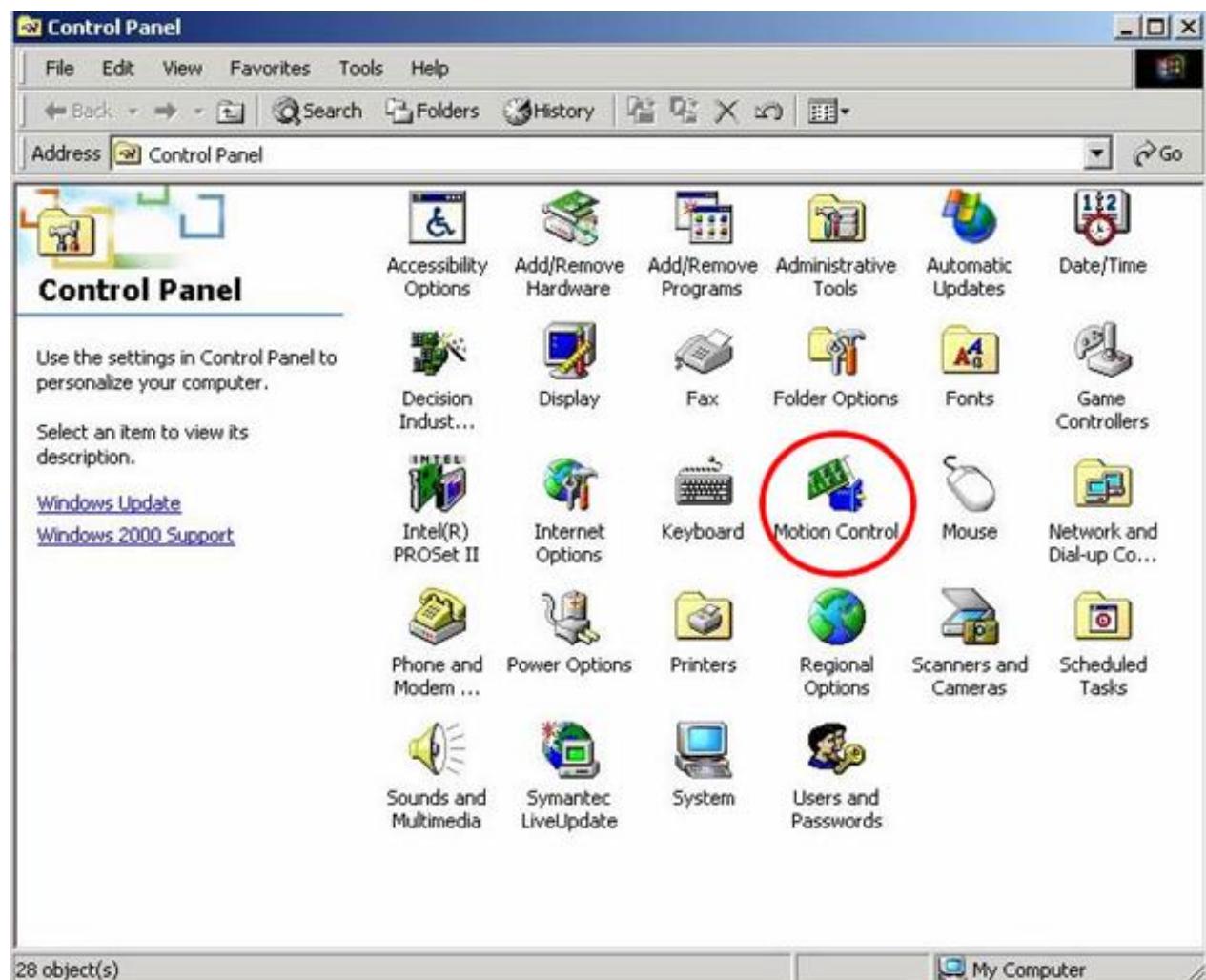
Software			
For windows2000	SMD BS383V, BS390V software	How to do?	Version
	<a href="#">Old Softwares</a>		
	<a href="#">Upgrade software</a>	<a href="#">How to do?</a>	

download the newest software      download old software      check software version

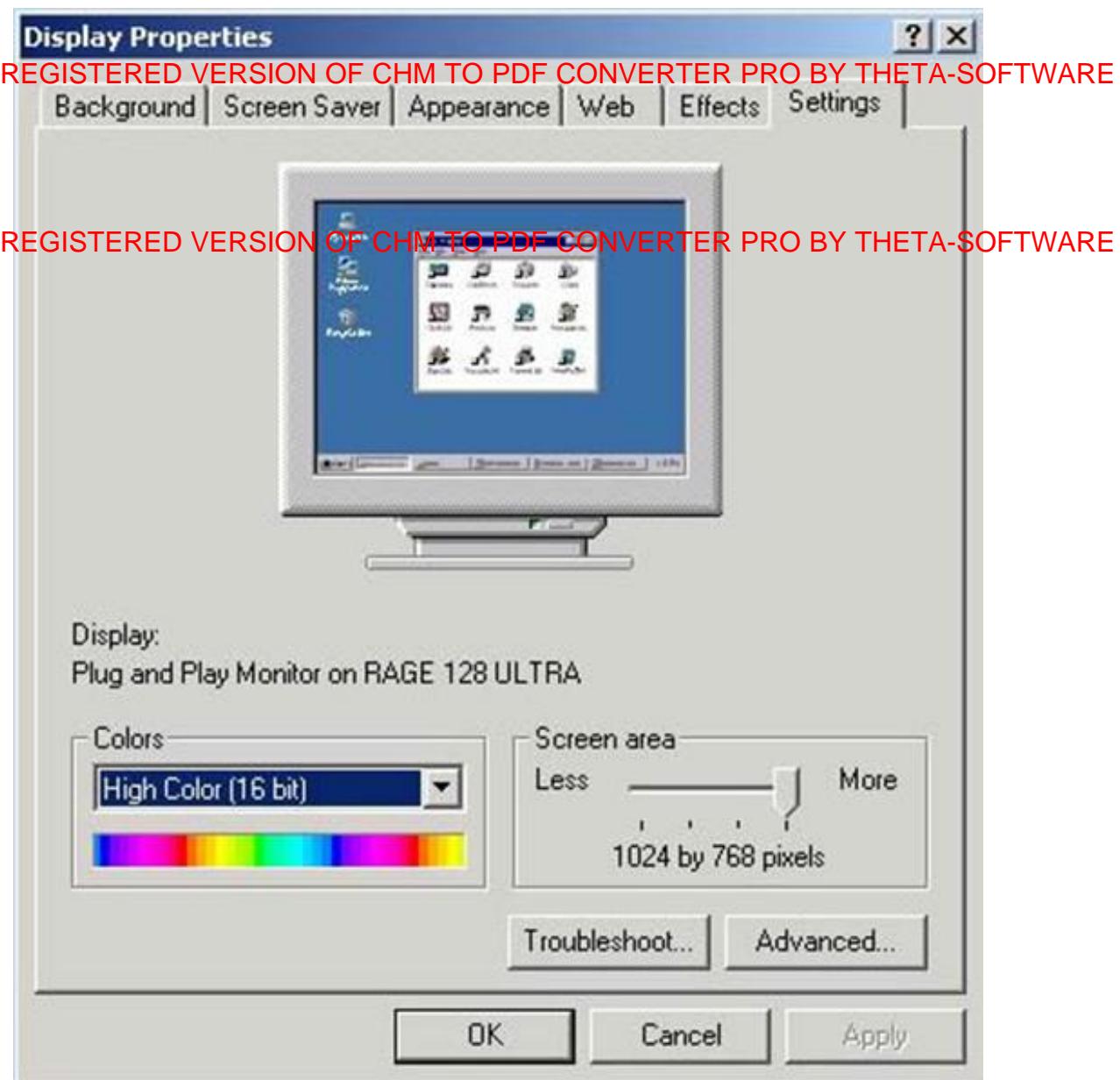
Remark: user can put the CD disk to CD-ROM, and click [AutoTronik software](#) or can directly run the "smdwin\_3.exe" in AutoTronik Software directory, it will begin to install the old version SMD software

## REMARK: Another setup for Computer

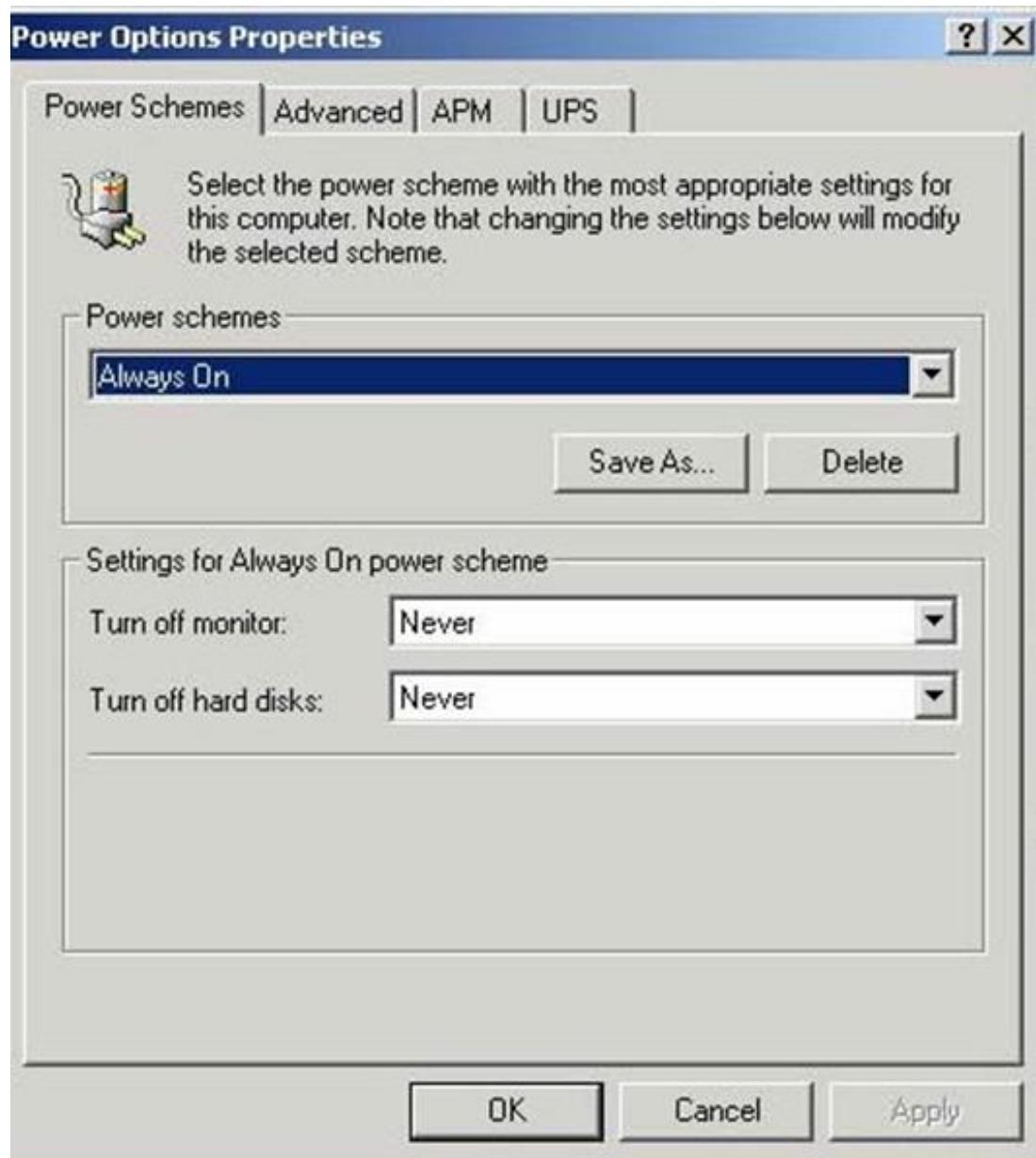
Remark1: After installed the AutoTronik Driver, user can see the "Motion Control" icon in control panel, if has this icon that means AutoTronik Driver install succeed



Remark2 : please select the High Color (16 bit) and 1024 x 768 pixels of Screen area



Remark3 : Enter **Control Panel - Display - Screen Saver** page and click the **Power** button,  
Select **Never** for **Turn off monitor & Turn off hard disks**  
Select **Always On** for **Power schemes**



## 1. Hardware and Software (383X1,X2, 384X1,X2, 386X1,X2, 387X1,X2, 391X1,X2)

### 1.0 Photo for Hardware

There are 6 add on card come with the machine:

- a) P4 CPU CARD (for ISA long slot, built-in display card, network card)

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**



- b) MOTOR I/O CARD FOR 8 AXIS (new motor I/O card, for PCI slot)

**Part Number : PC-MIO-8**



- e) I/O card (220mm in length, for ISA short slot)

**Part Number : PC-I/O**



f) Image card (120mm in length, for PCI bus)  
**Part Number : PC-IM-IDS**



g) Vision Image card (vision machine only, for PCI bus)  
**Part Number : PC-IM-COG**



**All the cards are already installed inside the machine correctly; there is no need for user to do the installation again.**

#### 1.01 Cable Connect

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

Please connect the power extend cable to the power-in socket that at the back of the machine

Please connect MONITOR cable to the VGA interface that extended from the machine

Please connect MONITOR POWER CABLE to the extended power cable from the machine

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

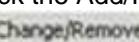
Two in one cable connected between Mouse and Keyboard (to make clear the respective socket) connect to the PS/2 interface of the machine

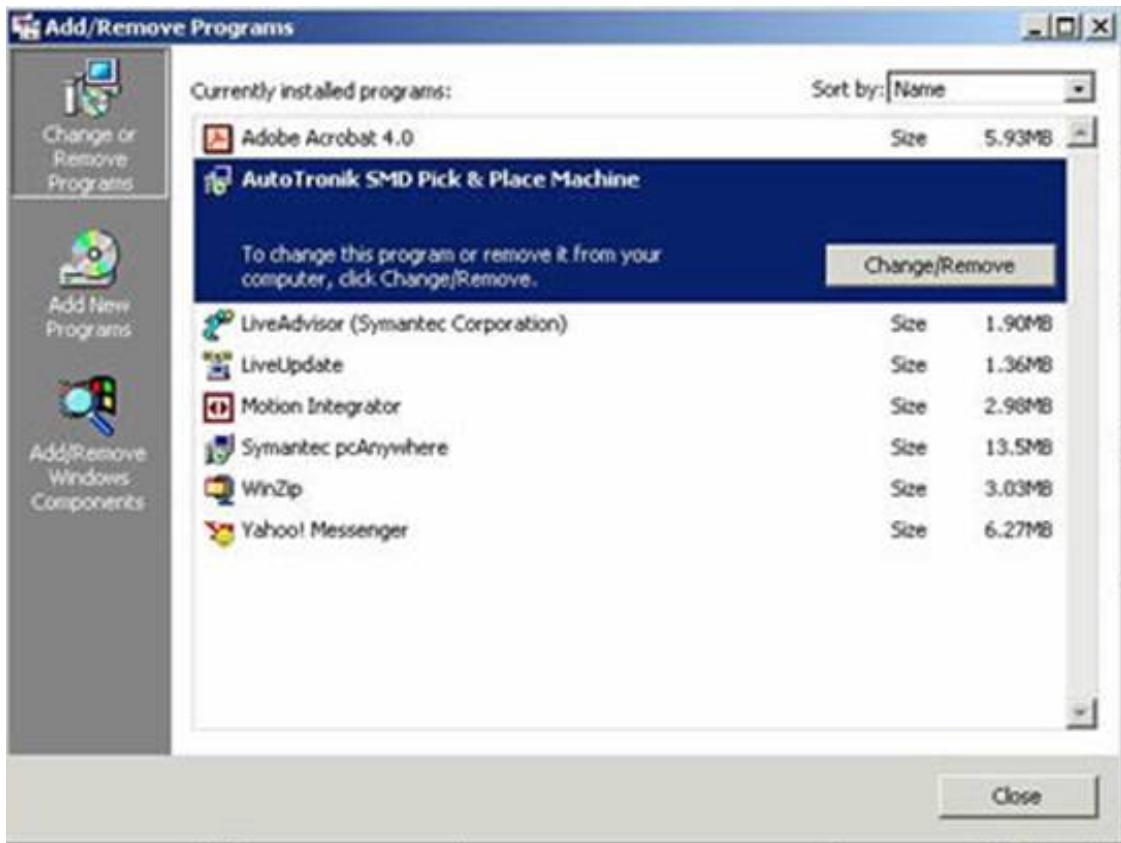
## 1.1 Software uninstall

All software and driver are already installed, there is no need for the user to re-install.

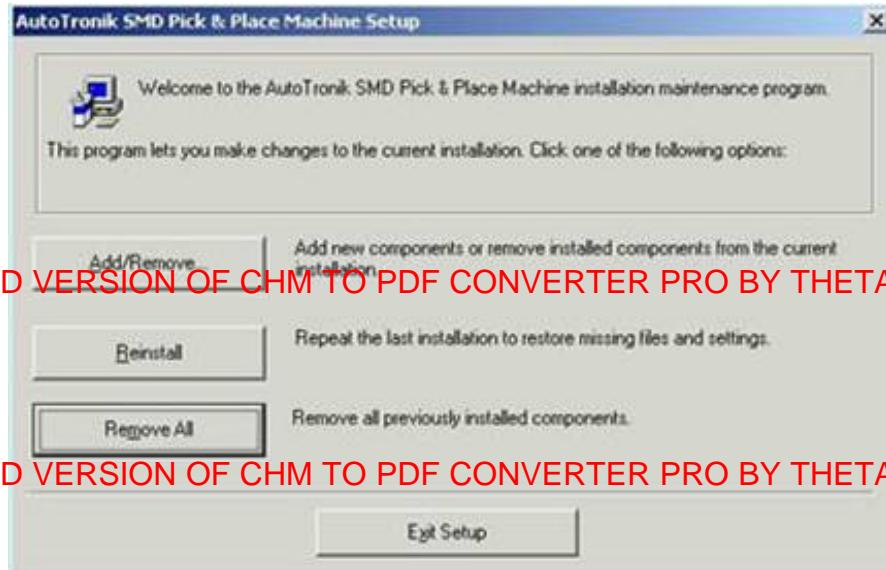
If that it need to upgrade the software, please follow the step below:

Software Upgrade:

- a) Exit software, reboot computer
- b) Click the Add/Remove Programs  Icon in Start menu - Settings - Control Panel, and click  button to remove the SMD Software.



- c) Choose 'Remove All' to remove the old version software



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

**Remark: User Component Library and Pick & Place data file won't be deleted if remove the old version software**

## 1.2 Driver installation

**For software upgrade from old verison 2.0 or below, please download the new driver first**

After uninstall the old version software, please put the CD disk to CD-ROM and below frame will be shown:



**Image Card Driver** is the Image card Driver, or can directly run the 'setup.exe' in Auto Tronik DRV 3.0 \ IDS card driver \ setup folder.

**Motor I/O card Driver** is the motor I/O card driver, or can directly run 'setup.exe' in Auto Tronik DRV 3.0 \ MFX card driver folder

**AutoTronik software** is the SMD software, Please install it after finish installed the CPU Card Driver and Auto Tronik Driver, this software can directly run the 'smdwin\_3.exe' in Auto Tronik Software folder.

**Internet Explorer 6.0** is for install Internet Explorer 6.0, please install IE6.0 first and then install the Vision Image card driver

**Vision Image Card Driver** is for install Vision machine Vision Image card driver

**CPU crad driver** is the CPU Card Driver, include Display Card Driver and Network card Driver

Display Card Driver can click **Display crad driver** to install, or directly run the 'setup.exe' in CPU Card Drv 1715VN \ Display Card \ win2000 directory

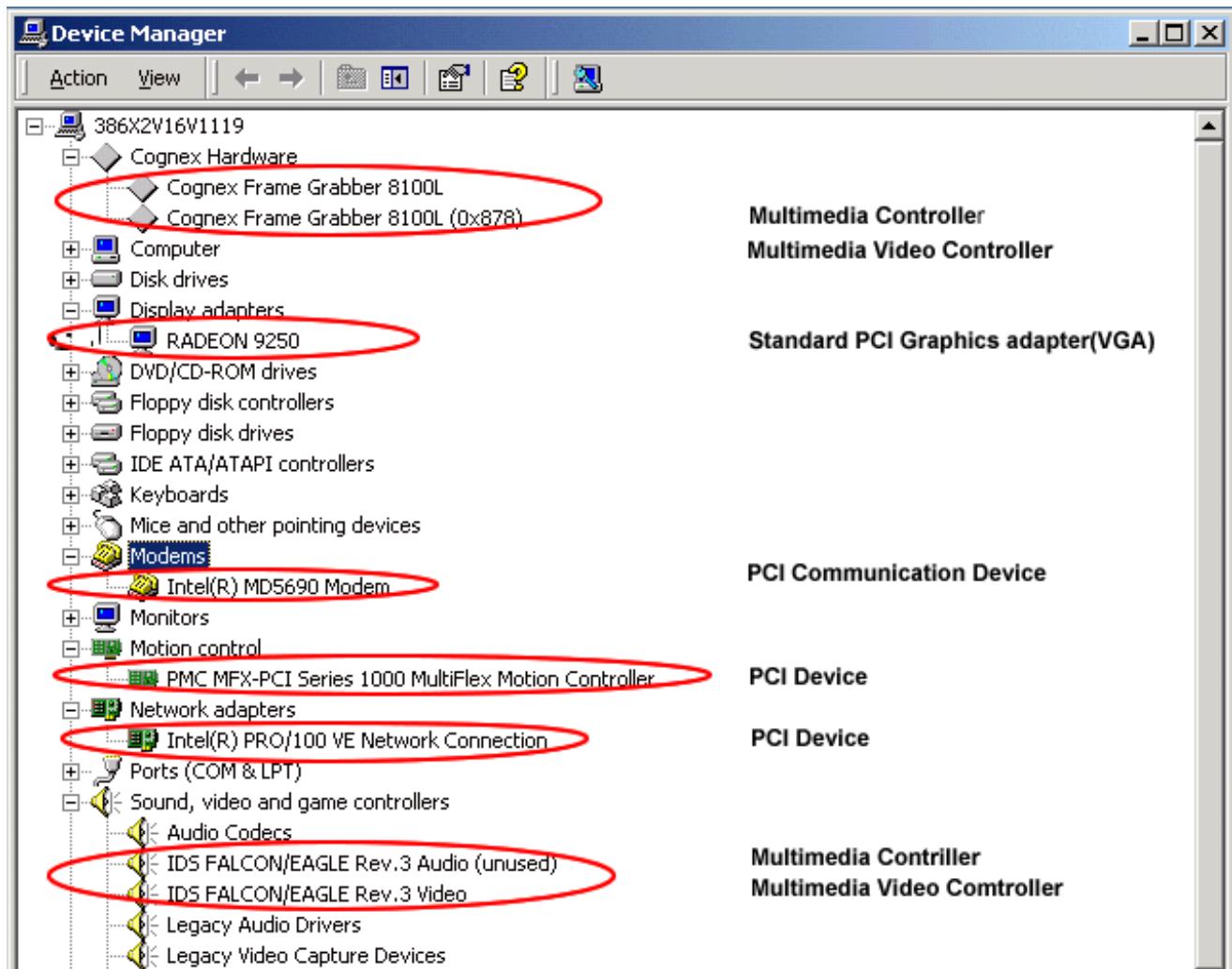
Network Card Driver can click **Network crad drive** to install, or directly run the 'autorun.exe' in CPU Card Drv

1715VN \ Network Card \ win2000 directory

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

After installed the windows2000, the un-detect Device will be show in 'Device Manager'



PCI Communication Device ----- Modem Card Driver (We can find the driver in Service\Modem Card\ from CD-ROM)

Multimedia Controller ----- SMD Driver (After installed the AutoTronik Driver and Cognex Card Driver, we can found the driver in C:\WINNT\system32)

Multimedia Video Controller ----- SMD Driver (After installed the AutoTronik Driver and Cognex Card Driver, we can found the driver in C:\WINNT\ \system32)

Standard PCI Graphics Adapter(VGA)----- Please install Display Card Driver

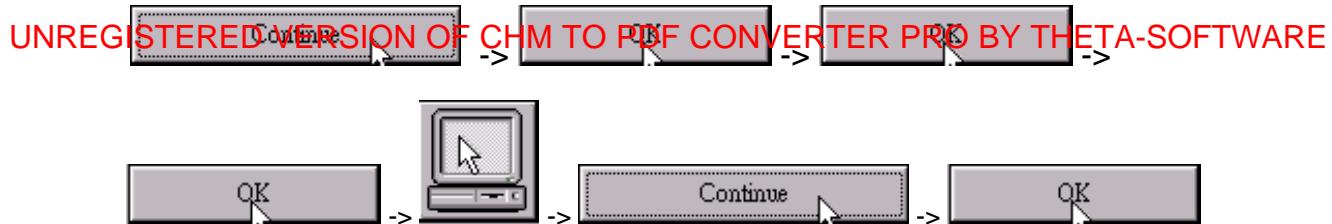
PCI Device ----- Please install Network Card Driver

PCI Device ----- Please install MFX Driver and click PATCH for upgrade

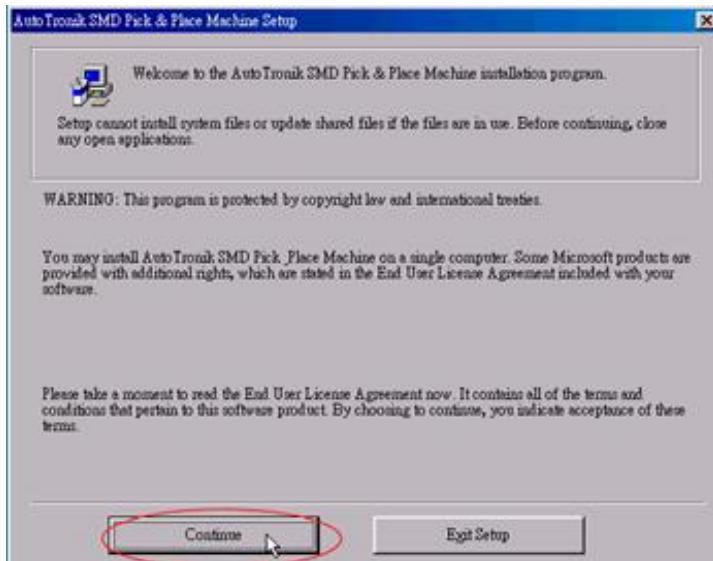
### 1.3 software installation

After reboot the SMD machine, please put the CD disk to CD-ROM, and click **AutoTronik software** or can directly run the “smdwin\_3.exe” in AutoTronik Software directory, it will begin to install new version SMD software.  
**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

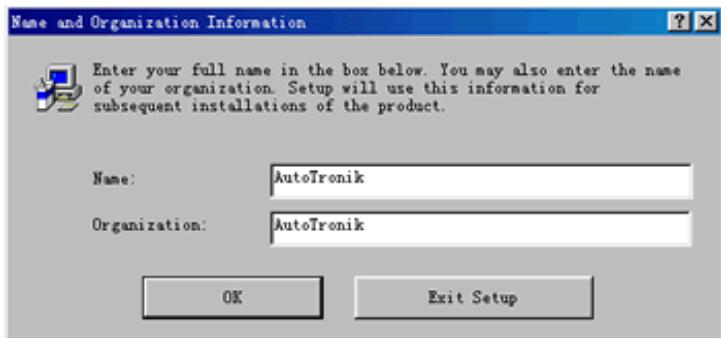
Easy installation as follow :



- d) Run the “smdwin\_3.exe” in AutoTronik Software\ from the CD-ROM

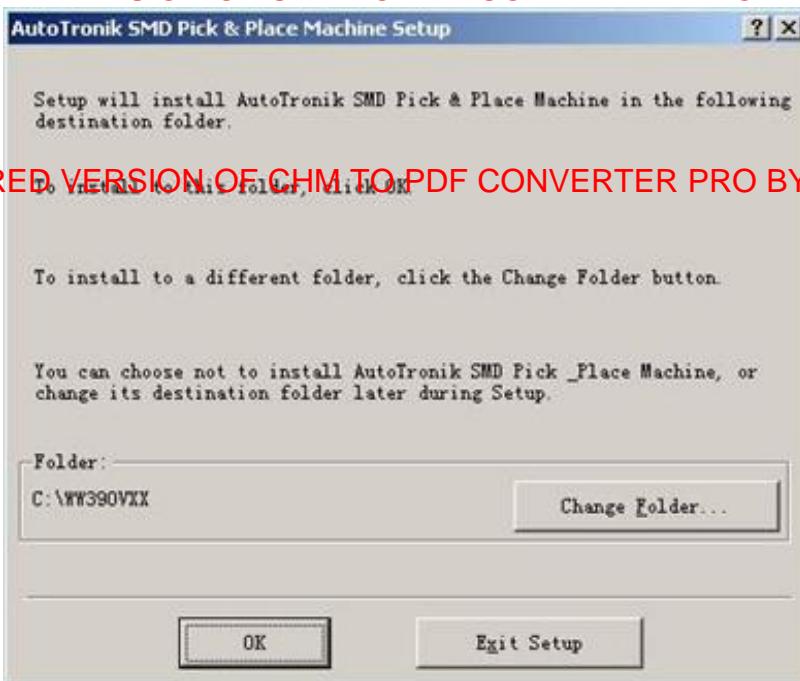


- e) User can either enter the name here or click ‘OK’ directly



- f) Please don't change the original folder location WW390VXX for installation

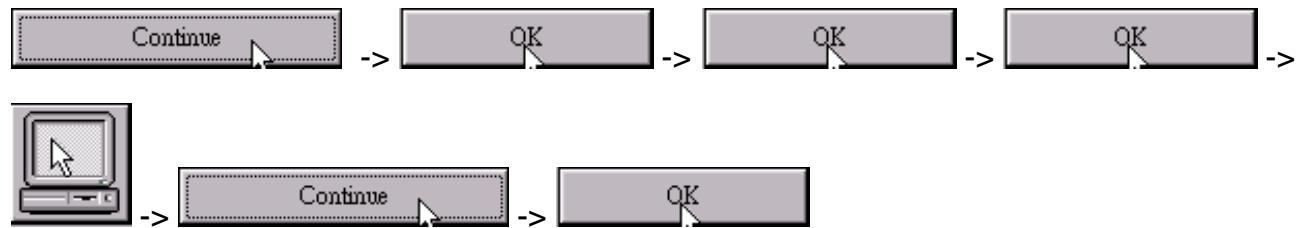
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- g) Click  to start software installation for AutoTronik SMD



\* Easy installation as follow :



## 1.4 Get Software from Website

The software for vision machine is SMDWIN\_3.EXE

1. Autotronik SMD Software can be downloading from below website:

[www.autotronik-smt.de](http://www.autotronik-smt.de)

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

2. please select the language from software update

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

*AutoTronik-SMT GMBH*

*Sulzbacher Strasse 111*

*92224 Amberg*

*Germany*

- ▶ [\[HOME\]](#)
- ▶ [\[NEWS\]](#)
- ▶ [\[PRODUCTS\]](#)
- ▶ [\[CONTACT US\]](#)
- ▼ [\[SOFTWARE UPDATE\]](#)
  - ▶ [\[deutsch\]](#)
  - ▶ [\[english\]](#)

3. Please select the correct machine model and then click “Download” for enter.

Sulzbacher Strasse 111,  
92224 Amberg,  
Germany



**Please use Internet Explorer 5.5 or above to view the follow  
webpage!**

---

**Pick & Place Machine**  
BS381,BS381L,BS381N,BS383N,BS390M1,BS390L1,BS390N1

**DownLoad**

---

**Pick & Place Machine BS390L2,BS390N2**

**DownLoad**

---

**Pick & Place Machine BS383V1,V2;BS390V1,V2;BS386V1,V2**

**DownLoad**

---

**Stencil Printer BS1300, BS1400**

**DownLoad**

---

**Pick & Place Machine DOS Version Software**

**DownLoad**

4. Must be input the machine CD-KEY and Serial Number and click "Submit" button to login, in that, user can download the SMD software, SMD Driver, SMD Manual

e.g. CD-Key: ABCDE-ABCDE-ABCDE-ABCDE.

Serial Number: 1234

Remark: All character that input into CD-Key must Capital letter, please don't forget the midline.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

See login

CD-Key(XXXXX-XXXXX-XXXXX-XXXXX)

ABCDE-ABCDE-ABCDE-ABCDE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Serial Number(XXXX)

1234

Submit

5. for download page

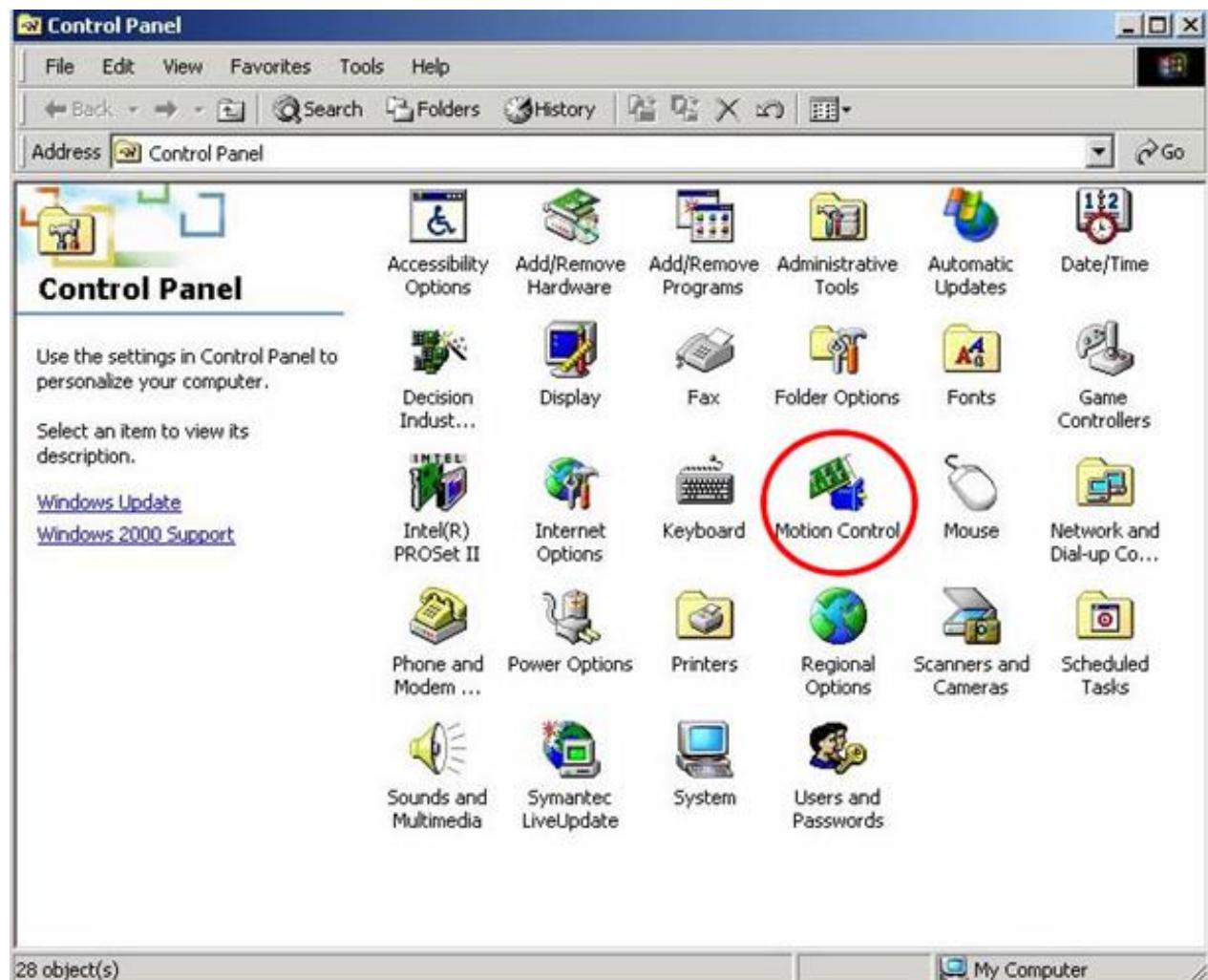
Software			
For windows2000	SMD BS383V, BS390V software	How to do?	Version
	<a href="#">Old Softwares</a>		
	<a href="#">Upgrade software</a>	<a href="#">How to do?</a>	

download the newest software      download old software      check software version

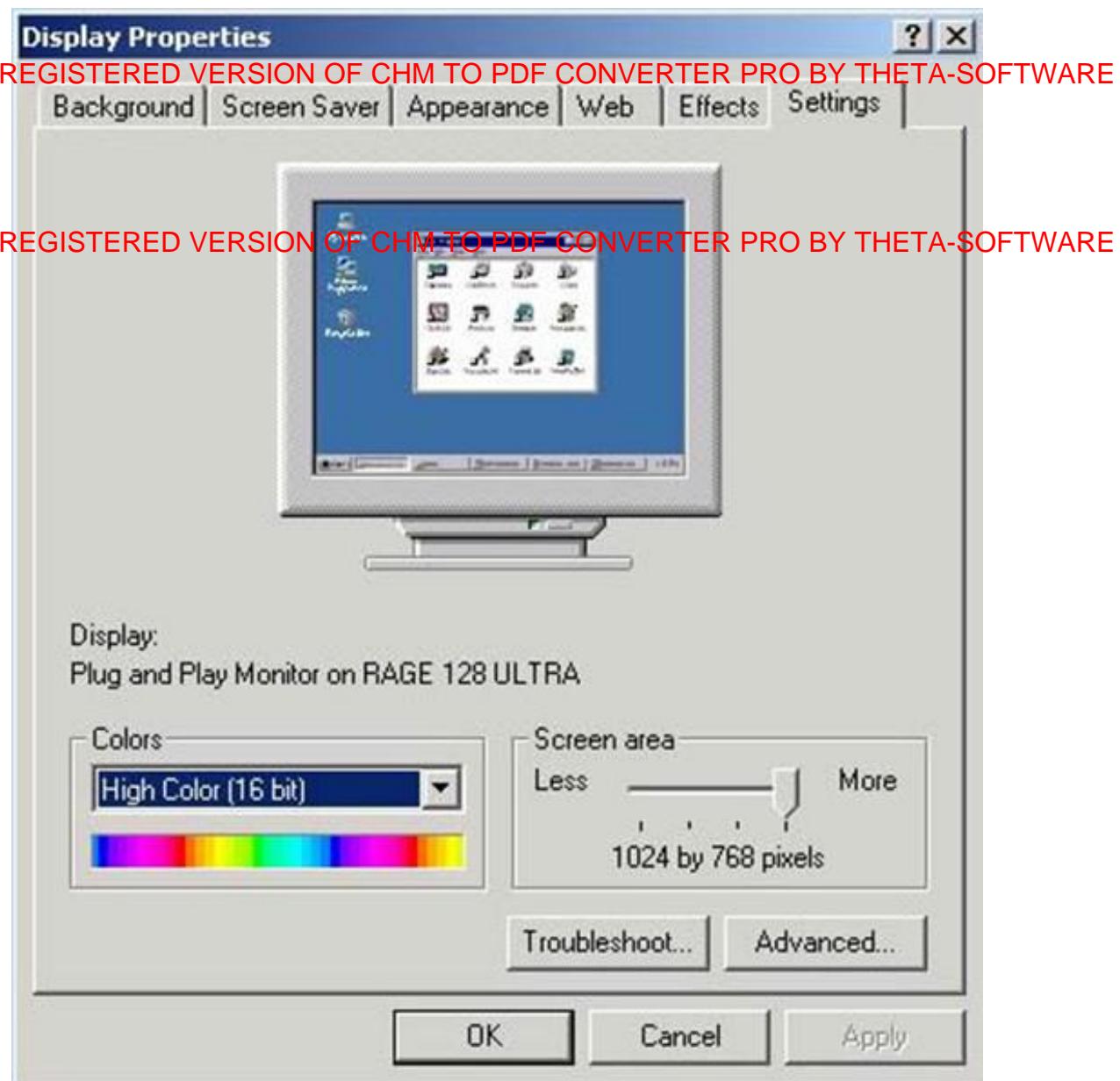
Remark: user can put the CD disk to CD-ROM, and click [AutoTronik software](#) or can directly run the "smdwin\_3.exe" in AutoTronik Software directory, it will begin to install the old version SMD software

## REMARK: Another setup for Computer

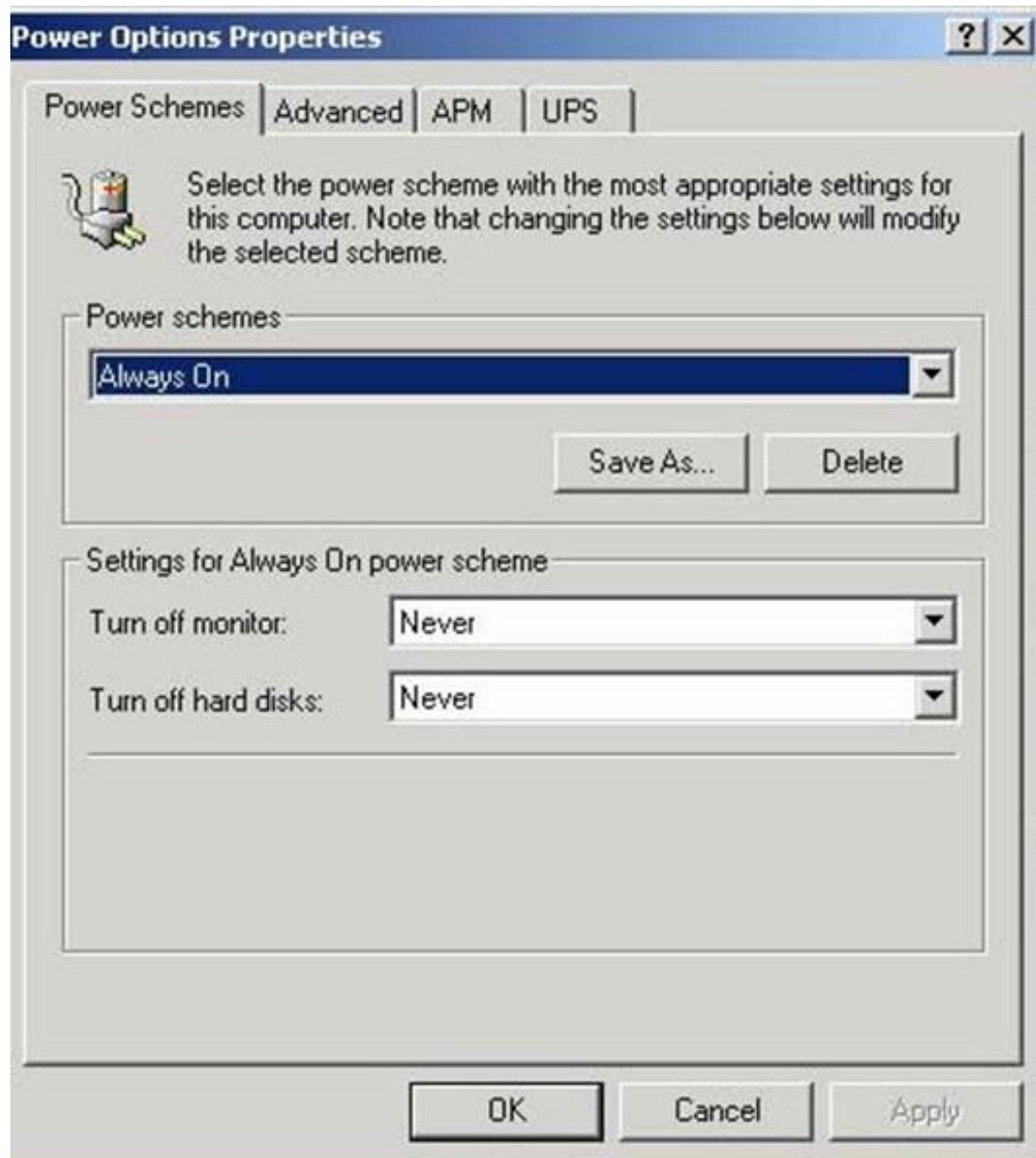
Remark1: After installed the AutoTronik Driver, user can see the "Motion Control" icon in control panel, if has this icon that means AutoTronik Driver install succeed



Remark2 : please select the High Color (16 bit) and 1024 x 768 pixels of Screen area



Remark3 : Enter **Control Panel - Display - Screen Saver** page and click the **Power** button,  
Select **Never** for **Turn off monitor & Turn off hard disks**  
Select **Always On** for **Power schemes**



## 2 Software Setup

### 2.01 Get the newest Software from Website

The software for vision machine is SMDWIN\_3.EXE

1. Autotronik SMD Software can be downloading from below website:

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

**[www.autotronik-smt.de](http://www.autotronik-smt.de) or [www.autotronik-smt.com](http://www.autotronik-smt.com)**

2. please select the SUPPORT

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

ABOUT AUTOTRONIK  
EXHIBITIONS  
► SUPPORT  
CONTACT  
DISTRIBUTORS

3. Must be input the machine CD-KEY and Serial Number and click“Login Now”button to login.

E.g. CD-Key: ABCDE-ABCDE-ABCDE-ABCDE.

Serial Number: 1234

Remark: All character that input into CD-Key must Capital letter, please don't forget the midline.

Please login

register now

Username / CD Key ABCDE-ABCDE-ABCDE-ABCDE

Password/SerialNumber \*\*\*\*

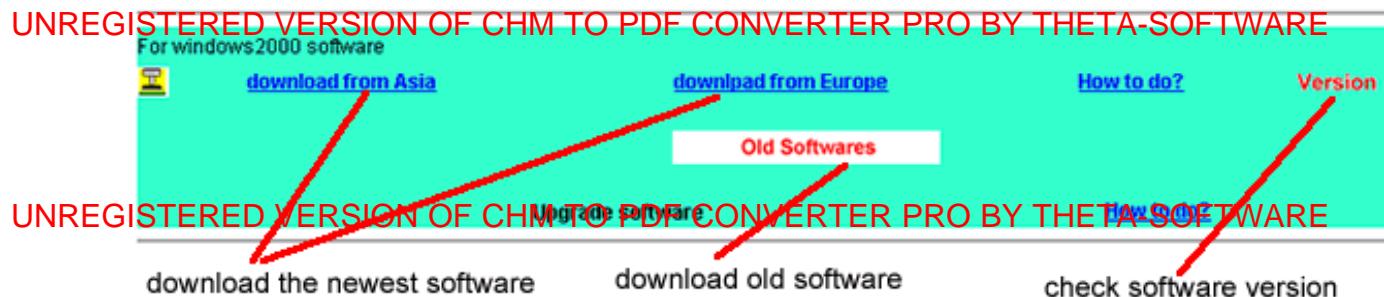
Login Now

4. Please select the correct machine model (only one machine mode will be shown)

1. [SMT-Bestuecker BS383N1,BS390N1](#)
  2. [SMT-Bestuecker BS384V,BS391V](#)
  3. [SMT-Bestuecker BS390N2](#)
  4. [SMT-Schablonendrucker BS1300, BS1400](#)
  5. [SMT-Bestuecker BS683V4,BS684V6](#)
  6. [Here to regist all of the others smd cd key](#)
  7. [Refresh registered information](#)
-

5. for download page, in that, user can download the SMD software, SMD Driver, SMD Manual

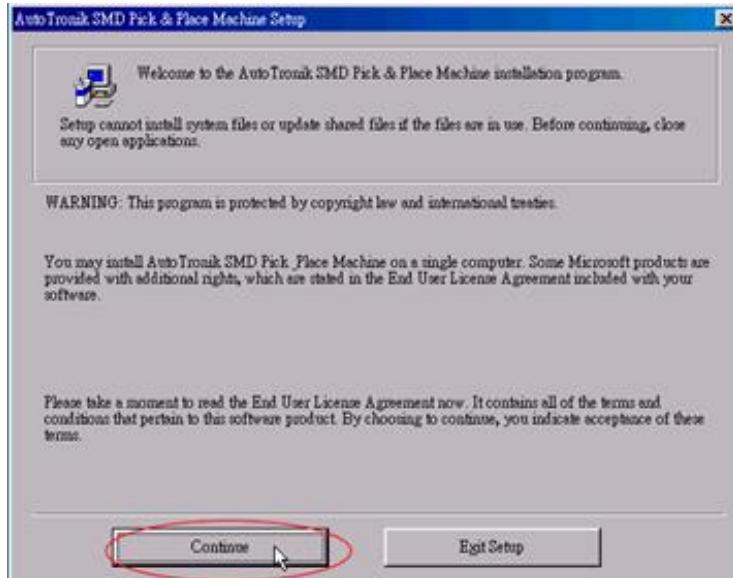
## Software



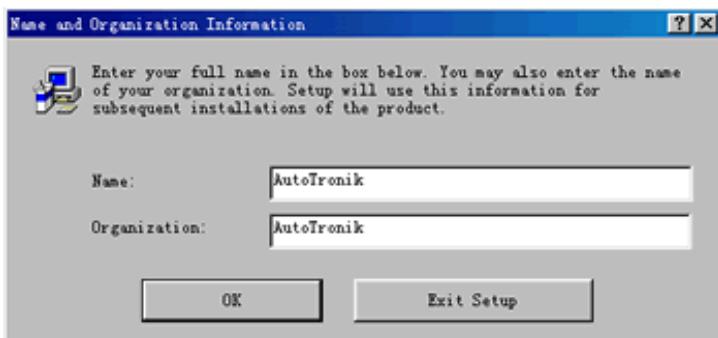
Remark: user can put the CD disk to CD-ROM, and click **AutoTronik software** or can directly run the "smdwin\_3.exe" in AutoTronik Software directory; it will begin to install the old version SMD software

## 2.02 software installation

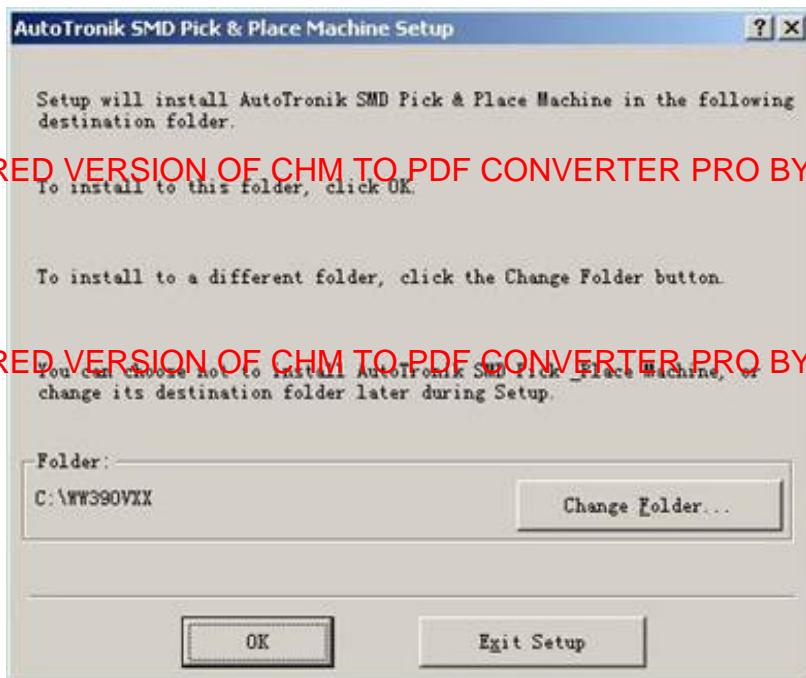
- Run `smdwin_3.exe`



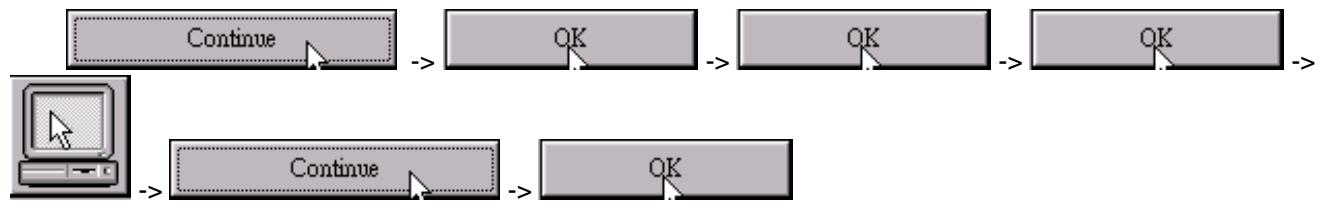
- User can either enter the name here or click 'OK' directly



c) Please don't change the original folder location WW390VXX for installation



\* Easy installation as follow:



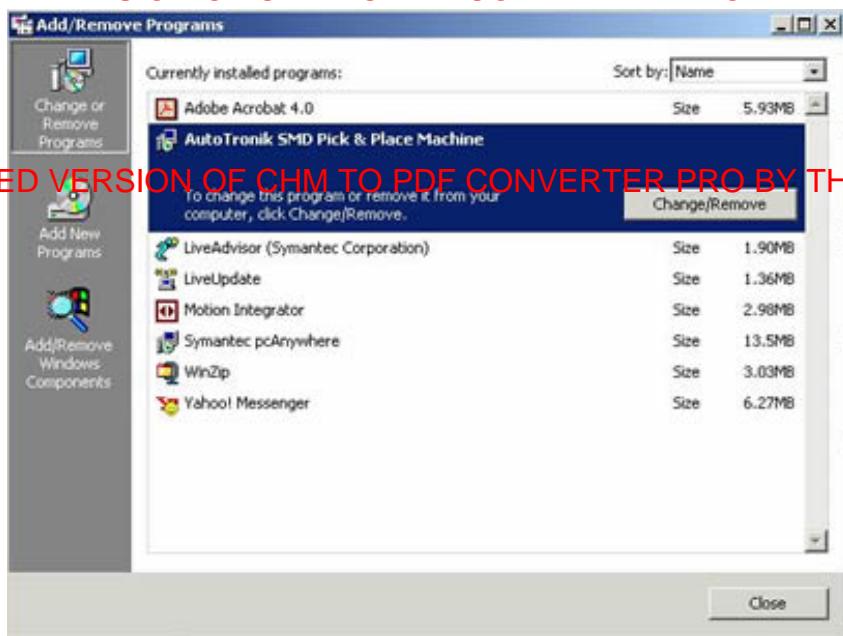
## 2.03 Software removes:

- a) Exit software, reboot computer



- b) Click the Add/Remove Programs Icon in Start menu – Settings – Control Panel, and click button to remove the SMD Software.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



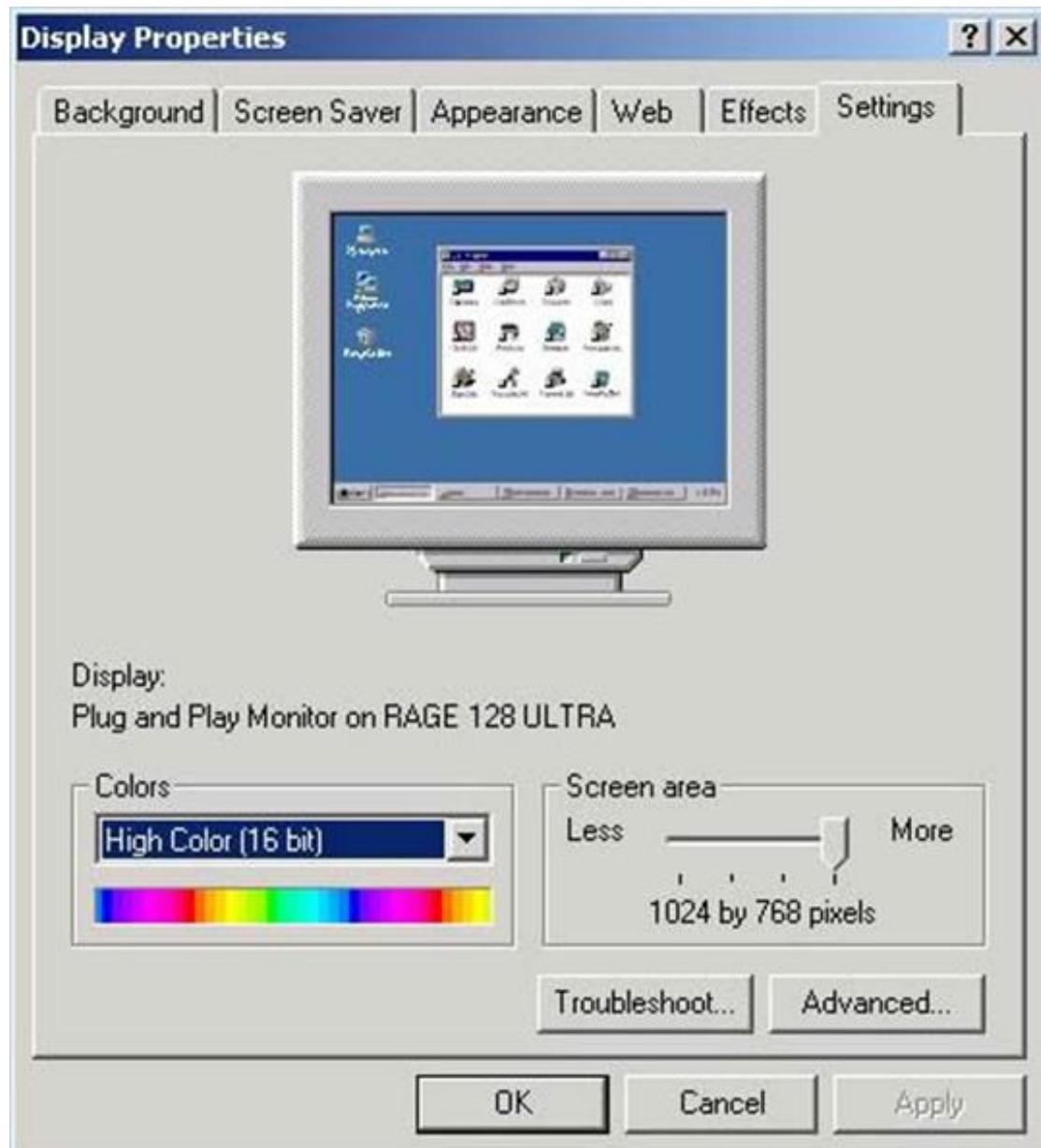
- c) Choose 'Remove All' to remove the old version software



**Remark: User Component Library and Pick & Place data file won't be deleted if remove the old version software**

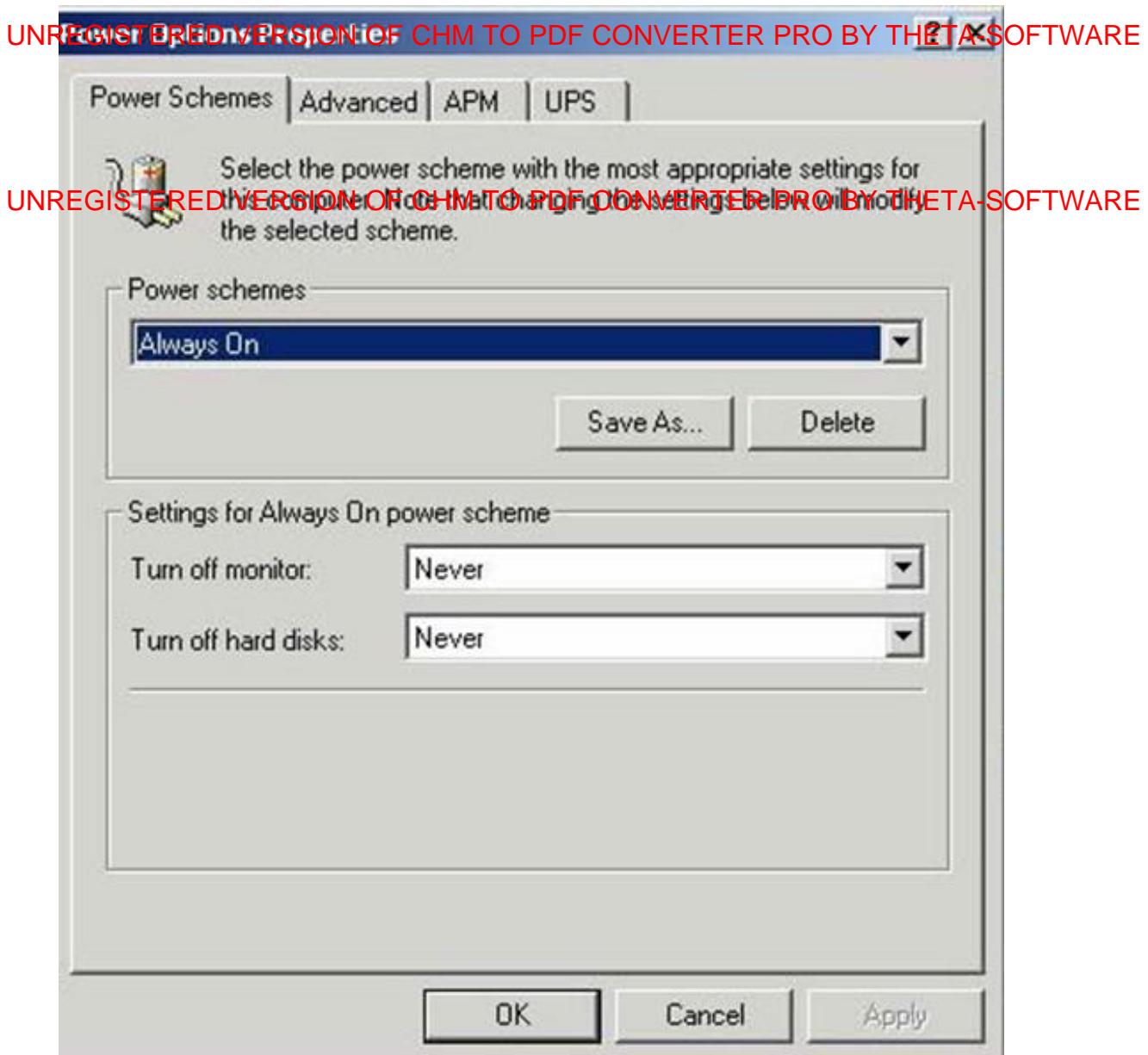
## 2.04 screen setup

Please select the High Color (16 bit) and 1024 x 768 pixels of Screen area



## 2.05 Power schemes

Enter Control Panel - Display - Screen Saver page and click the Power button, Select **Never** for Turn off monitor & Turn off hard disks. Select **Always On** for Power schemes

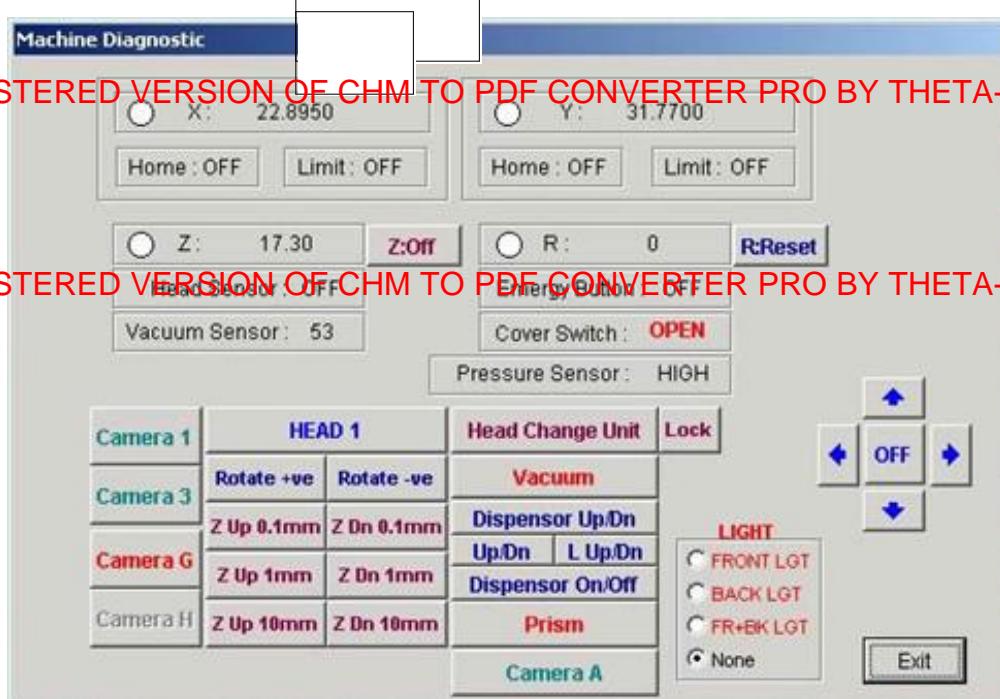




### 3. DIAGNOSTIC I/O TEST

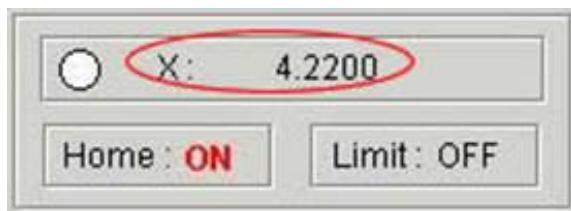
During program start up, please click  to enter Diagnostic mode or in the Utility Menu - Diagnostic, then Machine Diagnostic

shown:



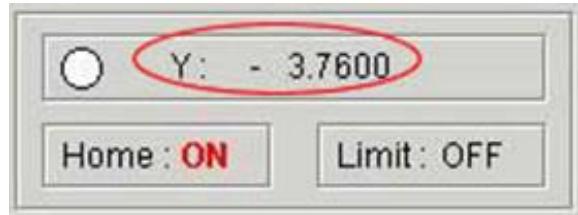
Click **HEAD 1** become to diagnostic HEAD 2, Click **HEAD 2** become to diagnostic HEAD 1

#### 3.01 X-axis checking



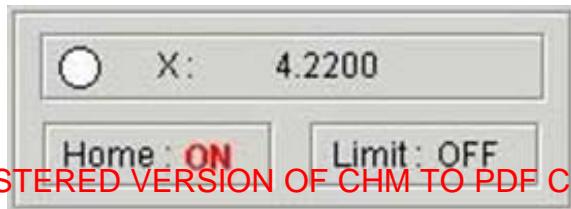
Move the HEAD manually to right hand side, the X-coordinate will be decreased; and move the HEAD to left hand side, the X- coordinate will be increased.

#### 3.02 Y- axis checking



Move the HEAD manually to front, the Y-coordinate will be increased; and move the HEAD to rear, the Y-coordinate will be decreased.

### 3.03 X - HOME sensor

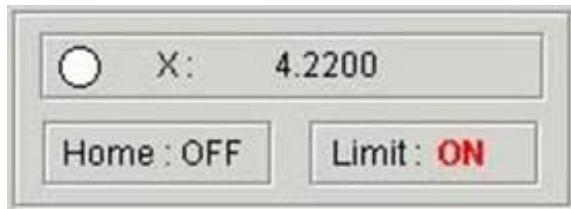


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Move the HEAD manually to touch the edge of right (most right hand side) , the X-HOME sensor should be "ON", when the HEAD is not in the position of right edge, the HOME sensor reading should be "OFF".

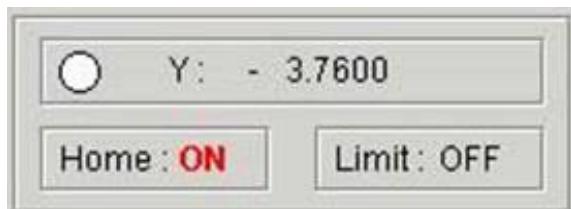
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 3.04 X-LIMIT switch



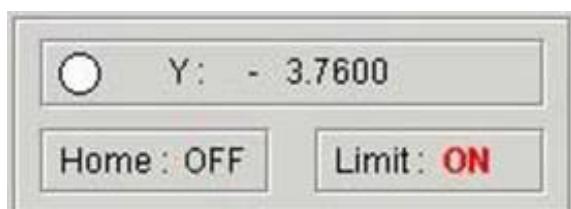
Move the HEAD manually to the edge of left (most left hand side) , the X-LIMIT switch should be "ON", when the HEAD is not in the position of left edge, the LIMIT switch reading should be "OFF".

### 3.05 Y-HOME sensor



Move the HEAD manually to touch the rear edge, the Y-HOME sensor should be "ON", when the HEAD is not in the position of rear edge, and the HOME sensor reading should be "OFF"

### 3.06 Y- LIMIT switch



Move the HEAD manually to touch the front edge; the Y- LIMIT switch should be "ON", when the HEAD is not

in the position of front edge, the LIMIT switch reading should be "OFF"

### 3.07 HEAD SENSOR

The HEAD SENSOR reading should be "OFF", when the Z-axis is about 1mm below the top position.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

The HEAD SENSOR reading should be "ON",

when the Z-axis is the top position.

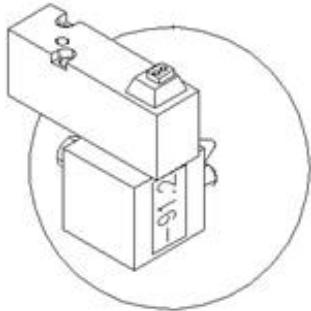
Please click **Z:Off** and then move Z-axis to the end by up and down manually. The Z-axis sensor must has variation ( display "ON" and "OFF" at this moment, otherwise, the sensor is error or damaged.

### 3.08 VACUUM SENSOR

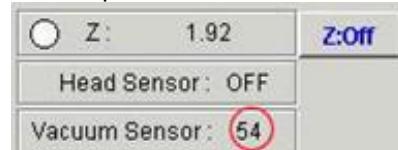
Click **Vacuum** the vacuum will be toggle, if the vacuum is turned on, the VACUUM SENSOR reading should be greater than 200.



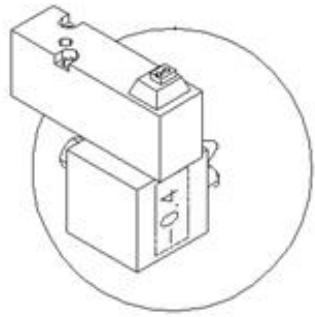
The reading of the vacuum sensor panel ( LED display ) will be about 90-92



If the vacuum is turned off, the VACUUM SENSOR reading on the computer should be less than 65. Please see the picture



The reading of the vacuum sensor panel ( LED display ) will be about 0



### 3.09 Camera 1 Relay



When click **Camera 1** the Video Output to the computer will switch to Camera 1, the user should heard a small sound "DIG".

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

### 3.010 Camera 2 Relay



When click **Camera 2** the Video Output to the computer will switch to Camera 2, the user should heard a small sound "DIG".

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

### 3.011 Camera 3 Relay



When click **Camera 3** the Video Output to the computer will switch to Camera 3, the user should heard a small sound "DIG".

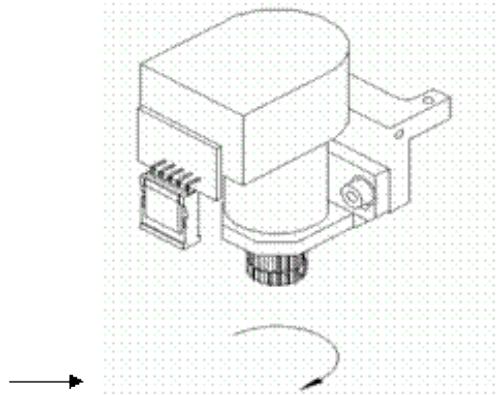
### 3.012 Nozzle rotate clockwise



When click **Rotate +ve** the R -axis will be rotated 90 degree clockwise

R: 0

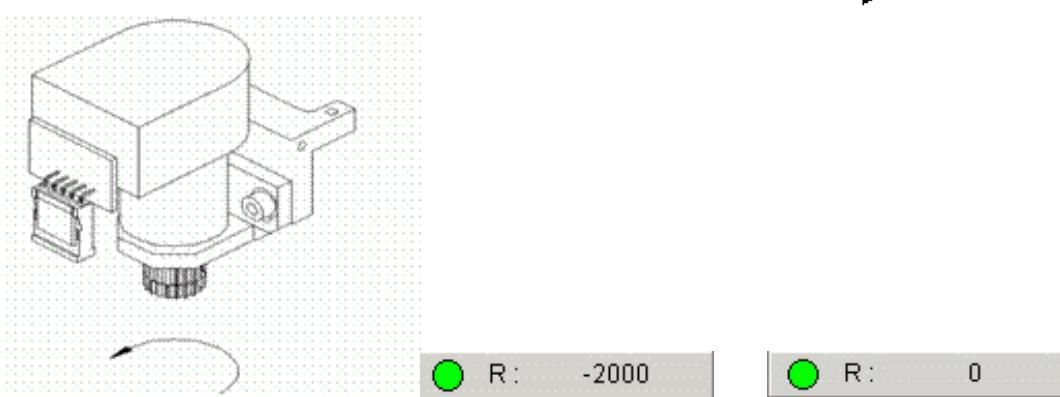
R: -2000



### 3.013 Nozzle rotate anti-clockwise



When click **Rotate -ve** the R -axis will be rotated 90 degree anti-clockwise



### 3.014 Z-axis rise 0.1mm

When click **Z Up 0.1mm** Z-axis raise up to a 0.1mm distance.

### 3.015 Z-axis rise 1mm

When click **Z Up 1mm** Z-axis raise up to a 1mm distance.

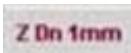
### 3.016 Z-axis rise 10mm

When click **Z Up 10mm** Z-axis raise up to a 10mm distance.

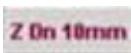
### 3.017 Z-axis drop 0.1mm

When click **Z Down 0.1mm** Z-axis drop down to a 0.1mm distance.

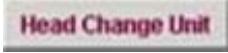
### 3.018 Z-axis drop 1mm

When click  Z-axis drop down to a 1mm distance.

### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

When click  Z-axis drop down to a 10mm distance.

### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

When click  the CH-1 auto change head will be opened and it will be closed if click again.

### 3.021 Vacuum on / off

When click  will toggle the vacuum generator .

### 3.022 Dispenser up / down (for model with dispenser)

When click  dispenser will fall down, it will rise up if click again .

### 3.023 Dispenser on / off (for model with dispenser)

When click  dispenser will drip adhesive impelled from air compress.

### 3.024 Reset R-axis meter

When click  will reset R-axis meter, please see diagram

### 3.025 Emergency Stop

When pressing the emergency stop on both side of the machine, the machine will stop operation and the emergency stop will shown “ON” at this moment, otherwise, it will shown “OFF”.

3.026 Cover open / close

Covers switch will shown “OPEN” during the cover is open up and the machine will stop operation at the same time, otherwise, it will shown “CLOSE”.

### 3.027 X, Y Axis movement

Click  Y-Axis will move to rear

Click  Y-Axis will move to front

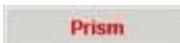
Click  X-Axis will move to left

Click  X-Axis will move to right

Click  X & Y axis will not move

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**  
The function is to move the X & Y axis will not move. This function is usually used to unlock the axis after using "ARROW KEY".

### 3.028 Prism checking

Click  will test the Prism

### 3.029 Camera A checking

Click  will test the Camera A

### 3.030 Light checking



Please test Light in

### 3.031 Exit

Click  will exit the diagnostic I/O test

#### 4. FAULT FINDING

FAULT SYMPTOMS	-ACTION
The power of the BS390 is turned on but green power indicator is turned off	<ul style="list-style-type: none"> <li>- Check the connector of the power indicator</li> <li>- Check the fuse of logic board</li> <li>- If still occurs problem after replace fuse please contact the representative of AutoTronik</li> <li>- Check the bulb has burned out or not</li> </ul>
The power is on but no video image	<ul style="list-style-type: none"> <li>- Check the camera video cable is connected to the image card in correct position</li> <li>- Check the open / short of the video cable by multimeter</li> </ul>
The machine cannot be HOME	<ul style="list-style-type: none"> <li>- Check HOME sensor with diagnostic</li> <li>- Check LIMIT switch with diagnostic</li> <li>- Check with Diagnostic whether X &amp; Y coordinate is moving correctly</li> <li>- Check the Motor I/O card is inserted correctly</li> <li>- If X &amp; Y coordinate is moving correctly check X &amp; Y LIMIT</li> <li>- Check the Z-axis is in UP position Head Sensor should be "ON"</li> <li>- Check anything jam the head</li> </ul>
The machine cannot be HOME in X direction	<ul style="list-style-type: none"> <li>- Check X-HOME sensor with diagnostic</li> <li>- Check X-LIMIT switch with diagnostic</li> <li>- Check anything jam the head</li> </ul>
The machine cannot be HOME in Y direction	<ul style="list-style-type: none"> <li>- Check Y-HOME sensor in diagnostic mode</li> <li>- Check Y-LIMIT switch in diagnostic mode</li> <li>- Check anything jam the head</li> </ul>
Auto detect height function failed	<ul style="list-style-type: none"> <li>- Check Air Pressure = 80psi</li> <li>- At least have 75psi when vacuum is on</li> <li>- Check Vacuum sensor reading in diagnostic mode</li> <li>- Clean the water in air filter and regulator</li> </ul>
Can't enter software	<ul style="list-style-type: none"> <li>- Pull out motor I/O card, clean the metal patch</li> <li>- Reinsert motor I/O card and Lock the screw tightly</li> <li>- AutoTronik Driver error, reinstall the driver</li> <li>- Desktop icon link error, reset the shortcut icon</li> </ul>
Can't control the ARM	<ul style="list-style-type: none"> <li>- Check motor power connector</li> </ul>
Conveyer Table can't move up	<ul style="list-style-type: none"> <li>- Check gas valve</li> </ul>
Z motor error	<ul style="list-style-type: none"> <li>- Check Z motor</li> <li>- Check Z Belt</li> <li>- Instead RZ motor drive board</li> </ul>

<b>For computer back plate</b>	
Fault symptoms	<ol style="list-style-type: none"> <li>1. Can't start computer</li> <li>2. Some driver missing</li> <li>3. Windows down during production</li> <li>4. Can't detect harddisk and RAM</li> <li>5. Can't detect image card, cpu card, etc</li> </ol>
<b>UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE</b>	
ACTION	<p>Open the industry box, remark all cards and label</p> <p>Take out all cards, clean by free paper and Dry Compressed air</p> <p>Dean the sheet metal by Alcohol</p> <p>Blow the slot by dry compressed air</p>
<b>UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE</b>	
<b>For I/O card</b>	
Fault symptoms	<ol style="list-style-type: none"> <li>1. Conveyor can't advance and backward</li> <li>2. Conveyor sensor all are "on"</li> <li>3. Conveyor running but can't stop</li> <li>4. Can't control smart feeder</li> <li>5. Emergency button can't use</li> </ol>
ACTION	Replace the I/O card
<b>For R Motor</b>	
Fault symptoms	R motor error
ACTION	<p>Check R axis running</p> <p>Check R belt</p> <p>Check R encoder</p> <p>Check the screw that bock the motor</p> <p>Check the connector for R motor and R encoder</p> <p>Check R motor driver board</p> <p>Replace R motor</p> <p>Replace R driver board</p> <p>Replace motor I/O card</p>



## 7. Maintenance and Adjustment

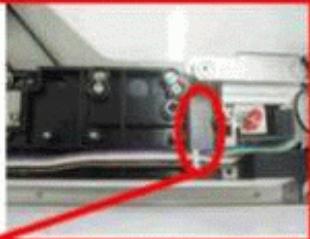
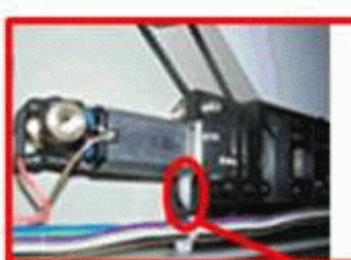
### 1) SF1A-XXL4 Auto Tape Feeder (every v

es: Special Grease, Cotton Bud, Scissors, Driver)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

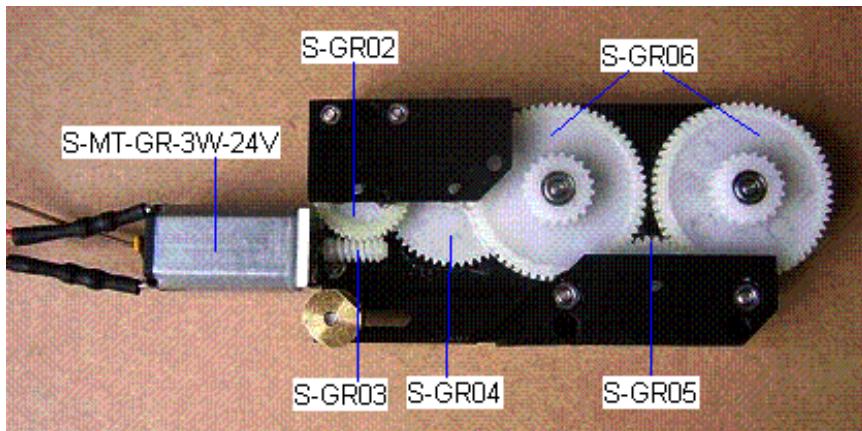


飞带轮



b 在齿轮上加雪油

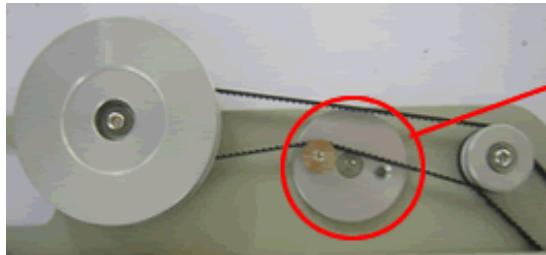
S-GB-L4A ( Plastic gearbox )



S-GB-L4A Plastic gearbox

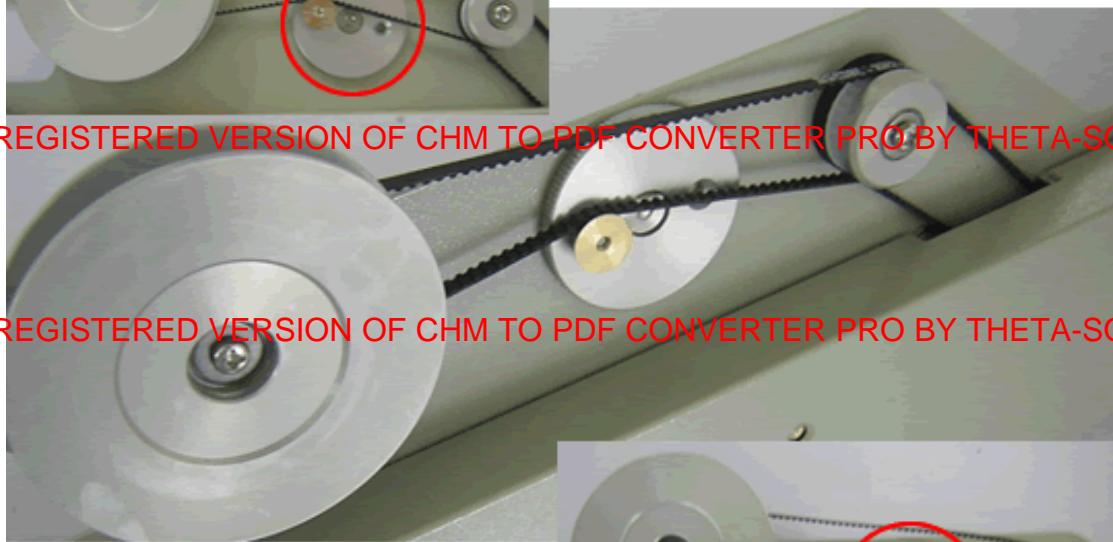
Type	HK part no	Description
Gearbox	S-GR02	Feeder gearbox gearwheel dia 17mm
Gearbox	S-GR03	Feeder gearbox worm gear for motor
Gearbox	S-GR04	Feeder gearbox gearwheel dia 25mm
Gearbox	S-GR05	Feeder gearbox gearwheel dia 16mm
Gearbox	S-GR06	Feeder gearbox gearwheel dia 30mm T=3mm
Motor	S-MT-GR-3W-24V	Gear motor for feeder

- 2) Step to increase the friction of sealing tape roller for taking off the sealing tape  
( For SFTA-XXL4 only)

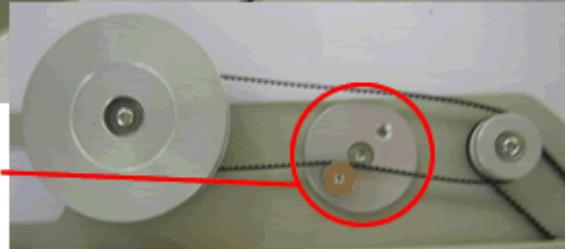


把定位片向上转则增大皮带拉力

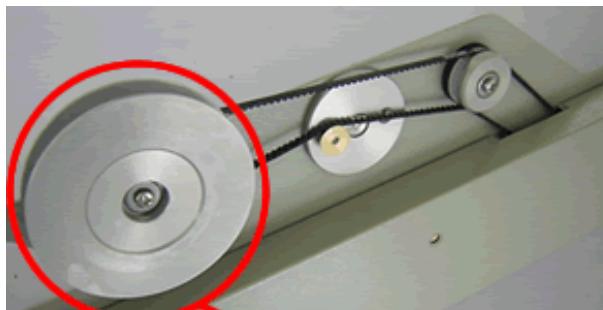
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



把定位片向下转则减少皮带拉力



3) S FTA-XXL 4 --- BELT

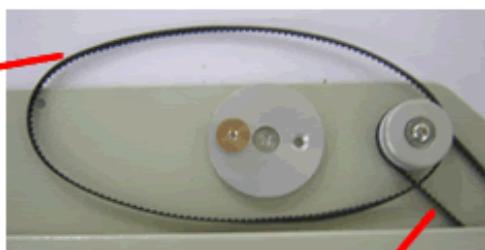


1) 拆下此螺丝

2) 取下胶带轮



3) 更换皮带2



皮带1

4) 重新安装胶带轮



压片 外推此开关



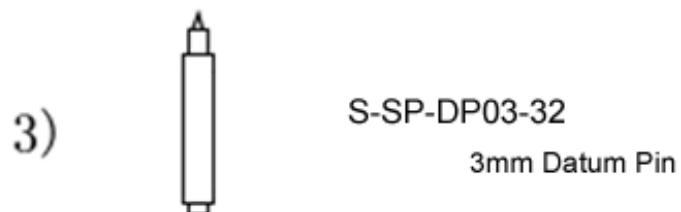
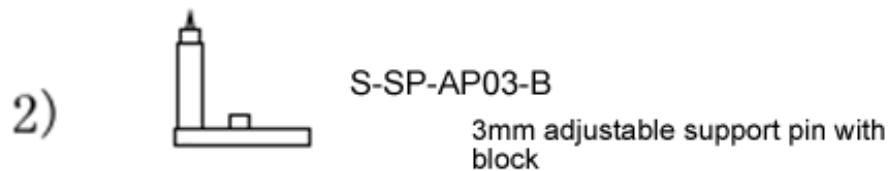
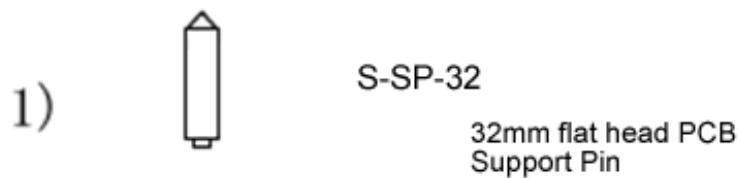
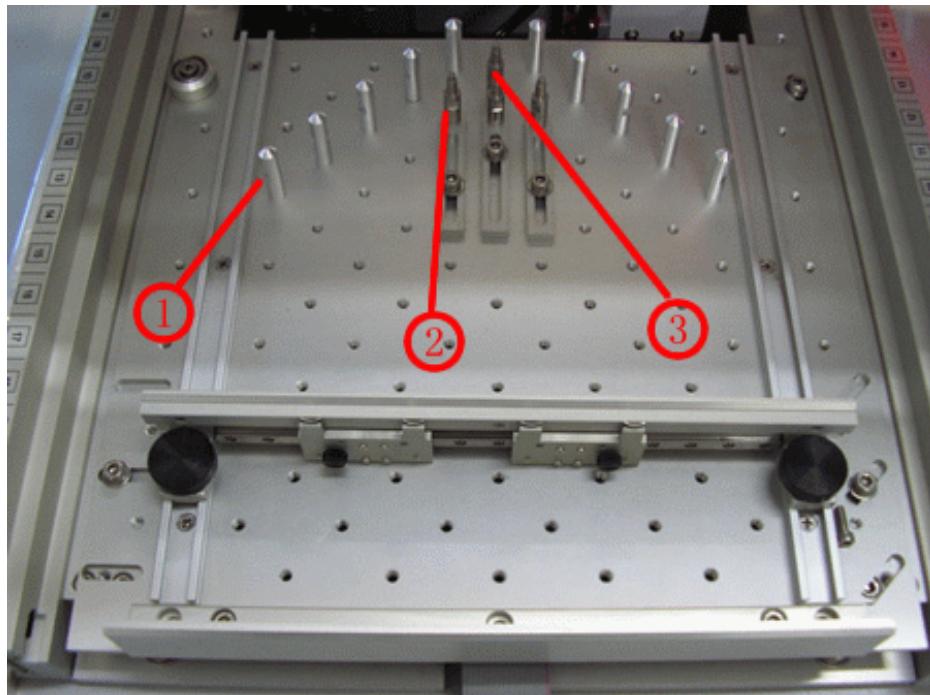
皮带3

1. BELT-1 part number : S-B-F- 100 - 2.5 , Feeder Belt
2. BELT-2 part number : S-B-F-150-2.5, Feeder Belt
3. BELT-3 part number : S-B-F-1 0 0 - 3.0 , Feeder Belt

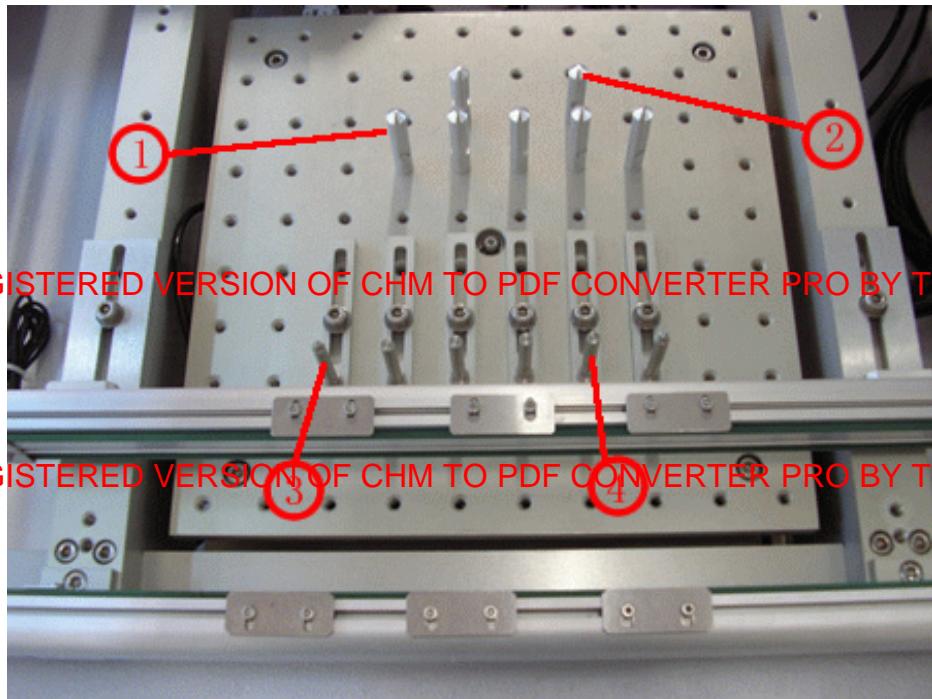
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

4) MANUAL SUPPORT PINS PART NUMBER



5) COVERYOR SUPPORT PINS PART NUMBER



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

1)



S-SP-CY-37

conveyor 37mm PCB  
Support Pin

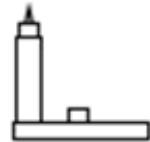
2)



S-SP-CY-42

conveyor 42mm PCB  
Support Pin

3)



S-SP-CY-AP03-37-B

conveyor 3mm adjustable  
support Pin with block

4)



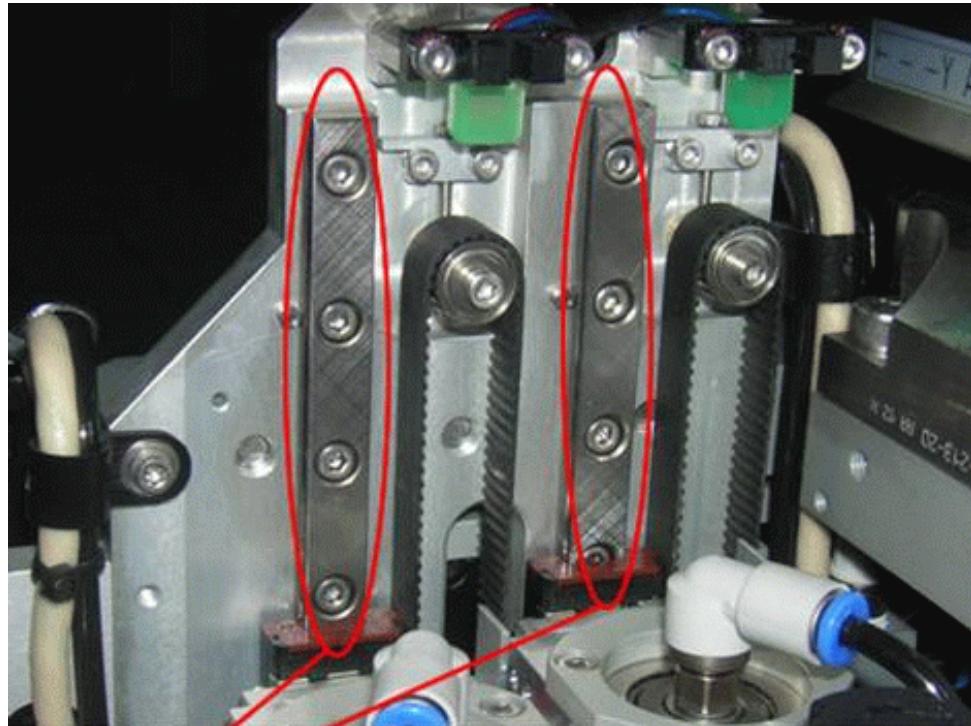
S-SP-CY-APF-37-B

conveyor flat head  
adjustable support pin  
with block

6) Shaft-Z (Up/Down) (every 6 month )

Necessity: oil

Press Shaft-Z by hand, add oil on both side of Shaft-Z ' s orbit bit . After that, move Shaft-Z from up and down in order to make oil can be evenly smeared on orbit.



Z轴(上/下) 加机油

**Remark: drip down appropriate quantity of grease, avoid to smear the other spare parts**

Remark: V1 machine has one orbit, V2 machine have two orbits

## 7) Replace Motor Coupler

Necessity: Hex Key , Motor Coupler in same model

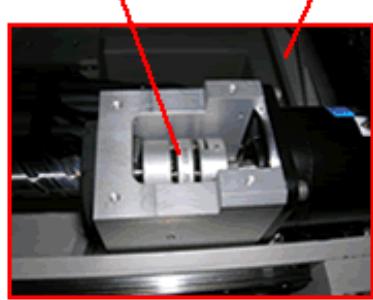
**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

Part Number

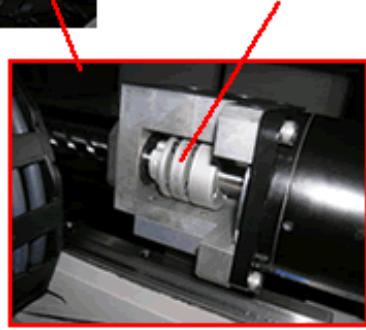
383V1,383X1  
**S-BE-CL-FMC-20x7x8**  
383V2,383X2  
**S-BE-CL-FMC-20x7x8**

Part Number

383V1,383X1  
**S-BE-CL-FMC-20x7x8**  
383V2,383X2  
**S-BE-CL-FMC-30x8x14**



X direction motor coupler



Y direction motor coupler

Set Screw "A"



Set Screw "B"

Motor coupler



Motor

- Unlock the Set Screw "A" and "B". ( not need to free)
- Release the four counter-bore that lock the motor, take out the motor with motor coupler

- Replace new motor coupler
- Locate the motor coupler in the middle of motor axis and ball screw axis, that means motor axis and ball screw axis insert the same distance for motor coupler
- Lock the Set Screw "A" and "B" tightly

8) Auto Change Head (every 3 month)

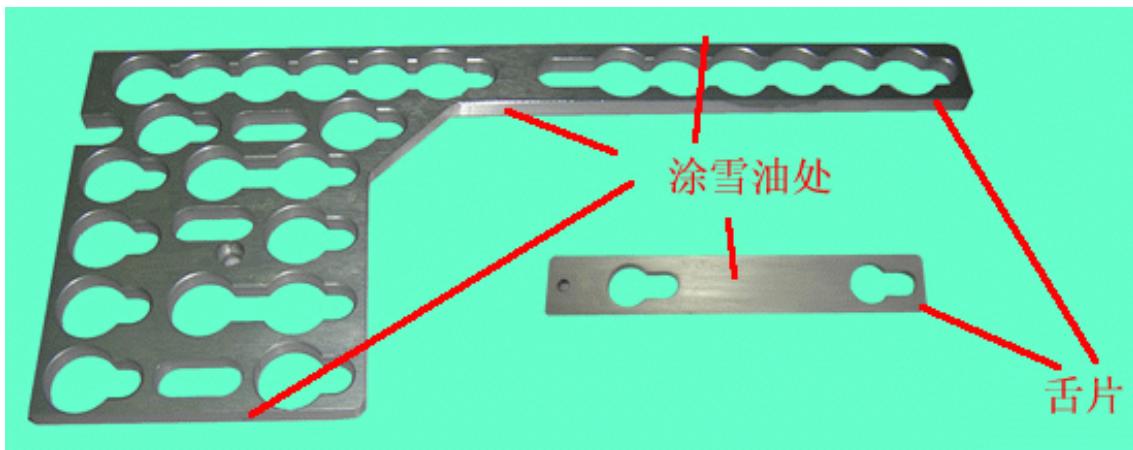
Necessity: Hex Key, Cross Head Screw Driver, Special Grease and Cotton Bud



舌片



- In software - please click "Head change Unit" button in Utility Menu - Machine Diagnostic and make the unit raised, then remove all nozzles on the unit by hand.
- Release six screws by cross head screw driver.
- Take out the cover from the unit , release screw A,B
- Take out the Tongue Piece and add little special grease on it. Please see below:



According to the above mentioned steps in inverse:

Adjust the location of Moveable Piece when the unit raise and the top of Tongue Piece open, enable the Holes of Nozzle and Bottom Mounting are completely overlapped (Please see below). Then put the cover back.



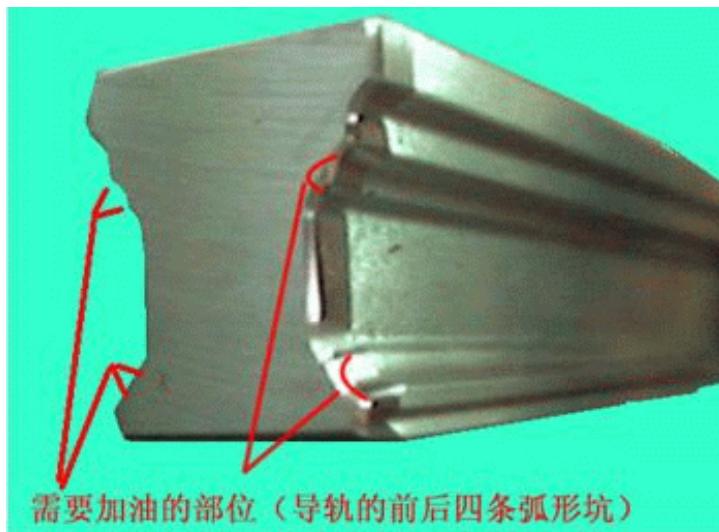
吸嘴孔与底座中的孔应完全重合

9) X Guiderail (every day)

Necessity: Oil and clean, soft & dry cloth



- Wipe off the old oil from the guiderail with a clean & soft cloth
- Add little oil inside the gap with four arches around the guiderail



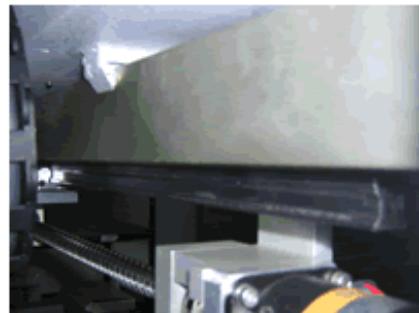
Remark: Oil cannot be dropped too much to avoid dripping, just ensure 4 gaps have enough oil is okay

10) Y Guiderail (every day)

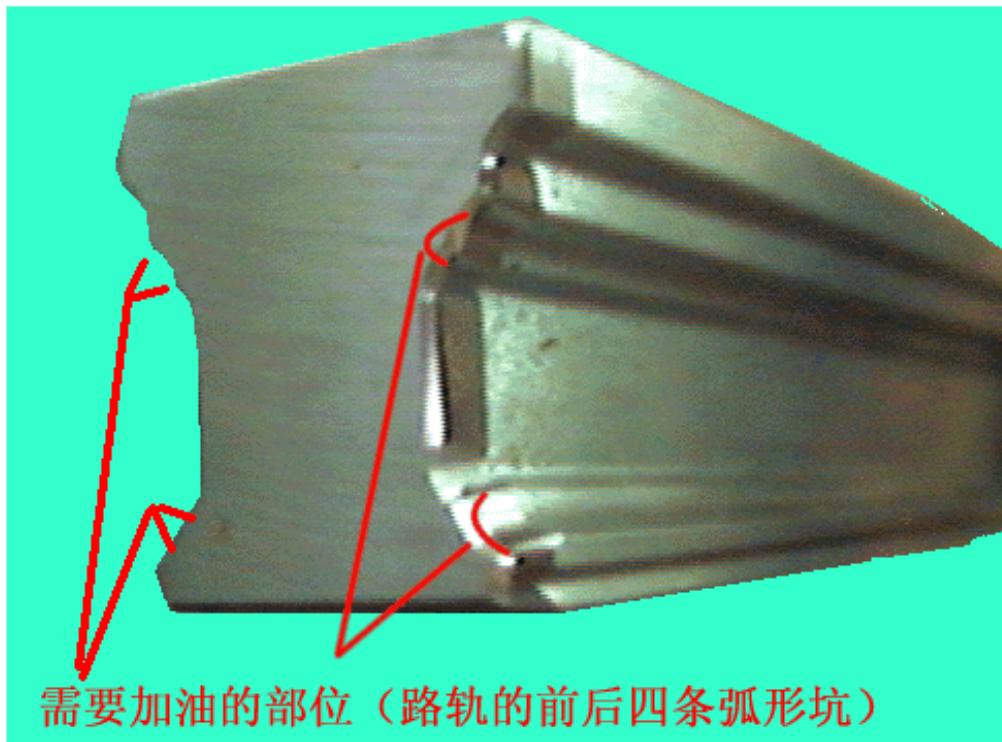
Necessity: Oil and clean, soft & dry cloth



Y路轨 (左)



Y路轨 (右)



- Wipe off the old oil from the guiderail with a clean & soft cloth
- Add little oil inside the gap with four arches around the guiderail

**Remark:** Oil cannot be dropped too much to avoid dripping, just ensure 4 gaps have enough oil is okay

11) Ball Screw  every year

Necessity: syringe, Special Grease, and clean, soft & dry cloth , ZB153

a) Wipe off the old oil from the guiderail with a clean & soft cloth

1. Take out the stopper for ball screw



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Fig 1



B153

Fig 2

2. Manual install ZB153 and tighten, Use syringe squash the special Grease into the ZB153 ,until the nut of ball screw have some special Grease overflow.



Fig 3

3. Pull out the syringe, take out the ZB153, re -plug the stopper

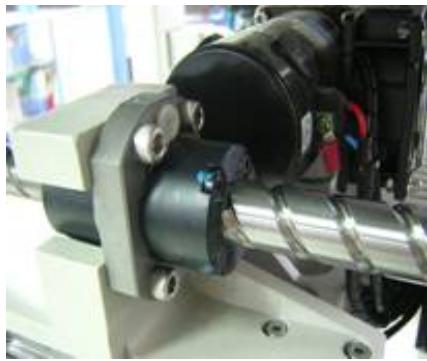
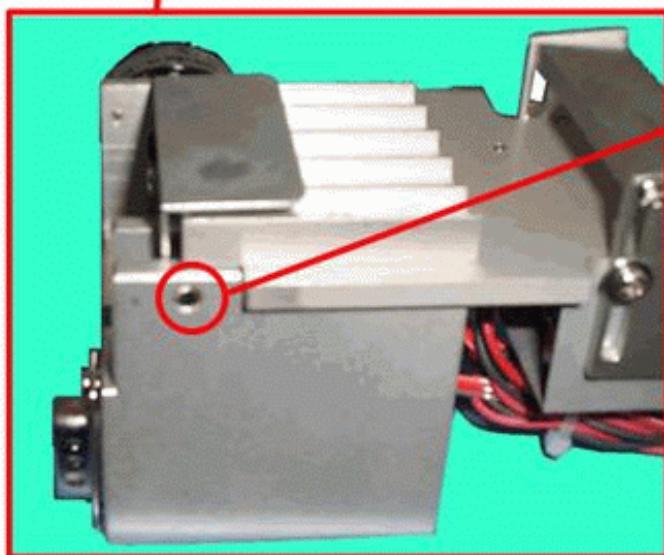
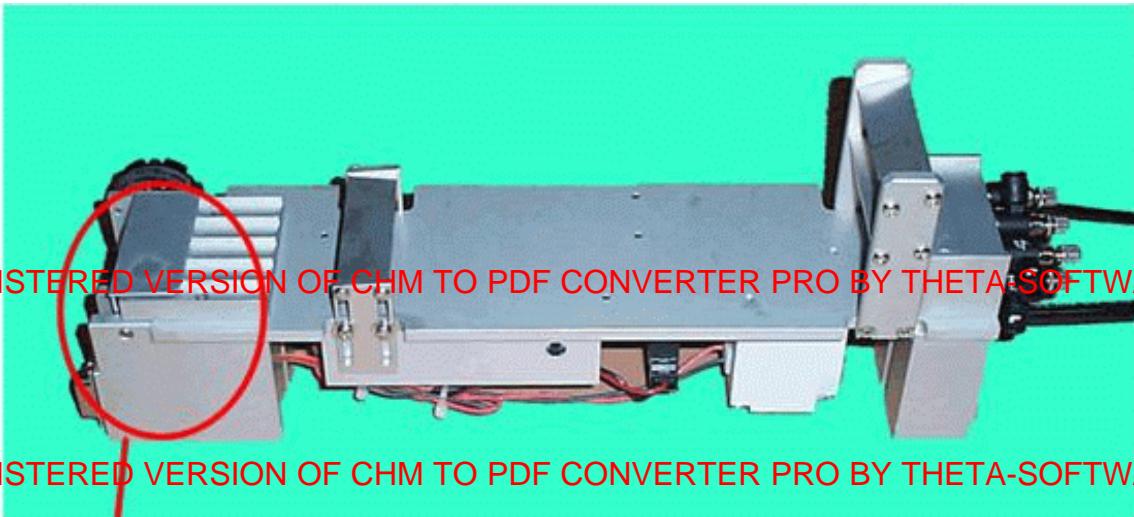


Fig 4

12) U FTB - X hinge (every week)

Necessity: Special Grease and Cotton Bud

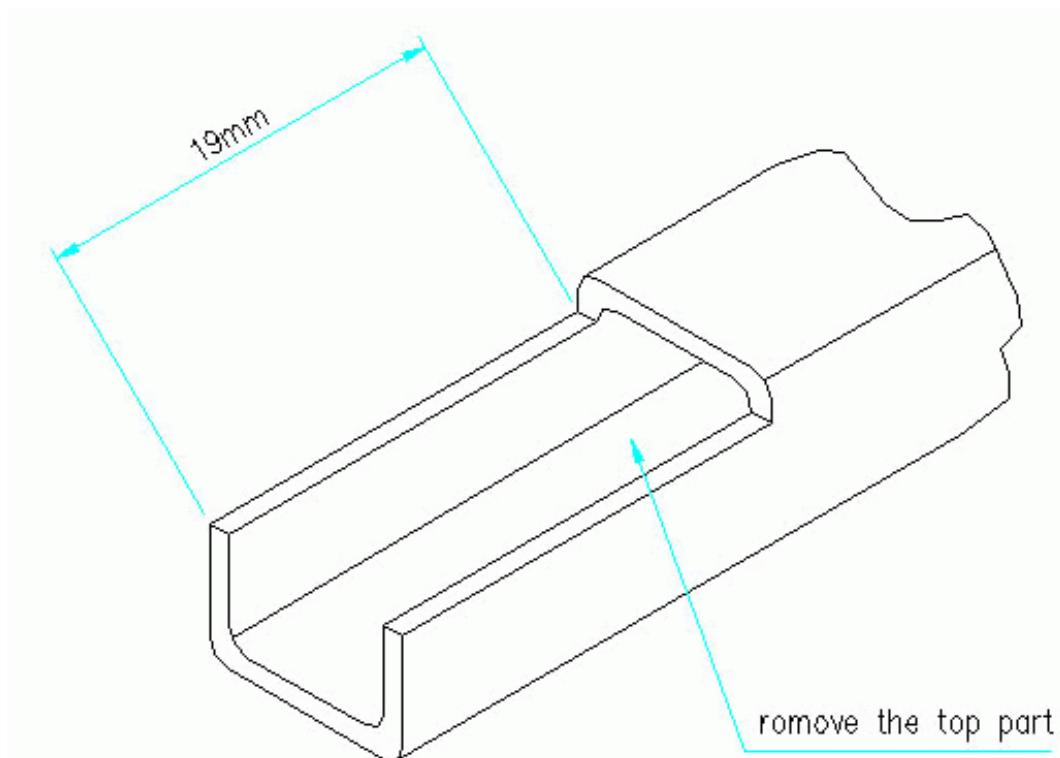


- Add special grease on the axle of cover board, please see above.

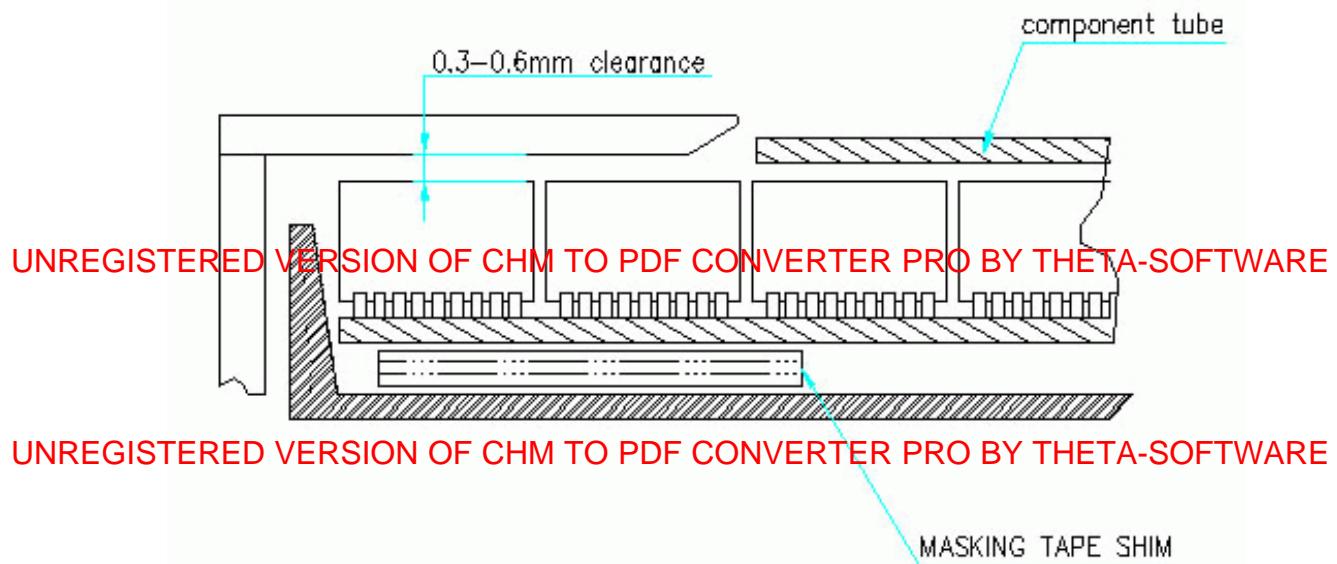


### Install component tube into UFTB feeder

1. Select an insert which the slot width can fit the width of the component tube.
2. Get a dummy tube & cut the end to the following shape.



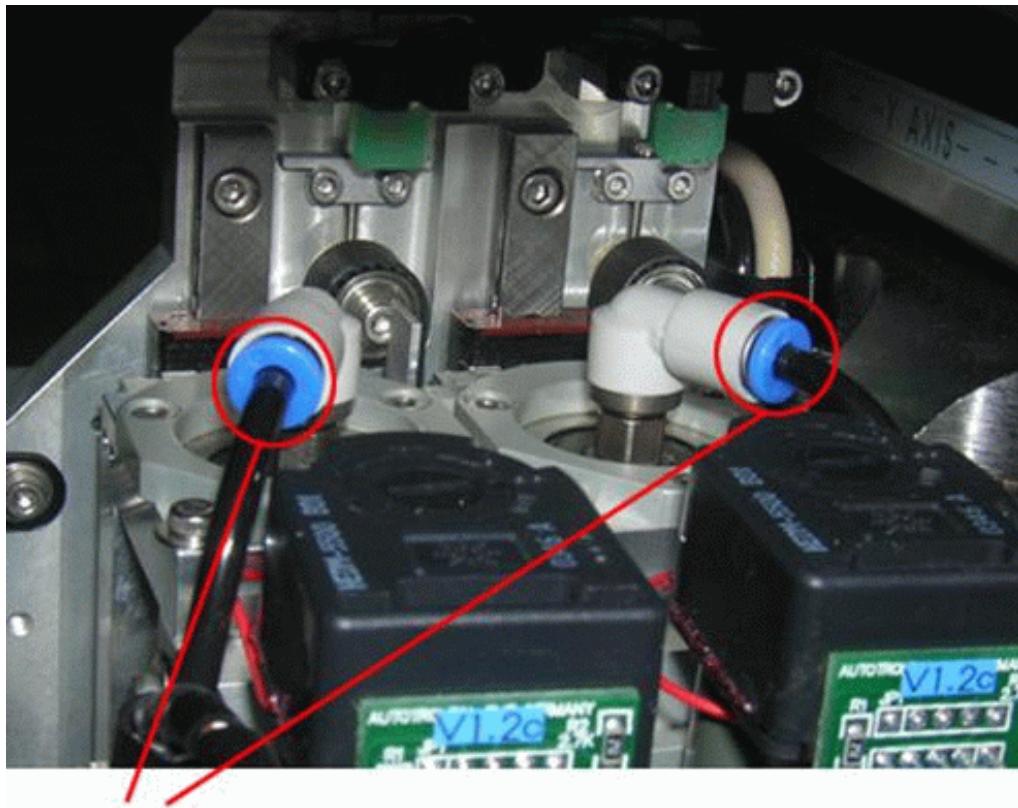
3. Fill up the rework dummy tube with components (slide the components form a new tube).
4. Fit the tube to the insert & shim the tube by masking tape to the level as shown.



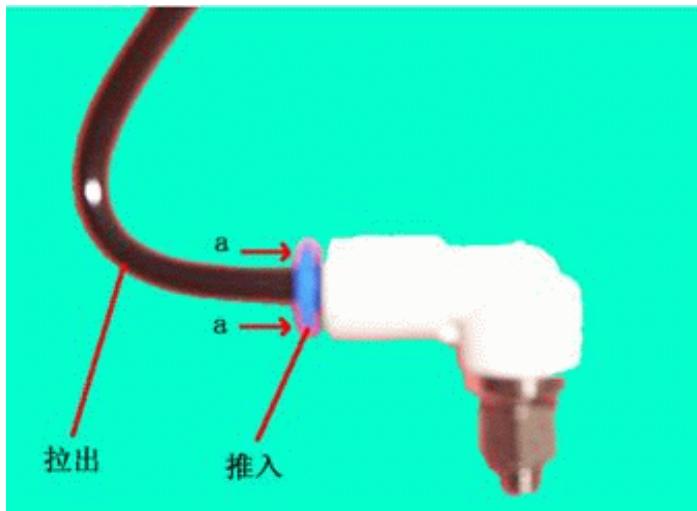
5. Adjust the horizontal pressure bar so that the friction of the bar with the tube is large enough to prevent the tube from re-bouncing.

13) Cleaning Z - Shaft (every three month)

Necessity: Dry Compressed Air



拔出气喉, 对此孔吹气



- Push the blue piece that connected the nozzle and hose (diagram 'a' shown), and pull out the black hose at the same time
- Blow in air into the hole of Z-Shaft by Dry Compressed Air, and spout all the dust, solder paste and dirt

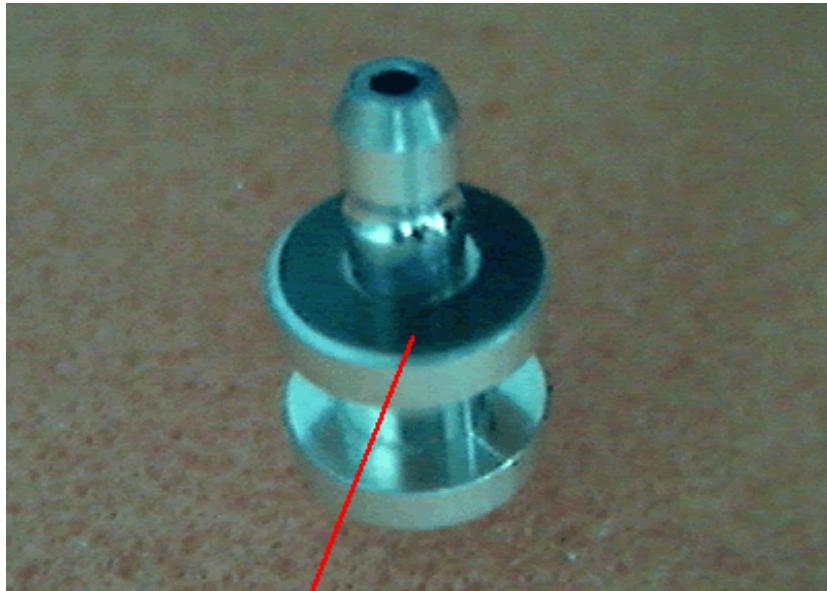
- Put back the black hose into the nozzle

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

14) Replace Nozzle plastic seal (every six month)

Necessity: New Nozzle plastic seal



塑胶密封圈

Tear off the broken Nozzle plastic seal. Please wipe off all the dirt with alcohol and put the new one on it.

## 15) Camera-1 Offset (Software Calibration)

This is to calibrate the offset between Camera-1 & the Z-axis. This offset is a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed

Camera-1 focus changed

- Component placement not accurate

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner of the Alignment-B, the machine will automatically install

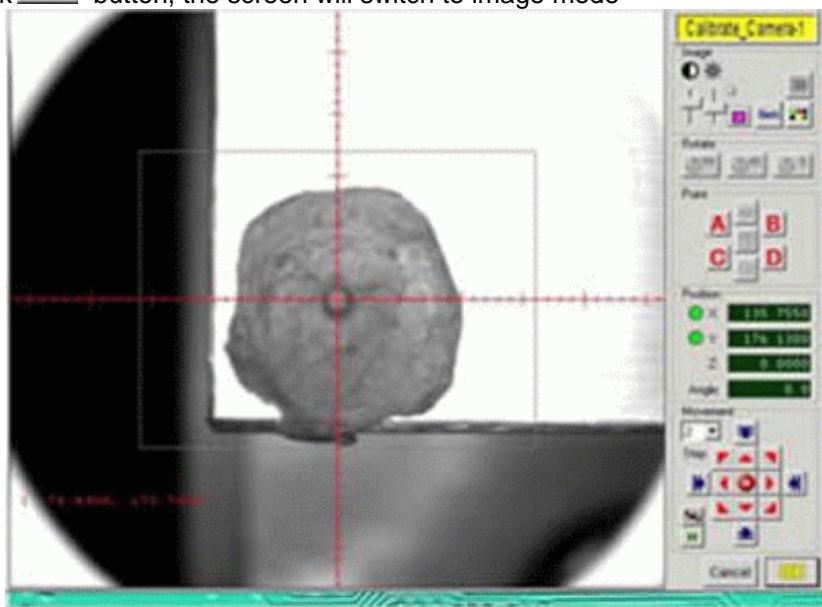
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode



Adjust the cross mark to the corner of the hole and click **OK** button.

The machine will auto remove nozzle #1 and the complete the **Calibrate Camera-1 Offset** procedure.

## 16) Vacuum - sensor (Software Calibration)

This is auto detect each nozzle's vacuum sensor Analog Reading. Please choose CALIBRATE MENU - Nozzle Parameters from the software, then the below frame will be shown:

Nozzle Parameter Setting		WHITE NOZZLE		BLACK NOZZLE		Alignment-G/H (Nozzle 7)	
HEAD 1	Length	OPEN	CLOSE	Learn	Learn	X	Y
Nozzle 1 (1.2mm)	6.00	187.9	237.4	161.0970	79.4600	Camera	Manual
Nozzle 2 (1.2mm)	5.00	111.2	235.6	101.0730	79.5350	Camera	Manual
Nozzle 3 (2.0mm)	6.00	85.1	84.9	81.0650	79.5600	Camera	Manual
Nozzle 4	4.50	101.4	232.4	191.1265	93.4281	Camera	Manual
Nozzle 5 (4.7mm)							
HEAD 2	Length	OPEN	CLOSE	Learn	Learn	X	Y
Nozzle 1 (1.2mm)	6.00	214.2	237.6	181.0890	79.5000	Camera	Manual
Nozzle 2 (1.2mm)	6.00	178.5	240.9	161.0810	79.5250	Camera	Manual
Nozzle 3 (2.0mm)	5.00	114.9	238.1	101.0570	79.6000	Camera	Manual
Nozzle 4	6.00	231.5	237.2	81.0490	79.6250	Camera	Manual
Nozzle 5 (4.7mm)	4.50	106.1	230.7	191.1105	93.4931	Camera	Manual
		Manual Nozzle Change Location		87.7650	263.9600	Manual	Test
		Waste Component Location		87.7650	263.9600	Manual	Test
		DP2-2s/MP2-2s Standby Location		50.0000	50.0000	Manual	Test
		<input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading					
		Z axis Position	68.92	mm	Manual		
		X-Y Location	201.0150	77.4000			ALL Vacuum Reading
		<input type="button" value="Learn"/>					
		<input type="button" value="Cancel"/>				<input type="button" value="OK"/>	

### Manual Calibrate

For example: click **Learn** button from the Nozzle 1 and Vacuum Sensor Analog Reading, then the machine will auto install Nozzle 1 and below frame will be shown:

Auto Learn Vacuum Sensor Analog Reading	
Open Reading :	219.1 <input type="button" value="Learn"/>
Close Reading :	235.5 <input type="button" value="Learn"/>
Close Reading : Please use your finger to clog the nozzle, that is to simulate a component is pick up.	
<input type="button" value="Cancel"/>	
<input type="button" value="OK"/>	

Firstly, detect the reading with no component, click **Learn** button, start vacuum and show the detected reading in "open reading".

After that, please use your finger to clog the nozzle, that is to simulate a component is pick up, then click the second **Learn** button, the vacuum will on again and show the detected reading in "close reading".

**OK**

Finally click **OK** button to save and exit.  
Do the above mentioned detect for all nozzles in sequence.

## Automatic Calibrate

(1) Enable Auto Learn Vacuum Sensor Analog Reading, click **Manual** button, manually move X-Y axis and move down Z-axis to the rubber pad by hand, this is for confirm the calibrate location.

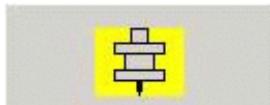
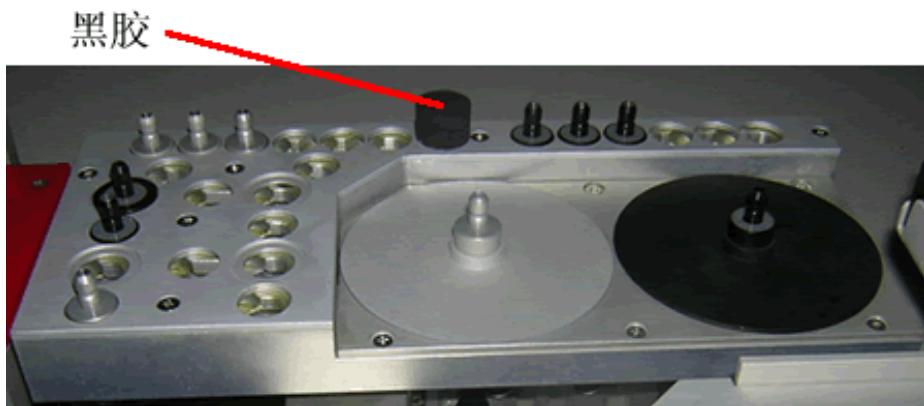
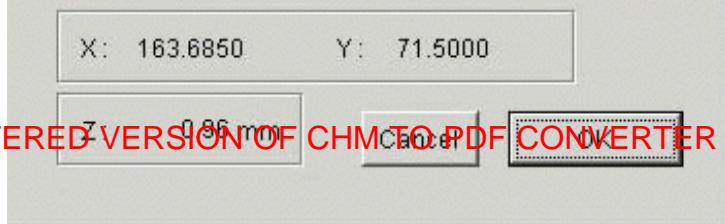
### Manual Learn Vacuum Reading Location

Please manually move X-Y axis and move down Z-axis

to the rubber pad by hand and then click <OK>

(Don't release move down Z-axis before click <OK>)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



(2) Click **ALL Vacuum Reading** button, machine will start to detect the reading with no component, and auto move to the rubber pad to detect the reading that is to simulate a component is pick up, and then software will auto detect the nozzle

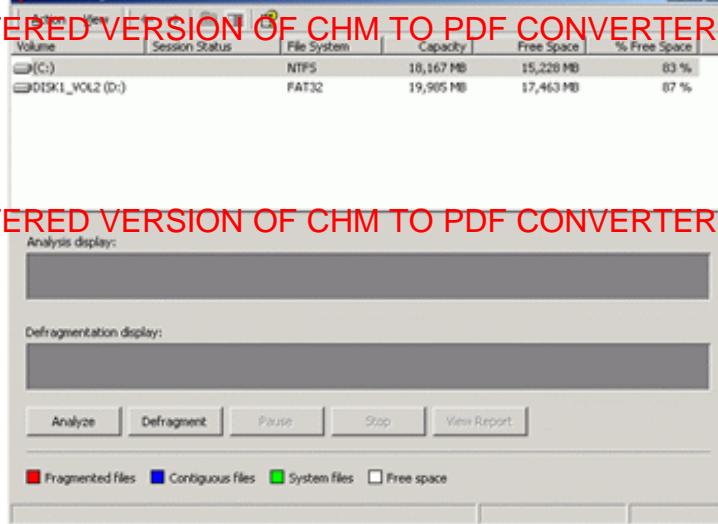


## 17) Disk Defragmenter

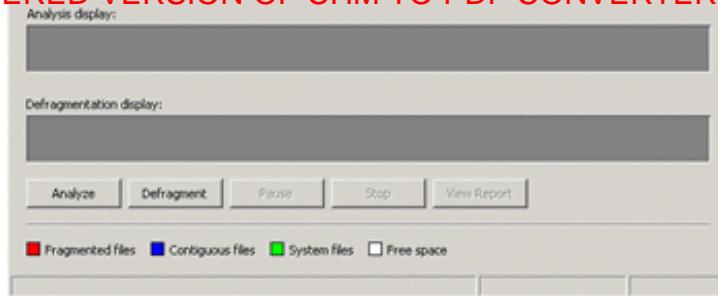
Select Start - Program - Accessories - System Tools - Disk Defragmenter to do disk defragmenter

Click **Analyze** for analyze , after finished please click **Defragment** for defragmenter

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



Before defragmenter , red means fragmented files



After defragmenter



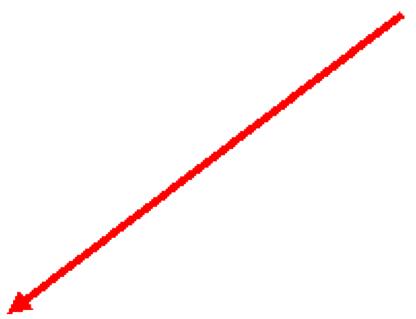
## 18) Maintenance of FESTO Air Filter

1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water; air filter for oil is use for filter oil.
3. The water will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.
4. If need drain oil, release the knob for oil, connect compressed air, then the oil will drain from oil outlet, when finish, tighten the knob for oil.(Please plug the gas tube to the filter first if necessary)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



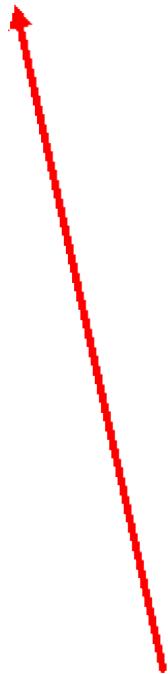


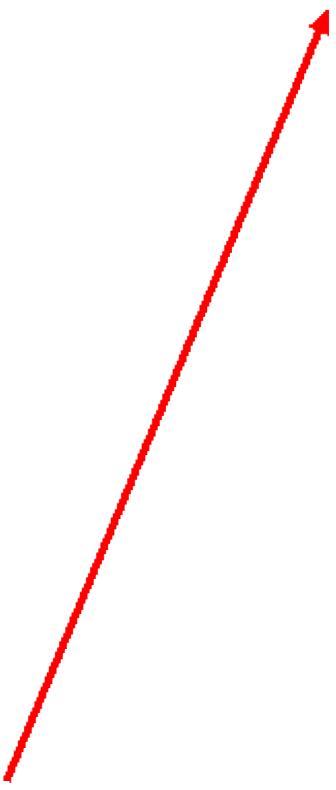
Replace way for filter element (S-LFR-FC-40U)

1. Take down the body by clockwise, remove the lock pin for replace the filter element.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





2. Reinstall the lock pin (counter clockwise for lock), reinstall the body by counterclockwise.

19) Maintenance of SMC Air Fitter

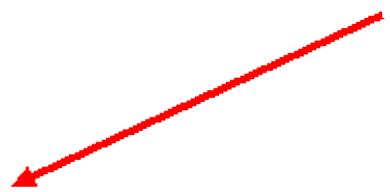
1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water air filter for oil is use for filter oil.
3. The water and oil will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE







UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Replace way for filter element (S-AF30P-060S0)

1. Pull down the lock, remover the filter body by clockwise or counterclockwise; remove the lock pin for replace the filter element.



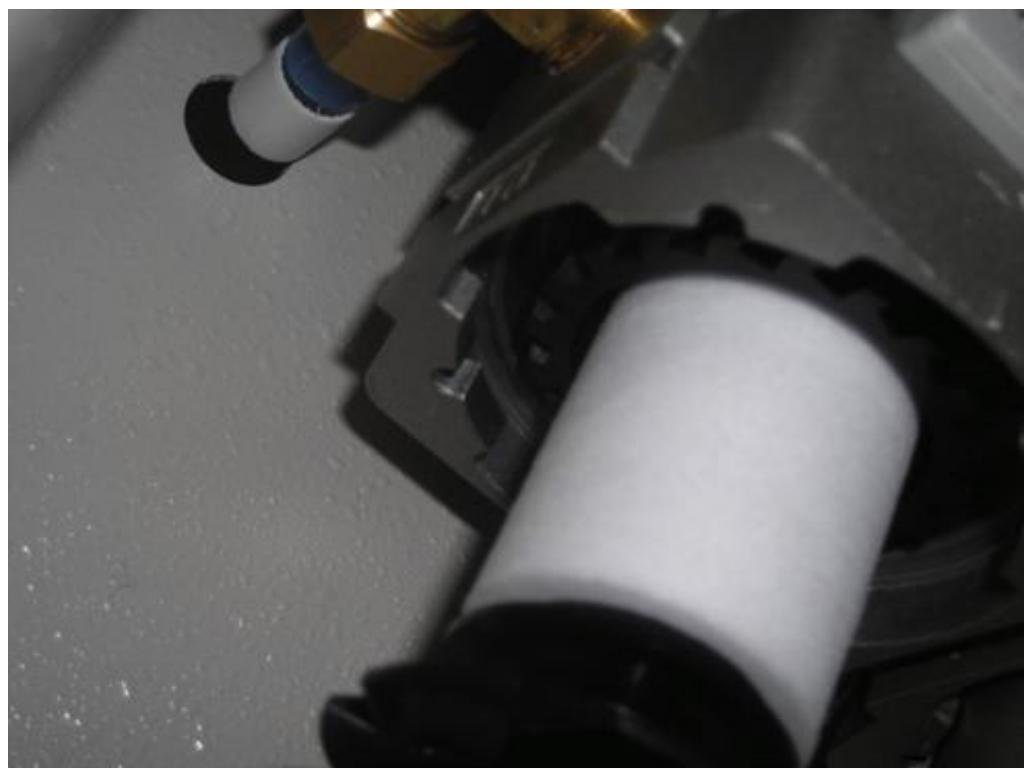


2. Reinstall the lock pin (counterclockwise for lock), and then reinstall the body (let the protruding arm at the concave, and then pull down the lock for install the body by clockwise or counter clockwise).

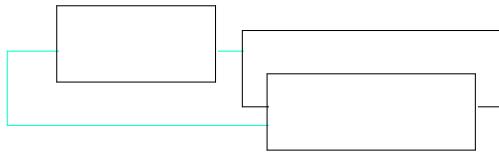
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



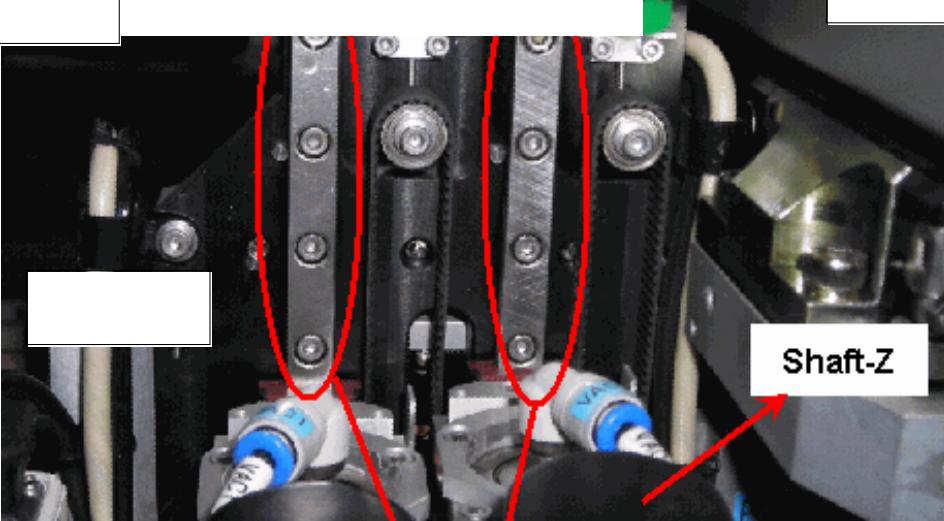
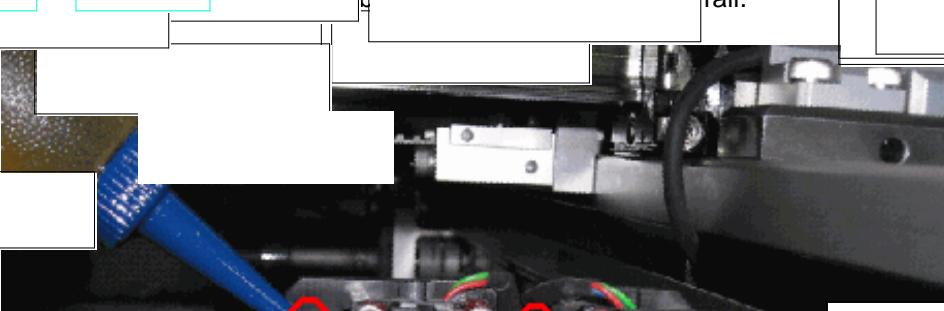


Necessity: oil(S-GREASE-RAIL)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA SOFTWARE



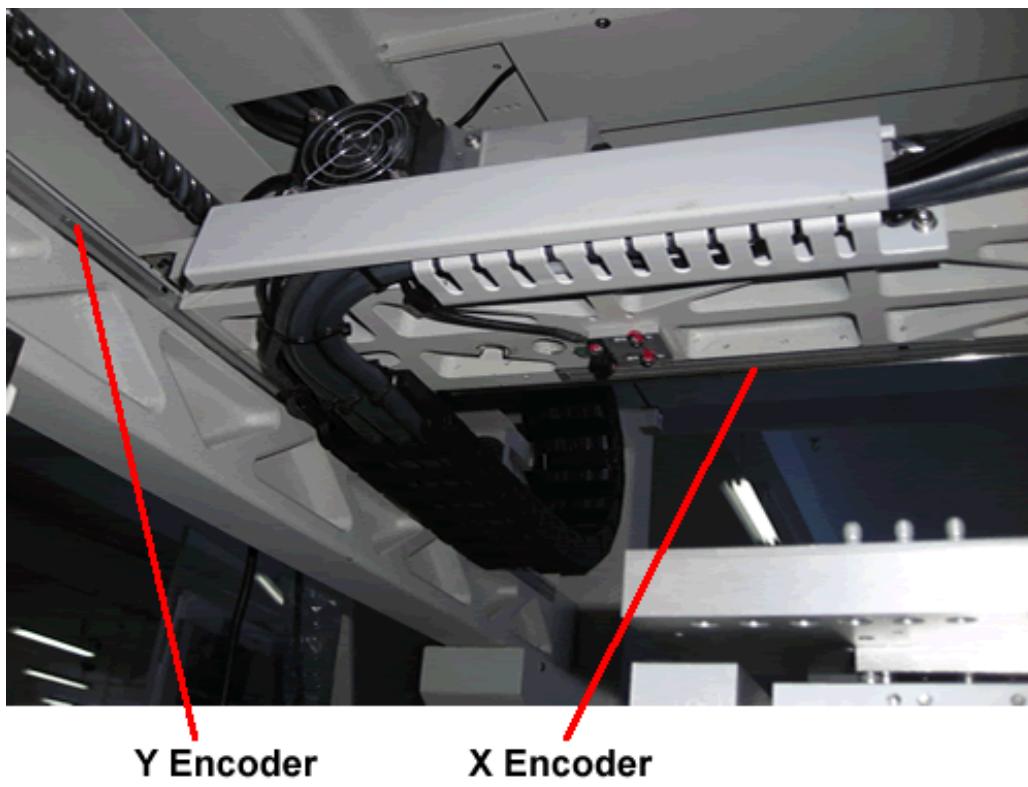
Guide rail of Shaft-Z (up/down) add oil

**Remark: Adds by drops the oil mass must be suitable, in order to avoid smears other parts**

Remark: V1 machine has one guide rail, V2 machine have two guide rails

2□ X-Y Encoder (every 3 month) (optional)

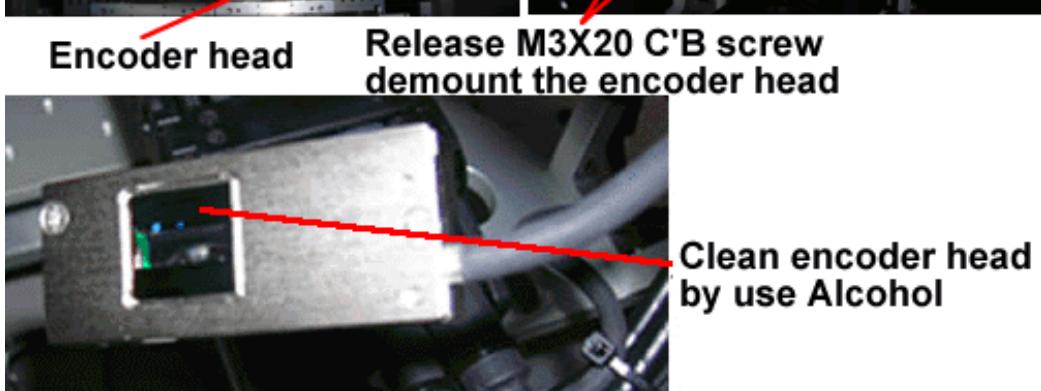
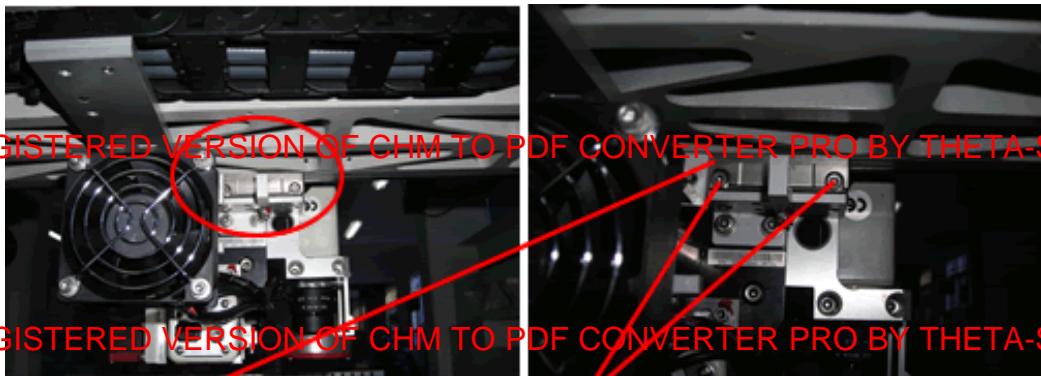
Necessity: Alcohol, clean soft & dry cloth and Dry Compressed Air



- Clean the encoder with dry cloth and alcohol completely.
- blow the encoder dry with Dry Compressed Air after cleaned

3□ Clean the X Encoder Head (optional)

Necessity: Hex Key, Alcohol

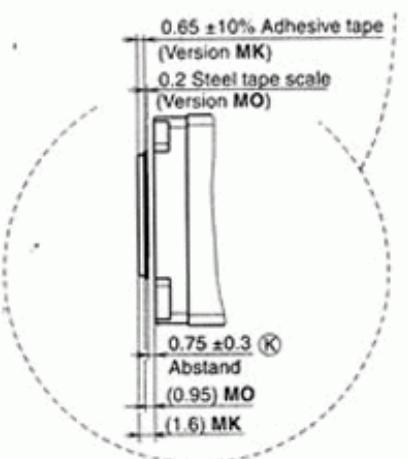


- 1) release the counter-bore screw for lock the encoder head
- 2) demount the encoder head
- 3) clean the encoder head by use Alcohol
- 4) Setup the encoder and encoder head, manual hold the encoder both sides and pull the encoder downwards when install the M3X20 C'B screw

#### Dimension notice

Use S-CAL-ENC-PP to calibrate the gap is  $0.75 \pm 0.3$

use calibraiton label to adjust the gap is  $0.75 \pm 0.3$

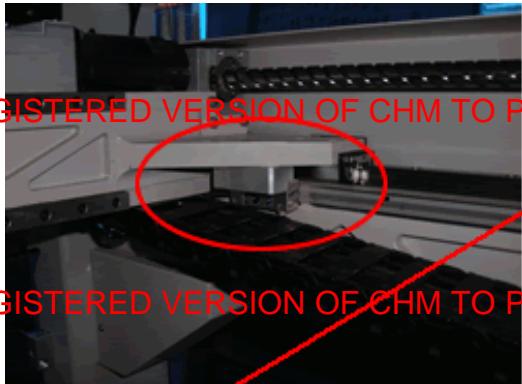


**Note: This clean is for Encoder head dust and must be clean, after clean, all about the data for Encoder will be change, and the calibration must operate by engineer**

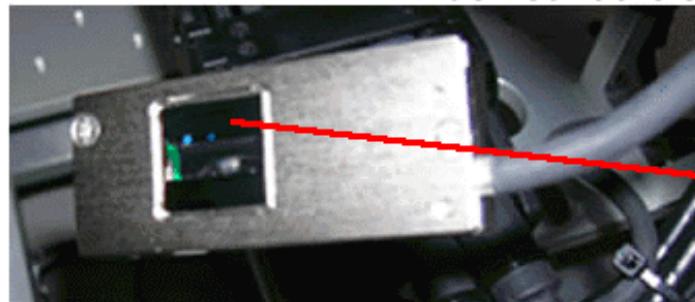
**If no necessary, don't do this operation!!**

4  Clean the Y Encoder Head (optional)

Necessity: Hex Key, Alcohol



**Release M3X25 C'B screw  
demount the encoder head**



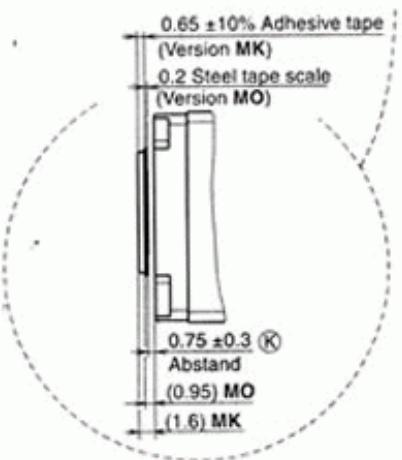
**Clean encoder  
head by use  
Alcohol**

- 1) release the counter-bore screw for lock the encoder head
- 2) demount the encoder head
- 3) clean the encoder head by use Alcohol
- 4) Setup the encoder and encoder head, manual hold the encoder upwards when install the M3X25 C'B screw

#### **Dimension notice**

Use S-CAL-ENC-PP to calibrate the gap is  $0.75\pm0.3$

use calbraiton label to adjust  
the gap is  $0.75 \pm 0.3$

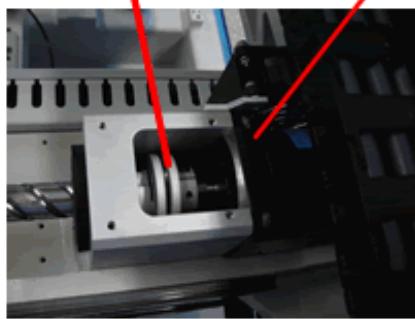
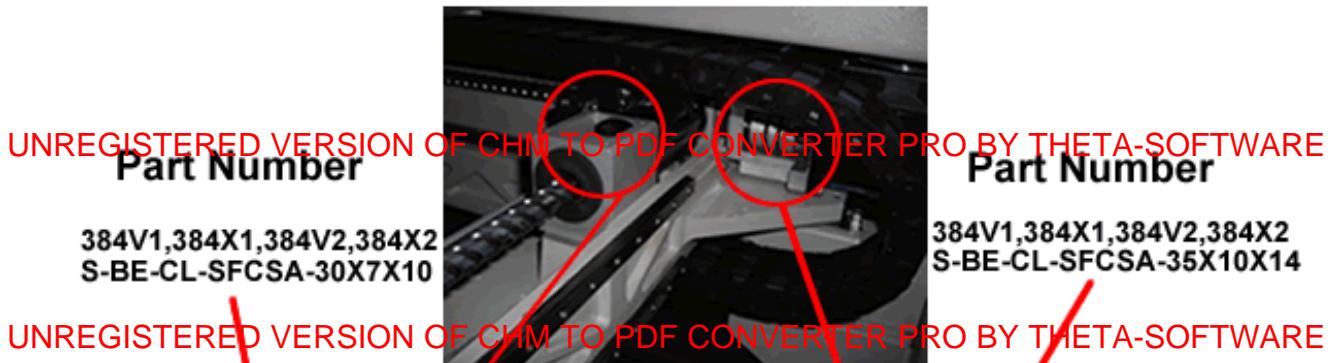


**Note: This clean is for Encoder head dust and must be clean, after clean, all about the data for Encoder will be change, and the calibration must operate by engineer**

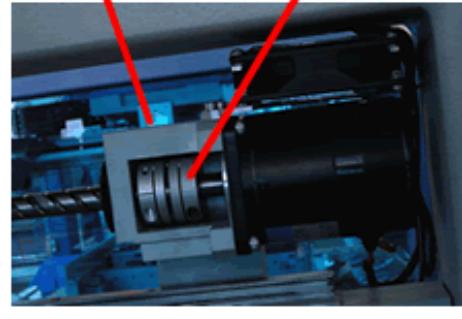
**If no necessary, don't do this operation!!**

5  Replace Motor Coupler

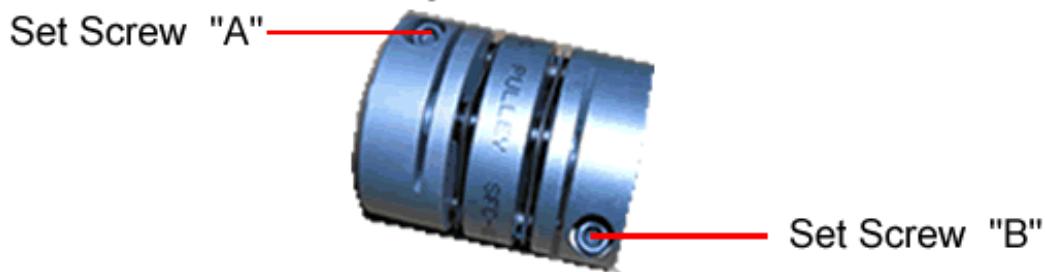
Necessity: Hex Key , Motor Coupler in same model



**X direction motor coupler**



**Y direction motor coupler**



- Unlock the Set Screw "A" and "B". ( not need to free)
- Release the four counter-bore that lock the motor, take out the motor with motor coupler
- Replace new motor coupler
- Locate the motor coupler in the middle of motor axis and ball screw axis, that means motor axis and ball

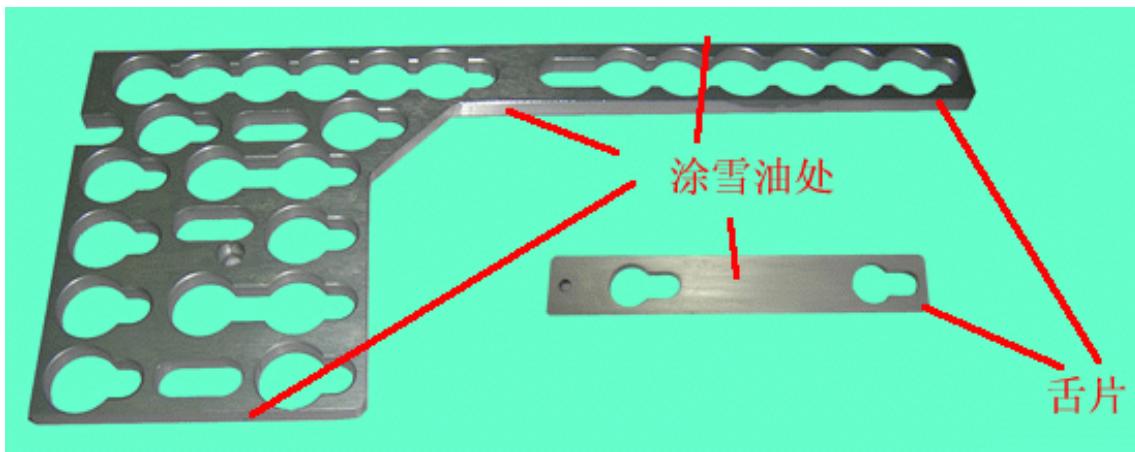
- screw axis insert the same distance for motor coupler
- Lock the Set Screw "A" and "B" tightly

6□ Auto Change Head (every 3 month)

Necessity: Hex Key, Cross Head Screw Driver, Special Grease and Cotton Bud



- In software - please click "Head change Unit" button in Utility Menu - Machine Diagnostic and make the unit raised, then remove all nozzles on the unit by hand.
- Release six screws by cross head screw driver.
- Take out the cover from the unit, release screw A,B
- Take out the Tongue Piece and add little special grease on it. Please see below:



According to the above mentioned steps in inverse:

Adjust the location of Moveable Piece when the unit raise and the top of Tongue Piece open, enable the Holes of Nozzle and Bottom Mounting are completely overlapped (Please see below). Then put the cover back.



吸嘴孔与底座中的孔应完全重合

7  X Guide rail (every day)

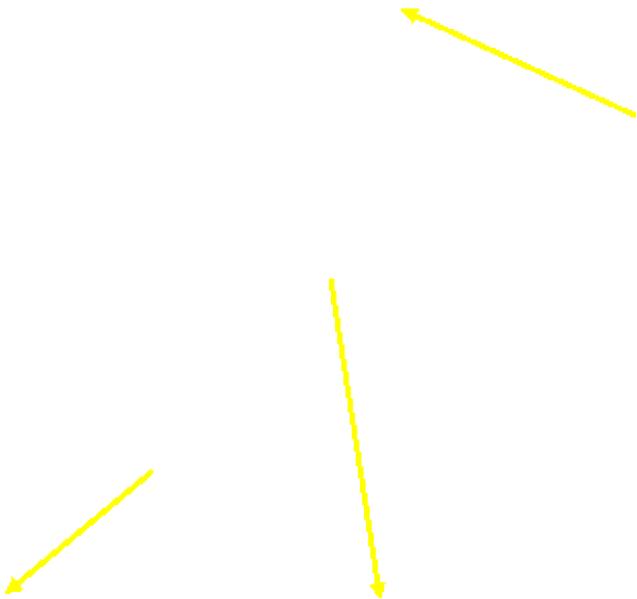
Necessity: Oil (S-GREASE-RAIL) and clean, soft & dry cloth

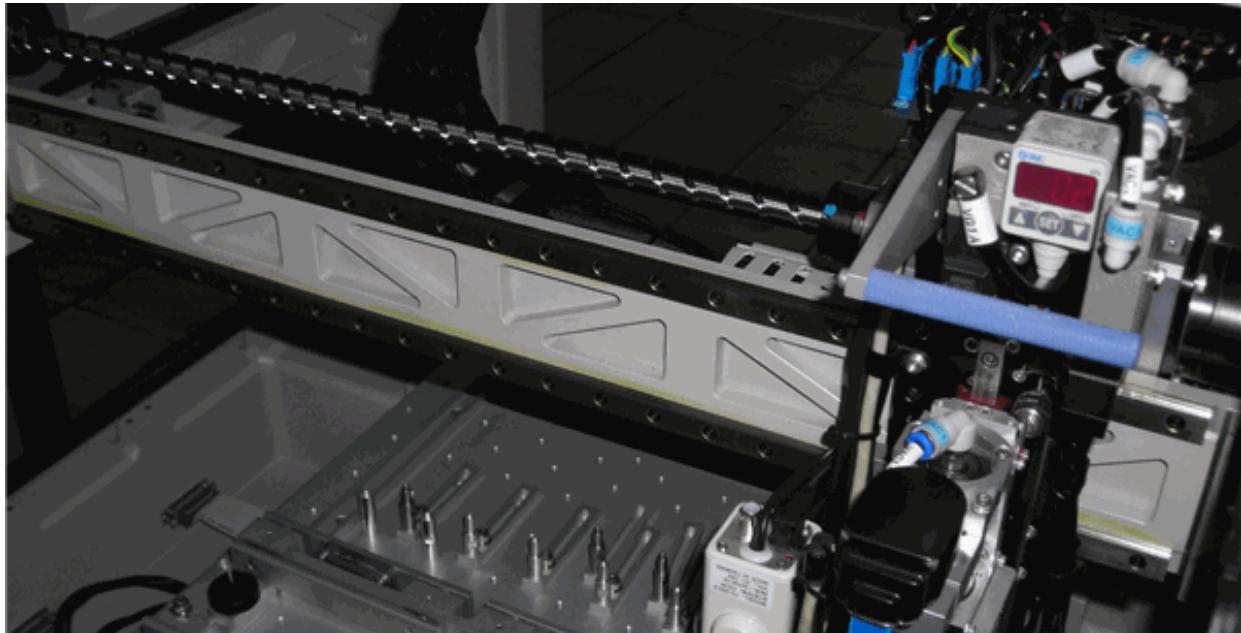


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

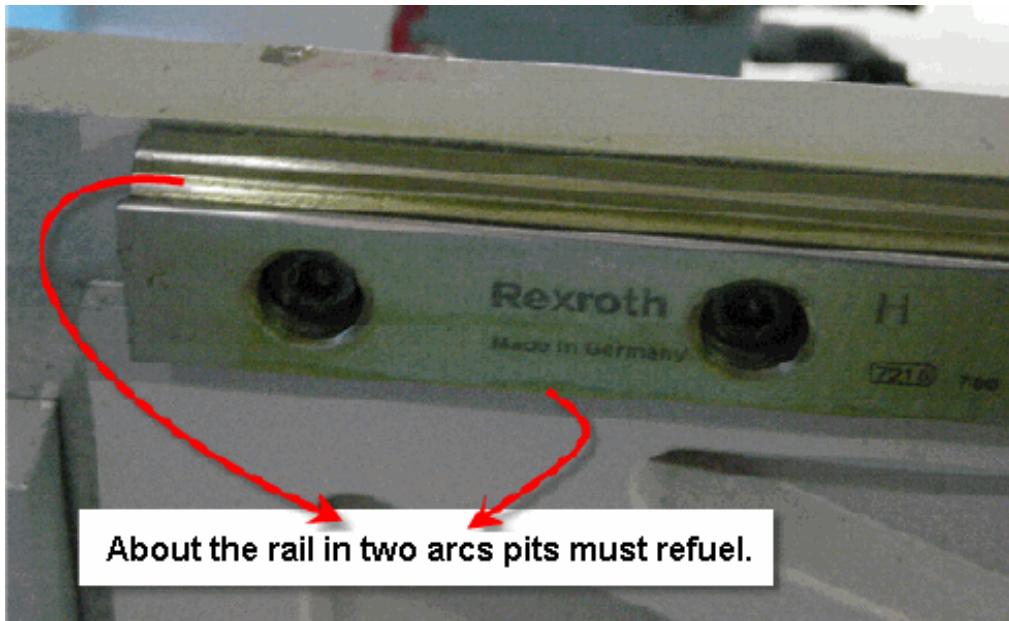
S-GREASE-RAIL

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





- A. Wipe off the old oil from the guide rail with a clean & soft cloth
- B. Move shaft-Z to the right, Add little oil inside around the guide rail (use Cotton Bud and dry cloth if necessary)
- C. About the rail in two arcs pits must refuel.



Remark: Oil cannot be added too much to avoid dripping, just ensure 2 arcs pits have enough oil is okay

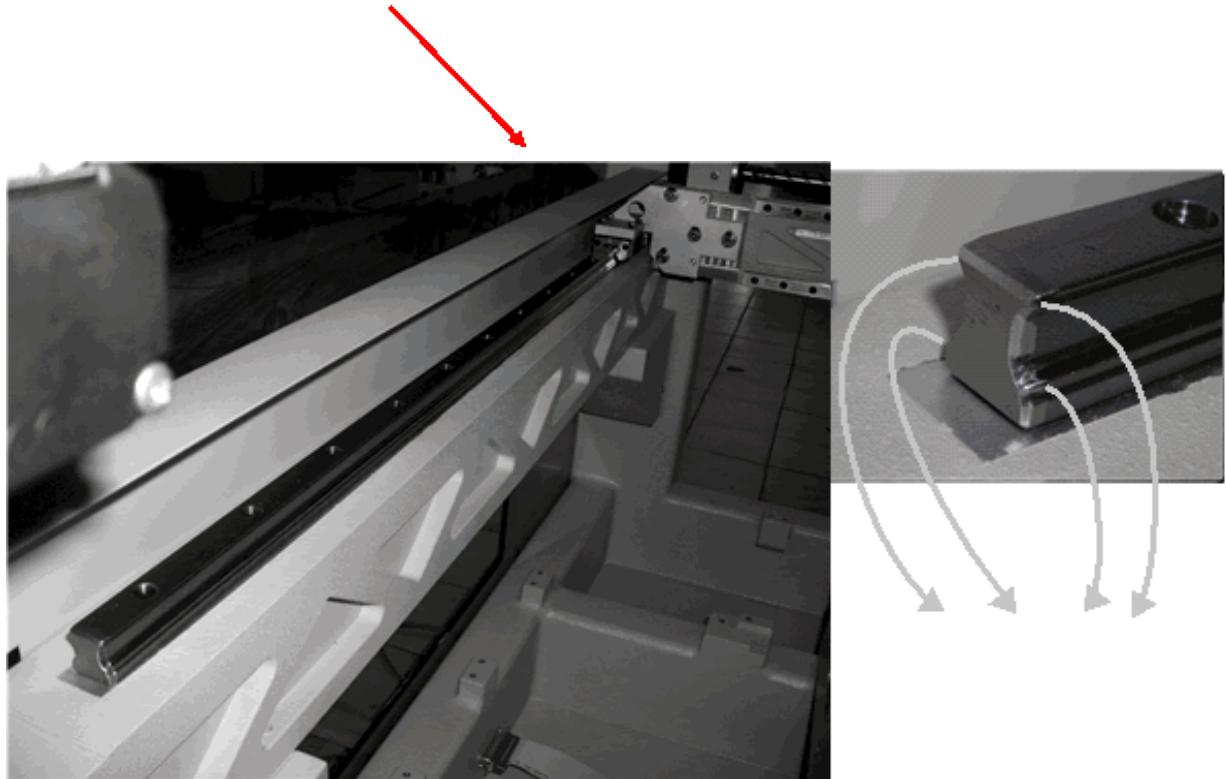
8□ Y Guide rail (every day)

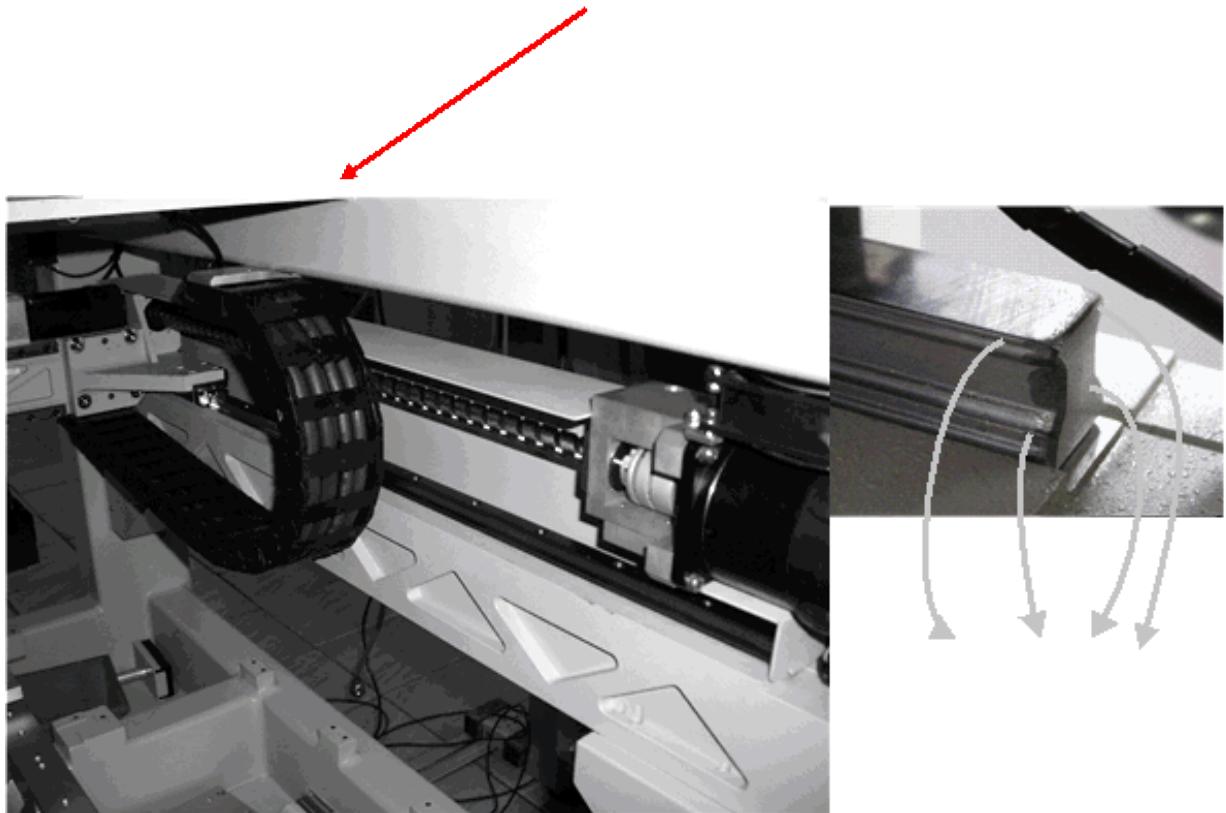
Necessity: Oil (S-GREASE-RAIL) and clean, soft & dry cloth



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE  
S-GREASE-RAIL

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





- A. Wipe off the old oil from the guide rail with a clean & soft cloth
- B. Move shaft-Z to the right, Add little oil inside around the guide rail (use Cotton Bud and dry cloth if necessary)
- C. About the rail in two arcs pits of both sides must refuel.

**Remark:** Oil cannot be added too much to avoid dripping, just ensure 4 arcs pits have enough oil is okay

9  Runner block  every 3 months

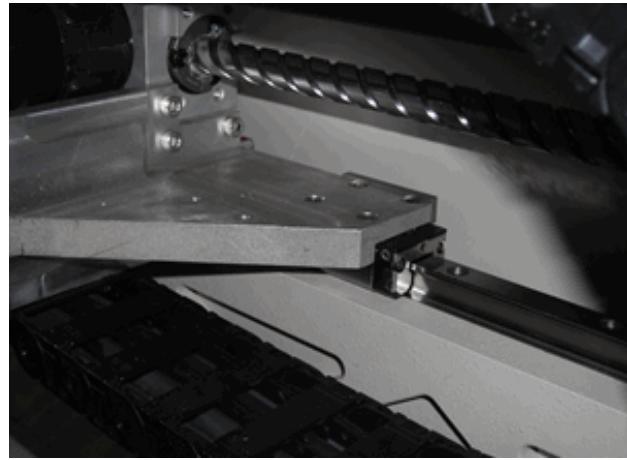
Necessity: Syringe with Special Grease (S-GREASE-BS), Hex Key, Link-Free Paper(S-LF-PAPER)



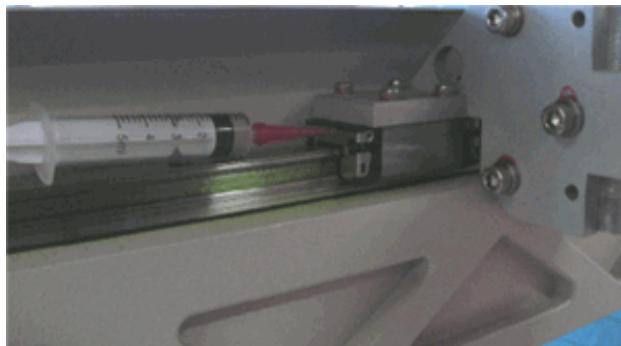
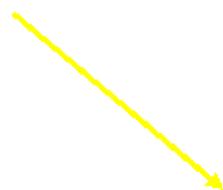
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

A. Move X axis to a position that can operation, use hex key to release the M3 screw





- B. Squash the special Grease into the runner block until the special grease overflow  
C. Clean the grease by Link-Free Paper, tighten the M3 screw, and about moves X axis to cause the guide rail refuel  
D. Repeat for add the other runner block, for in connection with two runner block, only add grease in both sides of them



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

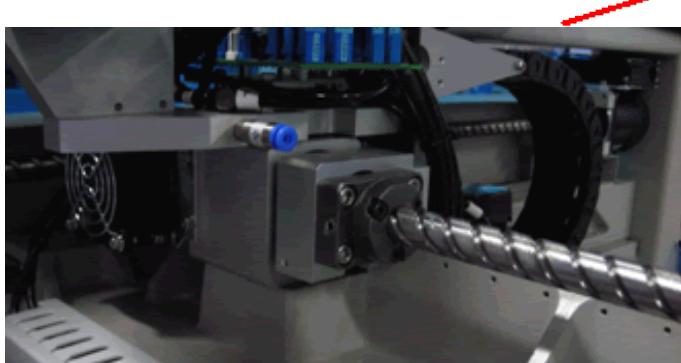


10  Ball Screw  every 3 months

Necessity:



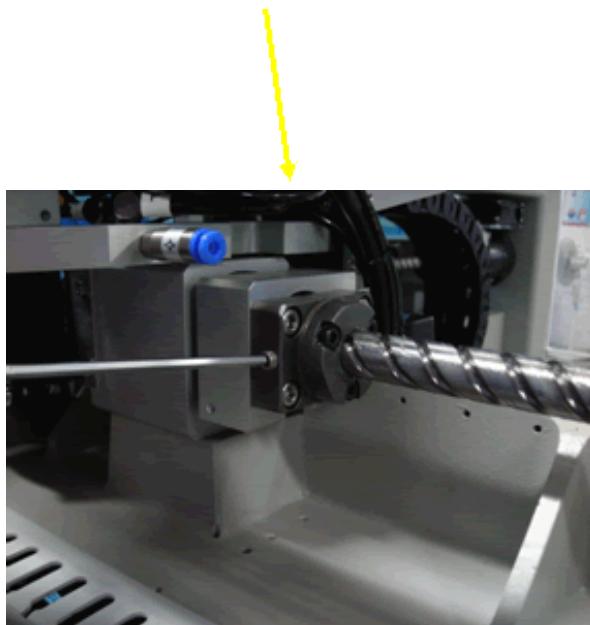
- a. Wipe off the old oil from the ball screw with Link-Free Paper
- b. For X ball screw, remove the M6 No head screw by hex key, turn Shaft-Z to the left



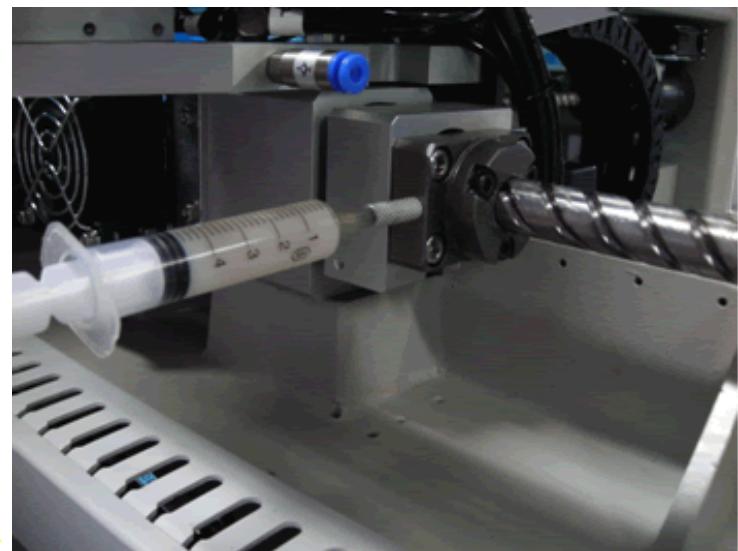
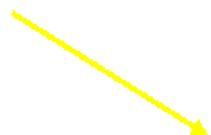
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



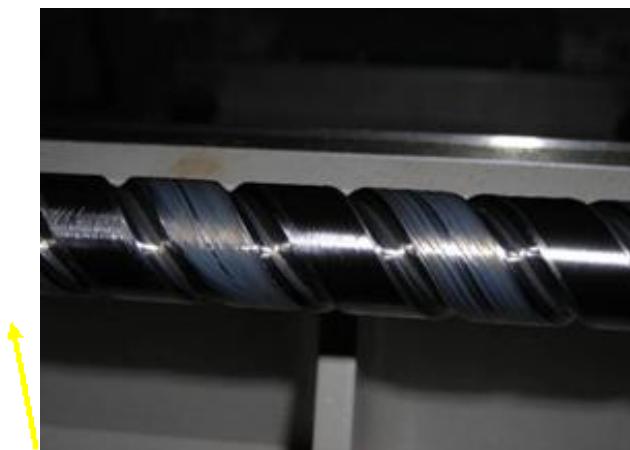
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- c. Manual install the ZB153 to the original location of M6 No head screw and tighten, let S-GREASE-BS-J insert into ZB153, squashing the syringe and moving the shaft-Z at the same time



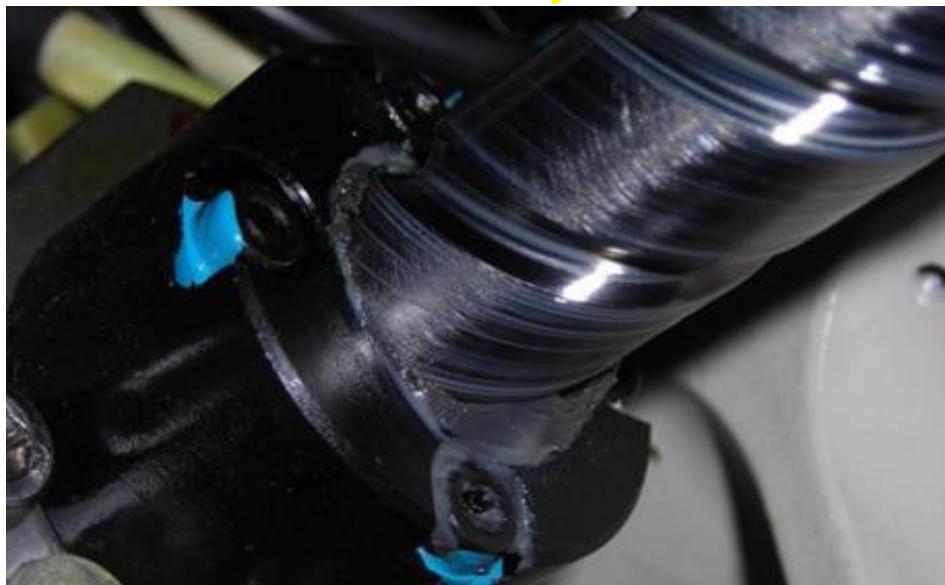
- d. If feel the grease excessive, please use some S-LF-PAPER lightly close the ball screw by hand, and then turn around the shaft-Z for clean.



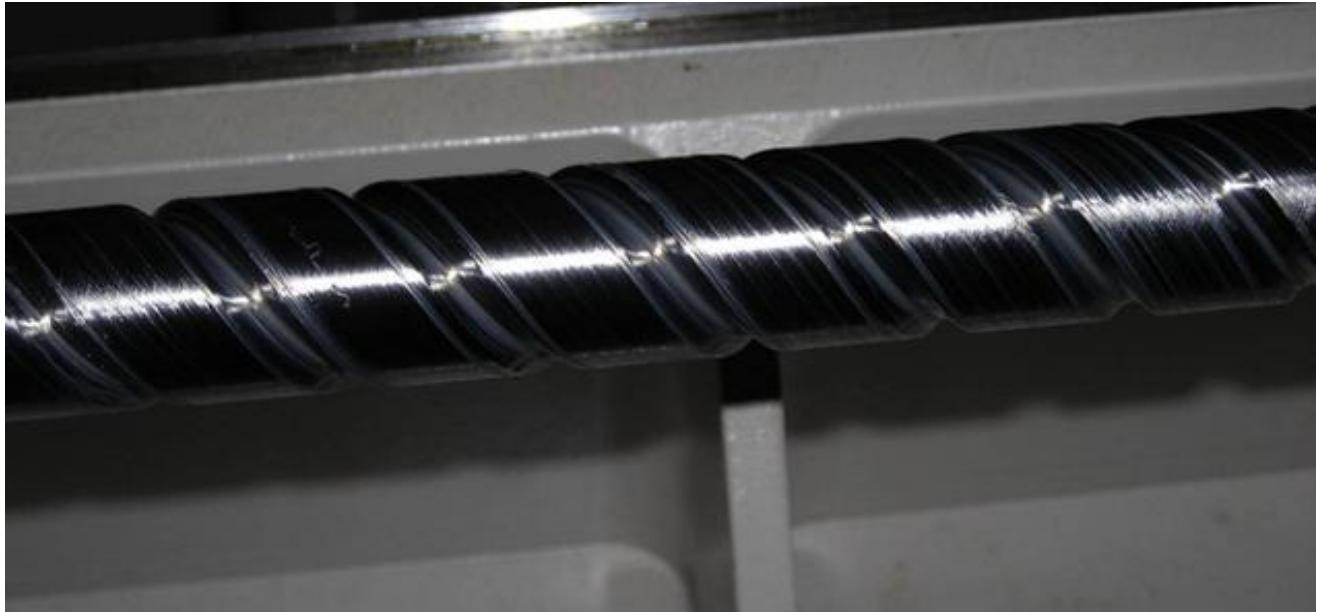
- e. If the nut of ball screw has some special Grease overflow, please clean also.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

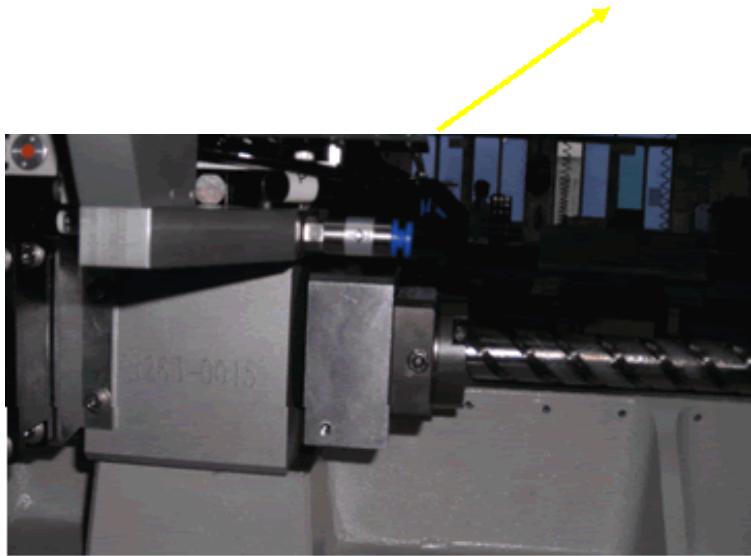
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



f. The best is only a little grease around the ball screw



g. Pull out the S-GREASE-BS-J and take out the ZB153, reinstall the M6 No head screw,



h. For Y ball screw, turn X axis to a position that can operation, remove the M6 No head screw by hex key,

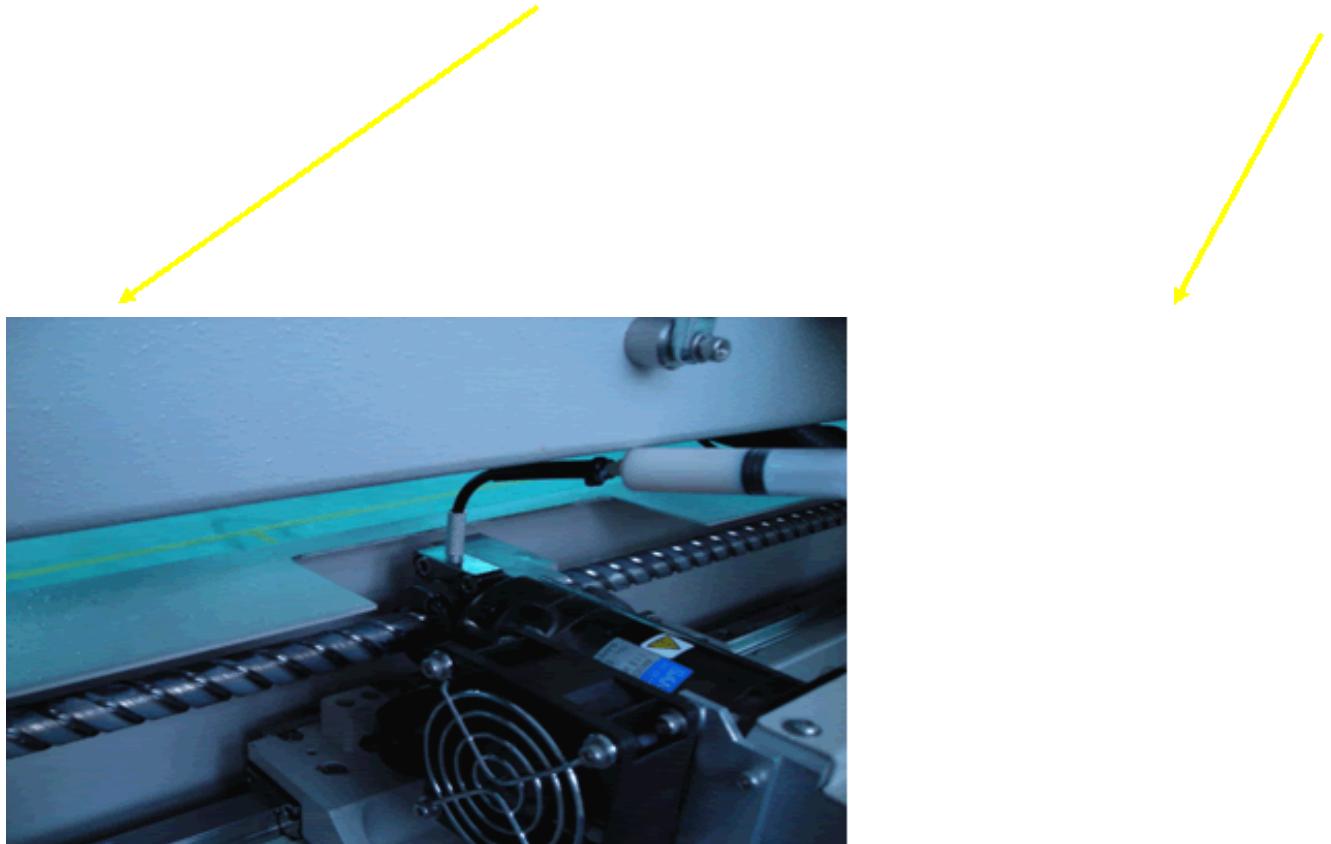
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



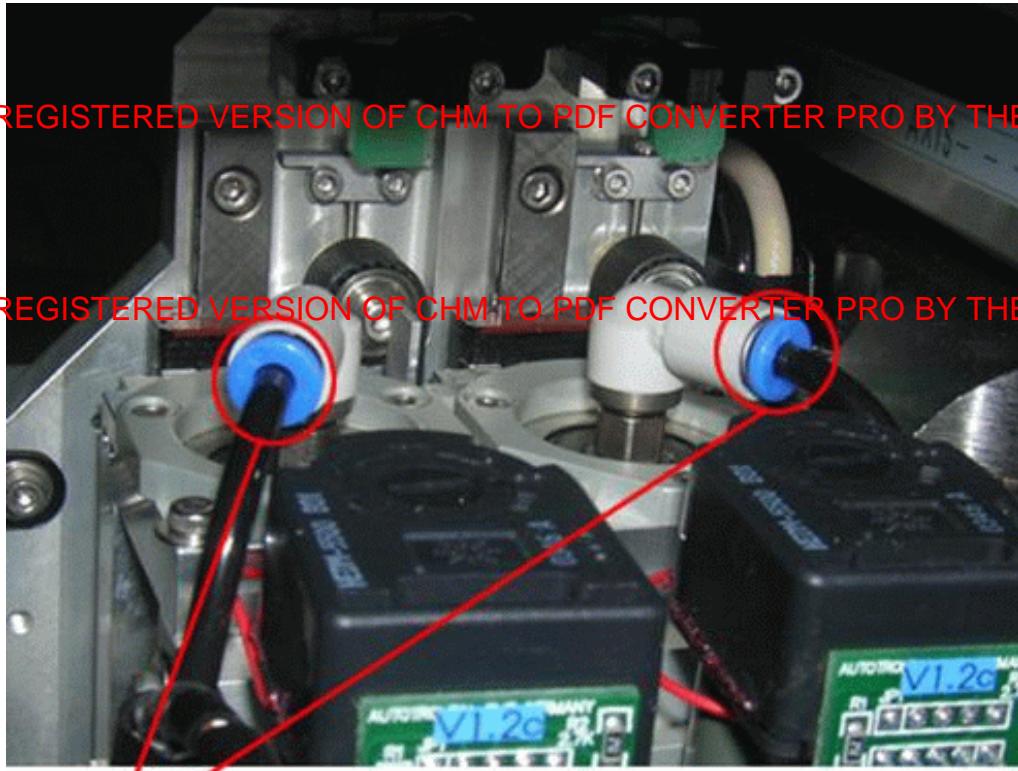
- i. Manual install the ZB153 to the original location of M6 No head screw and tighten, let S-GREASE-BS-J insert into ZB153 by a gas tube(SRW123), squashing the syringe, and then remove the S-GREASE-BS-J and gas tube(SRW123), turn around the X axis let the grease even



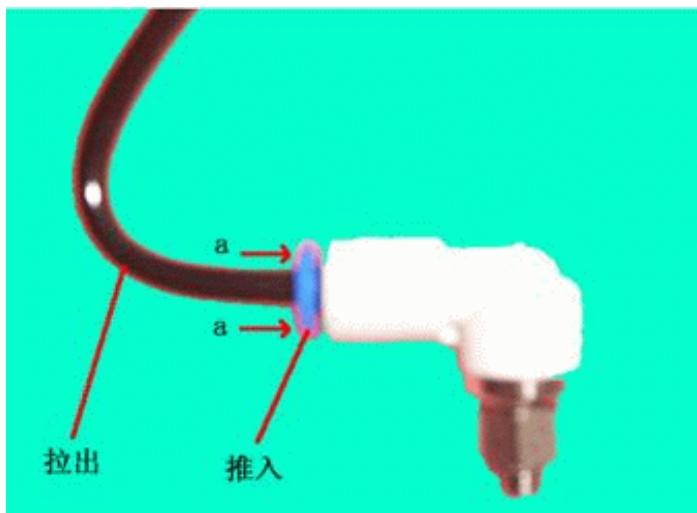
- j. If feel the grease excessive, please use some S-LF-PAPER lightly close the ball screw by hand, and then turn around the X axis for clean. (please refer e)
- k. The best is only a little grease around the ball screw (please refer f)
- l. reinstall the M6 No head screw

11□ Cleaning Z – Shaft (every three month)

Necessity: Dry Compressed Air



拔出气喉, 对此孔吹气



- Push the blue piece that connected the nozzle and hose (diagram 'a' shown), and pull out the black hose at the same time
- Blow in air into the hole of Z-Shaft by Dry Compressed Air, and spout all the dust, solder paste and dirt

- Put back the black hose into the nozzle

12□ Replace Nozzle plastic seal (every six month)

Necessity: New Nozzle plastic seal (S-NZ-PS01)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

塑胶密封圈

Tear off the broken Nozzle plastic seal. Please wipe off all the dirt with alcohol and put the new one on it.

### 13 Camera-1 Offset (Software Calibration)

This is to calibrate the offset between Camera-1 & the Z-axis. This offset is a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed
- Camera-1 focus changed
- Component placement not accurate

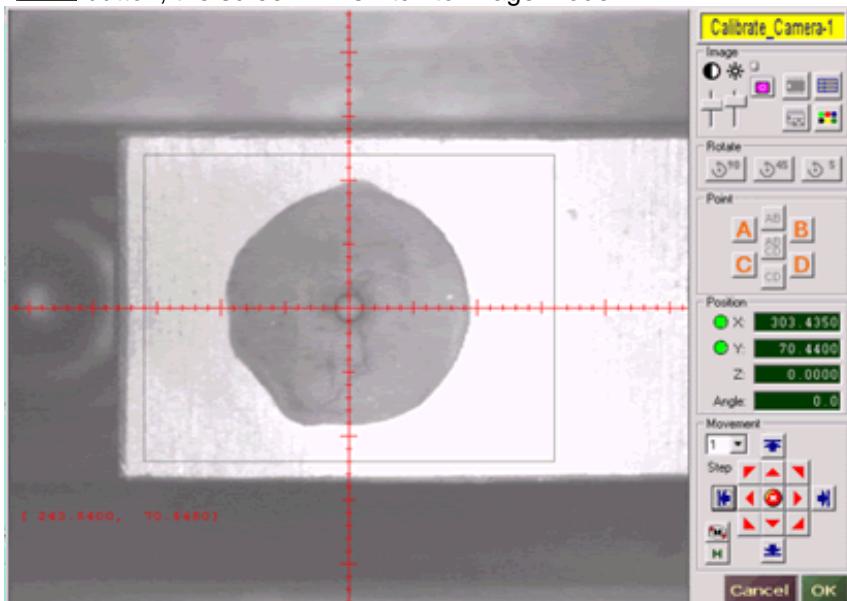
#### 1st step is to calibrate the Z-axis position:

You need to prepare a flat **Blue Tape** on the corner of the Alignment-B, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



#### 2nd step is to calibrate the Camera-1 position:

Click **OK** button, the screen will switch to image mode



Adjust the cross mark to the corner of the hole and click **OK** button.

The machine will auto remove nozzle #1 and the complete the **Calibrate Camera-1 Offset** procedure.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 14□ Vacuum - sensor (Software Calibration)

This is auto detect each nozzle's vacuum sensor Analog Reading. Please choose CALIBRATE MENU - Nozzle Parameters from the software, then the below frame will be shown:

Nozzle Parameter Setting		WHITE NOZZLE		BLACK NOZZLE		Alignment-G/H (Nozzle 7)					
HEAD 1		Length		Vacuum Sensor Analog Reading		Nozzle Change Location					
Nozzle 1 (0.7mm)	6.00	OPEN	217.6	CLOSE	236.9	Learn	X 181.1750	Y 79.3400	Camera	Manual	Test
Nozzle 2 (1.2mm)	6.00	OPEN	187.9	CLOSE	237.4	Learn	X 161.0970	Y 79.4600	Camera	Manual	Test
Nozzle 3 (2.0mm)	5.00	OPEN	111.2	CLOSE	235.6	Learn	X 101.0730	Y 79.5350	Camera	Manual	Test
Nozzle 4	6.00	OPEN	85.1	CLOSE	84.9	Learn	X 81.0650	Y 79.5600	Camera	Manual	Test
Nozzle 5 (4.7mm)	4.50	OPEN	101.4	CLOSE	232.4	Learn	X 191.1265	Y 93.4281	Camera	Manual	Test
HEAD 2		Length		OPEN	CLOSE	X 181.0890	Y 79.5000	Camera	Manual	Test	
Nozzle 1 (0.7mm)	6.00	OPEN	214.2	CLOSE	237.6	Learn	X 161.0810	Y 79.5250	Camera	Manual	Test
Nozzle 2 (1.2mm)	6.00	OPEN	178.5	CLOSE	240.9	Learn	X 101.0570	Y 79.6000	Camera	Manual	Test
Nozzle 3 (2.0mm)	5.00	OPEN	114.9	CLOSE	238.1	Learn	X 81.0490	Y 79.6250	Camera	Manual	Test
Nozzle 4	6.00	OPEN	231.5	CLOSE	237.2	Learn	X 191.1105	Y 93.4931	Camera	Manual	Test
Nozzle 5 (4.7mm)	4.50	OPEN	106.1	CLOSE	230.7	Learn					
				Manual Nozzle Change Location		87.7650	263.9600	Manual	Test		
				Waste Component Location		87.7650	263.9600	Manual	Test		
				DP2-2s/MP2-2s Standby Location		50.0000	50.0000	Manual	Test		
				<input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading							
				Z axis Position	68.92	mm	Manual				
				X-Y Location	201.0150	77.4000					
		<input type="button" value="EXIT"/>									

### Manual Calibrate

For example: click **Learn** button from the Nozzle 1 and Vacuum Sensor Analog Reading, then the machine will auto install Nozzle 1 and below frame will be shown:

Auto Learn Vacuum Sensor Analog Reading		
Open Reading :	219.1	<input type="button" value="Learn"/>
Close Reading :	235.5	<input type="button" value="Learn"/>
Close Reading : Please use your finger to clog the nozzle, that is to simulate a component is pick up.		
<input type="button" value="Cancel"/>	<input type="button" value="OK"/>	

Firstly, detect the reading with no component, click **Learn** button, start vacuum and show the detected reading in 'open reading'.

After that, please use your finger to clog the nozzle, that is to simulate a component is pick up, then click the second **Learn** button, the vacuum will on again and show the detected reading in 'close reading'.

OK

Finally click OK button to save and exit.  
Do the above mentioned detect for all nozzles in sequence.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

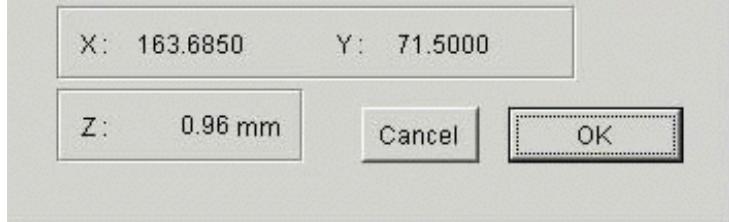
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Automatic Calibrate

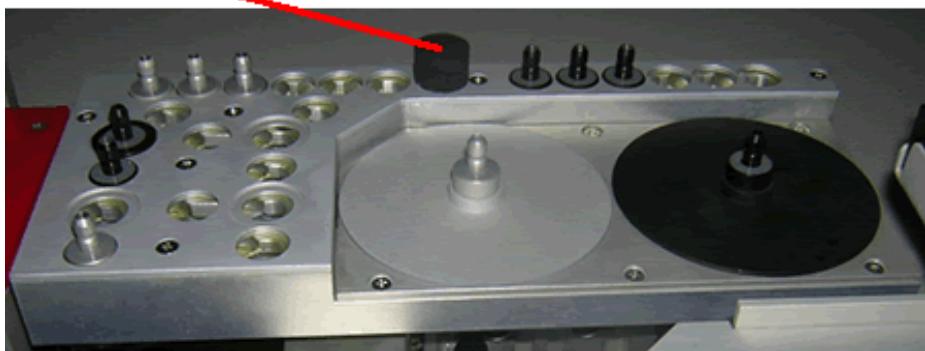
(1) Enable Auto Learn Vacuum Sensor Analog Reading, click **Manual** button, manually move X-Y axis and move down Z-axis to the rubber pad by hand, this is for confirm the calibrate location.

### Manual Learn Vacuum Reading Location

**Please manually move X-Y axis and move down Z-axis  
to the rubber pad by hand and then click <OK>**  
(Don't release move down Z-axis before click <OK>)



黑胶



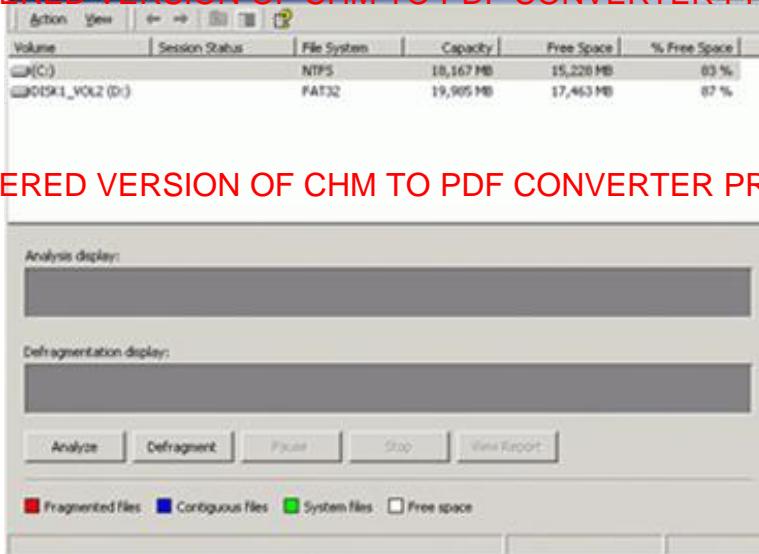
(2) Click **ALL Vacuum Reading** button, machine will start to detect the reading with no component, and auto move to the rubber pad to detect the reading that is to simulate a component is pick up, and then software will auto detect the nozzle

## 15 Disk Defragmenter

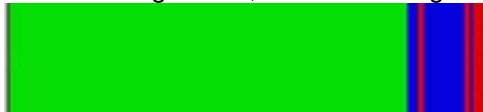
Select Start - Program - Accessories - System Tools - Disk Defragmenter to do disk defragmenter

Click **Analyze** for analyze, after finished please click **Defragment** for defragmenter

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**



Before defragmenter, red means fragmented files



After defragmenter



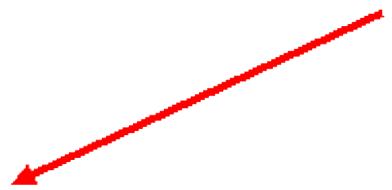
16□ Maintenance of SMC Air Fitter

1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water air filter for oil is use for filter oil.
3. The water and oil will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





Replace way for filter element (S-AF30P-060S0)

1. Pull down the lock, remover the filter body by clockwise or counterclockwise; remove the lock pin for replace the filter element.

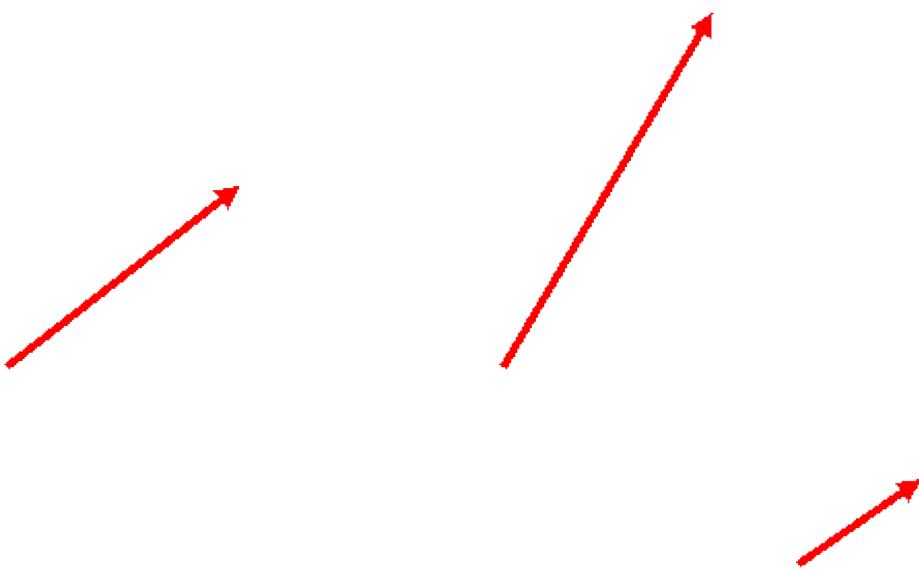


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

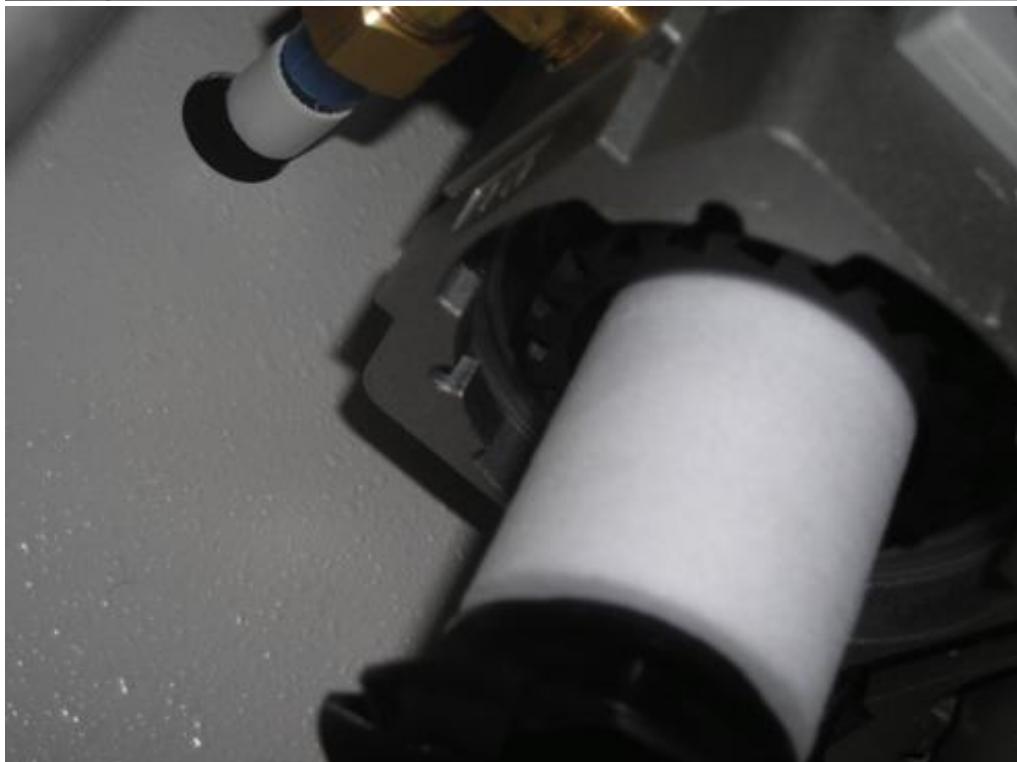
2. Reinstall the lock pin (counterclockwise for lock), and then reinstall the body (let the protruding arm at the concave, and then pull down the lock for install the body by clockwise or counter clockwise.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

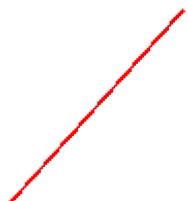


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



17  Conveyor Table Up/Down bearing (every 6 months)

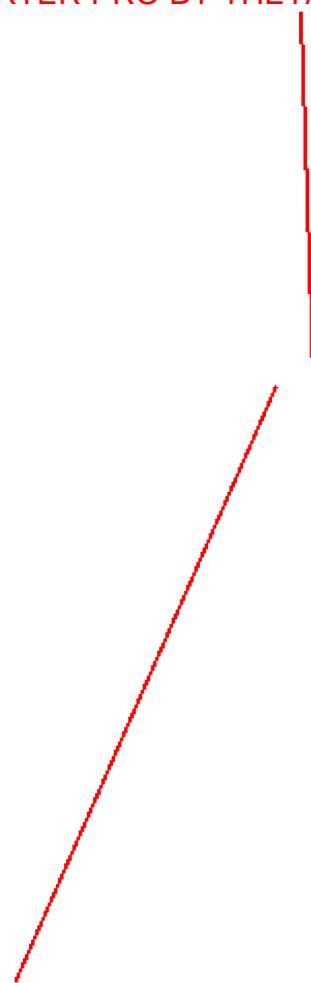
Necessity: Grease, Oil (S-GREASE-RAIL) and Cotton Bud



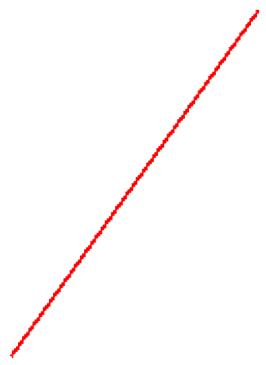
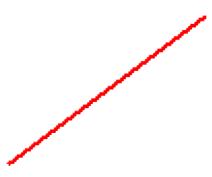


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



□fig 1 □



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



□fig 2 □



□fig 3 □

Æ Take out the conveyor.

Æ Take out the aluminum board upward carefully.

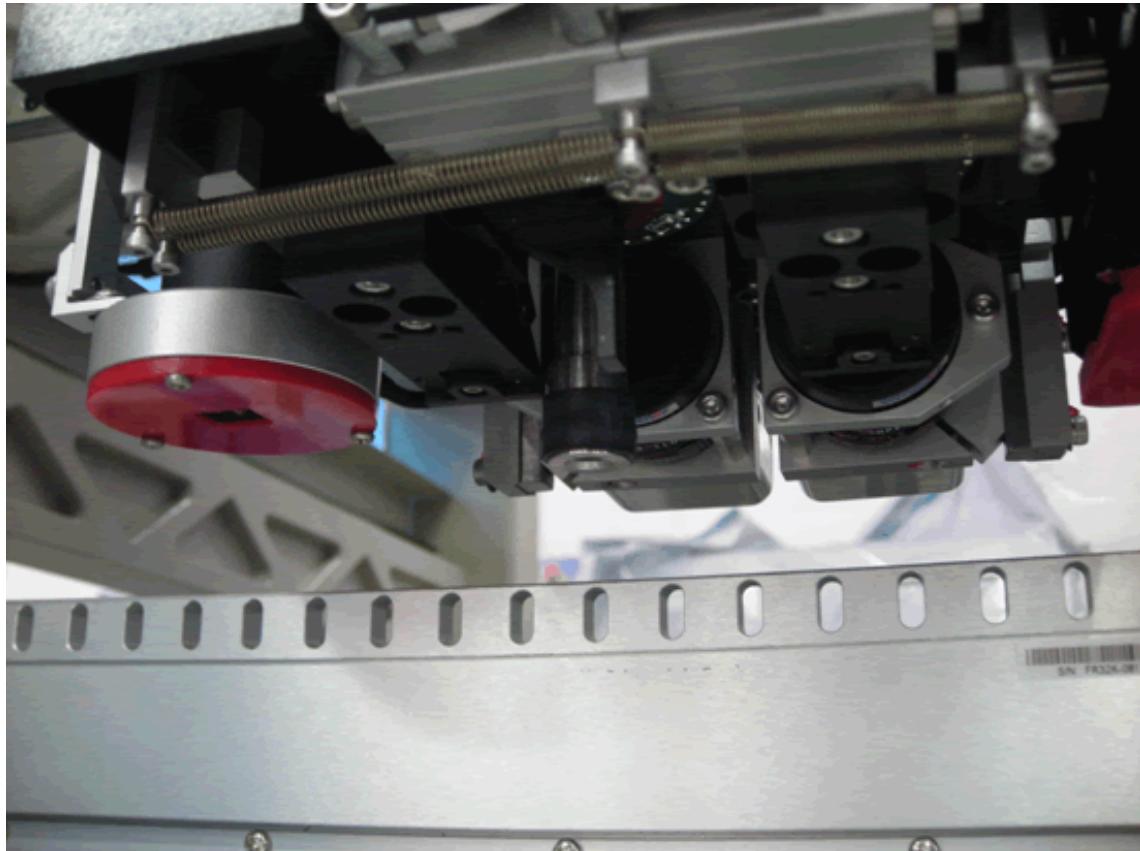
Æ Add grease on bearing, add oil on guide rail.

According to the above mentioned steps in inverse, don't reverse the aluminum board of conveyor Table when put back.

1. Pull down the shaft-Z

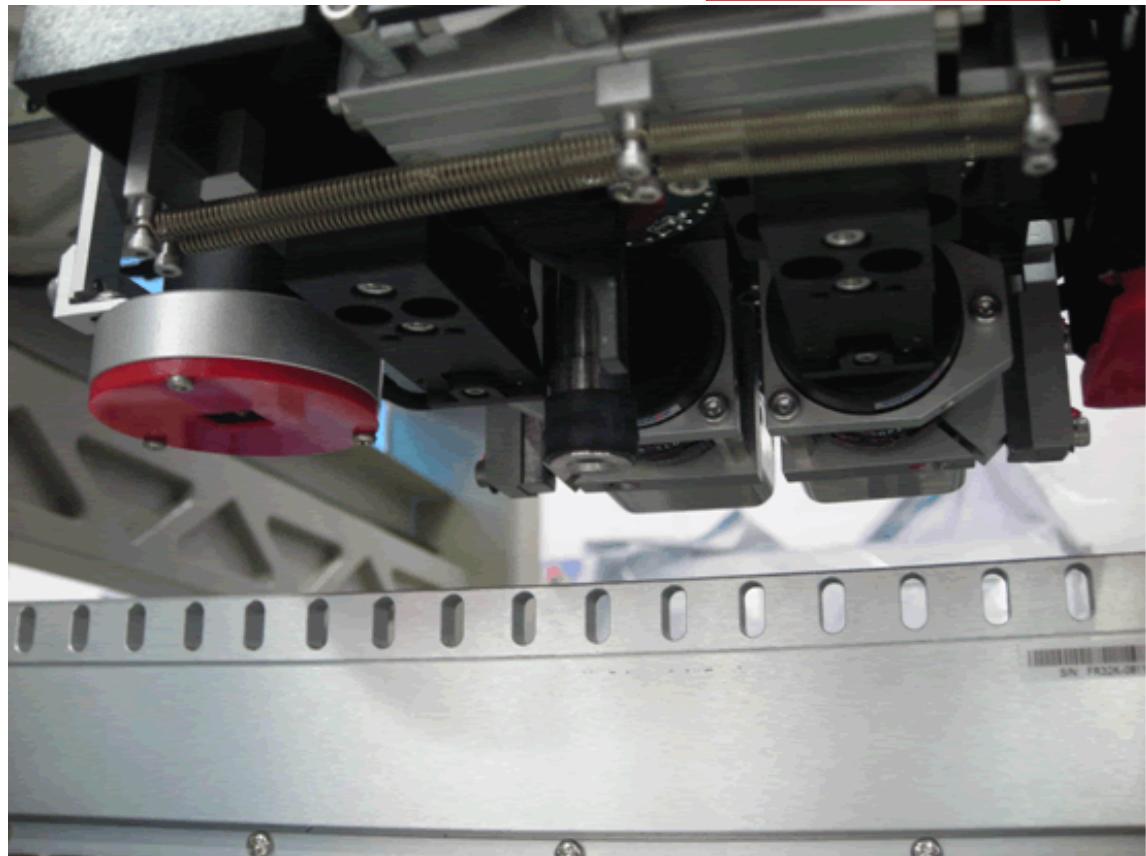
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



2. Take out the rubber ring (S-TU-Z-AXIS-10X8)

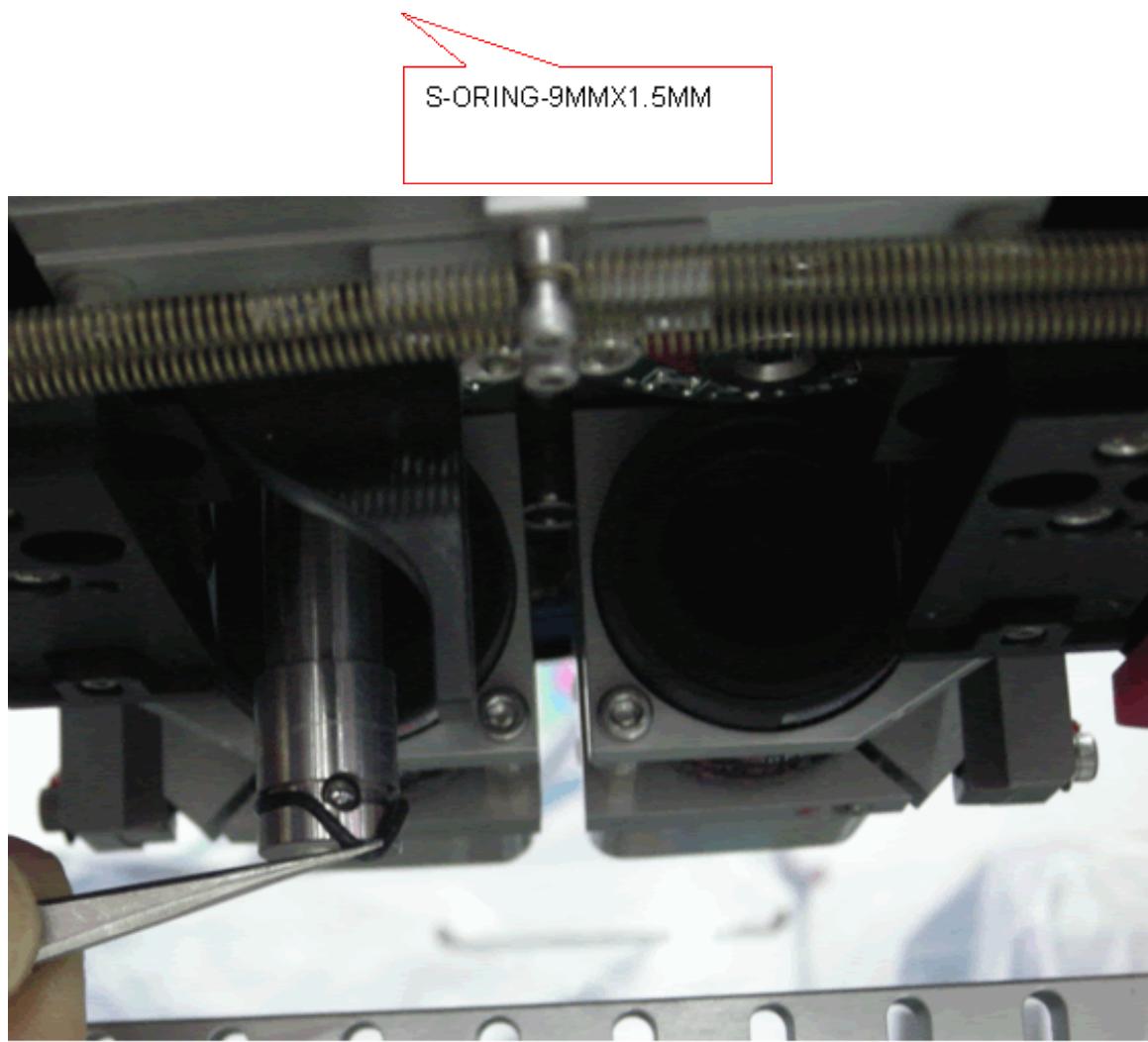
S-TU-Z-AXIS-10X8



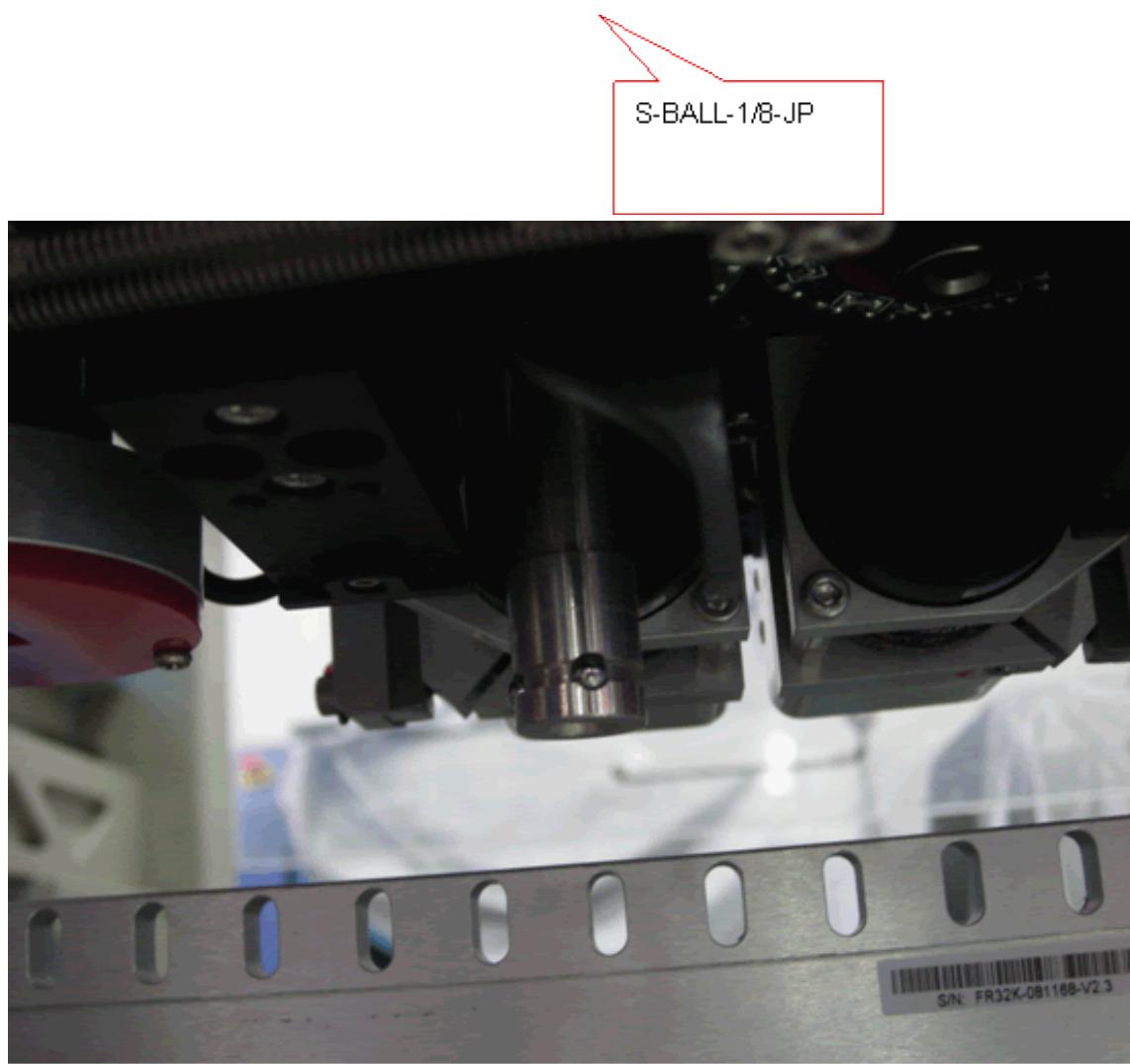
3. Use nipper to take out the O-ring (S-ORING-9MMX1.5MM)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

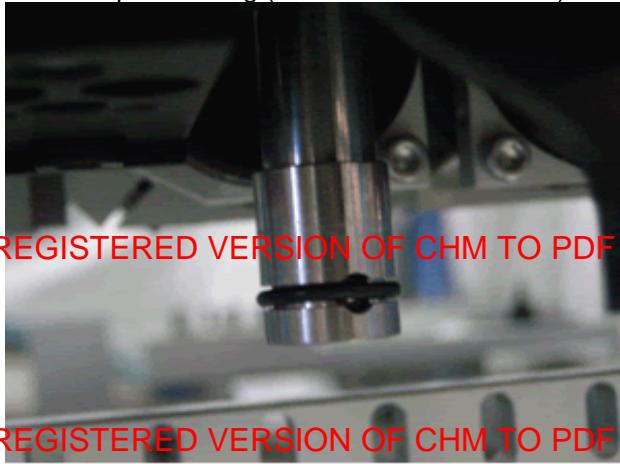
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



4. Replace the roll ball (S-BALL-1/8-JP)



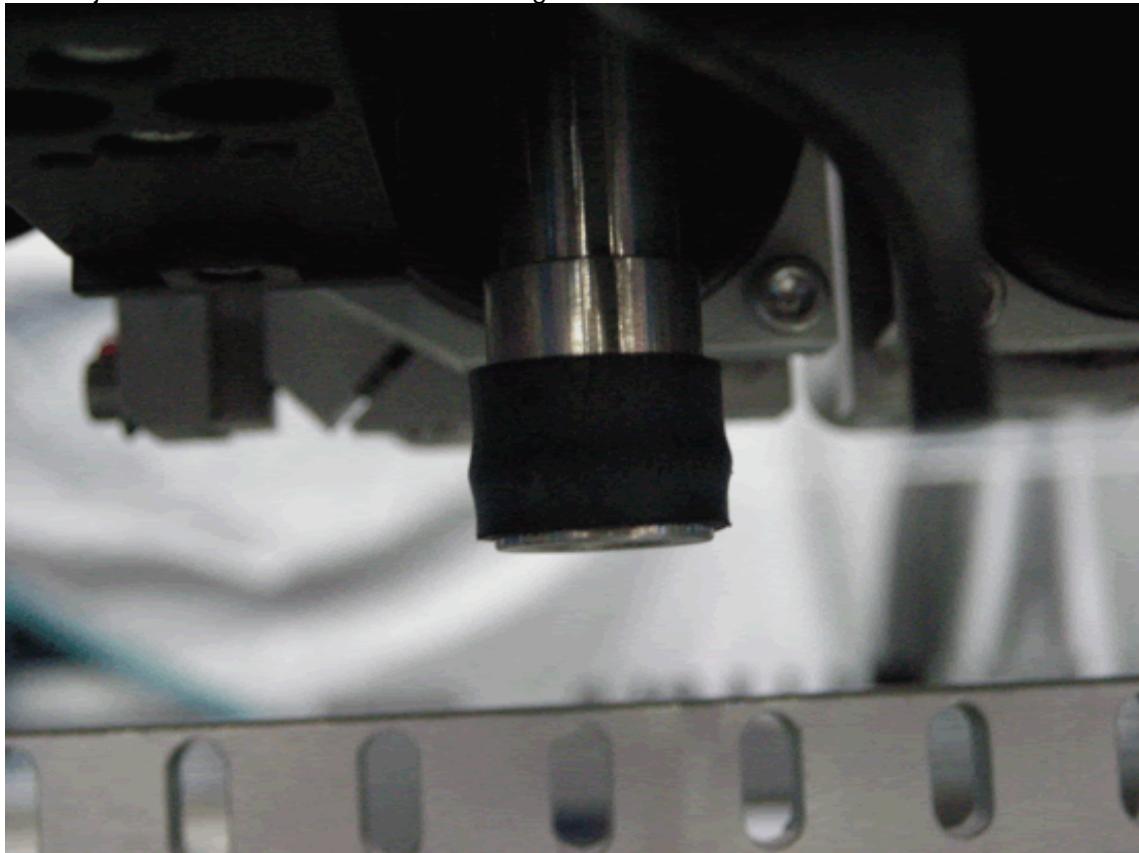
5. Setup the O-ring (S-ORING-9MMX1.5MM) and rubber ring (S-TU-Z-AXIS-10X8)



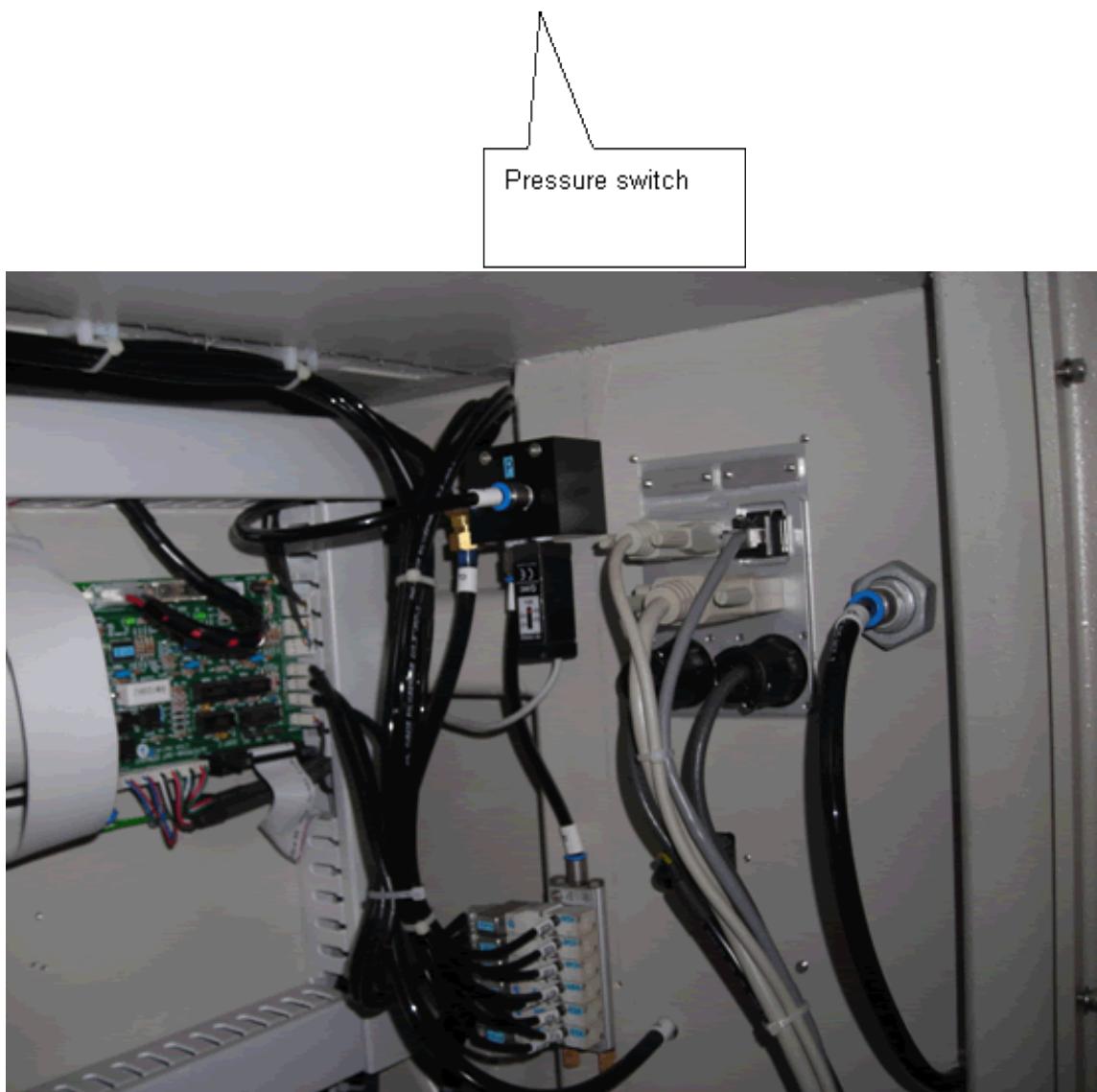
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

6. Adjust the S-TU-Z-AXIS-10X8 for little higher then the shaft-Z bottom



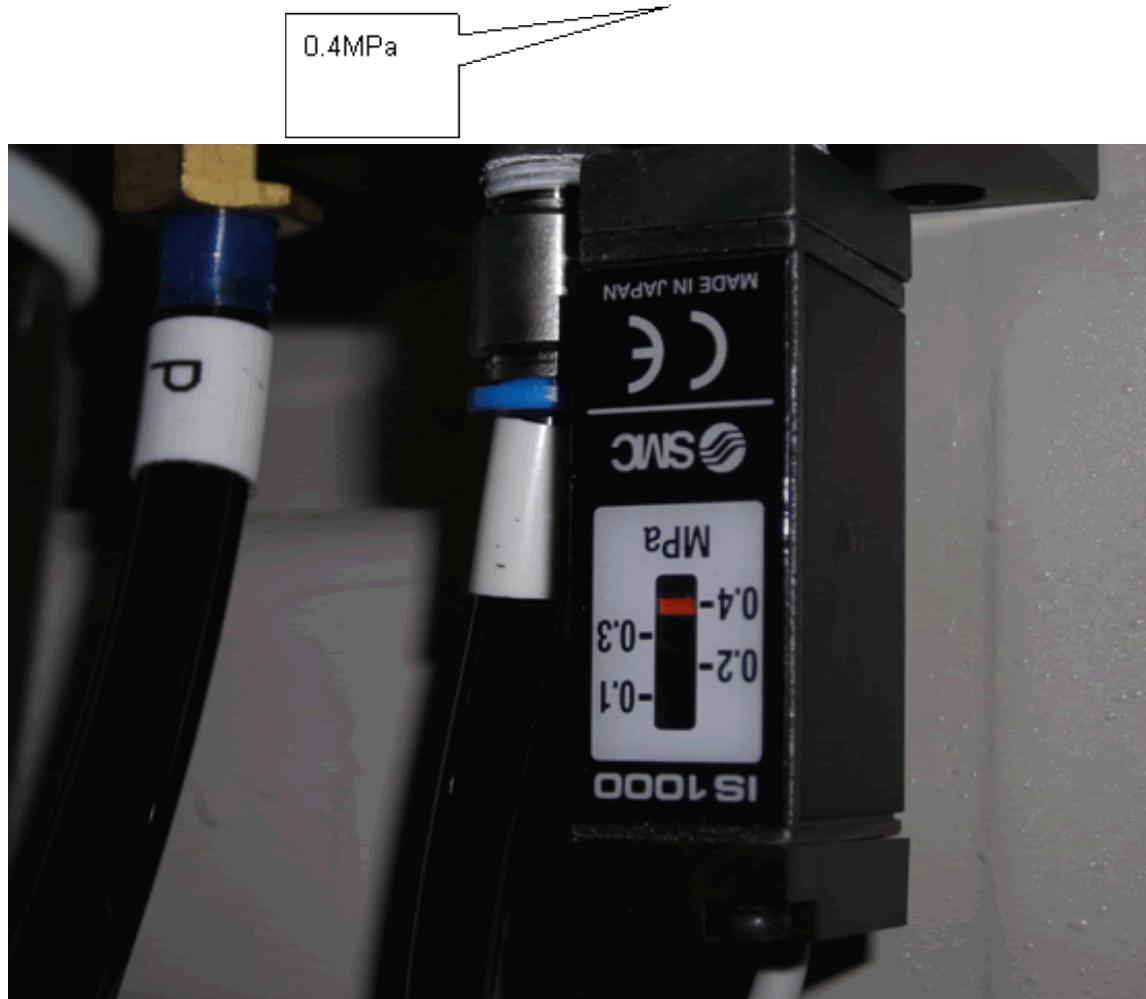
19  Pressure switch(S-IS1000-01S)  
Location of pressure switch (Please check below)



We usually set the value is 0.4MPa (Manufacturer setting)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



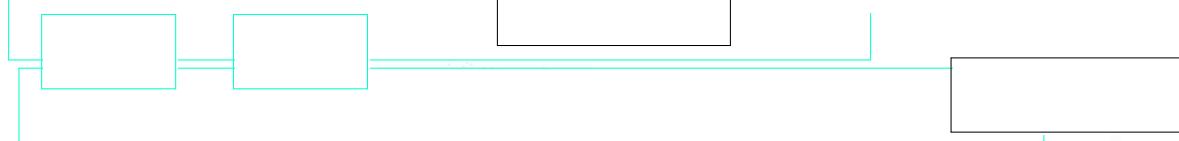
7.  

Auto Tape

es. Special Grease,



cie

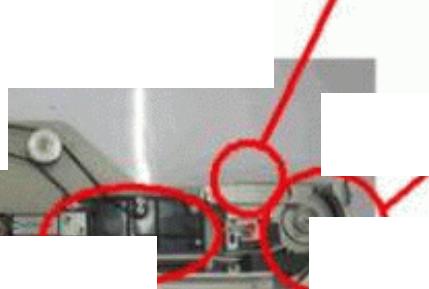


a

Auto Tape Bed - Auto Bed

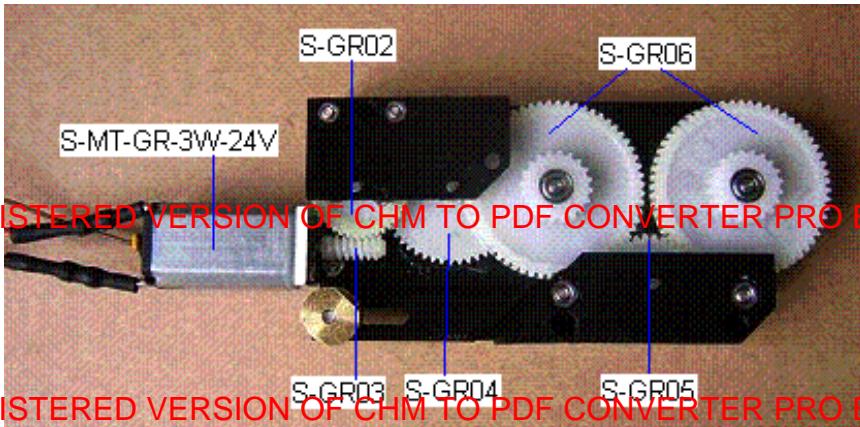


飞带轮



b 在齿轮上加雪油

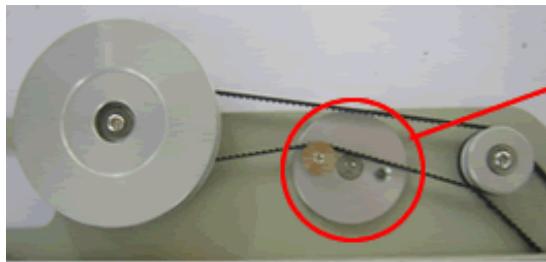
S-GB-L4A ( Plastic gearbox )



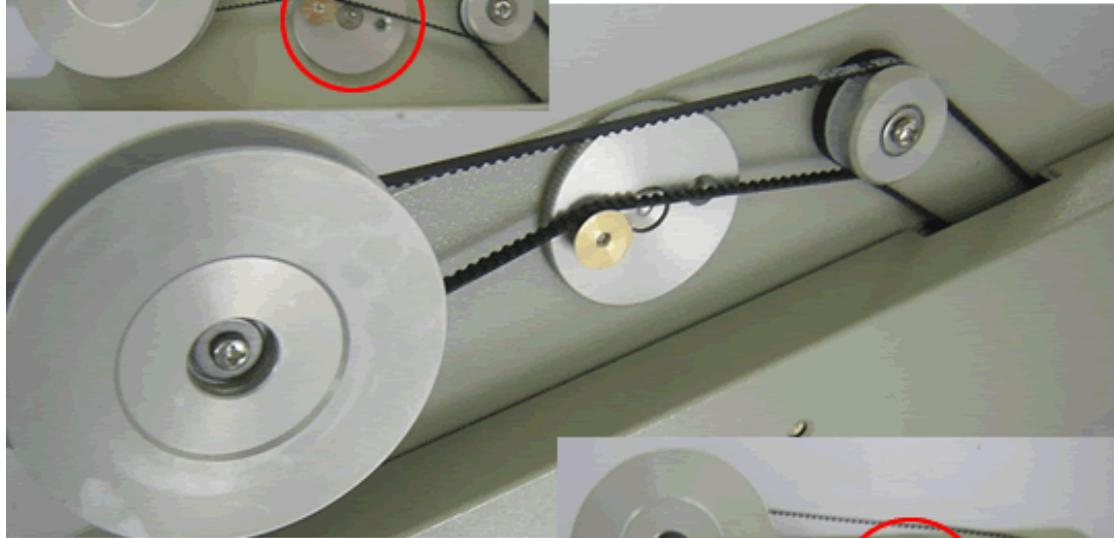
S-GB-L4A Plastic gearbox

Type	HK part no	Description
Gearbox	S-GR02	Feeder gearbox gearwheel dia 17mm
Gearbox	S-GR03	Feeder gearbox worm gear for motor
Gearbox	S-GR04	Feeder gearbox gearwheel dia 25mm
Gearbox	S-GR05	Feeder gearbox gearwheel dia 16mm
Gearbox	S-GR06	Feeder gearbox gearwheel dia 30mm T=3mm
Motor	S-MT-GR-3W-24V	Gear motor for feeder

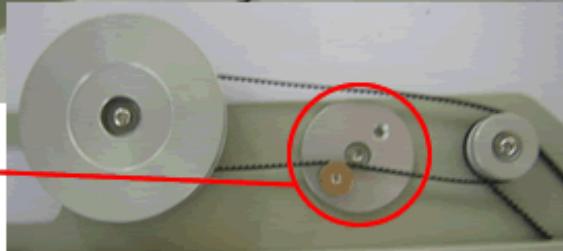
- 2) Step to increase the friction of sealing tape roller for taking off the sealing tape  
( For SFTA-XXL4 only)



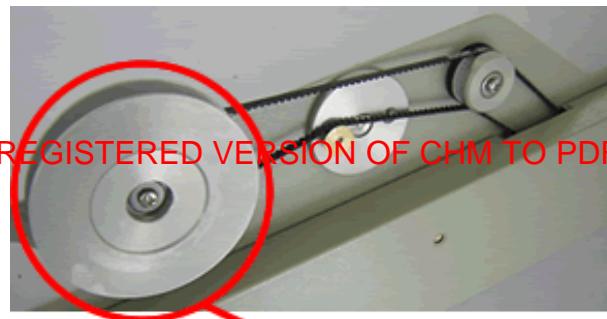
把定位片向上转则增大皮带拉力



把定位片向下转则减少皮带拉力



3) S FTA-XXL 4 --- BELT



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

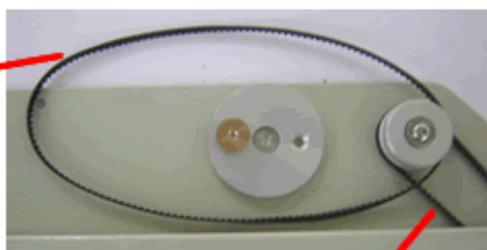


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

1) 拆下此螺丝



2) 取下胶带轮



3) 更换皮带2

4) 重新安装胶带轮

皮带1



压片

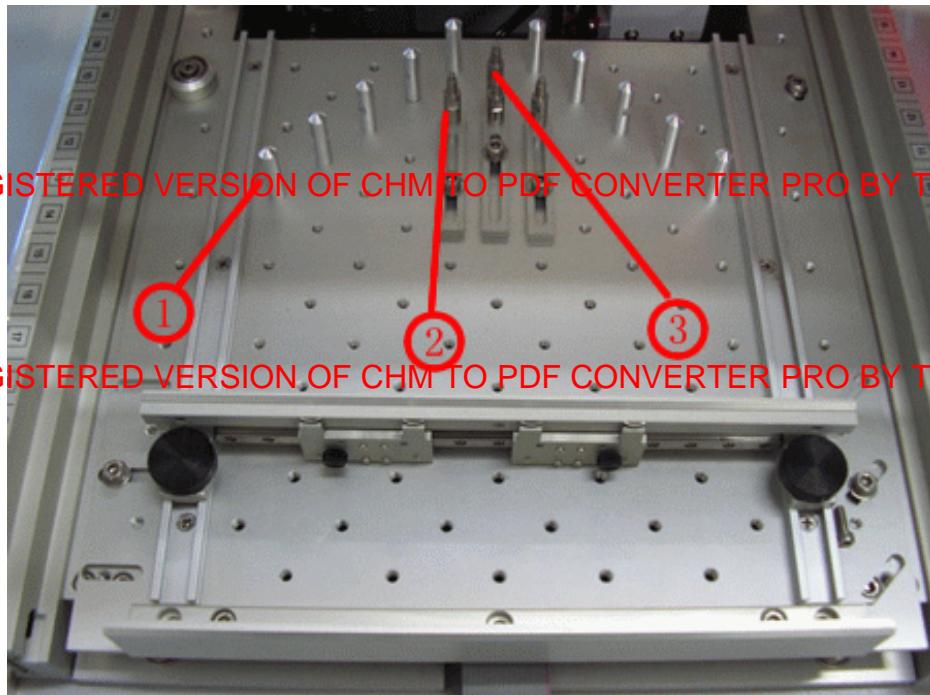
外推  
此开关



皮带3

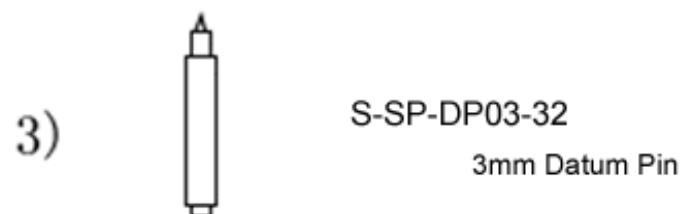
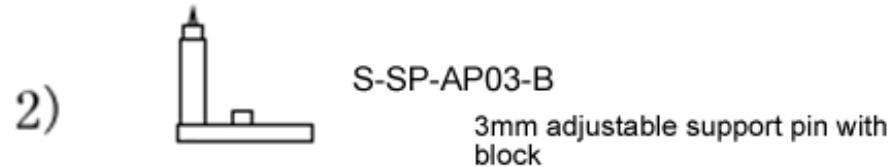
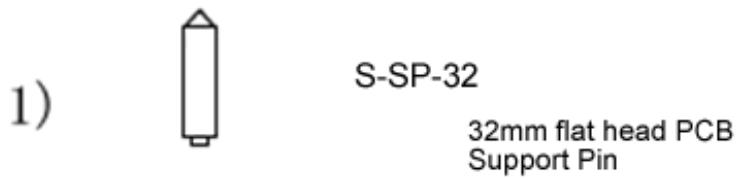
1. BELT-1 part number : S-B-F- 100 - 2.5 , Feeder Belt
2. BELT-2 part number : S-B-F-150-2.5, Feeder Belt
3. BELT-3 part number : S-B-F-1 0 0-3.0 , Feeder Belt

4) MANUAL SUPPORT PINS PART NUMBER

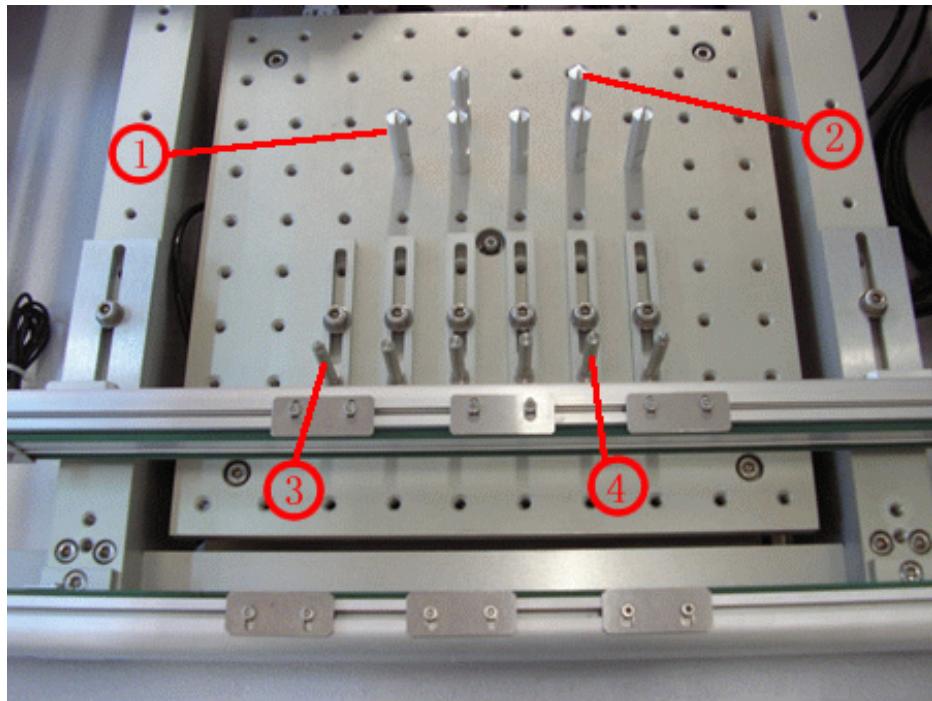


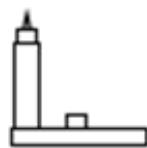
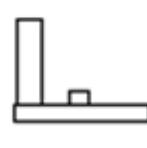
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



5) COVERYOR SUPPORT PINS PART NUMBER

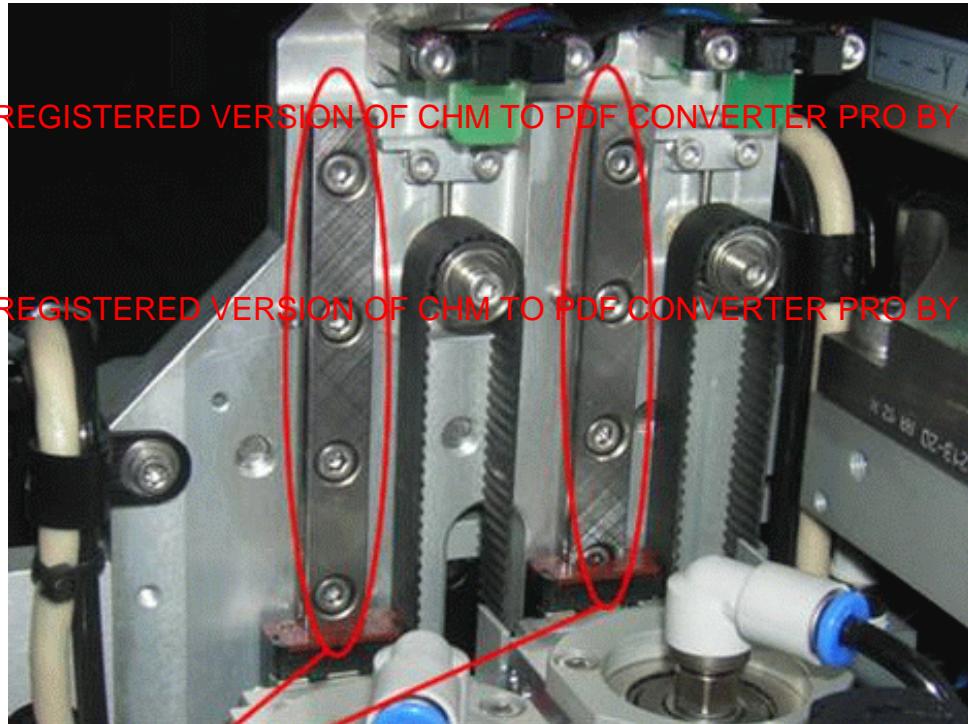


- 1)  S-SP-CY-37  
conveyor 37mm PCB  
Support Pin
- 2)  S-SP-CY-42  
conveyor 42mm PCB  
Support Pin
- 3)  S-SP-CY-AP03-37-B  
conveyor 3mm adjustable  
support Pin with block
- 4)  S-SP-CY-APF-37-B  
conveyor flat head  
adjustable support pin  
with block

6) Shaft-Z (Up/Down) (every 6 month )

Necessity: oil

Press Shaft-Z by hand, add oil on both side of Shaft-Z ' s orbit bit . After that, move Shaft-Z from up and down in order to make oil can be evenly smeared on orbit.



Z轴(上/下) 加衣车油

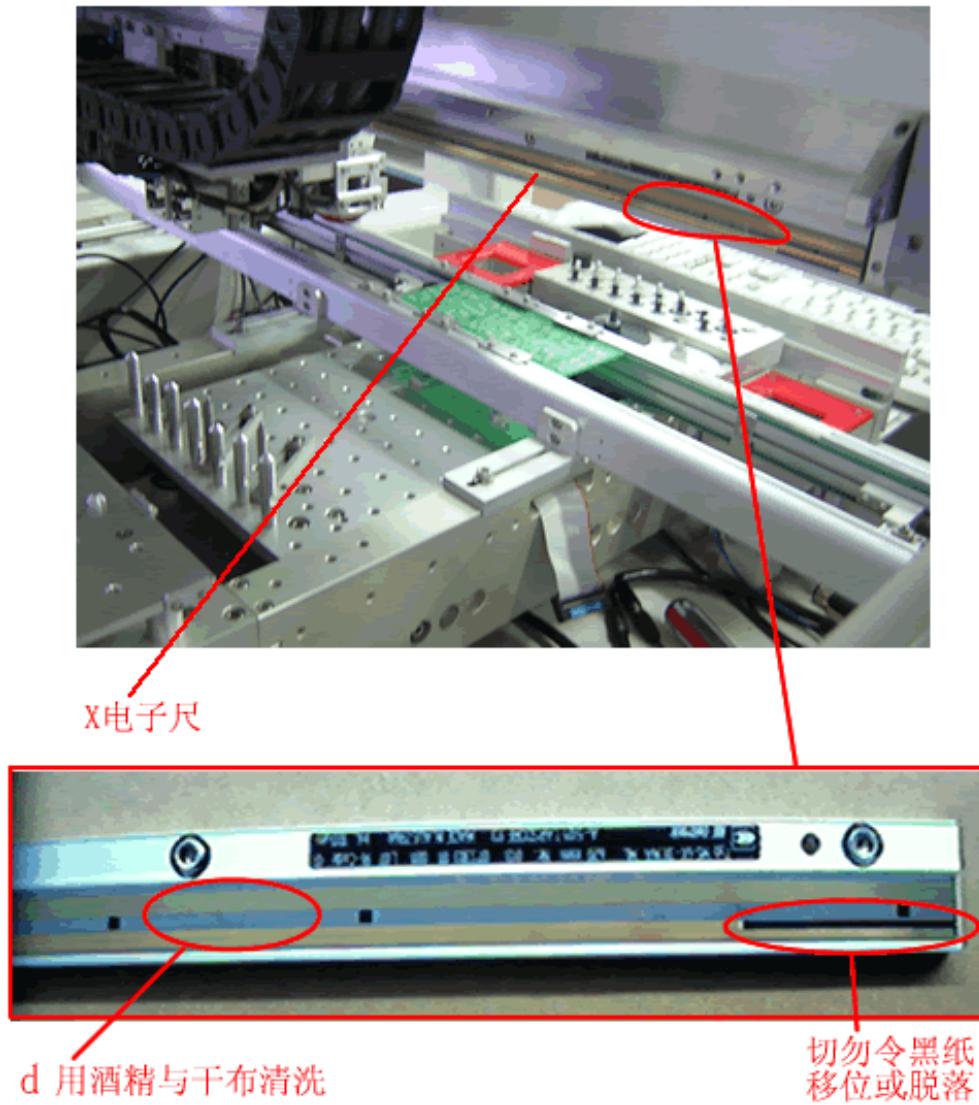
Remark: drip down appropriate quantity of grease, avoid to smear the other spare parts

Remark: V1 machine has one orbit, V2 machine have two orbits

7) X Encoder (every month)

Necessity: Screw Driver, Hex Key, Alcohol, clean soft & dry cloth and Dry Compressed Air

Open the cover of encoder with hex key and screw driver



Clean the encoder with dry cloth and alcohol completely.

Please see point **d** of above diagram

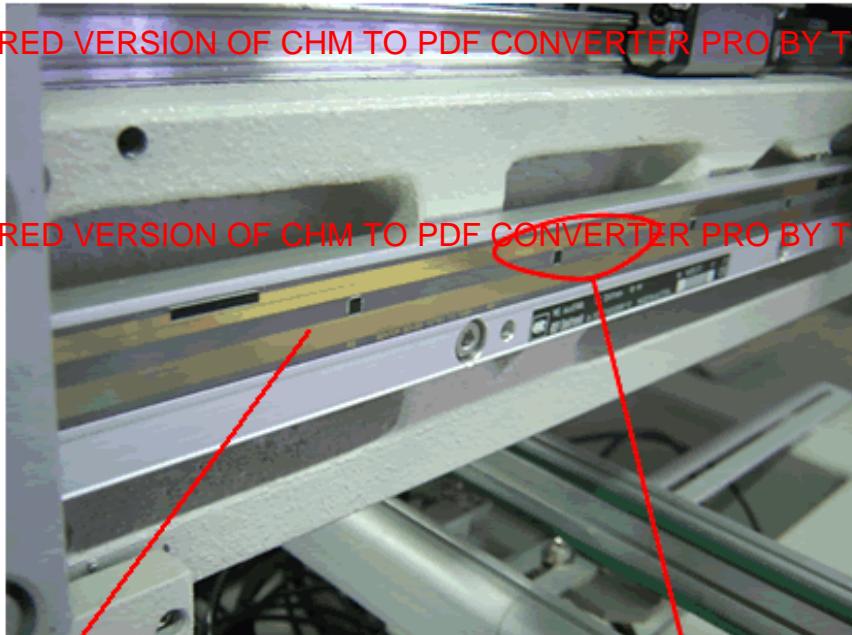
- blow the encoder dry with Dry Compressed Air after cleaned
- fix the cover of encoder

8) Y Encoder (every month)

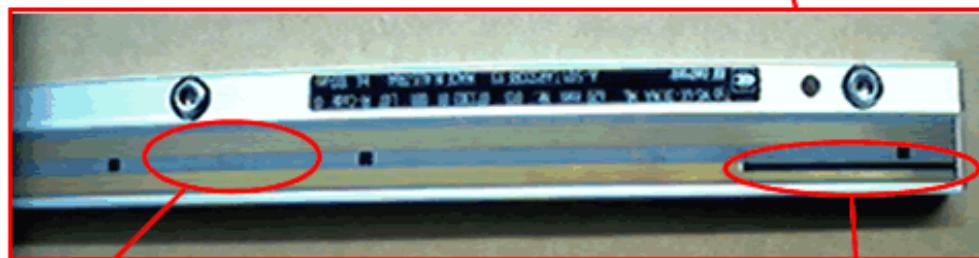
Necessity: Screw Driver, Hex Key, Alcohol, clean soft & dry cloth and Dry Compressed Air

Open the cover of encoder with hex key and screw driver

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



Y电子尺



d 用酒精与干布清洗

切勿令黑纸  
移位或脱落

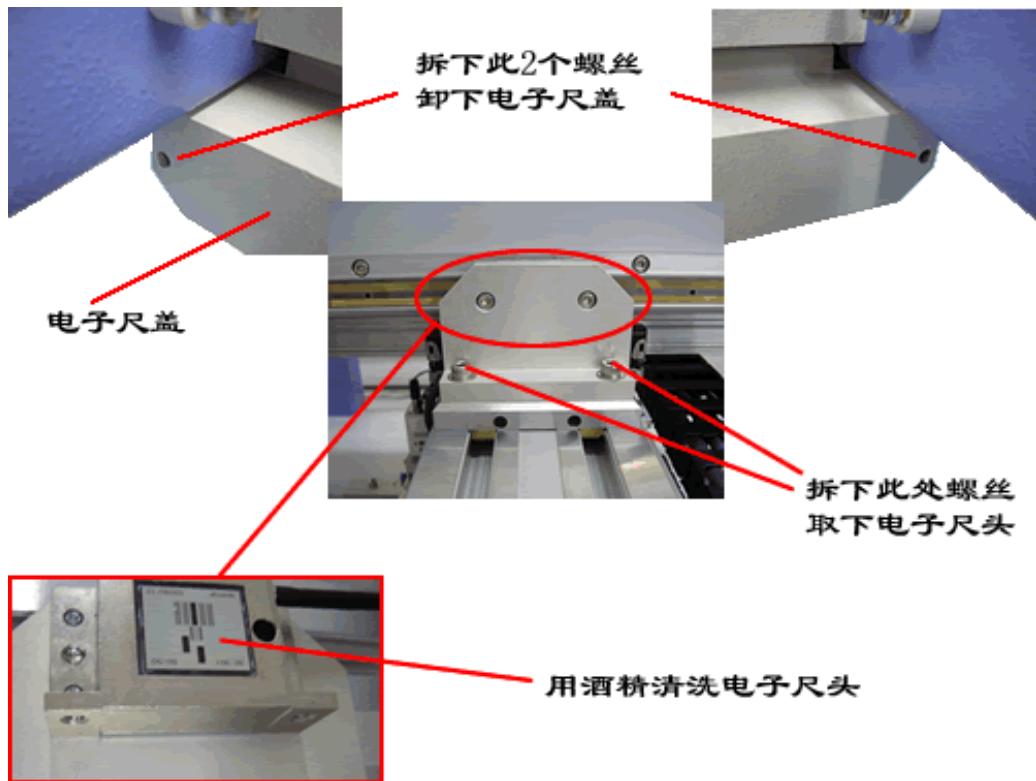
Clean the encoder with dry cloth and alcohol completely.

Please see point **d** of above diagram

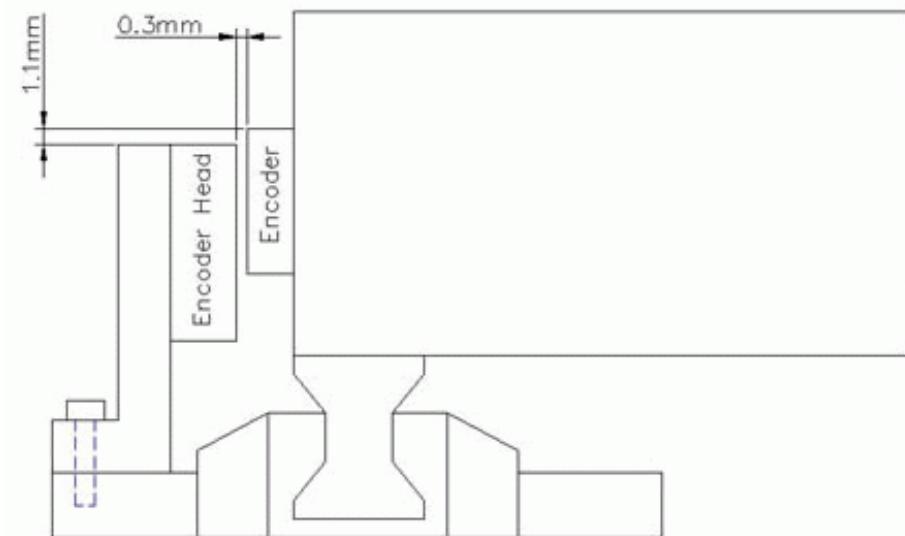
- blow the encoder dry with Dry Compressed Air after cleaned
- fix the cover of encoder

9) Clean the Encoder Head

Necessity: Hex Key , Alcohol



#### Dimension notice



Note: This clean is for Encoder head dust and must be clean, after clean, all about the data for Encoder will be change, and the calibration must operate by engineer

If no necessary, don't do this operation!!

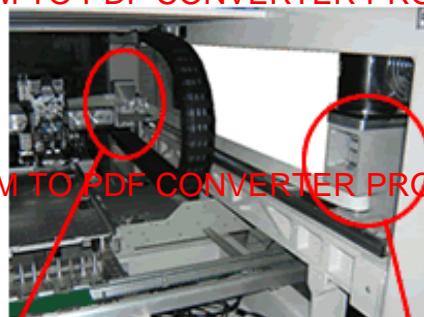
10) Replace Motor Coupler

Necessity: Hex Key , Motor Coupler in same model

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Part Number

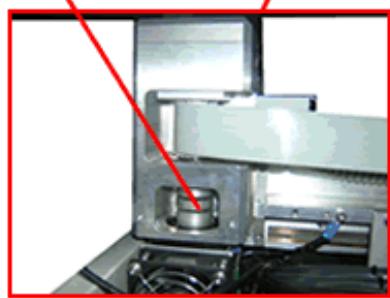
386X,387X  
S-BE-CL-FMC-20x7x8



Part Number

386X,387X  
S-BE-CL-FMC-30x8x14

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

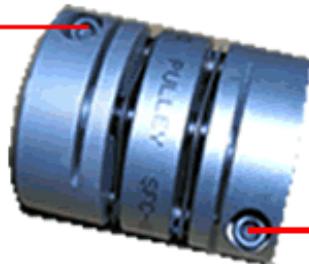


X direction motor coupler



Y direction motor coupler

Set Screw "A"



Set Screw "B"

Motor coupler



Motor

- Unlock the Set Screw "A" and "B". ( not need to free)

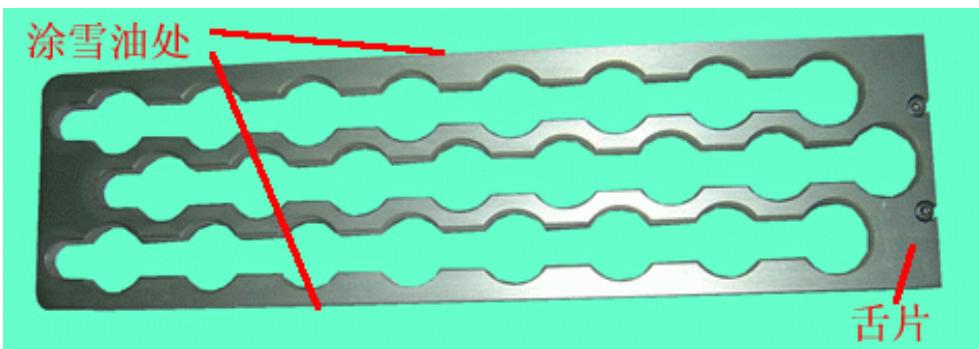
- Release the four counter-bore that lock the motor, take out the motor with motor coupler
- Replace new motor coupler
- Locate the motor coupler in the middle of motor axis and ball screw axis, that means motor axis and ball screw axis insert the same distance for motor coupler
- Lock the Set Screw "A" and "B" tightly

11) Auto Change Head (every 3 month)

Necessity: Hex Key, Cross Head Screw Driver, Special Grease and Cotton Bud



- In software - please click "Head change Unit" button in Utility Menu - Machine Diagnostic and make the unit raised, then remove all nozzles on the unit by hand.
- Release four screws by cross head screw driver.
- Take out the cover from the unit , release screw B
- Take out the Tongue Piece and add little special grease on it. Please see below:

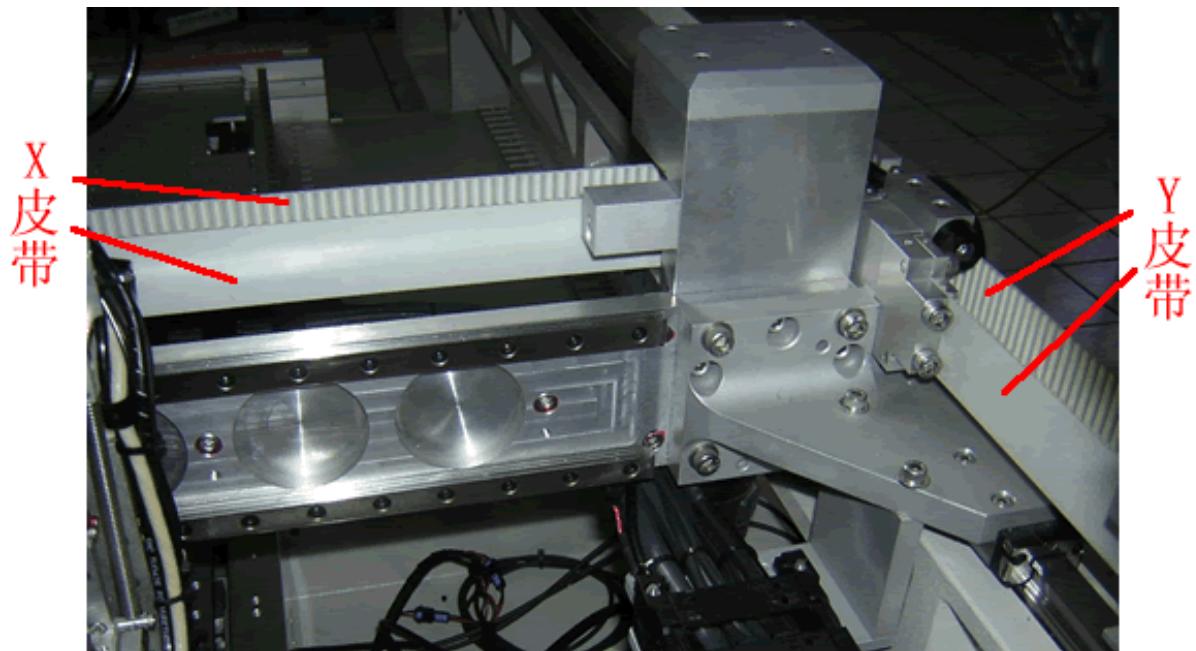


According to the above mentioned steps in inverse:  
Adjust the location of Moveable Piece when the unit raise and the top of Tongue Piece open, enable the Holes of Nozzle and Bottom Mounting are completely overlapped (Please see below). Then put the cover back.

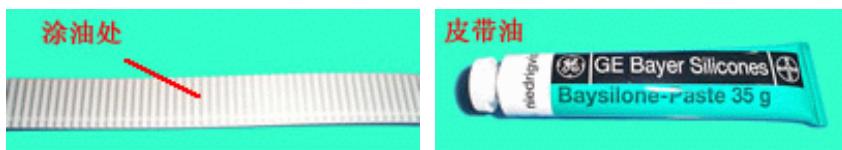


12) X, Y Belt (every week)

Necessity: Baysilone Paste for Belt and Cotton Bud



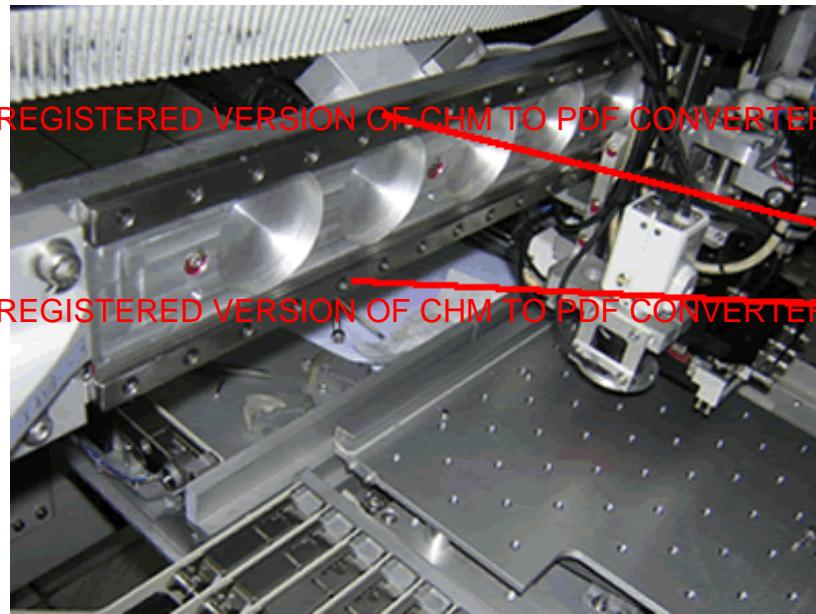
- Before add please Clean the old oil of the X,Y belt with dry cloth
- Evenly smear Baysilone Paste for belt on the teeth of X, Y Belt with cotton bud



Remark: Paste needed to be evenly added, please don't put too much, otherwise, it will dripping on the machine or splash into other places because of high speed.

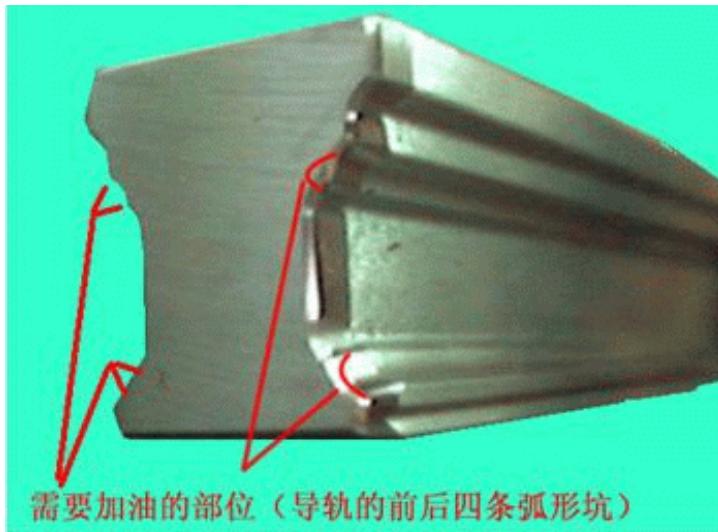
13) X Guiderail (every day)

Necessity: Oil and clean, soft & dry cloth



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE  
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

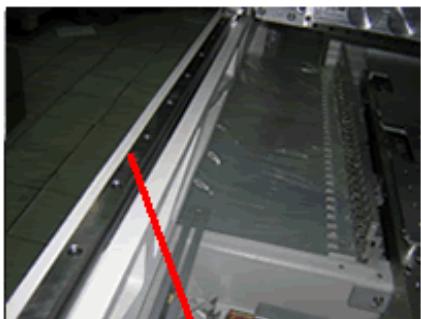
- Wipe off the old oil from the guiderail with a clean & soft cloth
- Add little oil inside the gap with four arches around the guiderail



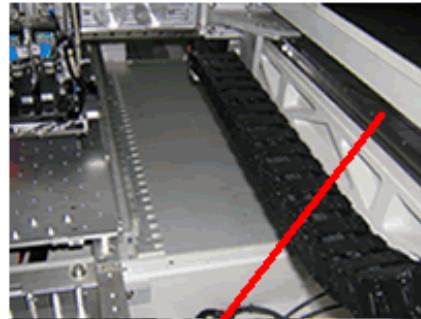
Remark: Oil cannot be dropped too much to avoid dripping, just ensure 4 gaps have enough oil is okay

14) Y Guiderail (every day)

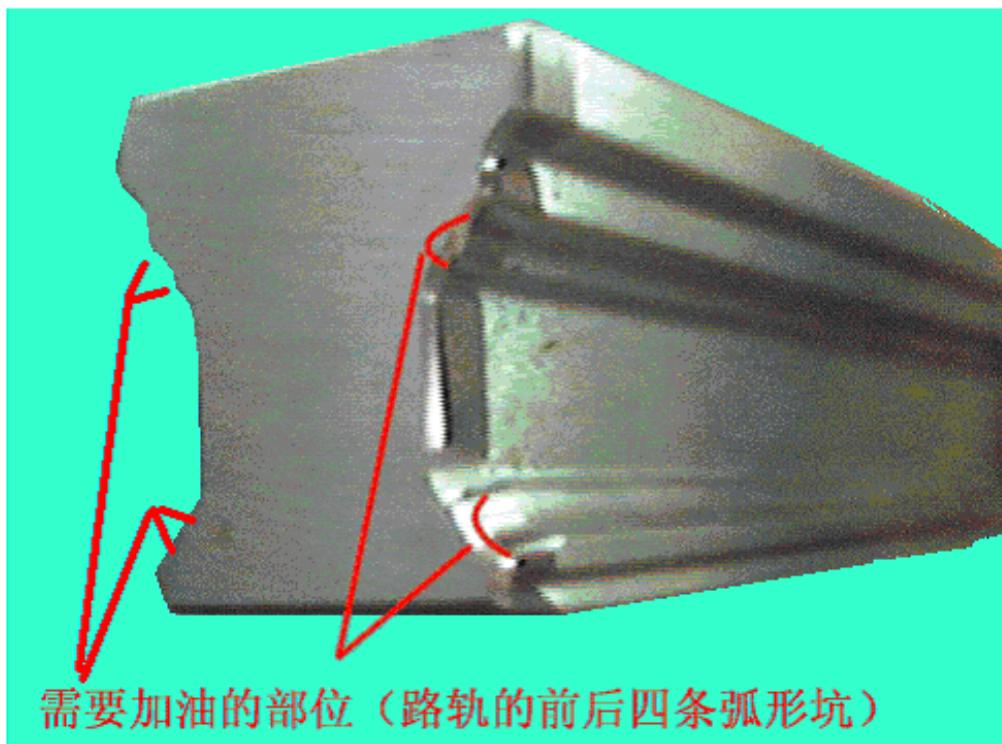
Necessity: Oil and clean, soft & dry cloth



Y路轨 (左)



Y路轨 (右)



- Wipe off the old oil from the guiderail with a clean & soft cloth
- Add little oil inside the gap with four arches around the guiderail

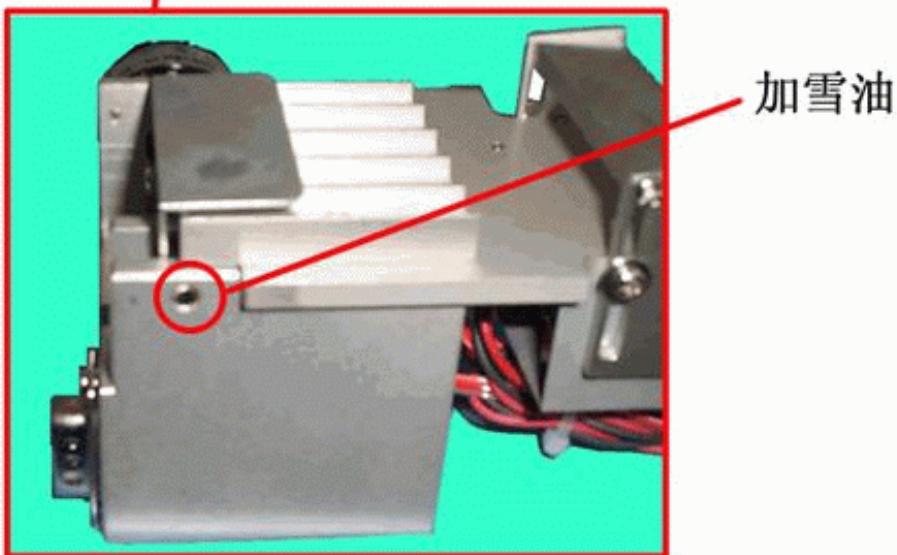
**Remark:** Oil cannot be dropped too much to avoid dripping, just ensure 4 gaps have enough oil is okay

15) UFTB - X hinge (every week)

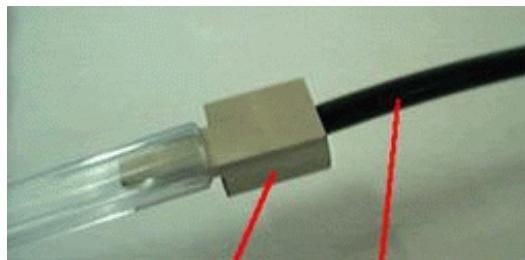
Necessity: Special Grease and Cotton Bud

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- Add special grease on the axle of cover board, please see above.

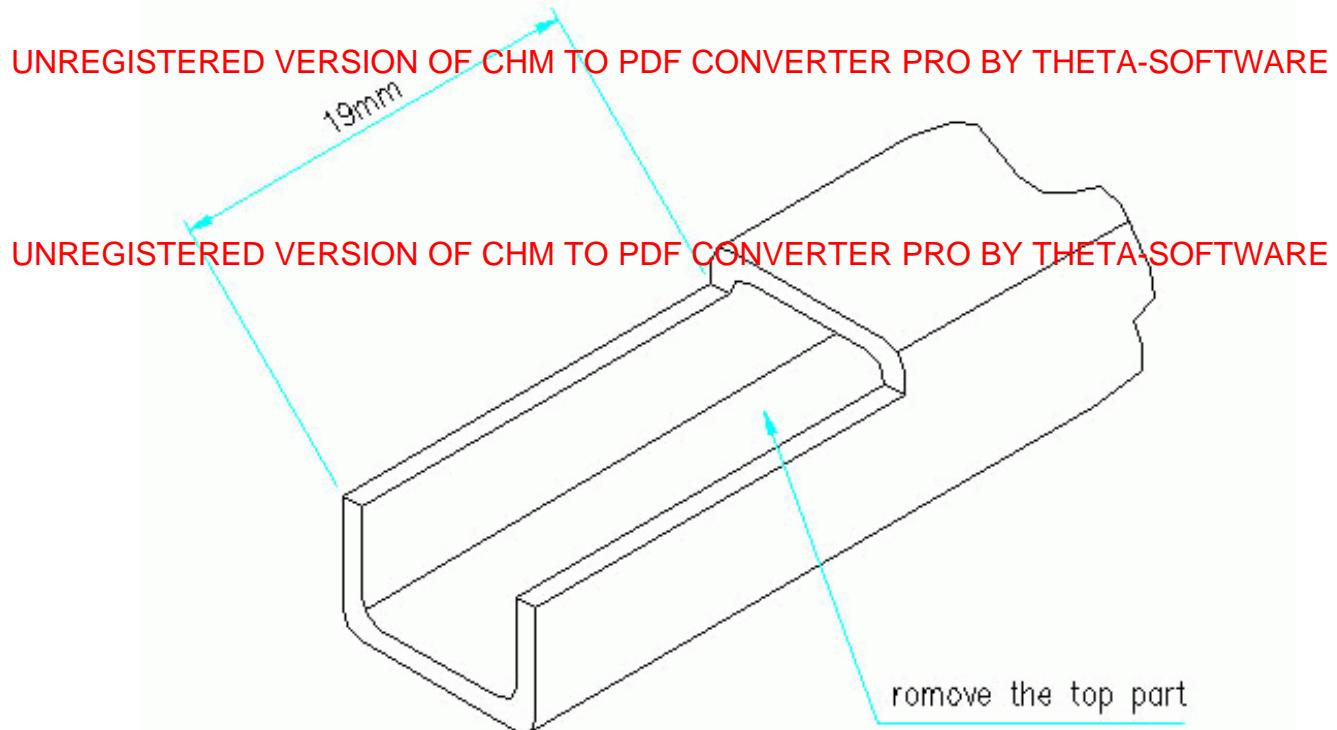


供气接嘴  $\phi$  4mm 气喉  
长度约50mm

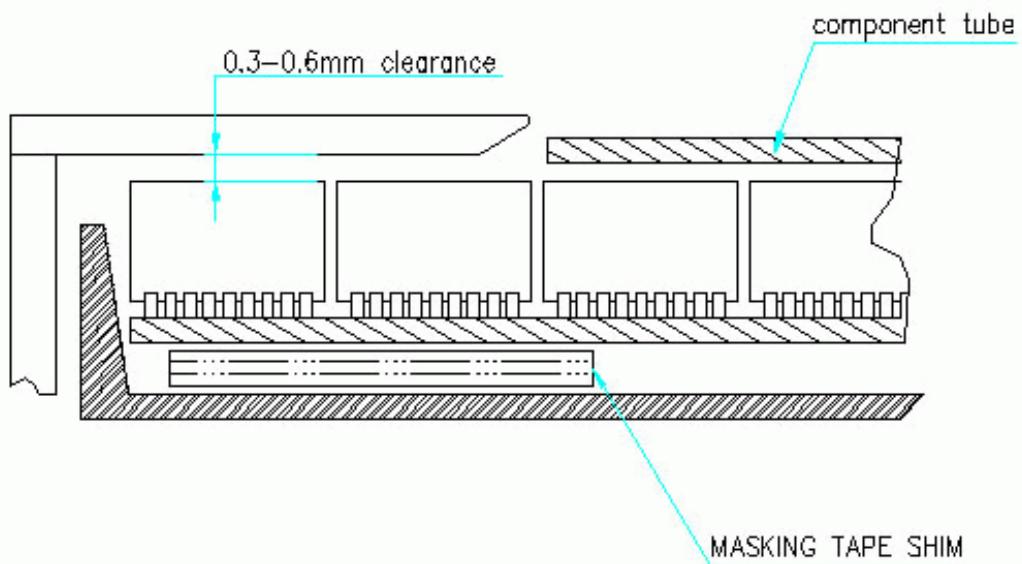


### Install component tube into UFTB feeder

1. Select an insert which the slot width can fit the width of the component tube.
2. Get a dummy tube & cut the end to the following shape.



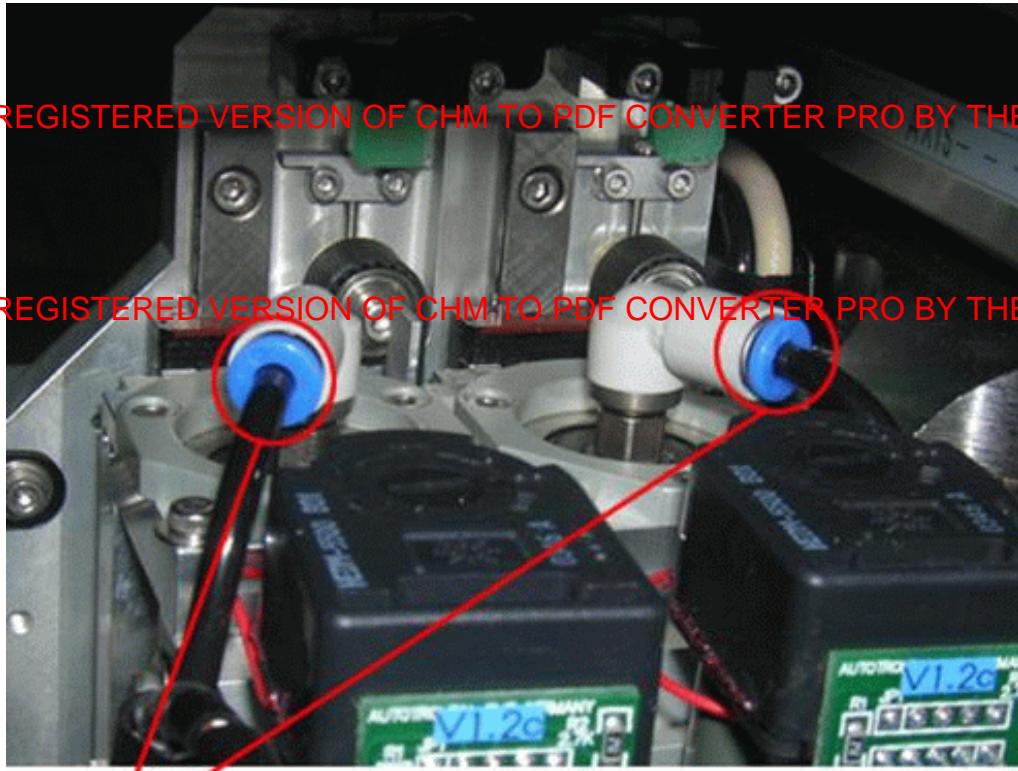
3. Fill up the rework dummy tube with components (slide the components form a new tube).
4. Fit the tube to the insert & shim the tube by masking tape to the level as shown.



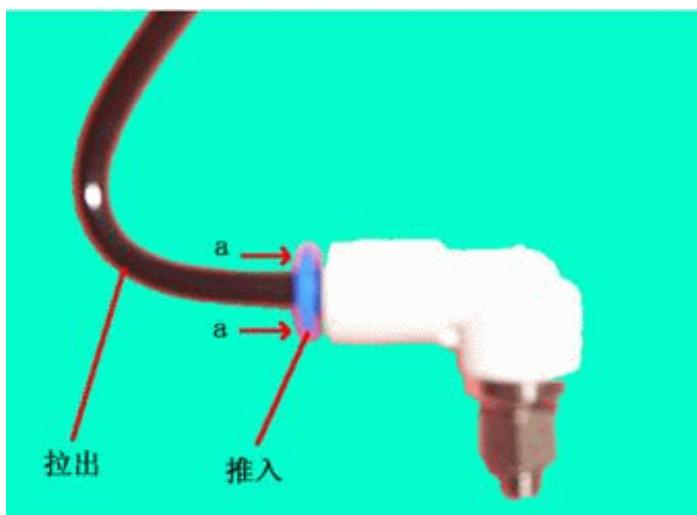
5. Adjust the horizontal pressure bar so that the friction of the bar with the tube is large enough to prevent the tube from re-bouncing.

16) Cleaning Z - Shaft (every three month)

Necessity: Dry Compressed Air



拔出气喉, 对此孔吹气



- Push the blue piece that connected the nozzle and hose (diagram 'a' shown), and pull out the black hose at the same time
- Blow in air into the hole of Z-Shaft by Dry Compressed Air, and spout all the dust, solder paste and dirt

- Put back the black hose into the nozzle

17) Replace Nozzle plastic seal (every six month)

Necessity: New Nozzle plastic seal



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

塑胶密封圈

Tear off the broken Nozzle plastic seal. Please wipe off all the dirt with alcohol and put the new one on it.

## 18) Camera-1 Offset (Software Calibration)

This is to calibrate the offset between Camera-1 & the Z-axis. This offset is a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed
- Camera-1 focus changed
- Component placement not accurate

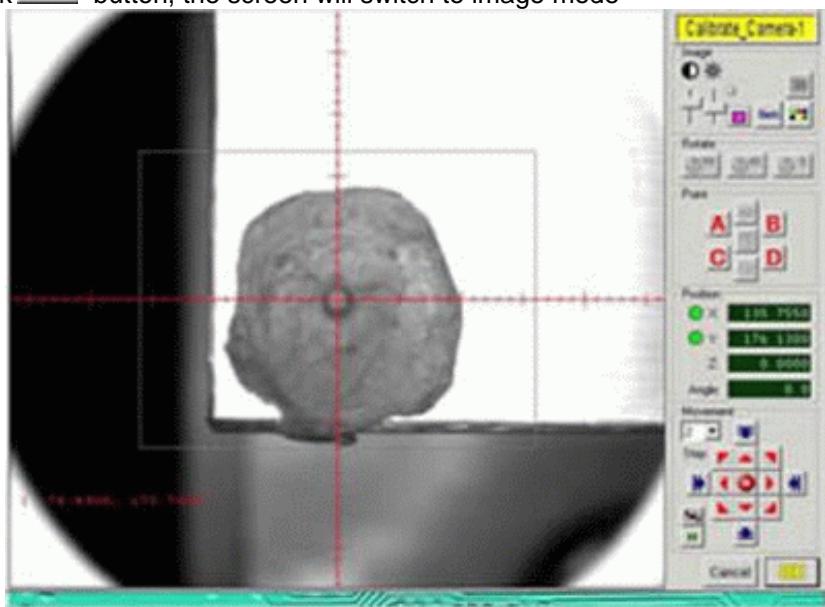
**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner of the Alignment-B, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape** .



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode



Adjust the cross mark to the corner of the hole and click **OK** button.

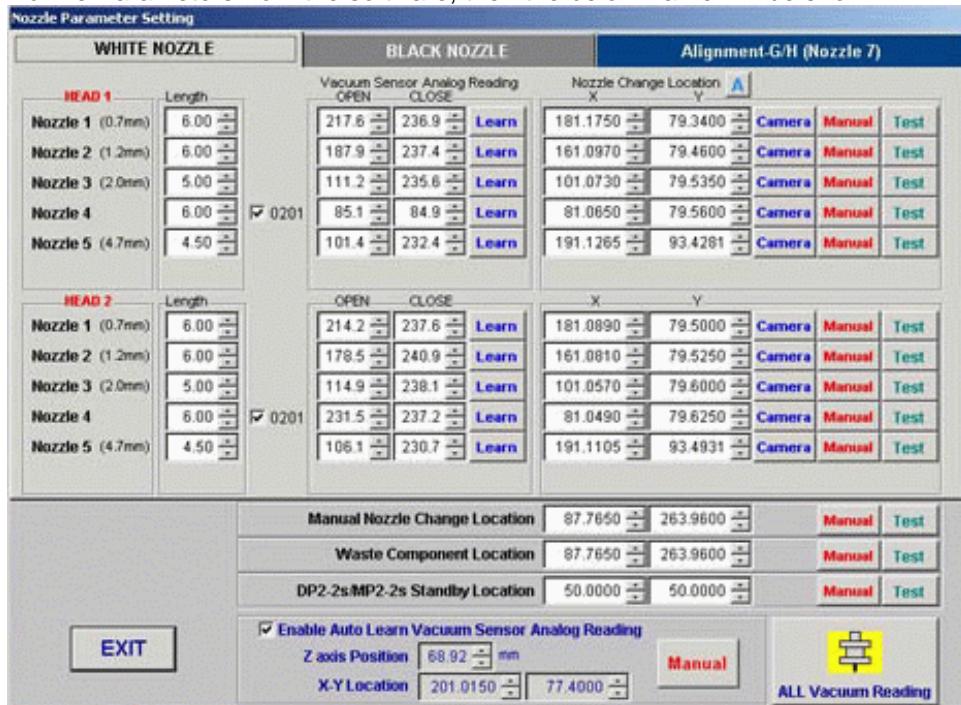
The machine will auto remove nozzle #1 and the complete the **Calibrate Camera-1 Offset** procedure.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

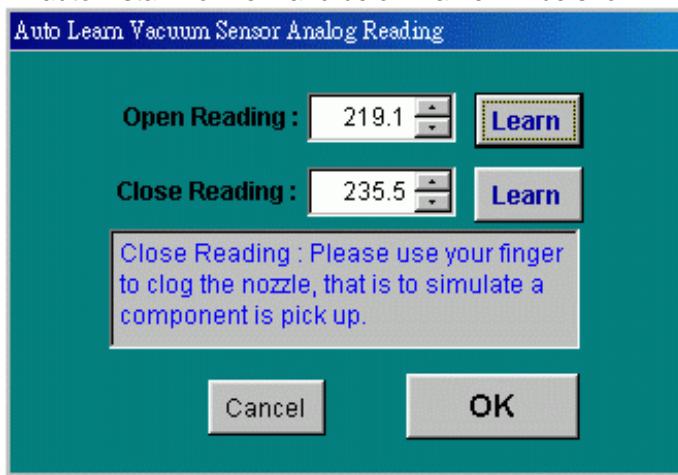
## 19) Vacuum - sensor (Software Calibration)

This is auto detect each nozzle's vacuum sensor Analog Reading. Please choose CALIBRATE MENU - Nozzle Parameters from the software, then the below frame will be shown:



### Manual Calibrate

For example: click **Learn** button from the Nozzle 1 and Vacuum Sensor Analog Reading, then the machine will auto install Nozzle 1 and below frame will be shown:



Firstly, detect the reading with no component, click **Learn** button, start vacuum and show the detected reading in "open reading".

After that, please use your finger to clog the nozzle, that is to simulate a component is pick up, then click the second **Learn** button, the vacuum will on again and show the detected reading in "close reading".

OK

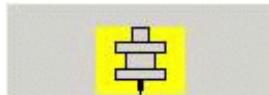
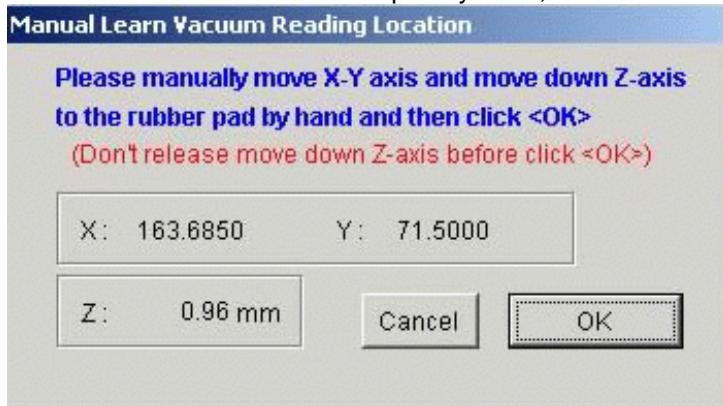
Finally click OK button to save and exit.  
Do the above mentioned detect for all nozzles in sequence.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Automatic Calibrate

(1) Enable Auto Learn Vacuum Sensor Analog Reading, click **Manual** button, manually move X-Y axis and move down Z-axis to the rubber pad by hand, this is for confirm the calibrate location.



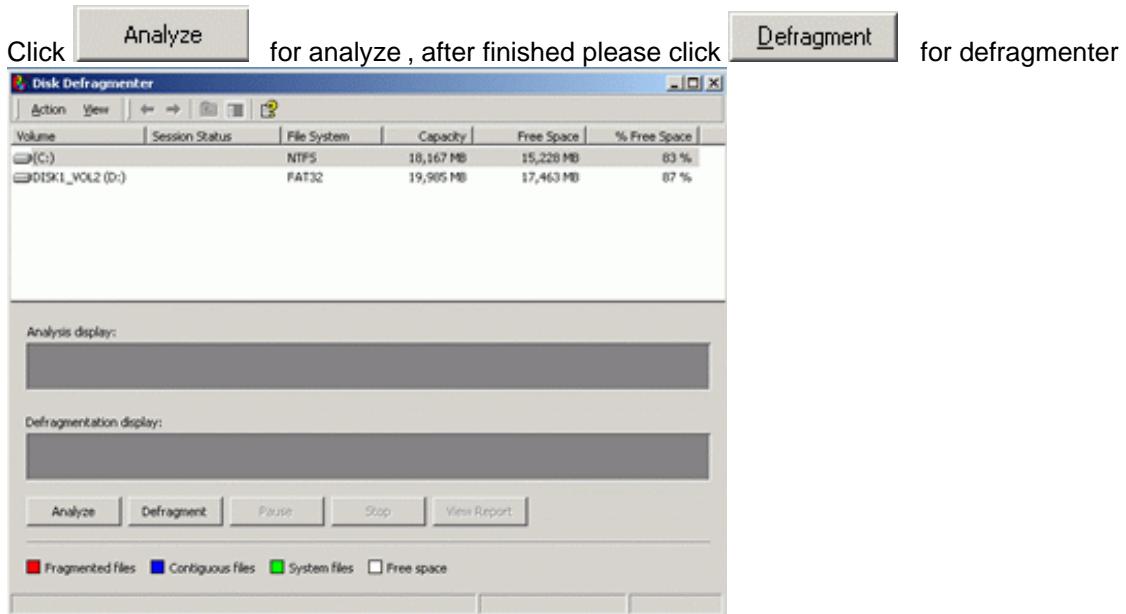
(2) Click **ALL Vacuum Reading** button, machine will start to detect the reading with no component, and auto move to the rubber pad to detect the reading that is to simulate a component is pick up, and then software will auto detect the nozzle

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 20) Disk Defragmenter

Select Start - Program - Accessories - System Tools - Disk Defragmenter to do disk defragmenter



Before defragmenter , red means fragmented files



After defragmenter



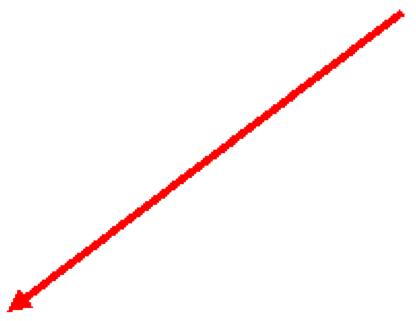
## 21 ) aintenance of FESTO Air Filter

1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water; air filter for oil is use for filter oil.
3. The water will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.
4. If need drain oil, release the knob for oil, connect compressed air, then the oil will drain from oil outlet, when finish, tighten the knob for oil.(Please plug the gas tube to the filter first if necessary)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





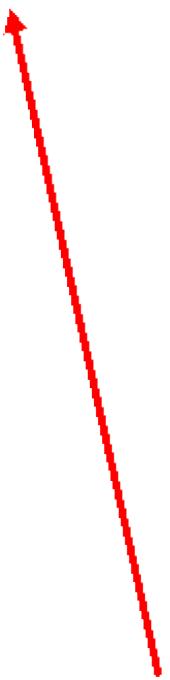


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

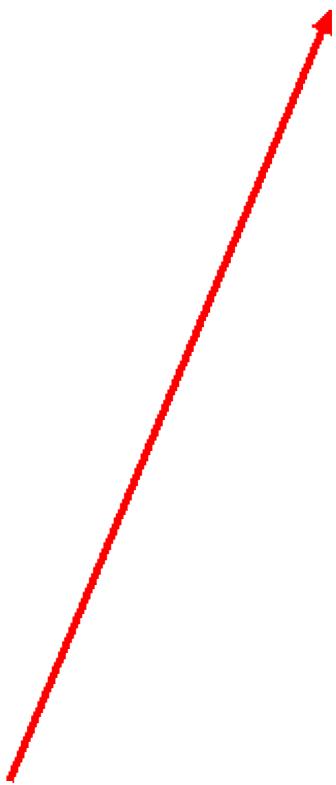
Replace way for filter element (S-LFR-FC-40U)

1. Take down the body by clockwise, remove the lock pin for replace the filter element.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE







2. Reinstall the lock pin (counter clockwise for lock), reinstall the body by counterclockwise.

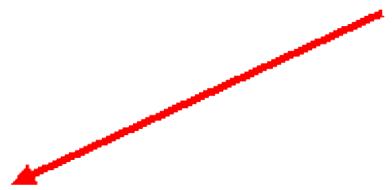
## 22) Maintenance of SMC Air Fitter

1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water air filter for oil is use for filter oil.
3. The water and oil will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

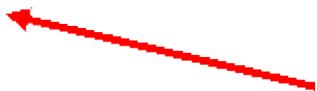
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





Replace way for filter element (S-AF30P-060S0)

1. Pull down the lock, remover the filter body by clockwise or counterclockwise; remove the lock pin for replace the filter element.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



2. Reinstall the lock pin (counterclockwise for lock), and then reinstall the body (let the protruding arm at the concave, and then pull down the lock for install the body by clockwise or counter clockwise).



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





Adjustment for Guide rail of Shaft-Z (X1,X2)

1

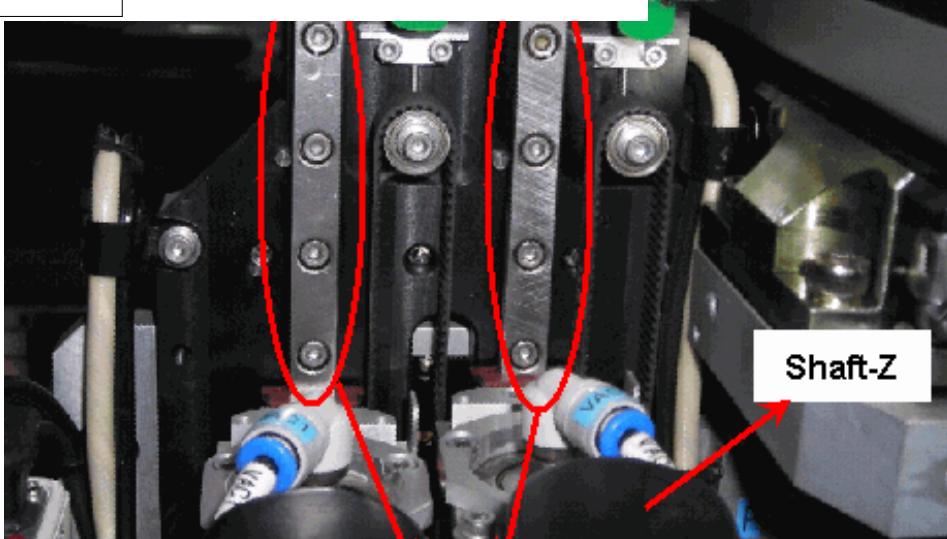
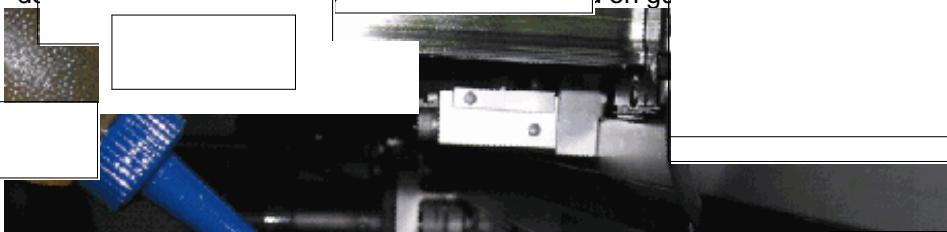
of Shaft-Z (Up/Down) (even)

I(S-GREASE-RAIL)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

A. Pre-  
d. Guide rail of Shaft-Z. Af  
d on gu



Guide rail of Shaft-Z (up/down) add oil

Remark: Adds by drops the oil mass must be suitable, in order to avoid smears other parts

Remark: V1 machine has one guide rail, V2 machine have two guide rails

## 2) X Encoder (every three month)

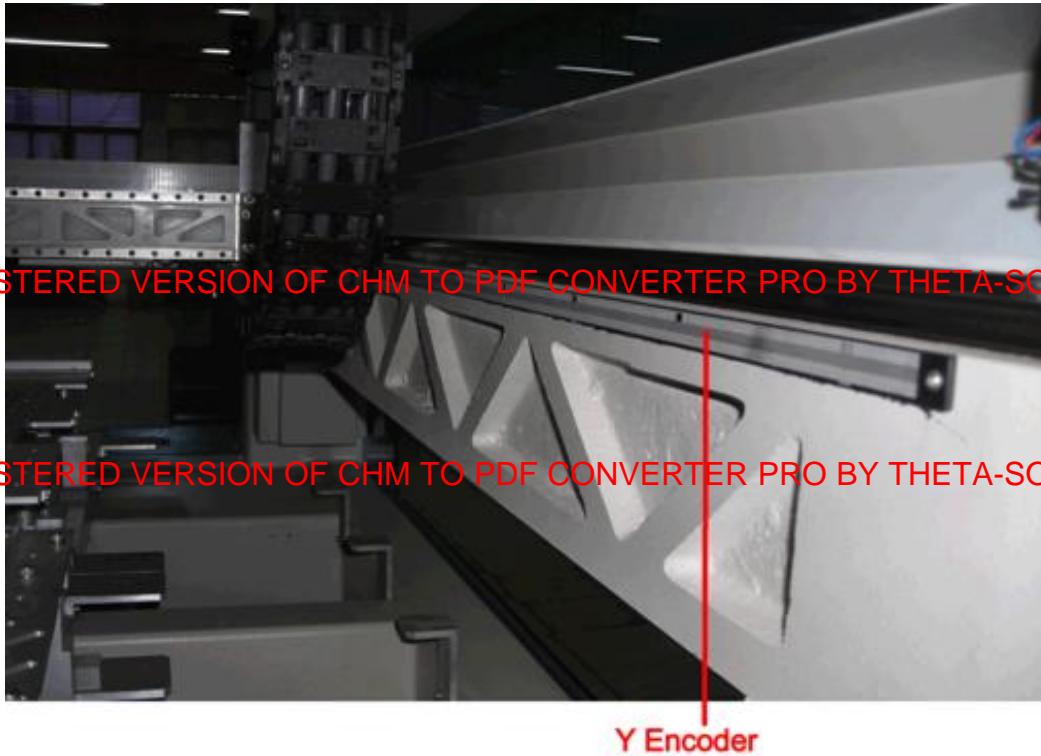
Necessity: Alcohol, clean soft & dry cloth and Dry Compressed Air



- View the X Encoder from machine head rear
- Clean the encoder with dry cloth and alcohol completely.
- blow the encoder dry with Dry Compressed Air after cleaned

## 3) Y Encoder (every six month)

Necessity: Alcohol, clean soft & dry cloth and Dry Compressed Air



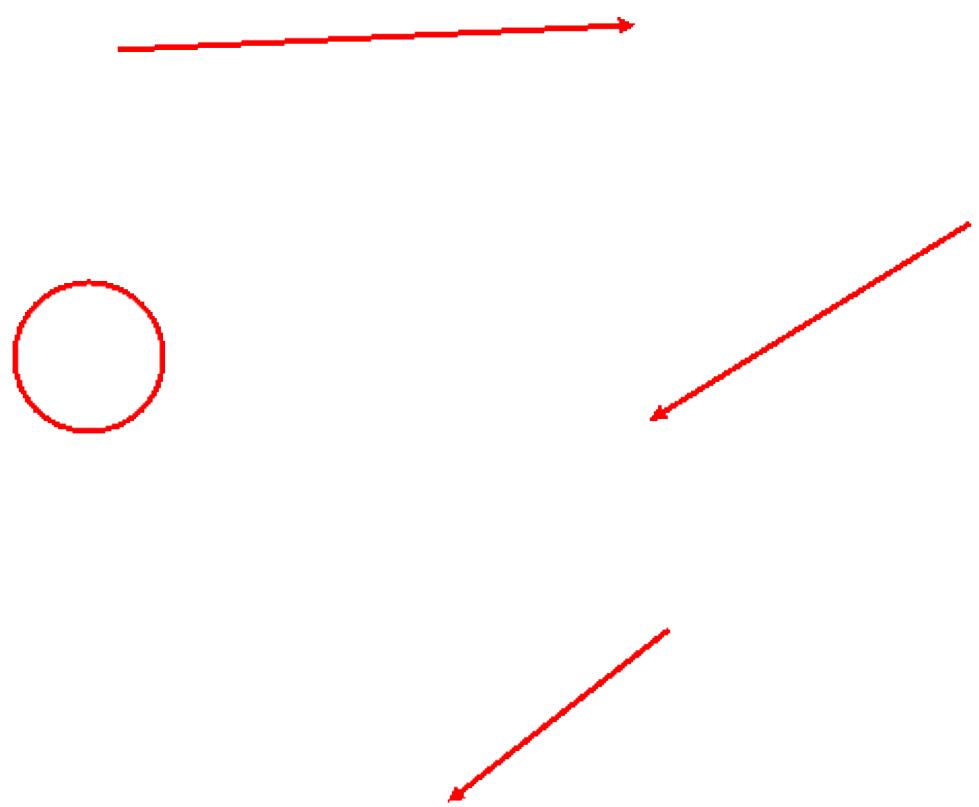
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

- View the Y Encoder from right side
- Clean the encoder with dry cloth and alcohol completely.
- blow the encoder dry with Dry Compressed Air after cleaned

4) Clean the X Encoder Head

Necessity: Hex Key, Alcohol





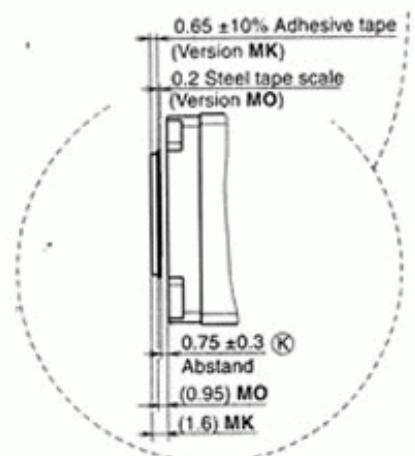
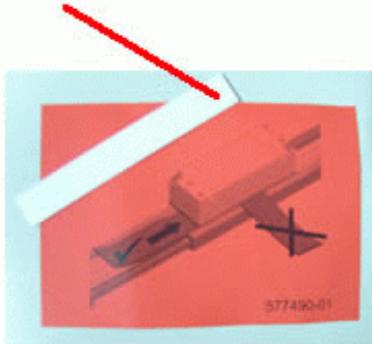
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- 1) release the counter-bore screw for lock the encoder head
- 2) demount the encoder head
- 3) clean the encoder head by use Alcohol
- 4) put the calibration label between the encoder and encoder head, reinstall the M3X12, then remove the calibration label

#### Dimension notice

use calibraiton label to adjust  
the gap is  $0.75 \pm 0.3$

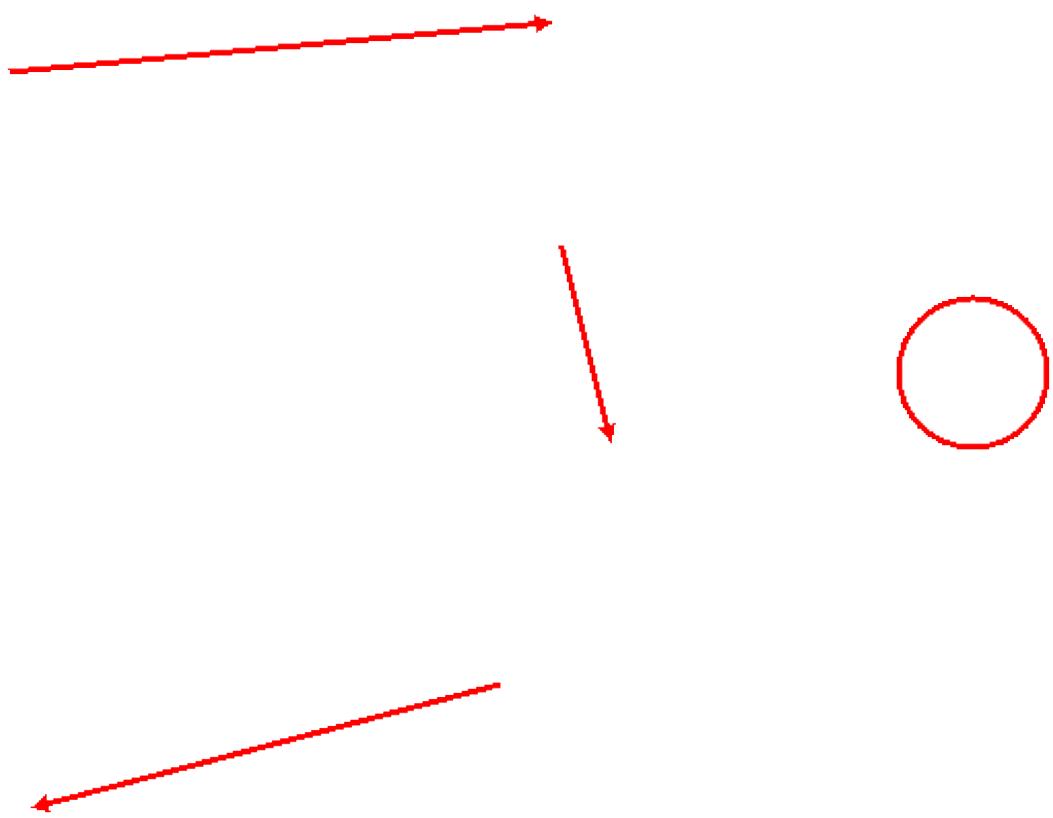


Note: This clean is for Encoder head dust and must be clean, after clean, all about the data for Encoder will be change, and the calibration must operate by engineer

If no necessary, don't do this operation!!

5) Clean the Y Encoder Head

Necessity: Hex Key, Alcohol





UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

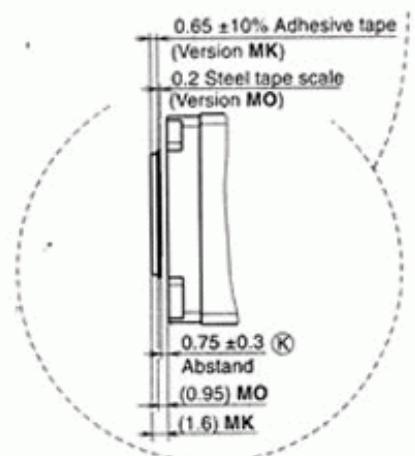
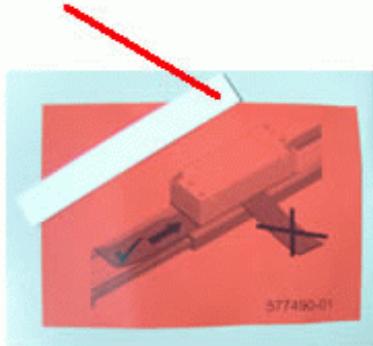
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- 1) release the counter-bore screw for lock the encoder head
- 2) demount the encoder head
- 3) clean the encoder head by use Alcohol
- 4) put the calibration label between the encoder and encoder head, reinstall the M3X12, then remove the calibration label

#### Dimension notice

use calibraiton label to adjust  
the gap is  $0.75 \pm 0.3$

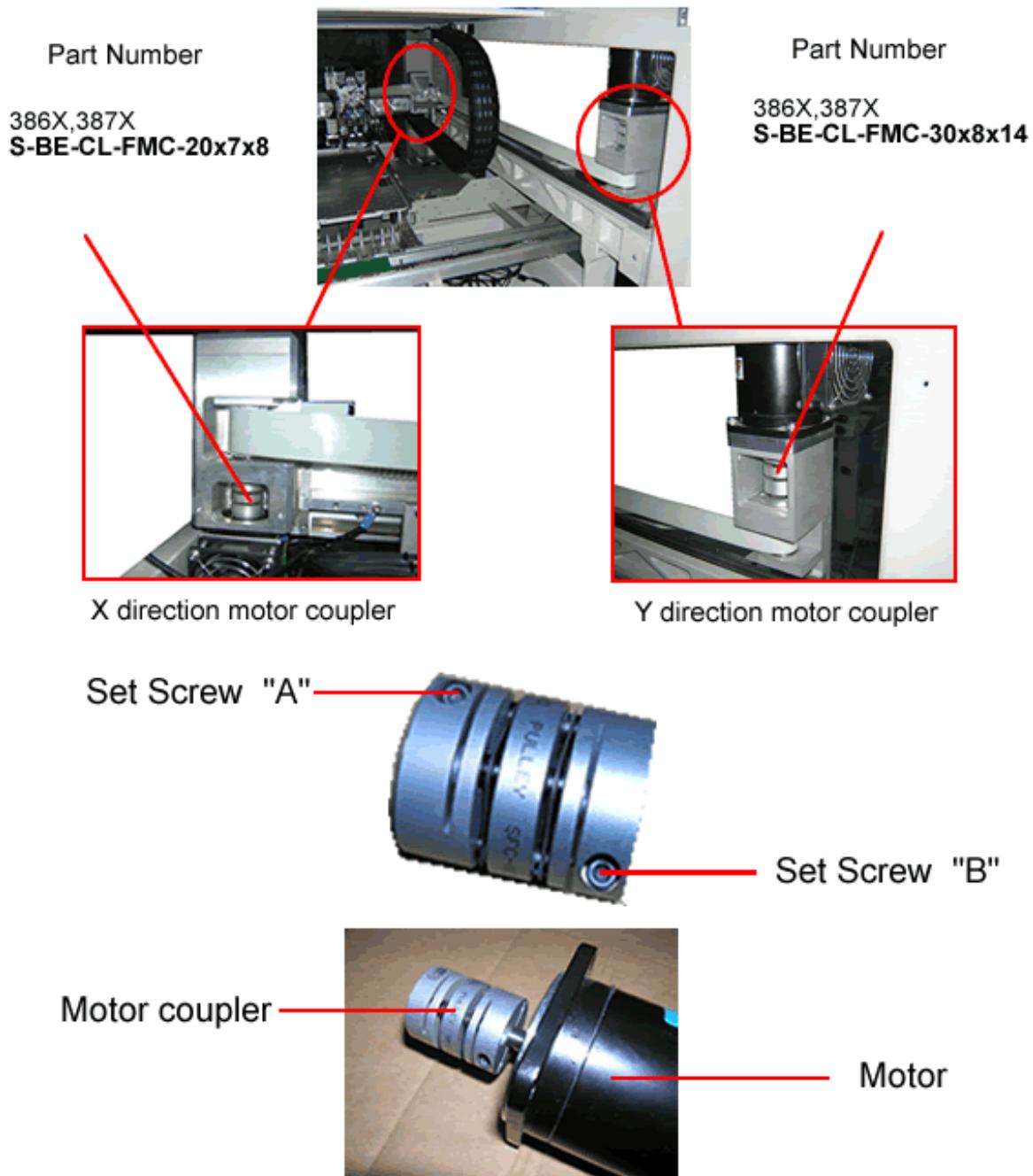


Note: This clean is for Encoder head dust and must be clean, after clean, all about the data for Encoder will be change, and the calibration must operate by engineer

If no necessary, don't do this operation!!

## 6) Replace Motor Coupler

Necessity: Hex Key, Motor Coupler in same model



- Unlock the Set Screw "A" and "B". ( not need to free)
- Release the four counter-bore that lock the motor, take out the motor with motor coupler
- Replace new motor coupler

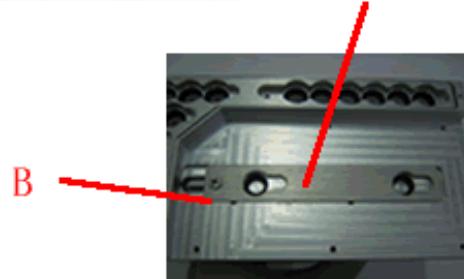
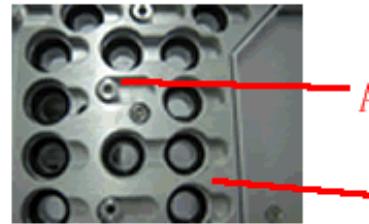
- Locate the motor coupler in the middle of motor axis and ball screw axis, that means motor axis and ball screw axis insert the same distance for motor coupler
- Lock the Set Screw "A" and "B" tightly

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

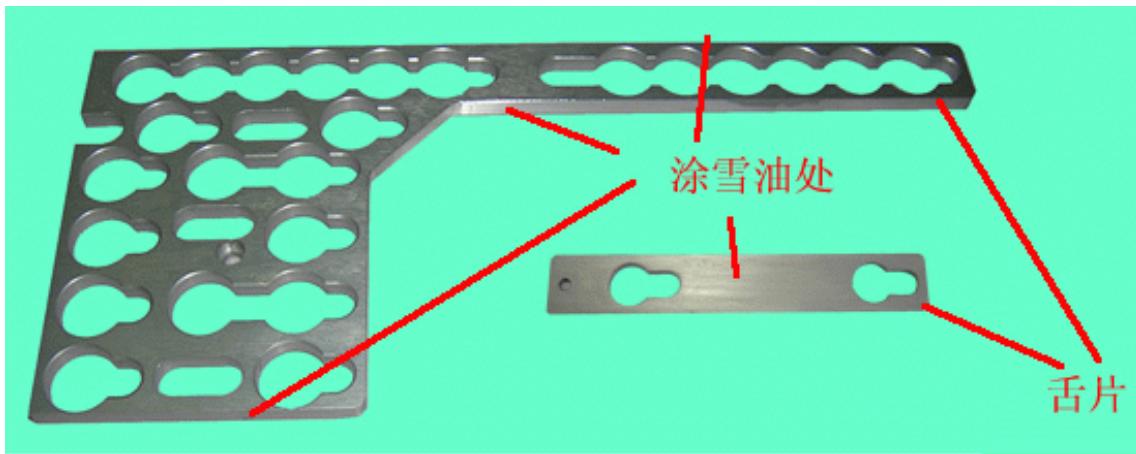
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 7) Auto Change Head (every 3 month)

Necessity: Hex Key, Cross Head Screw Driver, Special Grease and Cotton Bud



- In software - please click "Head change Unit" button in Utility Menu - Machine Diagnostic and make the unit raised, then remove all nozzles on the unit by hand.
- Release six screws by cross head screw driver.
- Take out the cover from the unit, release screw A,B
- Take out the Tongue Piece and add little special grease on it. Please see below:



According to the above mentioned steps in inverse:

Adjust the location of Moveable Piece when the unit raise and the top of Tongue Piece open, enable the Holes of Nozzle and Bottom Mounting are completely overlapped (Please see below). Then put the cover back.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

吸嘴孔与底座中的孔应完全重合

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

8 □ X, Y Belt (every week)

Necessity: Baysilone Paste for Belt and Cotton Bud, dry cloth



- Before add please Clean the old oil of the X,Y belt with dry cloth
- Evenly smear Baysilone Paste for belt on the teeth of X, Y Belt with cotton bud



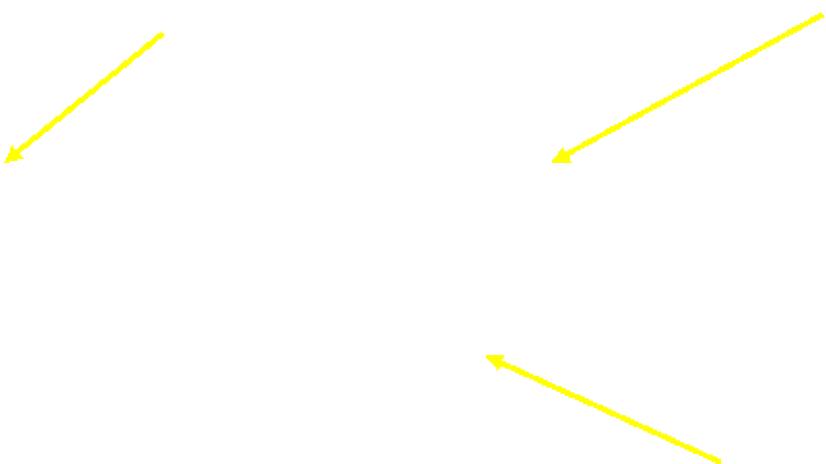
Remark: Paste needed to be evenly added, please don't put too much, otherwise, it will dripping on the machine or splash into other places because of high speed.

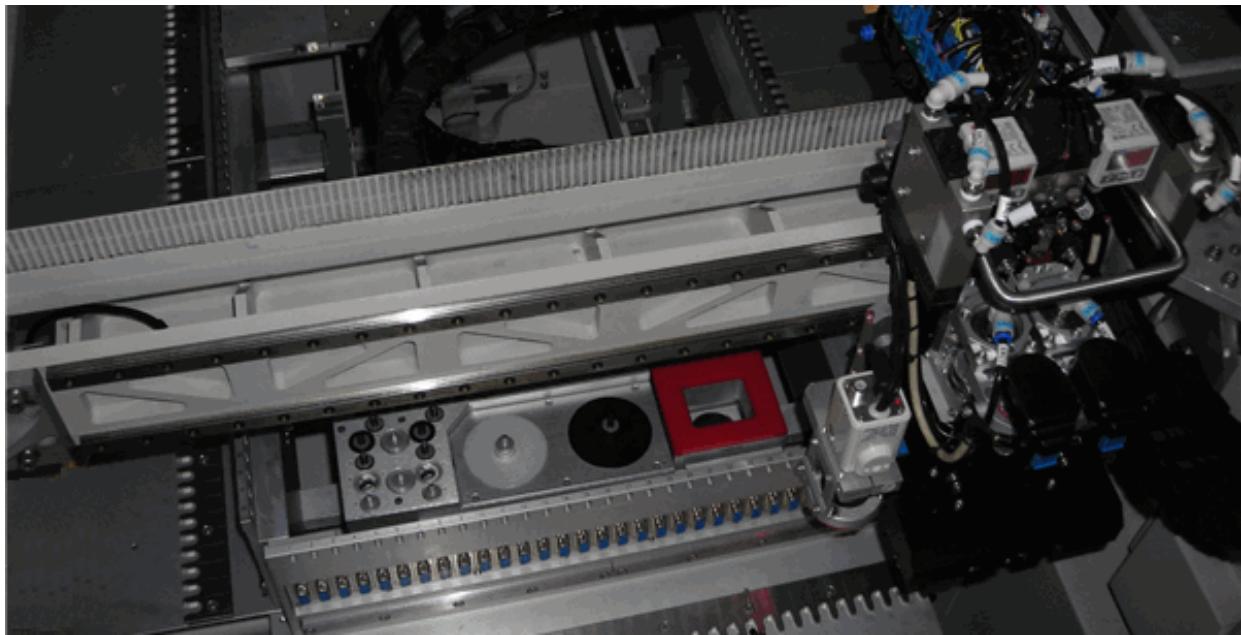
9) X Guide rail (every day)

Necessity: Oil (S-GREASE-RAIL) and clean, soft & dry cloth

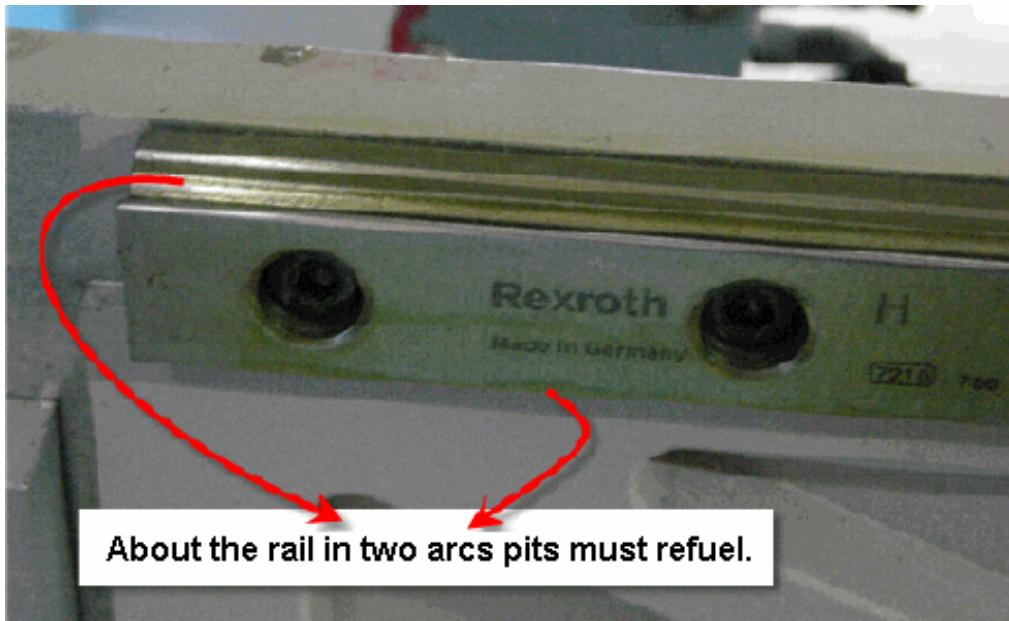


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





- A. Wipe off the old oil from the guide rail with a clean & soft cloth
- B. Move shaft-Z to the right, Add little oil inside around the guide rail (use Cotton Bud and dry cloth if necessary)
- C. About the rail in two arcs pits must refuel.



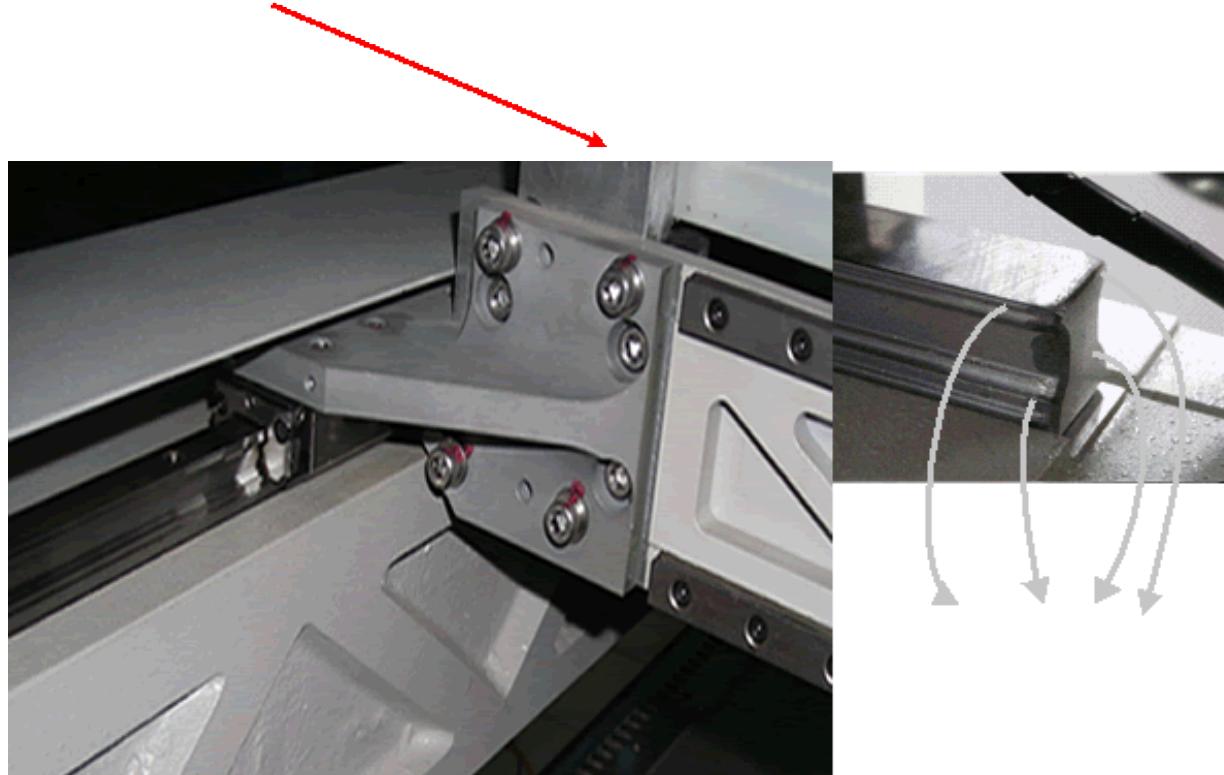
Remark: Oil cannot be added too much to avoid dripping, just ensure 2 arcs pits have enough oil is okay

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

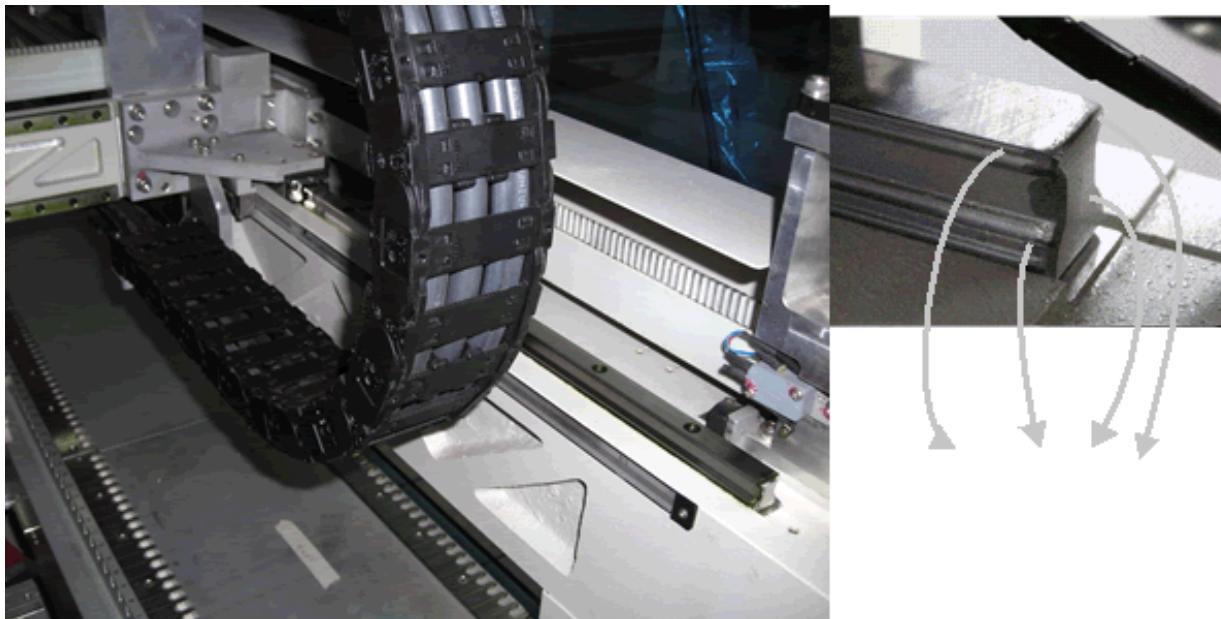
10) Y Guide rail (every day)

Necessity: Oil (S-GREASE-RAIL) and clean, soft & dry cloth



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- A. Wipe off the old oil from the guide rail with a clean & soft cloth
- B. Move shaft-Z to the right, Add little oil inside around the guide rail (use Cotton Bud and dry cloth if necessary)
- C. About the rail in two arcs pits of both sides must refuel.

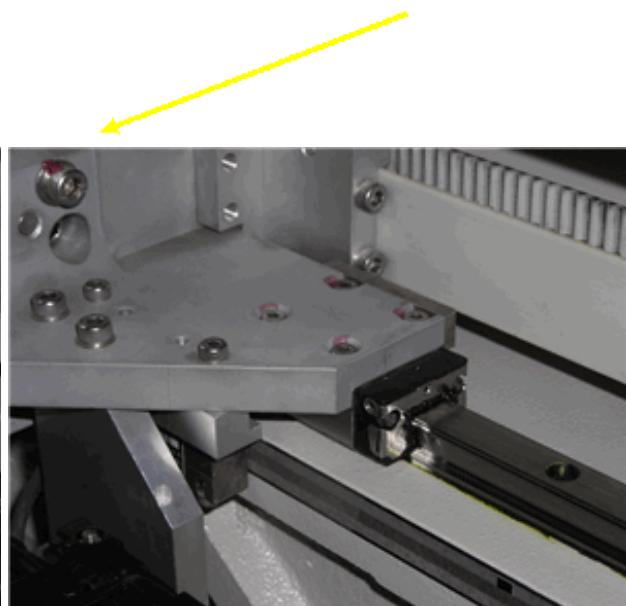
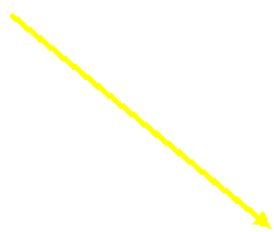
**Remark:** Oil cannot be added too much to avoid dripping, just ensure 4 arcs pits have enough oil is okay

11) Runner block  every 3 months

Necessity: Syringe with Special Grease (S-GREASE-BS), Hex Key, Link-Free Paper(S-LF-PAPER)



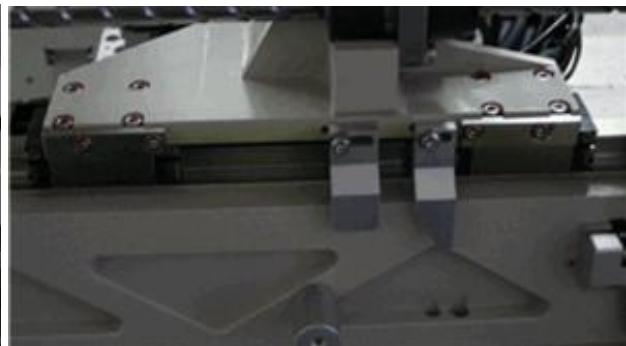
A. Move X axis to a position that can operation, use hex key to release the M3 screw

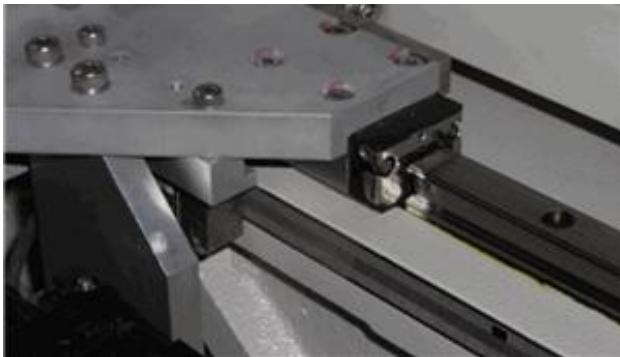


- B. Squash the special Grease into the runner block until the special grease overflow
- C. Clean the grease by Link-Free Paper, tighten the M3 screw, and about moves X axis to cause the guide rail refuel
- D. Repeat for add the other runner block, for in connection with two runner block, only add grease in both sides of them

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

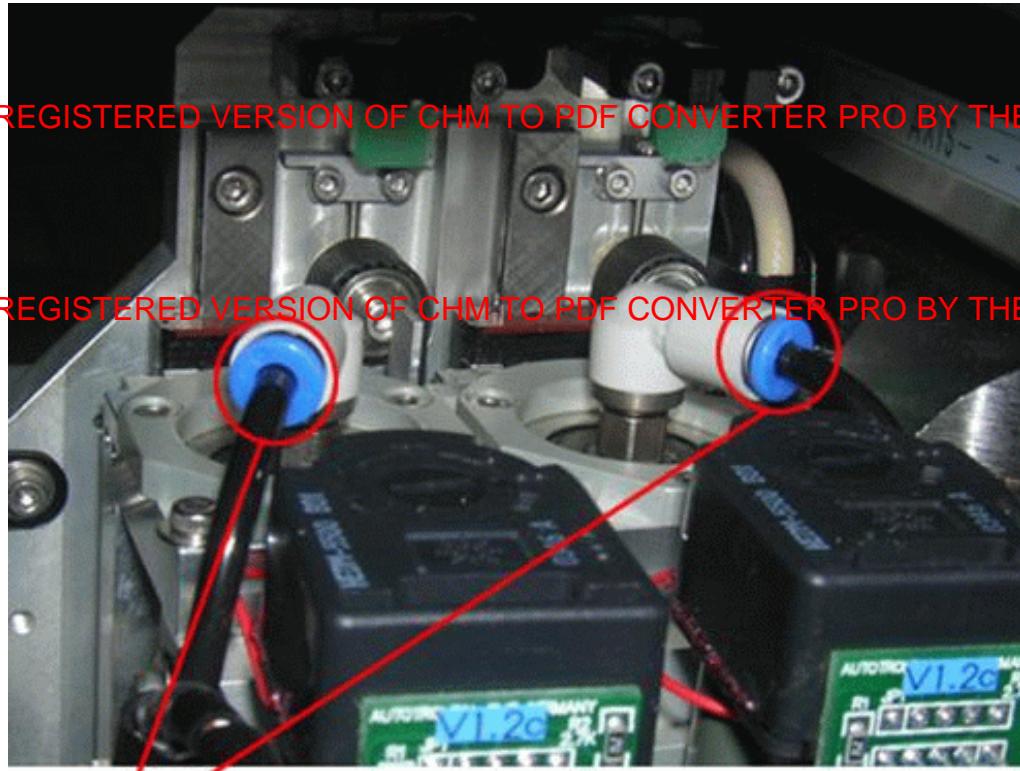
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



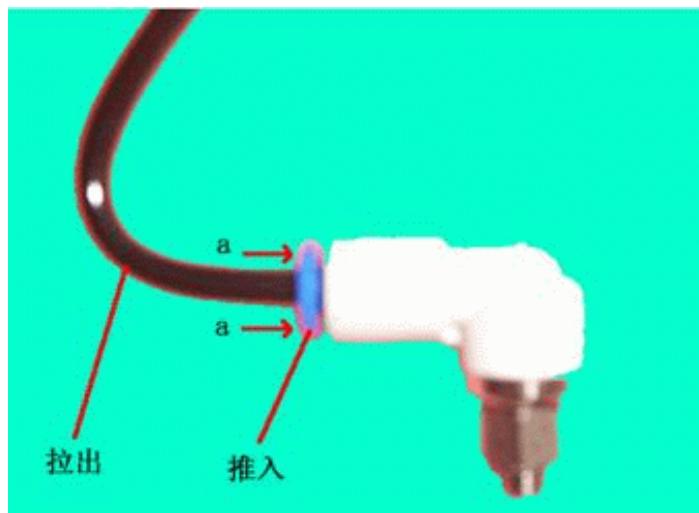


12) Cleaning Z - Shaft (every three month)

Necessity: Dry Compressed Air



拔出气喉, 对此孔吹气



- Push the blue piece that connected the nozzle and hose (diagram 'a' shown), and pull out the black hose at the same time
- Blow in air into the hole of Z-Shaft by Dry Compressed Air, and spout all the dust, solder paste and dirt

- Put back the black hose into the nozzle

13) Replace Nozzle plastic seal (every six month)

Necessity: New Nozzle plastic seal



塑胶密封圈

Tear off the broken Nozzle plastic seal. Please wipe off all the dirt with alcohol and put the new one on it.

#### 14) Camera-1 Offset (Software Calibration)

This is to calibrate the offset between Camera-1 & the Z-axis. This offset is a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed
- Camera-1 focus changed
- Component placement not accurate

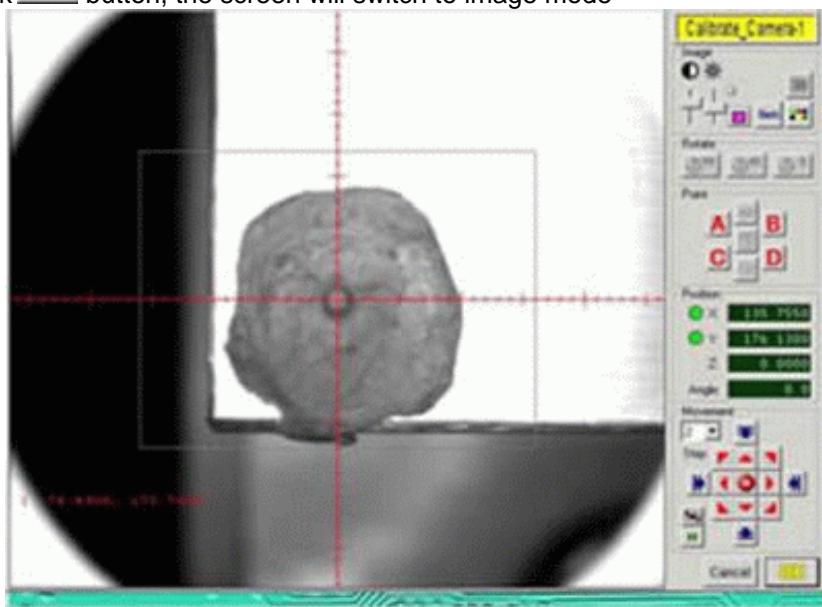
**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner of the Alignment-B, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode



Adjust the cross mark to the corner of the hole and click **OK** button.

The machine will auto remove nozzle #1 and the complete the **Calibrate Camera-1 Offset** procedure.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 15) Vacuum - sensor (Software Calibration)

This is auto detect each nozzle's vacuum sensor Analog Reading. Please choose CALIBRATE MENU - Nozzle Parameters from the software, then the below frame will be shown:

Nozzle Parameter Setting				
WHITE NOZZLE		BLACK NOZZLE		Alignment-G/H (Nozzle 7)
<b>HEAD 1</b>		Length	Vacuum Sensor Analog Reading	Nozzle Change Location
Nozzle 1 (0.7mm)	6.00	OPEN 217.6	CLOSE 236.9	X 181.1750
Nozzle 2 (1.2mm)	6.00	OPEN 187.9	CLOSE 237.4	Y 79.3400
Nozzle 3 (2.0mm)	5.00	OPEN 111.2	CLOSE 235.6	Camera
Nozzle 4	6.00	OPEN 85.1	CLOSE 84.9	Manual
Nozzle 5 (4.7mm)	4.50	OPEN 101.4	CLOSE 232.4	Test
<b>HEAD 2</b>		Length	OPEN 214.2	CLOSE 237.6
Nozzle 1 (0.7mm)	6.00	OPEN 178.5	CLOSE 240.9	X 181.0890
Nozzle 2 (1.2mm)	6.00	OPEN 114.9	CLOSE 238.1	Y 79.5000
Nozzle 3 (2.0mm)	5.00	OPEN 231.5	CLOSE 237.2	Camera
Nozzle 4	6.00	OPEN 106.1	CLOSE 230.7	Manual
Nozzle 5 (4.7mm)	4.50			Test
<input checked="" type="checkbox"/> 0201				
<input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading				
Z axis Position 68.92 mm				
X-Y Location 201.0150 77.4000				
<input style="background-color: red; color: white; border: 1px solid black; border-radius: 5px; padding: 2px 10px;" type="button" value="Manual"/>				
				
<input type="button" value="ALL Vacuum Reading"/>				
<input type="button" value="EXIT"/>				

### Manual Calibrate

For example: click **Learn** button from the Nozzle 1 and Vacuum Sensor Analog Reading, then the machine will auto install Nozzle 1 and below frame will be shown:

Auto Learn Vacuum Sensor Analog Reading		
Open Reading :	219.1	<input type="button" value="Learn"/>
Close Reading :	235.5	<input type="button" value="Learn"/>
Close Reading : Please use your finger to clog the nozzle, that is to simulate a component is pick up.		
<input type="button" value="Cancel"/>	<input type="button" value="OK"/>	

Firstly, detect the reading with no component, click **Learn** button, start vacuum and show the detected reading in "open reading".

After that, please use your finger to clog the nozzle, that is to simulate a component is pick up, then click the second **Learn** button, the vacuum will on again and show the detected reading in "close reading".

OK

Finally click OK button to save and exit.  
Do the above mentioned detect for all nozzles in sequence.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

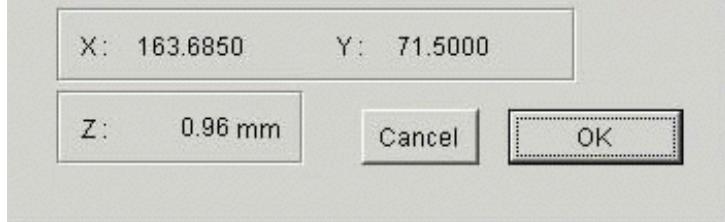
## Automatic Calibrate

(1) Enable Auto Learn Vacuum Sensor Analog Reading, click **Manual** button, manually move X-Y axis and move down Z-axis to the rubber pad by hand, this is for confirm the calibrate location.

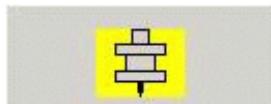
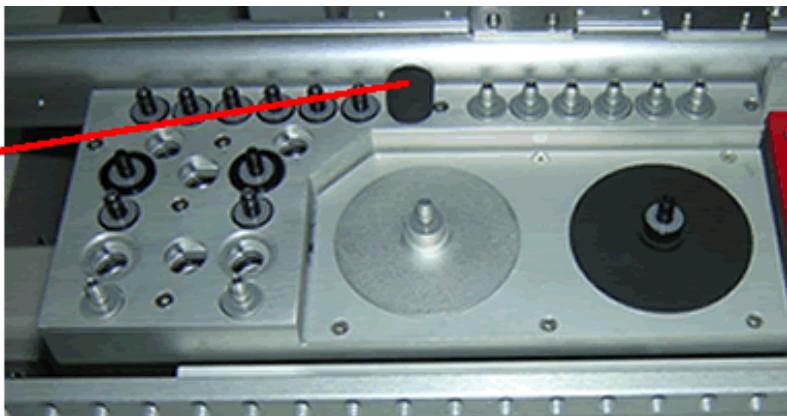
### Manual Learn Vacuum Reading Location

**Please manually move X-Y axis and move down Z-axis  
to the rubber pad by hand and then click <OK>**

**(Don't release move down Z-axis before click <OK>)**



黑胶



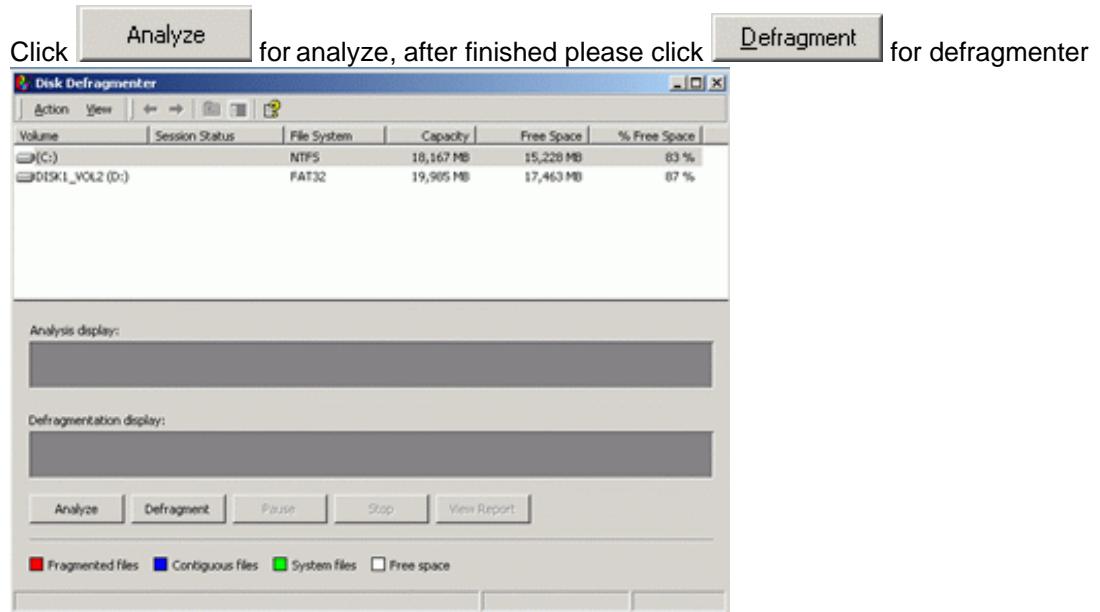
(2) Click **ALL Vacuum Reading** button, machine will start to detect the reading with no component, and auto move to the rubber pad to detect the reading that is to simulate a component is pick up, and then software will auto detect the nozzle

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 16) Disk Defragmenter(every week)

Select Start - Program - Accessories - System Tools - Disk Defragmenter to do disk defragmenter



Before defragmenter, red means fragmented files



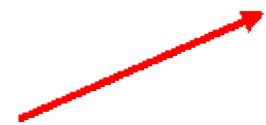
After defragmenter



17) Maintenance of SMC Air Fitter

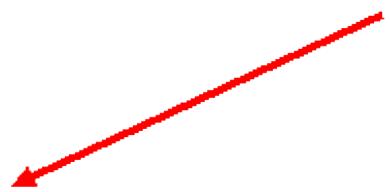
1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water air filter for oil is use for filter oil.
3. The water and oil will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE







UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Replace way for filter element (S-AF30P-060S0)

1. Pull down the lock, remover the filter body by clockwise or counterclockwise; remove the lock pin for replace the filter element.





2. Reinstall the lock pin (counterclockwise for lock), and then reinstall the body (let the protruding arm at the concave, and then pull down the lock for install the body by clockwise or counter clockwise).

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



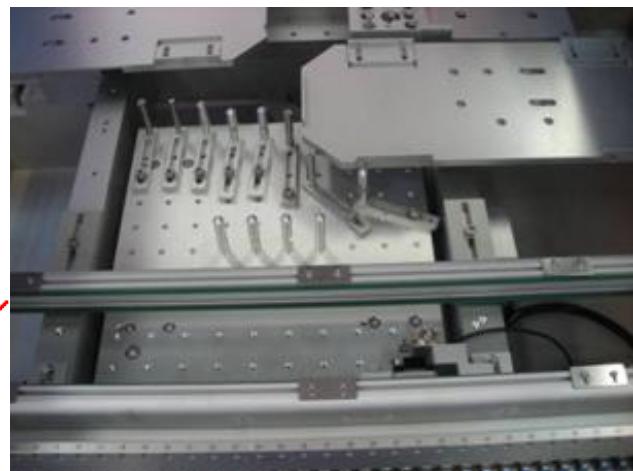


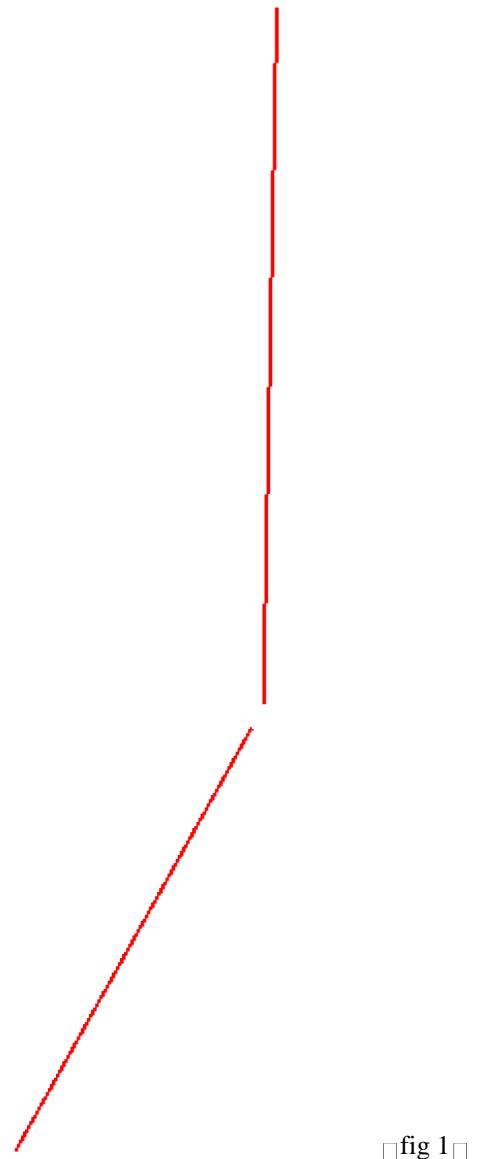
18) Conveyor Table Up/Down bearing (every 6 months)

Necessity: Grease, Oil (S-GREASE-RAIL) and Cotton Bud

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





□fig 1□

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

/

/

/

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



□fig 2□



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



□fig 3□

Æ Take out the conveyor.

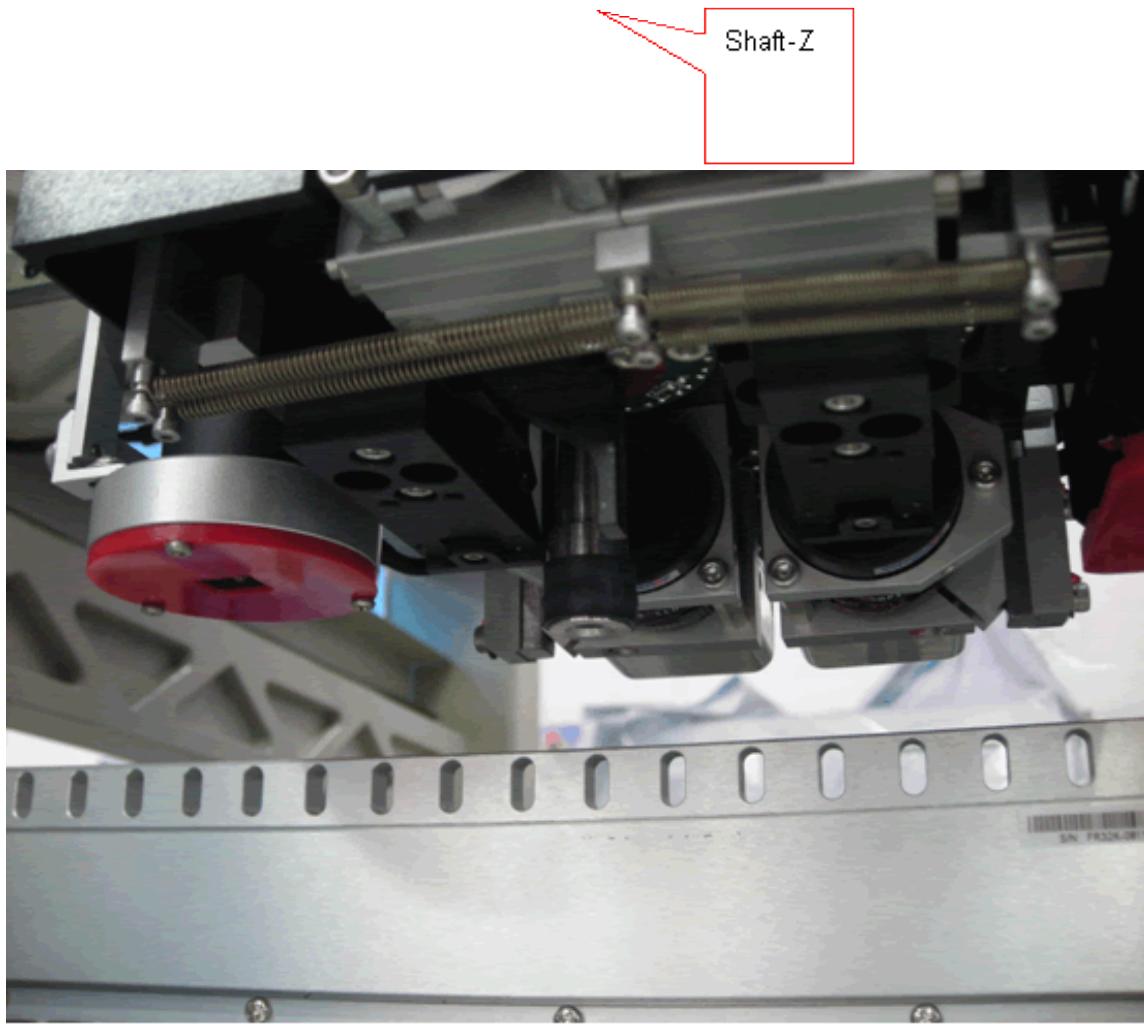
Æ Take out the aluminum board upward carefully.

Æ Add grease on bearing, add oil on guide rail.

According to the above mentioned steps in inverse, don't reverse the aluminum board of conveyor Table when put back.

#### 19 □ Maintenance for shaft-Z

1. Pull down the shaft-Z

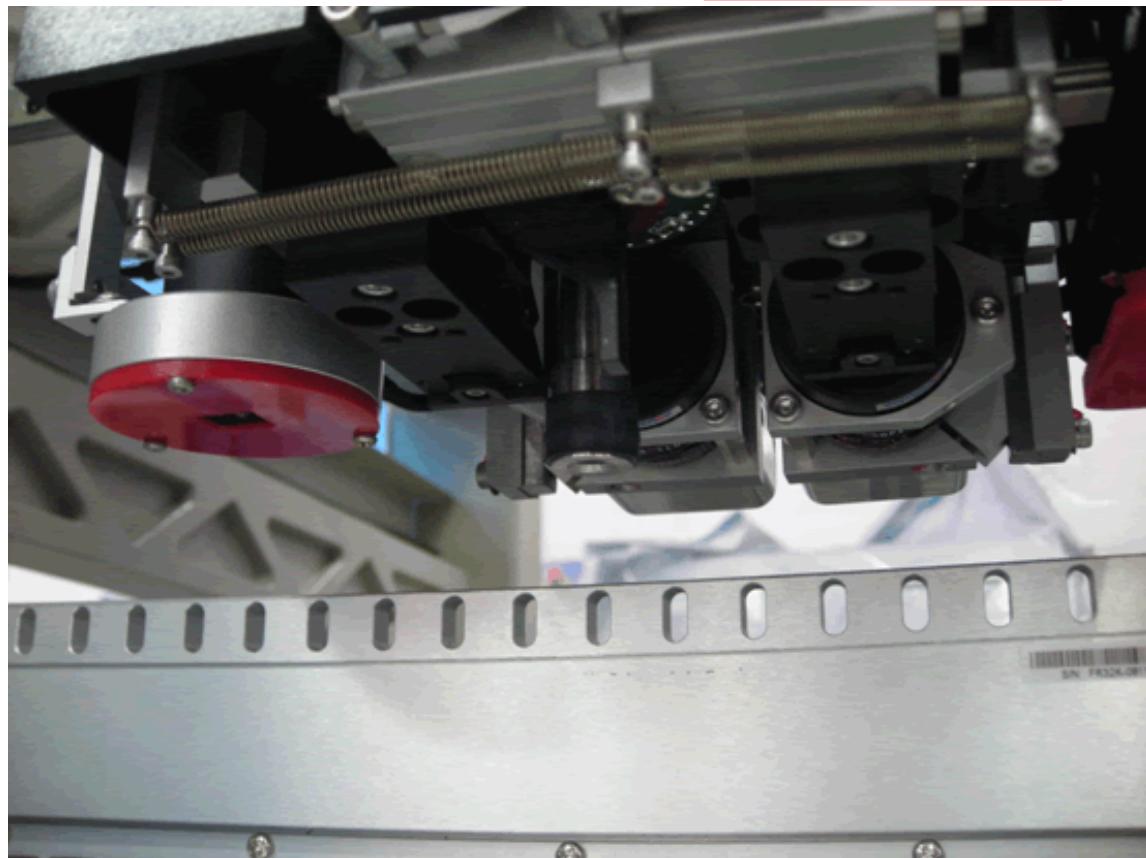


2. Take out the rubber ring (S-TU-Z-AXIS-10X8)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

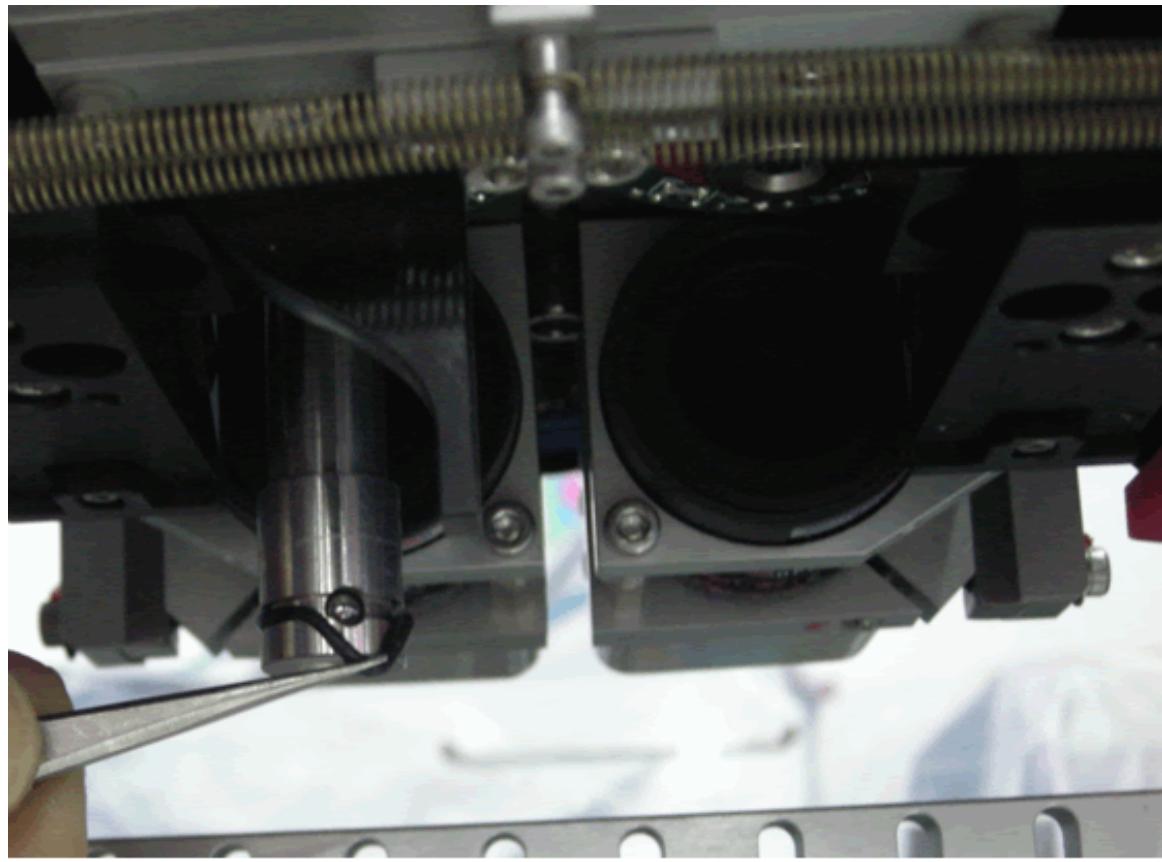
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

S-TU-Z-AXIS-10x8



3. Use nipper to take out the O-ring (S-ORING-9MMX1.5MM)

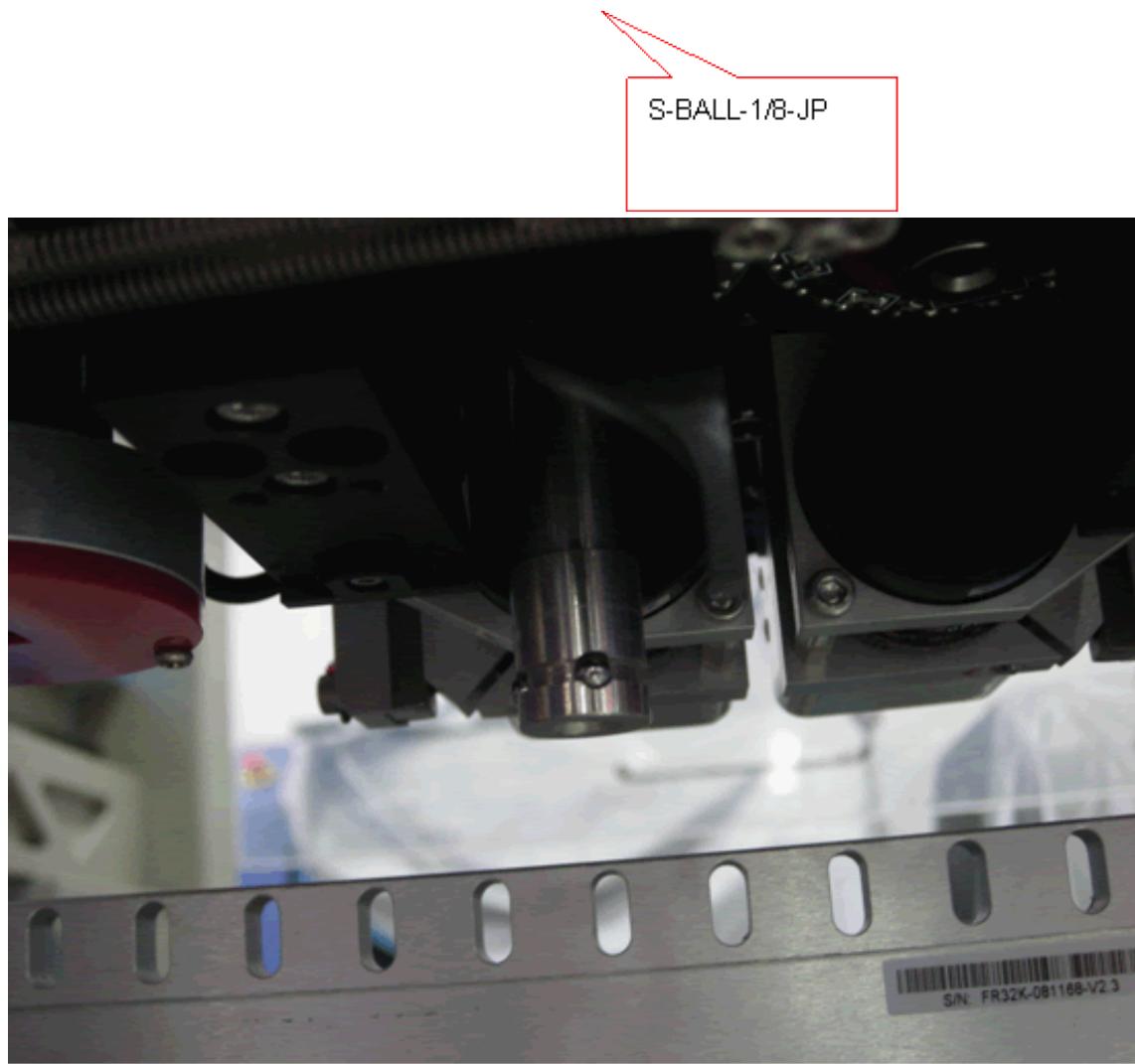
S-ORING-9MMX1.5MM



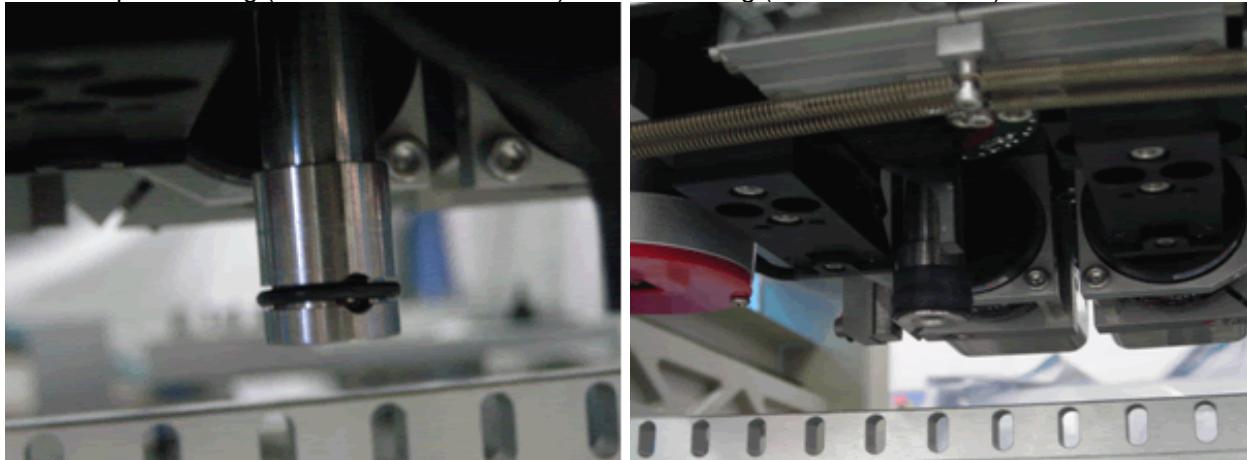
4. Replace the roll ball (S-BALL-1/8-JP)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

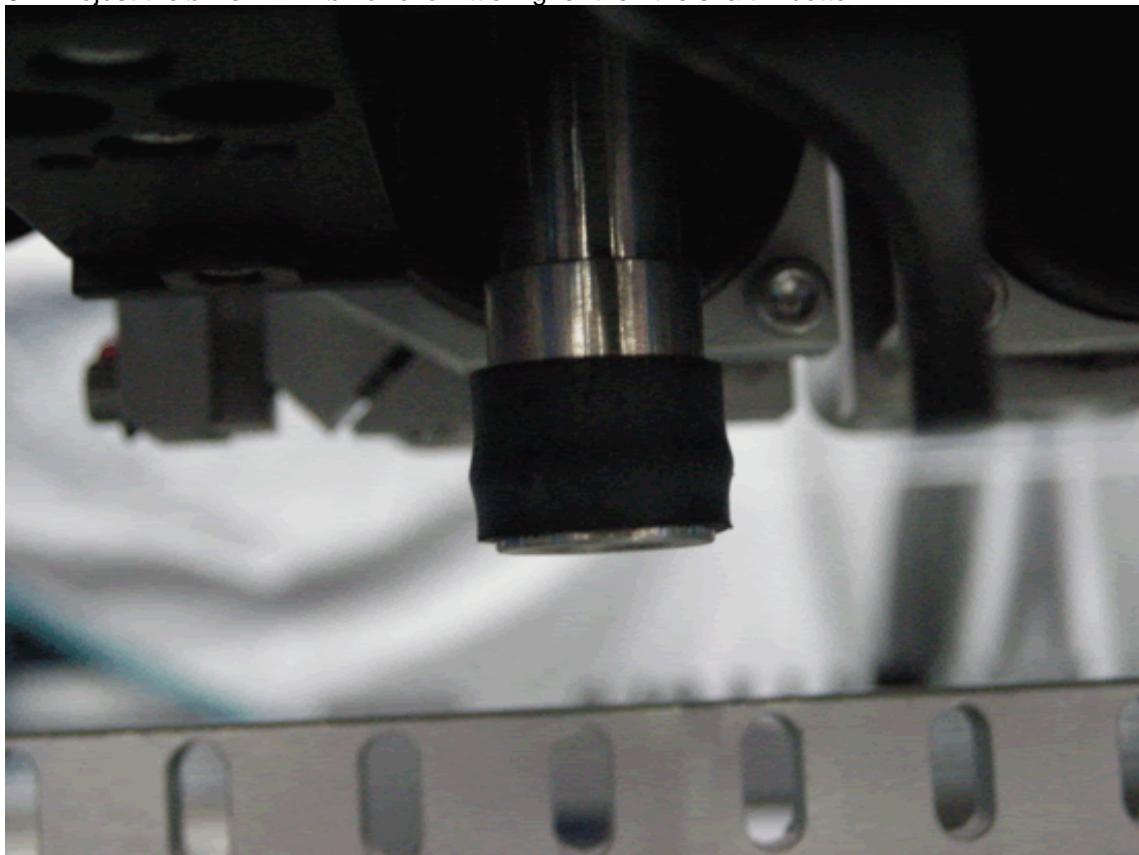
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



5. Setup the O-ring (S-ORING-9MMX1.5MM) and rubber ring (S-TU-Z-AXIS-10X8)



6. Adjust the S-TU-Z-AXIS-10X8 for little higher then the shaft-Z bottom

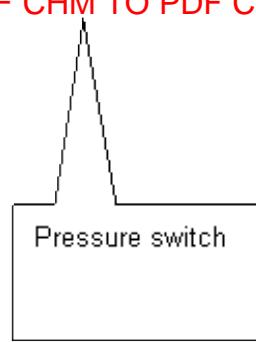


20) Pressure switch(S-IS1000-01S)

Location of pressure switch (Please check below)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



We usually set the value is 0.4MPa (Manufacturer setting)

0.4MPa



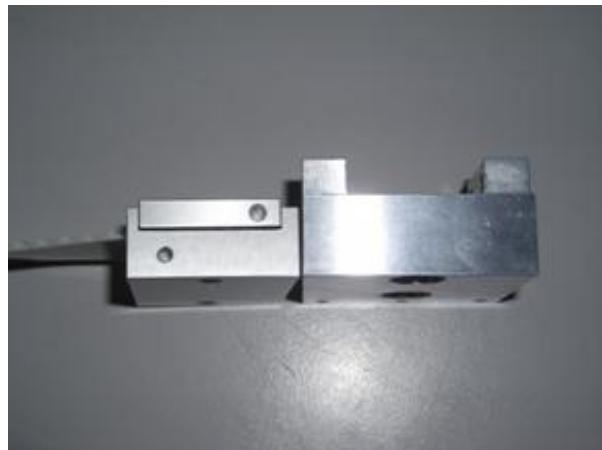
## 20) Notes on adjusting the belt length/tension for X/Y belts

1. The timing belt is mounted by two parts BX03, BX04. Changing the direction of these two parts can obtain different belt length/tension.



2. The timing belt is of 5mm pitch.
3. Reversing installing BX03 can obtain a change of 2.5mm belt length difference.
4. Reversing installing BX04 can obtain a change of 1.25mm belt length difference.
5. So in total there are 4 combination of lengths be possible: 1.25mm, 2.5mm, 3.75mm, 5mm.
6. There is a hole mark at the sides of BX03, BX04. We can have the following 4 combinations:





7. Try different combinations to see which one best fit the user needs.

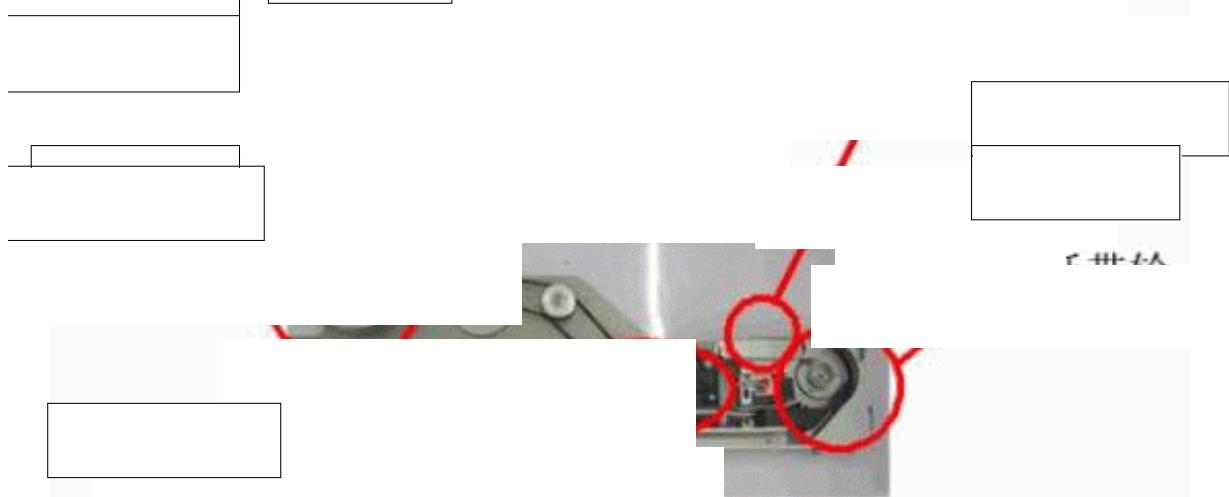
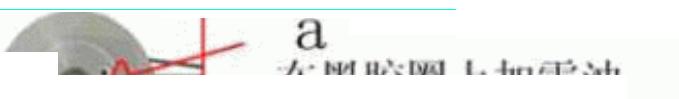
7.

ape

es: Special Grease,

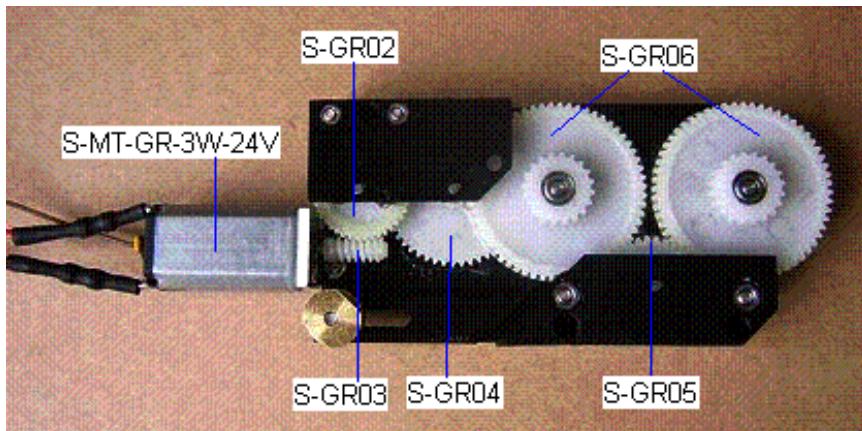
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



b 在齿轮上加雪油

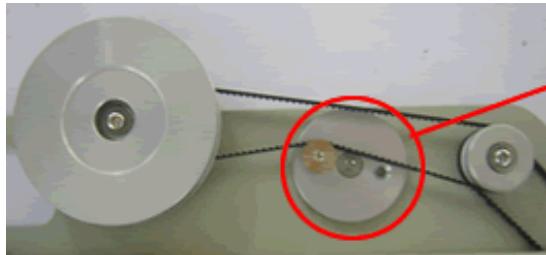
S-GB-L4A ( Plastic gearbox )



S-GB-L4A Plastic gearbox

Type	HK part no	Description
Gearbox	S-GR02	Feeder gearbox gearwheel dia 17mm
Gearbox	S-GR03	Feeder gearbox worm gear for motor
Gearbox	S-GR04	Feeder gearbox gearwheel dia 25mm
Gearbox	S-GR05	Feeder gearbox gearwheel dia 16mm
Gearbox	S-GR06	Feeder gearbox gearwheel dia 30mm T=3mm
Motor	S-MT-GR-3W-24V	Gear motor for feeder

- 2) Step to increase the friction of sealing tape roller for taking off the sealing tape  
( For SFTA-XXL4 only)

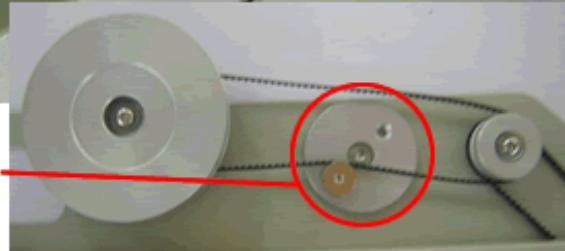


把定位片向上转则增大皮带拉力

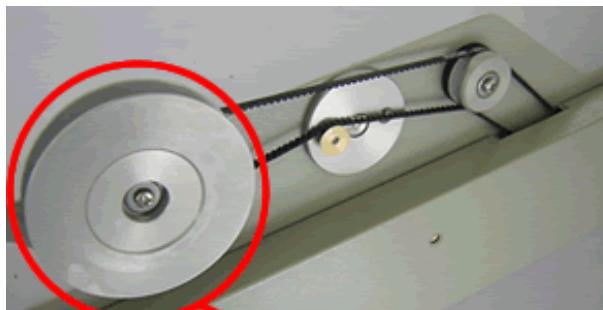
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



把定位片向下转则减少皮带拉力



3) S FTA-XXL 4 --- BELT



1) 拆下此螺丝

2) 取下胶带轮



3) 更换皮带2



皮带1

4) 重新安装胶带轮



压片 外推此开关



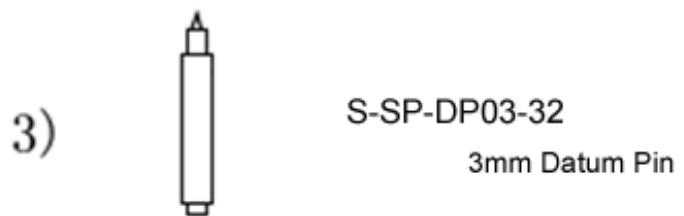
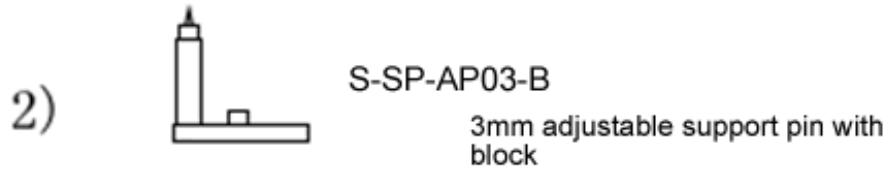
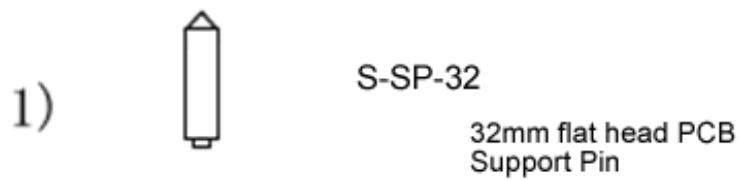
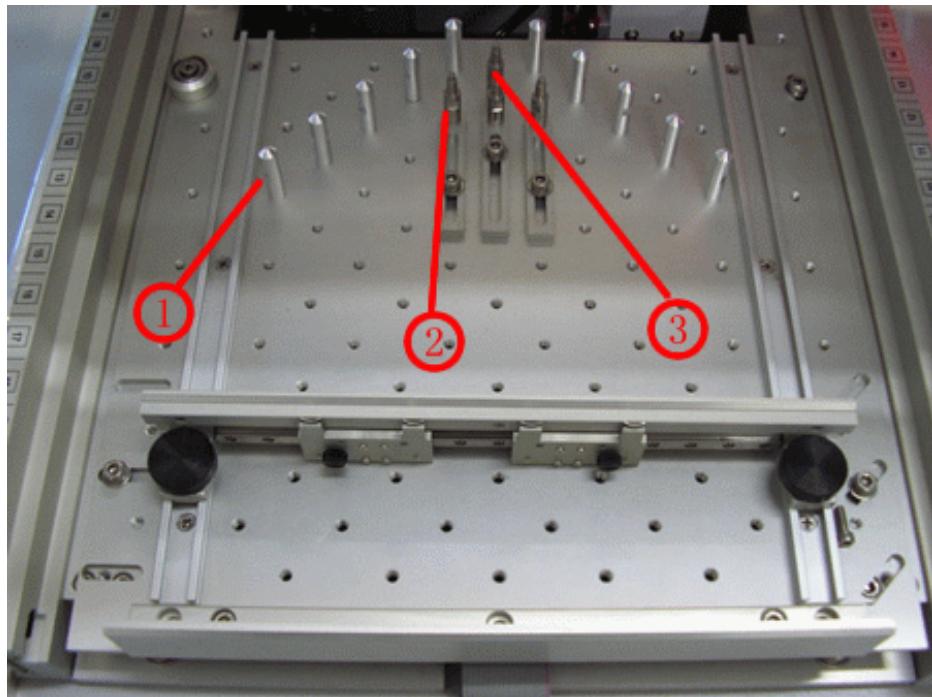
皮带3

1. BELT-1 part number : S-B-F- 100 - 2.5 , Feeder Belt
2. BELT-2 part number : S-B-F-150-2.5, Feeder Belt
3. BELT-3 part number : S-B-F-1 0 0 - 3.0 , Feeder Belt

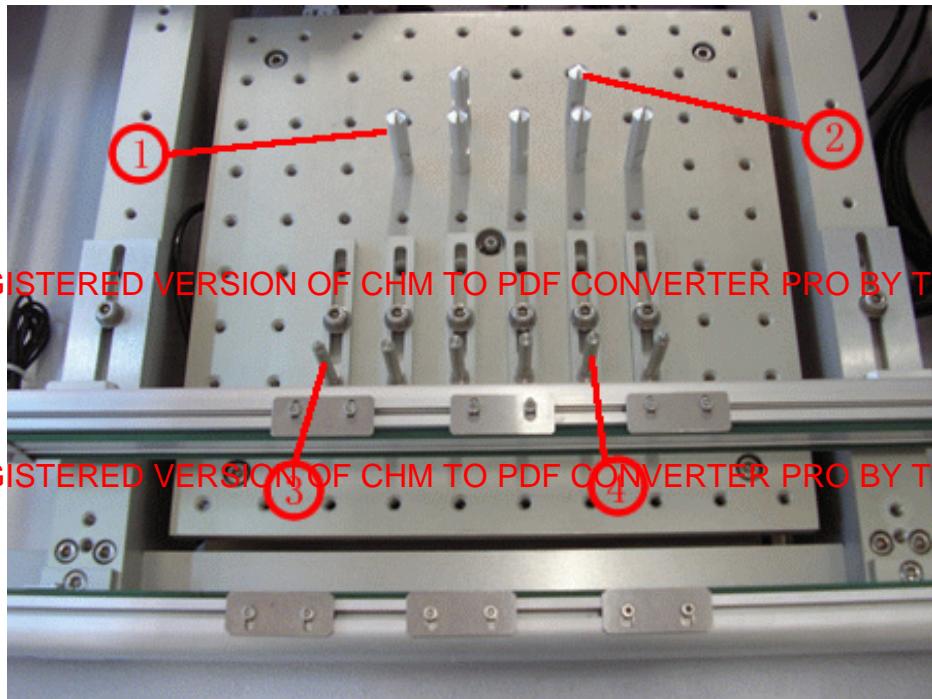
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

4) MANUAL SUPPORT PINS PART NUMBER



5) COVERYOR SUPPORT PINS PART NUMBER



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

1)



S-SP-CY-37

conveyor 37mm PCB  
Support Pin

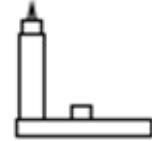
2)



S-SP-CY-42

conveyor 42mm PCB  
Support Pin

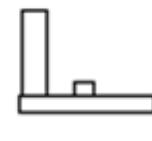
3)



S-SP-CY-AP03-37-B

conveyor 3mm adjustable  
support Pin with block

4)



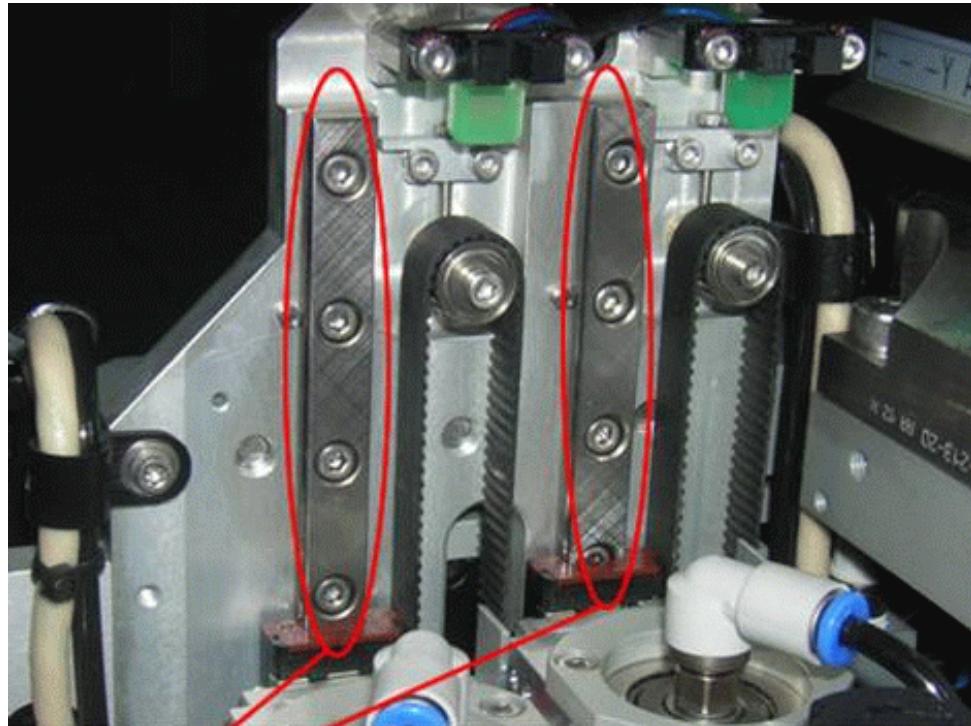
S-SP-CY-APF-37-B

conveyor flat head  
adjustable support pin  
with block

6) Shaft-Z (Up/Down) (every 6 month )

Necessity: oil

Press Shaft-Z by hand, add oil on both side of Shaft-Z ' s orbit bit . After that, move Shaft-Z from up and down in order to make oil can be evenly smeared on orbit.



Z轴(上/下) 加机油

**Remark: drip down appropriate quantity of grease, avoid to smear the other spare parts**

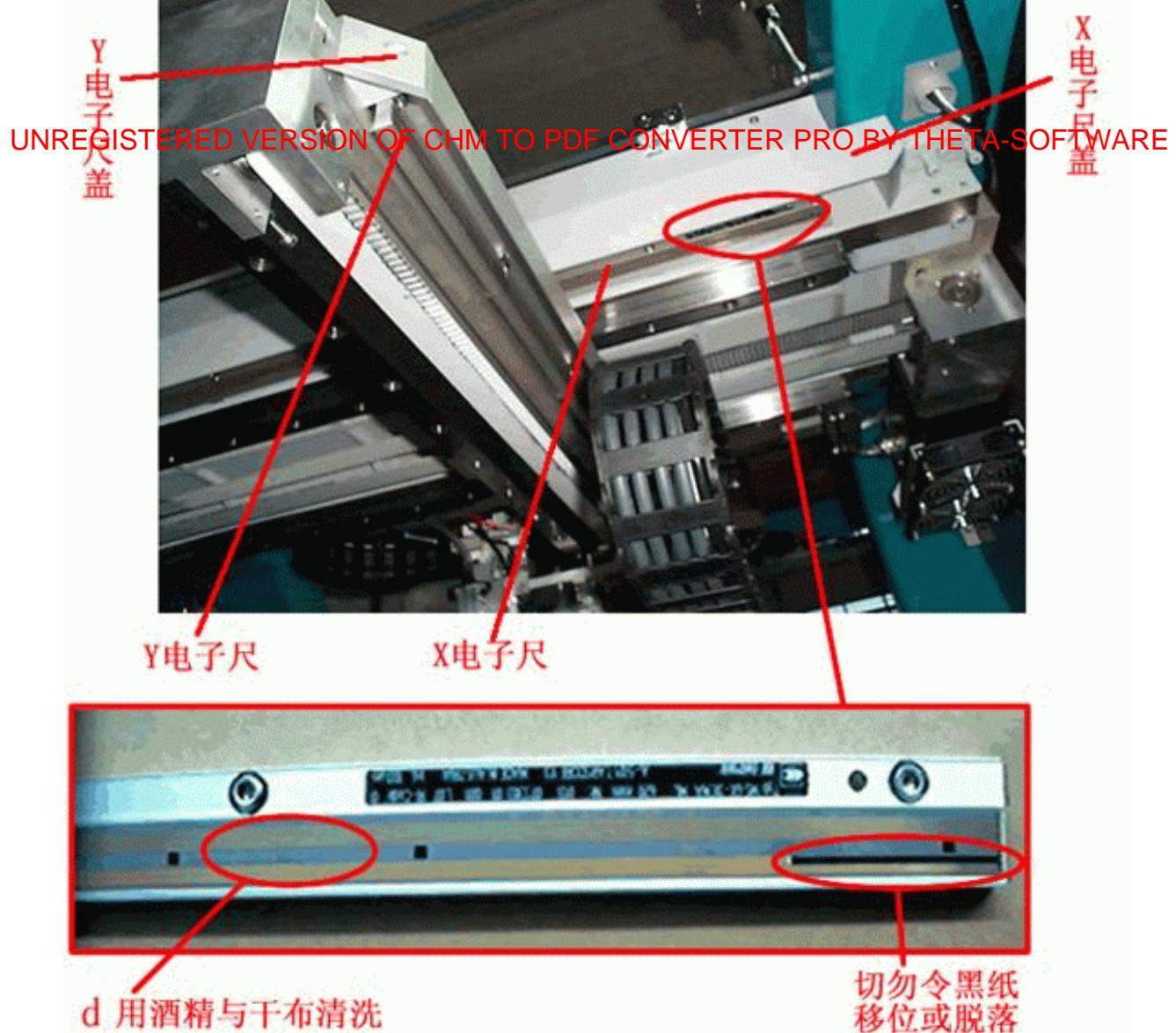
Remark: V1 machine has one orbit, V2 machine have two orbits

7) X-Y Encoder (every month)

Necessity: Screw Driver, Hex Key, Alcohol, clean soft & dry cloth and Dry Compressed Air

Open the cover of encoder with hex key and screw driver

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



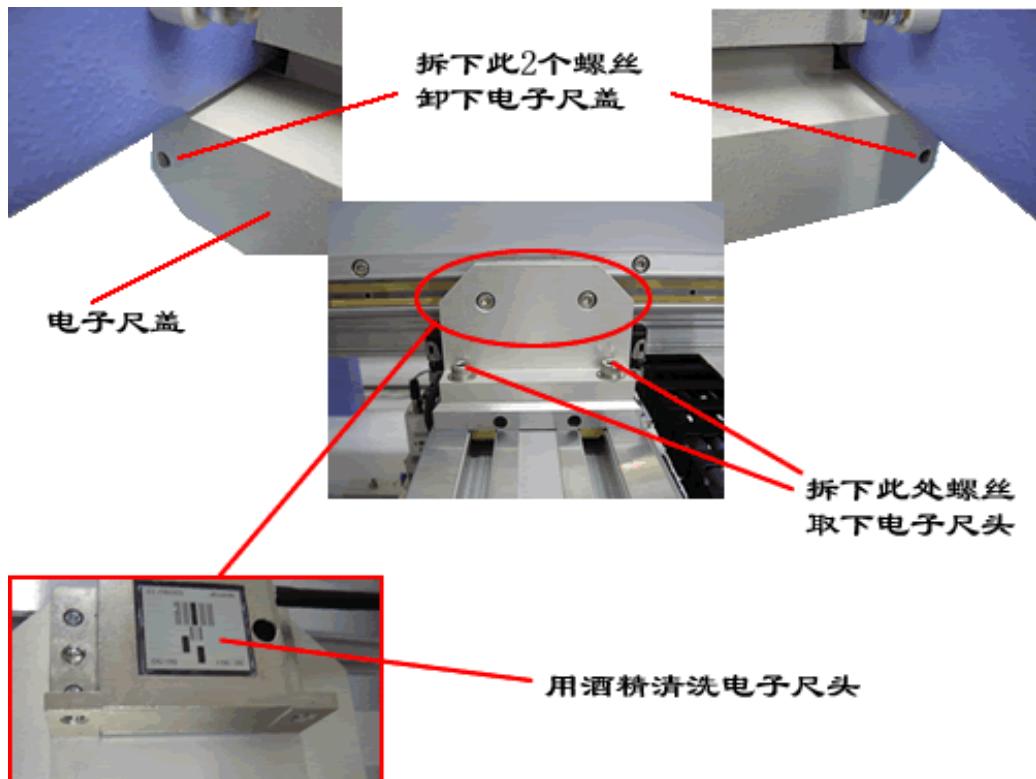
Clean the encoder with dry cloth and alcohol completely.

Please see point **d** of above diagram

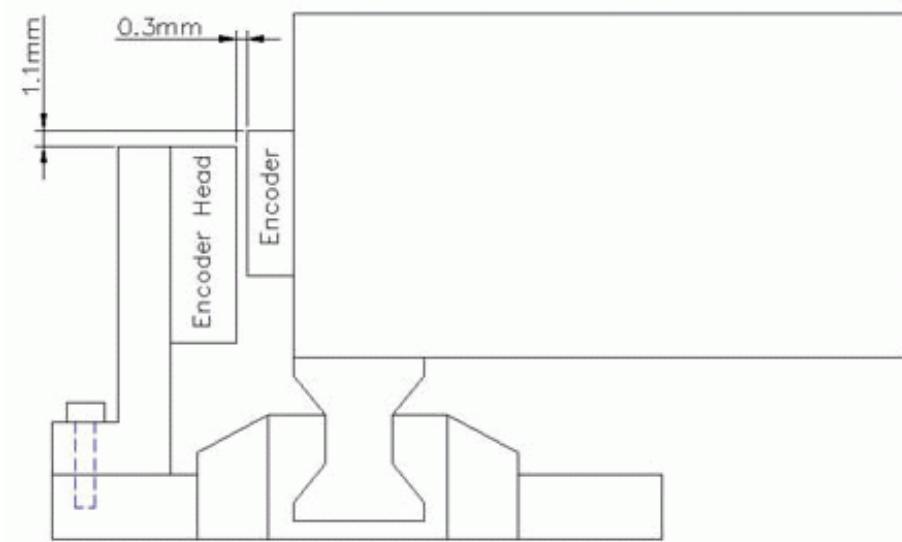
- blow the encoder dry with Dry Compressed Air after cleaned
- fix the cover of encoder

## 8) Clean the Encoder Head

Necessity: Hex Key , Alcohol



## Dimension notice



**Note: This clean is for Encoder head dust and must be clean, after clean, all about the data for Encoder will be change, and the calibration must operate by engineer**

**If no necessary, don't do this operation!!**

9) Replace Hugo Coupler Plastic Disc (every year)

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

Necessity: Hex Key ,Hugo Coupler Plastic Disc in same model

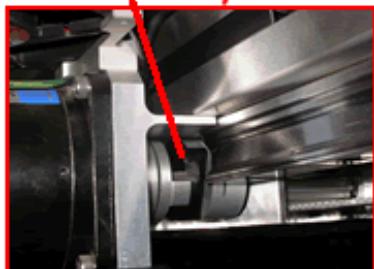
**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

Y黑胶部件编号:

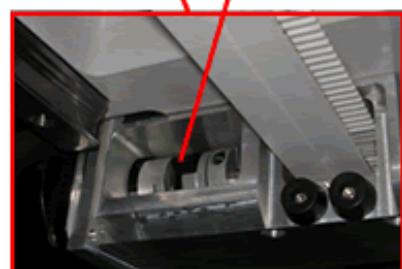
S-BE-CL-DISC-33

X黑胶部件编号:

S-BE-CL-DISC-33



Y方向马达连接器



X方向马达连接器



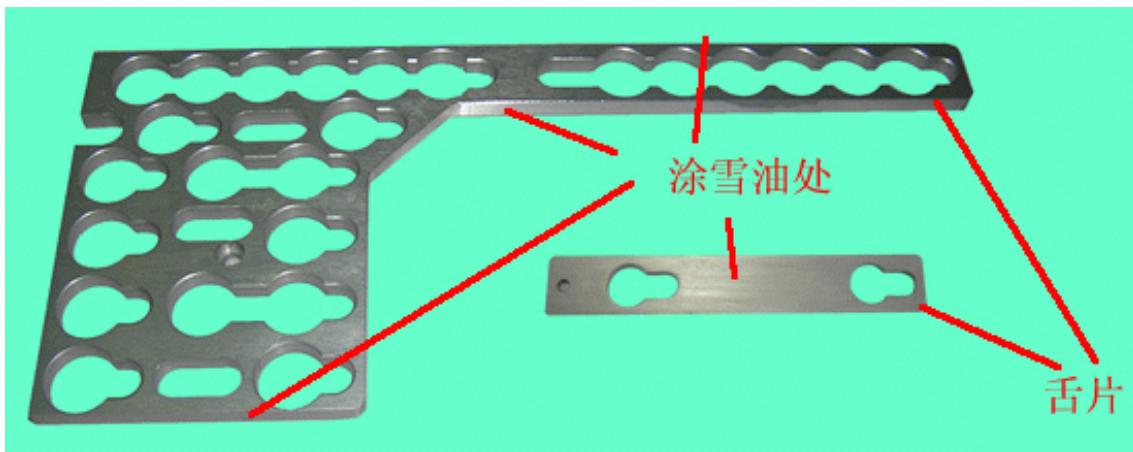
- Loose the Set Screw "A" and "B" . ( not need to free)
- Separate the metal coupler until take out the old Plastic Disc
- Replace with new Plastic Disc
- Move the metal coupler towards the Plastic Disc. must hold 1mm gap
- Lock the Set Screw "A" and "B" tightly

10) Auto Change Head (every 3 month)

Necessity: Hex Key, Cross Head Screw Driver, Special Grease and Cotton Bud



- In software - please click "Head change Unit" button in Utility Menu - Machine Diagnostic and make the unit raised, then remove all nozzles on the unit by hand.
- Release six screws by cross head screw driver.
- Take out the cover from the unit , release screw A,B
- Take out the Tongue Piece and add little special grease on it. Please see below:



According to the above mentioned steps in inverse:

Adjust the location of Moveable Piece when the unit raise and the top of Tongue Piece open, enable the Holes of Nozzle and Bottom Mounting are completely overlapped (Please see below). Then put the cover back.



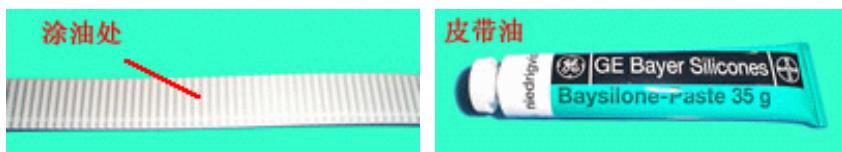
吸嘴孔与底座中的孔应完全重合

11) X, Y Belt (every week)

Necessity: Baysilone Paste for Belt and Cotton Bud



- Before add please Clean the old oil of the X,Y belt with dry cloth
- Evenly smear Baysilone Paste for belt on the teeth of X, Y Belt with cotton bud



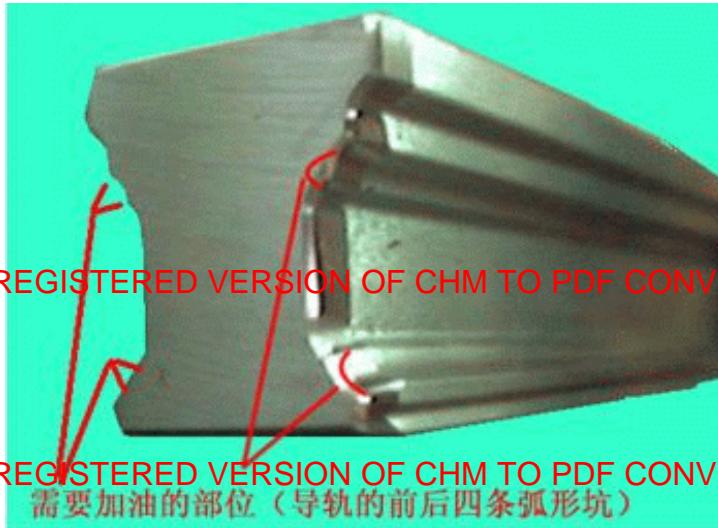
Remark: Paste needed to be evenly added, please don't put too much, otherwise, it will dripping on the machine or splash into other places because of high speed.

12) X, Y Guiderail (every day)

Necessity: Oil and clean, soft & dry cloth



- Wipe off the old oil from the guiderail with a clean & soft cloth
- Add little oil inside the gap with four arches around the guiderail (3 guiderail total)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

需要加油的部位 (导轨的前后四条弧形坑)

Remark: Oil cannot be dropped too much to avoid dripping, just ensure 4 gaps have enough oil is okay

13) Camera Lens (every month)

Necessity: Dry Compressed Air and clean, soft & dry cloth

吹气及用干布擦拭



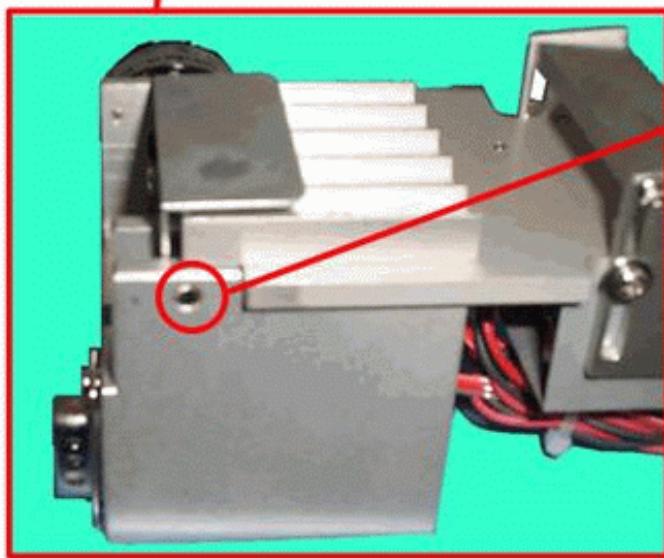
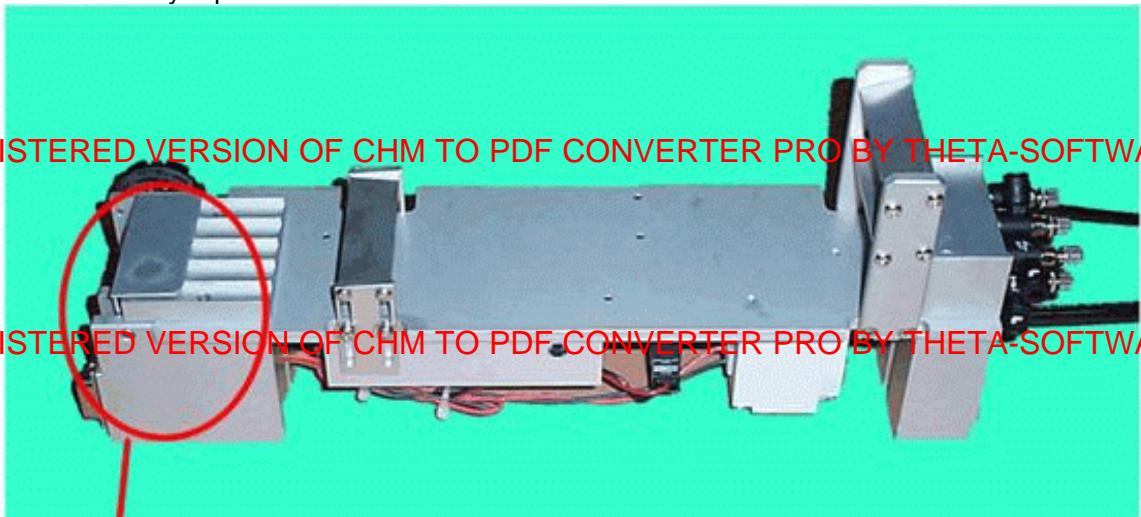
blow off the dust and dirt from the camera Lens by dry compressed air

rub it with cloth and make it dry by dry compressed air

**Remark: blow off the dust from camera Lens (diagram a) only use with dry compressed air and prohibit from wiping or touching, otherwise, the precision of the machine will be affected.**

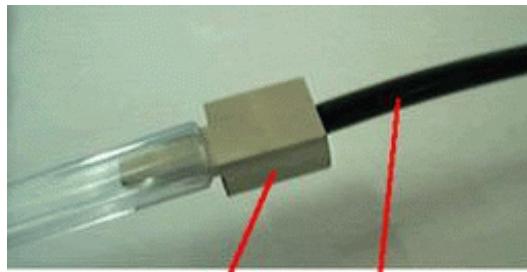
14) UFTB - X hinge (every week)

Necessity: Special Grease and Cotton Bud



加雪油

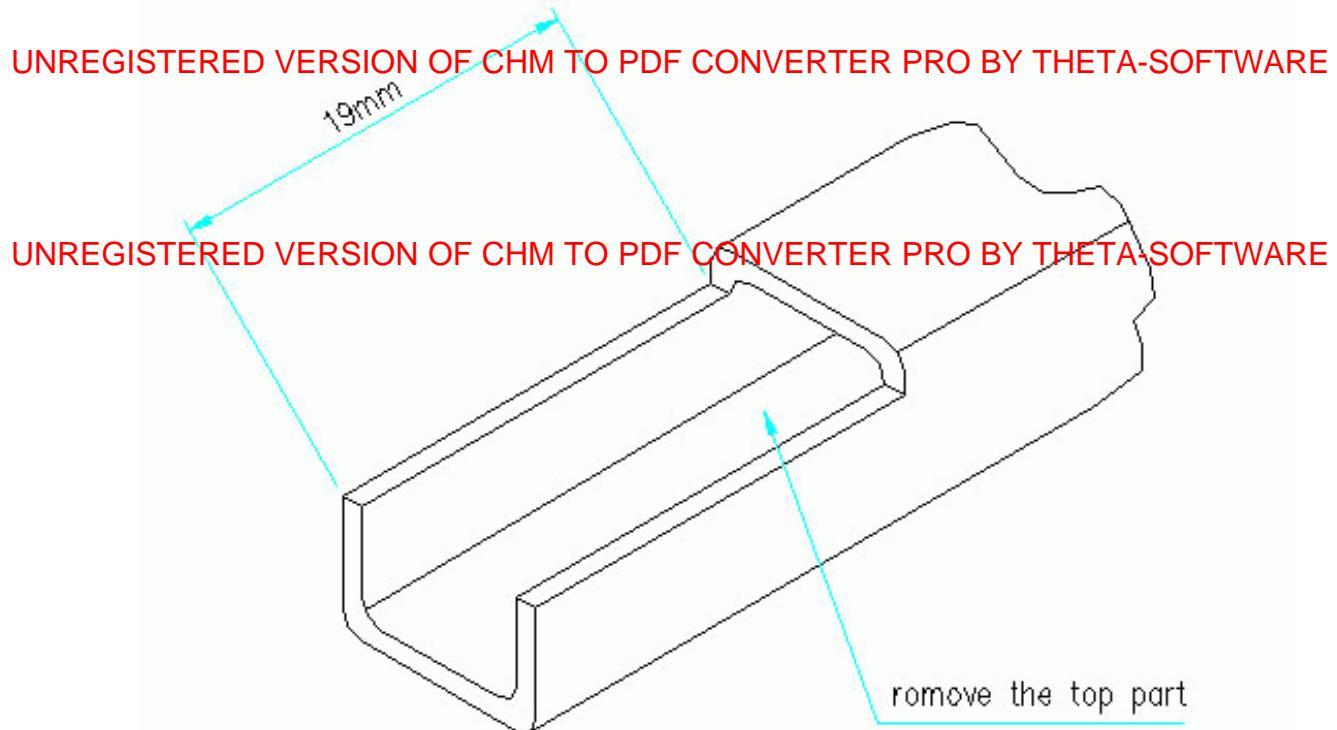
- Add special grease on the axle of cover board, please see above.



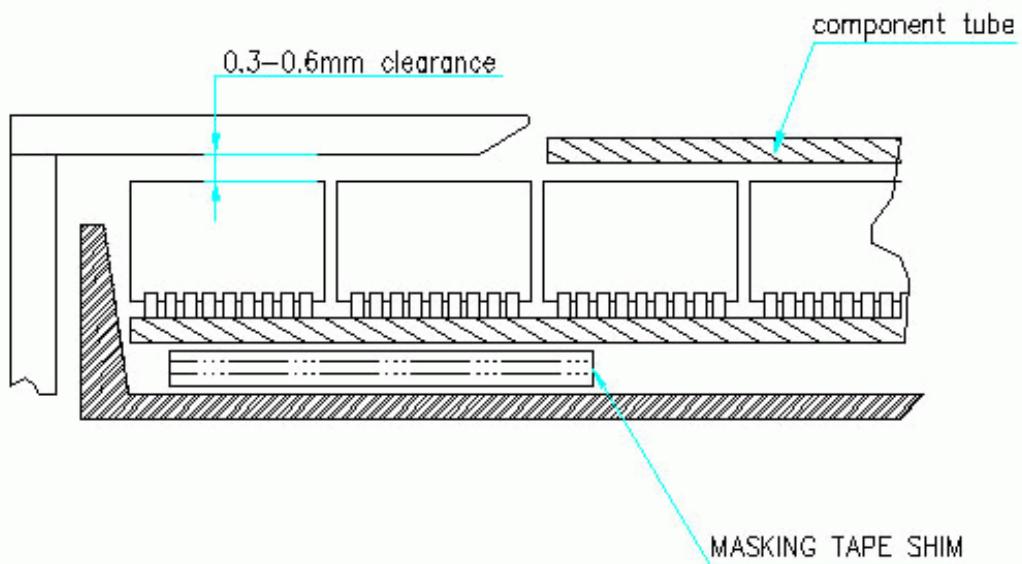
供气接嘴       $\phi$  4mm 气喉  
长度约50mm

### Install component tube into UFTB feeder

1. Select an insert which the slot width can fit the width of the component tube.
2. Get a dummy tube & cut the end to the following shape.



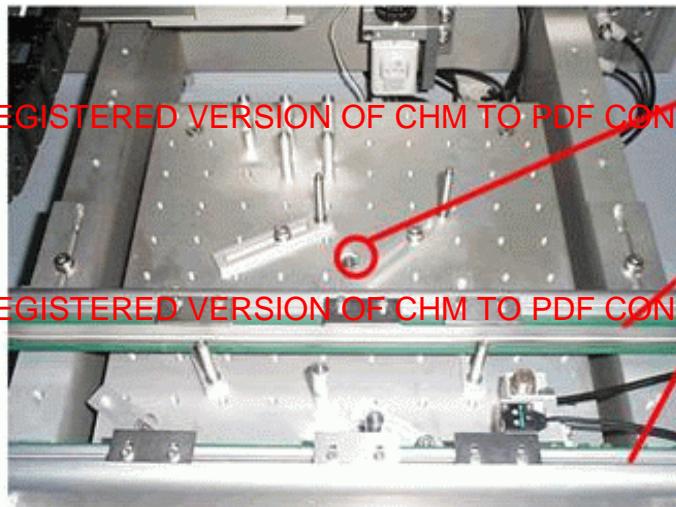
3. Fill up the rework dummy tube with components (slide the components form a new tube).
4. Fit the tube to the insert & shim the tube by masking tape to the level as shown.



5. Adjust the horizontal pressure bar so that the friction of the bar with the tube is large enough to prevent the tube from re-bouncing.

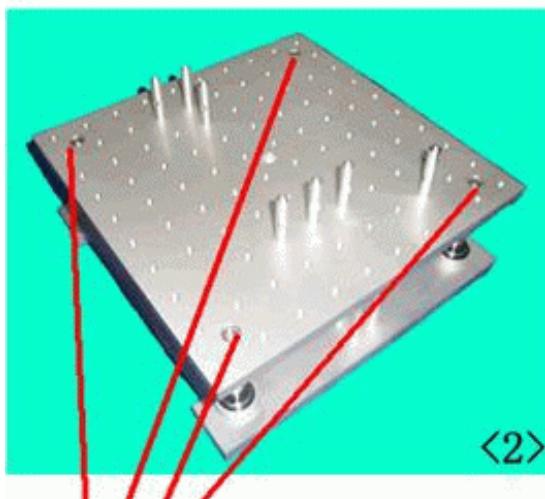
15) Conveyor Table Up/Down bearing (every 6 month)

Necessity: Hex Key , Screw Driver, Oil and Cotton Bud



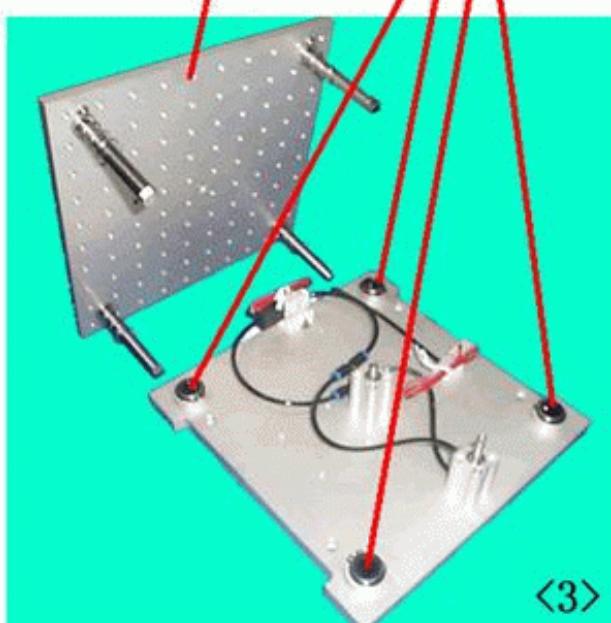
a. 螺丝

b. 传送带



c. 螺丝

<2>



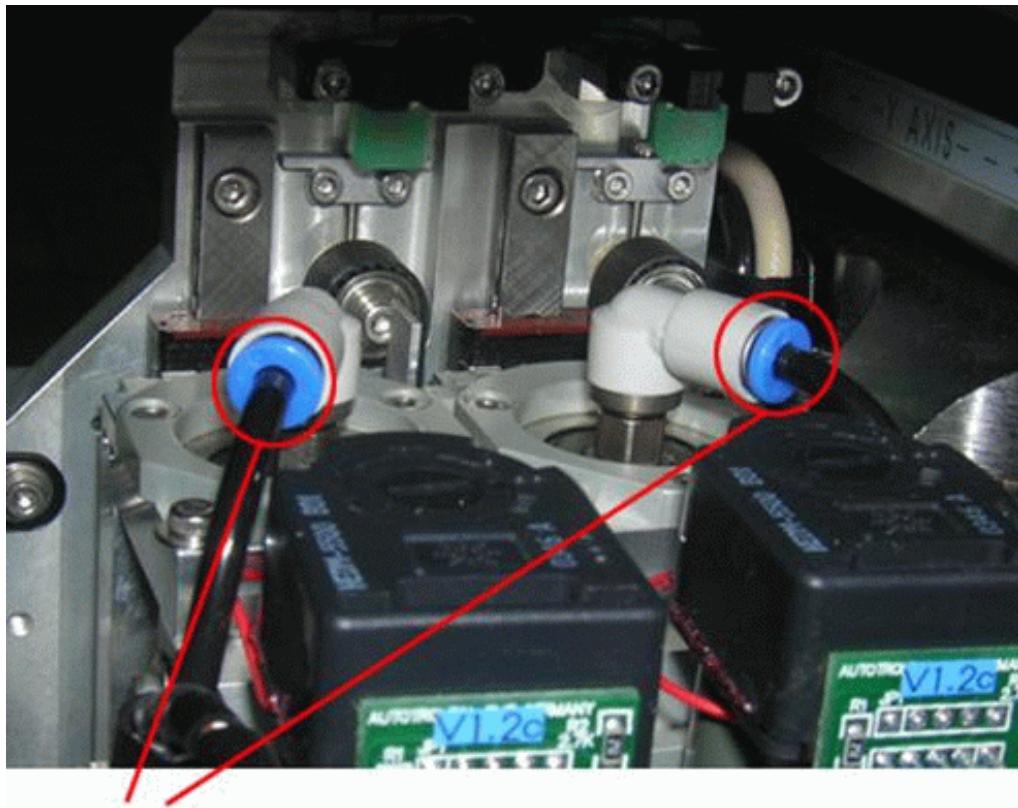
d. 轴承 (加雪油)

<3>

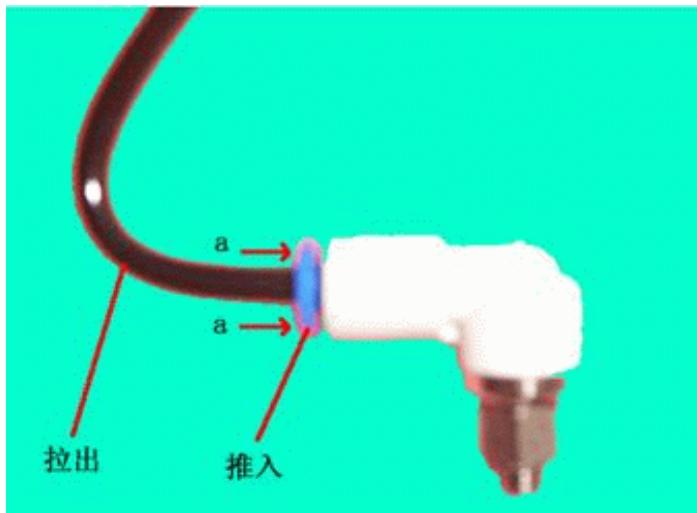
- Release screw "A" from the center of Conveyor Table
- Remove conveyor "B" to easy take out the Conveyor Table
- Release screws "C" with hex key after took out the Conveyor Table
- Take out the aluminum board (diagram 3) upward carefully
- Add oil on four bearing (diagram 3)
  - According to the above mentioned steps in inverse, don't reverse the aluminum board of Conveyor Table when put back.

16) Cleaning Z - Shaft (every three month)

Necessity: Dry Compressed Air



拔出气喉, 对此孔吹气



- Push the blue piece that connected the nozzle and hose (diagram 'a' shown), and pull out the black hose at the same time
- Blow in air into the hole of Z-Shaft by Dry Compressed Air, and spout all the dust, solder paste and dirt

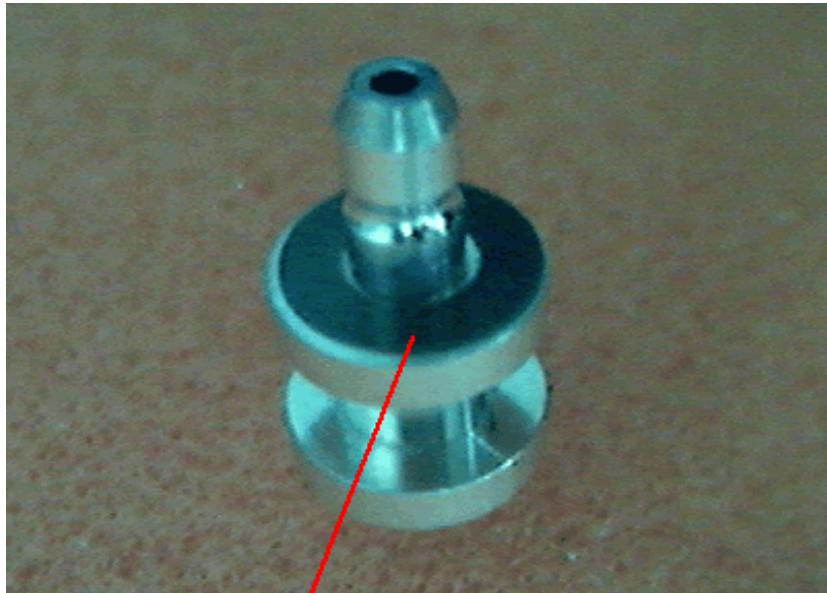
- Put back the black hose into the nozzle

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

17) Replace Nozzle plastic seal (every six month)

Necessity: New Nozzle plastic seal



塑胶密封圈

Tear off the broken Nozzle plastic seal. Please wipe off all the dirt with alcohol and put the new one on it.

## 18) Camera-1 Offset (Software Calibration)

This is to calibrate the offset between Camera-1 & the Z-axis. This offset is a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed

Camera-1 focus changed

- Component placement not accurate

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

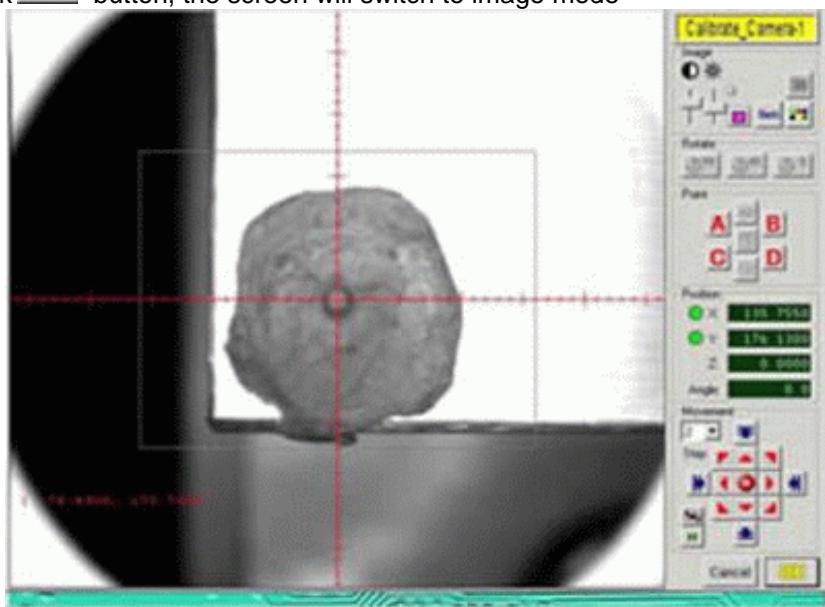
**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner of the Alignment-B, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode



Adjust the cross mark to the corner of the hole and click **OK** button.

The machine will auto remove nozzle #1 and the complete the **Calibrate Camera-1 Offset** procedure.

## 19) Vacuum - sensor (Software Calibration)

This is auto detect each nozzle's vacuum sensor Analog Reading. Please choose CALIBRATE MENU - Nozzle Parameters from the software, then the below frame will be shown:

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Nozzle Parameter Setting		WHITE NOZZLE		BLACK NOZZLE		Alignment-G/H (Nozzle 7)	
HEAD 1	Length	OPEN	CLOSE	Learn	Learn	X	Y
Nozzle 1 (1.7mm)	6.00	187.9	237.4	161.0970	79.4600	Camera	Manual
Nozzle 2 (1.2mm)	5.00	111.2	235.6	101.0730	79.5350	Camera	Manual
Nozzle 3 (2.0mm)	6.00	85.1	84.9	81.0650	79.5600	Camera	Manual
Nozzle 4	4.50	101.4	232.4	191.1265	93.4281	Camera	Manual
Nozzle 5 (4.7mm)							
HEAD 2	Length	OPEN	CLOSE	Learn	Learn	X	Y
Nozzle 1 (1.7mm)	6.00	214.2	237.6	181.0890	79.5000	Camera	Manual
Nozzle 2 (1.2mm)	5.00	178.5	240.9	161.0810	79.5250	Camera	Manual
Nozzle 3 (2.0mm)	6.00	114.9	238.1	101.0570	79.6000	Camera	Manual
Nozzle 4	4.50	231.5	237.2	81.0490	79.6250	Camera	Manual
Nozzle 5 (4.7mm)							
		Manual Nozzle Change Location	87.7650	263.9600	Manual	Test	
		Waste Component Location	87.7650	263.9600	Manual	Test	
		DP2-2s/MP2-2s Standby Location	50.0000	50.0000	Manual	Test	
		<input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading					
		Z axis Position	68.92	mm	Manual		
		X-Y Location	201.0150	77.4000			
						ALL Vacuum Reading	
		<b>EXIT</b>					

### Manual Calibrate

**Learn**

For example: click **Learn** button from the Nozzle 1 and Vacuum Sensor Analog Reading, then the machine will auto install Nozzle 1 and below frame will be shown:

Auto Learn Vacuum Sensor Analog Reading

Open Reading :	219.1	<b>Learn</b>
Close Reading :	235.5	<b>Learn</b>
Close Reading : Please use your finger to clog the nozzle, that is to simulate a component is pick up.		
<b>Cancel</b>	<b>OK</b>	

Firstly, detect the reading with no component, click **Learn** button, start vacuum and show the detected reading in "open reading".

After that, please use your finger to clog the nozzle, that is to simulate a component is pick up, then click the second **Learn** button, the vacuum will on again and show the detected reading in "close reading".

**OK**

Finally click **OK** button to save and exit.  
Do the above mentioned detect for all nozzles in sequence.

## Automatic Calibrate

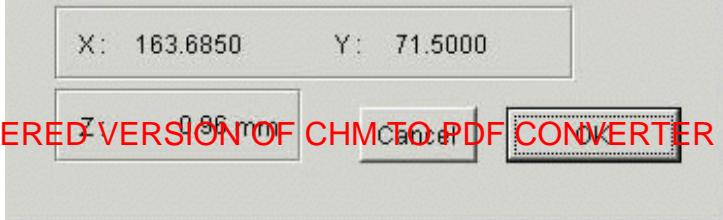
(1) Enable Auto Learn Vacuum Sensor Analog Reading, click **Manual** button, manually move X-Y axis and move down Z-axis to the rubber pad by hand, this is for confirm the calibrate location.

### Manual Learn Vacuum Reading Location

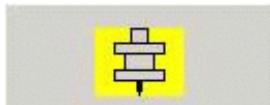
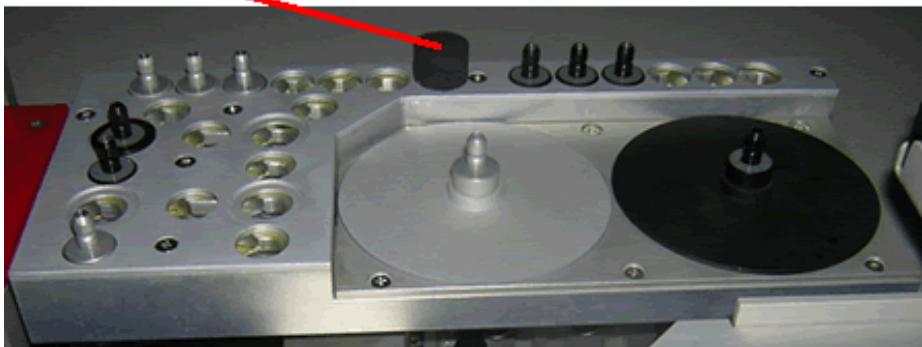
Please manually move X-Y axis and move down Z-axis

to the rubber pad by hand and then click <OK>

(Don't release move down Z-axis before click <OK>)



黑胶



(2) Click **ALL Vacuum Reading** button, machine will start to detect the reading with no component, and auto move to the rubber pad to detect the reading that is to simulate a component is pick up, and then software will auto detect the nozzle



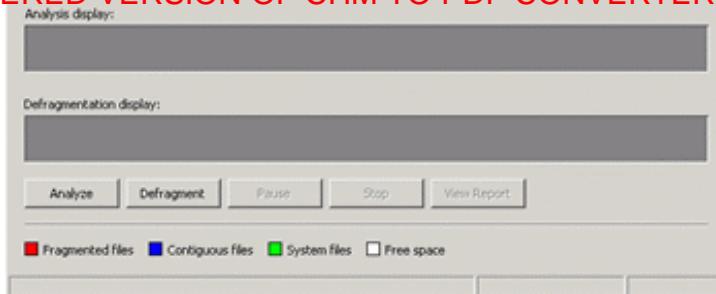
## 20) Disk Defragmenter

Select Start - Program - Accessories - System Tools - Disk Defragmenter to do disk defragmenter

Click **Analyze** for analyze , after finished please click **Defragment** for defragmenter



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



Before defragmenter , red means fragmented files

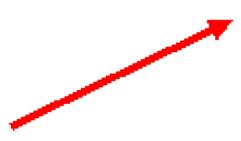


After defragmenter



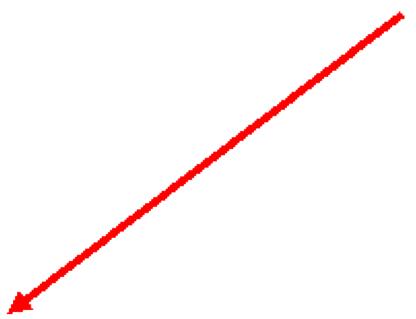
## 21) Maintenance of FESTO Air Filter

1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water; air filter for oil is use for filter oil.
3. The water will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.
4. If need drain oil, release the knob for oil, connect compressed air, then the oil will drain from oil outlet, when finish, tighten the knob for oil.(Please plug the gas tube to the filter first if necessary)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



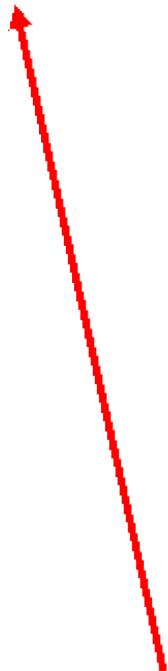


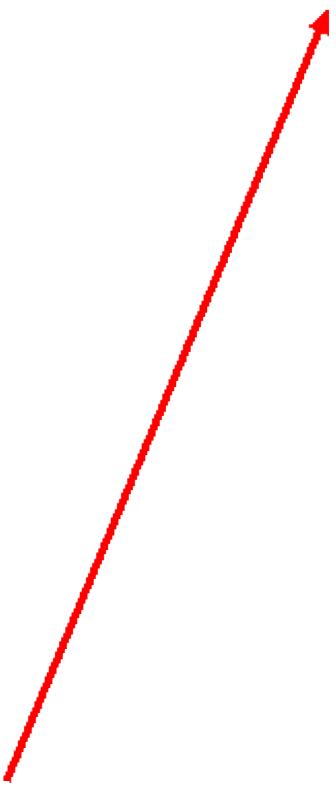
Replace way for filter element (S-LFR-FC-40U)

1. Take down the body by clockwise, remove the lock pin for replace the filter element.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





2. Reinstall the lock pin (counter clockwise for lock), reinstall the body by counterclockwise.

22) Maintenance of SMC Air Fitter

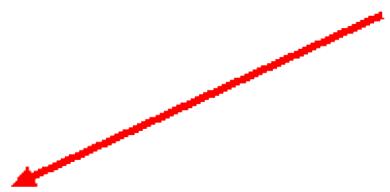
1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water air filter for oil is use for filter oil.
3. The water and oil will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE







UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Replace way for filter element (S-AF30P-060S0)

1. Pull down the lock, remover the filter body by clockwise or counterclockwise; remove the lock pin for replace the filter element.



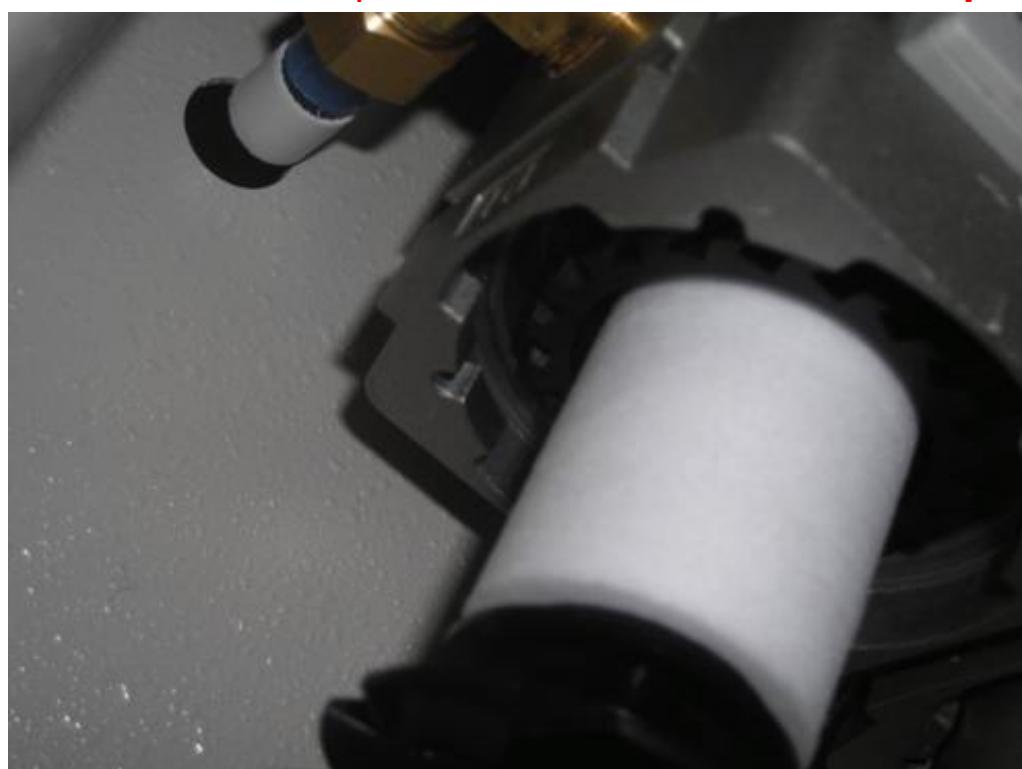


2. Reinstall the lock pin (counterclockwise for lock), and then reinstall the body (let the protruding arm at the concave, and then pull down the lock for install the body by clockwise or counter clockwise).

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





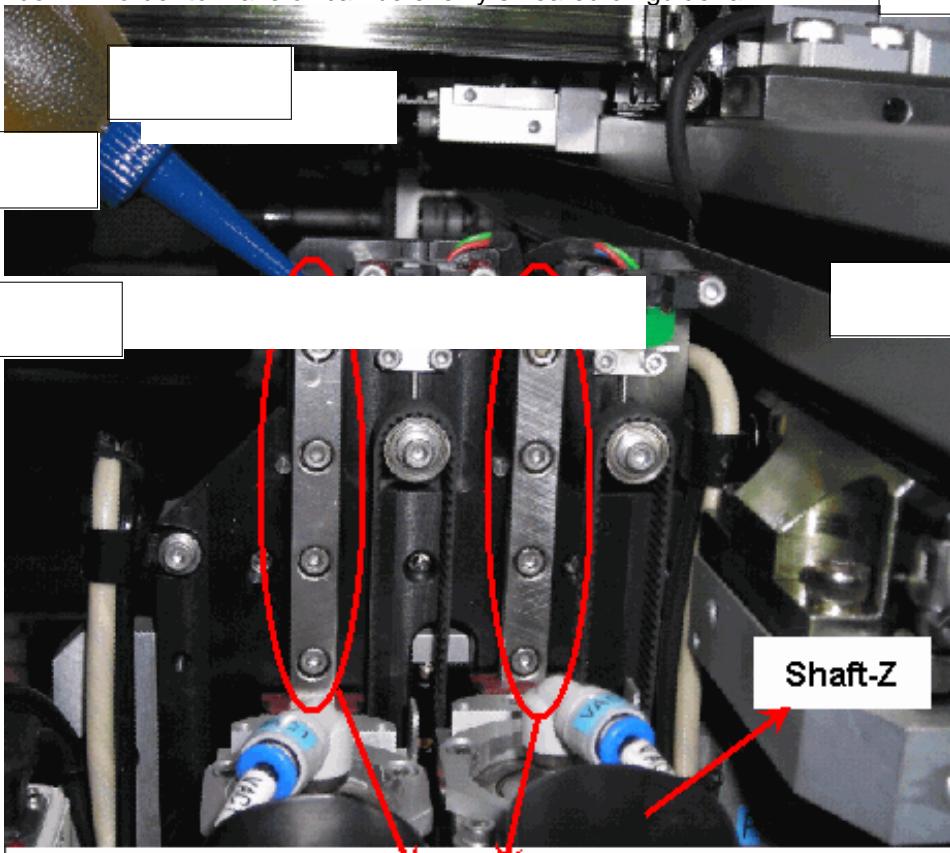
## aintenance and Adjustment for Spare Parts(391X1,X2)

### 1) Guide rail of Shaft-Z (Up/Down) (every 6 month)

Necessity: oil(S-GREASE-RAIL)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE  
Pri by hand, add oil on both side guide rail of Shaft-Z. After from up to  
down in order to make oil can be evenly smeared on guide rail.



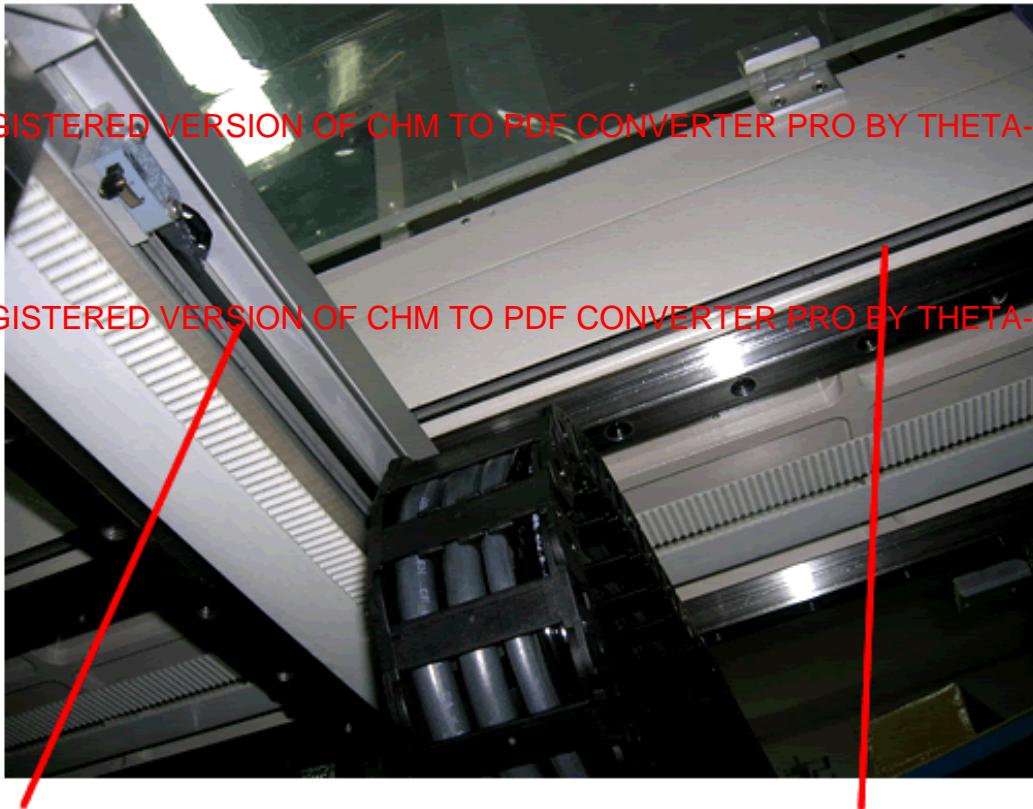
Remark: Adds by drops the oil mass must be suitable, in order to avoid smears other parts

Remark: V1 machine has one guide rail, V2 machine have two guide rails



2) X-Y Encoder (every 3 month)

Necessity: Alcohol, clean soft & dry cloth and Dry Compressed Air



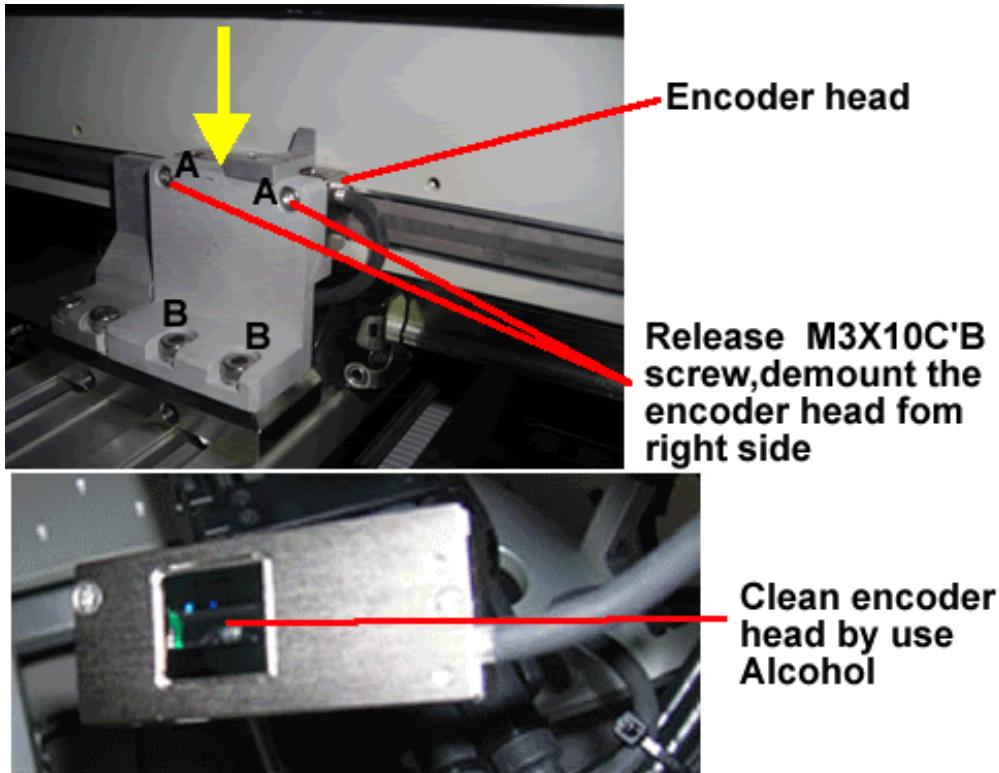
Y Encoder

X encoder

- Clean the encoder with dry cloth and alcohol completely.
- blow the encoder dry with Dry Compressed Air after cleaned

3) Clean the X Encoder Head

Necessity: Hex Key, Alcohol



- 1) release the M3X10 counter-bore screw for lock the encoder head
- 2) demount the encoder head from right side
- 3) clean the encoder head by use Alcohol
- 4) Setup the encoder and encoder head, pressure the encoder downwards when install the M3X10 C'B screw

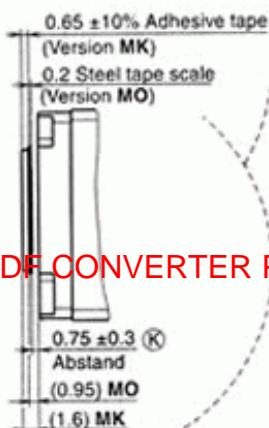
**Dimension notice**

Use S-CAL-ENC-PP to calibrate the gap is  $0.75 \pm 0.3$

use calbraiton label to adjust  
the gap is  $0.75 \pm 0.3$



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



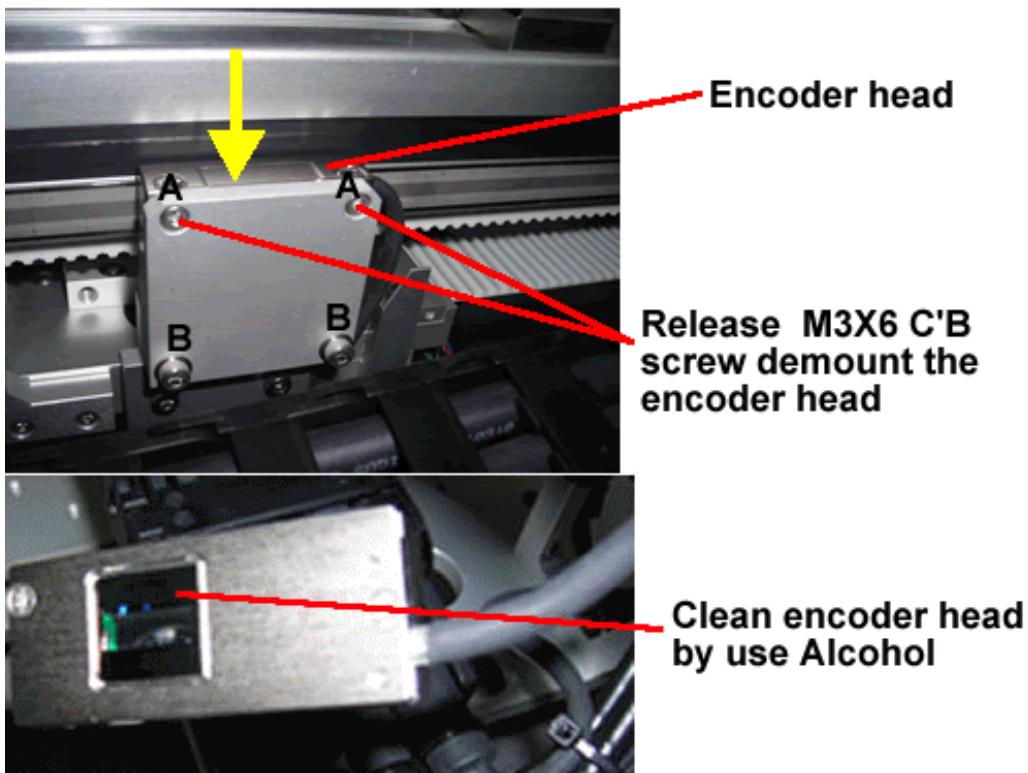
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

**Note: This clean is for Encoder head dust and must be clean, after clean, all about the data for Encoder will be change, and the calibration must operate by engineer**

**If no necessary, don't do this operation!!**

#### 4) Clean the Y Encoder Head

Necessity: Hex Key, Alcohol

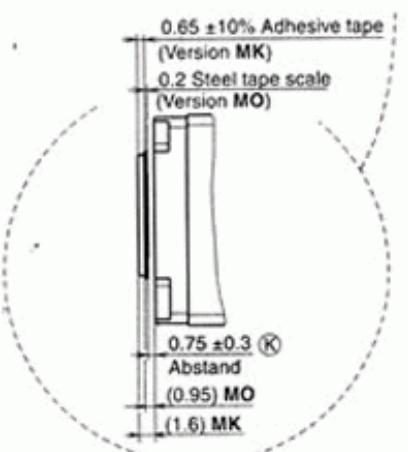


- 1) release the M3X6 counter-bore screw for lock the encoder head
- 2) demount the encoder head
- 3) clean the encoder head by use Alcohol
- 4) Setup the encoder and encoder head, pressure the encoder downwards when install the M3X6 C'B screw

#### Dimension notice

Use S-CAL-ENC-PP to calibrate the gap is  $0.75 \pm 0.3$

use calibraiton label to adjust the gap is  $0.75 \pm 0.3$



**Note: This clean is for Encoder head dust and must be clean, after clean, all about the data for Encoder will be change, and the calibration must operate by engineer**

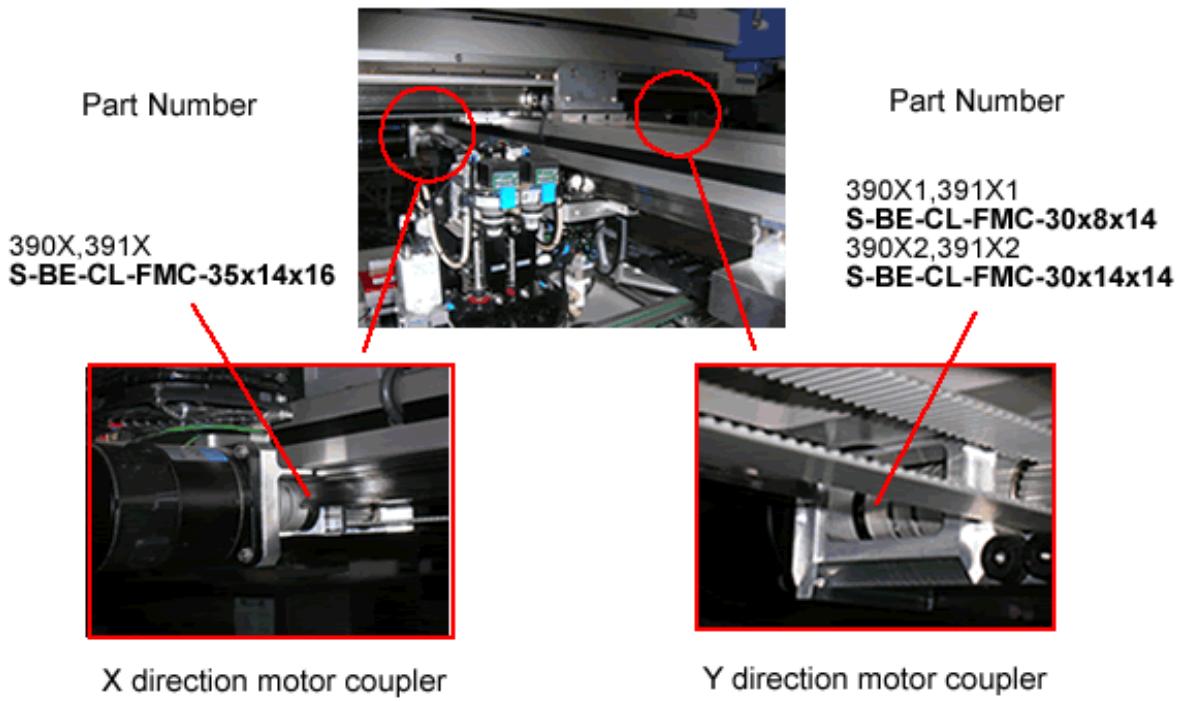
**If no necessary, don't do this operation!!**

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 5) Replace Motor Coupler

Necessity: Hex Key , Motor Coupler in same model



- Unlock the Set Screw "A" and "B". ( not need to free)
- Release the four counter-bore that lock the motor, take out the motor with motor coupler
- Replace new motor coupler

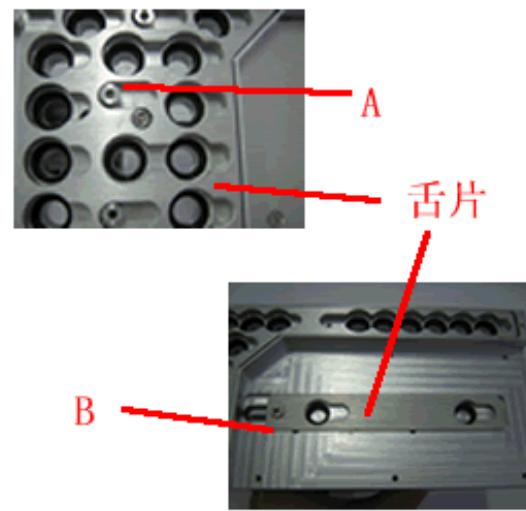
- Locate the motor coupler in the middle of motor axis and ball screw axis, that means motor axis and ball screw axis insert the same distance for motor coupler
- Lock the Set Screw "A" and "B" tightly

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

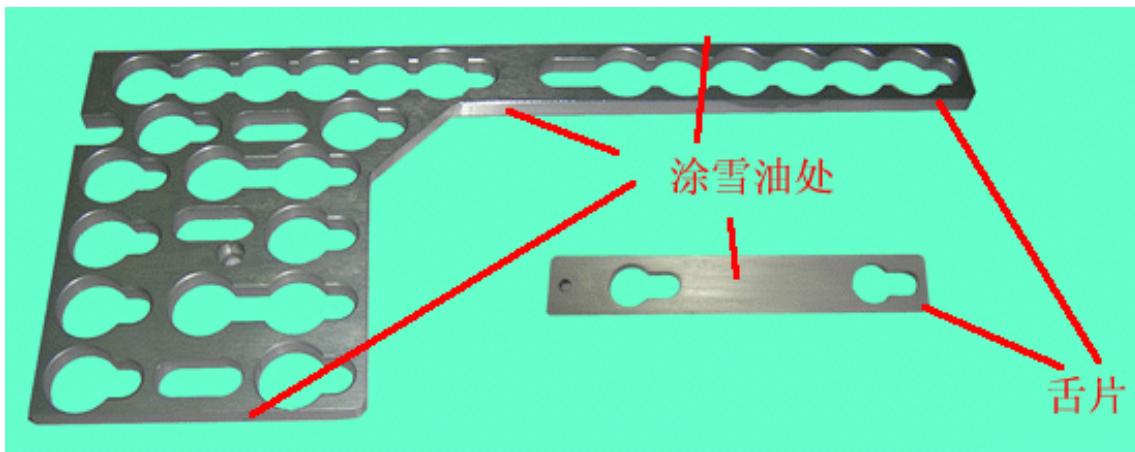
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## 6) Auto Change Head (every 3 month)

Necessity: Hex Key, Cross Head Screw Driver, Special Grease and Cotton Bud



- In software - please click "Head change Unit" button in Utility Menu - Machine Diagnostic and make the unit raised, then remove all nozzles on the unit by hand.
- Release six screws by cross head screw driver.
- Take out the cover from the unit, release screw A,B
- Take out the Tongue Piece and add little special grease on it. Please see below:



According to the above mentioned steps in inverse:

Adjust the location of Moveable Piece when the unit raise and the top of Tongue Piece open, enable the Holes of Nozzle and Bottom Mounting are completely overlapped (Please see below). Then put the cover back.



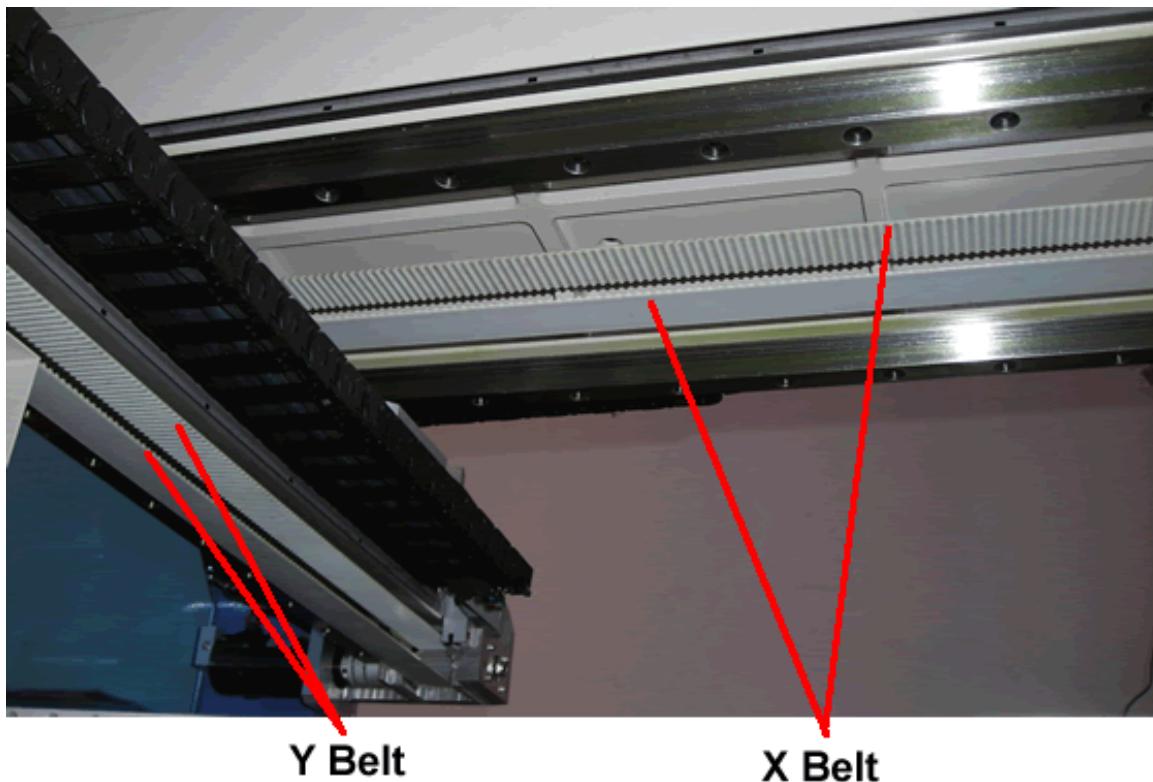
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

吸嘴孔与底座中的孔应完全重合

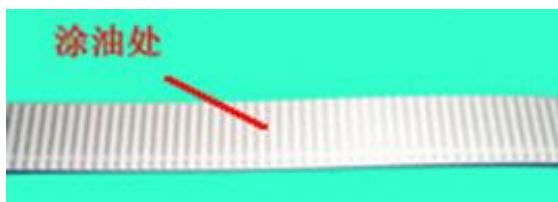
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

7) X, Y Belt (every week)

Necessity: Baysilone Paste for Belt (S-PM-OIL-STRAP) and Cotton Bud



- Before add please Clean the old oil of the X,Y belt with dry cloth
  - Evenly smear Baysilone Paste for belt on the teeth of X, Y Belt with cotton bud



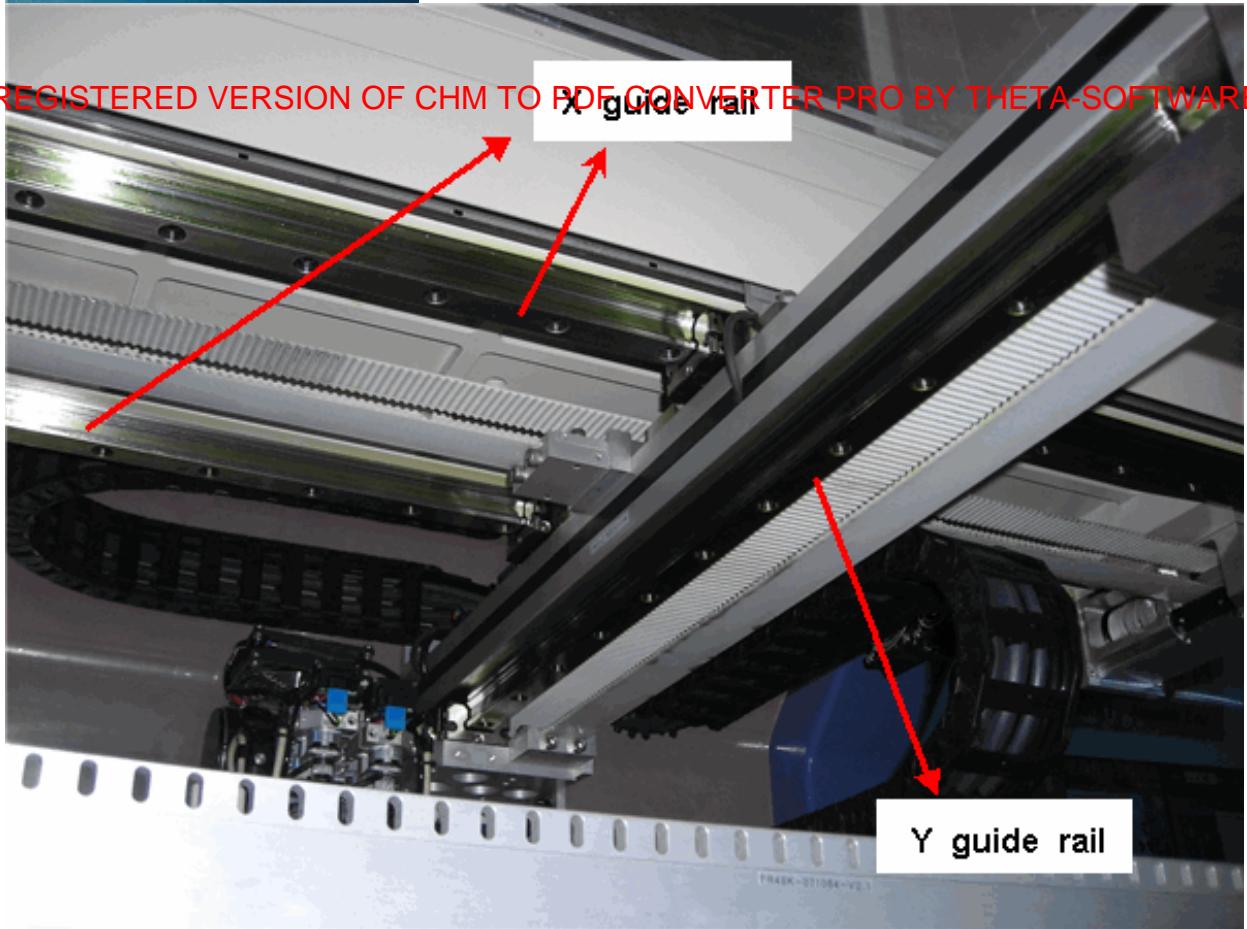
**Remark:** Paste needed to be evenly added, please don't put too much, otherwise, it will dripping on the machine or splash into other places because of high speed.

8) X, Y Guide rail (every day)

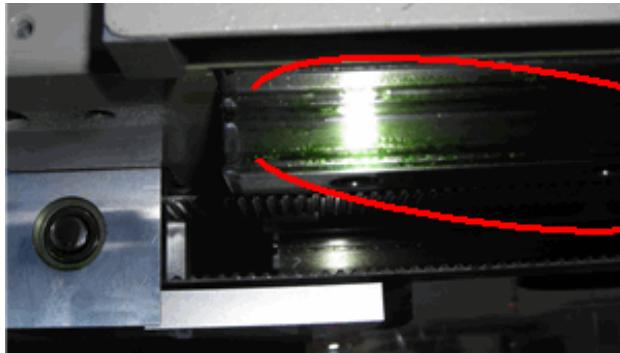
Necessity: Oil (S-GREASE-RAIL) and clean, soft & dry cloth



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- A. Wipe off the old oil from the guide rail with a clean & soft cloth
- B. Add little oil inside around the guide rail (use Cotton Bud and dry cloth if necessary)
- C. About the rail in two arcs pits of both sides must refuel.



About the rail in  
two arcs pits of  
both sides must  
refuel.

Remark: Oil cannot be added too much to avoid dripping, just ensure 4 arcs pits have enough oil is okay

9) Camera Lens (every month)

Necessity: Dry Compressed Air and clean, soft & dry cloth



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

吹气及用干布擦拭

blow off the dust and dirt from the camera Lens by dry compressed air

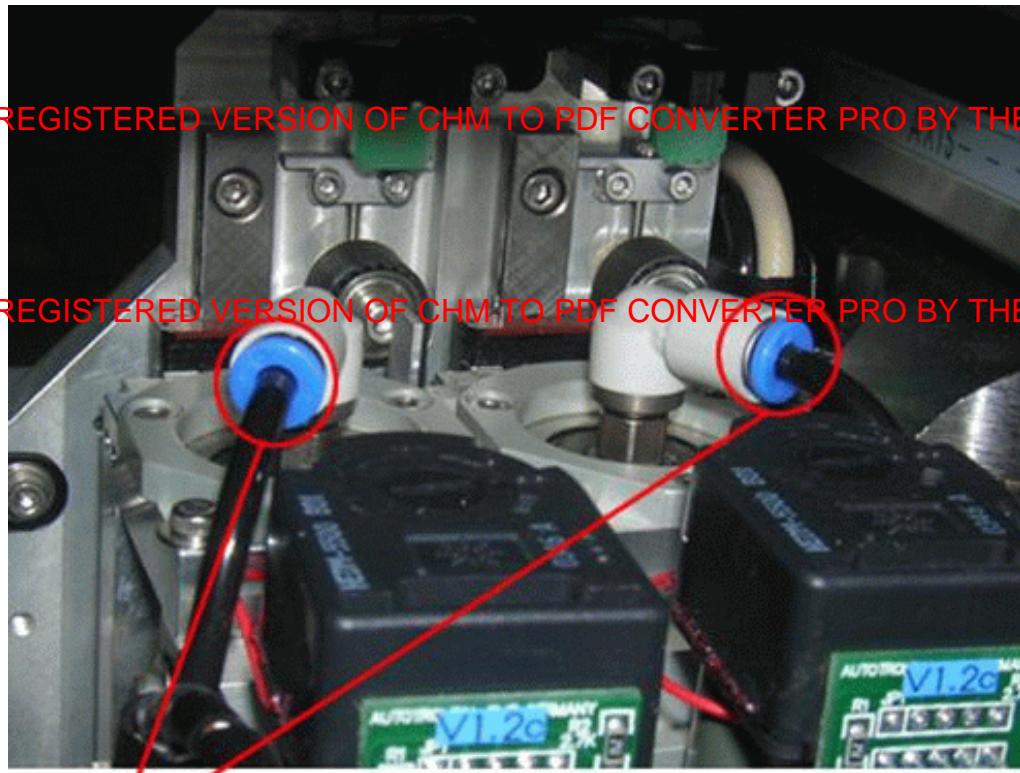
rub it with cloth and make it dry by dry compressed air

**Remark: blow off the dust from camera Lens (diagram a) only use with dry compressed air and prohibit from wiping or touching, otherwise, the precision of the machine will be affected.**

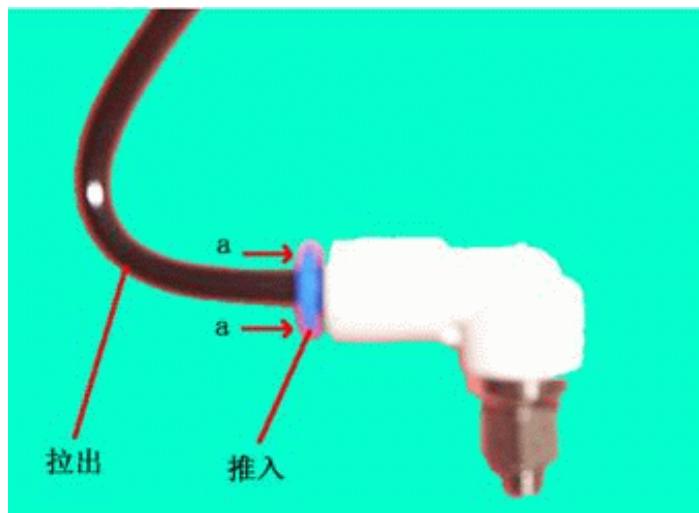


10) Cleaning Z - Shaft (every three month)

Necessity: Dry Compressed Air



拔出气喉, 对此孔吹气



- Push the blue piece that connected the nozzle and hose (diagram 'a' shown), and pull out the black hose at the same time
- Blow in air into the hole of Z-Shaft by Dry Compressed Air, and spout all the dust, solder paste and dirt

- Put back the black hose into the nozzle

11) Replace Nozzle plastic seal (every six month)

Necessity: New Nozzle plastic seal



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

塑胶密封圈

Tear off the broken Nozzle plastic seal. Please wipe off all the dirt with alcohol and put the new one on it.

## 12) Camera-1 Offset (Software Calibration)

This is to calibrate the offset between Camera-1 & the Z-axis. This offset is a very important parameter to the machine, since all of the location learning is base on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed
- Camera-1 focus changed
- Component placement not accurate

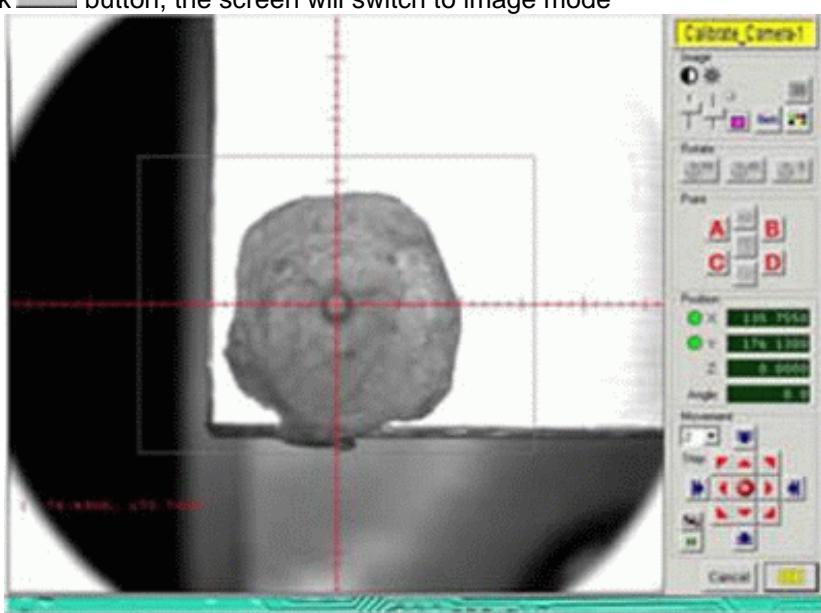
**1st step is to calibrate the Z-axis position:**

You need to prepare a flat **Blue Tape** on the corner pf the Alignment-B, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



**2nd step is to calibrate the Camera-1 position:**

Click **OK** button, the screen will switch to image mode



Adjust the cross mark to the corner of the hole and click  button.  
The machine will auto remove nozzle #1 and the complete the **Calibrate Camera-1 Offset** procedure.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### 13) Vacuum - sensor (Software Calibration)

This is auto detect each nozzle's vacuum sensor Analog Reading. Please choose CALIBRATE MENU - Nozzle Parameters from the software, then the below frame will be shown:

Nozzle Parameter Setting					
WHITE NOZZLE		BLACK NOZZLE		Alignment-G/H (Nozzle 7)	
<b>HEAD 1</b>		Length		Vacuum Sensor Analog Reading	
Nozzle 1 (0.7mm)	6.00	OPEN	217.6	236.9	<input type="button" value="Learn"/>
Nozzle 2 (1.2mm)	6.00	CLOSE	187.9	237.4	<input type="button" value="Learn"/>
Nozzle 3 (2.0mm)	5.00		111.2	235.6	<input type="button" value="Learn"/>
Nozzle 4	6.00	<input checked="" type="checkbox"/> 0201	85.1	84.9	<input type="button" value="Learn"/>
Nozzle 5 (4.7mm)	4.50		101.4	232.4	<input type="button" value="Learn"/>
<b>HEAD 2</b>		Length		X Y	
Nozzle 1 (0.7mm)	6.00	OPEN	214.2	237.6	<input type="button" value="Learn"/>
Nozzle 2 (1.2mm)	6.00	CLOSE	178.5	240.9	<input type="button" value="Learn"/>
Nozzle 3 (2.0mm)	5.00		114.9	238.1	<input type="button" value="Learn"/>
Nozzle 4	6.00	<input checked="" type="checkbox"/> 0201	231.5	237.2	<input type="button" value="Learn"/>
Nozzle 5 (4.7mm)	4.50		106.1	230.7	<input type="button" value="Learn"/>
Nozzle Change Location A					
		X	Y	Camera	Manual
		181.1750	79.3400	<input type="button" value="Camera"/>	<input type="button" value="Manual"/>
		161.0970	79.4600	<input type="button" value="Camera"/>	<input type="button" value="Manual"/>
		101.0730	79.5350	<input type="button" value="Camera"/>	<input type="button" value="Manual"/>
		81.0650	79.5600	<input type="button" value="Camera"/>	<input type="button" value="Manual"/>
		191.1265	93.4281	<input type="button" value="Camera"/>	<input type="button" value="Manual"/>
Test					
Manual Nozzle Change Location					
		87.7650	263.9600	<input type="button" value="Manual"/>	<input type="button" value="Test"/>
Waste Component Location					
		87.7650	263.9600	<input type="button" value="Manual"/>	<input type="button" value="Test"/>
DP2-2s/MP2-2s Standby Location					
		50.0000	50.0000	<input type="button" value="Manual"/>	<input type="button" value="Test"/>
<input checked="" type="checkbox"/> Enable Auto Learn Vacuum Sensor Analog Reading					
Z axis Position		68.92	mm	<input type="button" value="Manual"/>	<input type="button" value="Test"/>
X-Y Location		201.0150	77.4000	<input type="button" value="Manual"/>	<input type="button" value="Test"/>
 ALL Vacuum Reading					
<input type="button" value="EXIT"/>					

#### Manual Calibrate

For example: click **Learn** button from the Nozzle 1 and Vacuum Sensor Analog Reading, then the machine will auto install Nozzle 1 and below frame will be shown:

Auto Learn Vacuum Sensor Analog Reading			
Open Reading :		219.1	<input type="button" value="Learn"/>
Close Reading :		235.5	<input type="button" value="Learn"/>
Close Reading : Please use your finger to clog the nozzle, that is to simulate a component is pick up.			
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>	

Firstly, detect the reading with no component, click **Learn** button, start vacuum and show the detected reading in 'open reading'.

After that, please use your finger to clog the nozzle, that is to simulate a component is pick up, then click the second **Learn** button, the vacuum will on again and show the detected reading in 'close reading'.

OK

Finally click OK button to save and exit.  
Do the above mentioned detect for all nozzles in sequence.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

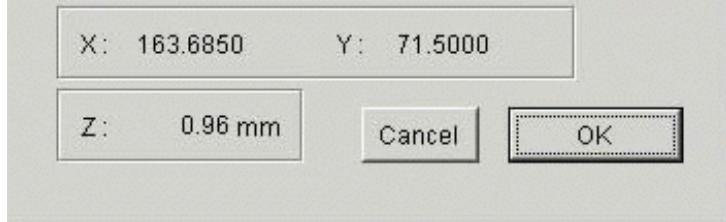
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## Automatic Calibrate

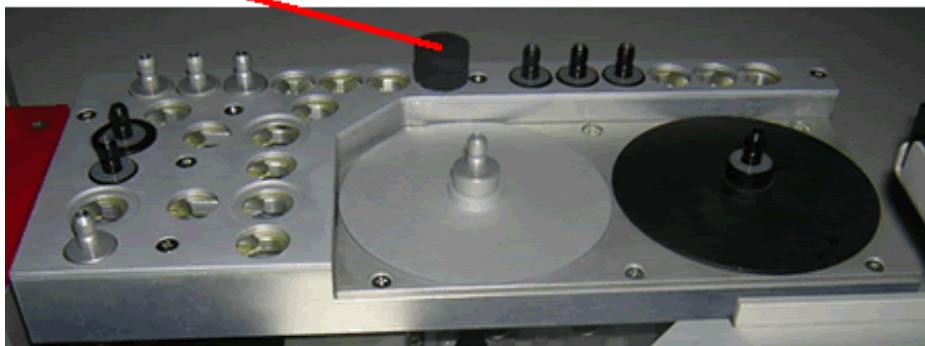
(1) Enable Auto Learn Vacuum Sensor Analog Reading, click **Manual** button, manually move X-Y axis and move down Z-axis to the rubber pad by hand, this is for confirm the calibrate location.

### Manual Learn Vacuum Reading Location

**Please manually move X-Y axis and move down Z-axis  
to the rubber pad by hand and then click <OK>**  
(Don't release move down Z-axis before click <OK>)



黑胶



(2) Click **ALL Vacuum Reading** button, machine will start to detect the reading with no component, and auto move to the rubber pad to detect the reading that is to simulate a component is pick up, and then software will auto detect the nozzle

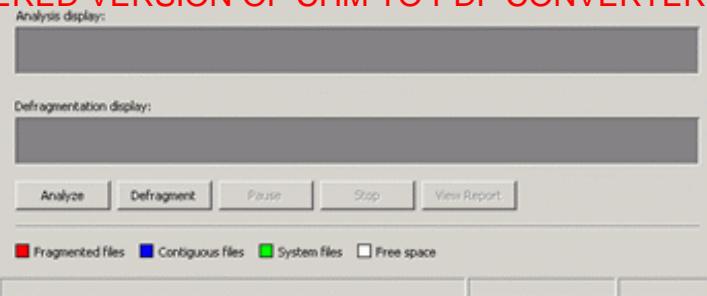
#### 14) Disk Defragmenter

Select Start - Program - Accessories - System Tools - Disk Defragmenter to do disk defragmenter

Click **Analyze** for analyze, after finished please click **Defragment** for defragmenter



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



Before defragmenter, red means fragmented files

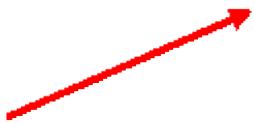


After defragmenter



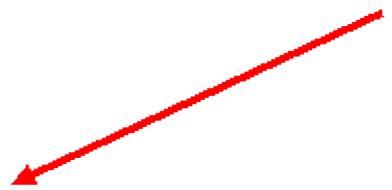
## 15) Maintenance of SMC Air Fitter

1. Air filter has air filter for water and air filter for oil.
2. Air filter for water is use for filter water air filter for oil is use for filter oil.
3. The water and oil will auto drain when they arrive the position which need to drain, please plug the gas tube to the filter first if necessary.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





Replace way for filter element (S-AF30P-060S0)

1. Pull down the lock, remover the filter body by clockwise or counterclockwise; remove the lock pin for replace the filter element.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



2. Reinstall the lock pin (counterclockwise for lock), and then reinstall the body (let the protruding arm at the concave, and then pull down the lock for install the body by clockwise or counter clockwise).



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



16) Conveyor Table Up/Down bearing (every 6 months)

Necessity: Grease, Oil (S-GREASE-RAIL) and Cotton Bud

1

2

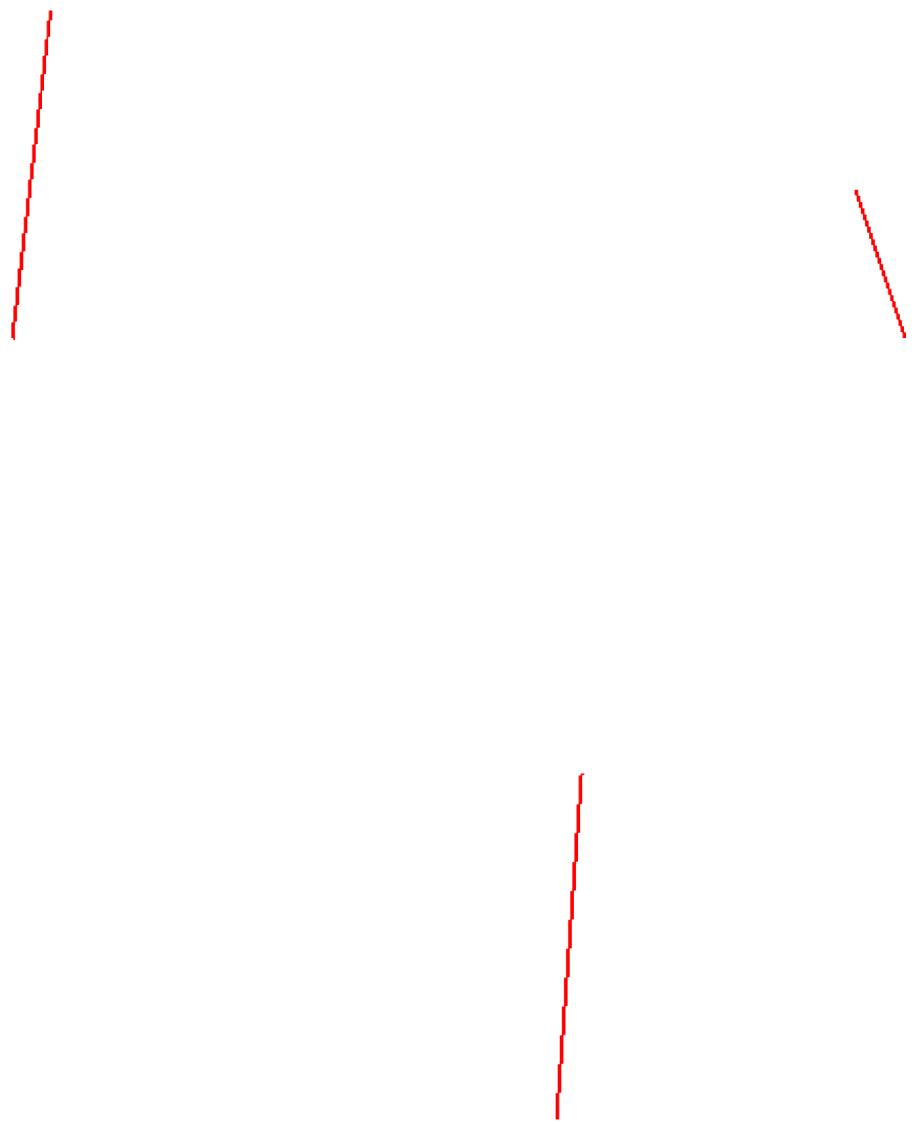
3



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

□fig 1□

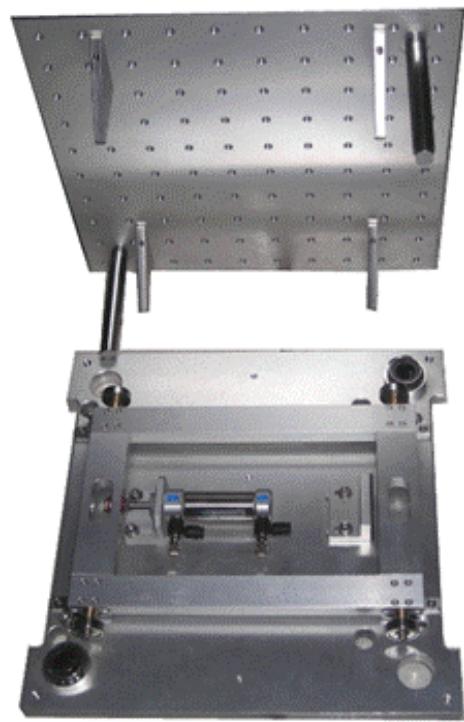


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



□fig 2□



□fig 3□

Æ Take out the conveyor.

Æ Take out the aluminum board upward carefully.

Æ Add grease on bearing, add oil on guide rail.

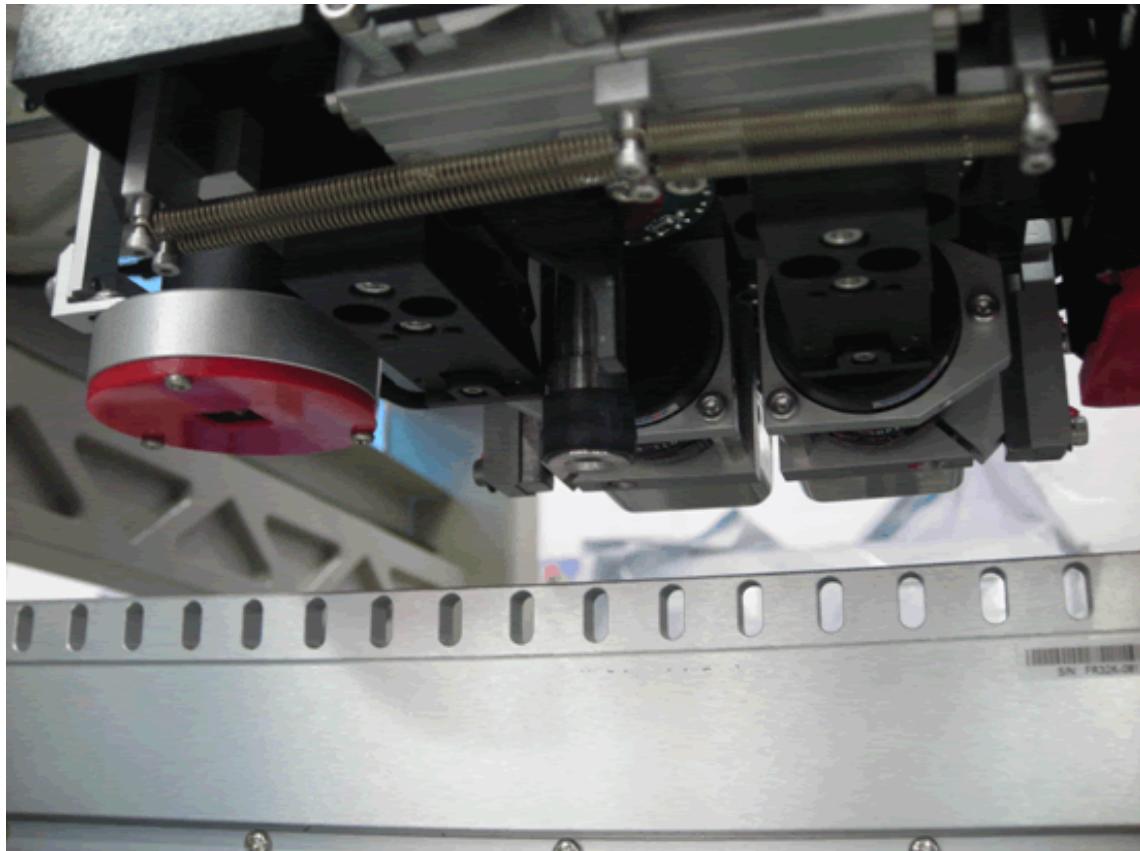
According to the above mentioned steps in inverse, don't reverse the aluminum board of conveyor Table when put back.

#### 17 □Maintenance for shaft-Z

1. Pull down the shaft-Z

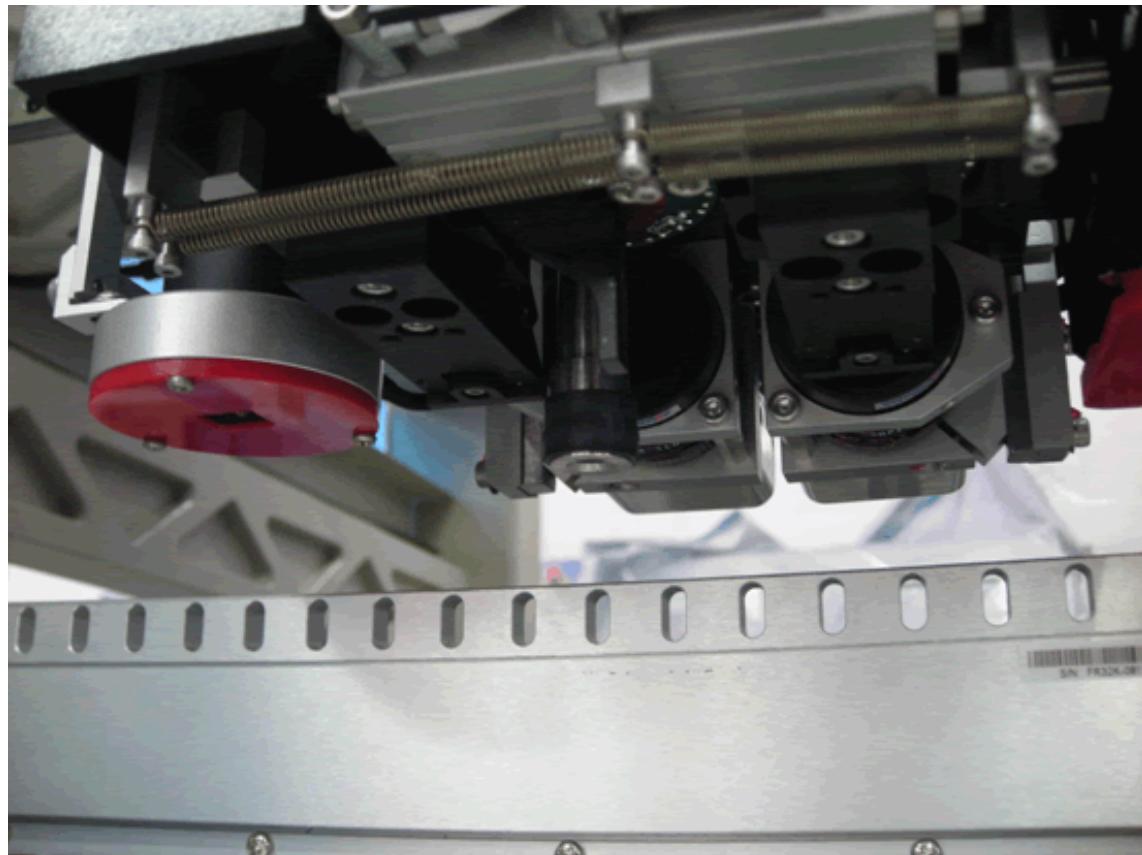
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



2. Take out the rubber ring (S-TU-Z-AXIS-10X8)

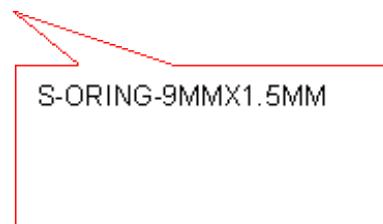
S-TU-Z-AXIS-10X8

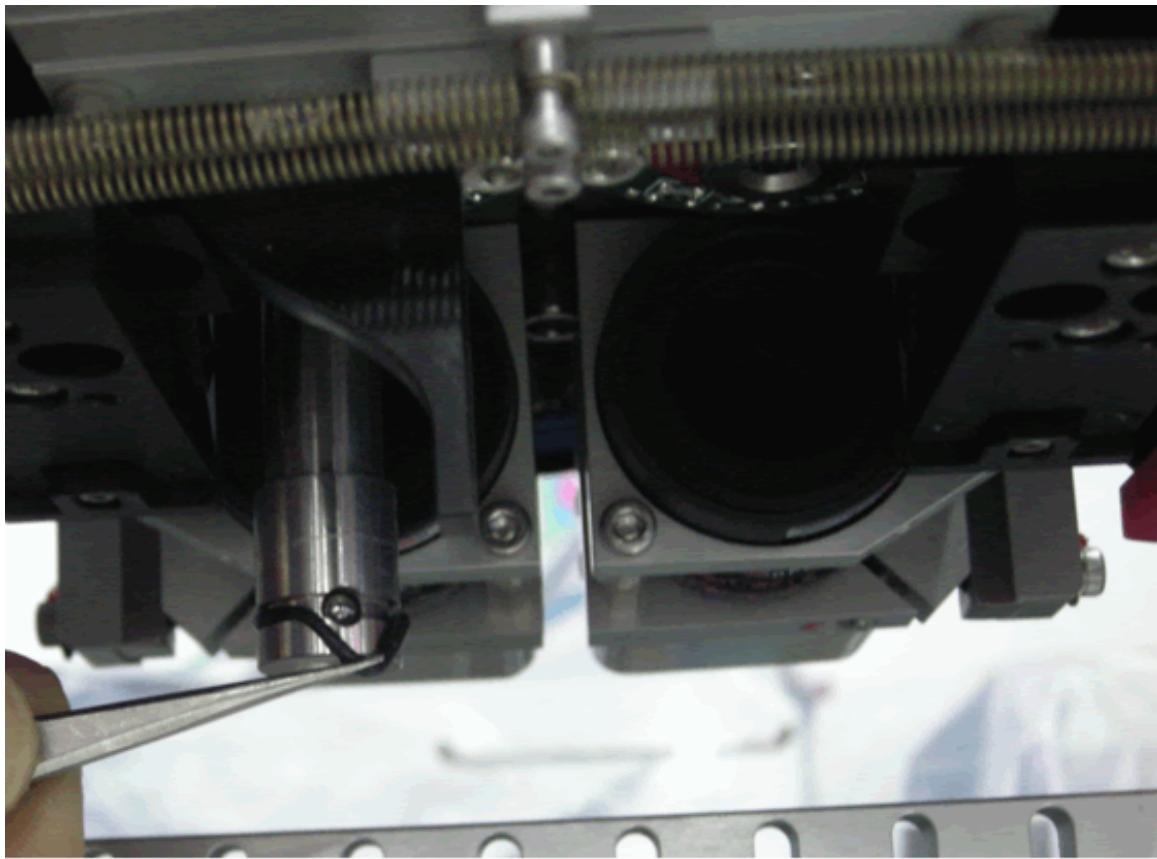


3. Use nipper to take out the O-ring (S-ORING-9MMX1.5MM)

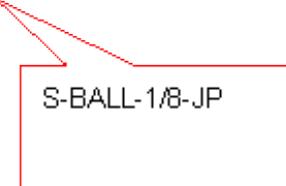
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE





4. Replace the roll ball (S-BALL-1/8-JP)

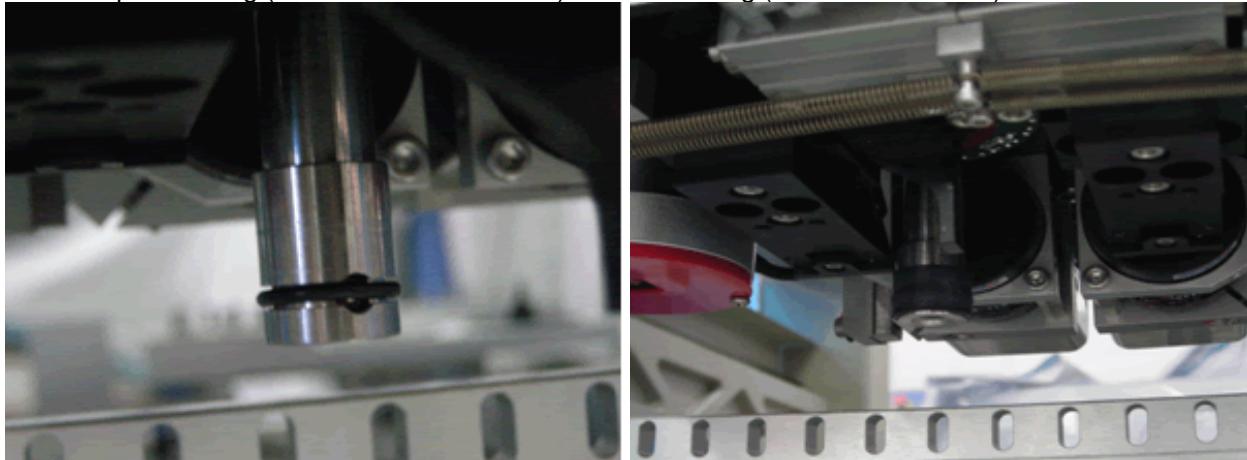




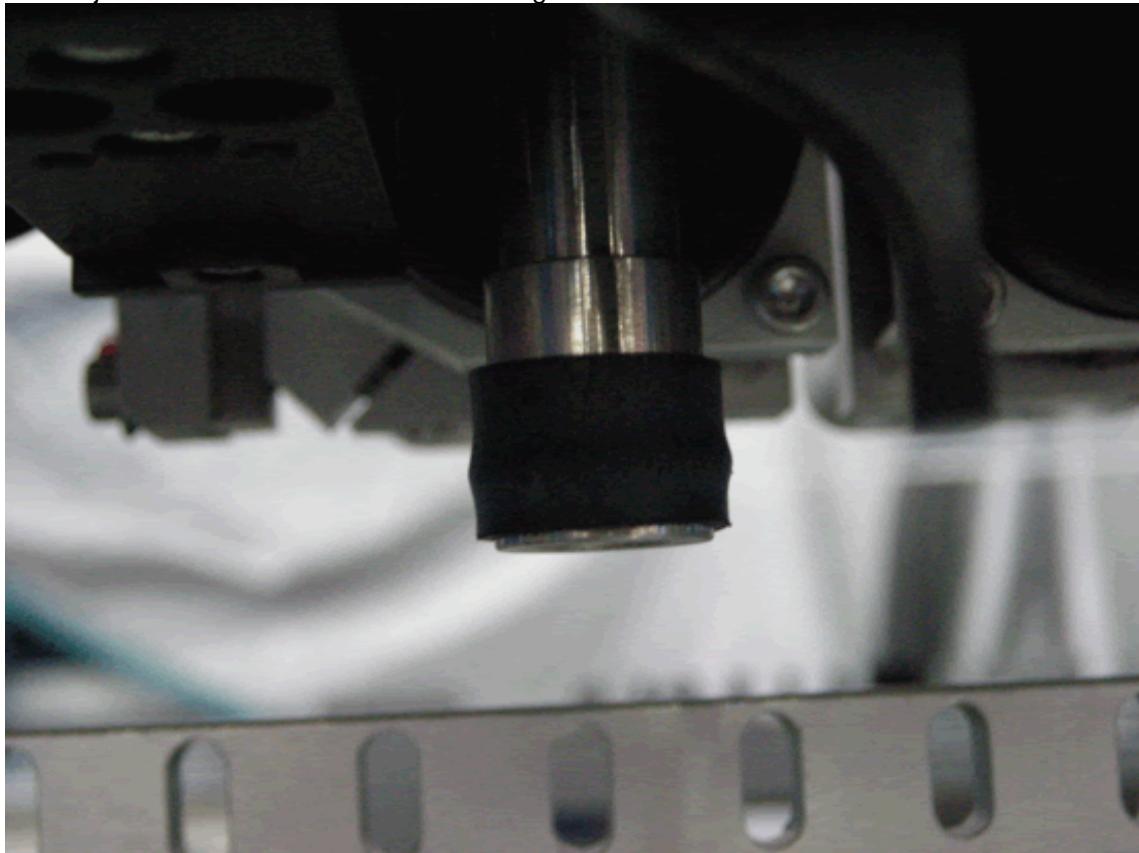
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

5. Setup the O-ring (S-ORING-9MMX1.5MM) and rubber ring (S-TU-Z-AXIS-10X8)



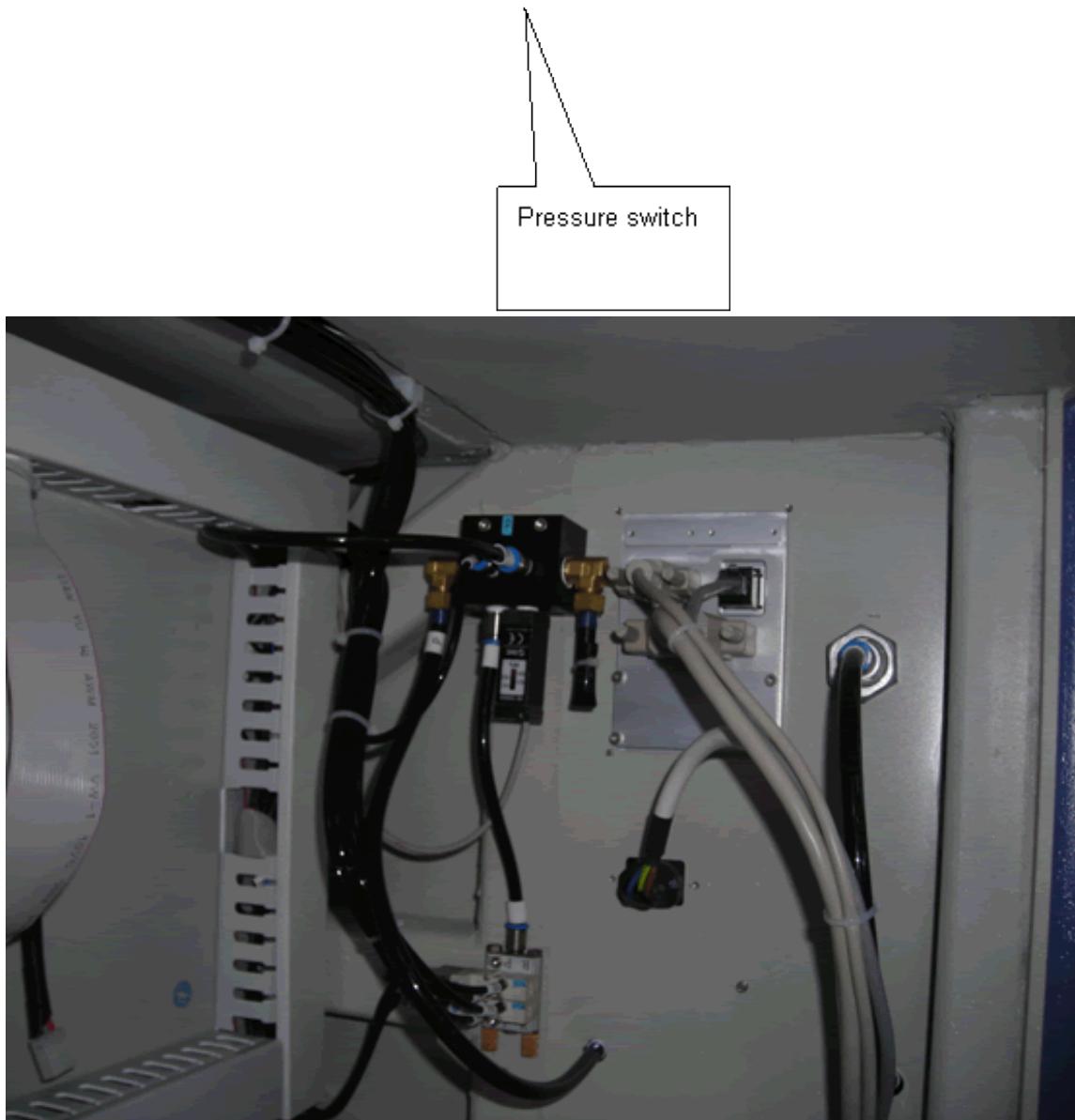
6. Adjust the S-TU-Z-AXIS-10X8 for little higher then the shaft-Z bottom



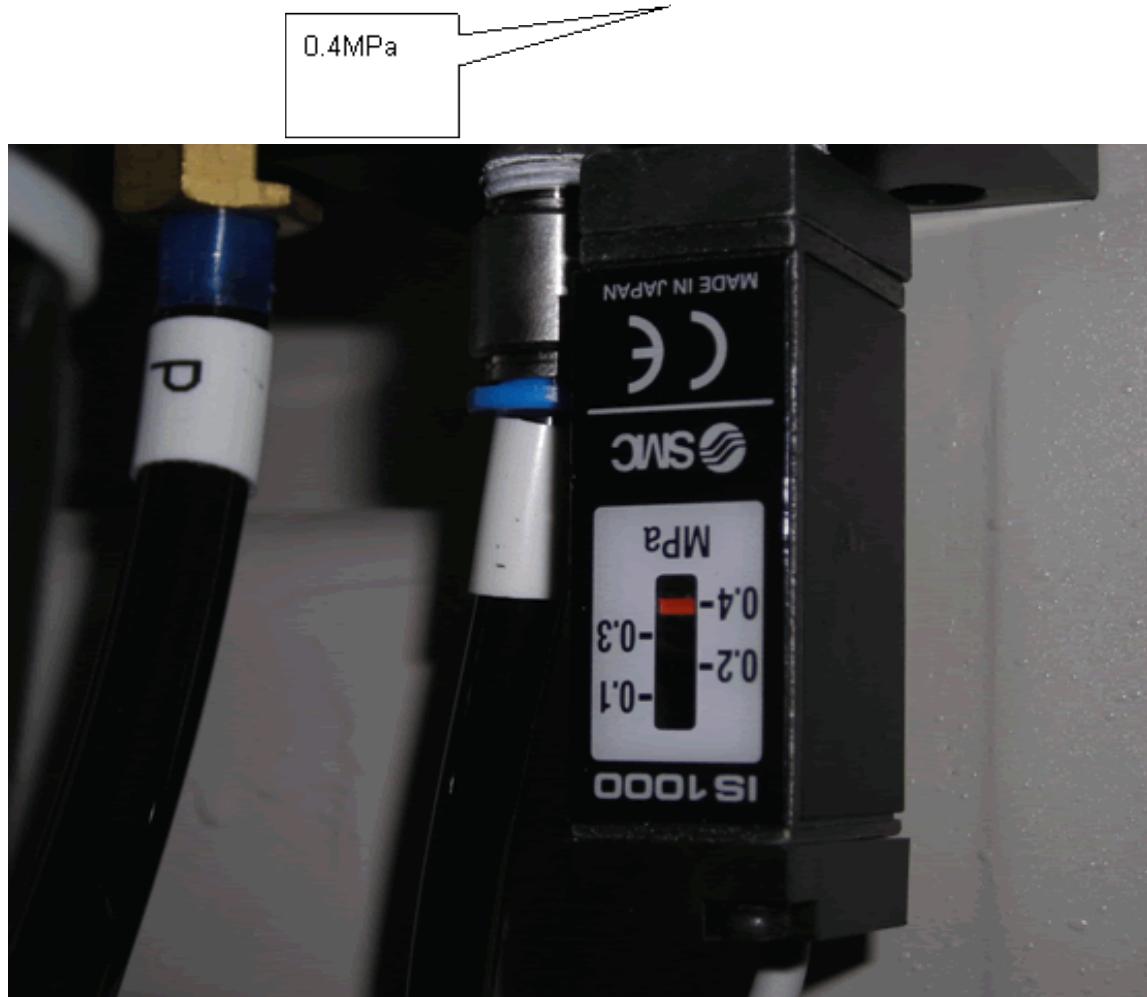
18) Pressure switch(S-IS1000-01S)  
Location of pressure switch (Please check below)

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

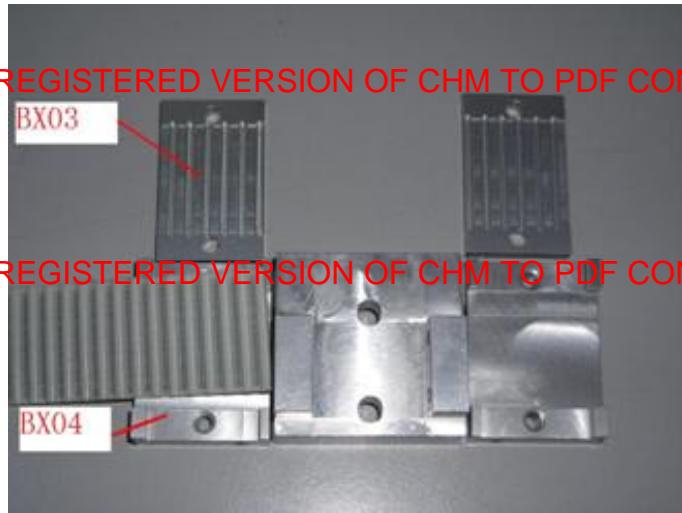


We usually set the value is 0.4MPa (Manufacturer setting)



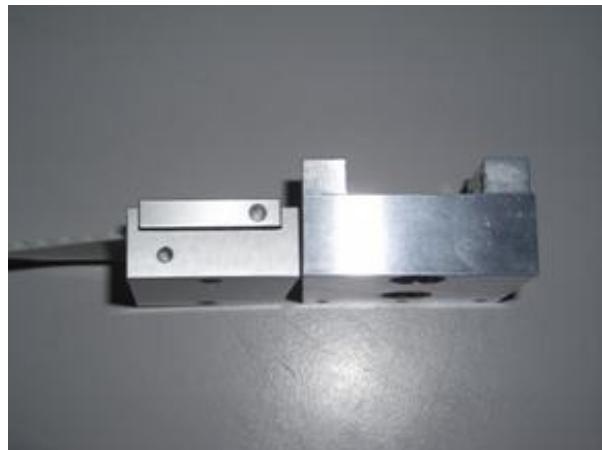
## 18) Notes on adjusting the belt length/tension for X/Y belts

1. The timing belt is mounted by two parts BX03, BX04. Changing the direction of these two parts can obtain different belt length/tension.



2. The timing belt is of 5mm pitch.
3. Reversing installing BX03 can obtain a change of 2.5mm belt length difference.
4. Reversing installing BX04 can obtain a change of 1.25mm belt length difference.
5. So in total there are 4 combination of lengths be possible: 1.25mm, 2.5mm, 3.75mm, 5mm.
6. There is a hole mark at the sides of BX03, BX04. We can have the following 4 combinations:

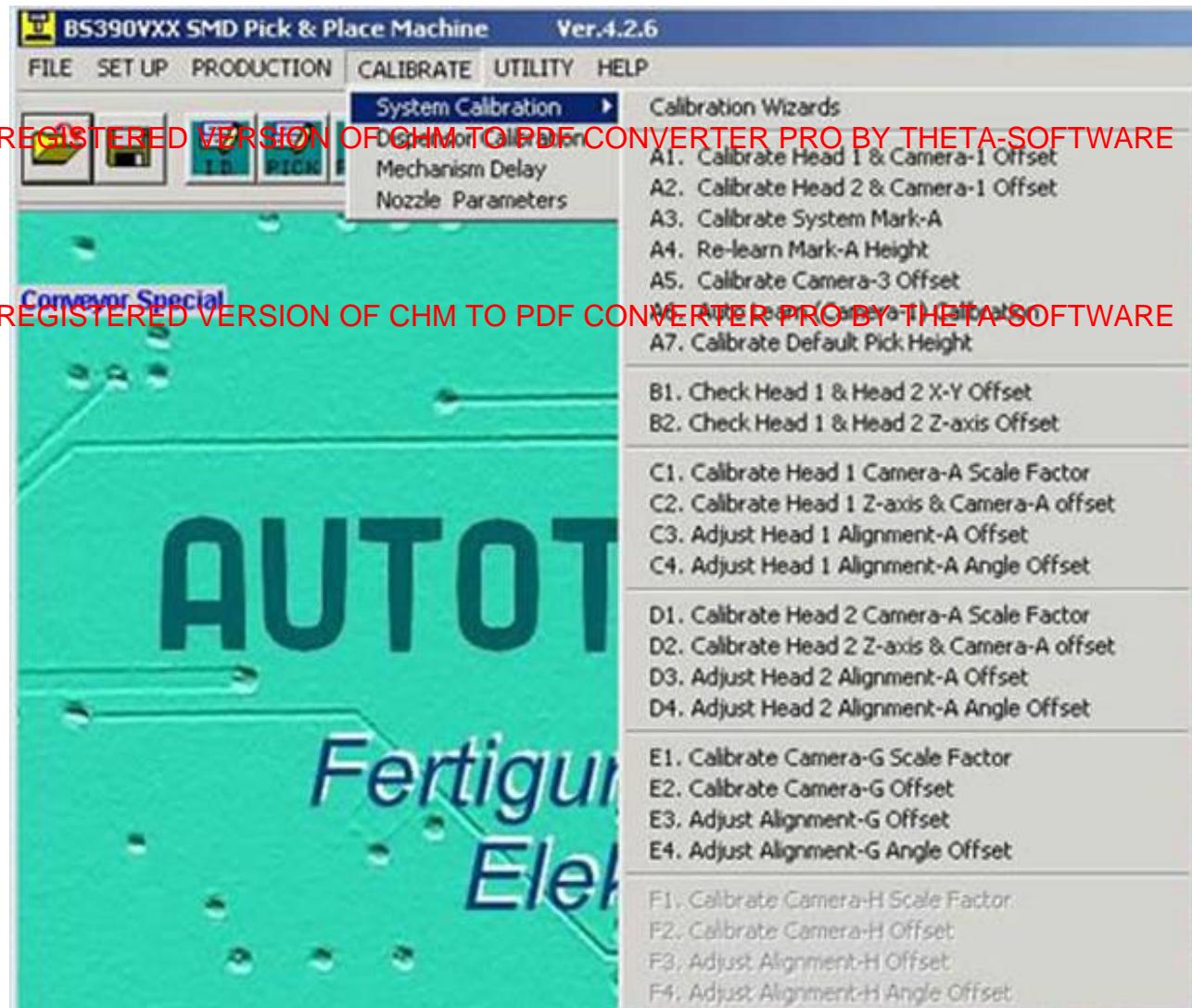




7. Try different combinations to see which one best fit the user needs.

1.

## 9. MACHINE CALIBRATION



There are 10 important calibrations procedure for machine:

- (i) A1. Calibrate Head 1 & Camera-1 Offset
- (ii) A2. Calibrate Head 2 & Camera-1 Offset (only for double head machine)
- (iii) A3. Calibrate System Mark-A
- (iv) A4. Re-learn Mark A Height
- (v) A5. Calibrate Camera-3 Offset (if Camera-3 is installed)
- (vi) A6. Auto Learn (Camera 1) Calibration
- (vii) C1 Calibrate Head 1 Camera-A Scale Factor
- (viii) C2 Calibrate Head 1 Z-axis & Camera-A offset
- (ix) C2 Calibrate Head 2 Camera-A Scale Factor (only for double head machine)
- (x) D2 Calibrate Head 2 Z-axis & Camera-A offset (only for double head machine)

## A1 Calibrate Head 1 & Camera-1 Offset

This is to calibrate the offset between Camera-1 & the Z-axis of Head 1. This offset and **Calibrate Head 2 & Camera-1 Offset** are very important parameters for the machine, as all location learning is based on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed
- Camera-1 focus changed
- Component placement not accurate

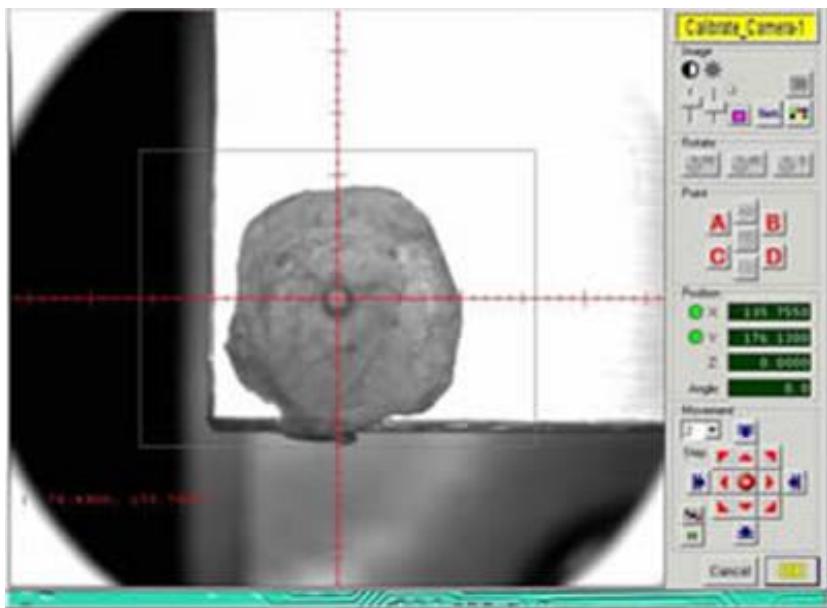
### 1st step is to calibrate the Z-axis position:

You need to prepare a flat **Blue Tape** on the corner of the anchor point, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



### 2nd step is to calibrate the Camera-1 position:

Click **OK** button, the screen will switch to image mode.



Adjust the cross mark to the center of the hole and click  button.  
The machine will auto remove nozzle #1 and the complete the **Calibrate Head 1 & Camera-1 Offset** procedure.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## A2 Calibrate Head 2 & Camera-1 Offset (only for double head machine)

This is to calibrate the offset between Camera-1 & the Z-axis of Head 2. This offset and **Calibrate Head 1 & Camera-1 Offset** are very important parameters for the machine, as all location learning is based on the Camera-1.

If any one of the following occurred, you should do this calibration again.

- Installation after shipping
- Camera-1 position changed
- Camera-1 focus changed
- Component placement not accurate

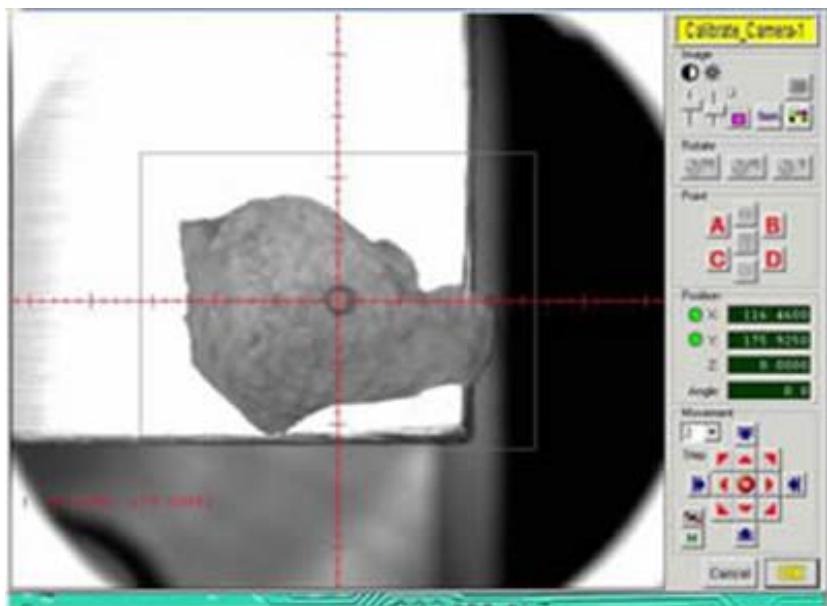
### 1st step is to calibrate the Z-axis position:

You need to prepare a flat **Blue Tape** on the corner of the anchor point, the machine will automatically install the nozzle #1, you can move the Head to the top of the **Blue Tape** and click **HEAD DN** to let the Z-axis go down to make a hole on the **Blue Tape**.



### 2nd step is to calibrate the Camera-1 position:

Click **OK** button, the screen will switch to image mode.



Adjust the cross mark to the center of the hole and click  button.  
The machine will auto remove nozzle #1 and the complete the **Calibrate Head 2 & Camera-1 Offset** procedure.

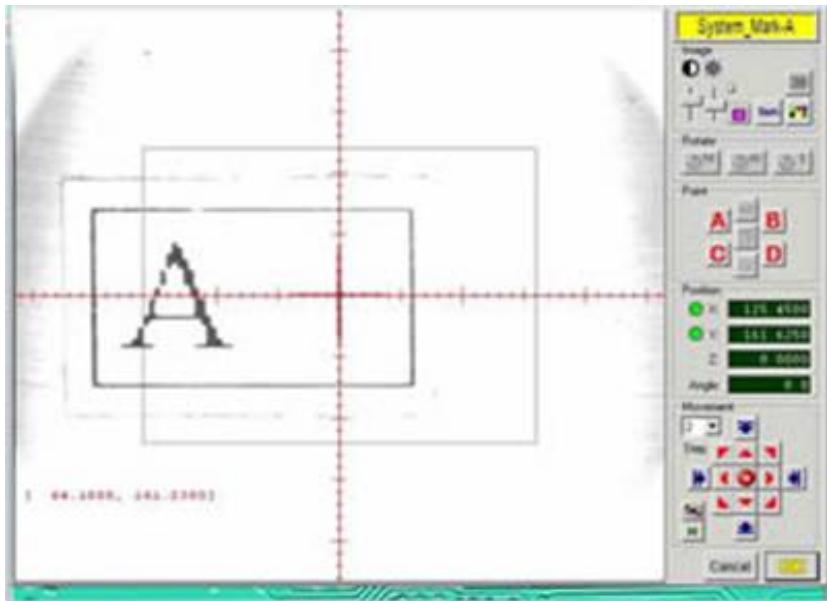
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

### A3 Calibrate System Mark-A

This is to calibrate the machine **Mark-A** position. Every time if you install the machine in a new location, you should do this calibration.

The screen will switch to image mode while it is entered, adjust the cross on the screen to the cross of **Mark-A** and click  button.



**IMPORTANT:** Calibrate Head 1 & Camera-1 Offset must be done before this calibration.

### A4 Re-learn Mark A Height:

This is to re-learn the height of the Mark-A, the machine will automatically install nozzle #1 and learn the height of the Mark-A by vacuum detection.

#### A5 Calibrate Camera-3 Offset (if Camera-3 is installed)

This is to calibrate the offset between Camera-3 & the Z-axis. When you enter this mode, the screen will switch to image mode, you can adjust the cross mark to the center of the hole on the **Blue Tape** and click **OK** button. (the hole on the **Blue Tape** is the same as **Calibrate Head 1 & Camera-1 Offset** in 6.1.1).

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

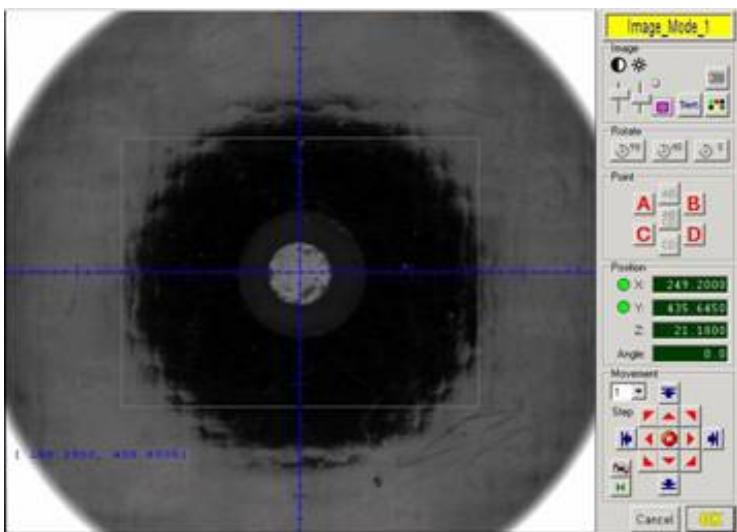


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

#### A6 Auto Learn (Camera 1) Calibration

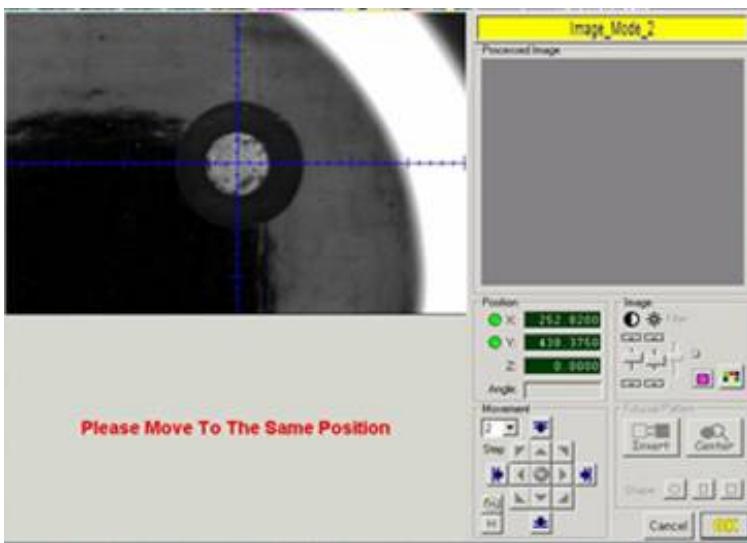
This is to calibrate the Camera-1 Auto Learn feature offset.

Image mode will be entered, select a point or a pad on a PCB, adjust the cross mark to the center and click **OK** button.



Then Image mode-2 will be entered, adjust the cross mark to the same position on the PCB and click

**OK** button.

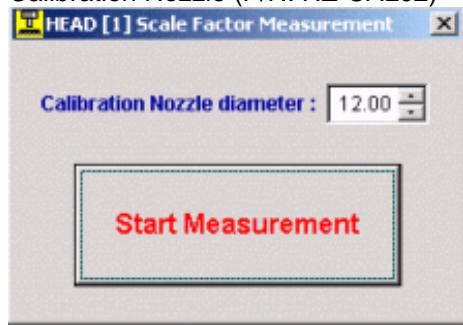


### C1 Calibrate Head 1 Camera-A Scale Factor

This is to calibrate Camera-A Scale Factor, and then use this Scale Factor to calibrate Z-axis, (This calibration just for hard disk DATA error or instead of Camera-A, usually machine already calibrated finish in the factory, so no need to calibrate again)

**Start Measurement**

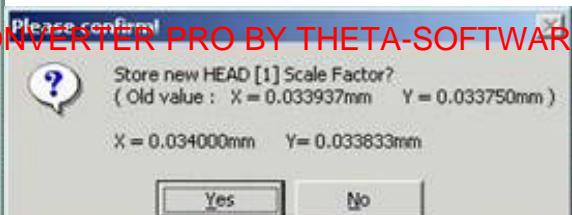
First setup the Nozzle diameter (Scale Factor), and then click **Start Measurement** for calibration. (please install the Calibration Nozzle (P/N: NZ-CAL02)



Use "田" to select the edge of Calibration Nozzle (P/N: NZ-CAL02), make sure the "田" diameter is the Nozzle diameter 12mm (Scale Factor), and the brightness & contrast can set to 300, click "yes" for save.



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

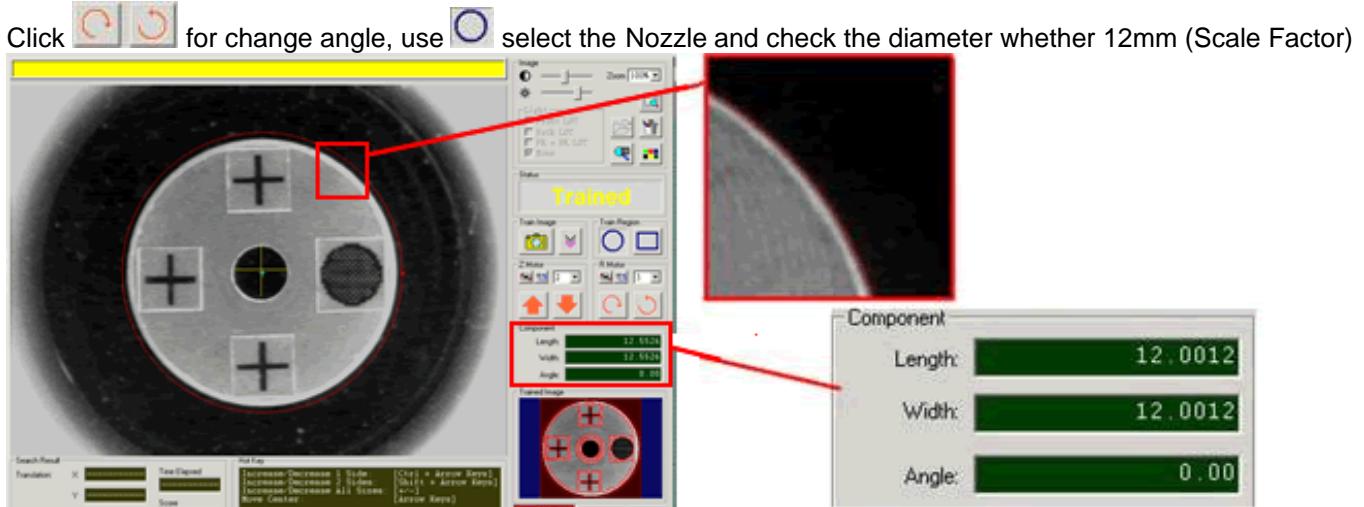


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

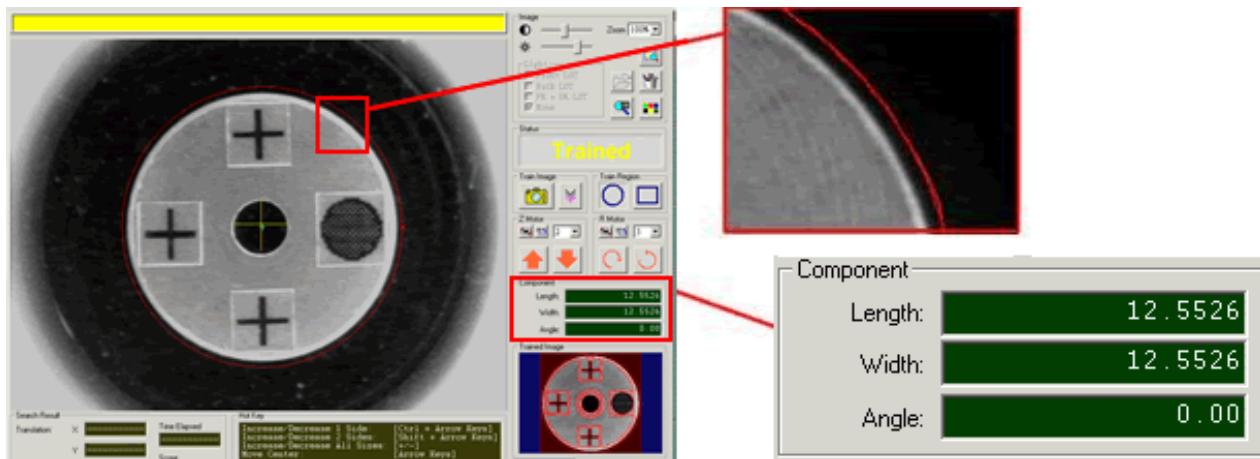
## C2 Calibrate Head 1 Z-axis & Camera-A offset

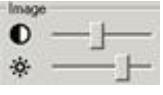
This is to use the Calibration Nozzle (P/N: NZ-CAL02) to learn the Head 1 Z-axis & Camera-A offset

a. select this head 1 will auto down, manual Install the Nozzle and click  below frame will be show. (only for new Calibration Nozzle (P/N: NZ-CAL02), if have old nozzle image please go to "b" )

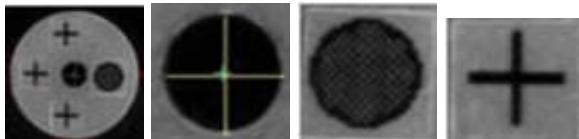


When finished, use SHIFT + Arrow Keys to zoom out about 12.55mm, click  capture image



use  to test the train image, at the same time, must adjust the brightness & contrast  , usually

brightness is set between 200~300, contrast is set between 500~600, refer the default advance setting

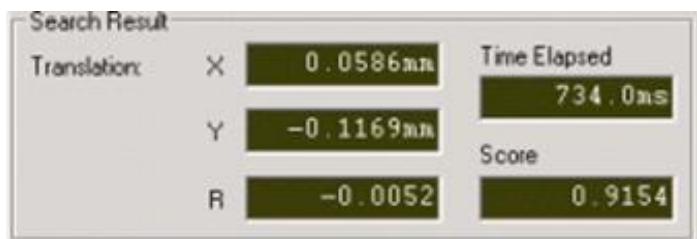
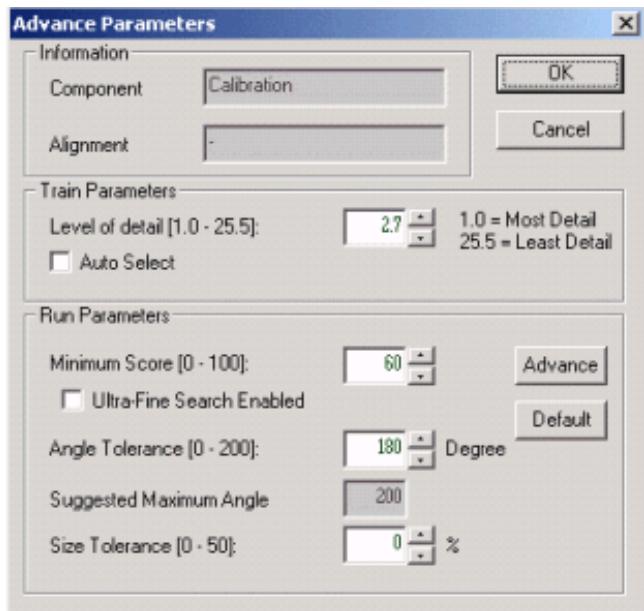


parameter, without fail to let  four reference point can clear to

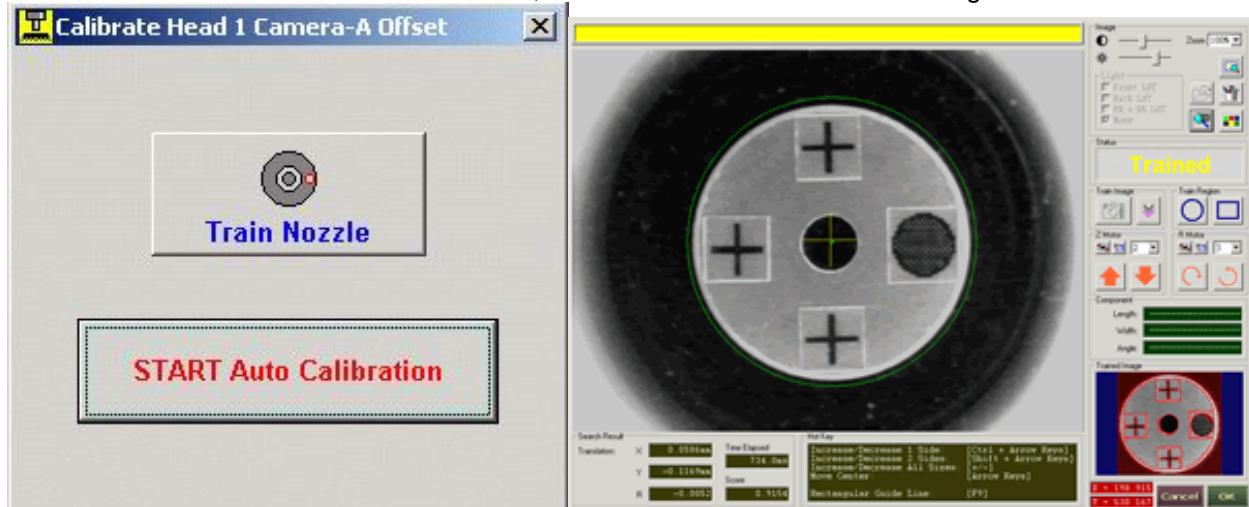
show in the image , the Time Elapsed must 500-1000ms , R is about +/-0.01

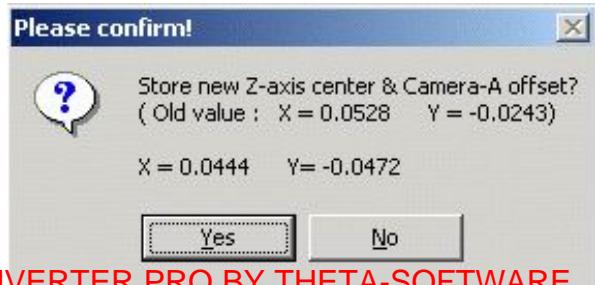
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



- b. Select **START Auto Calibration** for auto calibration, nozzle will auto circumrotate 360degree for trained.





UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

## **D1 Calibrate Head 2 Z-axis & Camera-A offset (only for double head machine)**

Please refer C1 for calibration

## **D2 Calibrate Head 2 Z-axis & Camera-A offset (only for double head machine)**

Select this Head 2 will auto down, manual install the Calibration Nozzle (P/N: NZ-CAL02), select for auto calibration, please refer C2.b

**START Auto Calibration**

## 10. MAINTENANCE AND CLEANING PRISM MODULE

### 10.1 SM Module

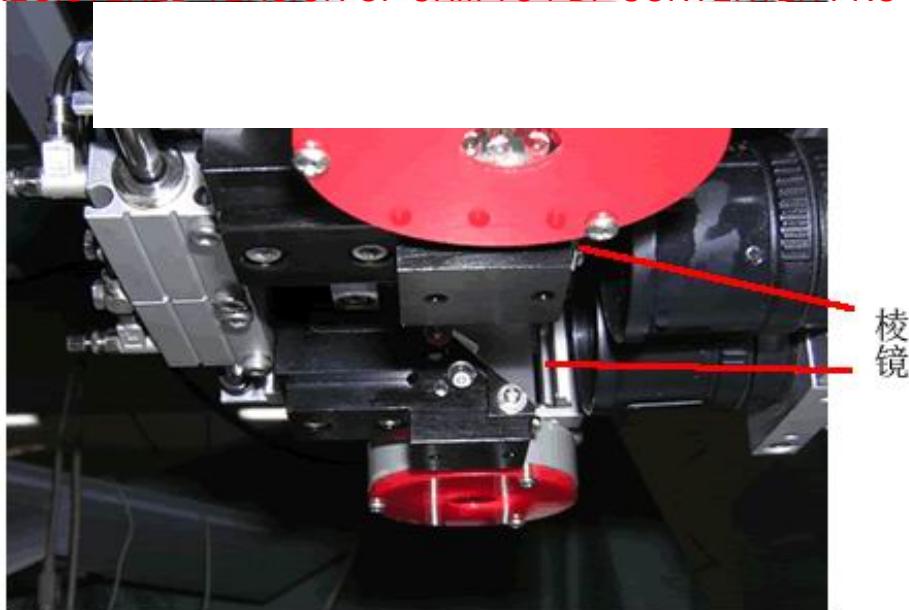
This section describes the procedures for cleaning the prism module.

PRISM MODULE: It should be treated and cleaned with the same caution as cleaning for a high-quality lens. Excessive amounts of dust or other residues on the prism module will affect the alignment.

Figure 1 shows the location of the prism module.

**Figure 1.** PRISM Module Location

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



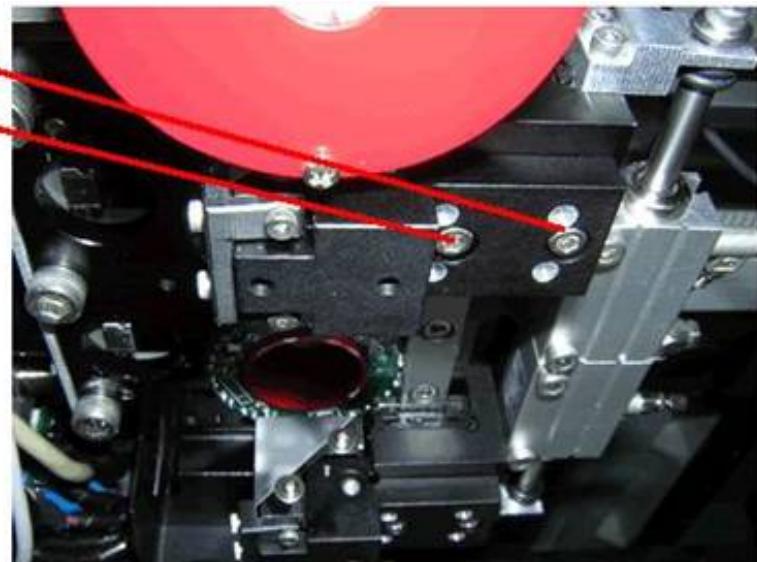
#### 10.2 Cleaning Schedule

We recommend cleaning the prism once every two months. Under certain conditions, it may be necessary to clean them more often.

#### 10.3 Prism Module install/remove sketch map

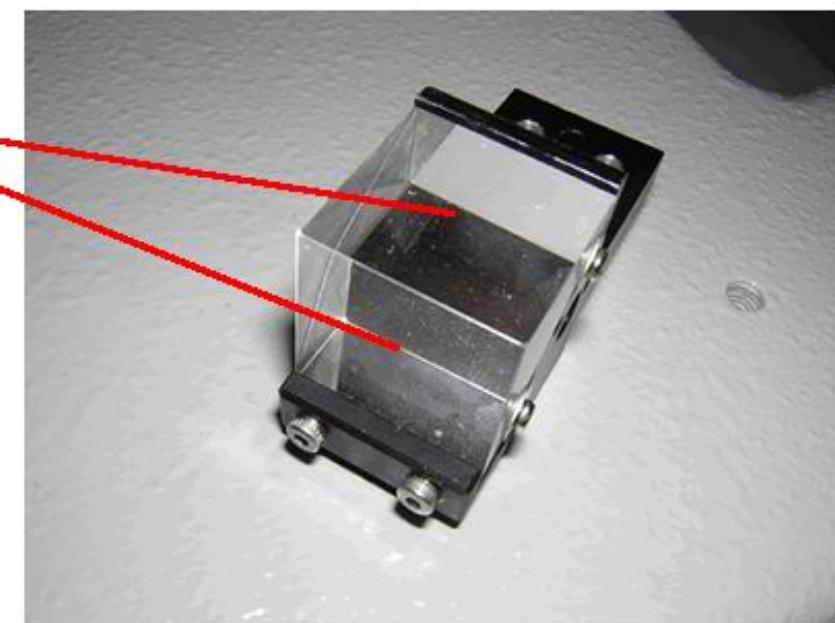
1)

卸下此处螺丝



2)

棱镜表面



ATTENDTION: Don't remove the PRISM from PRISM MODULE. The prism have been well calibrate inside the PRISM MODULE, any adjustment the position of the prism need to be re-calibrate from the factory

Under normal operating conditions, dust and debris can accumulate on the surface of the prism. To remove this dust, we recommend using one of the following procedures.

- clean the dust off the surface of the prism using an airbrush or a can of pressurized air.
- Brush the dust off the surface of the prism using a camel-hair brush or a brush made of a material designed for cleaning optical surfaces.
- Lightly wipe the surface of the prism using a clean, cotton-tipped swab.

**Note:** For best result, wipe in only one direction.

In case the PRISM is very dirty or other oily deposits that are not removed using normal cleaning procedures.

Use the following procedure:

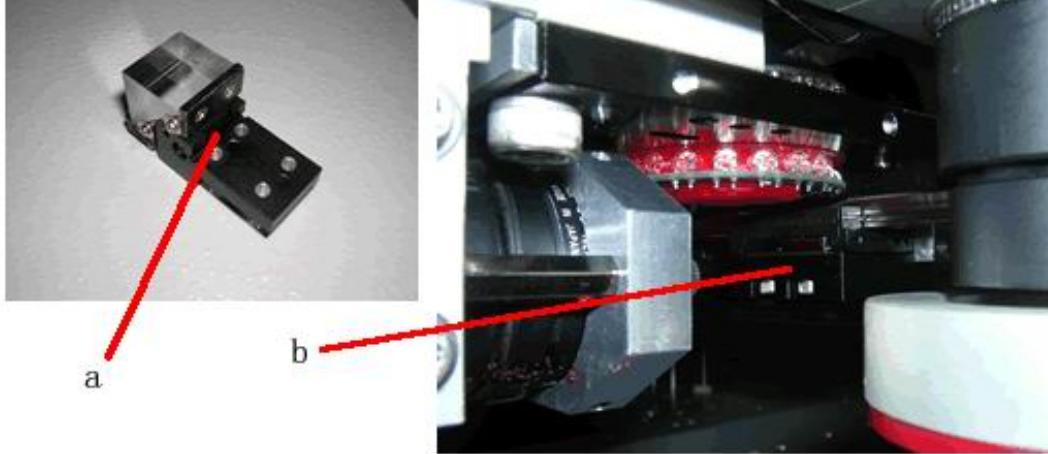
1. Moisten a lint-free tissue or cotton swab with cleaning solvent which used for cleaning glass.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

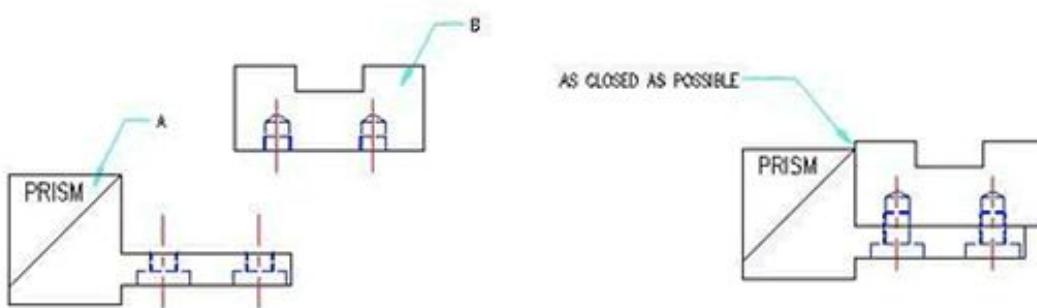
2. Wipe each side of the prism once with the moistened tissue or swab in a single direction.

3. Using a dry tissue or swab, lightly wipe each window in a single direction to remove any remaining cleaning solvent residue.

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**



3) 安装时将a紧密的靠近b, 并上紧螺丝



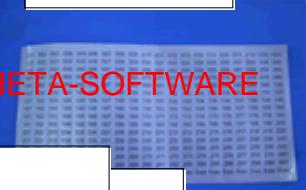
#### 10.4 Re-calibration of PRISM Module after cleaning

Please refer

9.C2 Calibrate Head 1 Z-axis & Camera-A offset

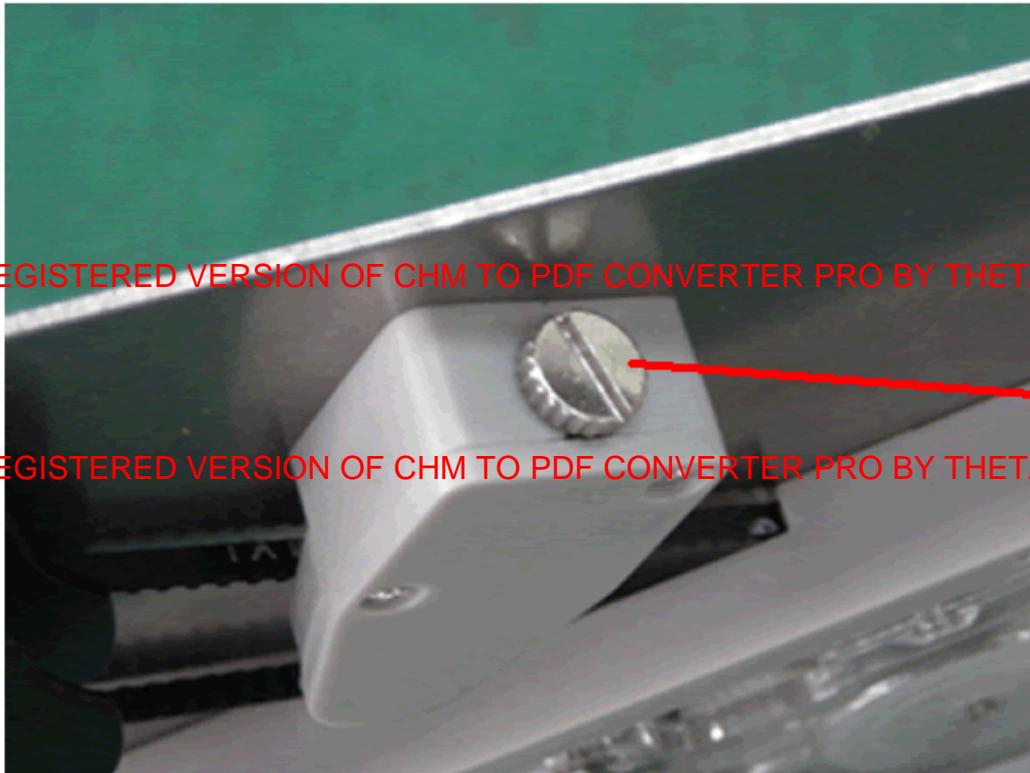
9.D2 Calibrate Head 2 Z-axis & Camera-A offset



454 Position 1			
Part. NO.			
1.	S-LB-KFTA-ID	Feeder	
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE			
2	S-CC-383-G27		
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE			
3	S-BT-MXL-T120-W2.5-RUB	Rubber tim T120 W2.5	
4	S-BT-MXL-T150-W2.5-RUB	Rubber timing belt MXL T150 W2.5	
5	S-GREASE-GB	Grease for feeder gearbox	
6	S-CT-MOTOR-PTC-V1.00	Gear motor for feeder	

7	S-CC-KFTA-MOT-V1.01	Gear motor cable	
8	S-K-ROL-08-V1.4C_C	8mm K FEEDER SEAL TAPE ROLLER VER.C	

**15.2. Step to increase the friction of sealing tape roller  
( For KFTA-XX only)**



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

1. turn B by counterclockwise will free the belt

2. turn B by clockwise will  
increase the friction of  
sealing tape roller.



### 15.3. KFTA-XX --- change BELT

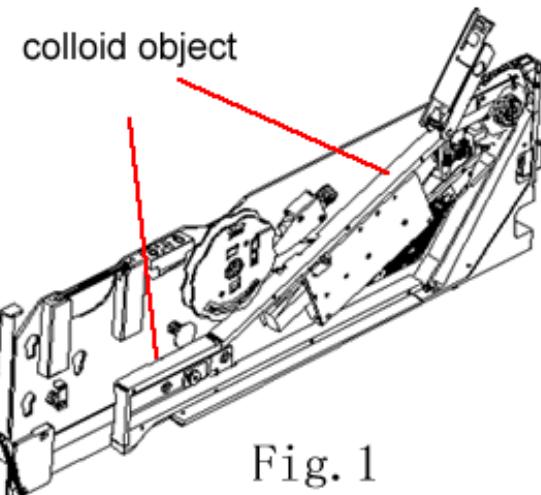


Fig. 1

1. Remove the **cover**, please check fig.1

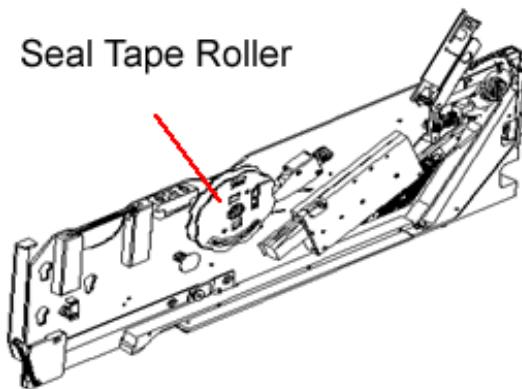


Fig. 2

2. Remove the **colloid object** (fig.2)

3. Remove the **Seal Tape Roller** (fig.3)

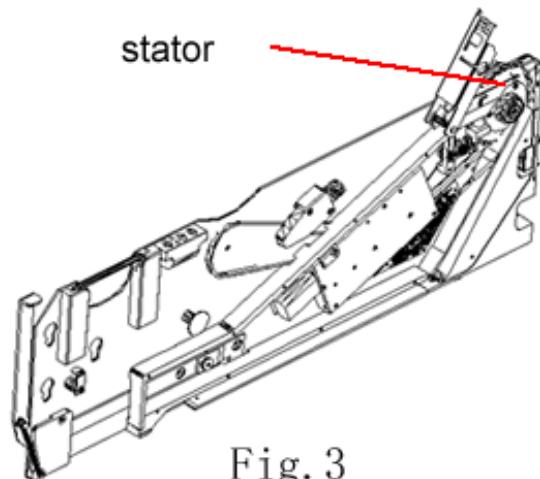
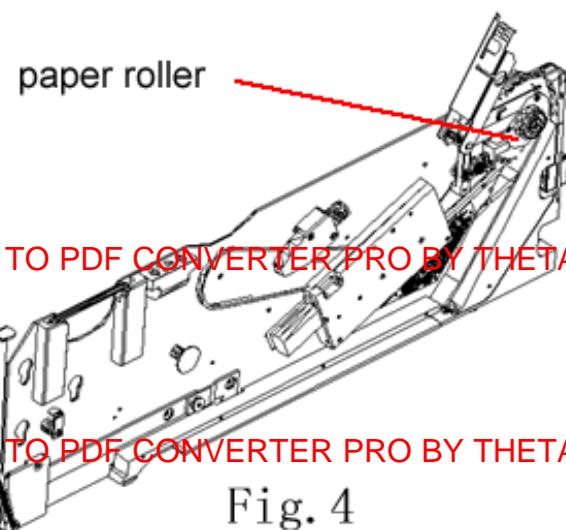


Fig. 3

4. Remove the **stator**, (fig.4)



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Fig. 4

5. Remove the **paper roller** (fig.5)

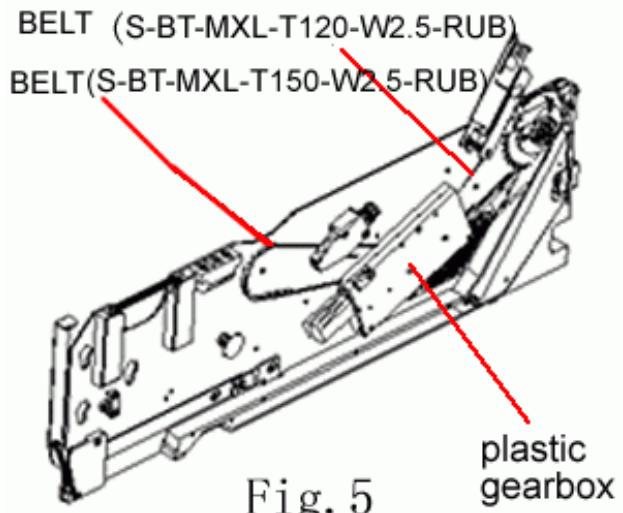


Fig. 5

6. Remove **plastic gearbox**, replace new belt

7. Set the belt into the gear, reinstall the screw, and please check fig.5

8. Reinstall **paper roller**, please check fig.5

9. Reinstall **stator**, please check fig.3

10. Reinstall **Seal Tape Roller**, please check fig.2

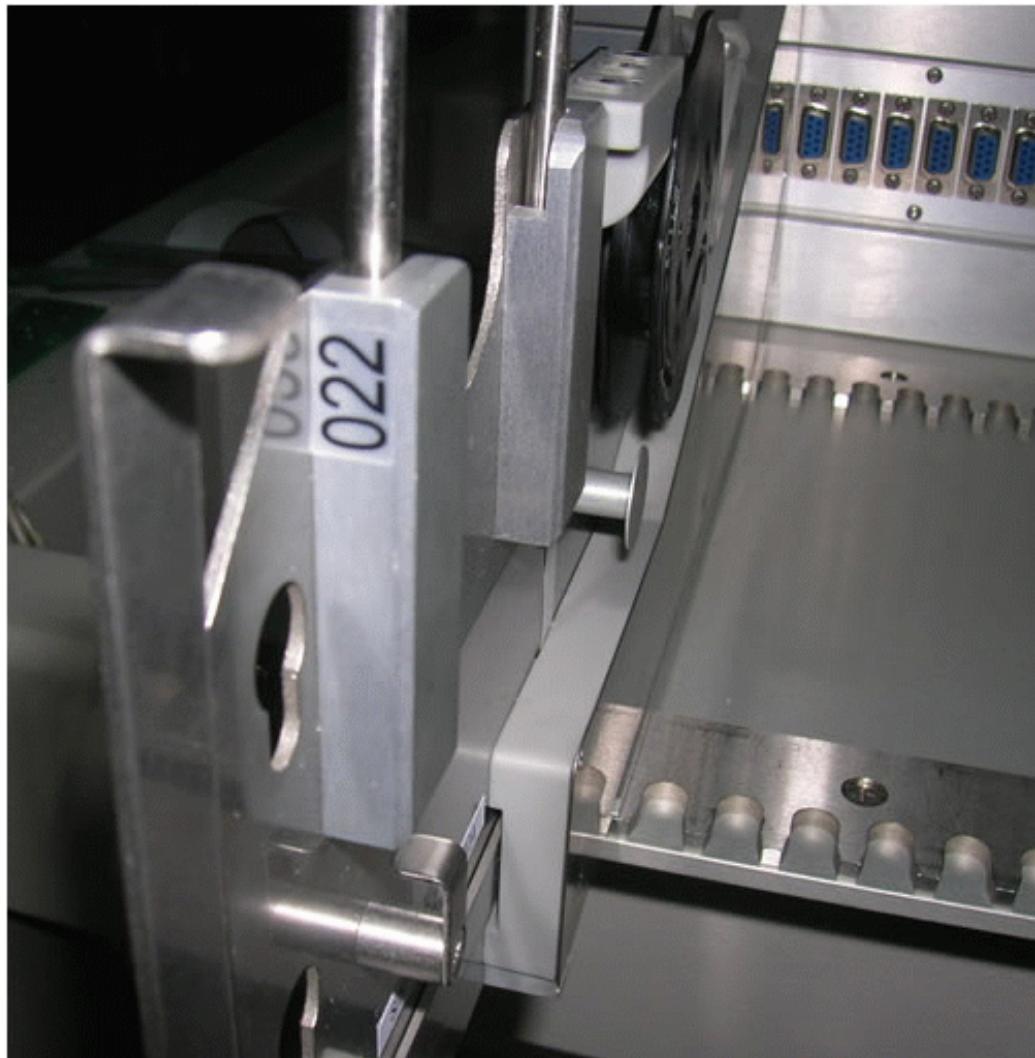
11. Reinstall **colloid object**, please check fig.1

12. Adjust the friction of belt by tnesioner (please refer increase the friction of sealing tape roller)

13. Adjust the position sensor

14. Reinstall the **cover**, replace belt finish

## 15.5 Position for Feeder ID Label



mark: each SMD has a feeder ID label in the user manual, user can stick the label to KFTA feeder for record the feeder ID that in the software.

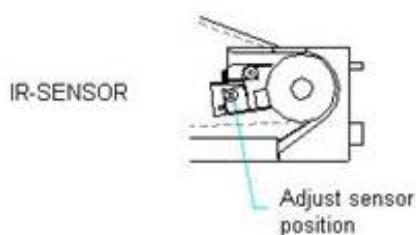
## 15.6 APPLICATION NOTES FOR 0201/0402 COMPONENT ON KFTA-08 FEEDER

**NOTE:** Please select the right feeder TYPE; otherwise the machine nozzle will be damaged during pick up.

1. Since most of the 0201/0402 is come with 2mm pitch, it need special feeder to handle. The feeder model with 2mm pitch is **KFTA-08HS**. ( For 0201 application , it must use KFTA-08HS)

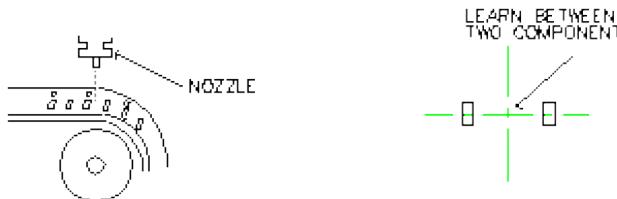
It also need NZ-0201B ( Black nozzle ) for most of 0201 application. For some special 0201 component, it might need NZ-0201 (White Nozzle)

2. There is another method to use standard KFTA-08L for 0402 application. we need to calibrate the starting position of the feeder by adjust the IR-sensor of the feeder. ( For more stable application of 0402, KFTA-08HS is recommended )



The above adjustment is only necessary when using KFTA-08L standard feeder for 0402 application (No need to adjust when using KFTA-08HS)

3. Since the weight of 0402 is very light, we need to learn the "component pick up height" from the top of the paper in order to get a more accuracy height.



4. We need to slow down the pick up speed to "3" in order to reduce the pick up vibration on the feeder.
5. We need to adjust the vacuum value usually from "70%" to "50%" because the size of the 0402 is a little bit smaller than the nozzle..

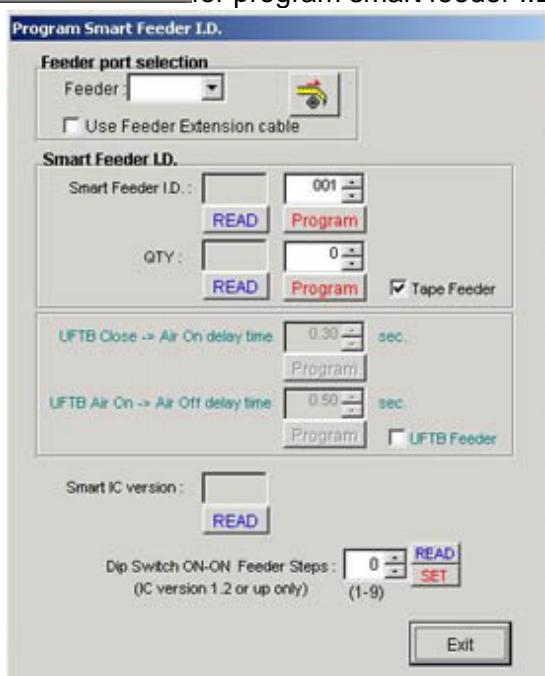
## 15.7 How to program feeder I.D. into smart feeder



Click **I.D.** for enter learn feeder I.D.



Click **Program Smart Feeder** for program smart feeder I.D.



### (1) Feeder Port selection:

Select feeder port where smart feeder install for programming

### (2) Smart Feeder I.D.

Enter Tape feeder to program smart feeder

- In Smart Feeder I.D.  use up/down arrow to select feeder I.D. that you want click **Program** to program the I.D. to smart feeder click **READ** to read I.D. from smart feeder (click **Program** will show you a successful message and the green LED will flash©



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

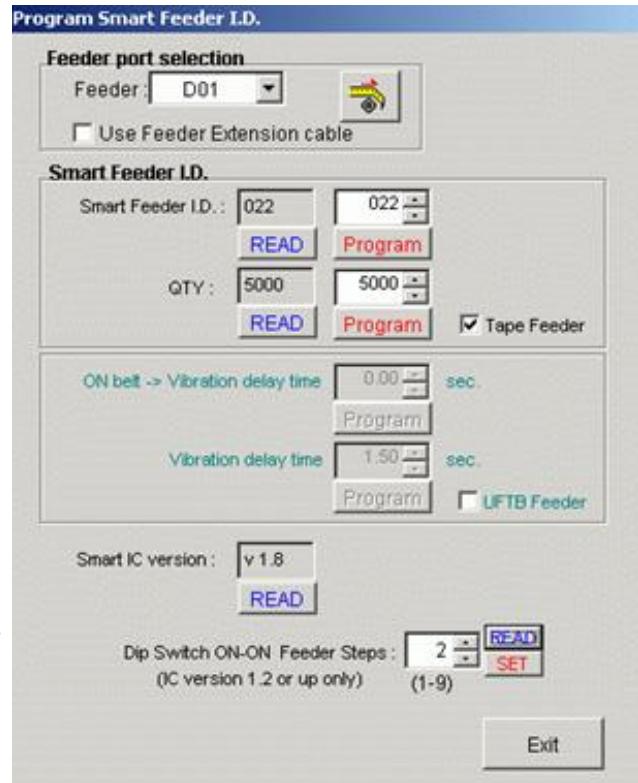


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

b. use up/down arrow to select feeder I.D. that you want click **Program** to program the I.D. to smart feeder click **READ** to read I.D. form smart feeder.(click **Program** will show you a successful message, click **Program** or **READ** the green LED will flash£©



A new I.D. is setting finish



## 15.8 How to set step for feeder

### 1£®Lock the feeder to feeder rack

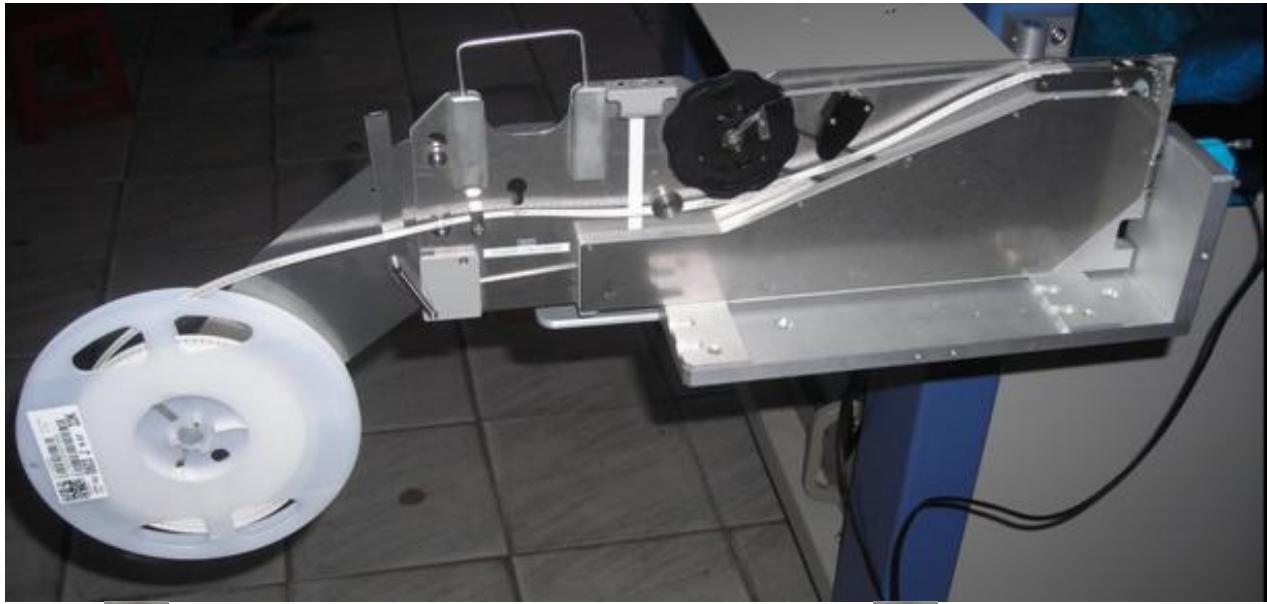
- upwards the LEVER can lock the feeder with feeder rack (We suggest there is no gap between and feeder rack)





2. Set step for feeder(for KFTA-12 or above)





1. Hold  about 5 second, the green LED will flash, then free the 
2. Press  will set the step (e.g. press twice, then the step is 2 click  again for setting finish)
3. Click  again for setting finish

Remark: Expect the K08HS is 2mm for step , other feeders are 4mm for step.

## **15.9 Load component to smart feeder**

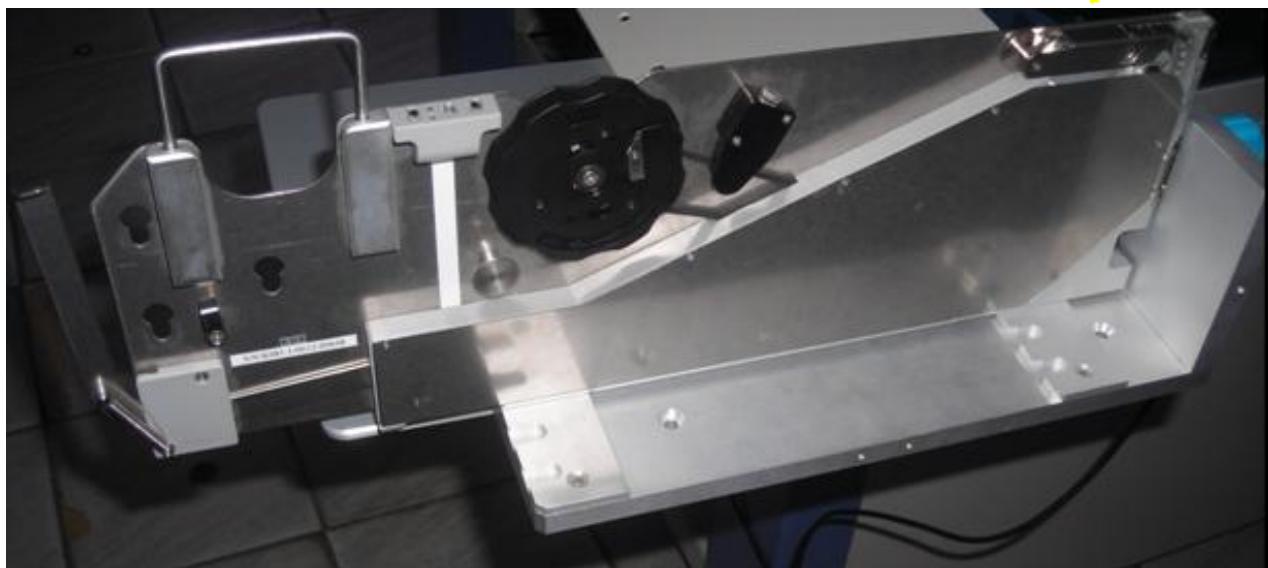
- a. Insert the feeder to the feeder stand and plug the feeder Adapter Extension Cable



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



b. Install the small backboard

Install note: there are three hole for install. We can select 1 and 2 or 2 and 3 if select 1 and 2, the small backboard will downwards if select 2 and 3 the small backboard will upwards.





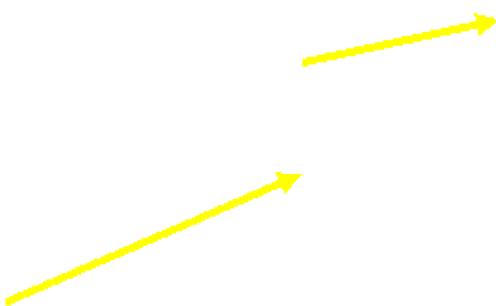
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

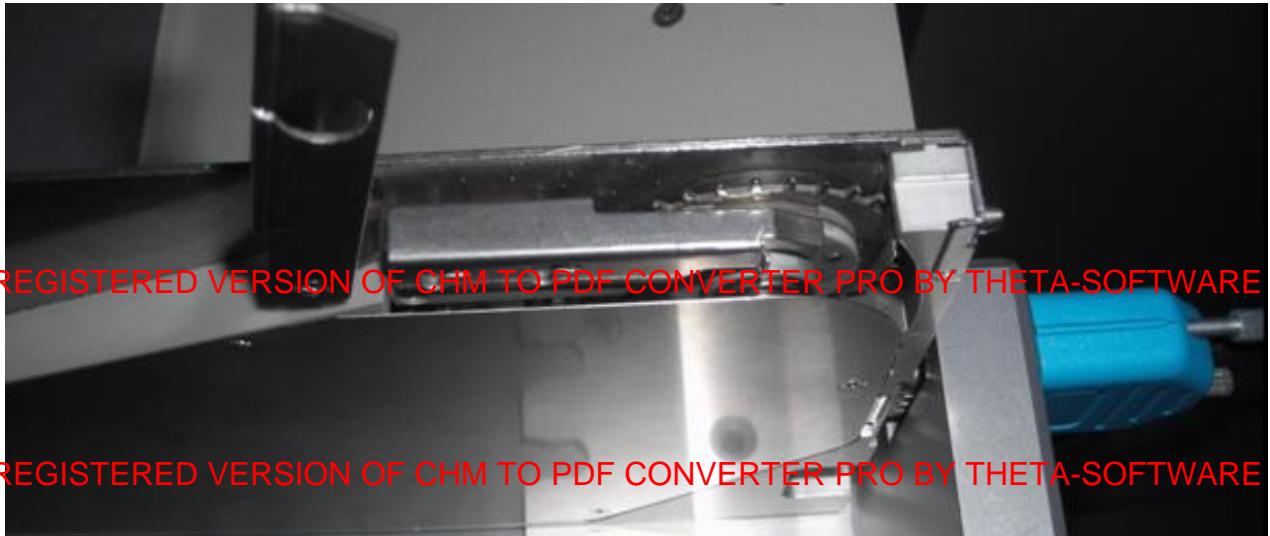
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

c. Open the lock plate , take up the pressure plate.

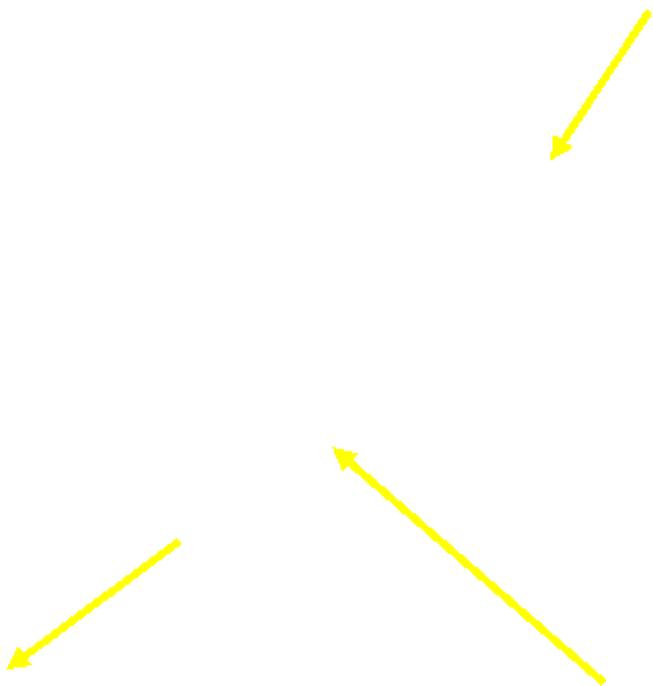


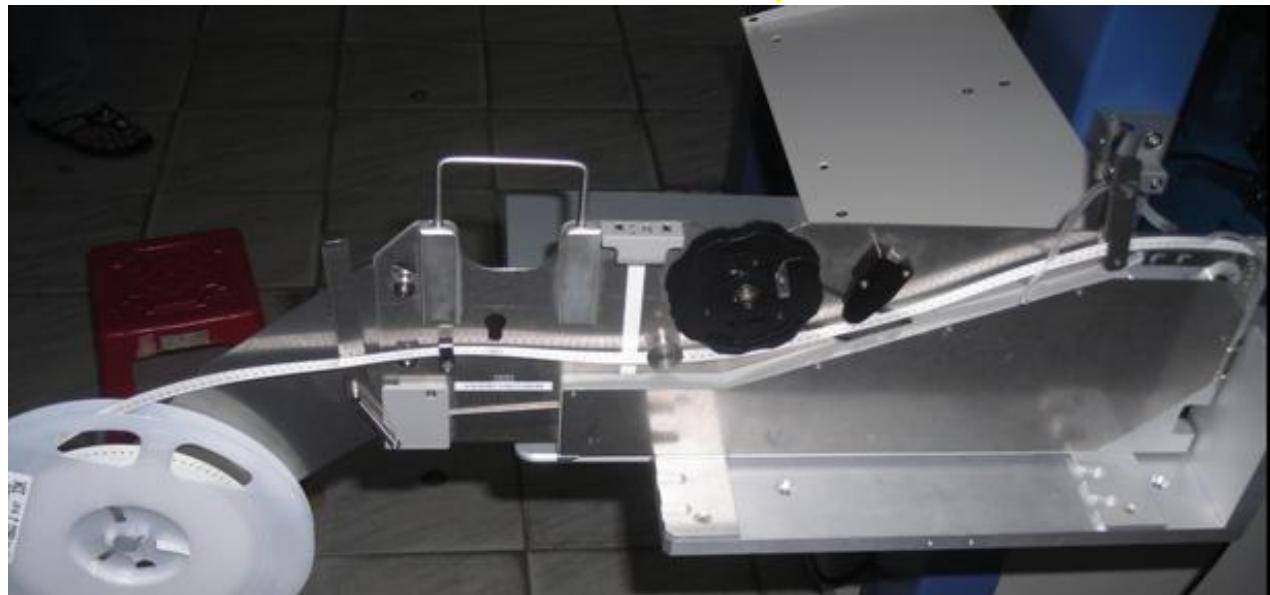
d. Push down and hang up the paper shrapnel show the gear wheel





e. Load component load tape into the small backboard let component tape through the Localizer and then roll the pillar and through out the pressure plate , setup the component tape into the gea4r wheel , and the let the seal tape through the circular gap , pull the seal tape and press down the pressure plate , roll the seal tape to the seal tape roller by counter clockwise ,lock the seal tape to the stator .

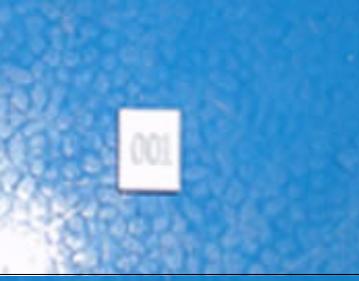


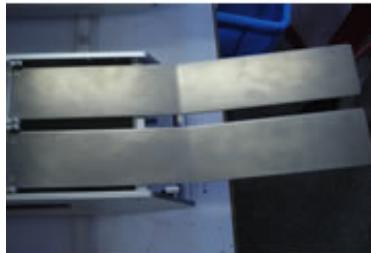


f. click advance button until find the component disappear

## 16.1 Packing List of K

V1.0

	part No.	Description	photo
		KFTB-2V Main Unit	
2.	S-HG-HEX-KEY-1.5mm	M2 Hex key	
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE			
3.	KEY-2mm	M2.6 Hex key	
4.	S-JC157-1	Shimming piece for SOIC16, SOIC14	
5.	S-JC157-2	Shimming piece for SSOP24	
6.	S-JC157-3	Shimming piece for TSSOP16, TSSOP14	

7.	S-JC157-4	Shimming piece for SOIC24	
8.	S-JC171	IC tube support plate	
9.	M2X8-CB-SS	M2X8 C 'B screw	

## 16.2 KFTB-2V - Install the IC tube support plate (1/1)

Please install the IC tube support plate before KFTB-2V production

1. Loosen the M3X8 screws





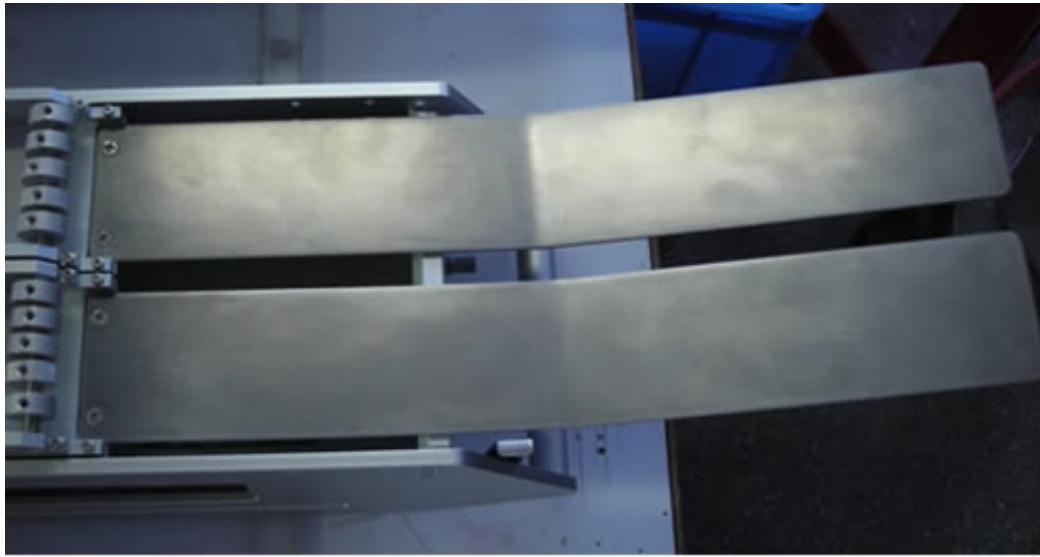
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



2. Please lock the IC tube support plate by M3X8 screws that loosen before.



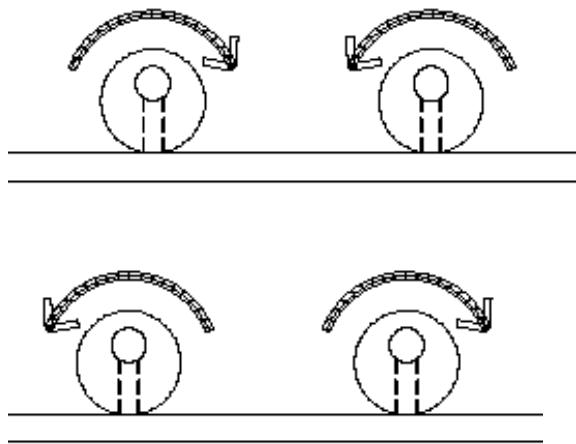
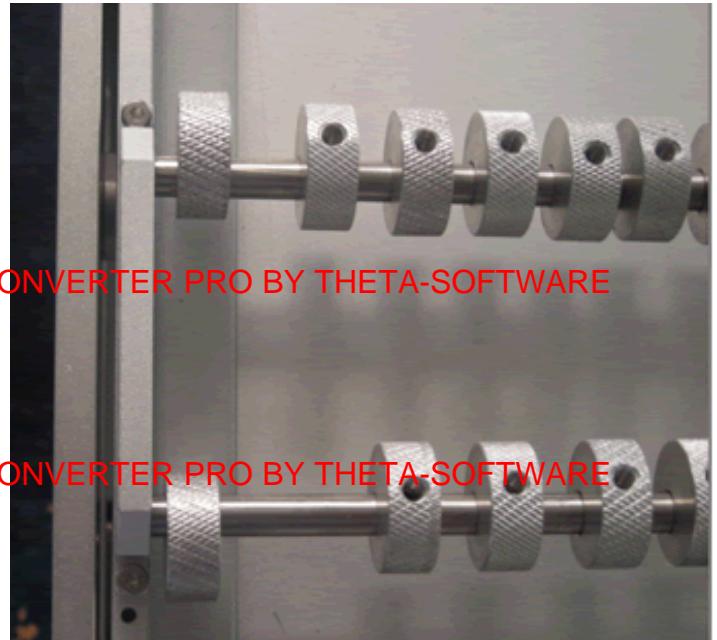


### 16.3 Application Note for KFTB-2V (Ver 1.1)

1. Turn the ECCENTRIC ROLLER in opposite direction to clamp the IC tubes. Please clamp the tube by using appropriate force, so that the tube will not deform too much to hinder smooth feeding

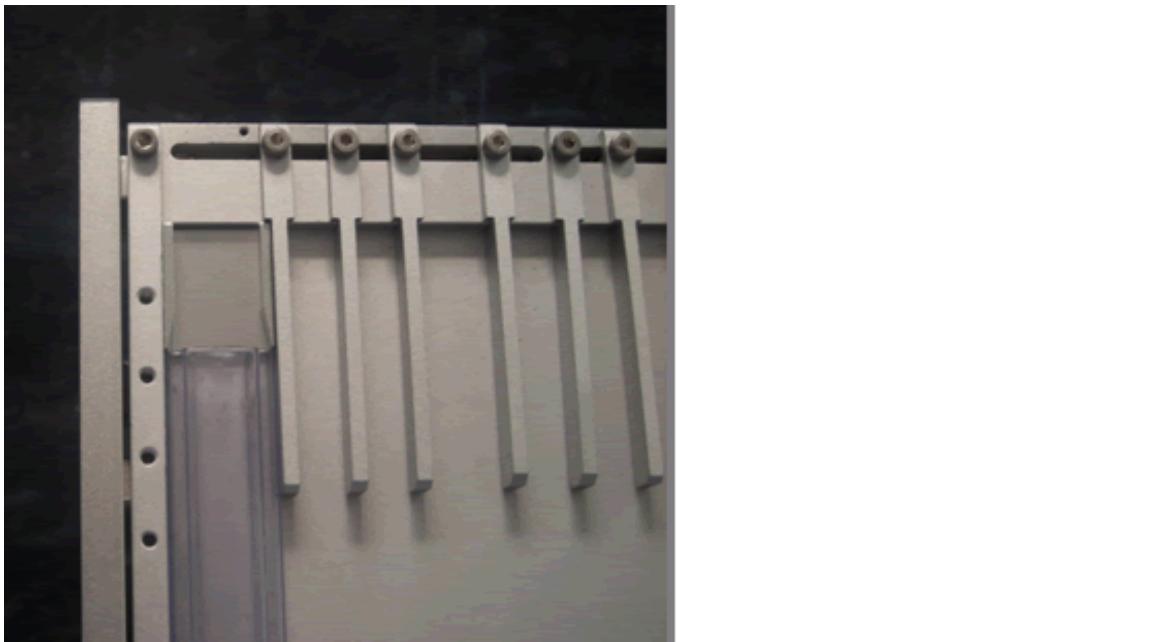
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



**Lock by two roller in opposite direction, not need to fix by set screw.**

2. The IC tube should be pressing the shimming piece. Use a double side adhesive tape to prevent the piece being picked up if necessary.  
Adjust the separators to fit the width of the shimming piece and IC tube.



16.4 KFTB-2V - Control panel (Ver 1.0) □ 1/1 □

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE



For manual feeding by manual  
triggering the vibration

Power indicator

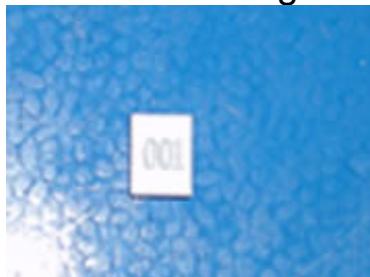
UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

For adjusting vibration frequency

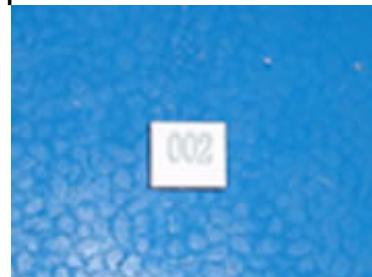
For adjusting the vibration amplitude

16.5 KFTB-2V - pick up position shimming pieces (1/1)

There is marking on the shimming piece



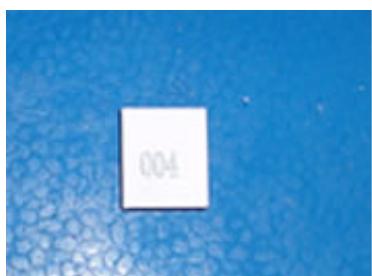
001



002



003



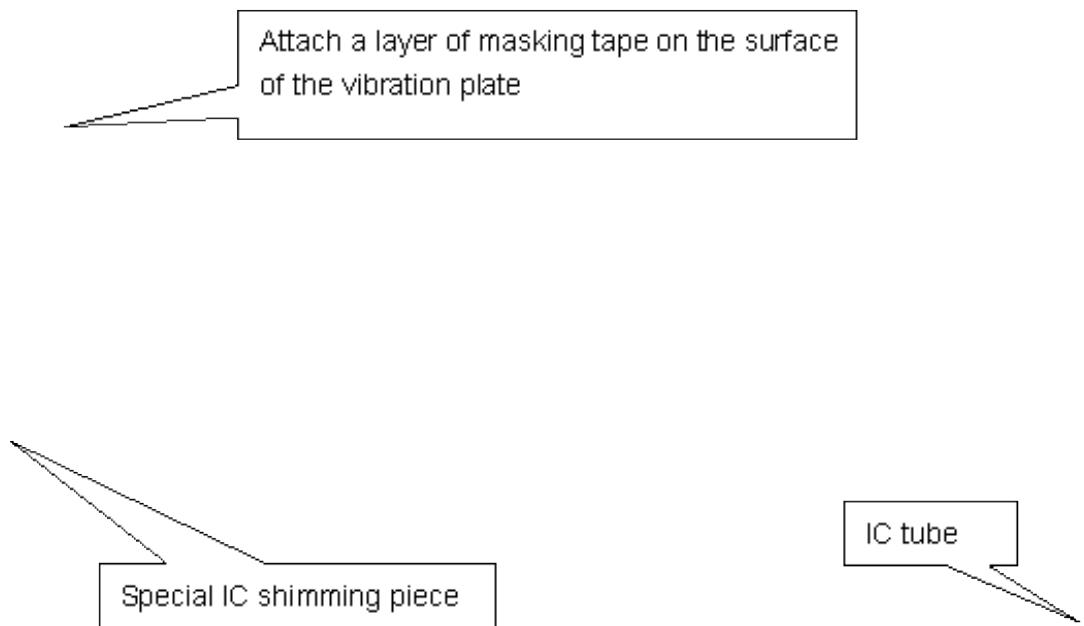
004

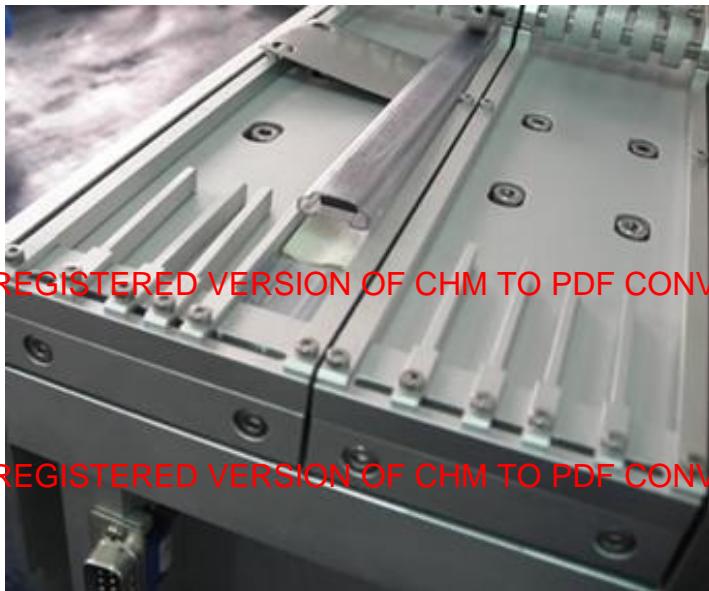
Shimming piece P/N	Marking	Used for components
S-JC157-1	001	SOIC16, SOIC14
S-JC157-2	002	SSOP24
S-JC157-3	003	TSSOP16, TSSOP14
S-JC157-4	004	SOIC24

## 16.6 KFTB-2V - making the shimming piece (1/1)

1. For special IC, if standard shimming piece do not fit, we can make the special IC shimming piece from the IC tube by themselves .

Remark: when install the IC tube to KFTB-2V, please attach a layer of masking tape on the surface of the vibration plate, so that the tube is a little bit higher than the shimming piece



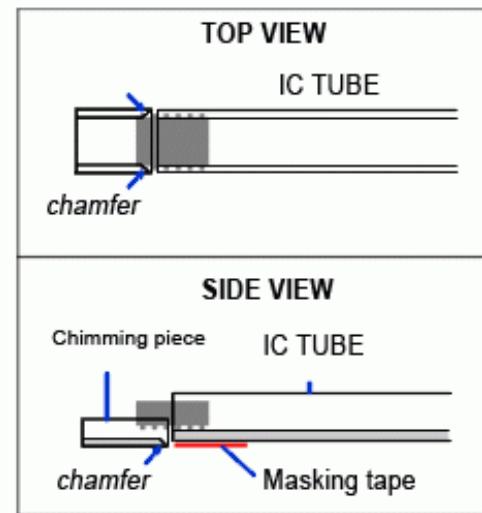
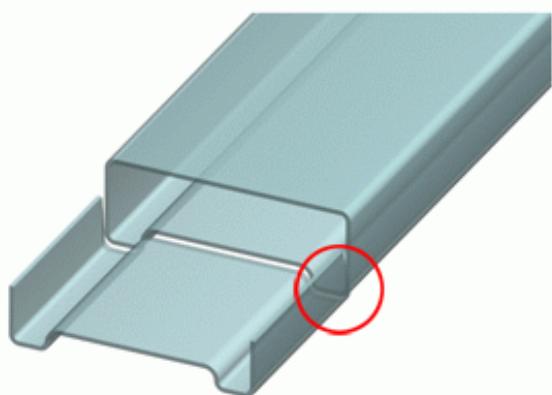
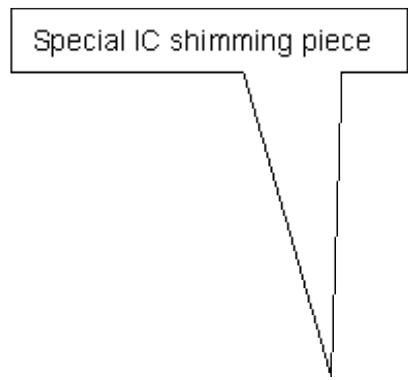


UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

2. The special IC shimming piece should be 1~2mm longer than the IC.





Chamfer the end of the self-made shimming piece for smooth feeding.

## APPENDIX A - How to use remote service kit

Optional Remote Service Kit provide remote service can be done by our worldwide remote center

### 1) Connect internet

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

#### a) use LAN cable connect Local Area Network

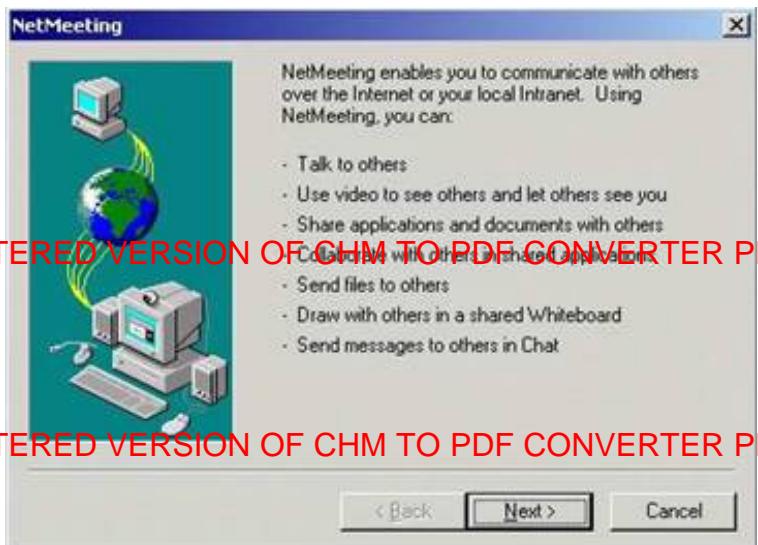


Connect the LAN Cable to the right of the machine, if find the icon that on the right-down Corner disappear,

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

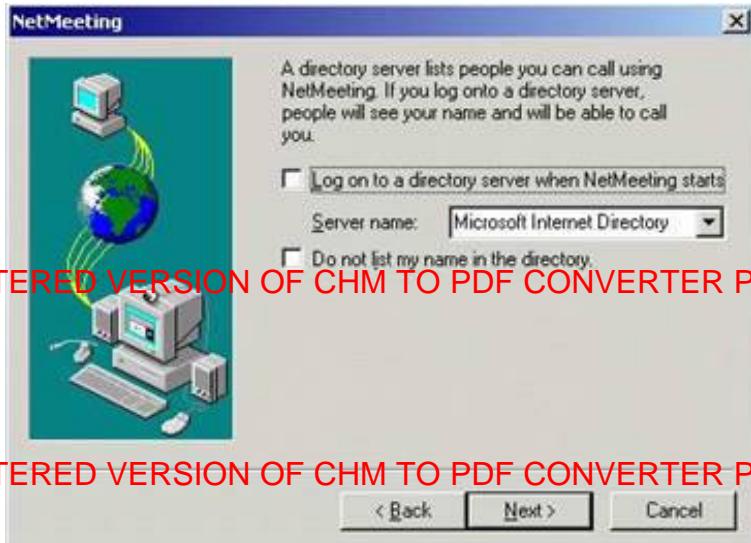
**2) NetMeeting remote control**

- a. In start - run type “conf” to install NetMeeting, click “Next”

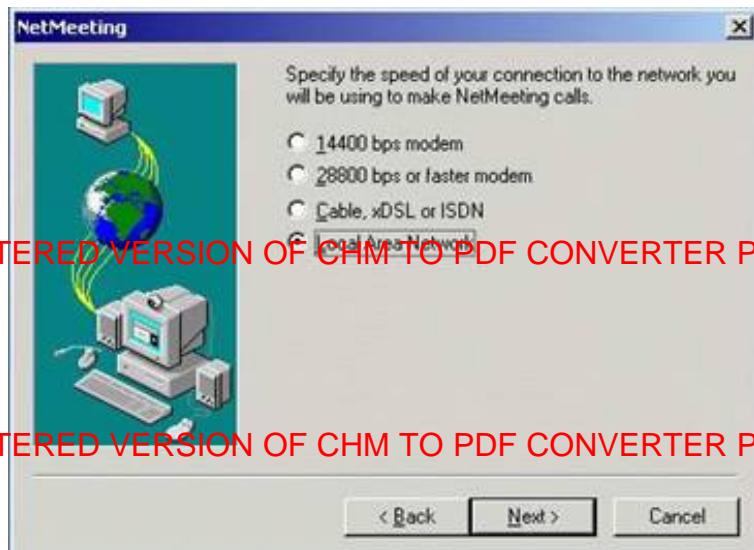




Select "Next"



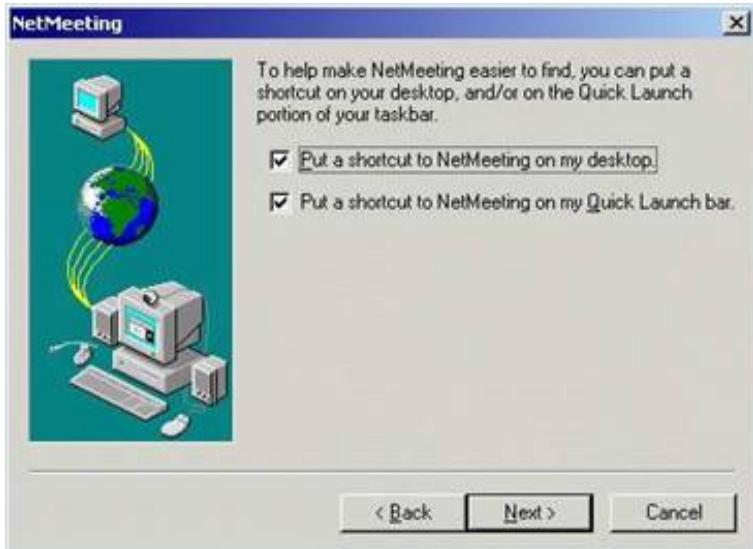
Select “Local Area Network” and then click “Next”



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

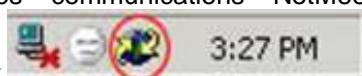
Select "Next"



Because machine not install sound card, so can always select "Next" until finish

(Or can click start - programs - accessories - communications - NetMeeting to install), after installed this

icon will be shown in the right-down corner



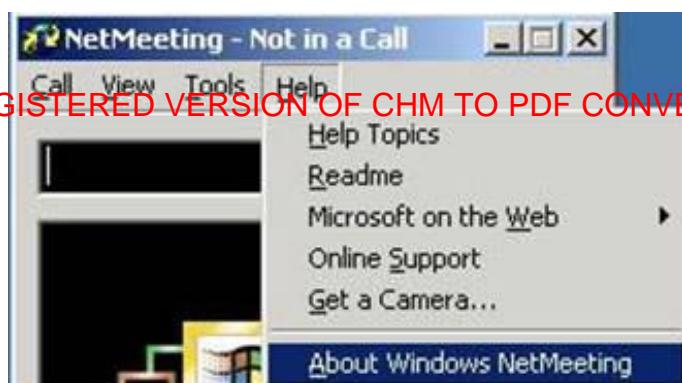
- a. Click start - programs - autotronik remote service - NetMeeting start NetMeeting

**For modem connect internet**

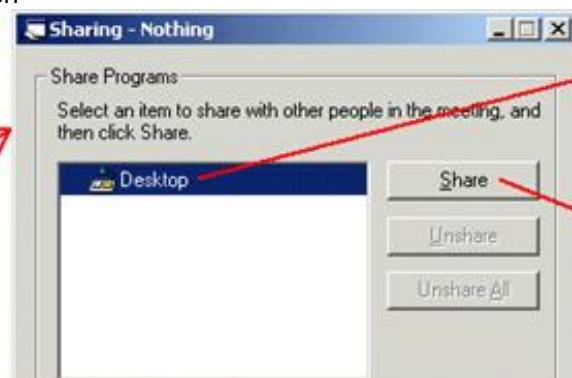
Advise client IP address through telephone or yahoo! messenger to autotronik agent, And then wait for calling

**For LAN Cable connect Local Area Network**

Through telephone or yahoo messenger advise autotronik agent IP address, and then use this IP address call agent



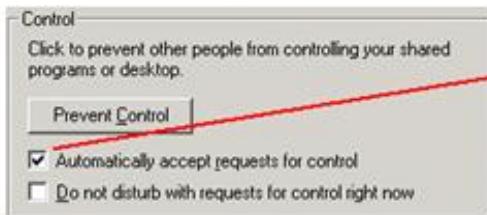
- b. Sharing program to view the question



- c. Allow control to solve the question



3. 点击允许  
协助按钮



4. 选择自动  
接受协助  
请求

### **3) Contact AutoTronik agent through network**

AutoTronik use yahoo! messenger to achieve the network contact, the newest yahoo! messenger can be download by <http://messenger.yahoo.com>

Click yahoo! Messenger icon in c:\service directory to connect , after input username : service\_autotronik and “6”

**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

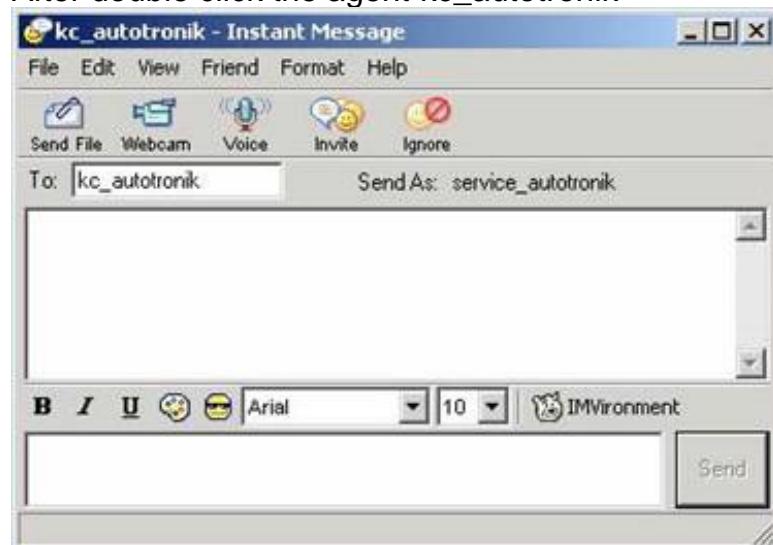
**UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE**

digit password, user can double click the Autotronik agent name, eg. kc\_autotronik or bb\_autotronik to consult the problem of software , ability , maintenance.....



After login yahoo! Messenger :

After double click the agent kc\_autotronik



## APPENDIX E - How to use GHOST to recover the hard disk

!!! This operation will erase all data in hard disk, please backup all important data before start to recover the hard disk.

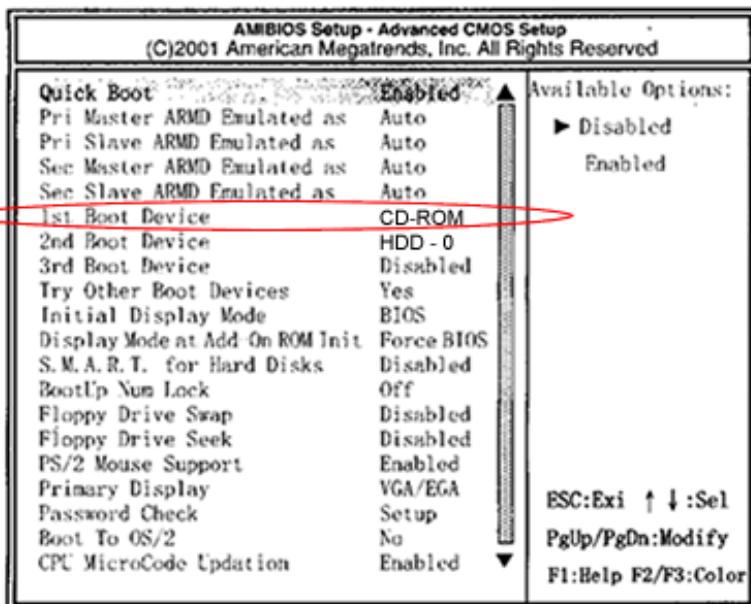
### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Remark : Before recover please backup the syst.dbf from C:\WW390VXX to floppy or other hard disk

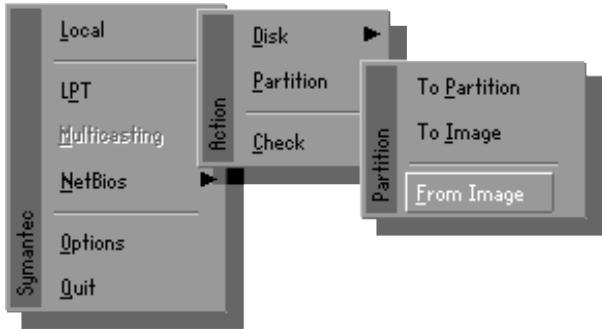
The following operation will only be done in case the Windows system is damaged seriously and unable to recover, then we need to recover the whole hard disk:

### UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

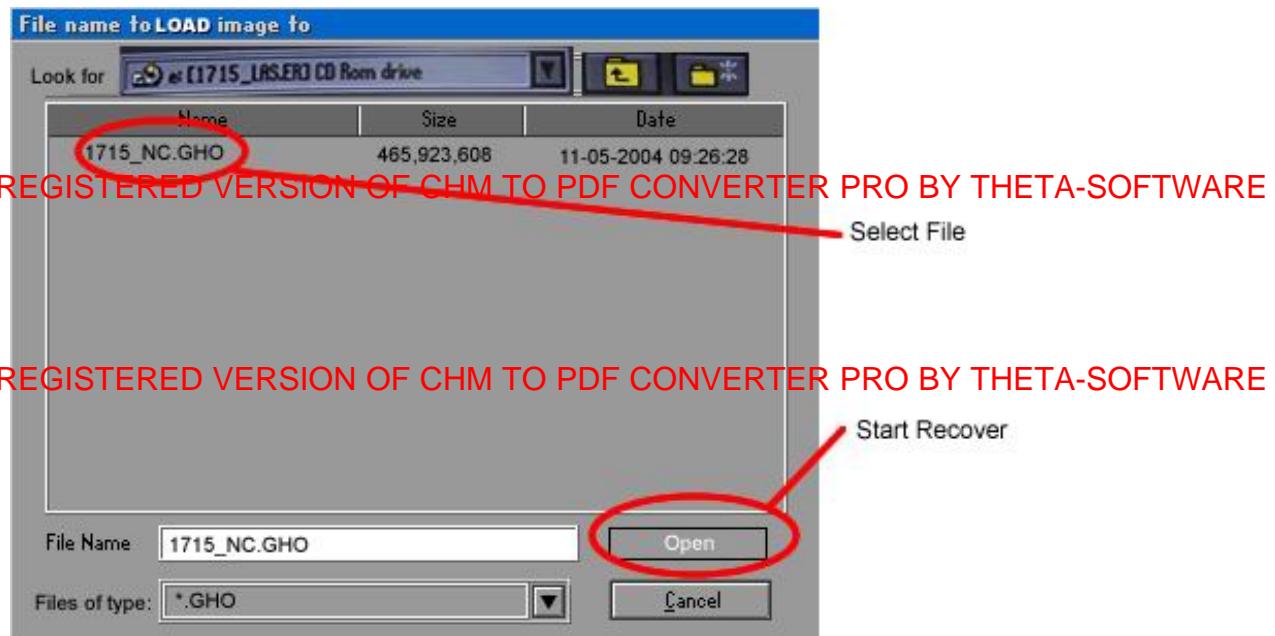
1. By pressing <Del> immediately after switching the system on, in **Advanced CMOS Setup** set the **1ST Boot Device** is CD-ROM



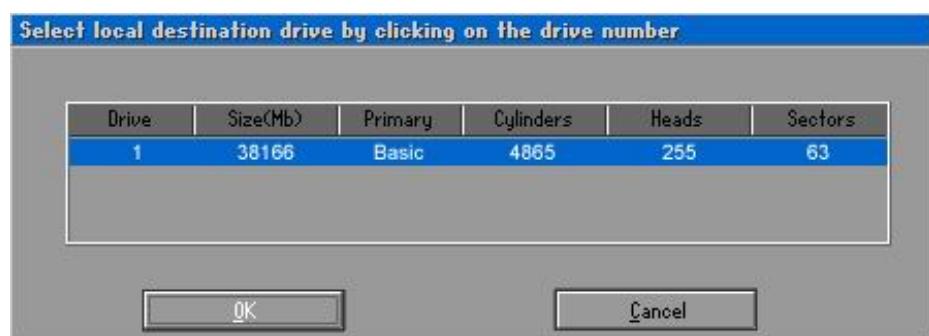
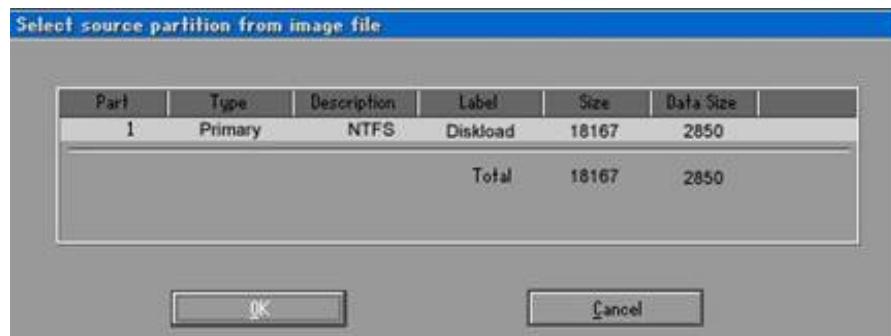
2. Put "Recover Disk" to CD-ROM
3. Now Boot-up system and it will auto enter GHOST software
4. Select LOCAL => PARTITION => FROM IMAGE



5. Select the correct IMAGE file from Picture Box



6. Make sure the partition that want to recover, usually the TOP is the first partition that need to recover

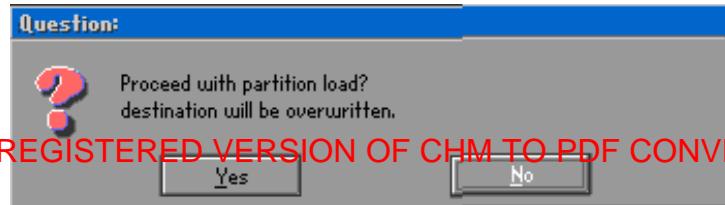


Select destination partition from drive: 1

Part	Type	Description	Volume Label	Size in Mb	Data Size in Mb	
1	Primary	NTFS	Diskload	18167	2911	
2	Logical	Fat32 extd	DISK1_VOL2	19994	2521	
		Free		4		
		Total		38166	5433	

**OK** **Cancel**

7. After click "YES" button, the image file will auto cover the first partition, and all the old data that in the partition will be lost



UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

8. Restart computer, the first partition is the best hard disk partition for SMD machine; just install the newest SMD software can let the Pick & Place machine work.

UNREGISTERED VERSION OF CHM TO PDF CONVERTER PRO BY THETA-SOFTWARE

Remark : Before recover please backup the syst.dbf from C:\WW390VXX to floppy or other hard disk