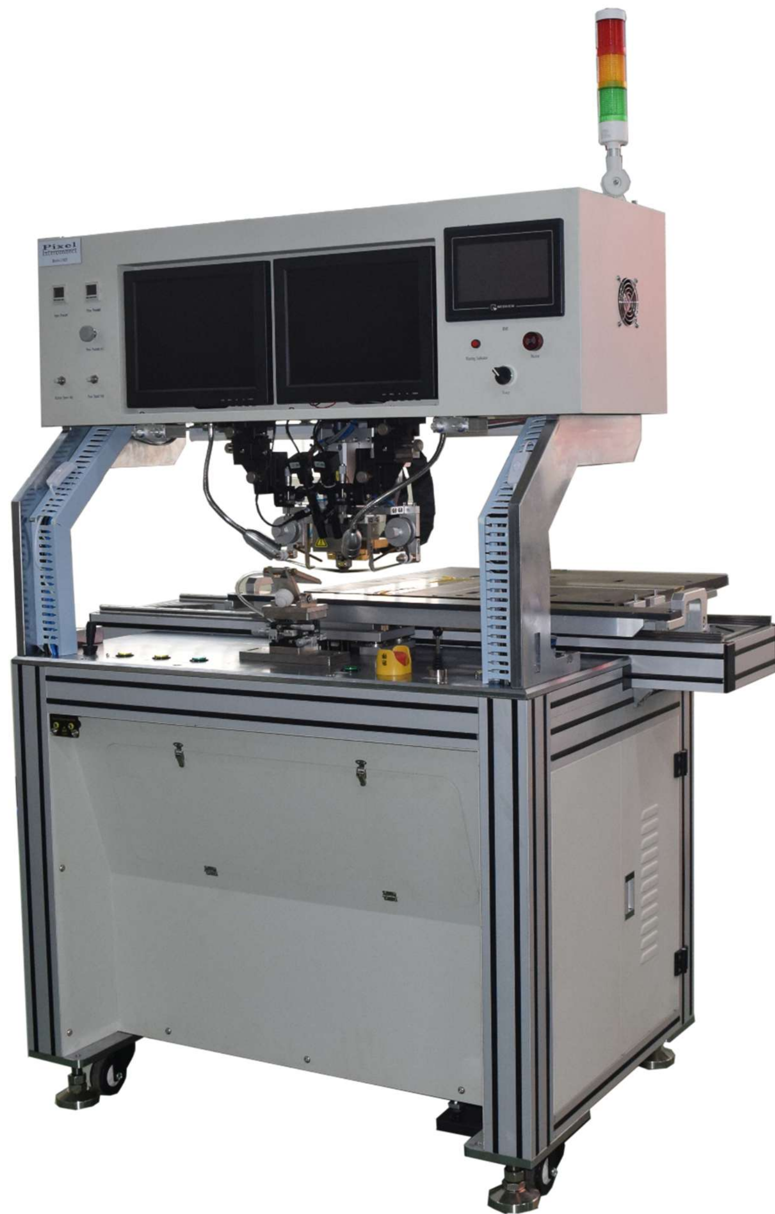
Pixel Interconnect, Inc.

Model P42T Bonder



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I. Technique and Application

Technique: Pulse heating machine heats pressure head by applying certain pulse voltages on it and heats up objects connected with pressure head; when the temperature rises (i.e. preset temperature), bonding between the objects will be completed.

Application: Pulse heating machines are used for producing the following products: USB cable assembly, bonding of TCP, COG, FPC and COF to LCD or PCB.

Advantage: Pulse heating machine differs from constant temperature in that the former will immediately reach the temperature needed when powered on, and it will instantly reach room temperature once no voltage is applied between two ends of heating tip. This is useful when needing to use different temperature profiles to bond products.

II. Specification and Performance

- Power supply: AC220V±10%，60Hz，3500W
- Working environment: 10-60℃，40%--95%
- Input air pressure: 0.4—0.7 Mpa, 12mm air input tubing provided
- Bonding force: 2.8—48.6 kgf
- Temperature setting: RT--499℃
- Bonding time: 1---99s
- Product: TAB, COG, FPC or COF
- Frame dimension: 1330mm（L）× 885mm（W）× 1450mm（H）
- Weight: 300 kg

III. Structure Diagram

Frame earth terminal

Human body earth terminal

1. Thermode Release	8. Limit Stop Button	15. Bond Pressure Adjust
2. Plate Vacuum	9. Power Switch	16. Bond Pressure Indicator
3. FPC Vacuum	10. Alarm Speaker	17. Input Air Indicator
4. Start Switch (Dual)	11. Status Light Tower	18. Thermode Up Valve
5. Start Switch (Dual)	12. HMI Touch Screen	19. Thermode Down Valve
6. Emergency Stop	13. Heating Indicator	20. Interposer Reel (2)
7. Position Adjust	14. Camera Displays	21. Light Adjust

IV. Equipment Installation Method and Requirements

1. Environment requirements: This equipment shall be installed in a dry and dust-free environment with no corrosive gas and temperature of 10℃—60℃.

2. Check if the accessories are complete according to packing list; move the equipment to and install it in a proper location according to plant building structure and production demands.

3. Raise castors off ground and level bonder using leveling feet; put a leveling gauge on stage and observe it when adjusting leveling feet.

4. Check whether each part is loose and for abnormal conditions.

5. Install earth wire according to requirements of electric wiring diagram; earth wire shall be soft copper core insulated wire with a section diameter of over 2mm; earth resistance shall be no more than 4Ω.

6. This machine uses single-phase power supply with input voltage of 220VAC and frequency of 60HZ.

V. Operating Method for Auto Mode (Continuous Bonding)

1. Verify that bonder is connected to main air and building power source and open air pressure valve to allow air to the bonder; adjust pressure to 0.4 --- 0.7MPa. Turn bonder power switch on.

2. Press touchscreen anywhere to allow selection of menu options. Press “Operation Mode” softkey. After ensuring that no hands are near the product stage, press the “Stage

Reset” soft button on the touchscreen to move the position of stage to home position (only used for first product after turning on bonder or when changing group (product) on bonder). After stage stops moving, the message “Return Origin Success” will appear on the touchscreen which indicates that the stage is at home position. Press the “Return” softkey to return to the main menu.

3. Select appropriate product bonding program pressing “Para Setup” softkey on touchscreen, entering password “6666”, pressing “Para Setup” softkey, pressing “Position Para Setup” softkey, select correct group (product) by pressing on the corresponding softkey and then press “Save Para” softkey, press “Return” three times to move back to main menu.

4. Adjust bonding pressure on bonder to correspond to product being bonded. Ensure correct sized bonding thermode is on bonder and replace and adjust as necessary. Adjust transformer switch as required based upon thermode chosen.

5. Press “Limit Stop” button to raise bottom alignment pin. Put a substrate (with COFs/flexes attached) on the platform and slide against the bottom and right-side alignment pins. Press “Limit Stop” button again to lower bottom alignment pin.

6. Using touchscreen, press “Operation Mode” soft button, press “Auto mode” soft button, then press “Verify Alignment” soft button. Vacuum will turn on and substrate stage will move to first bond position. Keep hands out of machine.

7. If needed, adjust position of substrate, observing alignment in monitors and on quartz back-up bar and by turning on/off plate vacuum buttons. Verify interposer rubber lies under thermode.

8. Press both start buttons or “Alignment Verified” soft button and the thermode automatically descends to begin bonding all flexes that have been selected for bonding; when bonding time is up, the thermode automatically rises, the stage moves to the next bonding position and the thermode descends to bond the next FPC.

9. Bonding will be complete when stage moves back to home position and turns off vacuum to the substrate. Then operator can remove substrate.

VI. Function Description

1. Operation panel description

1.1. Bond pressure adjust valve: It is used for regulating pressure of thermode. Turn it clockwise to increase air pressure and counter clockwise to reduce air pressure.

1.2. Bond pressure indicator: Displays working pressure value of thermode.

1.3. Input air pressure indicator: Display input air pressure input value.

1.4. Status Light Tower: Indicates red, green, yellow status of bonder operations

1.5. HMI: 5.7 inch HMI intelligent setting system; display all operation interfaces.

1.6. Displays: Clearly display pictures magnified by camera.

1.7. Heating indicator lamp: The indicator lamp is lit when heating.

1.8. Position Adjust lever: Used to manually control left-right movement of platform.

1.9. Thermode press/release speed adjust valves: Regulate rising/descent speed of thermode. Turn it cw to increase air flow and ccw to reduce air flow.

1.10. Light adjust: Turn it cw to increase cold light source brightness and ccw to reduce cold light source brightness.

2. Temperature controller

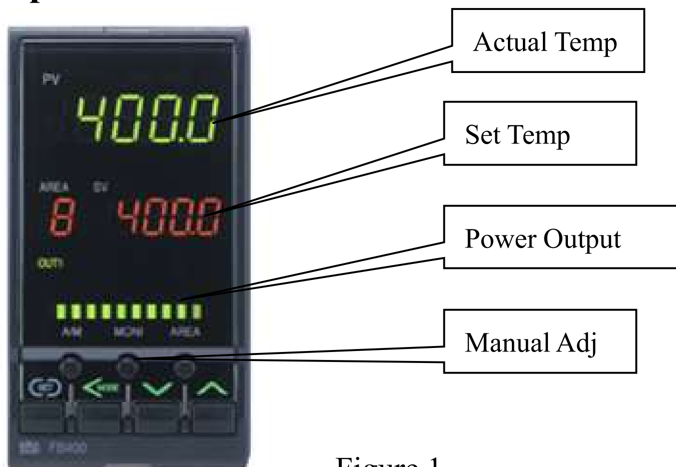


Figure 1

2.1 This temperature controller is located inside the bonder. All of its manual adjustment functions have been disabled; temperature setting is done on the touch screen.

3. Thermode components

3.1 Titanium alloy thermode: This thermode is heated by pulse power supply (the highest temperature can reach 499ºC; please properly reduce maximum temperature for smaller

thermodes, otherwise it may be damaged).

4. Air pressure valves and Vacuum valve

4.1. There are two air pressure valves inside the left hand side door of the bonder (see Fig. 2.0).

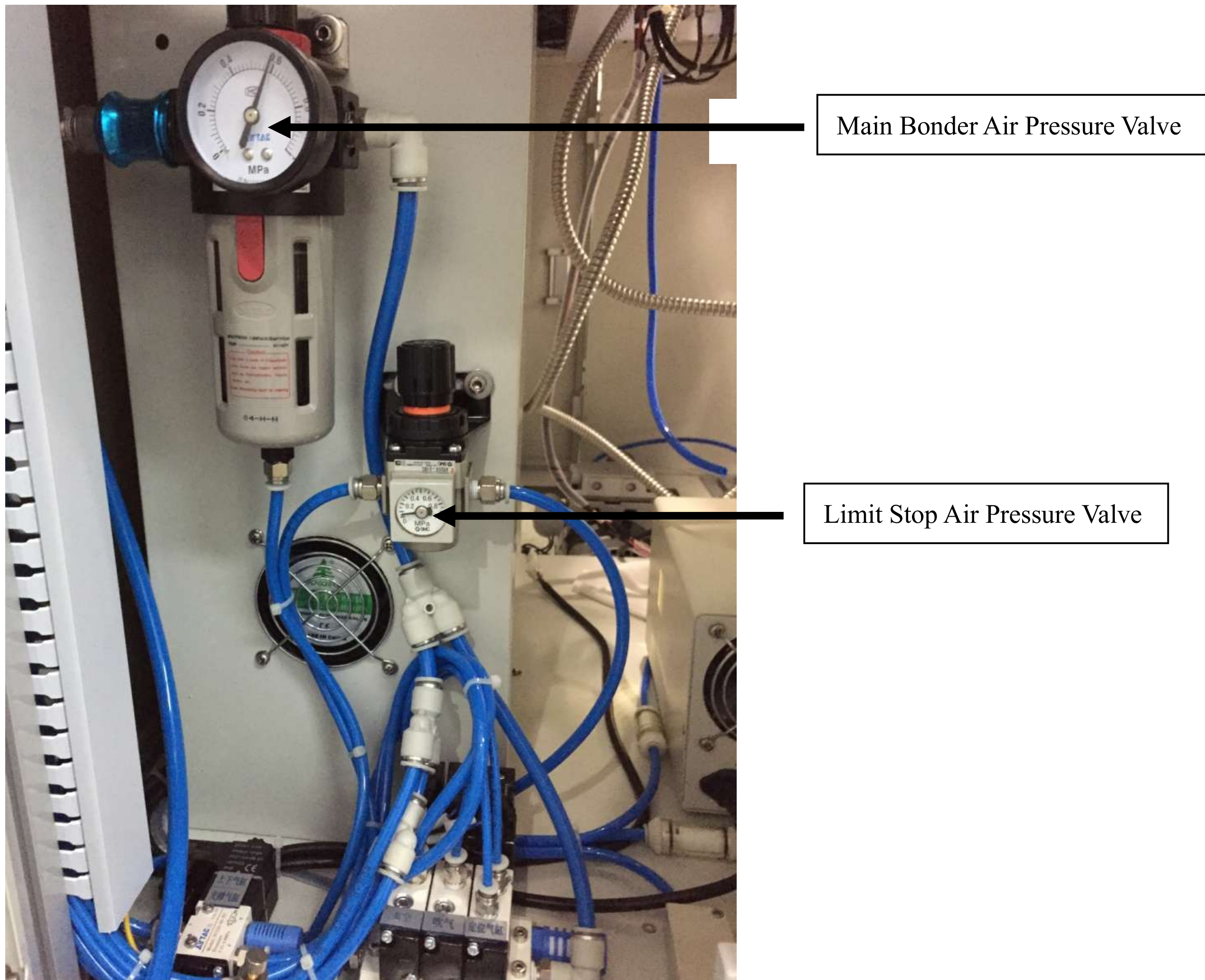


Figure 2.0

4.2. The main bonder air pressure valve should be adjusted to 0.60MPa. The Limit stop air pressure valve should be adjusted to 0.06MPa.

4.3 There is one stage vacuum valve located under the stage (see figure 2.5) that controls the amount of vacuum sent to the leftmost line of stage vacuum holes.

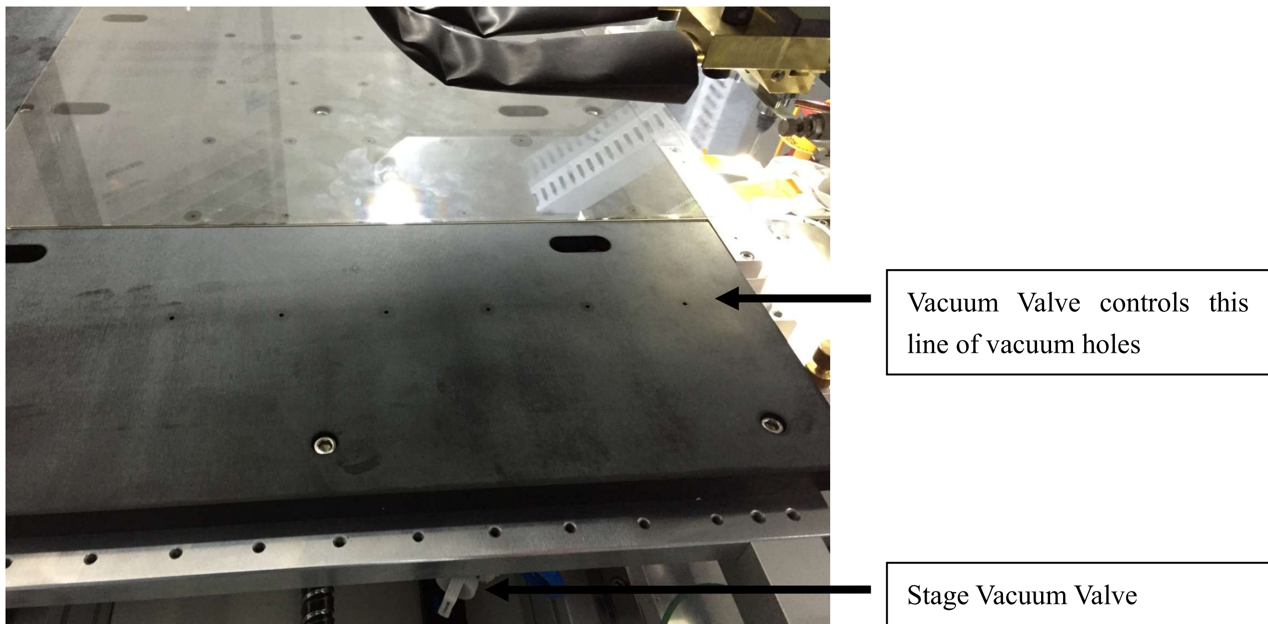


Figure 2.5

5. Lower Camera Support Components, Limit Stop Components, Transformer Switch and Thermode Pressure Cylinder Sensors:

5.1. Rotate knob "a" and camera support will move left and right (Figure 3.0)

5.2. Rotate knob "b" and camera support will move up and down. (Figure 3.0)

5.3. Rotate knob "c" and camera support will move back and forth. (Figure 3.0)

5.4. Move cameras in camera support "d" to change camera position. (Figure 3.0)

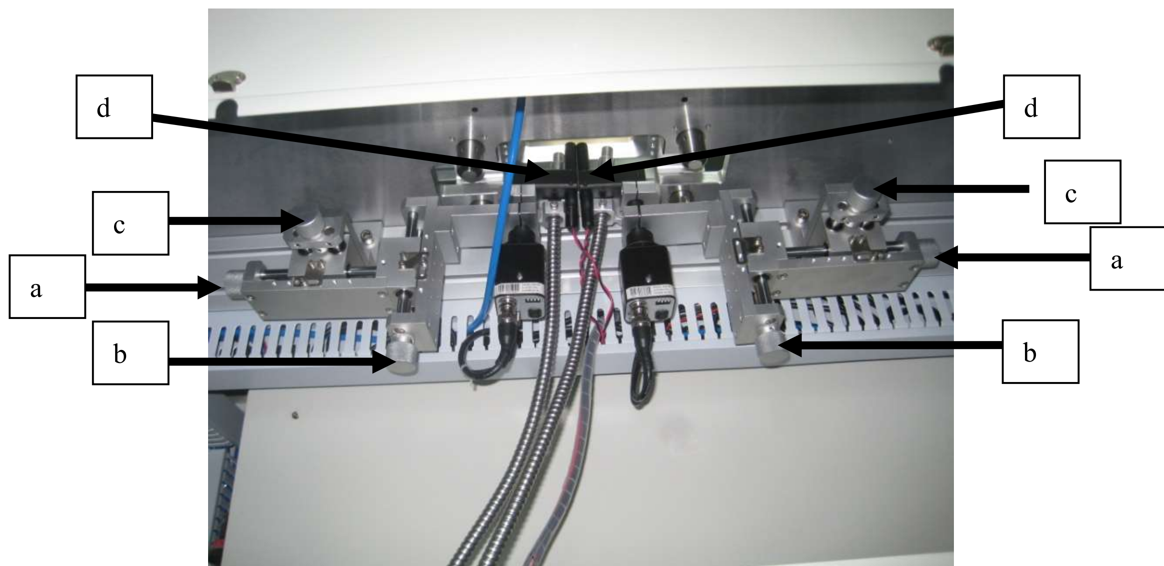


Figure 3.0

5.5 There are three substrate alignment pins that align the glass substrate to the quartz back-up bar and are shown in Figures 3.1 and 3.2. The pins on the right side of the substrate can be moved/adjusted by loosening the two bolts and moving the pins. The bottom pin (Limit Stop Pin) can be moved backwards/frontwards by loosening and tightening the two bolts and can be moved right/left by moving the fixture to one of the two other bolt patterns or by adjusting the positioning bolt shown in Figure 3.2.

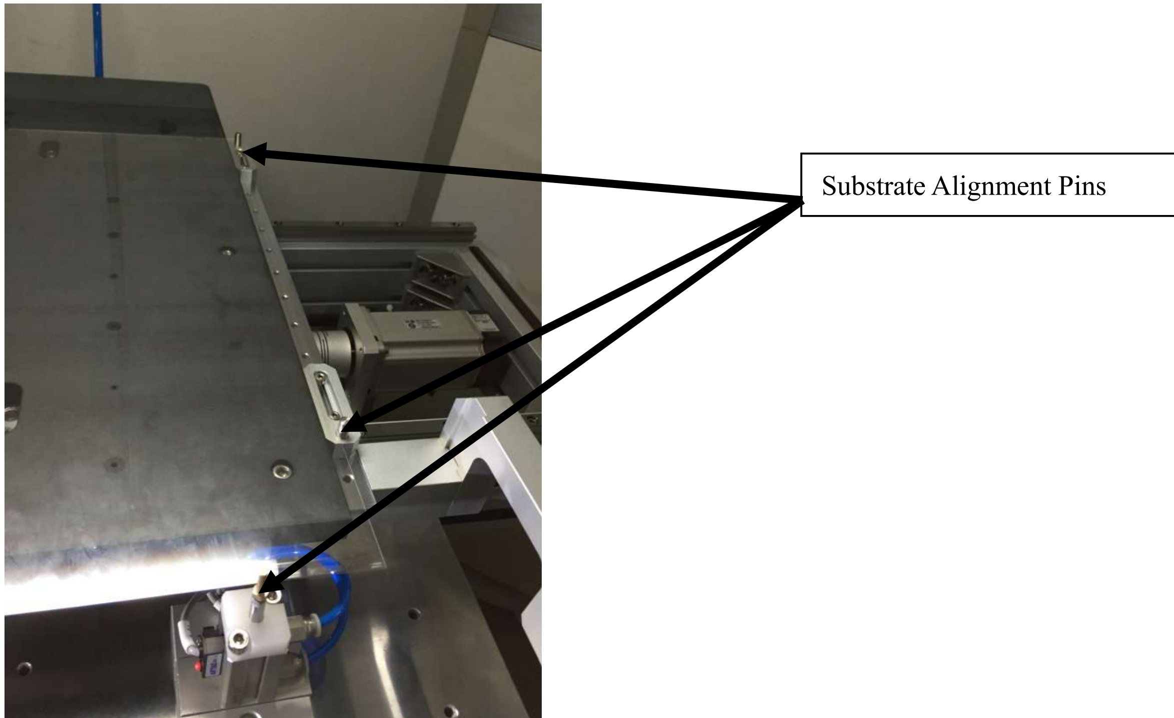


Figure 3.1

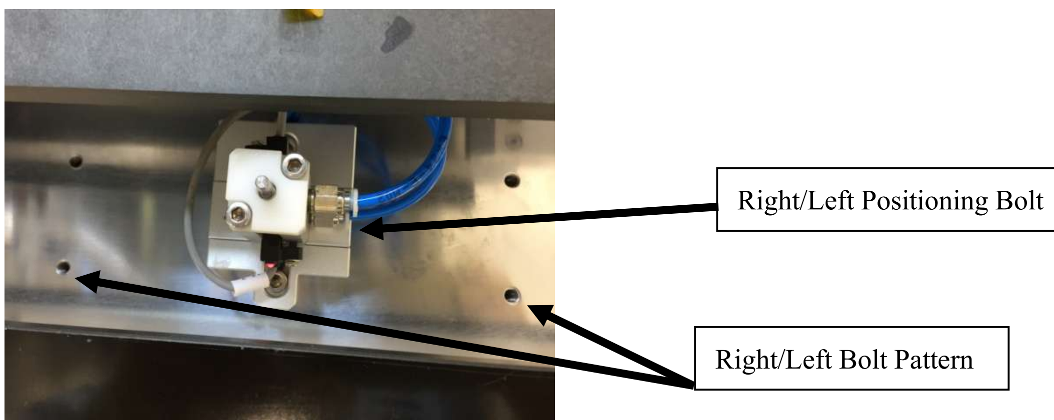


Figure 3.2

5.6 The thermode pressure cylinder sensors are located inside the top/rear door of the bonder and are shown in Figure 3.3. The top sensor tells the bonder when the thermode is at home position and the bottom sensor tells the bonder when the thermode is at bonding position. The bonder will not heat the thermode unless the sensor communicates that the thermode is in the bonding position. When bonding products of varying thickness, it is possible that the lower thermode sensor must be adjusted upwards or downwards slightly so that the sensor LED light is lit when the sensor is resting on the substrate. Loosen the sensor adjustment bolts shown in Figure 3.3 to allow movement of the sensor.

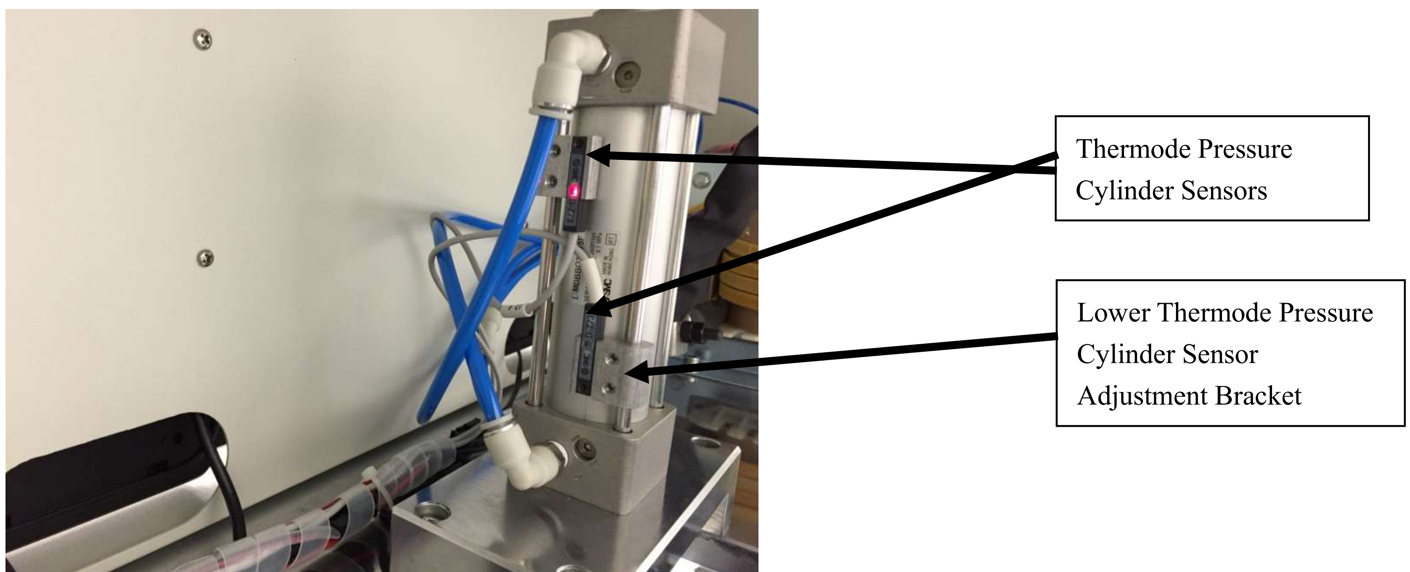


Figure 3.3

5.7 The transformer switch is located in the rear cabinet and shown in Figure 3.4. It is adjusted based upon the length of the thermode according to Figure 3.4. It is also related to the width of the thermode, the larger the transformer number, the quicker the thermode heats.

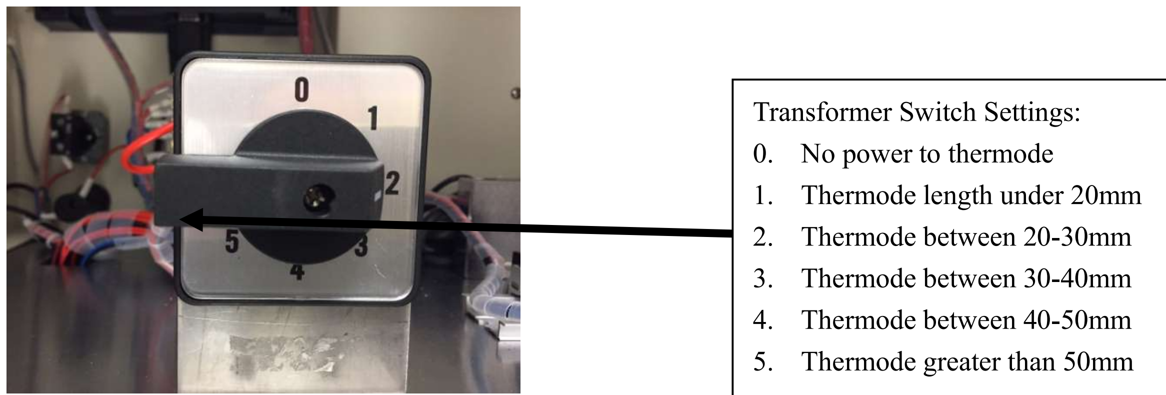


Figure 3.4

6. Thermode Set-Up

6.1 Install the required thermode and tighten the two to six M2.5 bolts (see Fig 4). Ensure interposer is mounted on supply reel, routed through the two guides and under thermode, and connected to take-up reel (see Fig 4.5). Rotate take-up reel to advance interposer one thermode length after completing 6 bonds.

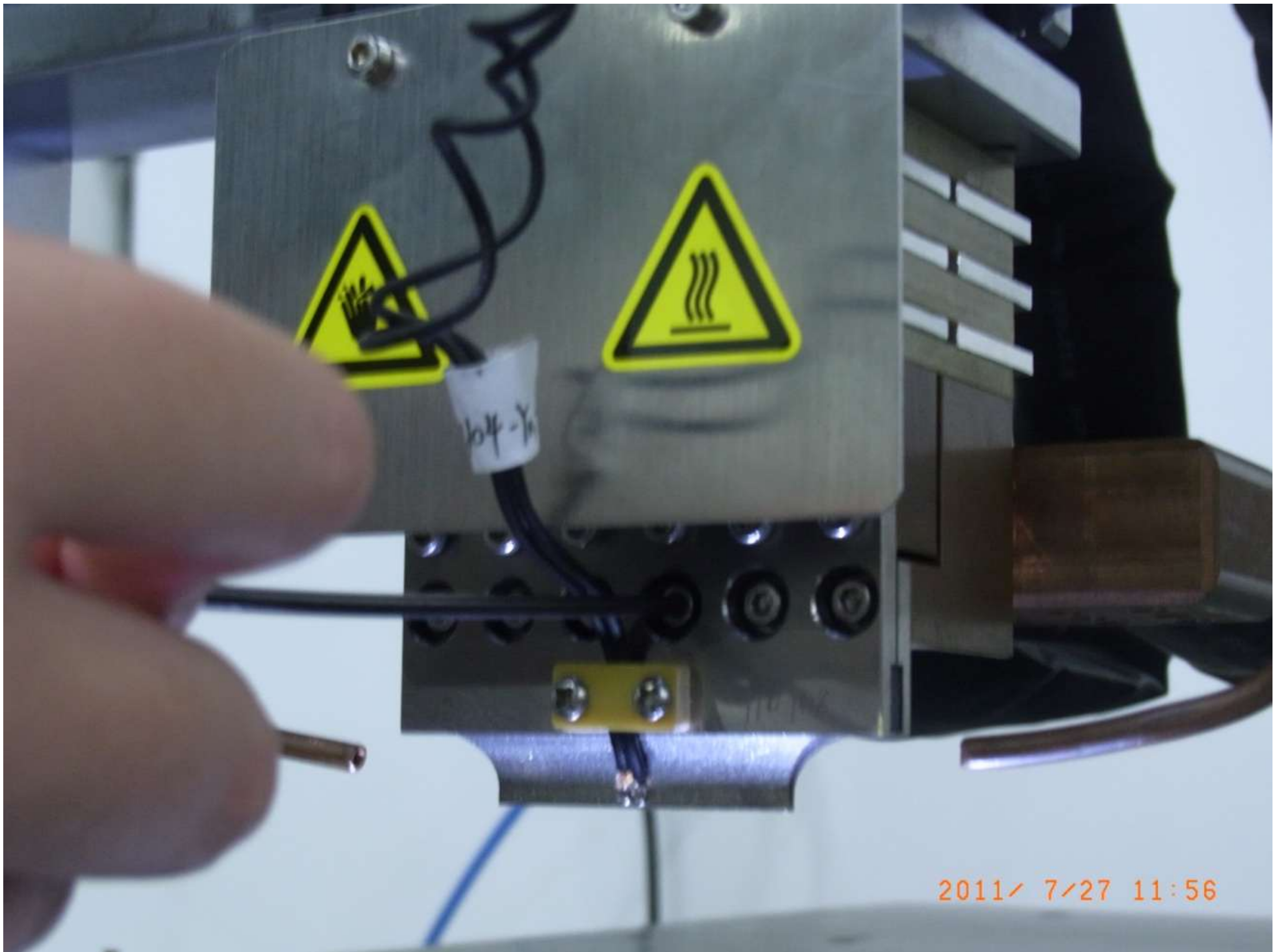


Figure 4

6.2 Place a substrate on the stage and on the backup bar. Adjust leveling bolts on backup bar (Figure 4.5) to ensure substrate is perfectly flat and that when substrate is pressed with a finger against the backup bar, that there is no movement left/right or backwards/forwards.

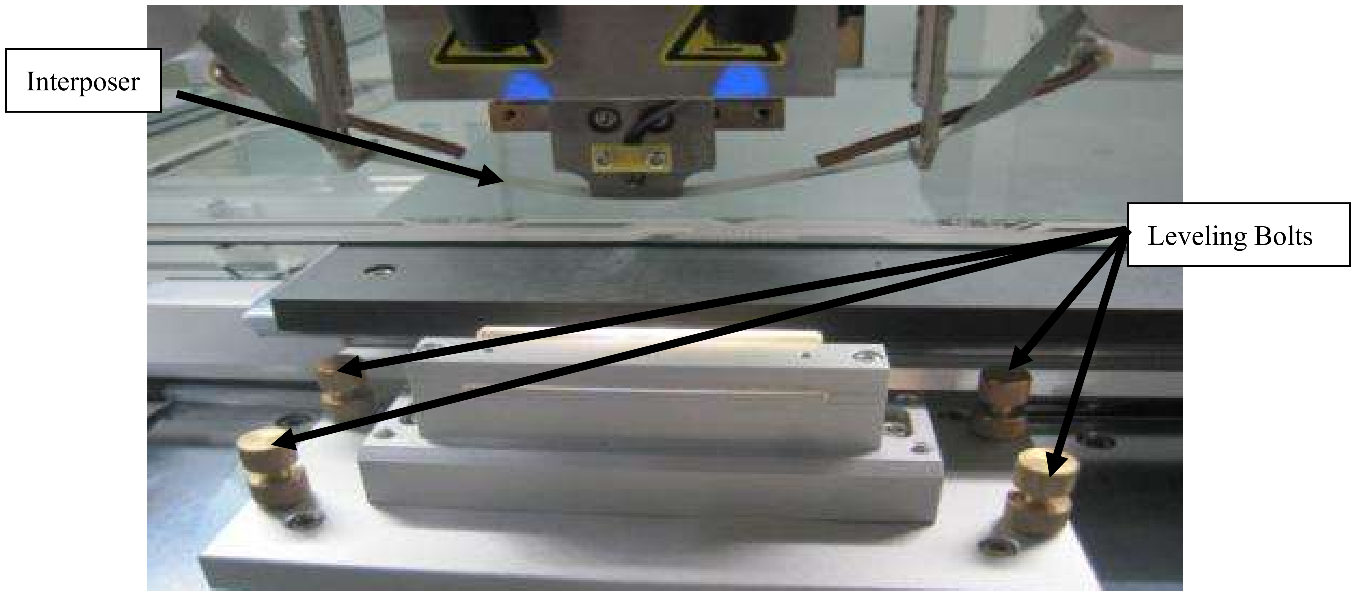


Figure 4.5

6.3 Slide interposer outside of thermode and use Manual Mode to lower thermode onto the backup bar. Adjust the flatness of thermode by adjusting the 4 M5 bolts above the thermode

(Figures 7-11). Alignment of the thermode is extremely important to ensure that the ACF ball crush is uniform. Pressure sensitive film is used to view co-planarity and then adjustments are made (if needed) to make the thermode coplanar to the fixture. The construction of the pressure sensitive film is shown in Figure 5 with a table of pressure sensitive imprints and corrective action adjustments shown in Figure 6.

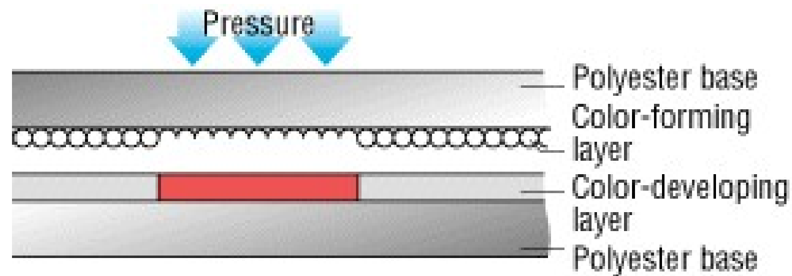
6.3.1 A thermode is built to be perfectly flat, but after mounting onto the bonder, requires precise adjustment in order to produce a perfectly flat bond. Adjustments are made by loosening/tightening some of the 4 bolts, moving the thermode in the desired direction as described in Figures 7-14 using an allen wrench. The degree that the thermode requires movement is determined by the imprint made when the thermode is pressed against a pair of pressure sensitive films.

6.3.2 This pair of films consists of one film which is coated with the micro-encapsulated color-forming material and the other film which is coated with the color-developing material.

6.3.3 Place a section of the two films with the “rough” coated sides facing each other onto the backup bar where the thermode will make contact in the final bond process. Verify that the pressure is at least 0.3MPa. Using the main menu, enter the manual mode and lower the thermode by pressing the “Thermode” softkey. After two seconds, press the “Thermode” softkey again to raise the thermode off the film.

6.3.4 When pressure is applied, the microcapsules are broken and the color-forming material reacts with the color-developing material. These will appear on the film as shown in Figure 5 and Figure 6.

6.3.5 Remove the two films from the glass slide and inspect the entire bond site length on the film for correct imprint. Adjust the thermode on the bonder as necessary until achieving a good pressure pattern as shown in Figure 6.



(Fig. 5)

	Pressure on rear of thermode. First turn both front tilt adjustment bolts CCW and then turn both rear tilt adjustment bolts CW. (Fig. 7)
	Pressure on front of thermode. First turn both rear tilt adjustment bolts CCW and then turn both front tilt adjustment bolts CW. (Fig. 8)
	Pressure on right of thermode. First turn both left tilt adjustment bolts CCW and then turn both right tilt adjustment bolts CW. (Fig. 9)
	Pressure on left of thermode. First turn both right tilt adjustment bolts CCW and then turn both left tilt adjustment bolts CW. (Fig. 10)
	Pressure on left and rear of thermode. First turn both front and the one rear right tilt adjustment bolts CCW and then turn rear left tilt adjustment bolt CW. (Fig. 11)
	Indicates a good pattern. No thermode adjustment action needed.

(Fig. 6)

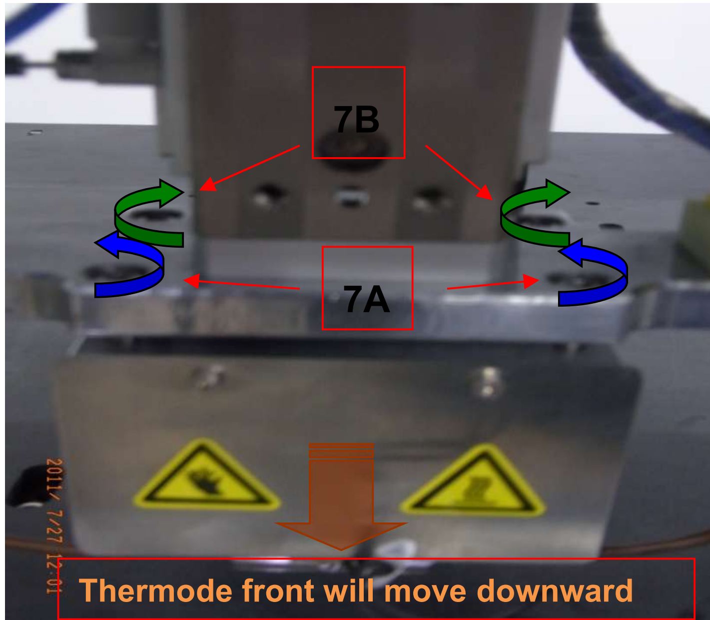


Figure 7: Adjusting the thermode front downward

Loosen (Turn CCW) front bolts 7A, tighten (Turn CW) rear bolts 7B

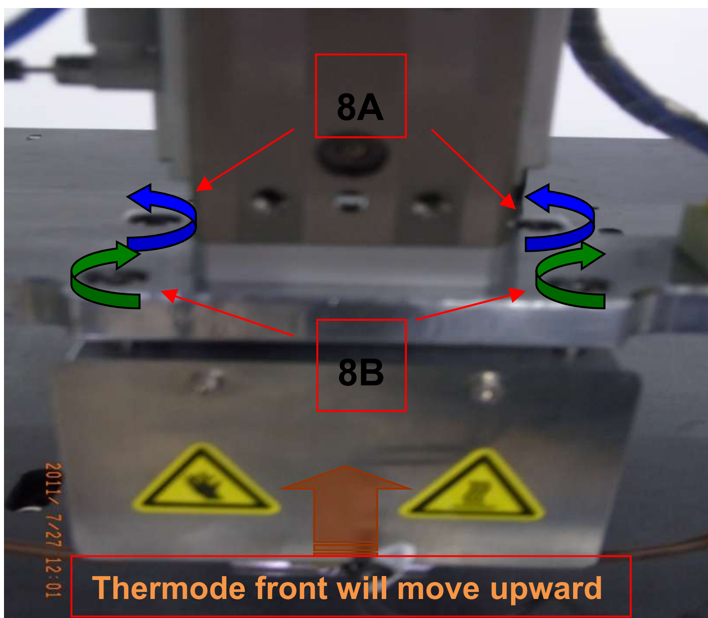


Figure 8: Adjusting the thermode front upward

- Loosen (Turn CCW) rear bolts 8A, tighten (Turn CW) front bolts 8B

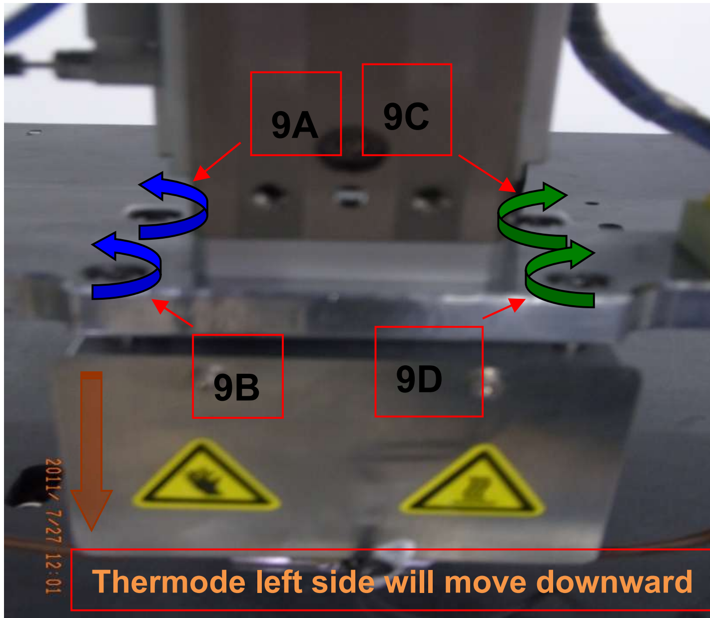


Figure 9: Adjusting the thermode left side downward

- Loosen both left bolts 9A, 9B slightly (Turn CCW); Tighten both right bolts 9C, 9D slightly (Turn CW)

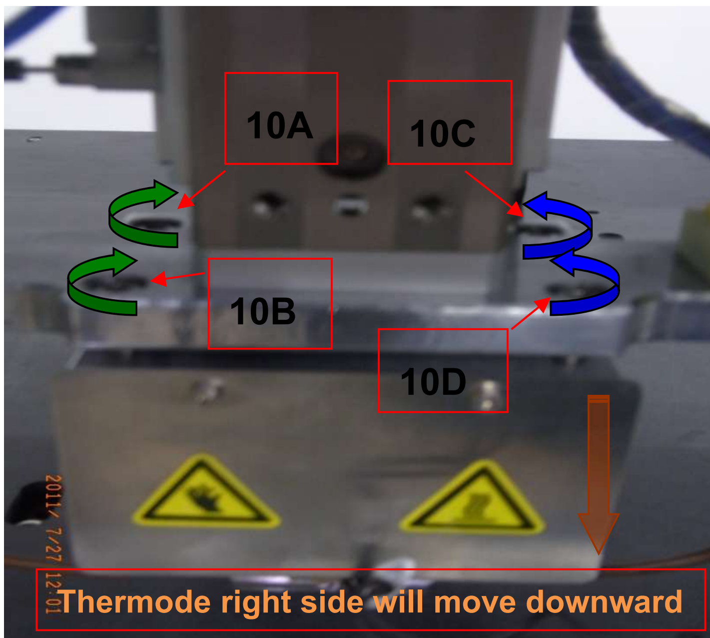


Figure 10: Adjusting the thermode right side downward

- Loosen both right bolts 10C, 10D slightly (Turn CCW); Tighten both left bolts 10A, 10B slightly (Turn CW)

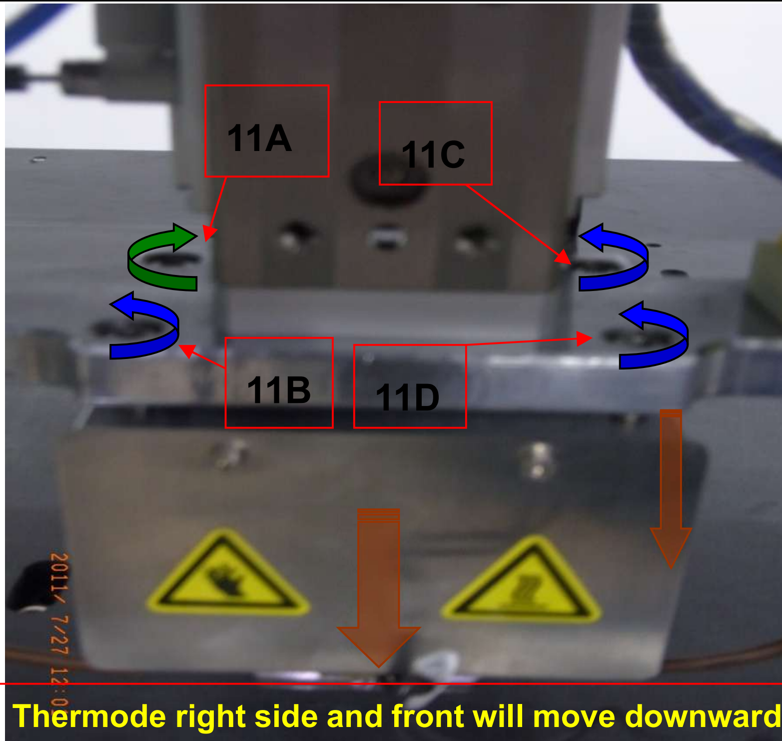


Figure 11: Adjusting the thermode right side and front downward

- Loosen bolts 11B, 11C, 11D (Turn CCW); Tighten bolt 11A (Turn CW)

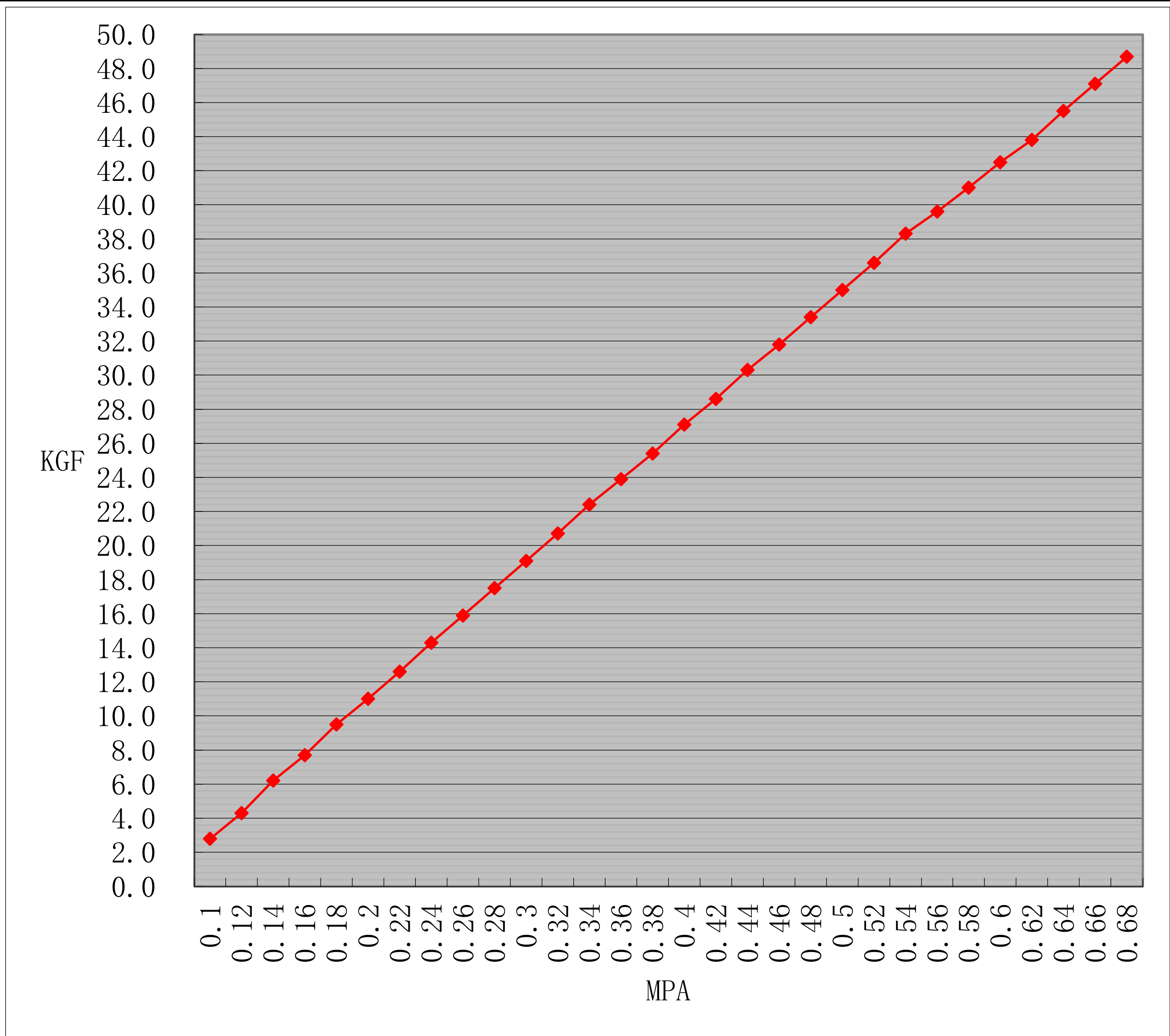
6.3.6 Another method to use when performing the pressure film test is to manually position the thermode to the pressure film.

6.3.6.1.1.1 Switch-off the air input using the thermode release switch

6.3.6.1.1.2 Place the pressure film onto the backup bar and lower the thermode to rest on the pressure film. Press downwards slightly. Lift up the thermode, inspect the pressure film, and make the adjustments needed to the thermode planarity to ensure a good pressure film imprint.

6.3.6.1.1.3 Switch-on the air input using the thermode release switch

6.4 Thermode bonding pressure set-up: Confirm that the air input pressure is 0.6 MPa. Adjust pressure as desired using the bonder gauge pressure vs bonder thermode force graph shown in Figure 12.



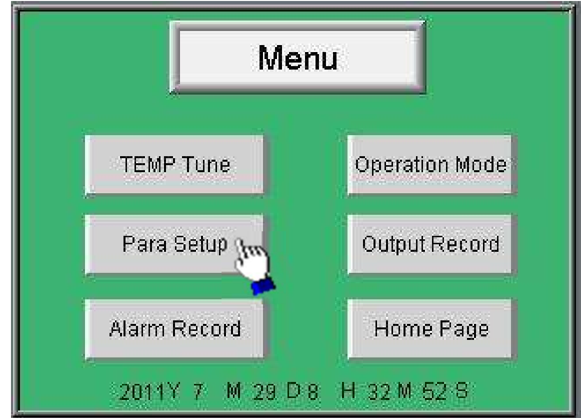
Bonder Gauge Pressure (Mpa) vs Bonder Thermode Force (kgf)

Figure 12

VII. Description of Operation Interface

Enter the menu: Power bonder on and HMI will automatically enter booting page (Fig. 7.1); then use a finger to press any position to enter "Menu" interface (Fig.7.2).

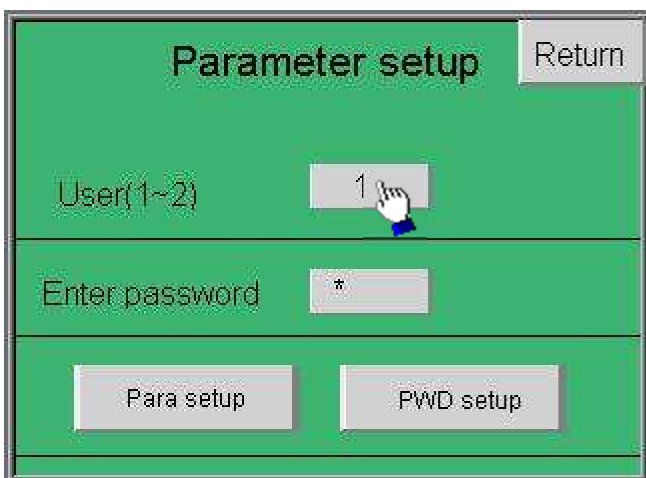
（Fig. 7.1）



（Fig. 7.2）

◆ When first using this machine or after changing group (product) in Para Setup, the stage must be reset by entering " Operation Mode" and then pressing "Stage Reset" (keeping hands out of stage area). After touchscreen displays "Return Origin Success", press "Return" softkey and select parameters for bonding using "Para Setup" (Fig. 7.2)

2. Enter "Para Setup", first select a user and input password corresponding to the user （Fig.7.3 and Fig. 7.4), then configure parameter setting.



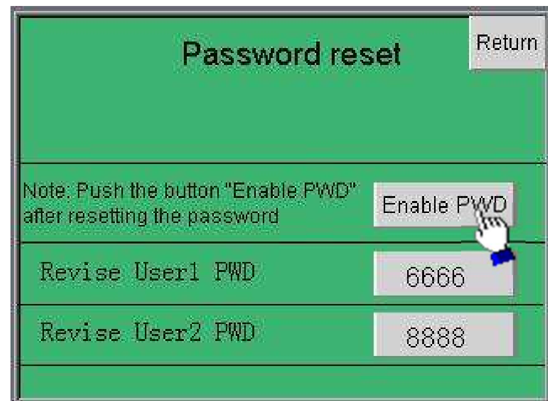
（Fig. 7.3）

（Fig. 7.4）

◆ User: You can select "1" or "2", representing codes of two operators (Fig. 7.3)

◆ Enter password: Default password of user "1" is "6666"; default password of user "2" is "8888". Input password before modifying parameters each time to prevent others from modifying parameters (Fig. 7.5)

(Fig. 7.5)

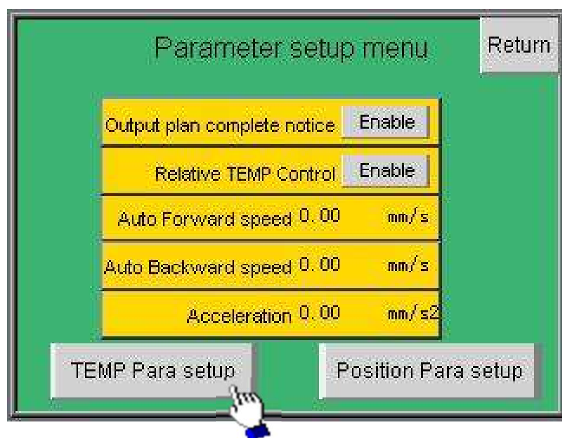


(Fig. 7.6)

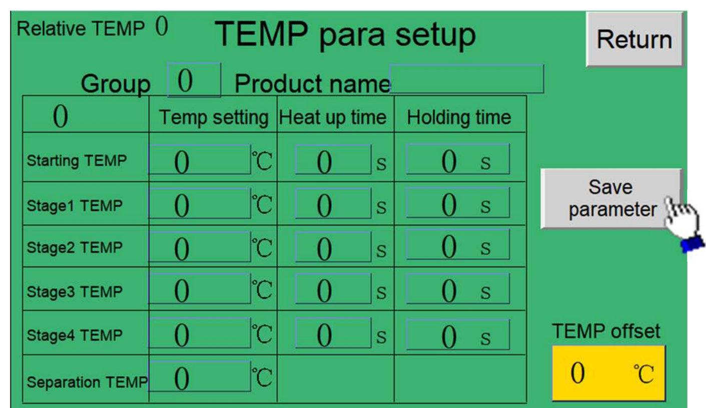
◆ User "1" can only set parameters but cannot change password; user "2" can set parameters and change passwords of User 1 and User 2. (Fig. 7.6).

Attention: After changing password, it will become effective only after "Enable Password" is clicked (Fig. 7.6).

2. Parameter setting: After entering "Para Setup", "Temp para setup" (Fig. 7.7) and "Position para setup" (Fig. 7.9) can be configured. **Parameters can be set only when the machine platform is in original position.**



(Fig. 7.7)



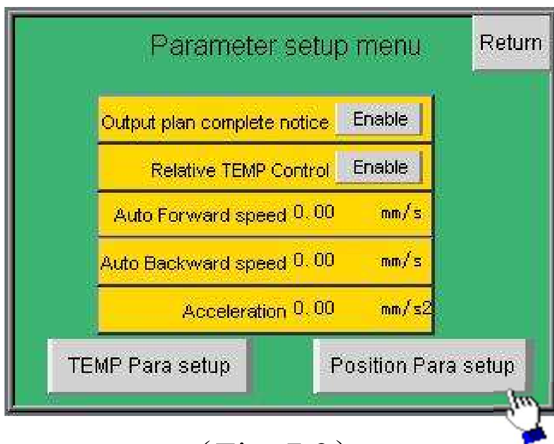
(Fig. 7.8)

◆ In this interface, you can enable "Output plan complete notice" and "Relative

TEMP control”，and set platform automatic forward speed, automatic backward speed and acceleration. (Fig. 7.7). Enabling relative temperature control allows you to define temperature offsets in the Temperature Parameter Setup Menu.

◆ Click “Temperature Para Setup” to set temperature parameters. First input product name of corresponding group number, then respectively set bonding parameters of this product: starting temperature (minimum 100° C, Stage 1-4 temperatures, Separation temperature，heating-up time and holding time. **Click “Save parameter” to save the parameters in the machine (**Fig. 7.8). Entering a value in Temp Offset (0-50C) allows the bonding head to exceed its maximum temperature by that amount through the use of lowering the value input by the thermocouple.

◆ Click “Position Para Setup” to set platform position parameters. First input corresponding product name and parameter group number, the respectively set work origin of the product, total advancing step number (**maximum 30**) and pressing point position of each step and other parameters (Fig. 7.10—7.12). **Click “Save Parameter” to save the parameters after configuration in the machine** (Fig. 7.12).



（Fig. 7.9）

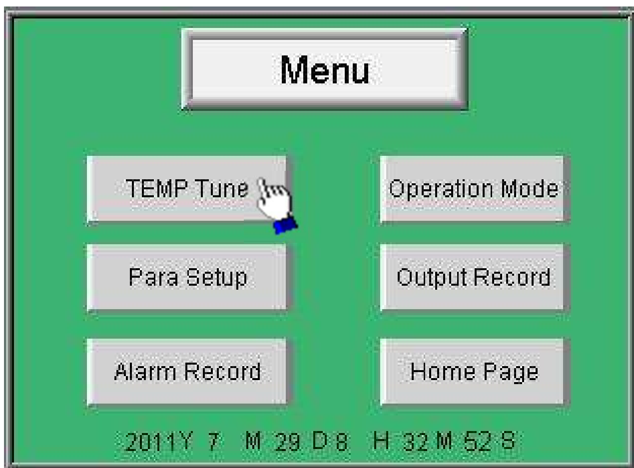
（Fig. 7.10）

（Fig. 7.11）

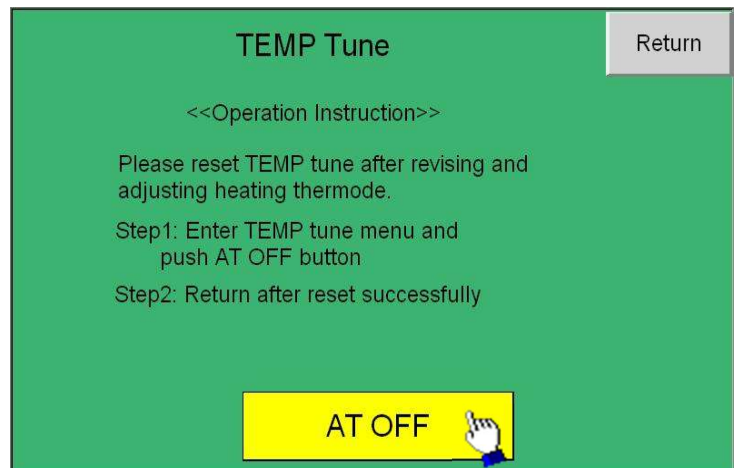
（Fig. 7.12）

◆This machine can set different temperature parameters and position parameters for different products and maximum twenty parameter groups can be set. If there are many models of products to be processed, set the rest of nineteen groups of parameters with the same method and return, and the system will automatically record and save them; you only need to call corresponding parameter group in production.

4. Temperature setting: Return and enter "Menu" for temperature setting (Fig. 7.13)



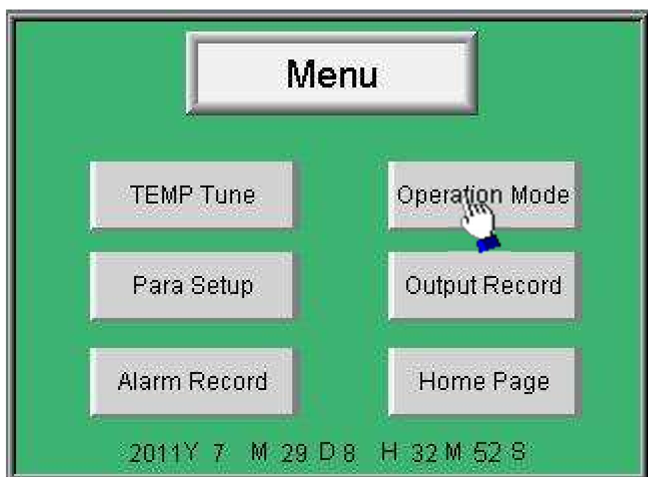
(Fig. 7.13)



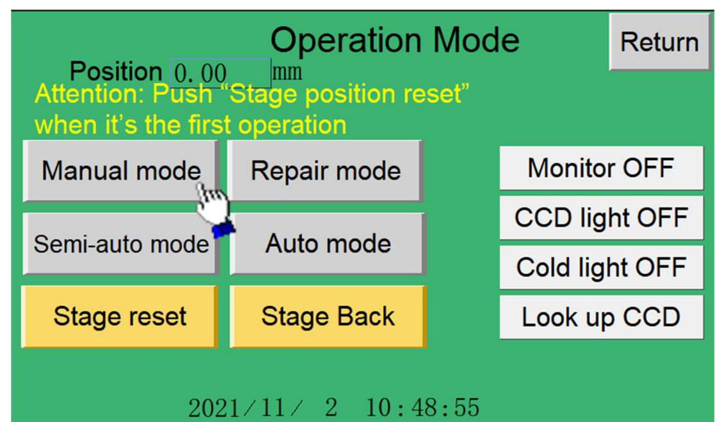
(Fig. 7.14)

◆ In order to improve accuracy of bonding temperature by up to 2°C, press "TEMP Tune" "AT OFF" softkey after changing temperature profile parameters. "TEMP Tune" should always be run after changing a thermode. (Fig. 7.14)

5. Performing Bonding: Press "Operation Mode" softkey to enter menu (Fig. 7.15)

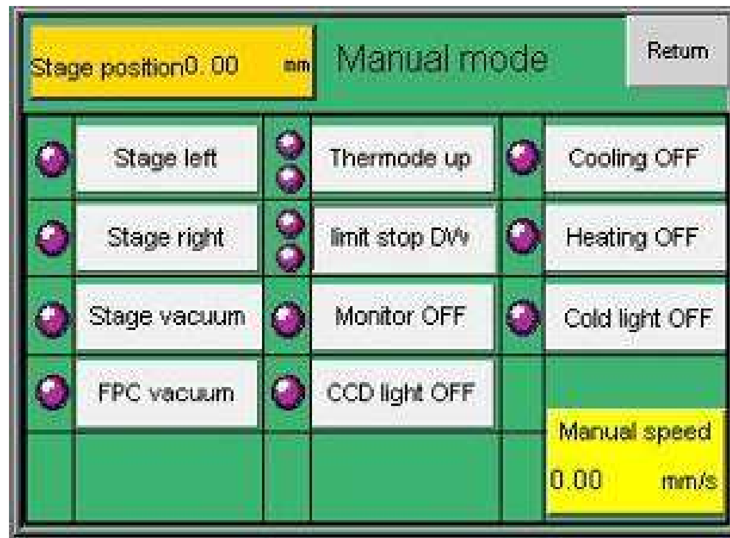


(Fig. 7.15)



(Fig. 7.16)

5.1 **Manual mode:** Press Manual Mode softkey to enter menu (Fig. 7.16).



（Fig. 7.17）

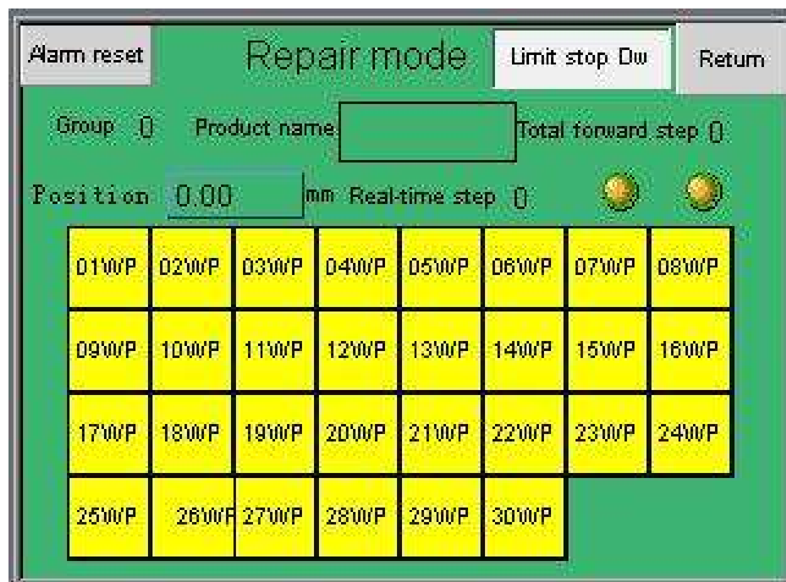
- Selecting any softkey in this menu will initiate separate actions for each mechanism and also setting of the manual platform moving speed.

5.2 **Repair mode:** Repair mode allows repair of a single COF/Flex by moving stage to the correct position and initiating the correct bond profile for that COF/Flex.

1. Starting at Main Menu, use “Para Setup”, “Position Para Setup” to select proper group (product to be repaired), press “Save Para” and then return to Main Menu
2. Adjust bonding pressure on bonder to correspond to product being bonded. Ensure correct sized bonding thermode is on bonder and replace and adjust as necessary. Adjust transformer switch as required based upon thermode chosen.
3. Enter Operation Mode menu and after ensuring that no hands are near the product stage, press the “Stage Reset” soft button on the touchscreen to move the position of stage to home position (only used for first product after turning on bonder or when changing group (product) on bonder). After stage stops moving, the message “Return Origin Success” will appear on the touchscreen which indicates that the stage is at home position, press Repair Mode softkey to enter repair menu (Fig. 7.18).
4. Press “Limit Stop” button to raise bottom alignment pin. Put a substrate (with COFs/flexes/pcbs attached) on the platform and slide against the bottom and

right-side alignment pins. Adjust pin locations as necessary. Press plate vacuum to secure. Press "Limit Stop" button again to lower bottom alignment pin.

5. Select bonding pad location needing repair (from left corner of substrate to right corner of substrate) by using a finger to press on the corresponding location on the touchscreen. Keep hands out of stage area as stage will now move to that bonding position.
6. Place COF/Flex on flipper, bonding pads upward and press FPC vacuum button to secure.
7. Align COF/Flex leads to substrate pads and press dual start buttons to initiate bonding process. Align cameras, observing monitors as required.
8. If COF/Flex must also now be bonded to PCB to complete repair, it is almost certain that temperature profile will be different. If so, starting at main menu, use "Para Setup", "TEMP Para Setup", to select a different temperature profile, then press the "Save Parameter" softkey. Return to Main Menu, select Repair Mode and select COF to repair. Release plate vacuum, align PCB bonding area to thermode and turn plate vacuum on. Press dual start buttons to initiate bonding process.
9. Remove product from stage at conclusion of bonding process.



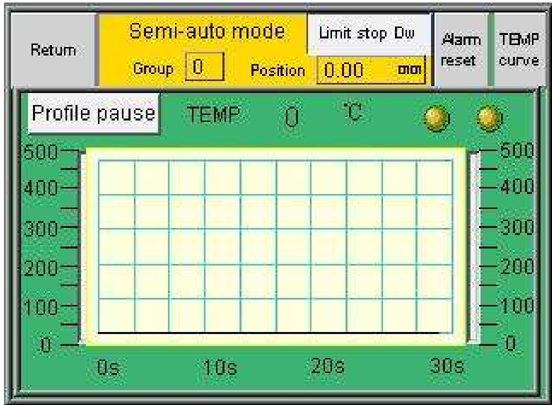
(Fig. 7.18)

5.3 **Semi-auto mode:** Semi-auto mode allows bonding of a single COF/Flex by moving stage to the correct position and initiating the correct bond profile for that COF/Flex. While similar to repair mode, it is designed to allow non-sequential alignment and bonding of multiple COF/Flexes onto a substrate.

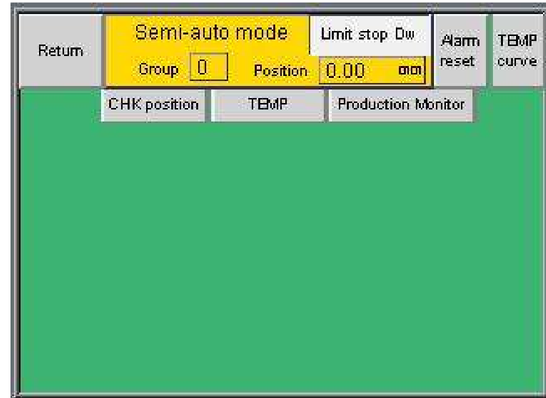
1. Starting at Main Menu, use "Para Setup", "Position Para Setup" to select proper group (product to be repaired), press "Save Para" and then return to Main Menu
2. Adjust bonding pressure on bonder to correspond to product being bonded. Ensure correct sized bonding thermode is on bonder and replace and adjust as necessary. Adjust transformer switch as required based upon thermode chosen.
3. Enter Operation Mode menu and after ensuring that no hands are near the product stage, press the "Stage Reset" soft button on the touchscreen to move the position of stage to home position (only used for first product after turning on bonder or when changing group (product) on bonder). After stage stops moving, the message "Return Origin Success" will appear on the touchscreen which indicates that the stage is at home position; press "Limit Stop" button to raise bottom alignment pin. Place a substrate on the platform and slide against the bottom and right-side alignment pins. Press plate vacuum to secure. Press "Limit Stop" button again to lower bottom alignment pin.
4. In Operation Mode menu, press Semi-auto mode softkey to enter semi-auto menu (Fig. 7.19). Move "Position Adj" switch right/left to move stage to correct bonding position.
5. If operator chooses to skip to an alternate bonding position, use the position adjust control to move the stage.
6. Place COF/Flex on flipper and press FPC vacuum button to secure.
7. Align COF/Flex leads to substrate pads and press dual start buttons to initiate bonding process. Align cameras, observing monitors as required.
8. If COF/Flex must also now be bonded to PCB, it is almost certain that temperature profile will be different. If so, starting at main menu, use "Para Setup", "TEMP Para Setup", to select a different temperature profile, then press the "Save Parameter" softkey. Return to Operation Mode Menu, select

Semi-auto mode again. Release plate vacuum, align PCB bonding area to thermode, turn plate vacuum on. Press start buttons to begin bonding process.

9. Repeat steps 4-8 as needed to align/bond additional COF/Flexes. Remove product from stage at conclusion of bonding process.



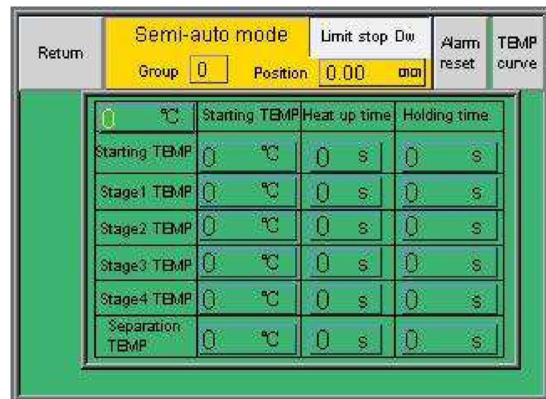
(Fig. 7.19)



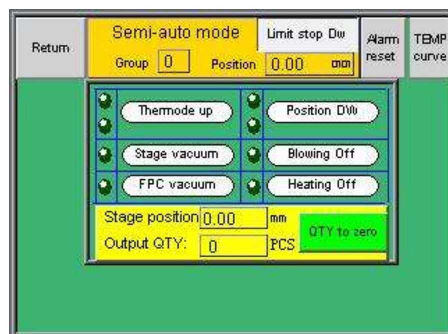
(Fig. 7.20)

◆ Click "Temperature Curve" in this menu and you can view real-time temperature curve; click it again to view "working position", "real-time temperature", "Output Statistics" and other real-time parameters (Fig. 7.21—7.23).

(Fig. 7.21)



(Fig. 7.22)

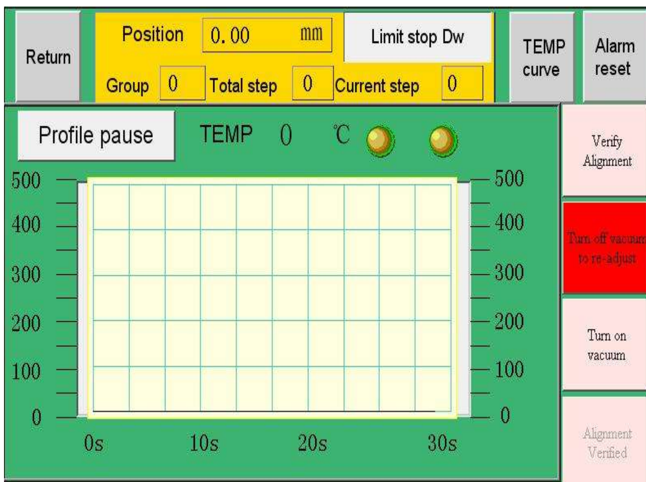


(Fig. 7.23)

5.4 **Auto Mode:** Auto mode allows final bonding of multiple COF/Flexes by moving the stage to the correct position and initiating the correct bond profile for those COF/Flexes. It is designed to allow sequential final bonding of multiple COF/Flexes that have already been aligned and tacked onto a substrate.

1. Starting at Main Menu, use "Para Setup", "Position Para Setup" to select proper group (product to be repaired), press "Save Para" and then return to Main Menu
2. Adjust bonding pressure on bonder to correspond to product being bonded. Ensure correct sized bonding thermode is on bonder and replace and adjust as necessary. Adjust transformer switch as required based upon thermode chosen.
3. Enter Operation Mode menu and after ensuring that no hands are near the product stage, press the "Stage Reset" soft button on the touchscreen to move the position of stage to home position (only used for first product after turning on bonder or when changing group (product) on bonder). After stage stops moving, the message "Return Origin Success" will appear on the touchscreen which indicates that the stage is at home position; press "Limit Stop" button to raise bottom alignment pin. Place a substrate (with its tacked COF/Flexes) onto the platform and slide against the bottom and right-side alignment pins. Press plate vacuum to secure. Press "Limit Stop" button again to lower bottom alignment pin.
4. Using touchscreen, press "Operation Mode" soft button, press "Auto mode" softkey, press "Verify Alignment" softkey (Fig. 7.24). Vacuum will turn on and substrate stage will move to first bond position. Keep hands out of machine.
5. If needed, adjust position of substrate, observing alignment in monitors and on quartz back-up bar and by turning on/off plate vacuum buttons. Verify interposer rubber lies under thermode.
6. Press both start buttons or "Alignment Verified" soft button (Fig. 7.25—7.28) and the thermode automatically descends to begin bonding all flexes that have been selected for bonding; when bonding time is up, the thermode automatically rises, the stage moves to the next bonding position and the thermode descends to bond the next FPC.

7. Bonding will be complete when stage moves back to home position and turns off vacuum to the substrate. Then operator can remove substrate.



（Fig. 7.24）

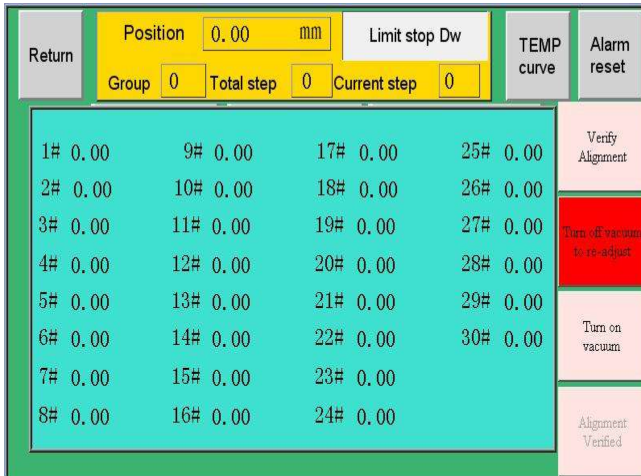
（Fig. 7.25）

◆ "Turn off vacuum to re-adjust" softkey： Press this softkey to remove the substrate vacuum so that its alignment can be changed (Fig. 7.24—7.28). Operator can also use plate vacuum button on the bonder.

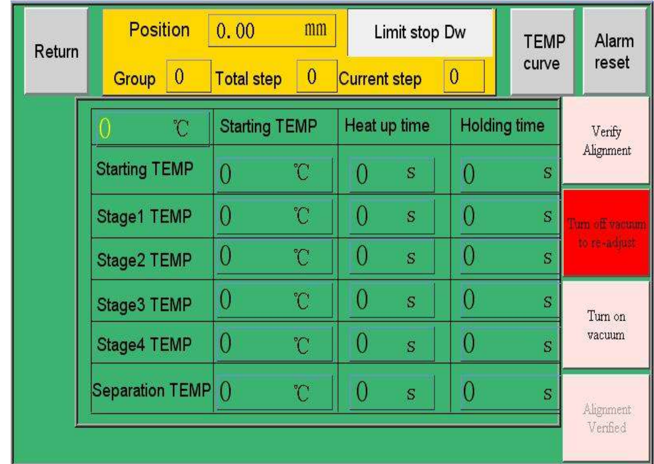
◆ "Turn on vacuum" softkey： Press this softkey to add substrate vacuum to secure the substrate (Fig. 7.24—7.28). Operator can also use plate vacuum button on the bonder.

◆ "Alignment Verified" softkey：Pressing this softkey allows the thermode to descend and perform a bonding process. After completion, the thermode ascends and the stage moves to the next bonding position. The cycle continues until all COF/FPCs have been bonded to the substrate. Then the stage moves to home position and operator can remove the substrate. (Fig. 7.24—7.28)

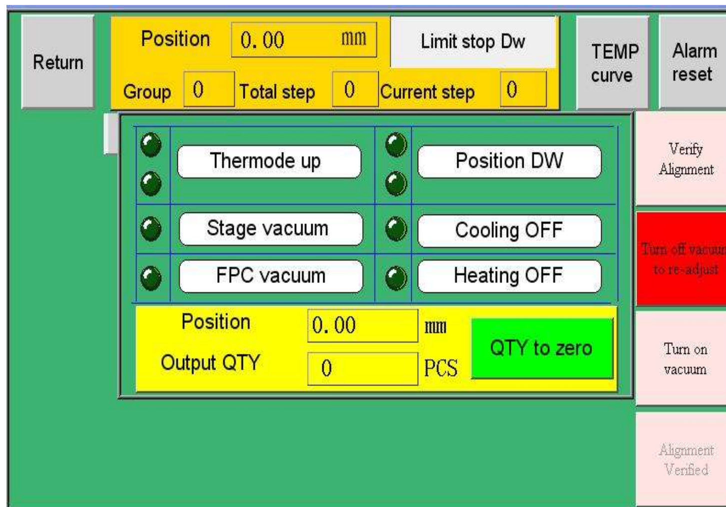
◆ Press the "Temperature Curve" softkey in this menu and you will view the bonding graphical temperature profile as it occurs; select it again to view the respective stage "working position", "real-time temperature in tabular format", "Output Statistics" and other real time parameters (Fig. 7.26—7.28).



（Fig. 7.26）



（Fig. 7.27）

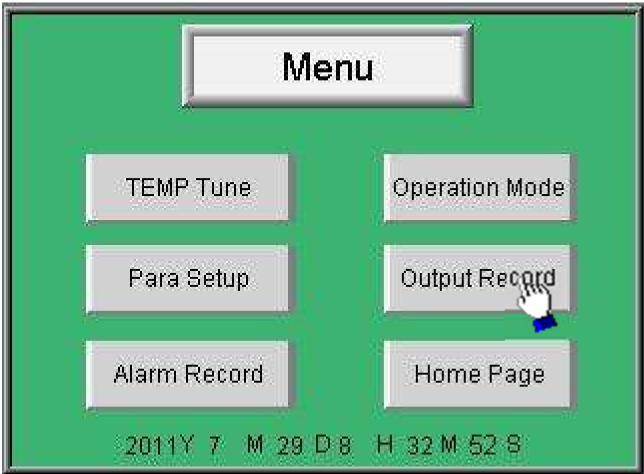


（Fig. 7.28）

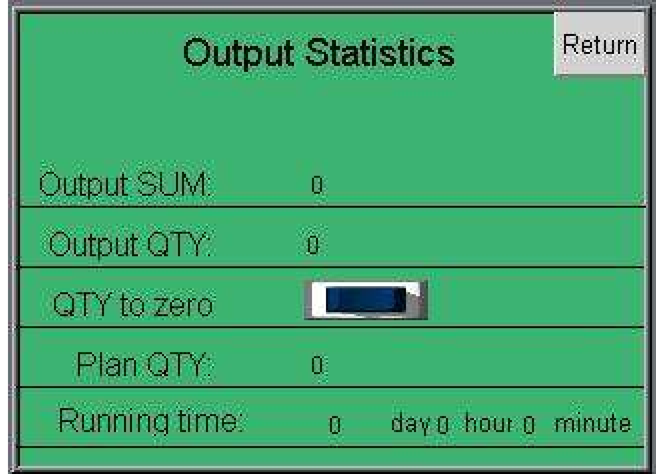
5.5 Stage reset: Selecting this softkey moves the stage to home position. **Users can enter parameter setting, maintenance mode, semi-auto mode and auto mode menus only when the machine platform is in this default position.**

5.6 Stage Back: Click this button and you move stage to the first bonding position for the current group number.

6. Output record: Selecting output record from the home menu allows view and modification of production output statistics or to clear actual quantity (Fig. 7.29-7.30).

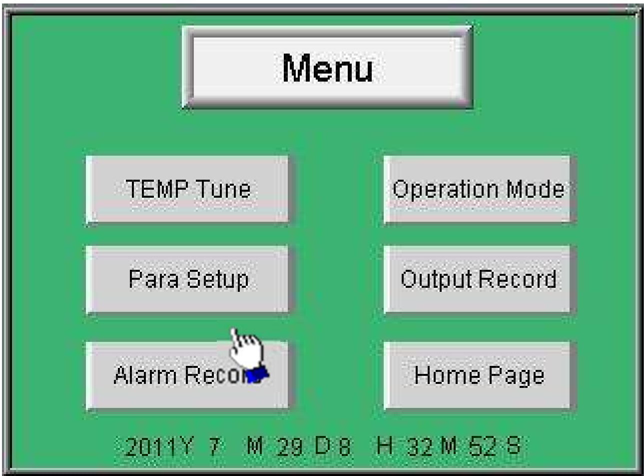


（Fig. 7.29）

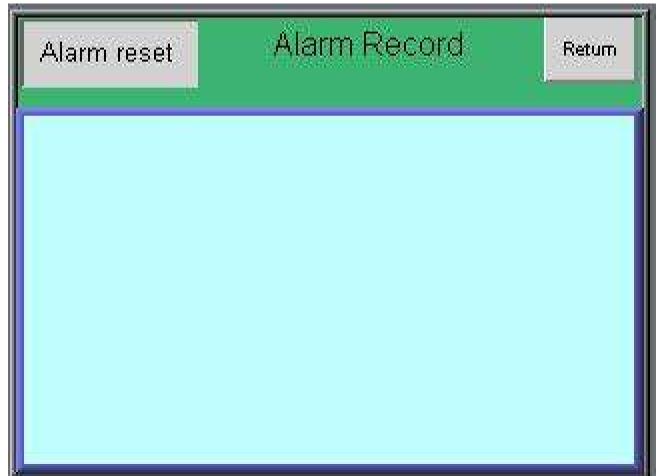


（Fig. 7.30）

7. Alarm Record: Selecting Alarm Record in the main menu to view failure information in normal operation of equipment (Fig. 7.31-7.32).



（Fig. 7.31）



（Fig. 7.32）

VIII. Precautions

1. Input air pressure shall be kept between 0.4--0.7MPa;
2. Power source shall be well grounded;
3. DO NOT put hands or other objects in the bonding area during production;
4. Power must be off and wait until it cools down before changing thermode.

IX. Maintenance and Servicing

Daily routine inspection:

1. Method of cleaning thermode: Clean pressing face of thermode with a cleanroom q-tip soaked with IPA to eliminate any residue. Do not use knife and other hard object to scrap the thermode.

Weekly routine inspection:

1. Air line circuit inspection: Turn off main power to bonder. Then close main air pressure source and observe the time from closing air pressure to thermode descent. If the time is shorter than 20s, there may be air leakage and it needs servicing.

Monthly routine inspection:

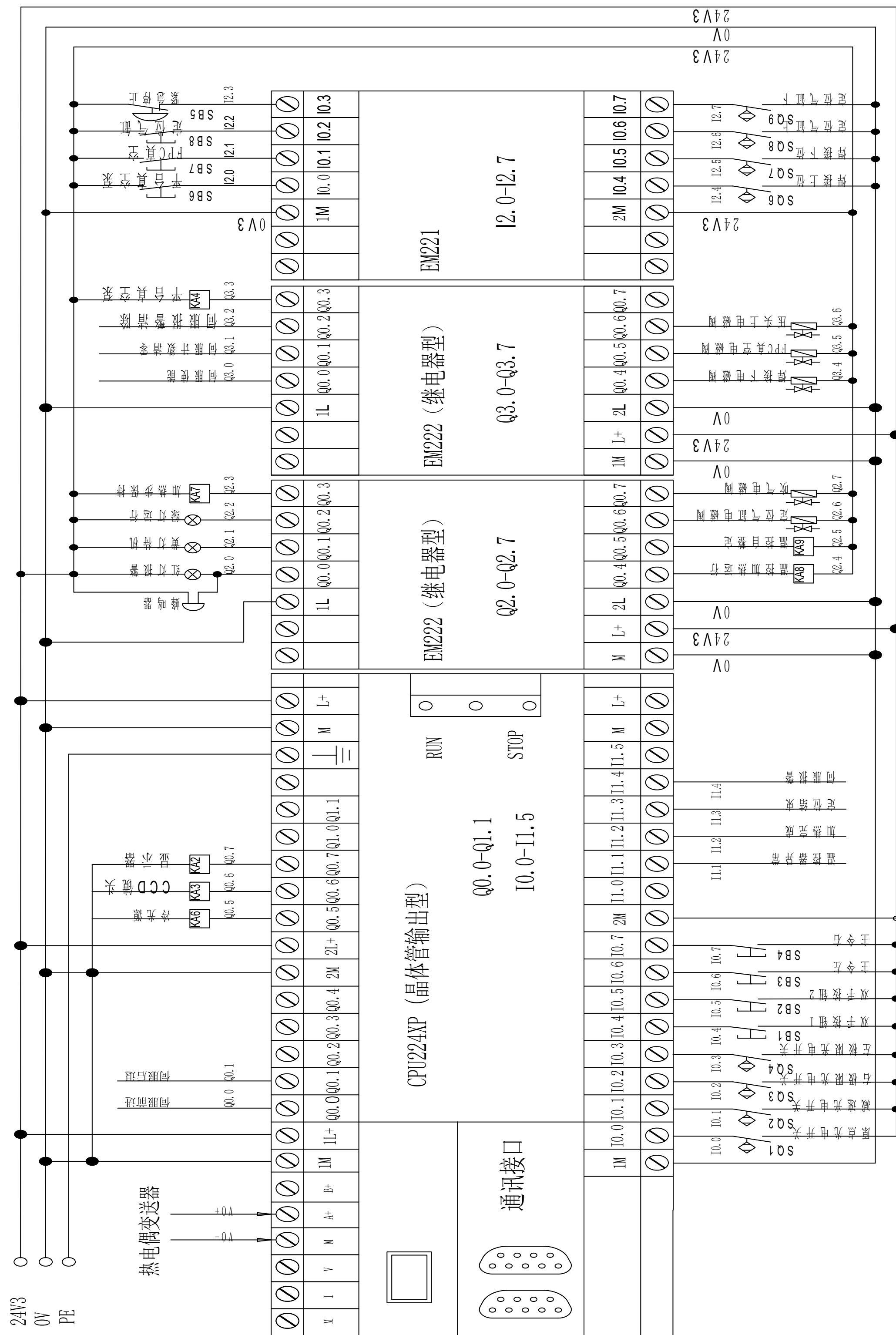
1. Check if fasteners are loose; refasten them.
2. Manually operate thermode pressure cylinder to move up/down and observe if it moves smoothly.
3. Check if contact surface of two copper poles for thermode is oxidized and blackened; if so, please polish the contact surface of copper pole with crocus paper.

X. Faults and Troubleshooting

Common Faults and Troubleshooting Method

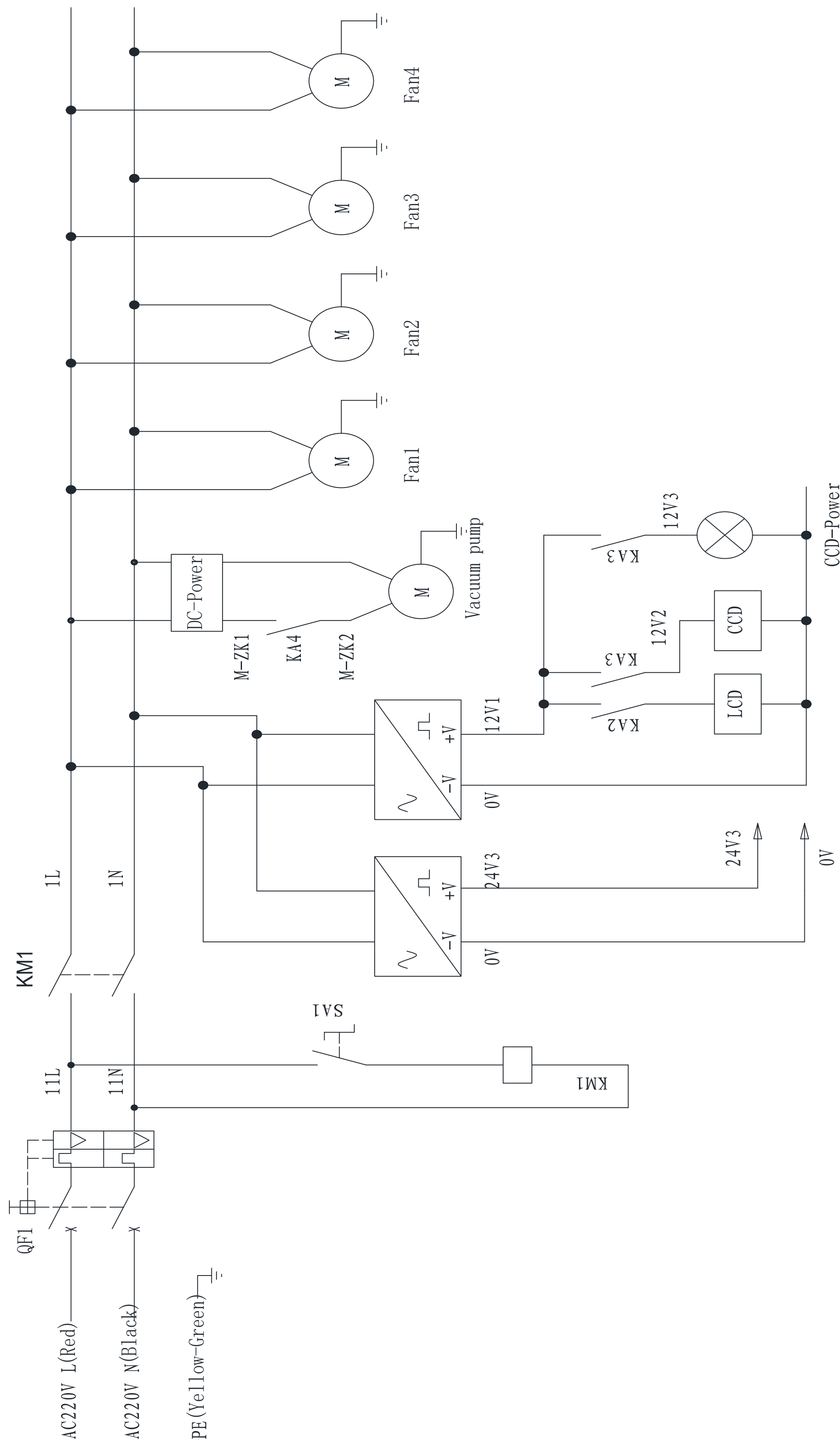
Symptom	Reason	Fault treatment method
Machine has no power.	Breaker is open	Close breaker
	Power switch is not on	Turn power switch on
	Contactor has no action	Check contactor coil circuit.
Manual operation is not effective.	Emergency stop switch has been pressed	Open emergency stop switch
	Sensor is not in place	Check corresponding sensor.
	Touch screen communication alarm.	Check touch screen communication circuit.
Ineffective tuning	Cylinder sensor is not in place.	Check corresponding sensor.
Stage cannot move.	Pressure cylinder upper sensor is not showing home position.	Adjust sensor position
	Pressure cylinder lower sensor is not showing home position.	Adjust sensor position
	Emergency stop switch has been pressed	Open emergency stop switch
No vacuum	Vacuum pump is not powered on	Switch on vacuum pump power switch
	Vacuum generator does not work.	Check vacuum generator

Annex 1: PLC Wiring Diagram

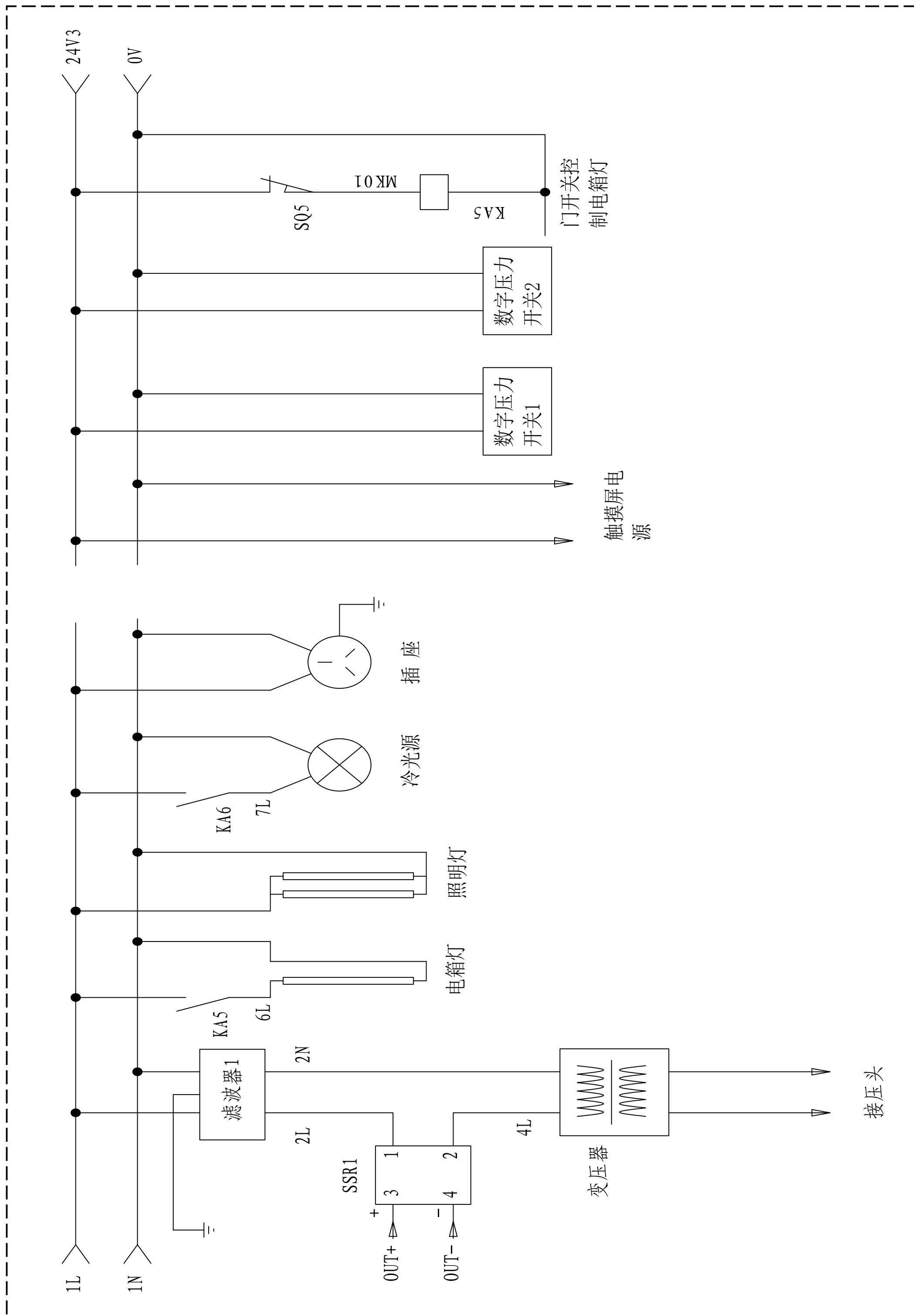


Annex 2: Air Line Circuit Diagram

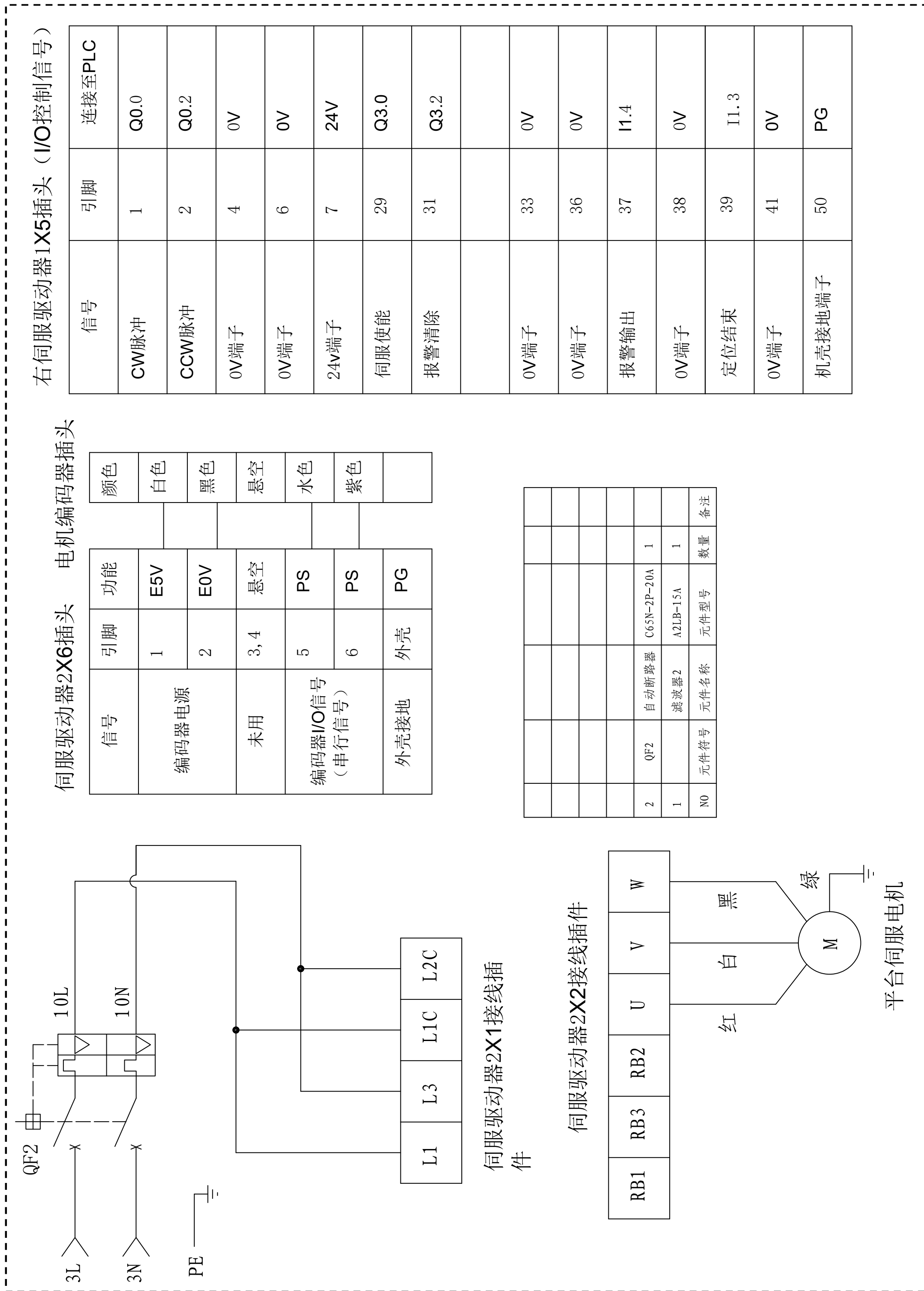
Annex 3: Electrical Schematic 1



Annex 4: Electrical Schematic 2



Annex 5: Servomotor Wiring Diagram



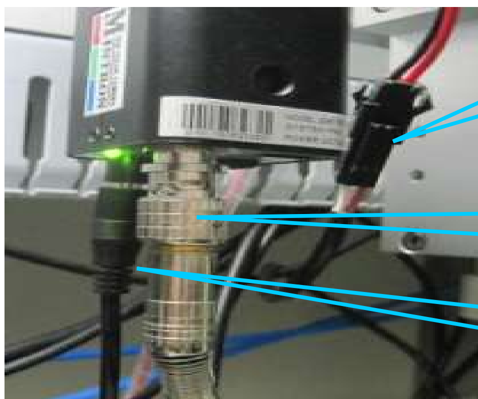
Annex 6: Look-up Camera Lens Installation

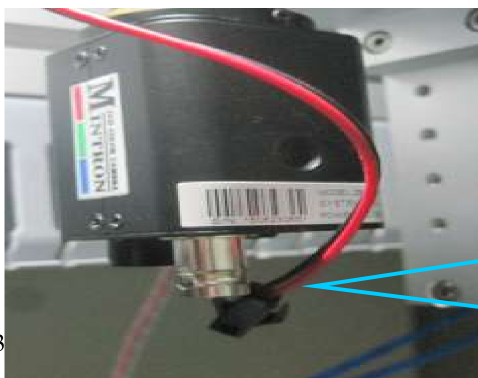
Each look-up CCD camera is attached to a magnifying lens assembly which includes its own adjustable LED light source. The customer can purchase many different pairs of lens which can be used with the bonder to give varying amounts of magnification. For instance, one pair presents an image magnified 100X and another pair presents an image magnified 200X. Typically the 100X lens are used for TAB/Flex bonding and the 200X lens are used for COG bonding.

Look-up Camera Lens Assembly

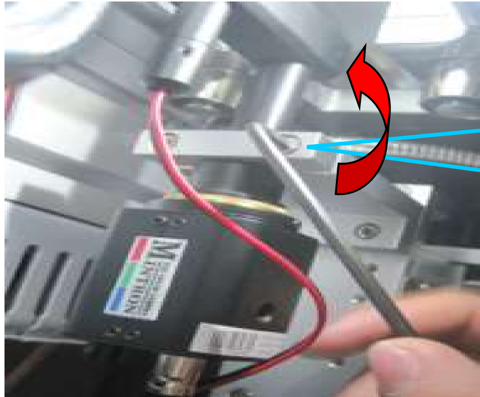
The following steps are used to remove and replace a lens assembly:

Step 1





Step 2



Loosen both bolts by rotating CCW

Remove the camera assembly

Step 3

Loosen the lens assy by rotating it CCW

Remove lens assy

Step 4

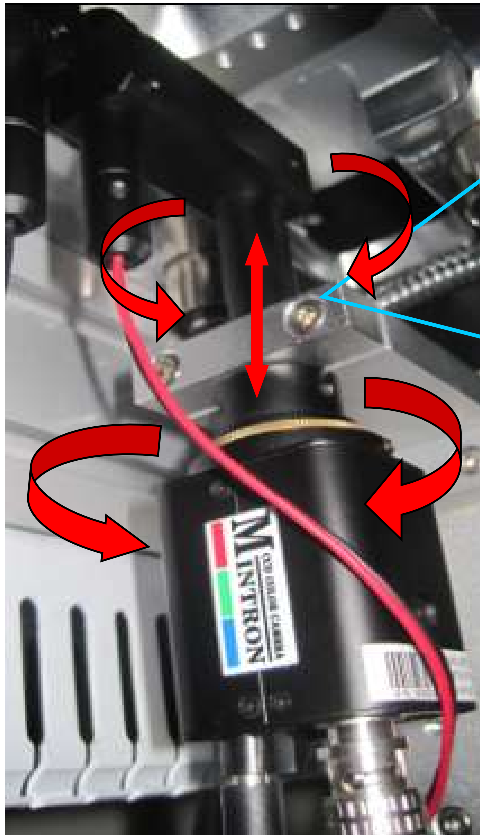
Add new lens assy by rotating CW

Don't tighten the set screws

Step 5

Insert all the cables that were removed in Step 1

Step 6

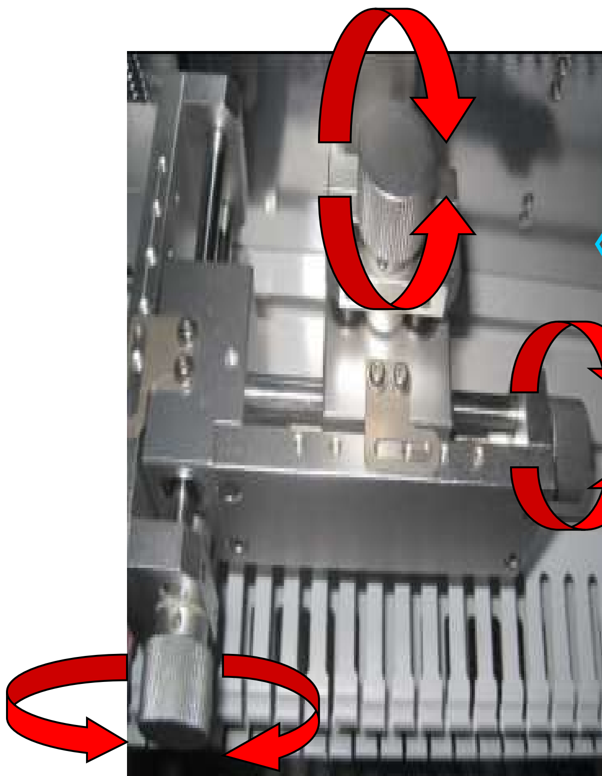


Adjust according to the image on the monitor

1、 Lens up and down

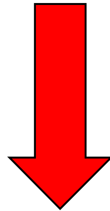
2、 CW or CCW turn the camera.

3、 Tighten two bolts that were loosened in Step 2



Adjust XYZ according to the image on monitor as well.

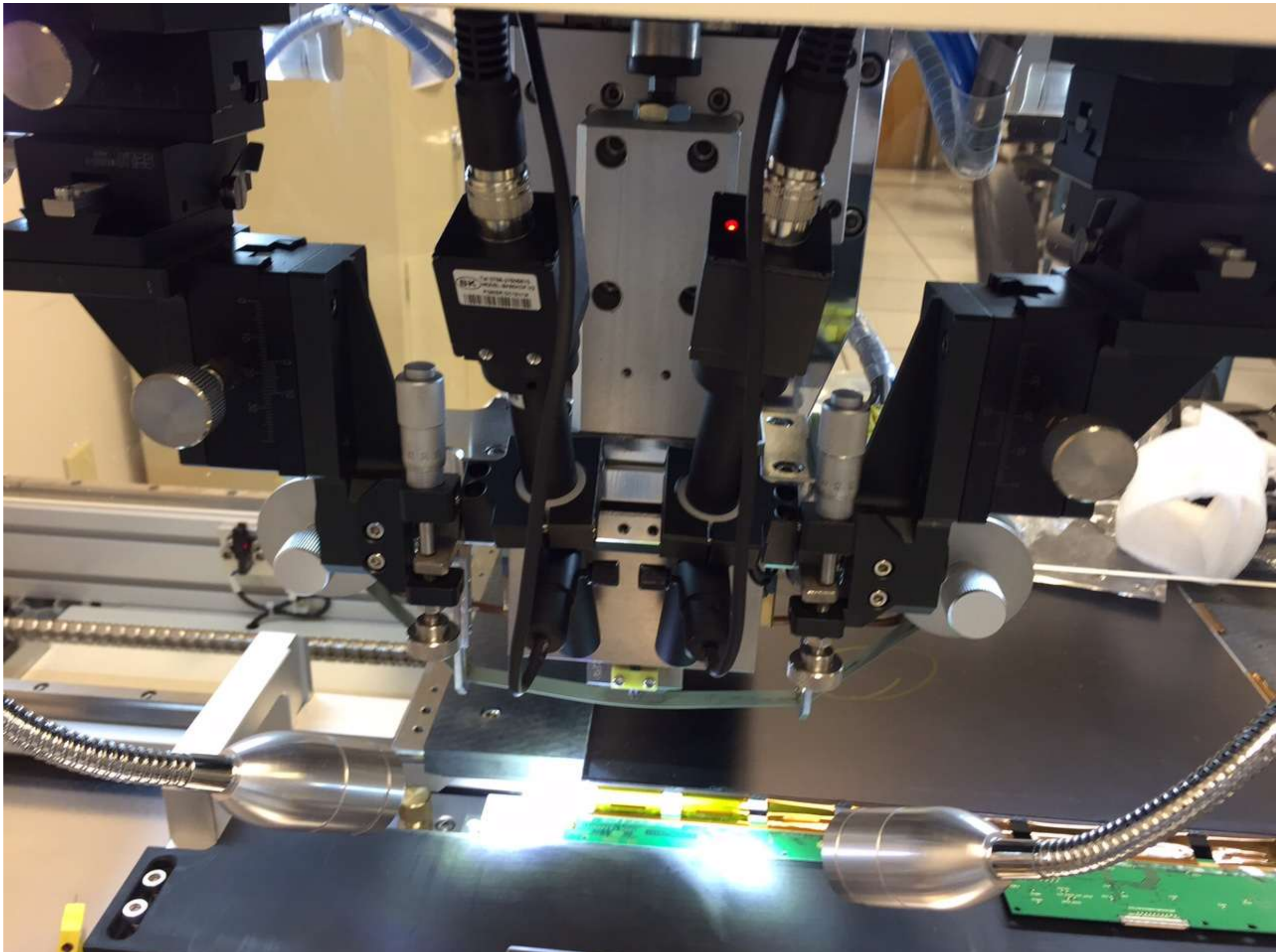
200X lens image



100X lens image

Annex 7: Look-Down Camera

The bonder can also be supplied with optional look-down CCD cameras attached to magnifying lens assemblies which includes their own adjustable LED light sources. Typically these cameras are used for bonding flexes to opaque surface (PCBs, ceramic, etc) where the look-up cameras cannot see through the substrate to aid in alignment.



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