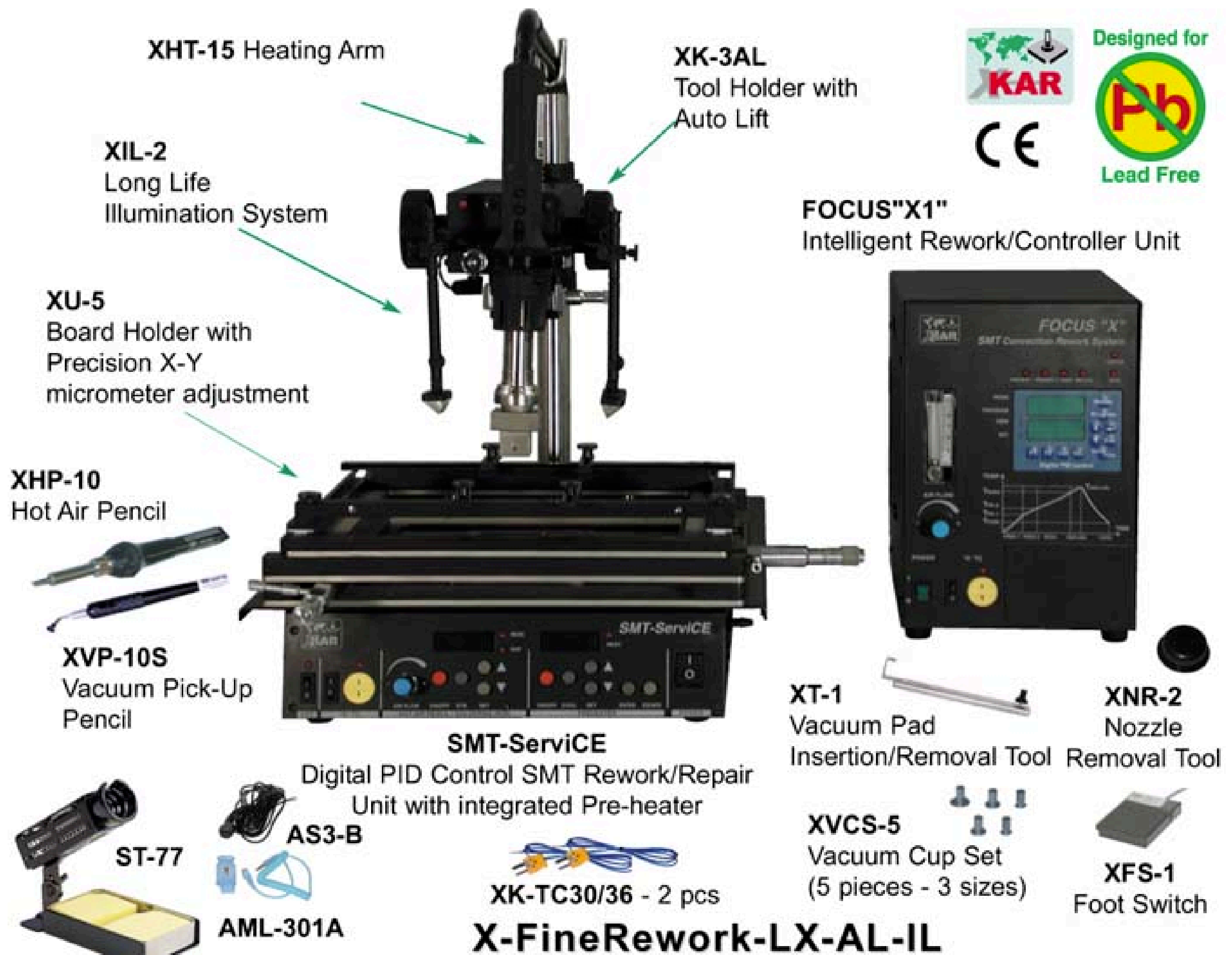
INSTRUCTION MANUAL

X-FineRework-LX Series
Precision, Hi Performance, Programmable Rework Systems for boards up to 14" wide



The picture above shows the X-FineRework LX fully loaded with all possible options

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II. INTRODUCTION - SYSTEM UNIQUE FGEATURES

X-FineRework-LX Series Rework Systems for boards up to 14" wide are Unique, Modular, Digital, PID Control SMT Rework/Repair Systems with integrated Pre-heater, Five Zone Profile control and programmable bottom pre-heat in each zone.

This system offers precise and accurate monitoring of process temperatures at a working point on a PCB.
Also, allows pre-setting of exact temperature of air stream at the end of Hot Air Pencil Nozzle and at a tip of Soldering Iron.

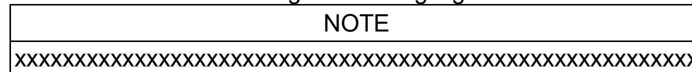
The accuracy is achieved by a unique feature, user adjustable offset, which allows for exact control of air stream temperature at the working point. This helps to compensate for differences in PCBs' being reworked (dual or multi-layer, high and low mass) because one can achieve quite accurate pre-heater settings.

Like no other system in the industry, our X-FineRework Controller- Focus”X” allows for pre-programming of both, top and bottom heating.

The unique, high performance of the unit is possible due to use of the newest microprocessor technology and thorough programming of all control and monitoring functions combined with PID temperature control of all heaters.

III. SAFETY

The purpose of this "SAFETY" section is to inform the users of the heading guidelines used in this manual to indicate special Notes, Cautions, Warnings or Dangers. Also included are precautions, which must be observed when operating or servicing this product. These "NOTES", "CAUTIONS", "WARNINGS" and "DANGERS" are inserted in this manual whenever deemed necessary. They appear in a blocked off form with outline and a shaded background to highlight the information as shown below.



NOTE

Used to indicate a statement of company recommendation or policy. The message may relate directly or indirectly to the safety of personnel or protection of property. NOTE is not associated directly with a hazard or hazardous situation and is not used in place of "CAUTION", "WARNING" or "DANGER".

CAUTION

Used to indicate a hazardous situation, which may result in minor or moderate injury. May also be used to alert personnel to conditions, procedures and practices which, if not observed, could result in damage to or destruction of the product or other equipment.

WARNING

Used to define additional information, that if not closely followed may result in serious damage to equipment and represent a potential for serious personnel injury.

DANGER

Defines additional information, that if not closely followed may result in severe personnel injury or death. Danger is not used for property damage unless personal injury risk is present.

PRECAUTIONS

The following are general safety precautions, which personnel must understand and follow when using or servicing this product. These precautions may or may not be included elsewhere in this manual.

CAUTIONS

1. The SMT-ServiCE pre-heater area and top plate are hot when the system is “ON” and for a period of time thereafter. DO NOT touch neither the pre-heater area, top plate or direct heated air stream. Severe burns may result!

2. The SMT-ServiCE hot air pen or iron heater assembly housing and any installed nozzles/tips are hot when the system is “ON” and for a period of time thereafter. DO NOT touch neither the heater assembly housing, nozzles/tips or direct heated air stream. Severe burns may result!
3. The Focus “X” hand-piece heater assembly housing and any of the installed nozzles/tips are hot when the system is “ON” and for a period of time thereafter. DO NOT touch neither the heater assembly housing, nozzles/tips or place your body parts in direct, hot air stream. Severe burns may result!
4. Utilize all standard electrical safety precautions when using this or any other electrical equipment.
5. Always use this system in a well-ventilated area. A fume extraction system (such as those available from XTRACTOR) is highly recommended to protect personnel from solder flux fumes.
6. Exercise proper precautions when using chemicals (e.g., solder pastes, board cleaners etc.). Refer to the Material Safety Data Sheet (MSDS) supplied with each chemical and adhere to all safety precautions recommended by the manufacturer.

DANGER

POTENTIAL SHOCK HAZARD. Only qualified service personnel should perform repairs made on this product. Line voltage parts will be exposed when equipment is disassembled. Service personnel must avoid contact with these parts when troubleshooting.

NOTES

To insure continued peak performance, use genuine, Bokar replacement parts.

IV. PACKAGING

The box contains the items marked wit “X” as per table below, depending on the Model, which was ordered:

X-FineRework-LX Series For Large Boards and with Base Containing Hot Air Pencil, Iron and Vacuum Pick-up									
Please Choose the combination, which BEST suites your needs and budget	1. Programmable, Intelligent SMT Rework/Repair Unit. Patented in US, Japan and Europe 2. Digital PID Control Unit with integrated Pre-heater Base, Hot Air Pencil, Iron and vacuum Pick-up 3. Open Frame Board Holder with X Y micrometer positioning of PCB for boards up to 14" wide			Micro Placer Head	Tool Stand with up/down Z axis movement				Long Life Illumination System
					with precise rotation and Auto Lift	with precise rotation	with Auto Lift	Basic “z” axis tool holder	
What it Contains	**FOCUS"X1"**	**SMT-ServiCE**	**XU-5**	**X-MP**	**XK-3AL**	**XK-3**	**XK-2AL**	**XK-2**	**XIL-2**
X-FineRework-LX-AL-IL	X	X	X		X				X
X-FineRework-LX-AL	X	X	X		X				
X-FineRework-LX-IL	X	X	X			X			X
X-FineRework-LX	X	X	X			X			
X-FineRework-LX2-AL-IL	X	X	X				X		X
X-FineRework-LX2-AL	X	X	X				X		
X-FineRework-LX2-IL	X	X	X					X	X
X-FineRework-LX2	X	X	X					X	

Each X-FineRework-LX Package additionally (besides the items marked with X in the table above) includes:

- XCB-1R - Cord connecting Focus "X" with Pre-heater Based Rework System SMT-SerwiCE or Preheaters X-1000.
- Manual
- Guarantee card

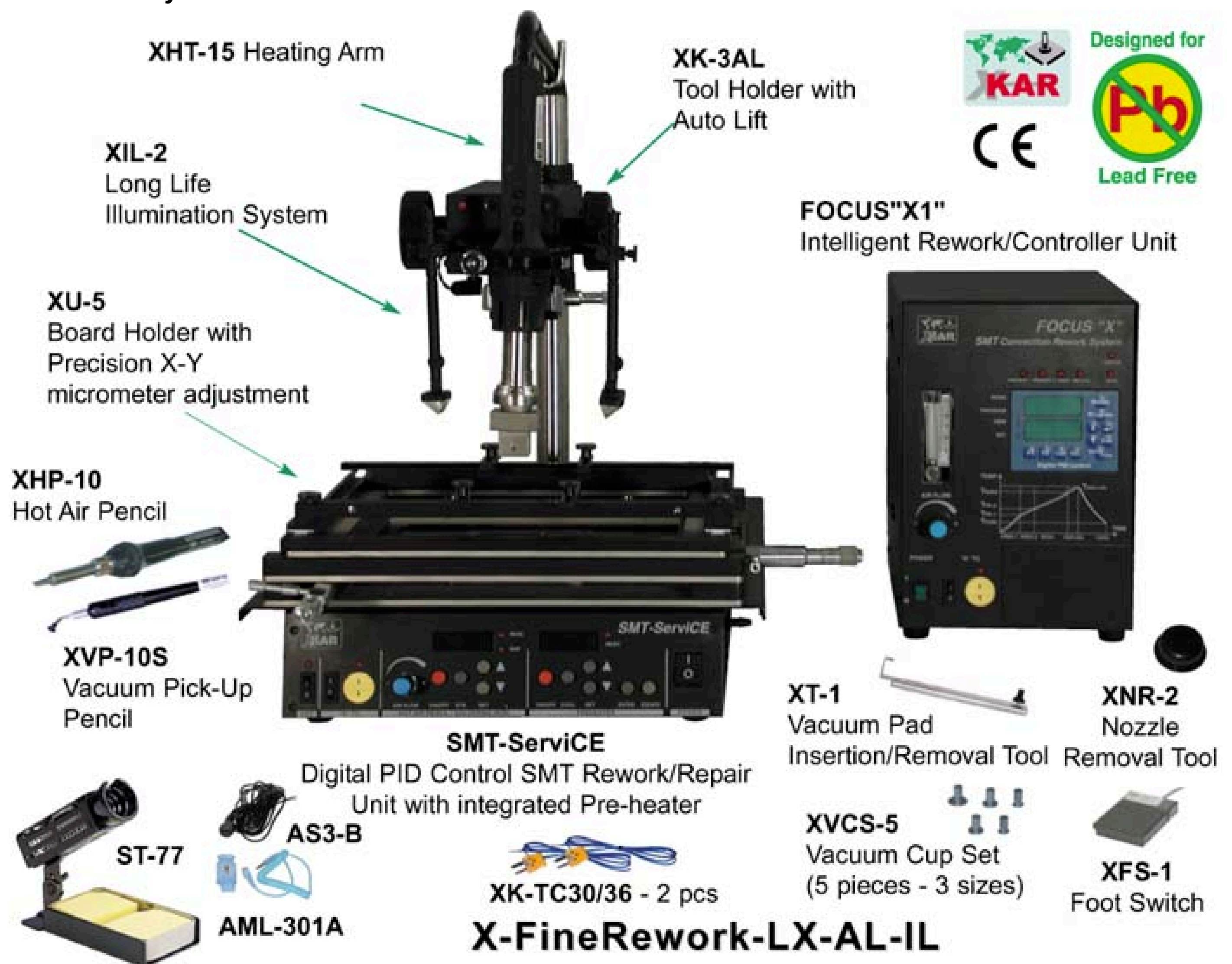
V. UNPACKING

Prior to use of the system, please check if the system is complete. Should you notice that any items are missing, please notify us, giving the details of model number, voltage, date of purchase, where purchased and what is missing. Missing items must be reported within 7 days from the date of purchase.

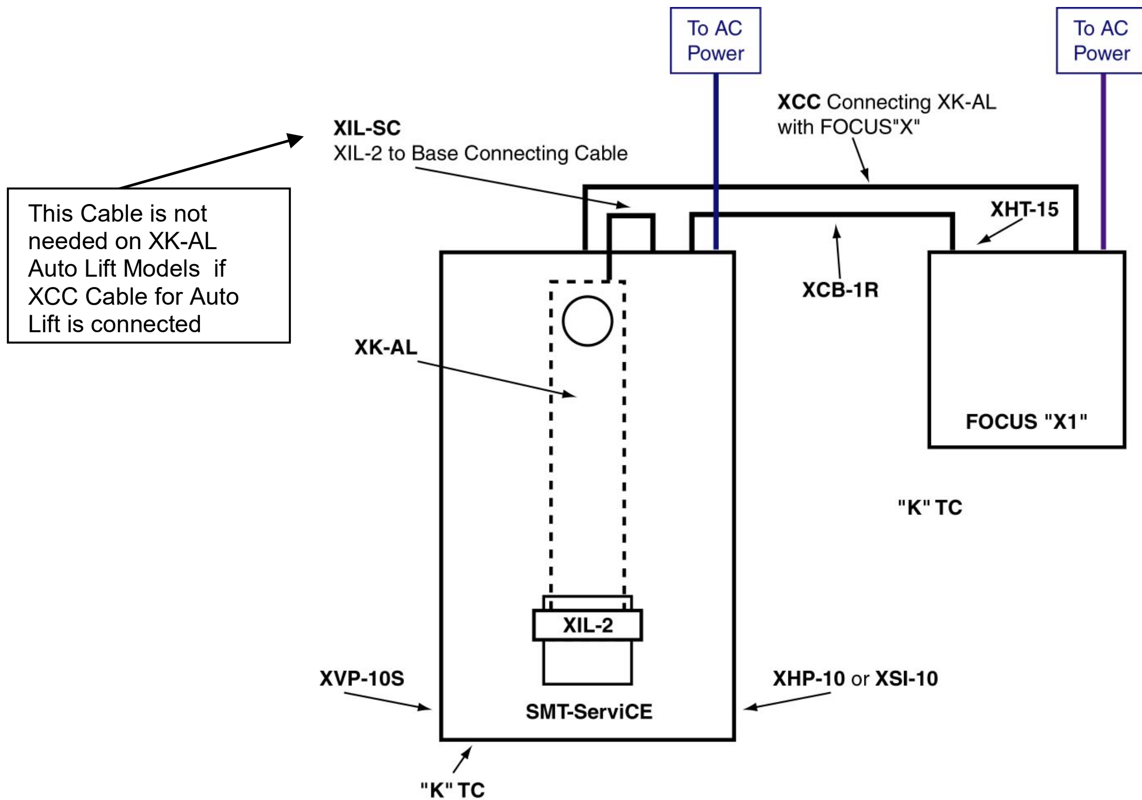
WARNING
When unpacking, please be careful and read the manual prior to turning the system "ON". Please check that the voltage of the System corresponds with the voltage of your available supply. Connection to incorrect voltage supply may cause damage to the System!

VI. GENERAL INFORMATION

View of the System



System block diagram



Top View of the System
External connections between system modules and to the external power

VII. SET-UP AND INSTALLATION

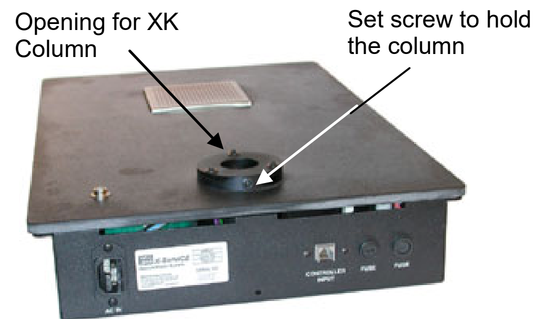
SET-UP SMT-ServiCE

a. Remove the SMT-ServiCE from its shipping box. Store the shipping box in a convenient location. Reusing of these box/boxes will prevent damage if you ship or store the system.
b. The system should be located on a rigid and stable work surface.
c. Check if the power switch on the front panel is in the “OFF” position.
d. Set-up the XST-77 Tool Holder on the right side of the system, place the XHP-10 with desired nozzle in the holder and connect the XHP-10 to the Base (Electrical and Air connections on the right side of the Base).
e. Fasten XVP-10 holder to the Base (Left side), connect the end of vacuum hose to the vacuum connector on the left side of the unit). Attach desired vacuum pick up probe and place the XVP-10 on the holder.
f. Attach (snap on) grounding wire AS3-B to the Top plate of the unit (connector on the right side at the back), and connect the other end of the wire to ESD ground.

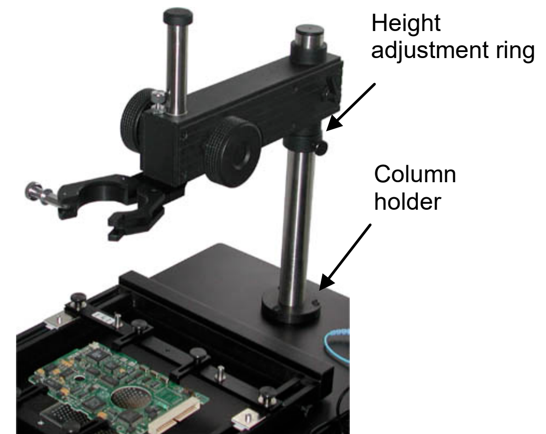
SET-UP XK-Series Hot Air Tool Holder

a. Remove the screw and the washer from the bottom of the column using hex key.
b. Unscrew the setscrew of the column holder at the back side of the base of SMT-ServiCE or X-1000 by using hex key.
c. Insert the column in the hole of the column holder. Insert the washer on the screw and tighten the column to the bottom side of the SMT-ServiCE or X-1000.
d. Fasten the setscrew of the column holder.
e. Insert the height adjustment support on the column and fasten knob to secure the ring on the column.
f. Insert the arm on the column and fasten arm rotation blocking nut to fix the arm in desired position.

The XK Series Hot Air Tool Holder is ready to use.



Rear view of SMT-ServiCE / X-1001 Bases



XK-2 installed on SMT-ServiCE / X-1001
Other XK-Holders install in similar way.

SET-UP XU-5 Open Frame Board Holder with X-Y micrometer positioning of PCB

a. Unpack XU-5 Board Holder and place on the SMT ServiCE top plate, above the pre-heater chamber.
b. Attach the board holder to the base using 4 screws supplied with the board holder.
c. Unblock the mechanism removing transport screw located in the right back corner of the Board Holder.
d. After installation of your board into the board holder you will position XU-5 in such a way, which places your component to be reworked (removed or replaced) under the center of the SMT-ServiCE pre-heater chamber.

SET-UP XIL-2 Long Life Illumination System

Please follow instructions included with XIL-2 Unit

SET-UP FOCUS”X1”

a. The system should be located on a stable work surface.
b. Mount the Hand piece holder on the right or left side of the FOCUS ”X” base unit.
c. Connect XHT-15 hand piece to FOCUS ”X” base unit. Tools required: Flat screwdriver and tweezers or long nose pliers

CAUTION
XHT-15 hand piece can be connected on the front (Focus “X”), on the back of the unit (Focus “X1” or either on the front or on the back (Focus “X2”).

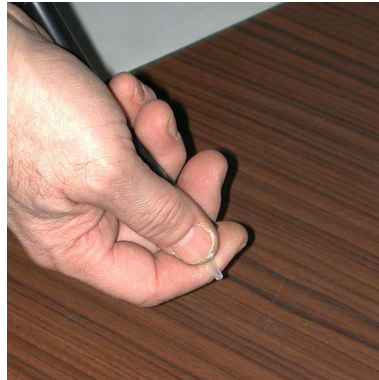
WARNING
Connect only one XHT-15 hand piece. FOCUS“X2” will not work if two hand pieces are connected to the base.

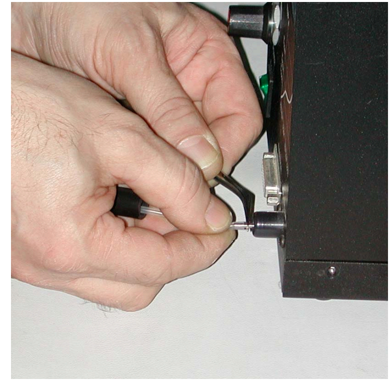
XHT-15 hand piece connected on front panel

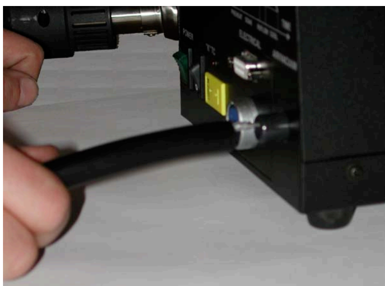
XHT-15 hand piece connected on back panel

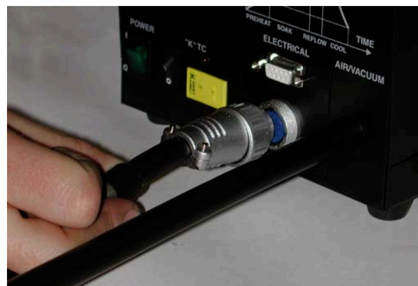
Connecting process is the same. Please see below.

Hold the hand piece vertically with air/vacuum tubes downwards from the air tube


Hold the vacuum tube with your thumb and pointing finger


Hold vacuum tube protruding (about ½" / 10mm) from the air electrical connector on the system base (right/bottom corner of the front panel of the base) with one hand (using tweezers or log nose pliers). Insert flexible vacuum tube of the hand piece over the tube in the unit. The overlap should be about 1/4" (~6.5mm).


Slide black hand piece air tube over air connector



Connect round power plug to a matching socket on the unit.

Tighten the ring to secure the connector

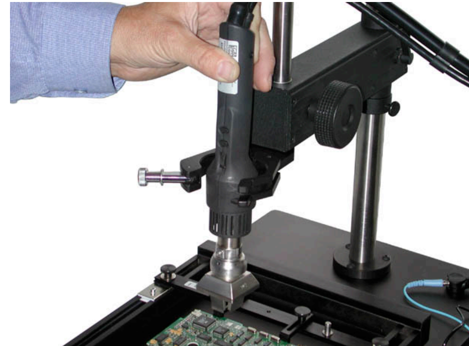
Connect multi-wire plug to a matching socket on the unit.

Tighten 2 screws (one on each side of a connector) using flat screwdriver to secure the connector in place

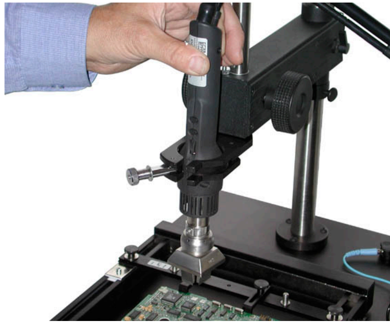
d. Place XHT-15 hand piece into XTH-2 Tool Holder or XK-Series holder.
e. Connect XFS-1 foot switch to the connector on the back panel of the FOCUS"X" base unit.
   It activates cycle advance feature, which is very useful during component placement and removal.
f. Select proper nozzle to match the component you need to rework.
g. Install the nozzle onto the XHT-15 tool.

Installation the XHT-15 Hot Air Tool into XK-Series Tool Holder

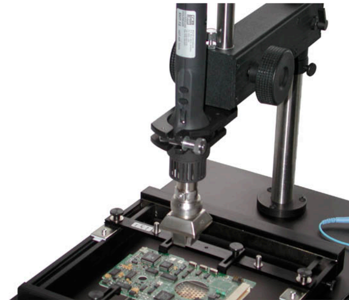
a). Turn the nut of the clamp counterclockwise to open it.



b). Place the XTH Series Tool straight in vertical position inside the clamp, matching clamp profile to the one of the handle.



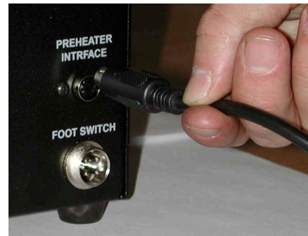
c). Close the clamp and fasten the tool

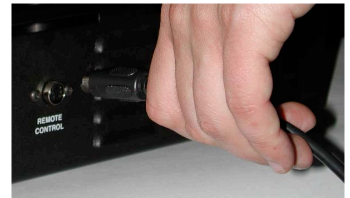


d). Tighten the nut turning it clockwise.

Connection the SMT ServiCE Base with the FOCUS"X1"

Insert one end of the XCB-1 cable into Remote Control socket located on the back panel of the SMT-ServiCE and the other end of the cable into FOCUS's pre-heater interface connector located on the back panel of the FOCUS "X1".

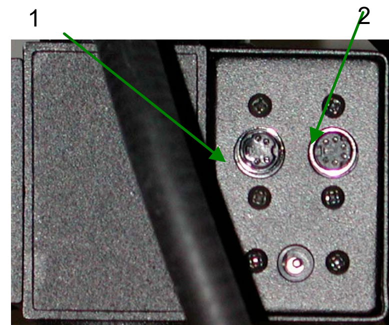




Błąd! Nie zdefiniowano zakładki.

Connection the FOCUS"X1" with XK-AL Series Tool Holder with Auto Lift

a. Connect power 12 V AC 150 mA to AC power receptacle
   Only if you are operating XK-AL without the FOCUS Unit.
b. Insert one end of the XCC-1 cord into XK-AL socket located on the back panel of the Focus "X" and the other end of the cord into Focus socket located on the back panel of the XK-AL



Rear panel of XK-AL

1. **Foot switch connector** – Foot switch (XFS-2) when connected to the unit, when pressed will raise the Hot Air Tool on demand.
2. **Focus connector** – Allows to connect to Focus "X" to remotely control the raise of the Hot Air Tool by FOCUS "X" program.

NOTE
To get more information about set-up and installation of each of the X-FineRework-LX subsystems please refer to their individual manuals.

October 2010

Addendum to X-FineRework Manual

NOTES and Practical Points on How to Approach Rework with X-KAR Machines

Component Rework Profile Development

CAUTION - Component Sensitivity

This method may subject the component to extreme temperatures. Evaluate the component's tolerance to heat prior to using this method. Plastic BGA's are especially sensitive to moisture absorption. Carefully evaluate pre-bake requirements.

CAUTION - Circuit Board Sensitivity

Circuit boards are fabricated from a wide variety of materials. When subjected to high temperatures they are susceptible to the following types of damage:
1. Layer de-lamination. Especially when soldering at higher temperature using lead free solders
2. Copper de-lamination, separation of pads, and barrels of inner layers.
3. Burns and solder mask chipping.
4. Warp.

Each circuit board must be treated individually and scrutinized carefully for its reaction to heat. If a series of circuit boards are to be reworked, the first few should be handled with extreme care until a reliable procedure is established.

1. OVERVIEW

Profile development procedure automatically creates a thermal profile based on user-defined target parameters. These may include; board temperature, soak duration, BGA package temperature, BGA package ramp rate, solder joint temperature, and time over reflow. The method uses an automatic repetition procedure, utilizing the information learned from previous runs to optimize the process.

NOTE

Prior to starting the profile development process both the Rework System and the circuit board should be at, or near, room temperature. Avoid the use of fans to cool the circuit board or BGA rework machine during Profile Development. Doing so may interfere with the software program. Allow the circuit board and BGA rework machine to cool naturally.

NOTE

If the circuit board has multiple BGA component locations that require development of profiles for their safe removal or replacement, and all the BGA components are of the same type and size, one rework profile may be used for all. The BGA component location to select for the profile development should be the one that will generally be the most challenging to rework. The most difficult BGA components to rework will generally be:
closest to the edge of the circuit board.

2. PREPARATION TO PERFORM PROFILE DEVELOPMENT

1. Select the BGA (or other component) Rework Nozzle that will be used to develop the Rework Profile. Nozzle Part Number should correspond to BGA (or other component) physical size. Test the fit of the nozzle. Nozzle should fit over BGA component with minimal gap (1mm is an optimal gap, but any other gap size can be chosen, depending on neighboring components). Larger the gap, easier it will be to position the nozzle over the component without touching it.
   Record Nozzle Part Number, BGA Component Height, and Circuit Board Thickness on BGA Rework Process Worksheet.
2. Test all Thermocouples prior to each use using a Digital Thermometer (or use multi input X-KAR SMT Profiler)
3. Test how are you going to fit your circuit board in the board holder, which is placed on the base of the Rework System. Consider the following:
   a) How to position the board so that you can remove a component or other hardware in such a way that the nozzle fits over the component without interference with other components on the board, and that the component is located centrally above the pre-heater chamber.
   b) Do you need or not, to use "heat shields" using Polyamide tape or aluminum foil to protect other components.
   c)Location of placement of Thermocouples for process monitoring.
4. Clean the top of the BGA component to be profiled. Place the tip of Thermocouple #2 on the center of the BGA component. Apply High Temperature Tape to temporarily hold the Thermocouple in position. Tape should not cover the tip of the Thermocouple.

5. Place Thermocouple #3 under one corner of the BGA component. Place Thermocouple #4 under the opposite corner of the BGA component. Thermocouples should be inserted far enough so that the wire insulation is just under the BGA component. Optimum location for these Thermocouples is between the 2nd and 3rd row of BGA solder balls. If needed, check location of Thermocouples using a microscope. Secure Thermocouples on the circuit board surface using High Temperature Tape or liquid ceramic, if you have one.

NOTE

The corners selected should be those closest to adjacent components or ground plane areas.

6. Place Thermocouple #5 under the corner of adjacent component. Secure Thermocouple the circuit board surface using High Temperature Tape. Apply High Temperature Tape to divert hot air from BGA Rework Nozzle from flowing directly onto Thermocouple.
7. Place one Thermocouple (#6) directly under the center of the BGA component on the opposite side of the circuit board directly in contact with the circuit board surface. Secure Thermocouple the circuit board surface using High Temperature Masking Tape.

Table 1 - Thermocouple Locations

TC Number	Thermocouple Location
1	Top side of the PCB, 1” from the component
2	Top center of BGA component to be profiled.
3	Corner location under BGA component to be profiled.
4	Opposite corner location under BGA component to be profiled.
5	Under adjacent component.
6	Bottom side of circuit board under center of BGA component to be profiled.

3. PROFILE DEVELOPMENT SETUP

1. Place the circuit board on the base of the Rework System. Circuit board should be placed in such a way so that tested (profiled) component is centered over the center of the bottom heater. Clamp circuit board in place using built-in clamps or board holder grooves.
2. Plug in the thermocouples into thermometers or SMT Profiler and mark them as shown in Table 1, so that you can make the record of time/temperature points for these thermocouple locations.
3. Install selected Nozzle. Depending on the nozzle type, the epoxy or tape securing the Thermocouple to the top of the BGA component may prevent the nozzle from contacting the circuit board surface.
4. Move the board holder and position the circuit board in such a way so that the BGA component to be profiled is aligned below the nozzle. Fine adjust X, Y and theta positions to have as good alignment as needed.
5. Position the Pre-heater Sensor, Thermocouple #1 approx. 1" from edge of BGA component being profiled. This thermocouple should touch the bare board and be attached to the board using polyamide tape or liquid ceramic.
6. Power on the System.
7. Enter the following information into the Focus “X1”.

TOP SIDE HEATING

		Temperature		Time (s)
		^{0}C	°F	
PLACE Program	Preheat 1	100	212	60
	Preheat 2	100	212	30
	Soak	160	320	60
	Peak	240	464	60
	Cool	100	212	120

8. Turn-off the FOCUS“X1” temporarily to test your board with Pre-heater only.
9. Set-up the temperature of the SMT-ServiCE to 150°C.
   Your pre-heater should be factory pre-set, to have offset temperature of 0°C. Turn-on the pre-heater pressing RED push-button on Pre-heater section of the SMT-ServiCE Base. If your board is a multiplayer one, do not change Acceleration setting of the Pre-heater. If your board has 2 or 3 layers, you may want to shorten Acceleration Time from 90 sec. to 45 sec. or so. Acceleration time is the time in which the pre-heater works on full power and its temperature is not controlled, to give you the shortest possible initial pre-heat time. Let the pre-heater run for 2 to 3 minutes and read TC-1 temperature. If your board has reached 150 degrees in this time period you do not need ant adjustment to pre-heater setting. If not, or if it exceeded 150°C, you should adjust the off-set to reed TC1 temperature as close as possible to the one set on the display.
10. Repeat this cycle 2 or three times to adjust the offset and acceleration time properly.
11. Cool down the board to room (or close to room) temperature before you start profiling of the Top Heating.
12. Refer to SMT-ServiCE Manual to learn about the unit.
13. Turn-off the SMT ServiCE and once again check if the system hardware is connected properly.
14. Turn-on power switches on both SMT-ServiCE and FOCUS”X1”
15. Check that all the thermocouples (one through six) are in place, and the position of the XHT-15 tool nozzle over the component. If all is aligned well proceed with system run to establish the most suitable profile.

4. TOP HEATER PROFILE DEVELOPMENT

1. Start the process by pressing Start/Stop key on the control panel of FOCUS ”X1” or press the XF-1 foot switch.
2. Monitor the process and record the six thermocouples temperatures in 15 seconds intervals. Stop the system if the PCB temperature (T/C #1 reading) approaches 180°C.
3. Do not stop the machine, nor make any parameter changes during the first run.
4. Analyze the data and optimize parameters for reliable rework as follows:
   a) Maximum temperature at any location on the board should not exceed 210°C. (For lead free solders this temperature should not exceed lead free solder melting temperature + 15°C)
   b) Minimize temperature differential across the component to less than 15°C
   c)Time above 183°C should be between 30 - 60 seconds (depending on the mass of your component and number of layers of your board).
5. Depending on your time restriction, optimize the rework cycle time. Utilize the pre-heat as much as possible (150°C on the bottom of the board is quite acceptable). If you can, <u>use top air temperature settings lower and choose zone times longer</u>. This is always safer for your boards. Especially when you are doing the rework for the first time.
6. Adjust process parameters as needed, and run the cycle again to confirm that your chosen profile parameters are the best for your board and the component.

Write the profile parameters and number this profile. Store the profile in FOCUS “X1” memory under the same number to re-call it and re-use it every time when you rework the same board and the same component.

5. Use the same sequence as used for profile development during components removal from the boards.

You will not need to experiment with profile development once you have the profile for the board and the component. Just re-call the profile from FOCUS”X1” and set desired offset on the pre-heater. With time, each system operator will learn how to estimate the profile parameters on the basis of knowledge of boards and components.

Component placement

Board Preparation

Prepare the land pattern as per your company specifications. The most widely used methods are as follows:

1. Pre-fill - The PCB land pattern is pre-filled using a soldering iron. Care must be taken to insure that all lands are tinned with an equal deposition of solder (provides a uniform appearance).
2. Solder Paste - Apply an equal amount of solder paste on each land using a solder paste dispenser to control deposition. Take care to insure that the proper amount of paste is dispensed. If too much paste is applied, solder bridges will form on the lands. If an insufficient amount of paste is applied, solder joint formation will be unacceptable (open/starved joints). The PCB assembly (or rework area) should also be preheated (in accordance with your company requirements) after solder paste deposition to remove any volatiles (e.g., solvents) in the paste. The X-1001 or SMT-ServiCE system is highly recommended for this preheating application.

Component Positioning

The X-FineRework series system has the capability of placing many SMD components properly. In some instances however, the user may prefer to position a component and solder tack it in place prior to final soldering. The following procedure is extremely useful when installing leaded components.

1. Using a X-KAR vacuum pick-up pencil (vacuum holding device) or tweezers for handling or holding, position the component leads to align with the land areas.

NOTE

A flux paste may be applied to corners of the PCB land pattern to temporarily hold the component in place.

2. Using a soldering iron with a fine pointed tip, tack two or more lead to land locations at opposite corners of the component. This will provide stability during subsequent handling throughout the soldering process.

Preheating

Preheating of a printed circuit assembly is normally required in the repair process whenever any one or more of the following situations exist.

1. Epoxy glass substrate with 4 or more layers.
2. Substrate with large ground planes.
3. Substrate of ceramic, polyimide or other high heat dissipative material.
4. Printed circuit assembly with large metal heat sinks.

Preheating of assemblies such as those listed above will accomplish the following objectives.

1. Minimize thermal shock by elevating the assembly temperature to a level closer to solder melt temperature.
2. Minimize the heat cycle reflow time.
3. Overcome the heat dissipation characteristics of the assembly.
4. Minimize adjacent melts on densely populated assemblies.

The assembly undergoing repair must be heated for a length of time sufficient to saturate at the preheat temperature required. The PCB preheat temperature normally used is 100°C (212°F) for epoxy glass substrates and 120°C (248°F) for ceramics and polyimides.

Although many different methods such as ovens and preheated plates may be utilized to accomplish the required results, the user must employ a method, which heats the assembly as evenly as possible and can be employed with the Focus unit. The preheat temperature should also be maintained throughout the Removal/Replacement process. X-KAR recommends the use of its X-1001 or SMT-ServiCE system for this purpose.

Component Removal

Install the proper Nozzle and Vacuum Cup onto the hand tool.

1. Set the unit POWER Switch to the ON position.
2. Press and release MODE Key as necessary until the display show Lt.88 6o.
3. Adjust the Set Temp as desired using the UP and DOWN keys. Press and hold the key; observe the Digital Readout as the Set Temperature increases (or decreases).
4. Adjust the Air Flow as desired using the Air Flow Control.
5. Press and release Vacuum Switch to activate vacuum.

NOTE

As an alternative to the component placement methods shown below in steps 7 through 10, the component (except BGAs) may be positioned and solder tacked in place on land pattern. See “Component Positioning”.

6. Position replacement component directly beneath and square to nozzle.
   a) When using BGA/CSPs, QFP/BQFPs or PLCCs nozzles, insert component body into the bottom of the nozzle. BGA components will rest against the walls of the nozzle.
   b) When using SO/SOLs or SOJs nozzles, position component leads beneath and in line with the air jets on the nozzle.
   c) When using a discrete nozzle, position the component on its land pattern (pre-filled or with solder paste deposition). Solder tack lead(s) if necessary.
7. If using a discrete nozzle proceed to step 13.
8. Using the vacuum tube adjuster on the hand tool, adjust the vacuum cup to a point where the bottom of the vacuum cup touches the component body. The component is now held in position with the vacuum cup.
9. Using the vacuum tube adjuster, adjust the position of the component
   a. to a spacing (depending on component) of 1-1.5mm (.040-.060”) between the bottom of the component and the bottom of the nozzle when using a QFP/BQFP, PLCC, SO/SOL or SOJ nozzle.
   b. to contact a BGA component when using a BGA/CSP nozzle.
10. Lower nozzle (with component) to a point where the component leads/contacts rest gently on or just above the component land pattern.

NOTE

If component has been pre-positioned on land pattern, lower nozzle to desired height above PCB. A height of 1-1.5mm (.040-.060") above the PCB when using QFP/BQFP, PLCC, SO/SOL or SOJ nozzles is recommended.

11. Ensure that the hand tool is held vertical to the PCB (except with discrete nozzles).
12. For discrete nozzles, hold the end of the nozzle tube above the rework area at a height and angle, which gives the best results in your particular application.

NOTE

Any required preheating should be completed before advancing beyond this point.

13. Press and release the hand tool heater switch to activate heat cycle. Heated air is now being applied to the rework area.
14. If using a discrete nozzle in a hand held operation, move the hand tool as necessary to direct air flow to the solder areas requiring reflow.
15. If vacuum is being used to hold component, press and release the vacuum switch to stop vacuum and release the component.
16. When complete solder melt is observed, press and release the hand tool heater switch and gently lift the hand tool from the PCB.

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