



INSTRUCTION MANUAL

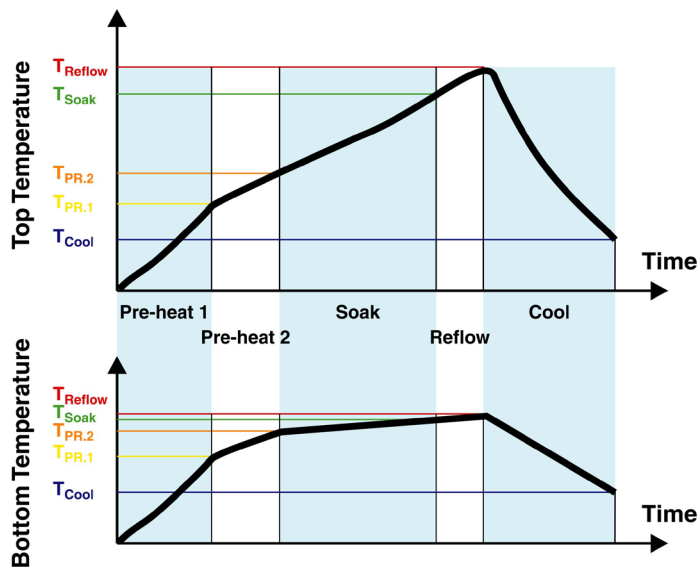
FOCUS “A+” SERIES

Programmable SMT Rework/Repair Unit / X-Rework Controller

The Unit offers the economical solution for sophisticated Rework.

Mature PCB Assembly and Rework industry of the new millennium requires reliable, accurate and not over priced tools for precision service and rework, which fulfill all the requirements of Process Control.

FOCUS “A+”, the newest system in the industry, offers total process control and best performance among convection Rework/Repair Tools. As the only system in the industry today in its class can pre-program both top and bottom heating. It is simple and easy to use. It has five time/temperature zones to accommodate lead-free solder profiling requirements (four heating and one cooling zone) and when used in conjunction with X-1000 Series or SMT-ServiCE units offers 5-zone and 10 top-bottom temperature control of the rework process.



Rework of any component using FOCUS “A+” is not a burden but an easy, routine repair/service task without worries that not careful or new on the job operator will damage the board during the Rework operation.

User programmable offset and pre-programmed bottom heating enable temperature accuracy and repeatability not found in any tools offered by other brands.

Patented in US, Japan and in Europe

US Patent #: 6,761,304 Issued July 13, 2004

Japanese Patent #: P2002-118358A

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FOCUS "A+" Programmable SMT Rework/Repair Unit / Rework Systems Controller

Patented in USA, Japan and in Europe.

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I. INTRODUCTION



FIG. 1 VIEW OF THE SYSTEM

Thank you for purchasing FOCUS"A+" Programmable SMT Rework/Repair Unit / Rework System Controller

BOKAR International retains the right to make changes to specifications contained herein at any time, without notice. Please contact your local authorized Distributor or Bokar International to obtain the latest specifications.

This manual will provide you with the information necessary to properly set up, operate and maintain the FOCUS"A+" unit. Please read this manual carefully before using the system.

The Unit was designed to offer a low cost solution for sophisticated Rework. Mature PCB Assembly and Rework industry of the new millennium requires reliable, accurate and not over priced tools for precision service and rework, which fulfill all the requirements of Process Control. FOCUS "A+" the newest system in the industry worldwide offers total process control and best performance among convection Rework/Repair Tools. FOCUS "A+" Digital SMT Convection Rework System has been designed to perform safe and efficient rework of SMD and BGA components. Microprocessor Profile Controller allows the operator to select or pre-program the appropriate removal or replacement profile and start the rework sequence. Removal and replacement profiles can be stored, recalled and edited with the touch of a button, or to guarantee process control. The profiles can be locked to eliminate operator adjustment. Programming is user friendly and can be learned in a matter of minutes. It is simple and easy to use. It has five time-temperature zones (four heating and one cooling zone) and when used in conjunction with SMT-ServICE or X-1000 Series preheating units offers 6-zone control of the rework process.

II. 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
XX

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 FOCUS"A+" hand-piece's 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!
2. Utilize all standard electrical safety precautions when using this or any other electrical equipment.
3. 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.
4. Exercise proper precautions when using chemicals (e.g., solder paste). 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 all 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 X-KAR replacement parts.

III. PACKAGING

The box contains as follows:

1. FOCUS "A+" Base Unit
2. XHT-12 Hot Air Tool
3. XTH-1 Tool Holder for XHT Series
4. Manual
5. Guarantee card

IV. 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!

V. GENERAL INFORMATION

FRONT PANEL

1. **POWER Switch**
Turns the system ON and OFF. Green light indicates that the system is ON.
2. **Air Flow Control**
Turn right to increase airflow or left to reduce airflow.
3. **Air Flow Meter**
Shows air flow in l/min
4. **Digital Control Panel**
Please see below.

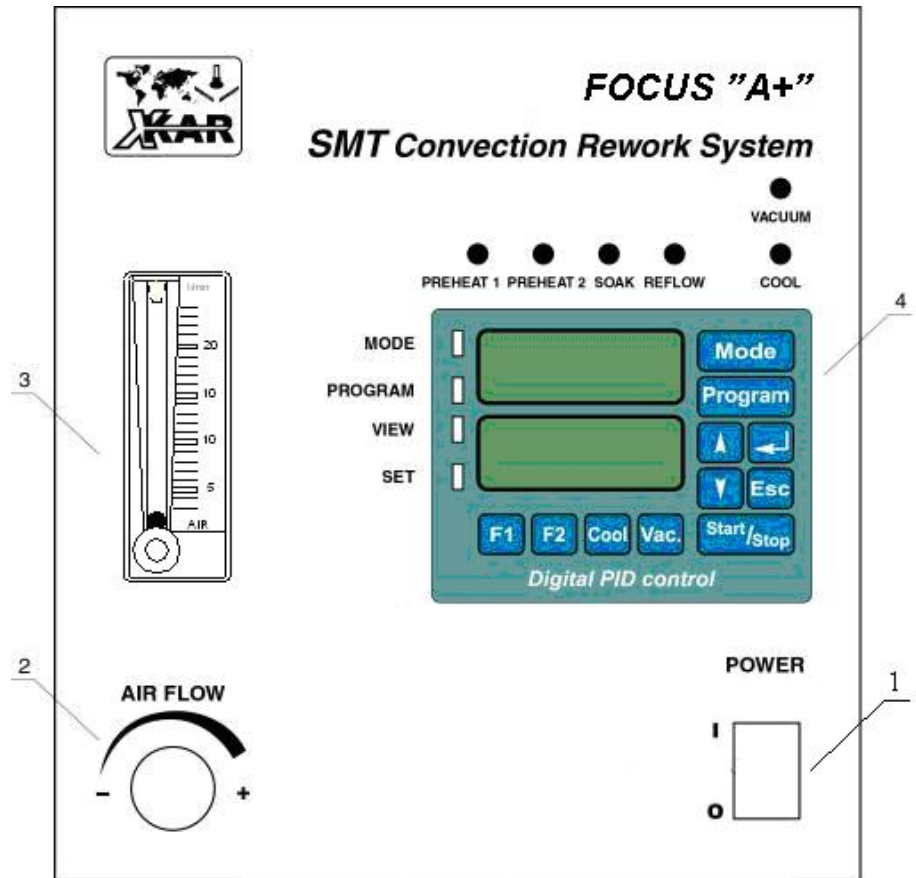


FIG. 2 VIEW OF THE CONTROL PANEL

BACK PANEL

1. **AC power receptacle**
Provides AC power to the system through a power cord.
2. **Fuse holder**
Contains a fuse for overload protection. 20 mm type fuse (value depends on AC supply 8A for 115V and 5A for 230V supply)
3. **XHT-12 out (Air / Vacuum and Heater Connections)**
Supply of air and vacuum to the hand piece.
4. **X-DataStore**
PC Interface used for Firmware Upgrades
5. **Pre-heater connector**
Allows for connection of FOCUS "A+" to X-1001 Series, X-600 pre-heaters and other bases. This way FOCUS"A+" can control bottom preheat.
6. **Foot switch connector** – Foot switch connected to the unit turns the hot gas ON and OFF and allows for cycle advance in Place and Lift modes.

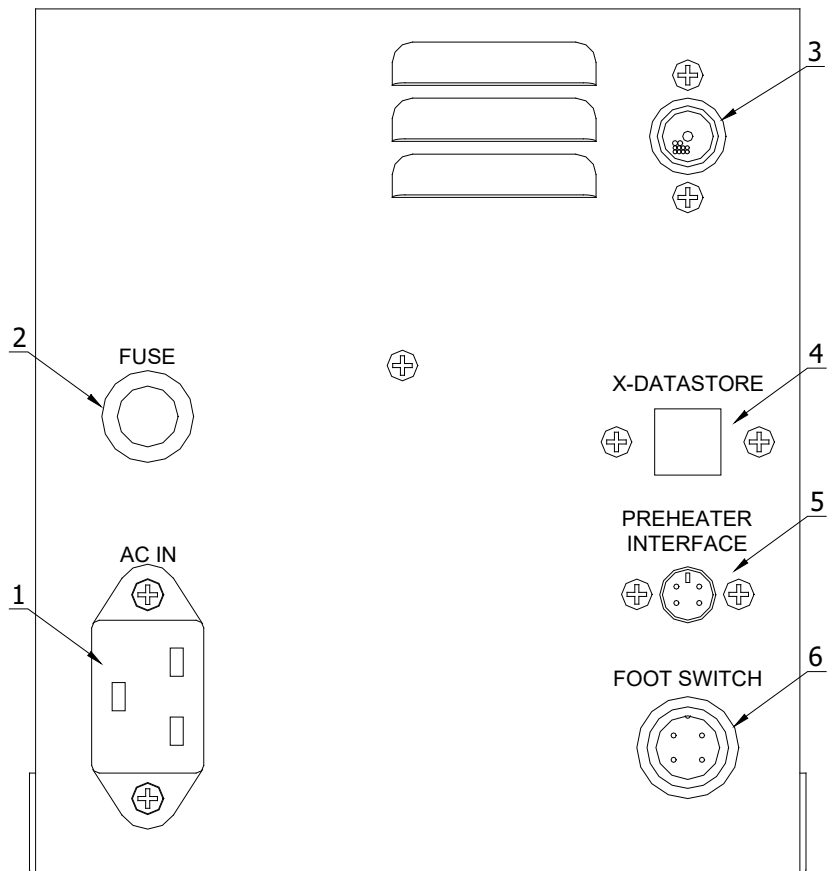


FIG. 3 VIEW OF THE BACK PANEL

DIGITAL CONTROL PANEL

1. **Set indicator** - Illuminates Green when the system is in **Set** mode of operation.
2. **View indicator** - Illuminates Green when the system is in **View** mode of operation.
3. **Program indicator** - Illuminates Green when the system is in Program **change** mode of operation.
4. **Mode indicator** - Illuminates Green when the system is in **Mode** change of operation.
5. **Preheat 1 indicator** - Illuminates Red when the system is in the first preheat zone.
6. **Preheat 2 indicator** - Illuminates Red when the system is in the second preheat zone.
7. **Soak indicator** - Illuminates Red when the system is in the soak zone.
8. **Reflow indicator** - Illuminates Red when the system is in the reflow zone.
9. **Cool indicator** - Illuminates Red when the system is in the cooling mode.
10. **Vacuum indicator** - Illuminates Red when vacuum is ON.

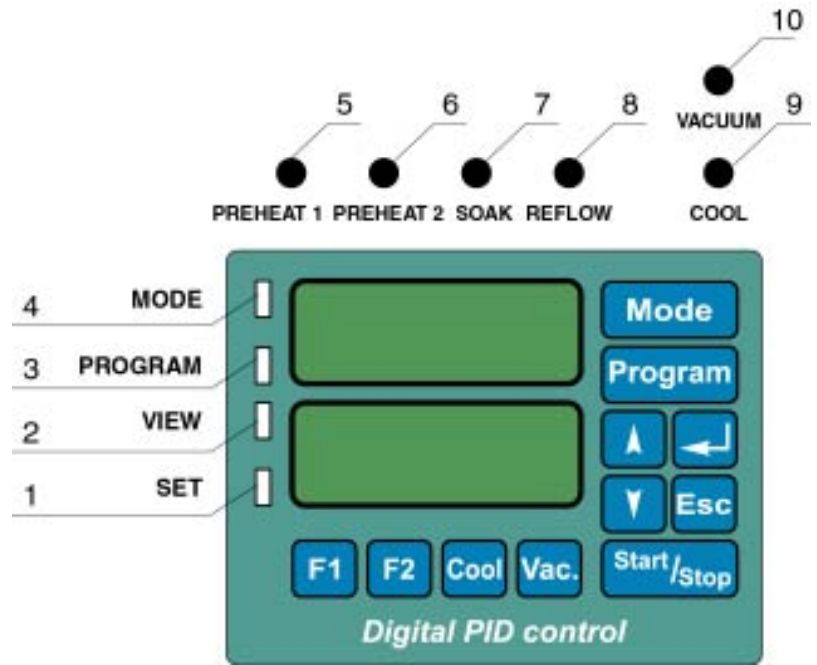
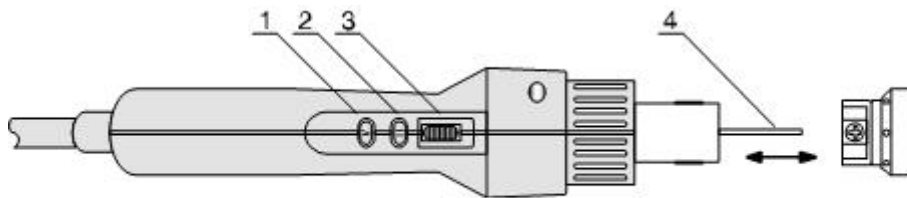


FIG. 4 VIEW OF THE DIGITAL CONTROL PANEL



XHT-12

XQF Quick Connect

FIG. 4 VIEW OF THE HAND PIECE

HAND PIECE

1. **Heater switch** – Turns power to the heater ON and OFF or pauses the cycle. Customer choice. Function of this switch is programmable from the front keyboard.
2. **Vacuum switch** – Turns vacuum ON and OFF.
3. **Vacuum tube adjuster** - Provides a vacuum tube positioning at operator fingertips. Turn up to lift the tube up or down to lower the tube.
4. **Vacuum tube** – When equipped with a vacuum cup (XVCW Series) provides the means to lift a component after de-soldering it from the board. Can be used to hold a component to be placed on the board (method not recommended for fine pitch but often used with great success).

VI. SET-UP AND INSTALLATION

ELECTRICAL REQUIREMENTS

The FOCUS "A+" unit consumes 500 Watts of power. If your power outlet cannot provide suitable power, arrange for a qualified, licensed electrician to install one for you.

SET-UP

1. The system should be located on a stable work surface.
2. Mount the Hand piece holder on the right or left side of the FOCUS "A+" base unit.
3. Tools required: Flat screwdriver,
4. Place XHT-12 hand piece into XTH-1 Tool Holder or XK-Series holder.
5. (Options) Connect XFS-1 foot switch to the connector on the back panel of the FOCUS"A+" base unit.
It activates cycle advance feature, which is very useful during component placement and removal.
6. Select proper nozzle to match the component you need to rework.
7. Install the nozzle onto the XHT-12 tool.
8. Connect AC power to a suitable AC power outlet.

VII. SYSTEM DESCRIPTION AND APPLICATION

FOCUS"A+" Digital SMT Convection Rework System has been designed to perform safe and efficient rework of SMD and BGA components. Microprocessor Profile Controller allows the operator to select or pre-program the appropriate removal or placement profile and start the rework sequence. Removal and placement profiles can be stored, recalled and edited with the touch of a button to guarantee process control. The profiles can be locked to eliminate operator adjustment. Programming is user friendly and can be learned in a matter of minutes.

FOCUS"A+" offers 3 modes of operations: Lift Mode with 1 pre-programmed removal profile and 3 user programmable profiles, Placement Mode with 1 pre-programmed profile and 3 user programmable profiles and Hand Mode with pre-programmed maximum temperature and 3 user programmable pre-set maximum temperatures.












Lift and Place Modes offer **five (5)** time/temperature zone control + pre-programming of temperature settings of the the bottom preheater in each of the 5 zones.

The system has several unique features, which make rework more accurate, safer and consuming less of valuable time.


Features:

- Simple and cost effective nozzle design allows for duplication of the original assembly reflow profile.
- Quick Connect (twist and lock method) to attach and detach the nozzles.
- Ergonomically designed, ESD Safe hand piece with the following advantages:
 - o Heater and vacuum ON-OFF Switches. Heater switch either stops or pauses the cycle. Can be pre-programmed either way from a front panel keyboard.
 - o Vacuum tube positioning at operator fingertips.
 - o Angled top to reduce cable pull during hand held operations.
- Vacuum pick-up tube and pads to lift-off the component at the end of reflow cycle.
- Allowance for storage of thirty-one - (1 factory set and 3 user programmable) profiles in each mode.
- Operator controlled (Hand) Mode with programmable maximum temperature.
- 3 modes of operations: Lift Mode, Placement Mode and Hand Mode. Each mode has one pre-programmed profile and 3 user-programmable profiles.
- 5 time/temperature zones for each profile PREHEAT 1, PREHEAT 2, SOAK, REFLOW and COOL DOWN
+ a possibility to pre-program bottom pre-heat temperature in each zone.
- Foot Switch-activated Cycle Advance, to override pre-programmed zone timing.
- Operator choice of temperature scale (Celsius or Fahrenheit).
- Locking Function to protect against unauthorized parameters change.
- User accessible offset adjustment for a particular nozzle to obtain extremely accurate display of hot air temperature at the end of selected nozzle.
- The Unit was designed to offer the best price/performance ratio in the industry for the system capable to handle sophisticated Rework.



Description of Front Panel Key Pad Functions and Programming

	MODE key allows selecting the MODE or changing the MODE.
	PROGRAM key allows selecting the PROGRAM or changing the program to the next one.
	UP and DOWN keys change viewed parameter during parameters preview, increase or decrease the value of parameter during its modification.
	ESCAPE key allows for cancellation of the action in progress (e.g. modification of a parameter). Also it allows leaving the VIEWING or MODIFICATION mode. Also, instantly ends the profile cycle.
	ENTER key allows for confirmation of new parameter value, selected MODE or PROGRAM number. Also, when the system is pre-programmed and ready for operation (Top display shows Mode and Program number and bottom display shows "Go") pressing ENTER key will access directly <u>Nozzle Offset entry mode</u> .
	START/STOP key allows starting and pausing the process. The process can also be started or paused by pressing "Heat" Switch on the Hand piece (if this switch was pre-programmed this way). To end the process after pausing it, the "ESC" key on the keyboard needs to be pressed.
	F1 key allows viewing the values of parameters of the MODE and PROGRAM currently selected at the time of pressing F1 key.
	F2 key allows entering modification mode of currently viewed parameter.
	Keys F1 and MODE, when pressed together for more than 0,5 sec. allow to enter the <u>user menu</u> which allows to set system parameters.
	COOL Key, when pressed, turns on the air pump at any time. During the execution of thermal profile, pressing the COOL Key advances the profile immediately to a cooling zone.
	VAC. Key turns ON and OFF vacuum pump. Vacuum Pump can also be turned ON and OFF by pressing the "Vacuum" Switch on the hand piece.

System Operation

When the system is turned "ON" the display shows  for about 1 second. After 1 second the display will show MODE and PROGRAM, which was used last, before the system was "turned off".



The Modes to choose from are as follows:

  **Hand Mode** is the mode in which the operator controls process time. The process time may be controlled in three different ways or in any combination of the three ways. The process may be started and stopped from the main keypad, the hand piece or the foot switch.


KEYPAD – Pressing the start/stop key the first time will start the process and pressing it again will pause the process. Press escape to end the process completely.



HAND PIECE – Pressing the "H" button the first time will start the process and pressing the "H" button a second time will stop the process completely.

FOOT SWITCH -- Pressing the foot switch the first time will start the process and pressing the foot switch a second time will stop the process completely.


  **Automatic Place Mode** in which the duration of each zone and temperature of both top heating and bottom heating in each zone (if FOCUS"A+" works with X-KAR Pre-heater Base) are pre-programmed and controlled automatically by microprocessor. Precisely pre-programmed cycle (profile) can be repeated every time the operator presses the Foot Switch, Heat Switch on the Hand-piece or Start/Stop key. There is one (1) pre-programmed sample profile and 30 user programmable profiles to be used by the operator as needed.

During an automatic cycle (the duration of a profile) an operator has four additional options:

- he/she can stop and pause the process by pressing Start/Stop key on the control panel keyboard and re-start it again from the point where he/she stopped it by pressing the Start/Stop key again.
- he/she can advance to the next zone (skip time left to the end of the zone) by pressing the Foot Switch.
- He/she can either: c1) stop and pause the cycle, or c2) end the profile by pressing the heater ("H") pushbutton on the hand piece. C1 or C2 functions can be pre-programmed by the operator using front panel keyboard.
- he/she can press  key to end the process (profile) at any time during the duration of a profile.






  **Automatic Lift (Remove) Mode** in which duration of each zone and temperature of both top heating and bottom heating in each zone (if FOCUS"A+" works with X-KAR Pre-heater Base) are pre-programmed and controlled automatically by microprocessor. Precisely pre-programmed cycle (profile) can be repeated every time the operator presses the Foot Switch, Heat Switch or Start/Stop key. There is one (1) pre-programmed sample profile and 3 empty profiles to be programmed by the user as needed. In LIFT MODE, the vacuum Pump is activated automatically at the start of a cycle. If needed, pressing the vacuum switch either on the keypad or on the hand-piece can turn vacuum OFF.


During the automatic cycle (the duration of a profile) an operator has three additional options:

- he/she can stop the process by pressing Start/Stop key on the control panel keyboard and re-start it again from the point where he/she stopped it by pressing the Start/Stop key again.
- he/she can advance to the next zone (skip time left to the end of the zone) by pressing the Foot Switch.
- He/she can either: c1) stop and pause the cycle, or c2) end the profile by pressing the heater ("H") pushbutton on the hand piece. C1 or C2 functions can be pre-programmed by the operator using front panel keyboard.
- he/she can press  key to end the process (profile) at any time during the duration of a profile.

MODE or PROGRAM cannot be changed when the profile cycle is in progress.

Pressing either MODE or PROGRAM key during the profile cycle in progress (or during parameter change) will display actual Mode and Program for 2 sec.

It is possible to change the parameters of the PROGRAM, which is actually run by pressing  key to view pre-set value and  key to access parameter change. At this point, parameter can be changed by using  Up and  Down arrows to set required value and confirming the change by pressing .

One can decide not to change the parameter value during the process of changing. At this point one can press  key to return to the original parameter value.

PROGRAMMING OF THE UNIT

CHANGING OR VIEWING SYSTEM SETTINGS

1. Press **F1** and **Mode** key simultaneously for about 2.5 seconds. The displays will show **USER** **SET**. After few seconds, the displays show first system setting.
2. Settings can be viewed by using Pre-heater SET (UP or DOWN) keys.

<p>LOC</p>	<p>Lock Feature The lock feature is used to limit the accessibility of an operator to Machine settings. Changes may only be used when a 4-digit code is entered. OFF -- When set to OFF no code is needed to make changes. On -- When set to On a code is required to make changes. Factory setting: OFF. Please see below for more detailed information on this function.</p>
<p>Code CHG</p>	<p>Code Change See below for more information.</p>
<p>C-F</p>	<p>Temperature Display Setup °C -- Displays the current temperature in Celsius (°C). °F -- Displays the temperature in Fahrenheit (°F). Factory setting: °C</p>
<p>cnt</p>	<p>System Counting dn -- When set to dn the system will show the remaining time. UP -- When set to UP the system will display the elapsed time. Factory setting: dn</p>
<p>Prht</p>	<p>Preheater Interface Control Auto -- Focus "A+" takes full control of the preheater. OFF -- Focus "A+" will not take control of the preheater. OnOFF -- Focus "A+" will only turn the preheater ON/OFF Factory setting: Auto</p>
<p>SLOP</p>	<p>Temperature Rise / Time Allows the operator to control how the temperature and time interact in each zone. The machine code must be entered to make changes to this setting. no-- Means that the setting <u>in each zone</u> is: top temperature, bottom temperature and the zone time. This is TBT or Top-Bottom-Time mode. YES -- Means that the operator <u>can set in each zone</u>: 1. top temperature, 2. bottom temperature, 3. time in which temperature should rise to the set temperature, and 4. time during which the system should hold the set temperature. This is TBrH or Top-Bottom-Rise-Hold mode.</p>
<p>HPb1</p>	<p>Hand Piece H Button Programming Option SEnd -- When set to SEnd the button operates as ON/OFF switch. SStP -- When set to SStP the button operates as pause push-button. Factory setting: SEnd</p>
<p>HPb2</p>	<p>Hand Piece "V" Button Programming Option. VAC -- When set to VAC the hand piece button will control the vacuum pump and turn it on and off. COOL -- When COOL is selected the button will turn the cooling on and off. Factory setting: VAC</p>

Sound	<p>Sound ON/OFF</p> <p><input type="checkbox"/> On -- When set to ON the beep will be heard when pressing keyboard keys.</p> <p><input type="checkbox"/> OFF -- When set to OFF the unit will not make any sound.</p> <p>Factory setting: <input type="checkbox"/> On</p>
End	Exits system settings.

Protection against unauthorized change of pre-programmed parameters

When system is unlocked system feature LOC is set to OFF. All parameters and system features can be altered without restrictions. When system feature LOC is set to On, the system will ask for a code number when someone will try to change pre-programmed values.

The Display will show: Code 0000 (First digit blinking). To unlock the system, previously selected code number must be entered. If incorrect value of the code number is entered, the display will show Err and sound will be heard for about one second. The system will re-set to the state it was in before an attempt to change the parameter. Properly entered code will unlock the system and allow for parameters change until the system is locked again or until the system is turned-off by ON/OFF switch (or by unplugging the unit from the wall outlet). It is sufficient to enter an appropriate code once during the time when the system is powered.

Changing the CODE:

Code CHG has to be selected in system parameters menu (F1 + MODE). Then, key F2 must be pressed. The display will than show ccod ---- (old code). Previously used code number must be entered and ← key pressed. The display will show ncod ---- (new code) and a new code number chosen by the user has to be entered. Display then will show REPE ---- and a new code has to be keyed in one more time. This new code will now be remembered by the system.

Special CODE numbers used by the system:

1234- factory set code on delivery of the system to a customer.

XXXX- „emergency code“; (call or e-mail Bokar International to obtain it. Proof of purchase will be required to release this code). This code will allow changing the code when entered in place of the old code.

YYYY- „master code“; this is manufacturers code which can be used in parallel or instead off the user code. Use of the “master code” does not interfere with currently used code number.

USING PREHEATER CONNECTED WITH FOCUS "A+"

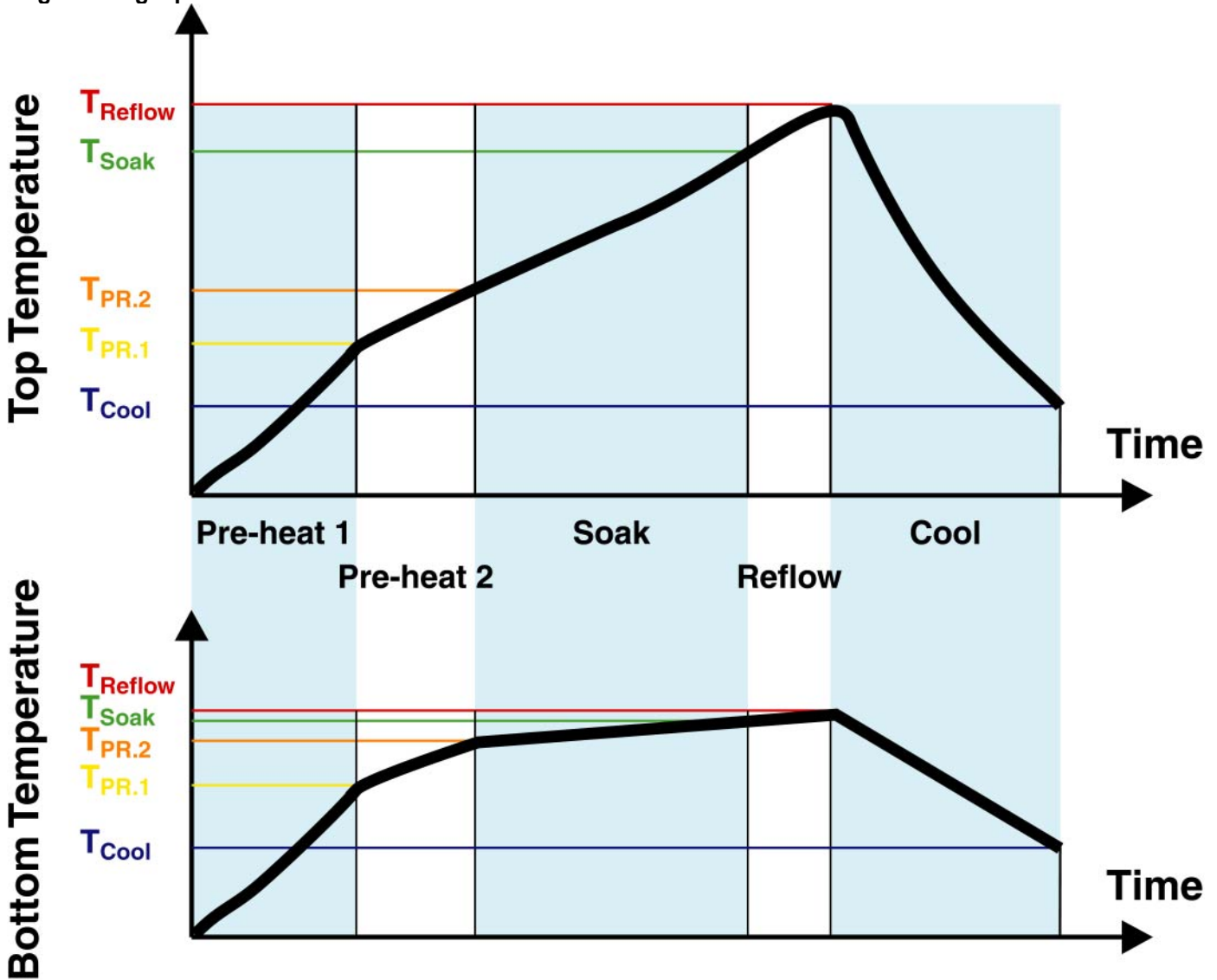
1. To connect SMT-ServiCE with FOCUS"A+" Unit:
 - a. turn SMT-ServiCE and FOCUS "A+" Units "OFF".
 - b. Insert one end of the XCB-1 cord into Remote control socket located on the back panel of the SMT-ServiCE and the other end of the cord into pre-heater connector located on the back panel of the FOCUS "A+" Unit.

NOTE
Turn "ON" SMT-ServiCE before you start the process from the FOCUS "A+" control panel.

WARNING
When SMT-ServiCE is connected to the FOCUS "A+" Unit, the pre-heater is locked and the Pre-heater On/Off key located on its front panel will not turn the pre-heater "ON".

2. Turn the SMT-ServiCE and the FOCUS"A+" Unit "ON".
3. Check PRH system setting in FOCUS unit.

Programming a profile



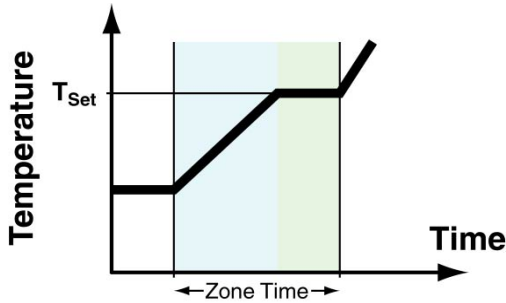
For each zone the following values can be set:

1. top.t – Top temperature. Temperature of hot gas at the end of the nozzle installed on XHT-12 (FOCUS "A+" Hand piece). Value can be set between 70-450 °C.

FOCUS "A+" Programmable SMT Rework/Repair Unit

2. bot.t – Bottom temperature. Temperature of the preheat of the PCB by hot gas from the pre-heater base (SMT-ServiCE or X-1001 Series). Value can set between 70-150 °C. Note: **This is not the air temperature. This is desired temperature on the PCB.**
Pre-heater can be off if the setting during programming the profile is selected to be OFF.
Note: This option is available only when pre-heater control in SYSTEM SETTING menu is set to "AUTO".
3. rISE – Time temperature rise - When temperature rise time is set to any value greater than 0 (zero), the heating process will try to reach set temperature in this pre-set time. To disable this function set time to 0 (zero). Value can be set between 0-240 seconds.
4. HOLd – Time to hold the set temperature. When temperature hold time is set to any value greater than 0 (zero), the heating process will maintain temperature during this pre-programmed time. To disable this function set value to 0 (zero). Hold time can be set between 0-240 seconds.

NOTE
In cooling zone one can only set time to turn off.



Picture on the left shows temperature rise or drop and temperature hold time

- Time of temperature rise
 - Time in which the system holds temperature at the same level
- T_{Set} – Set temperature in the zone
Zone Time = Time of temperature rise + Time to maintain temperature

NOTE
Time duration of the zone is the sum of temperature rise time and the time of temperature holding.

NOTE
When profile control in USER SETTING menu is set to "NO SLOP" only zone time can be pre-programmed.

See below HOW TO PRE-PROGRAM A PROFILE

Mode change; (Led.1 is „ON”)

Mode	Pressing "Mode" key will recall actually used MODE. Pressing "Mode" again will advance mode sequentially in a close loop.
LIFE	Automatic Lift Mode
PLACE	Automatic Place Mode
HDFE	Hand Mode
↵	Pressing "ENTER" key ends MODE change
Esc	Pressing "Esc" key also ends MODE change
F1	Pressing "F1" key ends MODE change and enables viewing of pre-set parameters
F2	Pressing "F2" key ends MODE change and enables change of the first parameter in a given MODE and a given PROGRAM
Start/Stop	Pressing "START" key ends MODE change and starts the process



Program change; (Led.2 is „ON”)

Program	Pressing "Program" key will recall actually used PROGRAM. Pressing "Program" key again will advance the PROGRAM sequentially in a close loop. One pre-programmed value is fixed (Program 1) and 3 other PROGRAMS are user programmable (programs 2, 3, 4)
↵	Pressing "ENTER" key ends PROGRAM change.
Esc	Pressing "Esc" key once returns to the PROGRAM number before initiated change. Pressing "Esc" key the second time also ends the PROGRAM change.
F1	Pressing "F1" ends PROGRAM change and enables viewing of pre-set parameters




FOCUS "A+" Programmable SMT Rework/Repair Unit

F2	Pressing "F2" ends PROGRAM change and enables change of the first parameter in a given PROGRAM
Start/Stop	Pressing "START" key ends PROGRAM change and starts the process



Viewing pre-programmed values and functions (Led.3 is "ON")

F1	Pressing "F1" key will allow viewing first parameter. Pressing "F1" key or  key will advance viewed parameter sequentially in a close loop. Pressing  will scroll the parameters in reverse.
F2	Pressing "F2" stops viewing and enables a change of the viewed parameter
Esc	Pressing "Esc" key ends parameters viewing mode
Program Mode	Pressing "MODE" or "PROGRAM" enables viewing of current MODE or PROGRAM
Start/Stop	Pressing "START" key ends parameters viewing mode and starts the process

Parameter value change (Led.4 is „ON")




	Pressing „arrow up" key will advance value sequentially in a close loop (value + 1)
	Pressing „arrow down" key will cause the system to go back to a lower value sequentially in a close loop (value - 1)
	Pressing "ENTER" key confirms new parameter value and will cause the system to go back to a parameters viewing mode
Esc	Pressing „Esc" key once returns to the parameter value before change. Pressing „Esc" key second time cause the system to go back to a parameters viewing mode
Program Mode	Pressing "MODE" or "PROGRAM" enables viewing of current MODE or PROGRAM
Start/Stop	Pressing "START" key ends parameters value change and starts the process
F2	Pressing "F2" allows to switch from temperature to time in the same zone

Viewing System Parameters (Led.3 is "ON")

NOTE: To access System Set-up Menu two keys must be pressed at the same time:  and  for longer than 1/2 of a second.

F1	Pressing „F1" key scrolls up through system parameters sequentially in a close loop
F2	Pressing "F2" key allows entry into a viewed system parameter change
Esc	Pressing "Esc" key ends system parameters viewing mode
Program Mode	Pressing "MODE" and "PROGRAM" enables viewing of current MODE or PROGRAM
Start/Stop	Pressing "START" key ends system parameters viewing and starts the process









System parameters modification after key is pressed (Led.4 is „ON")

	Pressing „arrow up" key will advance system parameters sequentially in a close loop
	Pressing „arrow down" key will cause the system to go back to a previous system parameter sequentially in a close loop
	Pressing "ENTER" key confirms new system parameter and will cause the system to go back to a system parameters viewing mode
Esc	Pressing "Esc" key ends system parameters viewing mode
Program Mode	Pressing "MODE" and "PROGRAM" enables viewing of current MODE or PROGRAM
Start/Stop	Pressing "START" key cancels current parameter modification and starts the process

Nozzle Offset Entry:

FOCUS "A+" Programmable SMT Rework/Repair Unit

When the system Mode and Program was selected and a nozzle was chosen, and the system lower display shows "Go" the nozzle offset can be entered.

- Press 
- The top display will show:  and the bottom display will show: . The displays will change in one second.
- After that the top display:  and the bottom display:  indicating pre-programmed offset in degrees Celsius or Fahrenheit (See above: Parameters, which may be pre-programmed).
- Enter required value (measured by you or taken from the table included in this manual) using up  and down  arrows.
- Press enter  to finalize offset number entry. The system will now adjust temperature settings to compensate for the temperature drop between the nozzle entering point and the point of air (or nitrogen) exit from the nozzle to solder or de-solder the component.

NOTE

Each program stores nozzle offset independently so that you can set different value for each program (in other words you can use different program for different nozzles).

Because each nozzle has different temperature drop, this offset compensation makes possible to achieve very accurate temperature control at the point of soldering.

System information

LED Indicator

- Led 1 – MODE change
- Led.2 – PROGRAM change
- Led.3 – Parameters viewing mode in a given Program
- Led.4 – Values or System parameter change

Red LED Indicators Showing Zone during the Process or viewing pre-programmed parameters:

- PREHEAT - Preheat Zones. This LED indicates both preheat zones. It blinks slowly in PREHEAT1 and stays all the time "on" in PREHEAT2
- SOAK - Soak Zone (to equalize the temperature across the component)
- REFLOW - Reflow Zone in which the solder melts.
- COOL - Cooling Zone (To cool the component after reflow for more reliable connections)

VIII. FIRMWARE UPGRADE

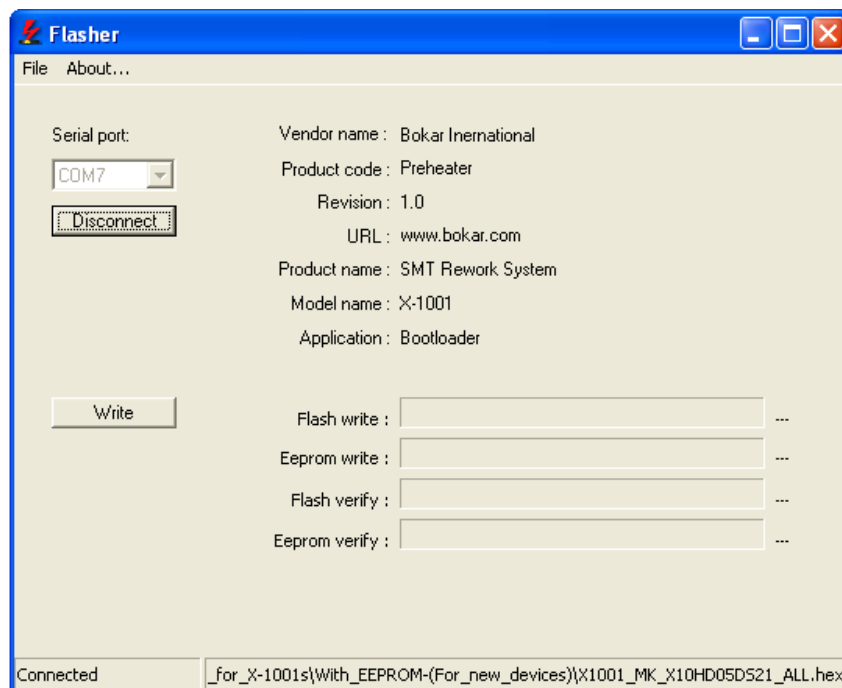
Checking firmware revision and SN in the device.

1. Connect the power cord
2. Turn the Power Switch to the "ON" position.
3. Press and hold "Esc" button.
4. After a few second the displays should show:

Top display	Bottom display (example values)	Description
Did	d06df	Device identifier
SoFt	02.39	Software revision
SN	545	Serial number

Reprogramming procedure

1. Turn the Power Switch to the "OFF" position.
2. Connect X485USB converter to the DATASTORE connector and to PC.
3. Press and hold "Enter" button on the device keyboard.
4. Turn the Power Switch to the "ON" position.
5. Release the "Enter" button.
6. Displays should show: "boot" "----".
7. Run program **flasher.exe** (from PC).
8. Select proper port number and press "Connect".
9. If connection is established You should see: "Vendor name: Bokar international"
10. If not please change port number and reconnect.



11. Select "File" from menu and choose file with firmware (*.hex).
For example for Focus X: "Focus_A_PLUS_X10HD05D_code.hex"
12. Press "Open"
13. Press "Write"
14. If re-programming went satisfactory you will see the message "Write successful. Would you like to run application?"
15. Press "Yes"

IX. TECHNICAL SPECIFICATIONS

Input Voltages	110-120 or 220-240V AC
Power Consumption	500W
Fuse	6,3A for 110-120V or 3,15A for 220-240V Slow-Blow 5mm x 20mm
Heater	Resistive, 450W line voltage
Heater Control	PID, Closed-Loop Thermocouple sensor feedback
Air Source	High efficiency diaphragm pump
Air Flow	Variable, 3 – 25 l/min, air flow controlled by the valve located on the front panel
Temperature	70 °C – 450 °C (158 °F – 842 °F)
Weight	5,5kg (12,2 lbs)
System dimensions	200mm x 300mm x 1800mm (7.9" x 11.8" x 7.1")
Packaged weight	7,5kg (16,6 lbs)

FOCUS "A+" pre-programmed Profiles

TOP SIDE HEATING

		Temperature		Time (s)
		°C	°F	
HAND MODE Program	Max. Temperature	350	662	-----
LIFT Program	Preheat 1	120	248	30
	Preheat 2	120	248	30
	Soak	150	302	30
	Peak	260	500	40
	Cool	100	212	120
PLACE Program	Preheat 1	100	212	30
	Preheat 2	100	212	30
	Soak	160	320	60
	Peak	240	464	60
	Cool	100	212	120

X. HOW TO PRE-PROGRAM A PROFILE

NOTE

If the pre-heater "control setting" is set to off in the system setting menu, you will not be prompted to set the temperature values for the pre-heater and the system will not turn the pre-heater on and off.

1. Connect the unit to appropriate power outlet.
2. Set the power switch to the "ON" position. (The switch will illuminate when it is in the on position.)
3. The TOP display will show "On" for about a second and then change and display the last mode and program number that was used before the unit was power off.
 E.g. Top display **LIFE** (Lift Mode)
 Bottom Display **POS** (Program #5)
4. Press the **Program** key to increment the currently display program by one. After you have pressed the program key the initial time the program indicator will illuminate. You may continue to press the program key to move to the next program or you may use the **▲** or **▼** arrow keys.
5. Once you have the appropriate program number displayed press the **◀** key to select the program.
6. Press **F1** key to display the first parameter of the program. (see the chart below for a list of parameters in each mode.)
7. Use **▲** or **▼** arrow keys to move to and display the parameter you wish to change.
8. Press **F2** to select the parameter.
9. Using **▲** or **▼** arrow keys to change the value of the parameter that you have just selected.
10. Press **↵** key to save the value that you have just change for a given parameter. This will also return you to the parameter menu.
11. Repeat steps 10 thru 13 to change additional parameters.
12. After you have finished making changes press **Esc** key to end the parameter viewing mode.
13. You are now ready to run this program or make changes to another one.

FOCUS "A+" Program Parameters Tables.

SLOPE OFF Tables:

Listed below are three tables, which show the program variables for each of the three modes.

We have included variables that may be utilized as a starting point for your new programs.

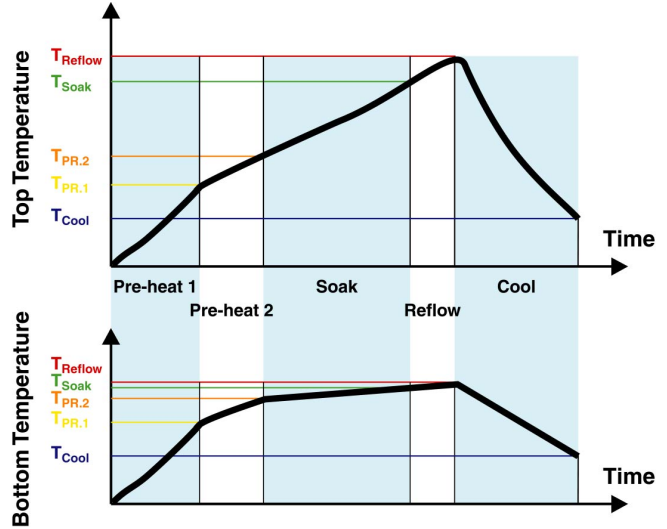


Table 1a		
FOCUS "A+" LIFT		
User Set Menu: SLOP set to NO		
Displayed Value when programming after F2 is pressed		
Top Display (alternating)		Bottom Display
Function	Zone	Set Value
Prht		YES
toP.t	Pht.1	100
bot.t	Pht.1	100
SEC	Pht.1	60
toP.t	Pht.2	140
bot.t	Pht.2	140
SEC	Pht.2	30
toP.t	HEAt	160
bot.t	HEAt	150
SEC	HEAt	60
toP.t	rEFL	260
bot.t	rEFL	off
SEC	rEFL	60
toP.t	COOL	100
bot.t	COOL	30
SEC	COOL	120
OFFS		0

Table 2a		
FOCUS "A+" PLACE		
User Set Menu: SLOP set to NO		
Displayed Value when programming after F2 is pressed		
Top		BOTTOM
1st	2nd	Start
Prht		YES
toP.t	Pht.1	100
bot.t	Pht.1	100
SEC	Pht.1	110
toP.t	Pht.2	130
bot.t	Pht.2	130
SEC	Pht.2	80
toP.t	HEAt	160
bot.t	HEAt	150
SEC	HEAt	120
toP.t	rEFL	260
bot.t	rEFL	off
SEC	rEFL	90
toP.t	COOL	100
bot.t	COOL	100
SEC	COOL	120
OFFS		0

Table 3a		
FOCUS "A+" HdFt		
User Set Menu: SLOP set to NO		
Displayed Value when programming after F2 is pressed		
Top		BOTTOM
1st	2nd	Start
Prht		YES
toP.t	refl	350
bot.t	refl	150
ACLt		90
OFFS		0

FOCUS "A+" Programmable SMT Rework/Repair Unit

SLOPE ON Tables:

Listed below are three tables, which show the program variables for each of the three modes.

We have included variables that may be utilized as a starting point for your new programs.

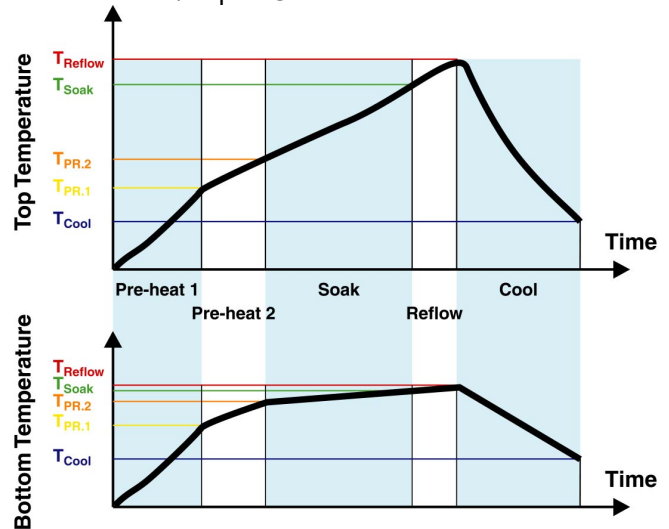
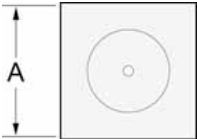


Table 1b		
FOCUS "A+" LIFT		
User Set Menu: SLOP set to YES		
Displayed Value when programming after F2 is pressed		
Top		BOTTOM
1st	2nd	Prog 1
Prht		YES
toP.t	Pht.1	100
bot.t	Pht.1	100
rISE	Pht.1	90
HOLd	Pht.1	20
toP.t	Pht.2	130
bot.t	Pht.2	130
rISE	Pht.2	50
HOLd	Pht.2	30
toP.t	HEAt	160
bot.t	HEAt	off
rISE	HEAt	30
HOLd	HEAt	60
toP.t	rEFL	260
bot.t	rEFL	off
rISE	rEFL	80
HOLd	rEFL	10
toP.t	COOL	100
bot.t	COOL	100
SEC	COOL	120
OFFS		0

Table 2b		
FOCUS "A+" PLACE		
User Set Menu: SLOP set to YES		
Displayed Value when programming after F2 is pressed		
Top		BOTTOM
1st	2nd	Prog 1
Prht		YES
toP.t	Pht.1	100
bot.t	Pht.1	100
rise	Pht.1	90
Hold	Pht.1	20
toP.t	Pht.2	130
bot.t	Pht.2	130
rise	Pht.2	50
hold	Pht.2	30
toP.t	HEAt	160
bot.t	HEAt	off
rise	HEAt	30
hold	HEAt	60
toP.t	rEFL	260
bot.t	rEFL	off
rise	rEFL	80
hold	rEFL	10
toP.t	COOL	100
bot.t	COOL	100
hold	COOL	120
OFFS		0

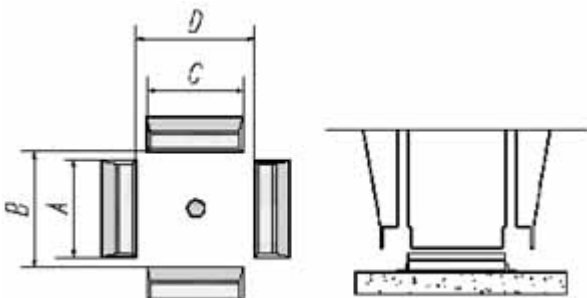
Table 3b		
FOCUS "A+" HdFt		
User Set Menu: SLOP set to YES		
Displayed Value when programming after F2 is pressed		
Top		BOTTOM
1st	2nd	Prog 1
Prht		YES
toP.t	refl	350
bot.t	refl	150
ACLt		90
OFFS		0

XI. STANDARD NOZZLES (Custom nozzles available upon request)



BGA/CSP FOCUS SERIES CONVECTION NOZZLES

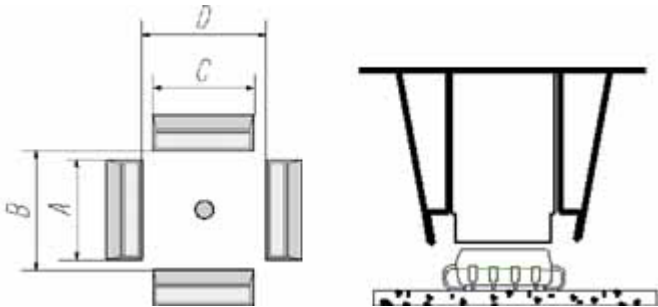
Part Number	Nozzle Number	A (inside diameter)		Suggested Package
		Inch	mm	
XNB-100A	XNB 7X7	0.315	8	BGA16, BGA25
XNB-100	XNB 8X8	0.393	10	BGA16, BGA25
XNB-100B	XNB 10,5X10,5	0.413	10,5	BGA16, BGA25
XNB-100C	XNB 7,5X9	0.295x0.354	7,5x9	BGA16, BGA25
XNB-101A	XNB 12,4X12,4	0.488	12,4	BGA49, BGA 64
XNB-101	XNB 12X12	0.551	14	BGA49, BGA 64
XNB-102A	XNB 13,6X13,6	0.512	13	BGA49, BGA 64
XNB-102	XNB 13X13	0.590	15	BGA49, BGA 64
XNB-103	XNB 15X15	0.669	17	BGA81, BGA100
XNB-104	XNB 17X17	0.748	19	BGA121
XNB-105	XNB 19X19	0.787	21	BGA141, BGA121
XNB-106	XNB 23X23	0.984	25	BGA169
XNB-107	XNB 27X27	1.142	29	BGA324, BGA225, BGA289
XNB-108	XNB 35X35	1.457	37	BGA529, BGA484
XNB-109	XNB 38X38	1.575	40	BGA576, BGA625
XNB-110	XNB 40X40	1.654	42	BGA625, BGA676
XNB-111	XNB 5,5X13,5	0.216x0.531	5,5x13,5	BGA49, BGA64
XNB-112	XNB 11,3X12,4	0.445x0.488	11,3x12,4	BGA49, BGA64
XNB-113	XNB 7X7	0.315	8	BGA16, BGA25
XNB-114	XNB 8,8X8	0.346x0.315	8,8x8	
XNB-115	XNB 5.5X15,9	0.216x0.626	5,5x15,9	
XNB-116	XNB 6,8x7,4	0.268x0.291	6,8x7,4	
XNB-117	XNB 7x11	0.276x0.433	7x11	
XNB-118	XNB 11x33	0.433x1.299	11x33	
XNB-119	XNB 7,6x7,6	0.299x0.299	7,6x7,6	
XNB-120	XNB 12x14	0.472x0.551	12x14	
XNB-121	XNB 6x6	0.236x0.236	6x6	
XNB-122	XNB 15x28	0.590x1.102	15x28	
XNB-123	XNB 32x32	1.260x1.260	32x32	



QFP/BQFP FOCUS SERIES CONVECTION NOZZLES

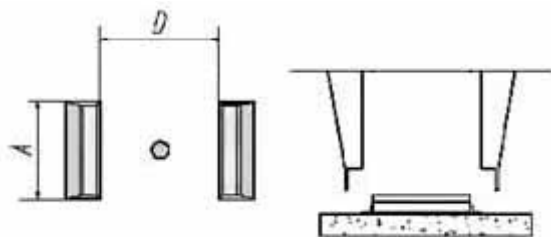
FOCUS "A+" Programmable SMT Rework/Repair Unit

Part Number	Nozzle Number	A		B		C		D		Suggested Package
		inch	mm	inch	mm	inch	mm	inch	mm	
XNQ-200	XNQ 12x12	0.472	12	0.551	14	0.472	12	0.551	14	QFP64, QFP48, QFP80, BQFP28
XNQ-201	XNQ 14x14	0.591	15	0.677	17,2	0.591	15	0.677	17,2	SQFP100, TQF100
XNQ-202	XNQ 14x20	0.591	15	0.665	16,9	0.827	21	0.906	23	QFP128, QFP80, QFP100
XNQ-203	XNQ 16x16	0.629	16	0.826	21	0.629	16	0.826	21	BQFP100T25, QFPT63
XNQ-204	XNQ 17.5x17.5	0.590	15	0.728	18,5	0.590	15	0.728	18,5	BQFP84
XNQ-205	XNQ 24x24	0.827	21	0.953	24,2	0.827	21	0.953	24,2	BQFP132, FQFP176
XNQ-206	XNQ 28x28	1.142	29	1.220	31	1.142	29	1.220	31	QFP128, SQFP208
XNQ-207	XNQ 32x32	1.220	31	1.315	33,4	1.220	31	1.315	33,4	QFP184T, FQFP408
XNQ-208	XNQ 37x37	1.220	31	1.457	37	1.220	31	1.457	37	BQFP196
XNQ-209	XNQ 40x40	1.535	39	1.654	42	1.535	39	1.654	42	BQFP244



**PLCC FOCUS SERIES
CONVECTION NOZZLES**

Part Number	Nozzle Number	A		B		C		D		Suggested Package
		inch	mm	inch	mm	inch	mm	inch	mm	
XNP-300	XNP 7,3x12,5	0.272	6,9	0.354	9	0.272	6,9	0.551	14	PLCC 7,3X12,5
XNP-301	XNP 11,5x11,5	0.394	10	0.512	13	0.394	10	0.512	13	PLCC28
XNP-302	XNP 11,5x14	0.591	15	0.591	15	0.394	10	0.512	13	PLCC 11,5X14
XNP-303	XNP 17,5x17,5	0.591	15	0.728	18,5	0.591	15	0.728	18,5	PLCC44
XNP-304	XNP 20x20	0.748	19	0.827	21	0.748	19	0.827	21	PLCC52
XNP-305	XNP 25x25	0.945	24	1.024	26	0.945	24	1.024	26	PLCC68
XNP-306	XNP 30X30	1.142	29	1.220	31	1.142	29	1.220	31	PLCC84
XNP-307	XNP 11,5x25	0.945	24	1.354	34,4	0.394	10	0.480	12,2	PLCC 11.5x25
XNP-308	XNP 9x9	0.272	6,9	0,299	7,6	0.272	6,9	0,299	7,6	LQFP 48

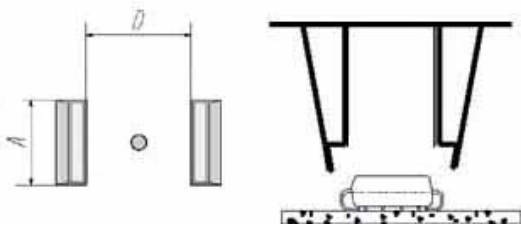


**SO/SOL FOCUS SERIES
CONVECTION NOZZLES**

Part Number	Nozzle Number	A		D		Suggested Package
		inch	mm	inch	mm	
XNS-400	XNS 4.4x10	0.394	10	0.189	4,8	SO16
XNS-402	XNS 5.6x13	0.591	15	0.224	5,7	SSOP8T
XNS-403	XNS 7.6x15	0.630	16	0.283	8,2	SOL20/26, TSOP20/24
XNS-404	XNS 7.6x18	0.748	19	0.283	8,2	TSOP24
XNS-405	XNS 7.6x12.7	0.472	12	0.323	8,2	SOL20, TSOP28
XNS-406	XNS 19x8	0.315	8	0.748	19	TSOP32
XNS-407	XNS 8.6x18	0.748	19	0.343	8,7	TSOP28/32
XNS-408	XNS 18.5x12	0.748	15	0.728	19,5	TSOP40/48
XNS-409	XNS 13x28	1.142	29	0.531	13,5	PSOP44
XNS-410	XNS 21X11.3	0.827	21	0.445	11,3	SOP32

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XNS-411	XNS 11,5X27,5	0.439	11,5	1.083	27,5	SOP32
XNS-412	XNS 4,4x5	0.173	4,4	0.199	5	

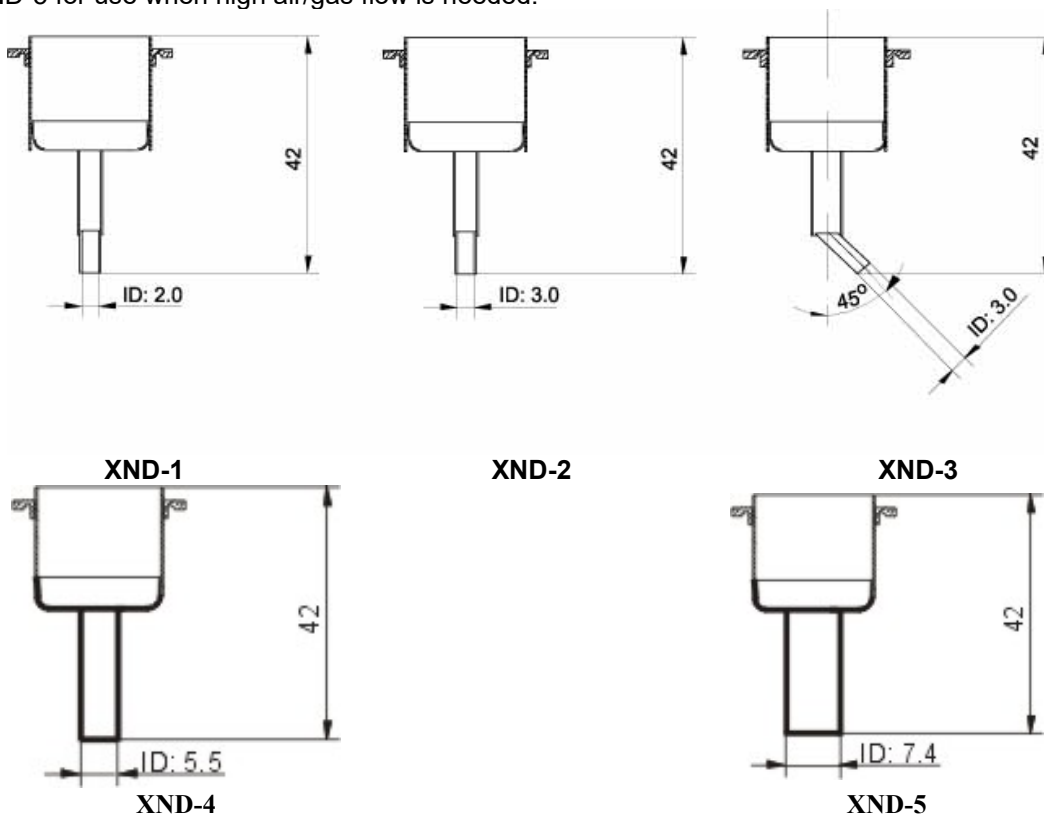


SOJ FOCUS SERIES CONVECTION NOZZLES

Part Number	Nozzle Number	A		D		Suggested Package
		inch	mm	inch	mm	
XNS-401	XNS 15x8.2	0.591	15	0.323	8,2	SOJ20
XNS-413	XNS 4,9x19	0.193	4,9	0.748	19	

DISCRETE NOZZLES

XND-4 and XND-5 for use when high air/gas flow is needed.



XII. NOZZLE OFFSET TABLE

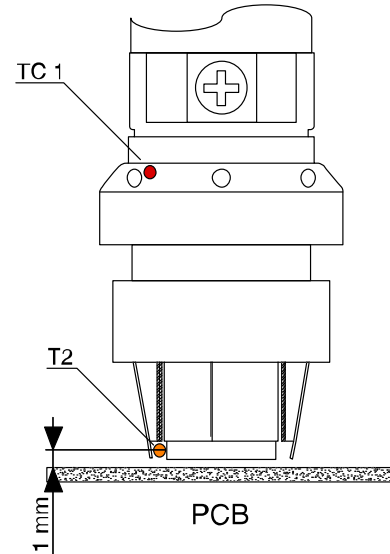
Calculated for 15l/min. Please confirm the offset for your air settings.

Note: For the most accurate readings, nozzle offset must be entered every time one changes the nozzle. Nozzle offset Table

Nozzle Description	Nozzle Number	Measured at 15l/min	
		Nozzle offset	
		°C	°F
XNB 8x8	100	0	32
XNB 12x12	101	15	59
XNB 13x13	102	20	68
XNB 15x15	103	20	68
XNB 17x17	104	20	68
XNB 19x19	105	25	77
XNB 23x23	106	30	86
XNB 27x27	107	25	77
XNB 35x35	108	30	86
XNB 38x38	109	30	86
XNB 40x40	110	30	86
XNQ 12x12	200	45	113
XNQ 14x14	201	55	131
XNQ 14x20	202	65	149
XNQ 16x16	203	60	140
XNQ 17.5x17.5	204	55	131
XNQ 24x24	205	70	158
XNQ 28x28	206	75	167
XNQ 32x32	207	65	149
XNQ 37x37	208	110	230
XNQ 40x40	209	110	230
XNP 7.3x12.5	300	55	131
XNP 11.5x11.5	301	50	122
XNP 11.5x14	202	65	149
XNP 17.5x17.5	303	55	131
XNP 20x20	304	75	167
XNP 25x25	305	70	158
XNP 30x30	306	75	167
XNS 4.4x10	400	40	104
XNS 15x8.2	401	40	104
XNS 5.6x13	402	60	140
XNS 7.6x15	403	60	140
XNS 7.6x18	404	50	122
XNS 7.6x12.7	405	10	50
XNS 19x8	406	30	86
XNS 8.6x18	407	60	140
XNS 18.5x12	408	60	158
XNS 13x28	409	70	158
XND-1	XND-1	60	140
XND-2	XND-2	60	140
XND-3	XND-3	70	158
XND-4	XND-4	10	50
XND-5	XND-5	0	32

TC 1 = Sensor Temperature

T2 = Air Temperature



The Nozzle offset is the temperature difference between sensor temperature TC 1 and the actual temperature of the air at the nozzle end (measured 1 mm above the PCB and in the center of the air stream).

Nozzle offset = TC 1 – T2

Note: The offset measurement will vary depending on temperature sensor position, which measures T2.

The system has built-in function, which allows the user to verify the measurements and create his own offset table depending on his measurement method and his own offset definition.

XIII. SPARE PARTS LIST

PN	Description
30187S	Keyboard Pad
30181S	Triac BTA 26/700V
30202S	Triac BTA 12/600V
30214S	Diode BYT 12 P 800 (220V)
30871S	Fuse 20mm 6,3A (115V)
30872S	Fuse 20mm 3,15A (220V)
10240S	Air Flow Meter 3-20 l/min
10157S	Air Volume Control needle valve assembly
10151S	Air Pump Assembly
20288S	Vacuum Pump Assembly
30297S	Air Valve Knob
20100S	Power switch (green)
20574S	Power Cord 115V
30877S	Power Cord 230V
30230S	Temperature control PCB
30869S	Heater Assembly
30870S	Heater tube assembly
10310S	Hand piece housing Assembly
20357S	Power Transformer
10138S	Vacuum Solenoid J2
XFS-1	Foot Switch
XT-1	Vacuum Cup Insertion/Removal Tool
XNR-2	Nozzle Handling Cup
XVCS-10	Vacuum Cup Set
XHT-12U -115	Hand piece Assembly 115V
XHT-12E -230	Hand piece Assembly 230V
XTH-1	Tool Holder Assembly
XQF	Quick Connect



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XIV. Recommended FOCUS Series Accessories

This optional accessories make rework easier and safer.

1. Range of Nozzles (see above)
2. **XFS-1** Foot Switch (Highly recommended)
Necessary to use cycle advance feature, which helps a lot when re-working a new board.



3. **XVCS Series** (Vacuum Pick-Up Pad Set)
Made of high temperature ESD silicone and have molded inside stopper to prevent vacuum tube from protruding though the cup.
XVCW-10 Diameter: 10 mm (~.4 inch)
XVCW-8 Diameter: 8 mm (~.315 inch)
XVCW-6 Diameter: 6 mm (~.25 inch)



XVCW-10 XVCW-8 XVCW-6

XVCS-5 Set includes: XVCW-10 1 pcs, XVCW-8 2 pcs, XVCW-6 2 pcs
(One set is included with the unit)

XVCS-10 Set includes: XVCW-10 2 pcs, XVCW-8 4 pcs, XVCW-6 4 pcs

4. **X-T1** Vacuum Pad Insertion/Removal Tool
Super practical to insert vacuum cup on hot vacuum tube.



5. **XNR-1** Nozzle Insertion Removal Tool
Tool to handle the nozzles when they are hot, if someone does not like the Nozzle handling Cup (shown below).



6. **XNR-2** Hot Nozzle Handling Cup.
Handy, simple tool to handle the nozzles when they are hot
(Included with the system).



7. **XFQ** - Quick Connect.
This nozzle adapter makes the nozzle change fast and easy
(Included with the system).



8. **XNH-1** Nozzle holder.
Practical means to store hot nozzles during rework



9. **XNH-2** Nozzle holder (For larger nozzles)

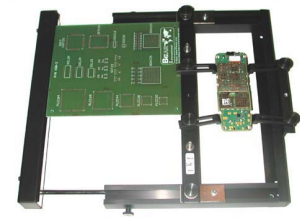


10. **XU-5** Open Frame Board Holder
Precise, with X-Y micrometer positioning for PCB fine adjustment.
Extends to accommodate large boards.



FOCUS "A+" Programmable SMT Rework/Repair Unit

11. **XU-1SH** Retractable Board Holder with arms to hold irregular boards.
(Maximum board size 12" (305mm) x open end).
Probably the most versatile and practical board holder for rework in existence.
Highly recommended. The picture on the right shows XU-1. XU-1SH looks a bit different.



12. **XU-Mini** Irregular Shape PCB Holder (e.g. Cellular Phone).
Universal, can stretch to accommodate 10" wide boards.



13. **XCBH-1** Board Holder for Cellular Phone Boards
Includes small arms equipped with mounting pins to support phone PCB's.



14. **XK-Series or XK-AL Series** - Adjustable Tool Holders for precision movement of the tool up and down. XK-3 tool holder includes the rotation stage allowing for theta adjustment (rotation) of the tool.
One of a kind, precise, durable. Prepared for XIL-2 Long Life Illumination System. XK-AL models include Auto-Lift to lift the component at the end of the reflow zone.



15. **X-1001** Series Under Board Convection Pre-Heaters For SMT Rework/Repair
Intelligent, with temperature meter built-in and precise air temperature control.



FOCUS "A+", X-600, XKB-2, XBB-1

Complete, Low Cost Rework "A+" System.