

BlackJack SolderWerks BK4050 Repairing System

INSTRUCTION MANUAL

Thank you for purchasing the BlackJack BK4050 Repairing System.
Please read this manual before operating the equipment.
Keep manual in accessible place for future reference.

NOTE: Please remove the screw located at the center of the bottom part of the main unit. This screw holds the pumps in place during shipping. Failing to remove this screw prior to use can cause damage to the unit

TABLE OF CONTENTS

Product Description	2
Specifications	2
Safety Precautions	3
Control Panel Guide	4
Operating Guidelines	4 — 6
Special Functions and Features	6 — 8
Care and Maintenance	8
Basic Troubleshooting Guide	9 — 11

PRODUCT DESCRIPTION

The BlackJack SolderWerks BK4050 Hot air reworking station is designed to easily repair surface mounted devices. Its digital display and tactile buttons allows easy operation and adjustments.

The Hot air reworking station is equipped with our BlackJack SolderWerks Hot-air triple protection system, which provides (1) **System cool-down**, (2) **Auto System Sleep**, and (3) **Overheat Protect**. The **System cool-down** feature removes the residual heat from nozzle when the Hot-air function is switched off, this will let the nozzle cool down more rapidly and pro-long the life of the heating element. The **Auto System Sleep** feature puts hot-air gun in sleep mode when the hot-air gun has been left unattended. The **Overheat Protect** feature effectively shuts off power to the heater when an overheat in the handle has been detected.

A mechanical arm may be attached to the station for easy hands free reworking, Its vacuum pickup pen provide easy handling of sensitive ICs during reworking.

SPECIFICATIONS

Station Dimensions:	188 (W) x 127 (L) x 244 (D) mm
Power Input :	AC 110 V / 50-60 Hz
Power Consumption	500 W (peak)
Temperature Range:	100°C - 480°C
Heating Element	Metal Heating Core
Pump/Motor Type:	Diaphragm Special-Purpose Lathe Pump
Air Capacity:	23 l/min (Max)

Specifications are subject to change without prior notice

SAFETY PRECAUTIONS

CAUTION:

Improper usage can cause serious injury to personnel and/or damage to equipment. For safety, please follow these precautions:

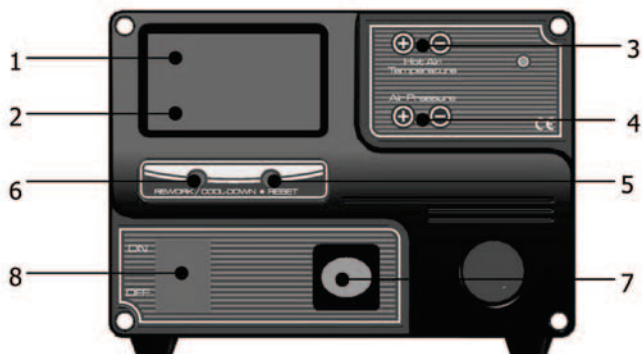
- Check each component after opening the package to make sure everything is in good condition. Do not use item if visible damage is seen, report the issue to your vendor.
- Power off unit and unplug the device when moving the device from one location to another.
- Do not subject the main unit to physical shock
 - Never drop or sharply jolt the unit.
 - Contains delicate parts that may break if the unit is dropped.
- Always connect power to a grounded receptacle.
- Tip temperature may reach as high as 480°C when switched ON.
 - Do not use the device near flammable materials.
 - Do not touch heated parts which may include tips, nozzles, barrels.
- Disconnect from power source if the unit will not be used for a long periods. Switch off power during short breaks.
- Use only genuine replacement parts.
- Soldering process produces smoke — use on well ventilated place.
- Do not try to alter or repair unit, bring to qualified service center for repairs.

IMPORTANT:

As soon as the equipment has been removed from the package, **REMOVE THE SCREW** located at the center of the bottom part of the main unit. This screw holds the pump in place during transportation. Failing to remove the screw before using the equipment can cause damage to the system. **The Hot Air Gun holder was installed on the station upside down for packaging purpose. To set up the Hot Air Gun holder:**

1. Loosen the two screws that secure the holder to the station.
2. Turn the holder right side up.
3. Re-fasten the two screws.
4. Place the hot air gun onto the holder in preparation for usage.
5. Make sure the mesh cap is place at the smoke absorber terminal.

CONTROL PANEL GUIDE



LEGEND:

- 1 Hot Air Temperature display
- 2 Airflow Level display
- 3 Hot Air Temperature Controls
- 4 Airflow Controls
- 5 Reset Button
- 6 Hot air function switch (Rework/Cool-Down modes)
- 7 Suction pen receptacle
- 8 Power Switch

OPERATING GUIDELINES

RESET button

The RESET button can be used to reconfigure temperature and airflow level settings. Once pressed, the system restarts the device using default temperature and airflow level values of 100°C and 51, respectively. Pressing the RESET button also removes previously configured system values.

OPERATING GUIDELINES

Suction Pen Assembly and Usage

Plug the end of the suction pen to its receptacle and attach a suction tip that matches the particular IC to be used. Suction strength can be increased by increasing the air pressure . The higher the air pressure the more powerful the suction strength.

HOT AIR REWORKING

1. Turn ON the main power switch ("8"). The panel will initially display the "ESD SAFE" in a scrolling manner, afterwards the temperature and air level display panel will both display "OFF".
2. Start the hot air gun pressing the Hot air function switch, The unit will now be in rework mode ("6").
3. The system's default setting would be 100°C temperature and 51 on the airflow level meter. The temperature may overshoot momentarily but will automatically adjust itself to reach the desired (actual) value.
4. Set desired air pressure by pressing the airflow control buttons ("4").
5. Adjust hot air gun temperature by pressing hot air temperature Control buttons ("3").
6. Allow 1-2 minutes for the temperature to stabilize before reworking.
7. After reworking, select "Cool-down" from the hot air function switch. This will start the **System cool-down** function by blowing air at full speed to accelerate cooling down of hot air gun.
8. The cooling function will automatically stop once the temperature of the hot air gun goes below 100 degrees Celsius.
9. The panel will display "OFF" on both the temperature and airflow level indicating that the device can already be switched OFF.
10. Turn OFF the device.
11. Unplug the unit from the power source.

IMPORTANT: It is strongly advised to increase the airflow level when higher temperature is needed. This is to protect the heating element inside the handle from excessive heat .

OPERATING GUIDELINES

Suction Pen

Pick up ICs by tapping the tip of the pen on top of the IC. while covering the hole at the side of the suction pen,

Blockages in the suction pen's tube and nozzle may cause the air pressure to drop, routinely clean the air passages for maximum air pressure capacity.

Mechanical Arm

Attach the mechanical arm to the top left side of the unit. Three square nuts are available for the mechanical arm expansion. To attach the mechanical arm follow these steps: **Use of the mechanical arm is optional.**

1. Slide all three nuts to the back.
2. Match the first hole to the first nut, Attach the first screw but do not tighten it.
3. Slowly slide the mechanical arm platform until the second hole matches with the second nut. Again attach the second screw but do not tighten it.
4. Slowly slide the mechanical arm platform until the third hole matches with the third nut. Attach the screws and tighten all three screws.
5. Attach the hot air gun to the mechanical arm. For easy hands free re-working.

SPECIAL FUNCTIONS AND FEATURES

BlackJack SolderWerks® Hot Air Triple Protection System

1. **System cool-down** — This feature draws the heat out of the nozzle before turning off the pump. By decreasing the residual heat of the nozzle we prolong the life of the heating element and eliminate potential heat damage to other equipments .

Activating the automated system cool down feature

- Place the Hot air gun on its holder.
- Switch Hot air gun function switch to cool down mode.

SPECIAL FUNCTIONS AND FEATURES

- The unit will immediately blow maximum air at room temperature this will quickly cool down the nozzle.
 - It will then turn off the pump when the temperature at the nozzle has fallen below 100 degrees Celsius.
2. **Auto System Sleep** — This offers protection in case of operator neglect and as a power saving feature.
- In case the operator forgets to turn off the unit, the Auto Sleep system kicks in (5 minutes default) by enabling the **system cool-down mode**, before putting the system into Sleep mode (pump and heater are inactive). This feature also acts as power save mode and heater protection. When the hot air has been idle for some time it shuts the system off, It easily reverts back to previous system setting once the operator picks up the hot air gun.
 - This feature is activated by default, with a preset 5 minute stand-by timer. The standby timer will begin countdown once the hot air gun is placed on its dock , when the timer expires the system will go to **system cool-down mode** before displaying four dashes on the Hot air temperature and Air flow display. The dashes "- - - -" indicate that the system is in sleep mode. Picking up the nozzle will automatically awaken the system.

Changing countdown time before Stand-by Mode

1. Switch the unit ON (or press "Reset" button).
2. Press and hold air flow increase button while the banner is scrolling.
3. Display panel, will initially indicate 'L05', which means the device will switch to sleep mode if the nozzle is docked on the handle and remain idle for 5 minutes (default).
4. Adjust the timer by pressing buttons temperature adjust buttons.
5. Press air flow decrease button to confirm.

Notes:

- Time is configurable from 1 to 20 minutes (default 5 minutes).
- The device has a switch located at the handle (cradle), which activates

3. **Overheat Protect**— This offers automatic protection in case over-heat in the handle is detected, There is a built in heat sensitive fuse that unlatches when overheat is detected. When it is activated the power to the heating element is cut off. It will wait for the handle and nozzle to cool down before it deactivates. It is recommended to activate the **System cool-down** feature and wait for the entire hand piece to cool to room temperature before using the equipment if Over-heat Protect become active.

CARE AND MAINTENANCE

REPLACING THE HEATING ELEMENT

The heating element is found in the middle part of the hot air gun. The normal life of a heating element is 1 year under normal operating conditions.

Steps:

1. Ensure unit is off and is disconnected from main power source.
2. Loosen the 3 screws that secure the handle.
3. Slide off the nozzle.
4. Push out the heating element from the back of the hot air gun.
5. Disconnect the ground wire sleeve.
6. Peel of the protection tube covering the thermal sensor wires, unsolder the wires and detach from the base.
7. Loosen the clip securing the heating element to the base of the hand-piece and slide out the heating element.
8. Insert new heating element and reconnect the thermal sensor wires, use heat-shrink-tubes to avoid shorting of thermal sensor.
Be careful not to rub Heating Element wire.
9. Reconnect the ground wire after replacing the element.
10. Assemble the handle again.

BASIC TROUBLESHOOTING GUIDE

PROBLEM 1: THE UNIT HAS NO POWER

1. Check if the unit is switched ON.
2. Check the fuse. Replace with the same type if fuse is blown.
3. Check the power cord and make sure there are no disconnections.
4. Verify that the unit is properly connected to the power source.

PROBLEM 2: TEMPERATURE DISPLAY IS ALWAYS ABOVE 500°C

Description: Constant display of above 500°C temperature from the panel then displays a blinking "OFF" on both sides of the panel after a few minutes.

SOLUTION:

The thermal sensor may be broken and needs to be replaced.

PROBLEM 3: ACTUAL AIR TEMPERATURE IS NOT INCREASING

Description: Actual temperature reading is not increasing or decreasing based on desired level. The panel will then display a blinking "OFF" on both sides afterwards.

SOLUTION:

The heating element may be broken and needs to be replaced, or the thermal sensor could be shorted.

PROBLEM 4: BANNER IS ALWAYS SCROLLING - THE UNIT IS NOT USABLE

Description: The product name is just always scrolling from the digital panel, rendering the device unusable.

SOLUTION: Try to press "Reset" from the panel. Note that resetting the device will also reset all previously defined configurations.

BASIC TROUBLESHOOTING GUIDE

PROBLEM 5: AIR PRESSURE LEVEL IS SIGNIFICANTLY LOW NO MATTER HOW HIGH THE AIRFLOW LEVEL IS ADJUSTED

Case 1: Check the mains voltage (AC power source). If the voltage level falls significantly low, about 15-20% lower than the standard, there will also be a noticeable drop in the air pressure level.

SOLUTION: Please refer to your local power service provider.

Case 2: The microcontroller might have detected the operating frequency incorrectly. The user will notice that airflow level is weaker compared to the displayed value.

SOLUTION: Try to press the "Reset" button on the panel and let the device re-detect the proper operating frequency. Note that resetting the device will also reset all previously defined configurations.

Case 3: The Suction Vacuum cap is connected to the Smoke Absorber Terminal or Vacuum cap instead of the mesh cap.

SOLUTION:

Change the cap to the mesh cap. This allows more air to pass through the system. Make sure as well that the vacuum tube IC pick up pen is not connected.

Case 4: The mesh cap is connected but airflow level is still low.

SOLUTION:

Check the filter pad inside the mesh cap for dirt that can block the air passage. Clean or replace if necessary.

PROBLEM 6: THE UNIT IS VERY NOISY

SOLUTION: Make sure the screw has been removed from the center of the base of main unit. Remove if otherwise.

BASIC TROUBLESHOOTING GUIDE

PROBLEM 7: THE UNIT IS VIBRATING TOO MUCH

Check if the 4 screws that hold the pump in place are properly and tightly connected. Unplug the system from the main power source before opening the case to check the internal settings.

PROBLEM 8: DISPLAY AND OTHER DEVICE OPERATION ISSUES

SOLUTION 1: Try to press the "Reset" button on the device. Note that resetting the device will also reset all previously defined configurations.

SOLUTION 2: Turn off the unit wait a few seconds then turn on the unit again.

OTHER PROBLEMS NOT MENTIONED:

Contact the vendor.

