

## SS-952C-F Series

### SMD Rework Station Instruction Manual



# Rework Station Instruction Manual



## Product Description:

The TENMA SS-952 Series SMD Rework Station is a reworking tool designed to remove and/or repair surface mounted devices such as SOIC, CHIP, QFP, BLCC, BGA, and so on. It is made to repair systems without potentially harming or damaging components by actual or direct contact.

One of the key features of this product is the builtin sleep mode with timer functionality. This allows the device to cool down temporarily after a predefined time set by the user with 5 minutes as the default. The sleep mode function will be activated if the hot air gun is docked on the handle and remained idle for 5 minutes. Once the hot air gun is released from the handle during sleep, the unit will automatically switch back to previous working temperature and airflow level conditions without the need for manual intervention.

## Functions and Features:

- Micro processorcontrolled ESD safe unit
- Fast heating response
- Easytoadjust temperature and airflow control with digital display
- Builtin temperature sensor that aids in providing stable (temperature) measurements
- Builtin thermal protector
- Wide range of operating temperature and airflow level selection
- Integrated airflow gauge for precise airflow level adjustment
- Unique sleep mode with timer functionality
- Automatic cooling functionality for safety and added protection
- Compatibility with various types of air nozzles to meet different repairing requirements
- The package includes both UK and Euro cords



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## Package Inclusion:

Quantity	Part Description
1 unit	TENMA SS-952 Main Station with Hot Air Gun
4 pcs	Air Nozzles (1124, 1130, 1196, 1197)
1 pc	Z003 Hot Air Gun Holder
1 pc	Vacuum Suction Pen (For SS-952) only
1 pc	G001 IC Popper (for SS-952 only)
1 pc	Power Cord
1 pc	Instruction Manual

## Specifications:

Station Dimensions	188 (W) × 127 (L) × 244 (D) mm
Weight	3.8Kg.
Power Input	110-220V AC/ 50-60Hz
Power Consumption	500W
Temperature Range	100°C-480°C
Heating Element Type	Metal Heating Core
Pump/Motor Type	Diaphragm Special Purpose Lathe Pump
Air Capacity	23 l/min (Max.)



# Rework Station Instruction Manual



## Care and Safety Precautions:



### Caution

Improper usage can cause injury and physical damage. For your own safety, please observe the following precautions.

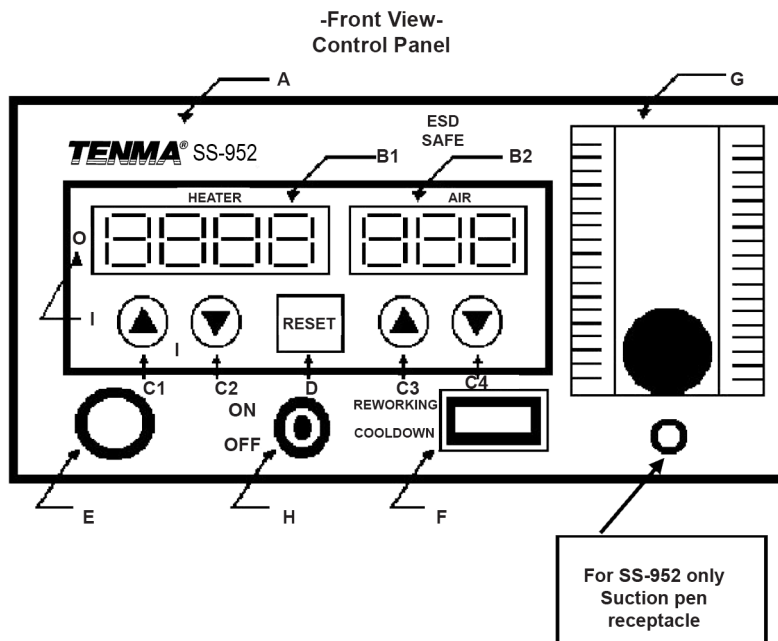
- Temperature may reach as high as 480°C when turned on.
  - Do not use the device near flammable gases, paper and other flammable materials.
  - Do not touch heated parts, which can cause severe burns.
  - Do not touch metallic parts near the tip.
- Thermal Protector
  - Unit is equipped with auto shutoff ability when temperature gets too high and automatically turns on when temperature dropped to a safe level.
- Handle with Care
  - Never drop or sharply jolt the unit.
  - Contains delicate parts that may break if unit is dropped.
- Disconnect the plug from the power source if the unit will not be used for a long period.
  - Turn off power during breaks, if possible.
- Use only genuine replacement parts.
  - Turn off power and let unit cool before replacing parts.
- The unit may produce a small amount of smoke and unusual odor during first usage. This is normal and should not yield any negative result when reworking.
- Soldering process produces smoke, use on well ventilated place.
- Do not alter unit, specifically the internal circuitry, in any manner.



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## Panel Controls:



## Legend:

- A Product Name
- B1 Temperature Meter
- B2 Airflow Level Meter
- C1 Temperature Control (Up)
- C2 Temperature Control (Down)
- C3 Airflow Control (Up)
- C4 Airflow Control (Down)
- D Reset Button
- E Hot Air Output
- F Hot Air Gun Switch
- G Airflow Gauge
- H Power Switch
- I Temperature Adjustment Indicator



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## Operating Guidelines:



### Warning

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.

### How to use the RESET button?

The RESET button (button D from the control panel) can be used to reconfigure temperature and airflow level settings. Once pressed, the system will temporarily switch to stand by mode then start 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.



### Caution

**Do not RESET** the system while temperature is still high. Allow the temperature to drop to a minimum before pressing the reset button. Failure to do so can damage the heating element as well as the handle because of excessive heat.

### Note: (for SS-952 only)

#### 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 (buttons C3 and C4). The higher the air pressure the more powerful the suction strength.

To pick up ICs using the suction pen, increase air pressure to maximum, cover the hole at the side of the suction pen while gently tapping the tip of the suction pen on top of the IC.



# Rework Station Instruction Manual

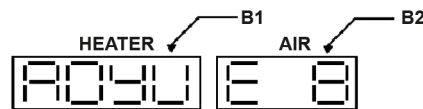


## Operating Guidelines:

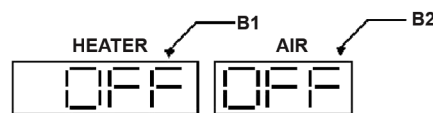


### How to use TENMA SS-952B-F /SS-952C-F SMD Rework Station? (SMD Reworking)

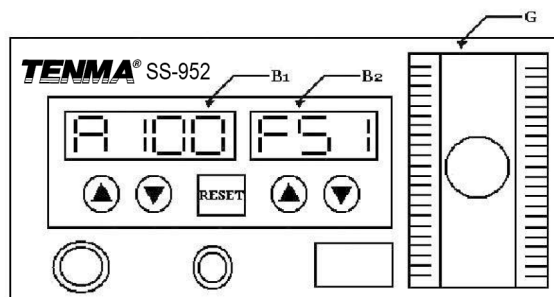
1. Turn ON the main power switch (H from the panel). The panel will initially display the product name in a scrolling manner like below.



The temperature (heat) and air level panel will both display "OFF" afterwards.



2. Start the hot air gun by selecting "Reworking" from the Hot Air Gun switch, F.
3. The system will operate at 100 o C temperature and 51 on the airflow level meter, by default. You will also notice that the metal ball inside the airflow gauge is positioned somewhere in the middle. The temperature (reading) may overshoot momentarily but will automatically adjust itself to reach the desired (actual) value.

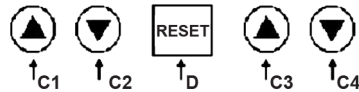


# Rework Station Instruction Manual



## Operating Guidelines:

4. Set desired air pressure by pressing C3 or C4 from the panel.

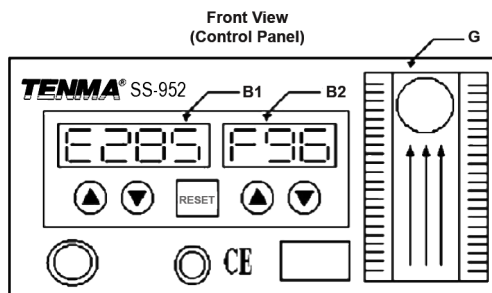


5. Adjust hot air gun temperature by pressing buttons C1 or C2.

6. You may start reworking as soon as the actual temperature and desired airflow level have reached the desired values as shown from the display panel.

7. After reworking, select “Cool down” from the Hot Air Gun switch.

8. This will start the auto cooling function by blowing air at full speed to accelerate cooling down of the hot air gun.



9. The cooling function will automatically stop once the temperature of the hot air gun reaches 90°C, as displayed from panel, B1.

10. The panel will display “OFF” on both the temperature and airflow level indicating that the device can already be switched OFF.

11. Turn OFF the device by using the power switch.

12. Unplug the unit from the power source.

**Recommendation:** When adjusting the temperature, it is strongly advised to increase the airflow level first in order to manage the temperature. Excessive heat may damage the handle and heating element of the equipment.





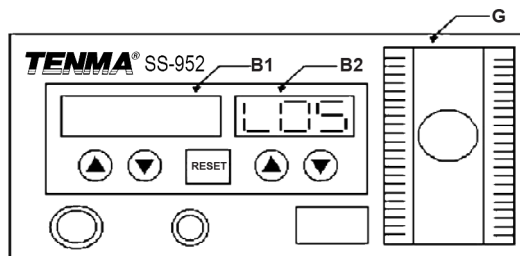
# Rework Station Instruction Manual



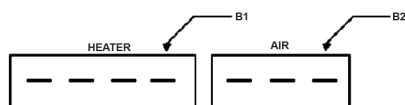
## Operating Guidelines:

### Sleep Mode Timer SetUp

1. Switch the unit ON (or press "Reset" button, D, from the panel).
2. Press and hold C3 while the banner is scrolling.
3. Display panel, B2, will initially indicate 'L05', which means the device will switch to sleep mode after 5 minutes (default) of idle time and if the nozzle is docked on the handle for the duration of time.



4. Adjust the time before sleep by pressing buttons C1 or C2.
5. Press C4 to confirm.
6. The device will start counting down when the hot air gun is docked on the handle. Once countdown is finished and the hot air gun still docked, the device will automatically blow air (at room temperature) to bring down temperature to 90°C. The panel will then display the following after reaching the safe temperature level and to indicate that the device is now in sleep mode.



### Notes:

- Time is configurable from 1 to 20 minutes (default 5 minutes).
- The device has a switch located at the handle (cradle), which activates the countdown before the system goes to sleep.
- Once the hot air gun is released from the handle during sleep mode, the unit will automatically switch back to previous working temperature and airflow level parameters.



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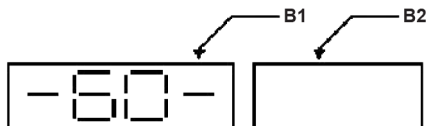
## Operating Guidelines:

### Manual Operating Frequency Selection

The SMD Rework Station has already the capability of auto selecting the frequency based on the input power. However, in rare very cases, users may want to manually select the operating frequency. The following procedure will instruct you how to do this.

#### Steps:

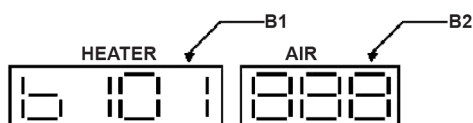
1. Switch the unit ON (or press "Reset" button, D, from the panel).
2. Press and hold C1 while the banner is scrolling.
3. The display panel, B1, will initially indicate '60', which means the device is currently operating at 60Hz of frequency.



4. Use buttons C3 and C4 to switch between 50 Hz and 60Hz.
5. Press C2 to confirm. The system will resume automatically.

### Temperature Setting and Adjustment

1. While the unit is ON and the Hot Air Gun switch set to "Reworking", press buttons C1 or C2 from the control panel to increase or decrease the temperature, respectively.
2. The display panel, B1, will show something like 'bXXX' while the temperature is being adjusted.



You will also notice that a red light ("I" from control panel) is blinking from the panel. This is to indicate that the system is trying to reach or maintain the desired temperature level.

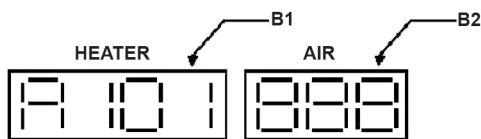


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## Operating Guidelines:

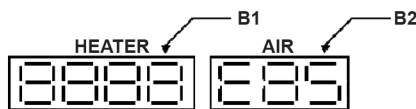
3. Wait for a few seconds while the device is adjusting the actual temperature. The control panel will then display 'AXXX' to indicate the actual temperature. Note that actual temperature may vary for  $\pm 5\%$  of the defined value. This is normal and should not have any negative impact on reworking.



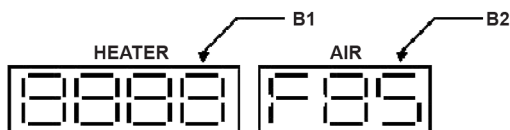
**Note:** The temperature range is between 60°C and 480°C.

## Airflow Level Setting and Adjustment

1. While the unit is ON and the Hot Air Gun switch set to "Reworking", press buttons C3 or C4 from the control panel to increase or decrease the airflow level, respectively.
2. The display panel, B2, will show something like 'EYYY' while air pressure is being adjusted.



3. Wait for a few seconds until the panel displays 'FYYY' indicating that actual airflow level has been reached.



**Note:** The airflow level range is between 6 and 99.



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## Maintenance:

 <b>Warning</b>
All cleaning and/or maintenance should be performed when the equipment is switched off and completely disconnected from the main power source.

## Changing The Fuse:

- Make sure the equipment is completely isolated from the main power source before changing the fuse.
- The fuse of the main unit is located at the back of the equipment, right above the power plug connector.
- Change the blown fuse by unscrewing the fuse holder.
- Replace only with the same fuse type, size, and rating. Use the table below as reference.
- Keep a spare fuse of the same rating for emergency purpose.

Location	Rating	Size
Rear Panel	3A, 220V	5mm × 20mm
	5A, 110V	

## Spare Parts List:

Number	Name & Specification
10094	Hot air gun heating element
30104S	Plastic handle of hot air gun
S003	Hot air gun complete handle
20932	Hot air gun metal pipe
P002	Diaphragm pump



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## Maintenance:

### Replacing The Heating Element

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

#### Steps:

1. Loosen the 3 screws that secure the handle.
2. Slide off the plastic tube.
3. Disconnect the ground wire sleeve.
4. Inside the pipe, the quartz glass and heat insulation is installed.
5. Peel of the protection tube covering the thermal sensor wires, unsolder the wires and detach from the base.
6. Loosen the clip securing the heating element to the base of the handpiece and slide out the heating element.
7. Insert new heating element and reconnect the thermal sensor wires, use heatshrinktubes to avoid shorting of thermal sensor.  
**Be careful not to rub Heating Element wire.**
8. Reconnect the ground wire after replacing the element.
9. Assemble the handle again.

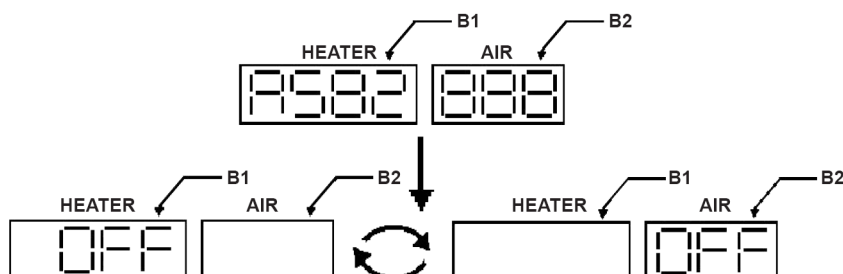
## Basic Troubleshooting Guide:

### 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 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.



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## Basic Troubleshooting Guide:

### 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.

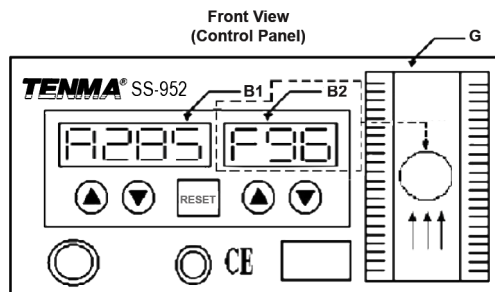
**Solution:** The heating element may be broken and needs to be replaced, or the thermal sensor could be shorted.

### Problem 4: Banner or Product Name 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.

### Problem 5: Air Pressure Level is Significantly Low no Matter How High the Airflow Level is Calibrated



**Case 1:** Check the mains voltage (AC power source). If the voltage level falls significantly low, about 1520% 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.



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## Basic Troubleshooting Guide:

**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.

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

**Problem 9:** For SS-952 Only; Air Pressure Drops When Using the Suction Pen

**Description:** The Air pressure drops when using the suction pen and does not recover to its previous height in the air gauge.

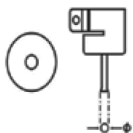
**Solution:** Decrease the air pressure level, set air pressure level at about 80.

**Note:** (for SS-952 only)

Air pressure level may drop a little when the suction pen is picking up ICs. The air pressure level gauge should revert back to its previous state when the IC is released. Blockages in the suction pen's tube and nozzle may cause the air pressure to drop. Clean the air passage for maximum air pressure capacity regularly.

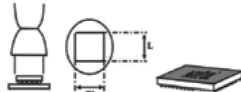
## Air Nozzles\*:

**Straight Single**



Nozzle Model	Nozzle Size, $\phi$ (mm)
1124	2.5
1130	4.4
1194	6
1195	8
1196	7
1197	9
1198	12

**Ball Grid Array**



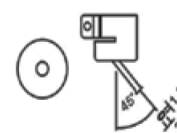
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm)	
		W	L
1010	BGA 9x9	10	10
1313	BGA 12x12	13	13
1616	BGA 15x15	16	16
1919	BGA 18x18	19	19
2828	BGA 27x27	28	28
3636	BGA 35x35	36	36
3939	BGA 38x38	39	39
4141	BGA 40x40	41	41

**Small-Outline Package**



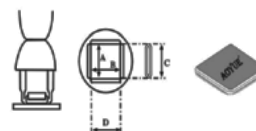
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm)	
		L	W
1131	SCP 4.4x10	10	4.8
1132	SCP 5.6x13	15	5.7
1133	SCP 7.5x15	16	7.2
1134	SCP 7.5x18	19	7.2
1257	SCP 11x21	21	11.7
1258	SCP 7.6x12.7	11.7	8.2
1259	SCP 13x28	29	13.5
1260	SCP 8.6x18	19	8.7

**Bent Single**



Nozzle Model 1142

**Plastic Leaded Chip Carrier**

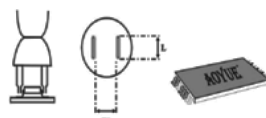


**Small Outline J-Lead**



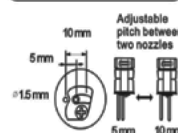
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm)	
		L	W
1183	SOJ 15x8	16	8
1184	SOJ 18x8	19	10
1214	SOJ 10x26	25.9	12

**Thin Small-Outline**



Nozzle Model	IC Package Size (mm)	Nozzle Size (mm)	
		L	W
1185	TSOL 13x10	10	11.9
1187	TSOL 18.5x8	10	18.5
1186	TSOL 18x10	11.7	18.2

**Dual Single Adjustable**



Nozzle Model 1325

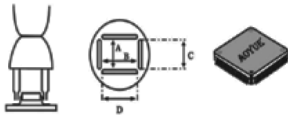
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm)			
		A	B	C	D
1135	PLCC 17.5x17.5 (44pins)	18.5	18.5	15	15
1136	PLCC 20x20 (52pins)	21	21	19	19
1137	PLCC 25x25 (68pins)	26	26	24	24
1138	PLCC 30x30 (84pins)	31	31	29	29
1139	PLCC 73x12.5 (18pins)	9	14	69	69
1140	PLCC 11.5x15 (28pins)	13	13	15	10
1141	PLCC 11.5x14 (32pins)	15	13	15	10
1188	PLCC 9x9 (20pins)	11	11	10	10
1189	PLCC 34x34 (100pins)	36.5	36.5	33.5	33.5



# Rework Station Instruction Manual



## Quad Flat Pack



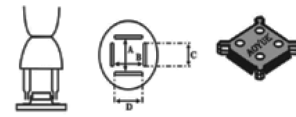
Nozzle Model	IC Package Size (mm)	Nozzle Size (mm)			
		A	B	C	D
1125	QFP 10x10	10.2	10.2	10	10
1126	QFP 14x14	15.2	15.2	15	15
1127	QFP 17.5x17.5	19.2	19.2	19	19
1128	QFP 14x20	15.2	21.2	15	21
1229	QFP 28x28	29.6	29.7	29	29
1215	QFP 42.5x42.5	42.5	42.5	40	40
1261	QFP 20x20	20.2	20.2	21	21
1262	QFP 12x12	12.2	12.2	12	12
1263	QFP 28x40	27.7	39.7	29	39
1264	QFP 40x40	40.2	40.2	39	39
1265	QFP 32x32	32.2	32.2	31	31

## Single In Line Package



Nozzle Model	IC Package Size	Nozzle Length (mm)
1191	SIP 25L	26
1192	SIP 50L	52.5

## Bumpered Quad Flat Pack



Nozzle Model	IC Package Size (mm)	Nozzle Size (mm)			
		A	B	C	D
1180	BQFP 17x17	18.2	18.2	13.6	13.6
1181	BQFP 19x19	19.2	19.2	16	16
1203	BQFP 35x35	35.2	35.2	30.6	30.6
1182	BQFP 24x24	24.2	24.2	21	21

\*Sold Separately

## Part Number Table

Description	Part Number
Rework Station, 500W, 110V/220V, UK+EU	SS-952BC-F

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