

# **E S D**

## **REWORK SYSTEM**

### **3 IN 1, I702**

## **USER'S GUIDE**

**Thank you for purchasing the Rework system. This manual describes the use and maintenance of the Rework system. Please read it before reading the manual, keep it in a safe place for future reference.**

# Safety instructions



## **Automatic Blowing Function**

Please note the unit will automatically blow air after following operations. This will stop in about 1 minute.

- Connecting the plug.
- Turning on/ off the power switch.
- Turning off the switch for SMD Rework.

## **Before Plugging In!**

The automatic blowing function will start sending air when you connect the power plug to power source.

## **After Using**

After turning off the switch for SMD Rework and power switch the unit will automatically blow air through the pipe for a short period of time. Do not disconnect the plug during this cooling process.

## **High Temperature**

The tip/nozzle temperature can reach as high as around 400°C (752°F) when the power switch is on. Since mishandling may lead to burns and fire, be sure to comply with the following precautions.

- Do not touch metallic parts near the tip/ nozzle.
- Do not use the product near flammable items.
- Advise other people in the work area that the unit can reach a very high temperature and should be considered potentially dangerous.
- Turn the power off while taking breaks and when you are finished using it.
- Before replacing parts or storing the unit, turn the power off and allow the unit to cool to room temperature.

Be sure to comply with the following precautions. Failing to do so may lead to personal injury or damage to the unit.

- Do not use the unit for applications other than soldering or desoldering.
- Do not rap the iron against the work bench to shake off residual solder, or otherwise subject the iron to severe shocks.
- Make sure to use only genuine replacement parts.
- Turn the switch off before connecting or disconnecting the soldering /desoldering iron connecting cord from the cord receptacle on the station.

## CAUTION

Make sure the four red screws which are used to fasten the Vacuum Pump are removed before use. Otherwise serious damages may be caused to the user.

### 1. Parameters

Desoldering pump power:	220W
Heating power:	60W/36VAC 400KHz
Temperature:	320°C ~ 480°C
Desoldering pump:	Diaphragm pump
Vacuum pressure:	600mmHG
Tip to Ground Resistance:	<2Ω
Tip to Ground Potential:	<2mV

### 2. Features

- \* Anti-electrostatic design to protect PCB from damage due to static charge or leakage.
- \* Powerful built-in Vacuum Pump and no need to equip an external vacuum system, easy to carry .
- \* Sensor closed loop temperature control for heating system, temperature is precise.
- \* 36VAC power supply for heating is fully separated from mains by transformer, safe and reliable.
- \* Specially designed desoldering nozzle and heating tube so that solder wire can be sucked into filter even in melt state, less maintenance and high efficiency.
- \* Heat resistant vacuum hose to protect it against hot heating element.
- \* Thermal switch in desoldering vacuum loop to protect motor against damage from overheating due to overtime running.

### 3. Operating Instructions

#### 1. Before Operation

- \* Place the handle of the unit and the cleaning sponge. Dampen the cleaning sponge with water.
- \* Connect the plug (five cores) to the receptacle on the station, turn clockwise to tighten it, and connect the hose to the vacuum connection.

NOTE: Be sure to disconnect the power before inserting or extracting handle assembly to avoid Damages to PCB.

#### 2. Desoldering Operation

- \* Put the power plug into the socket. Turn the switch on, the indicating lamp lights up , the unit begins heating. Set the temperature knob to the desired temperature (recommended 380°C - 450°C). High temperature can reduce the useful life of nozzle and heating element. Low temperature can make the solder block the inside tube.
- \* Clean nozzle, but remain the proper quantity of solder on the nozzle, and wet the nozzle with solder.
- \* Melt the solder with soldering nozzle, not to touch the plate and make certain solder is melted. When solder is fully in liquid state, press the switch on the handle of 809 then the desoldering pump starts and begins to absorb solder (move the element lead slowly with soldering nozzle to absorb solder in PCB holes).

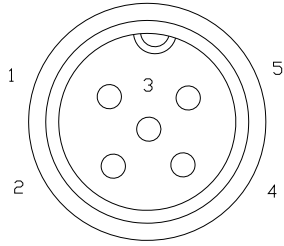
### **3. Resolution of desoldering**

- \* Solder cannot be melted completely.
  - A: When desoldering for large transistors, controllable silicon and large transmission terminals on PCB with radiator on multi-layer plate, power supply layer and earth wires. Because of the insufficient heating capacity, the temperature is a little lower that it's difficult to remove solder. We can raise the temperature to melt solder, but the best way is to warm PCB with auxiliary heater to make the temperature reach around 70°C, and then remove solder with desoldering tool.
  - B: If the nozzle is damaged, for instance, damaged or eroded coating layer, under this circumstance. The nozzle should be replaced.
- \* Weak suction power
  - A: If the indicating lamp on the handle of the unit shows red, this means nozzle, heating element, and the remaining solder in the spring filter ought to be cleaned, or replace the spring filter.

NOTE: Only when solder inside the handle is in liquid state, you can dredge with a needle. Be careful to avoid injury.

- B: Leakage of vacuum system
  - Please check the following possible conditions, the vacuum hose is broken? the heating element isn't fastened? the nozzle is slack? the vacuum connection on the station is not tightened? the seal cover inside the 809 handle is broken?
  - If any, please take some effective measure to seal or replace some parts.

### **4. Diagram (the plug of 809 handle assembly)**



A	Between pins 1&2	Heating element $<1\Omega$
B	Between pins 4&5	Sensor $<1\Omega$
C	pin 3	grounding point
D	Between pins 2&3	$\infty$ (Don't press switch ) on (press switch )

## 5. Replace parts

No.	Name	Specification
A1002	Suction Nozzle	$\Phi 0.8$ (0.3in)
A1003	Suction Nozzle	$\Phi 1.0$ (0.04in)
A1004	Suction Nozzle	$\Phi 0.8$ (0.3in) thick
A1005	Suction Nozzle	$\Phi 1.0$ (0.04in) thick
A1006	Suction Nozzle	$\Phi 1.3$ (0.05in)
A1007	Suction Nozzle	$\Phi 1.6$ (0.06in)
A1313B	Heating element	60W/36V 400KHz
A1314B	Front cover	
A1030B	Spring filter	
A1033B	Sponge	

# SOLDERING STATION

## Setting up & Operating the soldering station

**⚠ CAUTION:** The sponge is compressed. It will swell when moistened with water.  
Before using the unit, dampen the sponge with the water and squeeze it dry.

Failure to do so may result in damage to the soldering ti

### A. Iron Holder

#### 1. Small Cleaning Sponge

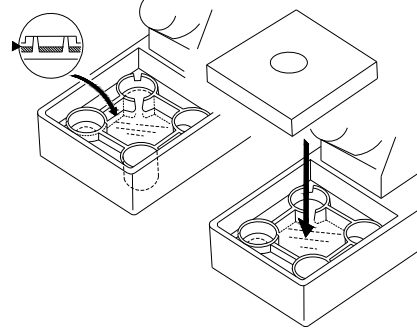
Dampen the small cleaning sponge with water and then squeeze it dry.

Place it in one of the 4 openings of the iron holder base.

#### 2. Add water to approximately the level as shown. The small sponge will absorb water to keep the larger sponge above it wet at all times.

\* The large sponge may be used alone (w / o small sponge & water).

#### 3. Dampen the large cleaning sponge and place it on the iron holder base.



**⚠ CAUTION:** Be sure to turn off the power switch before connecting or disconnecting the soldering iron. Failure to do so may damage the P.W.B.

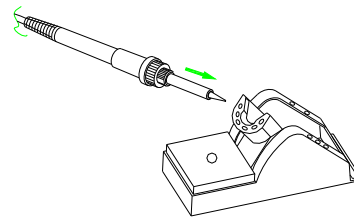
### B. Connections

#### 1. Connect the cord assembly to the receptacle

#### 2. Place the soldering iron in the iron holder.

#### 3. Plug the power cord into a power supply.

Be sure to ground the unit.



### C. Set the temperature

#### 1. Set the temperature control knob to the desired temperature.

### D. Turn on the power switch

The heater lamp blinks on and off when the tip temperature reaches the set temperature. The unit is now ready to perform soldering work.

**⚠ CAUTION:** The soldering iron must be placed in the iron holder when not in use.

## Tip Care and Use

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### • Tip Temperature -

● **Cleaning -**

solder and flux can form impurities on the tip. These impurities can result in defective joints or reduce the tip's heat conductivity.

When using the soldering iron continuously, be sure to loosen the tip and remove all oxides at least once a week.

This helps prevent seizure and reduction of the tip temperature.

Never leave the soldering iron sitting at high temp-

● **When not in use -**

High soldering temperature can degrade the tip.

Use the lowest possible soldering temperature.

The excellent thermal recovery characteristics ensure efficient and effective soldering even at low temperatures.

This also protects the soldered items from thermal damage.

Clean the tip regularly with a cleaning sponge, as oxides and carbides from the

● **After use -**

erature for long periods of time, as the tip's solder plating will become covered with oxide, which can greatly reduce the tip's heat conductivity.

Wipe the tip clean and coat the tip with fresh solder.

This helps prevent tip oxidation.

## **Maintenance**

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**Inspect and clean the tip**

**⚠ CAUTION: Never file the tip to remove oxide.**

1. Set the temperature to 250°C(482°F)
2. When the temperature stabilizes, clean the tip with the cleaning sponge and check the

condition of the tip.  
3. If there is black oxide on the solder-plated portion of the tip, apply new solder (containing

flux) and wipe the tip on the cleaning sponge. Repeat until the oxide is completely removed. Coat with new solder.  
4. If the tip is deformed or heavily eroded, replace it with a new one.

## **Calibrating the Iron Temperature**

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The soldering iron should be recalibrated after changing the iron, or Replacing the heating element or tip.

1. Connect the cord assembly plug to the receptacle on the station.  
2. Set the temperature control knob to 400°C (750°F).

3. Turn the power switch to “ON” and wait until the temperature stabilizes. Remove the CAL pot plug.  
4. When the temperature stabilizes, use a straight-edge (-) screwdriver or small plus (+) screwdriver to adjust the screw (marked CAL at the station) until the tip thermometer indicates a temperature of 400°C (750°F). Turn the screw clockwise to increase the temperature and counterclockwise

to reduce the temperature. Replace the CAL pot plug.

\* We recommend the 191/192 thermometer for measuring the tip temperature.

## **Tips**

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The tip temperature will vary according to the shape of the tip. The preferred method of adjustment uses a tip thermometer. (See “Calibration of the Iron Temperature”.) A less accurate method involves adjusting the temperature control knob according to the adjustment value for each tip.

Example: When using a T-H tip at 400°C (750°F), the difference between this tip and a



T-B tip is -20°C (-36°F).

Set the temperature control knob to 420°C (786°F).

Refer to the chart for the correct adjustment values.

## Troubleshooting Guide

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**⚠ WARNING:**\* Disconnect the power plug before serving. Failure to do so may result in electric shock.

\* If the power cord is damaged, it must be replaced by the manufacturer, its service agent or similarity qualified person in order to avoid personal injury or damage to the unit.

Problem1.

The heater lamp does not high up.

Check2. Is the power cord and /or connecting plug disconnected?

- Connect it.

Check3. Is the soldering iron cord broken?

- Refer to 'Checking for breakage in the cord assembly.'

Check4. Is the heating element broken?

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Problem2.

The heater lamp lights up but the tip does not heat up.

Check1. Is the fuse blown?

- Determine why the fuse blew and eliminate the

cause, then replace the fuse.

a. Is the inside of the iron short-circuited?

b. Is the grounding spring touching the heating element?

c. Is the heating element lead twisted and

short-circuited?

Problem3.

The tip heats up intermittently.

Problem4.

The tip is not wet.

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Problem5.

The tip temperature is too low.

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Problem6.

The tip can not be pulled off.

Problem7.

The tip doesn't hold the desired temperature.

- Refer to 'Checking for breakage in the heating element.'

Check3

Check5. Is the tip temperature too high?

- Set an appropriate temperature.

Check6. Is the tip clean?

- Refer to 'Tip Care and Use'

Check7. Is the tip coated with oxide?

- Refer to 'Inspect and clean the tip'.

Check8. Is the iron calibrated correctly?

- Recalibrate.

Check9. Is the tip seized?

Is the tip swollen because of deterioration?

- Replace the tip and the heating element.

Check8.

## Checking for Breakage of the Heating Element and Cord Assembly

Disconnect the plug and measure the resistance value between the connecting plug pins as follows.

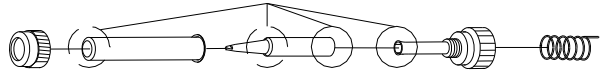
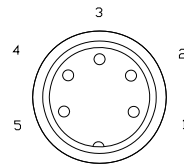
If the values of 'a' and 'b' are outside the above value, replace the heating element (sensor) and /or cord assembly.

Refer to procedures 1 and 2. If the value of 'c' is over the above value, remove the oxidization film by lightly rubbing with sand- paper or steel wool the points as shown.

2.5-4.0Ω(Normal)

b. Between pins 1 & 2 (Sensor) 43-58Ω(Normal)

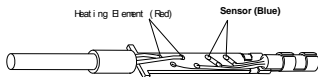
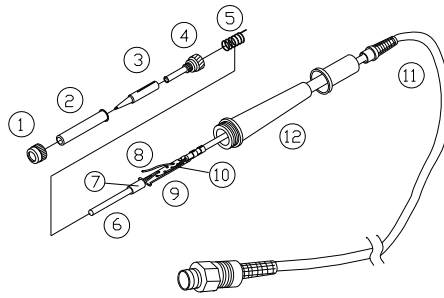
c. Between pins 3 & Tip Under 2Ω



Disassembling the 907/908

a. Between pins 4 & 5 (Heating Element)

### 1. Broken Heating Element



1. Turn the nut ① counterclockwise and remove the tip enclosure ②, the tip ③.
2. Turn the nipple ④ counterclockwise and remove and remove it from the iron.
3. Pull both the heating element ⑥ and the cord assembly ⑪ out of the handle ⑫. (Toward the tip of the iron).
4. Pull the grounding spring ⑤ out of the D-sleeve.

Measure when the heating element is at room temperature.

1. Resistance value of heating element (RED)  
2.5 - 4.0Ω.

2. Resistance value of sensor (BLUE) 43 - 58Ω.

If the resistance value is not normal, replace the heating element (Refer to the instructions included with the replacement part.)

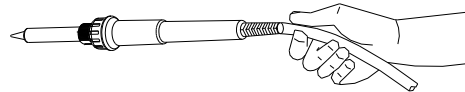
After replacing the heating element.

1. Measure the resistance value between 1) pins 4 & 1 or 2 2) pins 5 & 1 or 2. If it is not less 1MΩ, the heating element and sensor are touching.

This will damage the P.W.B.  
 2. Measure the resistance value 'a', 'b', and 'c' to confirm that the leads are not twisted and that the grounding spring is properly connected.

**2. Broken soldering iron cord.**  
**There are two methods of Testing the Soldering iron cord.**

1. Turn the unit ON and set the temperature control knob to 480°C(896°F). Then wiggle and kink the iron cord at various locations along its length, including in the strain relief area. If the LED heater lamp flickers, then the cord needs to be replaced.



⚠ CAUTION: The LED heater lamp will flicker even with a normal Iron cord if the temperature reaches 480°C (896°F).

2. Check the resistance between the pin of the plug and the wire on the terminal.  
 Pin 1: Red Pin 2: Blue Pin3: Greed  
 Pin4: White Pin5: Black pin the value should be 0Ω. If it is greater than 0Ω or is ∞, the cord should be replaced.

**Specifications**

Power Consumption	60W
<b>Station</b>	
	Station ESD
Output Voltage	24V AC/50W

Temperature Range	200°C - 480°C/392°F - 896°F
<b>Soldering Iron</b>	
	907 - ESD
Power Consumption	24V AC - 50W
Tip to Ground Resistance	Under 2Ω
Tip to Ground Potential	Under 2mV (TYP. 0.6mV)
Sensor	K TYPE
Cord Assembly	1.2m (4ft)
Total Length (Without cord)	190mm (7.5in)
Weight (W / O Cord)	44g (0.091bs)

\* The tip temperature was measured using 191 thermometer.

\* Specifications and design subject to change without notice.

## SMD REWORK STATION

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### 1. Production Summary

#### 1-1 Specification

Power Consumption	320W
Air Pump	diaphragm pump
Capacity	24L/min (max)
Hot Air Temperature	150 - 500°C
Sensor	K thermocouple

#### 1-2 Function

- \* Closed loop of sensor Control Temperature, large power in starting, rapid in temperature raising, accuracy and constant in temperature, no effect caused by amount of air exhaust.
- \* Prevent static electric and leakage electric to damage the PCB.
- \* Unnecessary touch the PCB, so can avoid to move element and heating impaction.
- \* Extensively adjust air and temperature and select different nozzle, so it can fit most of SMD.

\* Use inlet heating element, the type of heating element and nozzle is same as the international.

\* Delay to blow air when turn the power switch off, it can protect the automatic.

### 1-3 Usefulness

\* Fits most of SMD. Example for SOIC, CHIP, QFP, PLCC, BGA etc.

\* Contract hose.

### 1-4 Accessories

FP Pick-up wire ..... 1 pc.

FP Pick-up ..... 1 pc.

## 2. Operating Instructions

### 2-1 Before Operation

\* Select the FP pick-up wire that matches the size of the IC.

The Fp Pick-up has an S wire (14mm) attached to it, but an L wire (30mm) may be necessary, depending on the size of the IC. Choose the appropriate wire for the IC.

\* Select the Nozzle that matches the size of the IC.

Attach the Nozzle when both the Pipe and the Nozzle are cool.

\* Loosen the screw on the Nozzle.

\* Attach the Nozzle as shown in the drawing.

● Fasten the screw properly.

### 2-2 QFP Desoldering

\* **Plug the power cord into the power supply.**

After connection, the automatic blowing function may start sending air through the pipe, but the Heating Element remains cool.

\* **Turn the Power switch on**

The power switch may be turned on at any time while the automatic blowing function, is operating. Once the power switch is turned on, the Heating Element will begin to warm up.

\* **Adjust the Air Flow and Temperature Control Knobs**

After adjusting the Air Flow and Temperature Control Knob, wait for the temperature to stabilize for a short period of time. Refer to the distribution chart. For your reference, we

recommend you to adjust the temperature around 300 to 350°C. As for Air Flow in case of

single nozzle, set the knob 1-5, in another nozzle, set it from 4-7. When the working temperature is over 450°C, the knob of airflow control must be over 4 position.

\* Place the FP Pick-up under IC lead.

Slip the FP Pick-up Wire under the IC lead. If the width of the IC does not match the size of the FP Pick-up, adjust the width of the wire by suppressing the wire.

\* **Melt the solder**

Hold the iron so that the Nozzle is located directly over, but not touching the IC, and allow the hot air to melt the solder. Be careful not to touch the leads of the IC with the Nozzle.

\* **Remove the IC**

Once the solder has melted, remove the IC by lifting the FP Pick-up.

\* **Turn the Power Switch off.**

After the Power Switch is turned off, an automatic blowing function begins sending cool air through the pipe in order to cool both heating element and the handle.

In case you don't use the unit for a long time, disconnect the plug.

\* Remove any remaining solder.

After removing the IC, remove remaining solder with a wick or desoldering tool.

NOTE: In case of SOP, PLCC desolder it by using tweezers, etc.

### **2-3 QFP Soldering**

\* **Apply the solder paste.**

Apply the proper quantity of solder paste and install the SMD on the PWB.

\* **Preheat SMD.**

Refer to the photo to preheat SMD.

\* **Soldering**

Heat the lead frame evenly.

\* **Washing**

When soldering is completed. Wash away the flux.

NOTE: While there is merits to solder by Hot air, it's also possible to cause the defects such as solder balls, solder bridges. We recommend you go examine the conditions of soldering sufficiently.

## **3. Precautions**

\* **Attaching the Nozzle**

Do not force the Nozzle or pull on the edge of the Nozzle by pliers. Also, do not fasten the screw too tightly.

\* **Thermal Protector**

For safety, power is automatically shut off should the unit exceed a certain temperature. Once the temperature has dropped to a safety level, power is automatically turned on. Turn off the switch and cool the iron. After that, to continue operation, reduce the temperature setting or increase the air flow. Should the Thermal Protector be tripped and you do not wish to continue the operation or if you leave that place, be sure to turn the Power Switch off.

**\* Caution - High Temperature Operation**

Do not use the SMD unit near ignitable gases, paper, or other inflammable materials. Both the nozzle air are extremely hot and can cause painful burns. Never touch the heater pipe or allow the heated air to blow against your skin. Initially, the iron may emit white smoke, but this will soon disappear.

**\* When heater's LED is lighting, the heater is heating, when heater's LED extinguishes, stop heat.**

**\* After use, be sure to cool the unit.**

After turning off the power switch, the unit will automatically blow cool air through the Pipe for a short period of time. Do not disconnect the plug during this cooling process.

**\* Never drop or sharply jolt the unit.**

The pipe contains quartz glass which can break if the unit is dropped or jolted sharply.

**\* Do not disassembly the pump.**

**\* Disconnect the plug when you don't use the unit for a long time.**

When the power cord is connected into the power supply, the unit has a little flow of electricity, even the Power Switch is in off position. So then you don't use the unit for a long time, disconnect the plug.

\* When the temperature is over 350°C, when start it, the knob of airflow control should be at at 3 - 8 position.

\* When the working temperature is over 450°C, the knob of air flow control must be over 4 position.

## **4. Replacing the Heating Element**

**\* Remove the screws, slide the tube**

Remove the 3 screws (Fig. I-1, 2, 3) which secure the Handle and slide the cord tube.

**\* Open the Handle.**

Disconnect the ground wire sleeve (Fig. II-1) and remove the pipe. In the pipe, the quartz



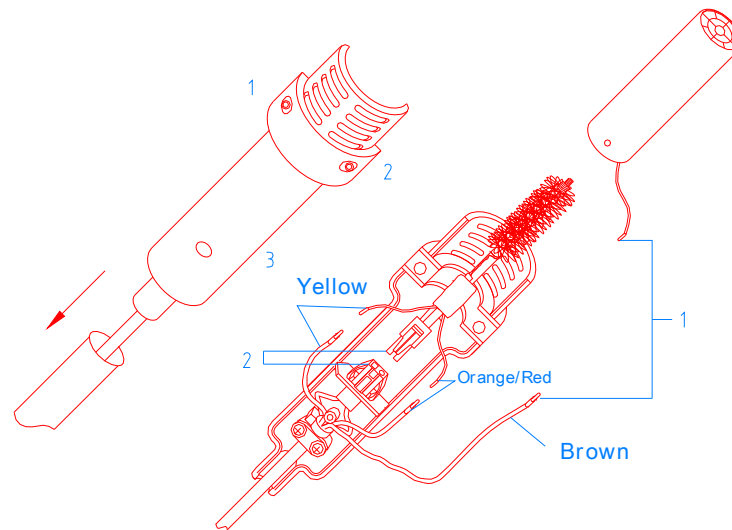
Glass and heat insulation is installed. Do not drop or miss it.

**\* Remove the Heating Element.**

Disconnect the terminal (Fig. II-2) and remove the Heating Element.

**\* Insert a new Heating Element.**

Handle it with care. Never rub the Heating Element wire. Insert a new Heating Element and reconnect the terminal. The sensor has polar. It is necessary to distinguish its colors connect it with same color. Reconnect the ground wire after replacing the element. Assemble the Handle in the reverse order of disassembly. Insert the Handle's projection into the hole in the pipe.



## Specifications

### Station

Power Consumption	320W
Pump	Diaphragm pump
Capacity	24l/min (max)
Outer Dimensions	187 (W)×135 (H)×245 (D)mm (7.36×5.31×9.64in)
Weight	4kg (approx.) (8.81 lb)

### Iron

Power Consumption	100, 110, 220 - 240/300W 120V/300W
Hot Air Temperature	150 ~ 500°C (212 ~ 932°F) (Use A1126)
Length	196mm (7.71 in)
Weight	120g (0.26 lb)

### Replacement Parts

NO	Name
A1143B	100V/300W Heating Element
A1144B	110V/300W Heating Element
A1145B	120V/300W Heating Element
A1146B	220V - 240V/300W Heating Element
B1438	FP Pick-up (with (S) (L) Wire)
B1439	FP Pick-up Wire (S)
B1440	FP Pick-up Wire (L)