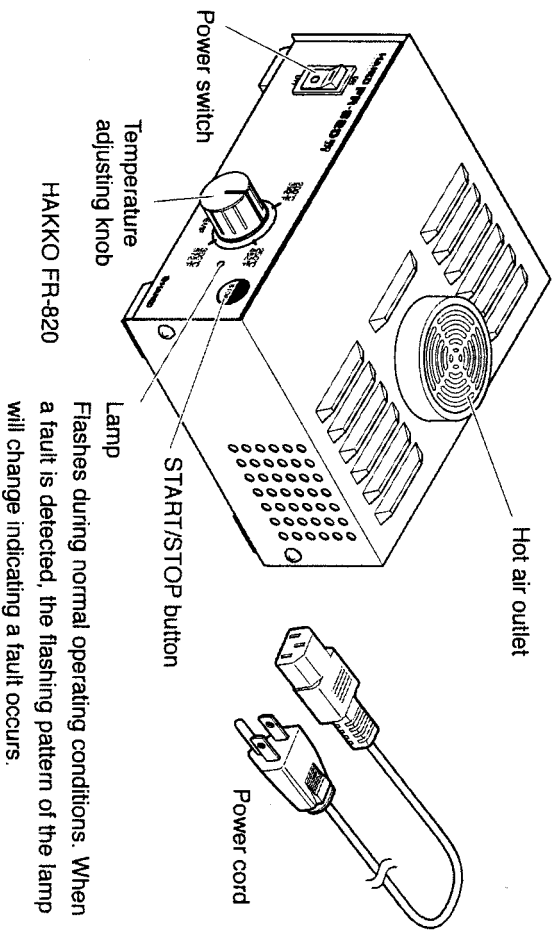


# 1. PACKING LIST & PART NAMES

HAKKO FR-820 .....	1	Instruction manual .....	1
Power cord .....	1		



# 2. SPECIFICATIONS

Model Name	HAKKO FR-820
Power Consumption	100V-330W, 110V-400W, 120V-470W 220V-460W, 230V-500W, 240V-540W
Control Temperature	150 - 300°C (302 - 572°F) (above the hot air outlet)
Dimensions	140 (W) × 70* (H) × 170 (D) mm
Weight	600g
Air Flow	0.18m <sup>3</sup> /min

\* Height (H) is the distance from the bottom of the foot to the top of the hot air outlet.  
 \* Specifications and design are subject to change without notice.  
 \* This product is protected against electrostatic discharge. Be sure to ground the unit during use.

# 3. WARNINGS, CAUTIONS, AND NOTES

## ⚠ WARNING

Warnings and cautions are placed at critical points in this manual to direct the operator's attention to significant items. They are defined as follows:

- ⚠ **WARNING:** Failure to comply with a WARNING may result in serious injury or death.
- ⚠ **CAUTION:** Failure to comply with a CAUTION may result in injury to the operator, or damage to the items involved.

● Observe the following precautions to ensure safety.

## ⚠ CAUTION

When the power is ON, the temperature of the hot air outlet ranges from 150 to 300°C. (302 to 572°F). To avoid injury to personnel or damage to items in the work area, observe the following:

- Do not directly touch either the hot air outlet or its vicinity.
- Do not use the product near combustible gases or flammable materials.
- Do not spray inflammable substances or flux to the hot air outlet or the air inlet.
- Do not put foreign substances into the hot air outlet or the air inlet.
- Do not use the unit in an enclosed area, and with the hot air outlet or the air inlet blocked.
- Advise those in the work area that the unit can reach very high temperatures and should be considered potentially dangerous.
- Turn the power OFF when no longer using the HAKKO FR-820 or when leaving it unattended.
- Before replacing parts or storing the unit, allow the unit to cool and then turn the power OFF.
- Do not use the unit in the vicinity of anything which can be sucked from the air inlet and cause a fire (such as dust and dirt).

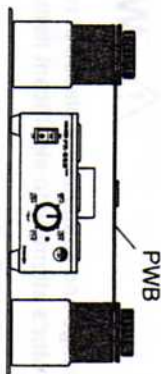
● Observe the following precautions to prevent accidents or damage to the unit.

- Do not use the unit for any purposes other than preheating.
- One hour is a guide for the length of time for continuous operation.
- Be sure the unit is grounded. Always connect power to a grounded receptacle.
- Do not modify the unit.
- Use only genuine HAKKO replacement parts.
- Do not wet the unit or use the unit with wet hands.
- Remove power cord by holding the plug – not the wires.
- While using the HAKKO FR-820, don't do anything which may cause bodily harm or physical damage.

# 4. OPERATION

## ● Preparation

Place FR-820 and PWB with the right figure as a guide.



● To start working

- ① Plug the power cord into an AC outlet.
- ② Turn on the power switch. The lamp comes on.
- ③ Adjust the temperature of the hot air.

**⚠ CAUTION**  
Make sure that the hot air outlet and its vicinity are not blocked before turning on the power switch.

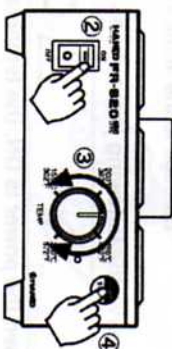
- ④ Press the START/STOP button to start preheating. The hot air is discharged from the hot air outlet. The lamp will start flashing.

## ● After finishing the work

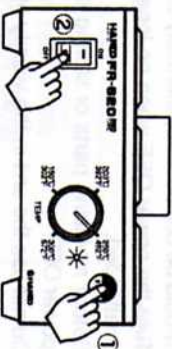
- ① Press the START/STOP button to stop preheating. The heater operation stops, then cooling of the unit by air starts.
- ② Make sure that the cooling-air discharge stops and the unit is completely cooled down before turning off the power switch.

## ● Temperature Offset Feature

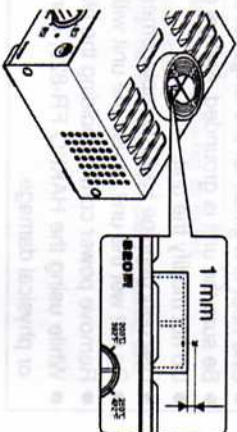
When making a temperature offset, measure the temperature of the hot air. The measurement should be made at the point which is 1 mm from the hot air outlet and is directly above the sensor.



● To finish working



**⚠ CAUTION**  
Turning off the power switch before air discharge stops may cause malfunction of the unit.



# 4. OPERATION

- ① Turn the temperature adjusting knob to 250°C and wait until the measurement temperature is stabilized.
- ② Make sure that the temperature stabilizes, then press the START/STOP button for three seconds. The color of the lamp will change to green.
- ③ Turn the knob so that the measured temperature becomes 250°C. The temperature offset ranges from -50°C to +50°C relative to the initial setting. Once the temperature is offset by +10°C, the temperature offset range is from -60°C to +40°C.
- ④ Press the START/STOP button again. The lamp returns to red, which indicates that an automatic control of the heater begins. Turn the knob to the desired temperature for preheating.

# 5. OPTIONS

## ● External switch

An optional hand switch or foot switch, which can be connected to the unit to be used as a substitute for the START/STOP button, is available.

## ● Optional extension pipe and lid

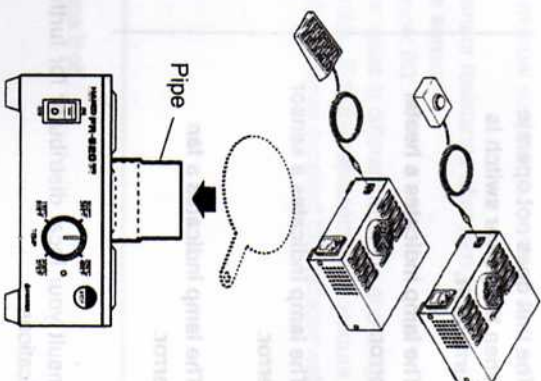
The optional extension pipe can be used to rectify the blow air. If using the 852, FR-802 or FR-803 without running the HAKKO FR-820, use the optional lid and pipe for the air outlet. Using the HAKKO FR-820 without the lid can damage it.

**⚠ CAUTION**  
If you try to make a temperature offset with the knob being set at 150°C or 300°C, the temperature cannot be offset in the negative (-) direction or in the positive (+) direction respectively.

**⚠ CAUTION**  
The temperature offset feature is inoperative unless the temperature stabilizes.

**⚠ CAUTION**  
If you try to make a temperature offset that exceeds +/-50°C, the lamp will start flashing. Temperature offset cannot be made while the lamp is flashing.

**⚠ CAUTION**  
The unit automatically switches to the normal operation mode unless you turn the knob within 90 seconds after entering the temperature offset mode.



## 6. ERROR INDICATION

When a fault is detected, the lamp on the front panel flashes in the following pattern indicating a fault occurs.

- **Heater Error**

Lamp flashing pattern:  
\* \* \* \* \*

When a heater fault is detected, the lamp flashes at equal intervals as shown to the left.

- **Sensor Error**

Lamp flashing pattern:  
\* \* \* \* \*

When a sensor fault is detected, the heater is forced to be turned off and the lamp flashes in a pattern of two blinks as shown to the left.

- **Fan Error**

Lamp flashing pattern:  
\* \* \* \* \*  
\* \* \* \* \*

When the fan fails to speed up within a given period of time or the fan speed drops below a certain level during operation, the lamp flashes in a pattern of four blinks as shown to the left.

## 7. TROUBLESHOOTING

### ⚠ WARNING

- Before checking the inside of the HAKKO FR-820 or replacing parts, be sure to disconnect the power plug. Failure to do so may result in electric shock.
- Perform troubleshooting after the unit is completely cooled down.

- The unit does not operate when the power switch is turned ON.

**CHECK** : Is the fuse blown?  
**ACTION** : Investigate why the fuse blew and then replace the fuse.

- The lamp indicates a heater error.

**CHECK** : Is the heater broken?  
**ACTION** : Measure the resistance value of the heater.

- The lamp indicates a sensor error.

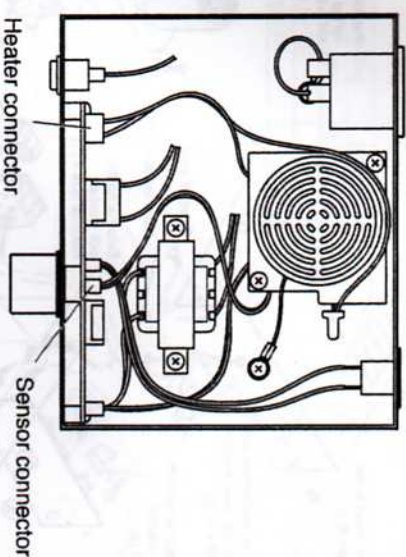
**CHECK** : Is the sensor broken?  
**ACTION** : Measure the resistance value of the sensor.

- The lamp indicates a fan error.

**CHECK** : Does a foreign substance get caught in the fan?  
**ACTION** : Remove the foreign substance (if any).

Consult your local distributor for further information about other troubles and error indications.

## 8. HEATER/SENSOR INSPECTION



**⚠ CAUTION**  
Measure the resistances of the heater and the sensor when their temperatures are at room temperature.

- Measure the resistance of the heater.

Measure the heater resistance after removing the connector from the heater.

Heater resistance: 25 to 30Ω (100 - 120V)  
Heater resistance: 100 to 110Ω (220 - 240V)  
If the resistance value is different from the above figure, replace the heater. (For the replacement procedure, see the instruction manual supplied the replacement part.)

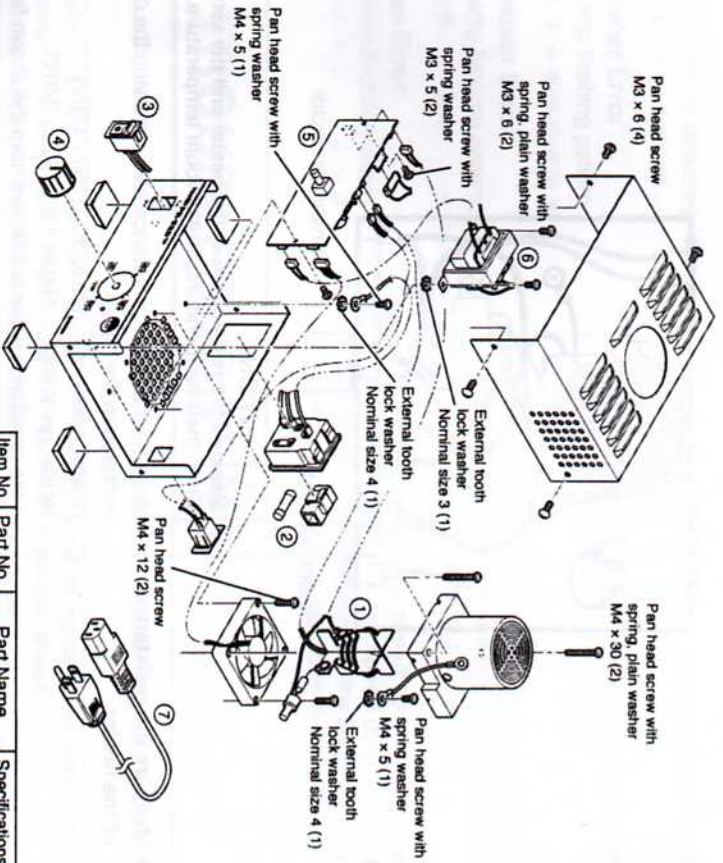
- Measure the resistance of the sensor.

Measure the sensor resistance after removing the connector from the sensor.  
Sensor resistance: 0Ω  
If the resistance value is different from the above figure, replace the sensor. (For the replacement procedure, see the instruction manual supplied the replacement part.)

## 9. MAINTENANCE

If flux adheres to the hot air outlet or its vicinity, wipe it off.

# 10. PARTS LIST



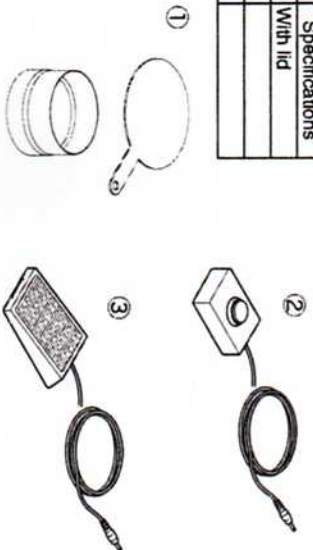
Item No.	Part No.	Part Name	Specifications
①	A1537	Heater	100-120V
	A1538	Heater	220-240V
②	B2468	Fuse	125V-5A
	B1268	Fuse	250V-3.15A
③	B2652	Power switch	
④	B1028	Knob	
⑤	B3258	PWB	100-120V
	B3259	PWB	220-240V
⑥	B3260	Transformer	100V
	B3261	Transformer	110-120V
	B3262	Transformer	220-240V

Item No.	Part No.	Part Name	Specifications
⑦	B2419	Power cord, 3 wired cord & American plug	100-120V
	B2421	Power cord, 3 wired cord but no plug	220-240V
	B2422	Power cord, 3 wired cord & BS plug	India
	B2424	Power cord, 3 wired cord& European plug	220V KTL, 230V CE
	B2425	Power cord, 3 wired cord & BS plug	230V CE, U.K.
	B2426	Power cord, 3 wired cord & Australian plug	
	B2436	Power cord, 3 wired cord & Chinese plug	China

# 10. PARTS LIST

## Optional Parts

Item No.	Part No.	Part Name	Specifications
①	B3263	Extension pipe	With lid
②	B2763	Hand switch	
③	B1649	Foot switch	



# 11. WIRING DIAGRAM

