HAKKO FX-951

SOLDERING STATION

High-output, temperature controlled soldering station

Instruction Manual

Thank you for purchasing HAKKO FX-951 soldering station.
Please read this manual before operating the HAKKO FX-951.
Keep this manual readily accessible for reference.

1. PACKING LIST AND PART NAMES

Please check to make sure that all items listed below are included in the package.

HAKKO FX-951 soldering station 1
HAKKO FM-2025 soldering iron 1
Control card 1
Power cord 1
Heat resistant pad 1
Iron holder 1
Instruction manual 1

HAKKO FX-951 Soldering station

Sleeve assembly
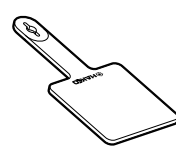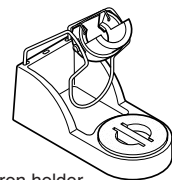
Tip (not included)

HAKKO FM-2025
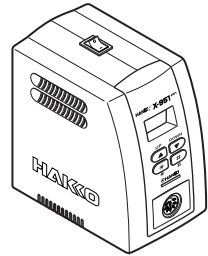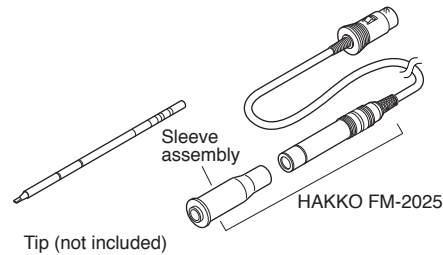
Control card
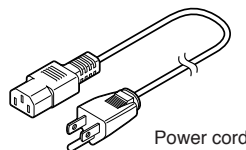
Power cord

Heat resistant pad

Iron holder

2. SPECIFICATIONS

HAKKO FX-951 soldering station

Power consumption	75W
Temperature range	200 - 450°C (400~840°F)
Temperature stability	±5°C (±9°F)

● Station

Output	24V
Dimensions	80 (W) × 130 (H) × 131 (D) mm
Weight	1.2kg

● HAKKO FM-2025 soldering iron

Power consumption	70 W (24 V)
Tip to ground resistance	< 2 Ω
Tip to ground potential	< 2 mV
Length of cord	1.2 m (4 ft.)
Length, (w/o cord)	188 mm (7.4 in.) with 2.4D tip
Weight, (w/o cord)	30 g (0.07 lb.) with 2.4D tip

NOTE:
The temperature were measured using the HAKKO 191 thermometer.
This product is protected against electrostatic discharge.
Specifications and design are subject to change without notice.

3. WARNINGS, CAUTIONS AND NOTES

⚠ WARNING

Warnings, cautions and notes 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. Two examples are given below.

NOTE : A NOTE indicates a procedure or point that is important to the process being described.

EXAMPLE: An EXAMPLE is given to demonstrate a particular procedure point or process.

⚠ CAUTION

When power is ON, tip temperatures will be between 200°C and 450°C. (392°F to 840°F.) To avoid injury or damage to personal and items in the work area, observe the following:
● Do not touch the tip or the metal parts near the tip.
● Do not allow the tip to come close to, or touch, flammable materials.
● Inform others in the area that the unit is hot and should not be touched.
● Turn the power off when not in use, or left unattended.
● Turn the power off when changing parts or storing the HAKKO FX-951.

To prevent accidents or damage to the HAKKO FX-951, be sure to observe the following:

● Do not use the HAKKO FX-951 for applications other than soldering.
● Do not allow the HAKKO FX-951 to become wet, or use it when hands are wet.
● Do not modify the HAKKO FX-951.
● Use only genuine HAKKO replacement parts.
● Do not bend or damage the control card. If the card does become damaged, do not force the card into the station slot.
● Do not strike the iron against hard objects to remove excess solder. This will damage the iron.
● Be sure the work area is well ventilated. Soldering produces smoke.
● While using HAKKO FX-951, don't do anything which may cause bodily harm or physical damage.
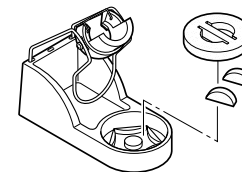
4. INITIAL SETUP

A. Iron holder

● Loosen the adjusting screws to change the angle of the iron receptacle as you like, then tighten the screws.
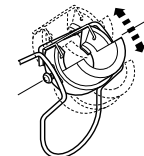
⚠ CAUTION
Do not set up the iron receptacle too high, the temperature of the soldering iron will become very hot.

⚠ CAUTION
Do not lay down the iron receptacle too much, it can be easy to fall down.

● The sponge is compressed. It will swell when moistened with water. Before using the unit, dampen the sponge with water and squeeze it dry.
1. Put the small cleaning sponge in one of the five holes in the iron holder base.
2. Add water to the iron holder base. The small sponge will keep the large sponge moist through capillary action.
3. Wet the large sponge, squeeze it dry and put it on the iron holder base.

⚠ CAUTION
Using the sponge without dampen with water may damage the tips.

B. Handpiece cord assembly
Pass the iron cord through the hole in the heat resistant pad.
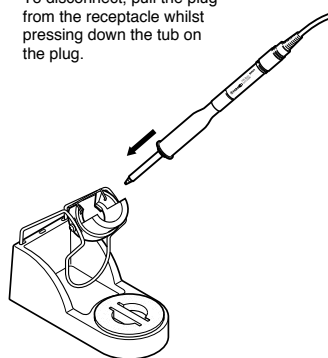

C. Soldering station

⚠ CAUTION
Be sure the power switch is OFF before connecting or disconnecting the soldering iron cord. Failure to do so may result in damage to the circuit board.

1. Insert the power cord into the receptacle at the back of the station.
Insert the soldering iron cord into the receptacle at the front of the station.

2. Set the iron in the iron holder.

3. Plug the power cord into a grounded wall socket.

⚠ CAUTION
The HAKKO FX-951 is protected against electrostatic discharge and must be grounded for full efficiency.

Insert the plug into the receptacle until it seats.
Receptacle

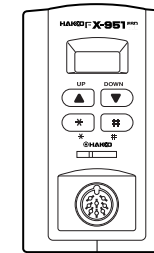To disconnect, pull the plug from the receptacle whilst pressing down the tub on the plug.

5. OPERATION

Controls and displays

Controls

The front panel of the HAKKO FX-951 soldering station has the following controls:
• Four control buttons:

□ – Initiates a data entry mode.

✱ – End of sequence signal (terminates a phase of a data entry mode); when pressed for less than one second, displays settings already stored.

▲ – Increases the value in the appropriate display window.

▼ – Decreases the value in the appropriate display window.

Displays

The HAKKO FX-951 has a three-digit display element. Depending upon the selected mode, it will display:
• Normal mode:
Sensor temperature (tip temperature)
• Data entry:
Selected quantity (see 'data entry procedures' for exact characteristics)
• Temperature scale:
°C or °F, depending upon selection
• Error detection:
Refer to 'ERROR MESSAGES' section

In addition, heater lamps will flash when the station has reached the desired temperature, indicating that it is ready for use.
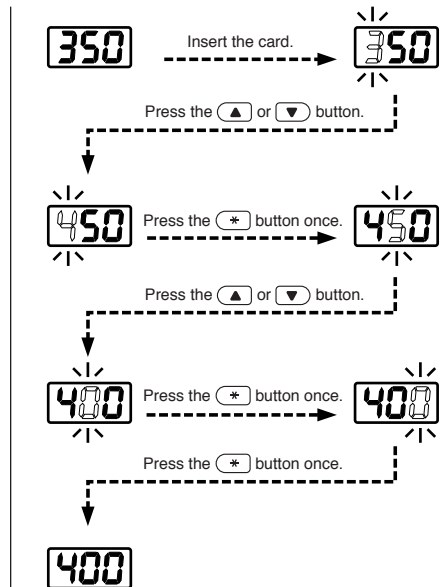An audible buzzer is provided to alert the operator when:
• The station has reached the set temperature. The buzzer will sound once.
• When the low temperature threshold has been crossed, the buzzer will sound continuously. This buzzer will shutoff when the sensed temperature returns to the acceptable range.
• The buzzer will sound once when sleep function is activated and the tip temperature starts to decrease.
• When a foreign substance, an incompatible tip, or the soldering end of the tip is inserted into the HAKKO FM-2025, the display will blink and the buzzer will sound continuously.
• The auto power shutoff is activated and the power to the heating element is shutoff, the buzzer will sound three times.
• When the error occurs with the HAKKO FM-2025, the buzzer will sound continuously.

● Operation
1. Turn the power switch ON.

2. Once the temperature is reached, the buzzer sounds. The heater lamp at the lower right of the temperature display **350** starts blinking.

⚠ CAUTION
The HAKKO FX-951 is preset at 350°C at the factory. Check the temperature setting by pressing the ✱ button. The set temperature will be displayed for two seconds.

⚠ CAUTION
Place the iron in the iron holder when not in use.

● Changing the temperature setting

Example: 350°C to 400°C

1. Insert the control card into the slot in the front of the unit.
• The hundreds digit will begin to flash, indicating that the unit is in the TEMPERATURE SET mode and data may be entered.

2. Entering the hundreds digit
• Press the ▲ or ▼ button to set the desired figure. Only 2, 3, or 4 can be selected. (In °F mode, 4, 5, 6, 7, or 8 can be selected). When the desired figure is displayed, press the ✱ button to enter. The tens digit will begin to flash.

3. Entering the tens digit
• Press the ▲ or ▼ button to set the desired figure. Any value from 0 to 9 can be selected. (In °F mode, the same value can be selected.) When the desired figure is displayed, press the ✱ button to enter. The units digit will begin to flash.

4. Entering the units digit
• Press the ▲ or ▼ button to set the desired figure. Any value from 0 to 9 can be selected. (In °F mode, the same value can be selected.) When the desired figure is displayed, press the ✱ button to enter. The desired temperature is now entered into the system memory and heater control will begin.

When the station is ON and the card is in the station, the data entry procedure follows:

350 → Insert the card. → 350
Press the ▲ or ▼ button.
450 → Press the ✱ button once. → 450
Press the ▲ or ▼ button.
400 → Press the ✱ button once. → 400
Press the ✱ button once.
400

NOTE:
If power is switched off or lost during the execution of this procedure, no data will be entered. The entire procedure must be repeated from step 1.

1. Hold the ✱ button down for at least one second. The current temperature setting will be displayed, then the hundreds digit will begin to flash. This indicates that the station has entered the temperature setting mode.
Continue with the procedure of 2 - 4, above.

2. When the ✱ button is pressed for less than one second, the current temperature setting is displayed for two seconds, then returns to show the actual tip temperatures.
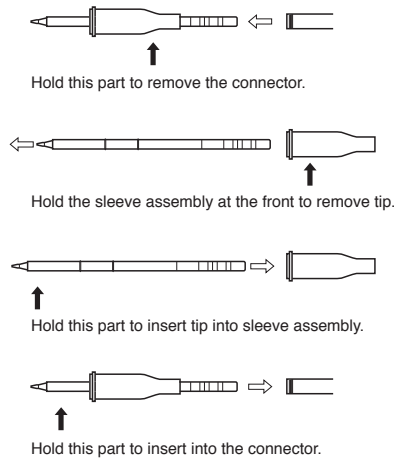
5. OPERATION

● **Replacing the tip**

Removing and inserting the tip:
Removing the tip: Hold the sleeve assembly to remove the connector.
Remove the tip from the sleeve assembly.
(If the tip is hot, hold it with the heat-resistant pad.)

Inserting the tip: Hold head part and insert the tip into the sleeve assembly. Push until the sleeve assembly touches the ring round the tip; at this point the tip should not be forced further into the sleeve assembly.
Put the tip into the connector.
Insert the new tip firmly into the connector. (If the tip is not properly inserted, [5-E] will be displayed.)

Hold this part to remove the connector.

Hold the sleeve assembly at the front to remove tip.

Hold this part to insert tip into sleeve assembly.

Hold this part to insert into the connector.

> **⚠ CAUTION**
> The tip can be very HOT. Use the heat-resistant pad for handling hot tips, but do not hold the hot portion of the tip, even with the pad, for a long time.

● **How to enter the tip offset value into the HAKKO FX-951**

Example 1
If the measured temperature is 410°C and the set temperature is 400°C, the difference is -10°C (need to decrease by 10°C). So, enter the figure which 10 is deducted from present offset value.

1. **Insert the control card into the slot in the station.**
 · The station is in the temperature setting mode.
 The hundreds digit will begin to flash.

2. **Press the [#] button on the front panel.**
 · This will set the station to offset value entry mode.

3. **Enter the offset value**
 The allowable ranges for offset values are -50 ~ +50°C (In °F mode -90 ~ +90°F).

> **NOTE:**
> During offset data entry mode with blinking, the tip temperature is controlled by present offset value.

 a. Entering the hundreds digit
 · Press the [▲] or [▼] button to set the desired figure. Only 0 (plus) or - (minus) can be selected. (In °F mode, it is the same as °C mode). When the 0 (plus) or - (minus) is selected, press the [*] button to enter. The tens digit will begin to flash.

 b. Entering the tens digit
 · Press the [▲] or [▼] button to set the desired figure. Any value from 0 to 5 (In °F mode, 0 to 9) can be selected. When the desired figure is displayed, press the [*] button to enter. The units digit will begin to flash.

 c. Entering the units digit
 · Press the [▲] or [▼] button to set the desired figure. Any value from 0 to 9 (In °F mode, same value can be selected.) When the desired figure is displayed, press the [*] button to enter. The desired temperature is now entered into the system memory and heater control will begin with new offset value.

When the station is ON and the card is in the station, the offset entry procedure follows:

Insert the card. [400]

Press the [#] button.

[100] Press the [▲] or [▼] button. [-00]

Press the [*] button once.

[-00] Press the [▲] or [▼] button. [-10]

Press the [*] button once.

[-10] Press the [*] button once. [-10]

> **NOTE:**
> When the unit is in offset-free mode, you can go into the offset value entry mode without control card by pressing the [#] button for second.

1. Hold the [#] button down for at least one second.
 The current offset value will be displayed, then the hundreds digit will begin to flash. This indicates that the station has entered the offset value input mode.
 Continue with the procedure of a - c, above.

2. When the [#] button is pressed for less than one second, the current offset value is displayed for two seconds, then returns to tip temperature.

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6. PARAMETER SETTINGS

The HAKKO FX-951 comes from the factory with the following values preset.

Temperature scale	Celsius
Power save	Disabled
Low temperature alarm setting	150°C
Resetting the supervisor or operator control setting	4 0
Setting temperature	350°C

● **Entering the parameter**

1 °C of °F temperature display

2 Power save setting

Power save is an optional setting HAKKO FX-951 has two kinds of power save functions. To turn off the power save function, select 0 and then press the [*] button.

> **Power save function setting:**
> 2 0   Disabled
> 210   Sleep   work after 10 minutes
> 230   Auto power shutoff   work after 30 minutes

● When the display shows [SLP], pressing any button the power will be turned on again.

> **NOTE:**
> The sleep function does not work in case the setting temperature is less than 300°C/570°F.

● When the display shows [- - -], and to begin soldering, cycle the power switch OFF, then ON.

3 Resetting the low temperature alarm tolerance setting
The unique function alerts the operator when the sensed temperature drops below a set limit. Should this occur, an error message will be displayed, and the buzzer will sound continuously. When the temperature returns within the allowable range, the buzzer will stop.

> Range of allowable low temperature alarm tolerance
> for °C: 30 - 150°C
> for °F: 50 - 300°F

Example: When the setting temperature is 350°C and the low temperature alarm tolerance is 100°C, buzzer will sound when the tip temperature will drop over 250°C.

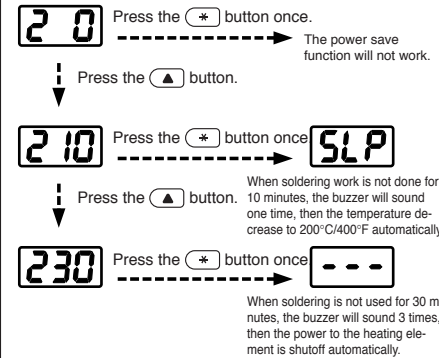**4 Resetting the supervisor/operator control setting**

The HAKKO FX-951 has the following four parameters:

1) °C or °F temperature display selection
2) Power save
3) Low temperature alarm tolerance setting
4) Resetting the supervisor/operator control setting

Once the station enters parameter mode, set the parameters in the order shown below. After all the parameters have been set, normal operation will be resumed.

1. Turn power OFF.
2. Insert the control card into the card slot in the front of the unit.
3. Press and hold down the [▲] and [▼] buttons simultaneously, and then turn power ON.
4. Hold [▲] and [▼] buttons down until the display shows [ıC] (Celsius) or [ıF] (Fahrenheit). When either the display shows either [ıC] or , [ıF] the station is in parameter input mode.
● Pressing either the [▲] and [▼] button will cause the display to alternate between [ıC] or [ıF].
● When the desired scale is displayed, select by pressing the [*] button. The system will automatically sequence to power save mode.

When the station enters the parameter input mode, the procedure is as follows.

[2 0] Press the [*] button once. → The power save function will not work.

Press the [▲] button.

[210] Press the [*] button once [SLP]
When soldering work is not done for 10 minutes, the buzzer will sound one time, then the temperature decrease to 200°C/400°F automatically.

Press the [▲] button.

[230] Press the [*] button once [- - -]
When soldering is not used for 30 minutes, the buzzer will sound 3 times, then the power to the heating element is shutoff automatically.

● When the station enters low-temperature alarm tolerance setting mode, the hundreds digit begins flashing. Enter and store the value in the same manner as described in "Changing the temperature setting."

● If you enter a value exceeding the allowable range shown to the left, you will be brought back to entering a value in the hundreds digit. If this occurs, reenter a correct value.

● Once the value is stored, the system will automatically sequence to resetting the supervisor/operator control setting mode.

To change the supervisor/operator control settings, the procedure is as follows.
● The display will show [4 0] or [4 1] when this mode is entered.

 [4 0] : No offset value can be entered without inserting the card.

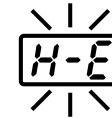 [4 1] : An offset value can be entered without inserting the card.

Pressing the [▲] or [▼] button will change [4 0] and [4 1].
When the desired setting is displayed, select by pressing [*] button.
The system will exit the parameter setting mode and begin heater control.
It is now ready for normal operation.

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7. ERROR MESSAGES

● **Sensor Error**

[S-E]

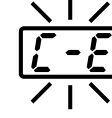● **Low-temperature alarm tolerance error**

[H-E]
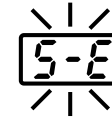
 EXAMPLE:

 350°C (400°C – 50°C)

 Set temperature — Low-temperature alarm tolerance

 OR

 650°F (750°F – 100°F)

 Set temperature — Low-temperature alarm tolerance

● **Heater terminal short circuit error**

[HSE]

● **Soldering iron error**

[C-E]

When there is the possibility that a failure has occurred in the sensor or heater (including the sensor circuit), [S-E] is displayed and the power is shut down.

> **⚠ CAUTION**
> The sensor error also occurs if the tip is not inserted properly.

If the sensor temperature falls below the difference between the current temperature setting and the low-temperature alarm tolerance, [H-E] is displayed and the warning buzzer sounds. When the tip temperature rises to a value within the set tolerance, the buzzer will stop sounding.

> **EXAMPLE:**
> Assume that the temperature setting is 400°C/750°F and the tolerance 50°C/100°F. If the temperature continues to decrease and finally falls below the value indicated below while the heating element is on, the displayed value starts blinking to indicate that the tip temperature has dropped.
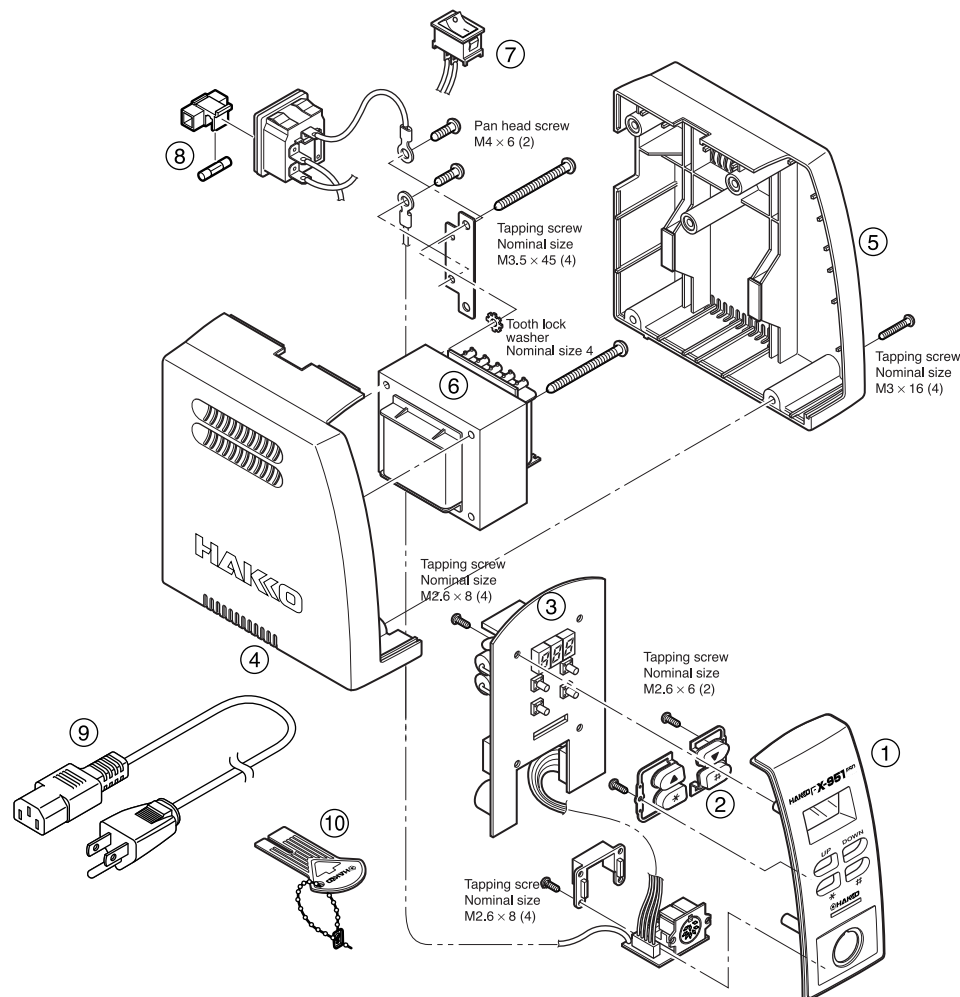
[HSE] will flash, and the buzzer will sound continuously, when the tip is inserted wrong way round, an incompatible tip is inserted, or a foreign object has found its way into the connector.

[C-E] will be displayed if the connector cord is not attached to the station OR the wrong soldering iron is connected.

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HAKKO FX-951

SOLDERING STATION

High-output, temperature controlled soldering station

Maintenance & Checking

1. PARTS LIST

Pan head screw M4 × 6 (2)

Tapping screw Nominal size M3.5 × 45 (4)

Tooth lock washer Nominal size 4

Tapping screw Nominal size M3 × 16 (4)

Tapping screw Nominal size M2.6 × 8 (4)

Tapping screw Nominal size M2.6 × 6 (2)

Tapping screw Nominal size M2.6 × 8 (4)

● HAKKO FX-951 Station

Item No.	Part No.	Part Name	Specifications
①	B2973	Front panel	
②	B2982	Button set	4 each
③	B2980	P.W.B./ tempera-ture control	
④	B2977	Case/Left	With rubber foot and cushion
⑤	B2978	Case/Right	With rubber foot and cushion
⑥	B2979	Transformer	100V
	B2983	Transformer	110V
	B2836	Transformer	120V
	B2984	Transformer	220V
	B2985	Transformer	230V
	B3067	Transformer	240V
⑦	B2852	Power switch	

Item No.	Part No.	Part Name	Specifications
⑧	B2403	Fuse/250V-2A	100-110V
	B3011	Fuse/250V-2A	120V
	B2987	Fuse/250V-1A	220-240V
⑨	B2419	Power cord, 3 wired cord & American plug	
	B2421	Power cord, 3 wired cord but no plug	
	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
	B2436	Power cord, 3 wired cord & Chinese plug	China
	B2426	Power cord, 3 wired cord & Australian plug	
⑩	B2972	Control card	
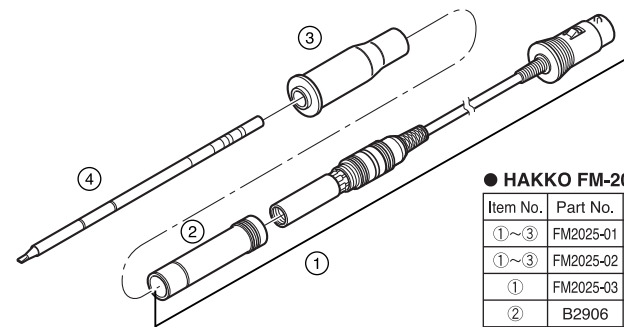
● HAKKO FM-2025

Item No.	Part No.	Part Name	Specifications
①~③	FM2025-01	HAKKO FM-2025	③ is yellow
①~③	FM2025-02	HAKKO FM-2025	③ is blue
①	FM2025-03	Connector assembly	
②	B2906	Connector cover	
③	B2765C	Sleeve assembly	Yellow
	B2768C	Sleeve assembly	Orange
	B2769C	Sleeve assembly	Blue
④		Tip	See back page.
⑤	B2300	Heat resistant pad	
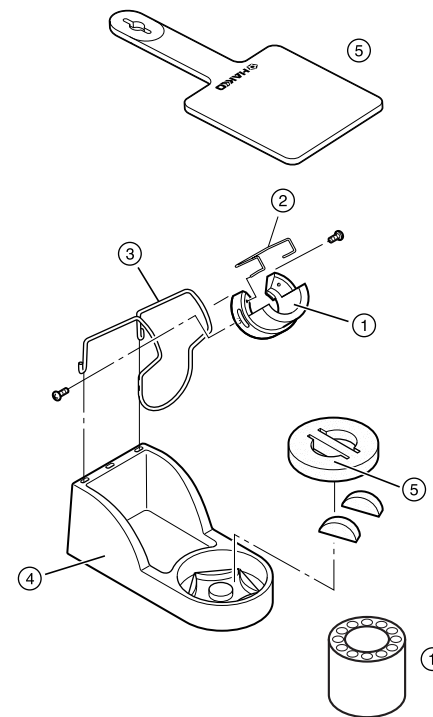
● Iron Holder

Item No.	Part No.	Part Name	Specifications
①~⑤	FH100-02	Iron holder	With cleaning sponge

● Iron Holder Parts

Item No.	Part No.	Part Name	Specifications
①	B3001	Iron receptacle	With screw
②	B2791	Retaining clip	
③	B3000	Holder for iron receptacle	
④	B2999	Iron holder base	With rubber feet
⑤	A1519	Cleaning sponge	

● Optional Parts

Item No.	Part No.	Part Name	Specifications
①	B2756	Tip tray	

2. MAINTENACE/CHECKING PROCEDURE

Performing proper and periodical maintenance extends the products life and contributes to use it always in a good condition. Efficient soldering depends upon the temperature, the quality and quantity of the solder and flux. Apply the following service procedure as dictated by the conditions of the usage.

> **⚠ WARNING**
> Since the soldering iron can reach a very high temperature, please work carefully. Except the case especially indicated, always turn the power switch OFF and disconnect the power plug before performing any maintenance procedure.

● Tip maintenance

1. Tip temperature

High temperatures shorten tip life and may cause thermal shock to components. Always use the lowest possible temperature when soldering. The excellent thermal recovery characteristics of the HAKKO FX-951 ensure effective soldering at low temperatures.

2. Cleaning

Always clean the soldering tip before use, to remove any residual solder or flux adhering to it. Use a clean and moist cleaning sponge No. A1519 (Provided with the HAKKO FX-951) or the HAKKO 599B tip cleaner. Contaminants on the tip have many deleterious effects, including reduced heat conductivity, which contribute to poor soldering performance.

3. After use

Always clean the tip and coat it with fresh solder after use. This guards against oxidation.

4. When the unit is not being used and the auto power shutoff is not active.

Never allow the unit to idle at a high temperature for extended periods. This will allow the tip to become oxidized. Turn the power switch OFF. If it is to be out of service for several hours, it is advisable to pull the power plug as well.

5. Inspecting and cleaning the tip

This procedure, if followed daily, will materially add to tip life.
1. Set the temperature to 250°C. (482°F.)
2. When the temperature stabilizes, clean the tip (see 2, above) and check the condition of the tip. If the tip is badly worn or deformed, replace it.
3. If the solder plated part of the tip is covered with black oxide, apply fresh solder, containing flux, and clean the tip again. Repeat until all the oxide is removed, then coat the tip with fresh solder.
4. Turn the power OFF and remove the tip, using the heat resistant pad. Set the tip aside to cool.
5. Remaining oxides, such as the yellow discoloration on the tip shaft, can be removed with isopropyl alcohol.

> **⚠ CAUTION**
> NEVER file the tip to remove oxides!

3. TROUBLE SHOOTING GUIDE

> **⚠ WARNING**
> · Before checking the inside of the HAKKO FX-951 or replacing parts, be sure to disconnect the power plug. Failure to do so may result in electric shock.

● The unit does not operate when the power switch is turned on.

CHECK : Is the power cord and/or the connection plug disconnected?
ACTION : Connect it.
CHECK : Is the fuse blown?
ACTION : Investigate why the fuse blew and then replace the fuse. If the cause can not be determined, replace the fuse. If the fuse blows again, send the unit in for repair.

● The tip does not heat up.
· **The sensor error 5-E is displayed.**

CHECK : Is the tip inserted properly?
ACTION : Insert the tip completely.
CHECK : Is the connection cord and/or the heater/sensor broken?
ACTION : See the appropriate section of this manual regarding how to check the connection cord and/or the heater/sensor for breakage.

● Solder does not wet the tip.

CHECK : Is the tip temperature too high?
ACTION : Set the appropriate temperature.
CHECK : Is the tip contaminated with oxide?
ACTION : Remove the oxide (see "Tip maintenance" on section 2).

● The tip temperature is too high.

CHECK : Is the connection cord broken?
ACTION : See "Checking the connection cord for breakage" on section 2.
CHECK : Is the entered offset value correct?
ACTION : Enter the correct value.

● The tip temperature is too low.

CHECK : Is the tip contaminated with oxide?
ACTION : Remove the oxide (see "Tip maintenance" on section 2).
CHECK : Is the entered offset value correct?
ACTION : Enter the correct value.

● The soldering iron error C-E is displayed.

CHECK : Is incorrect soldering iron connected?
ACTION : Connect the HAKKO FM-2025 soldering iron.

● The low-temperature alarm tolerance error H-E occurs frequently.

CHECK : Is the tip too small for the items to be soldered?
ACTION : Use a tip with a larger thermal capacity.
CHECK : Is the setting value for the low-temperature alarm tolerance too low?
ACTION : Increase the setting value.

● Heater terminal short circuit error H-SE is displayed.

CHECK : Is the tip for HAKKO FM-2025 soldering iron?
ACTION : Connect the HAKKO FM-2025 soldering iron.

● Checking Procedure

> **⚠ WARNING**
> Unless otherwise directed, carry out these procedures with the power switch OFF and the power UNPLUGGED.

● Check for a broken heater or sensor

1. Check for a broken heater or sensor

Measure the resistance across this position.

Verify the electrical integrity of the heater and sensor. Measure the resistance of the heater and sensor while at room temperature (15 to 25°C.; 59 to 77°F.). It should be 8Ω ±10%. If the resistance exceeds these limits, replace the tip.

● Check the grounding line
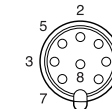
1. Unplug the connection cord from the station.
2. Measure the resistance value between Pin 2 and the tip.
3. If the value exceeds 2Ω (at room temperature), perform the tip maintenance described on section 2, maintenance for the tip. If the value still does not decrease, check the connection cord for breakage.
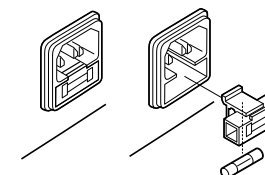
● Checking the connection cord for breakage

Black
White
Green
Red
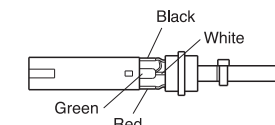
1. Remove the soldering tip and the sleeve assembly.
2. Turn the front piece of the HAKKO FM-2025 counterclockwise and remove the cover.
3. Measure the resistance values between the connector and the lead wires at the socket as follows:

Pin 1 – Red   Pin 2 – Green
Pin 3 – Black   Pin 5 – White

If any value exceeds 0Ω or is ∞, replace the HAKKO FM-2025.

● Replacing the fuse

1. Unplug the power cord from the power receptacle.
2. Remove the fuse holder.
3. Replace the fuse.
4. Put the fuse holder back in place.

4. TIP STYLES

Unit: mm (in.)

SHAPE B

T12-B SHAPE-B
T12-B2 SHAPE-0.5B
T12-B3 SHAPE-0.7B
T12-B4 SHAPE-0.4B
T12-BL SHAPE-BL

SHAPE BC

T12-BC1 SHAPE-1BC
T12-BCF1*
T12-BC2 SHAPE-2BC
T12-BCF2*
T12-BC3 SHAPE-3BC
T12-BCF3*

SHAPE C

T12-C1 SHAPE-1C
T12-C4 SHAPE-4C
T12-CF4*

SHAPE D

T12-D08 SHAPE-0.8D
T12-D12 SHAPE-1.2D
T12-D16 SHAPE-1.6D
T12-D24 SHAPE-2.4D
T12-D4 SHAPE-4D

T12-D52 SHAPE-5.2D
T12-DL08 SHAPE-0.8DL
T12-DL12 SHAPE-1.2DL
T12-DL32 SHAPE-3.2DL
T12-DL52 SHAPE-5.2DL

SHAPE I

T12-I SHAPE-I
T12-IL SHAPE-IL
T12-ILS SHAPE-ILS

SHAPE J

T12-J02 SHAPE-0.2J
T12-JL02 SHAPE-0.2JL
T12-JS02 SHAPE-0.2JS

SHAPE K

T12-K SHAPE-K
T12-KF SHAPE-KF
T12-KL SHAPE-KL
T12-KR SHAPE-KR
T12-KU SHAPE-KU

TUNNEL

T12-1001 TUNNEL 5.1 × 4.6
T12-1002 TUNNEL 5.1 × 10.4
T12-1003 TUNNEL 9.5 × 18.3
T12-1004 TUNNEL 9.5 × 15.8
T12-1005 TUNNEL 9.5 × 13.2

T12-1006 TUNNEL 6.9 × 11.4
T12-1007 TUNNEL 7.9 × 18.8
T12-1008 TUNNEL 19.5 × 10.2
T12-1009 TUNNEL 13.4 × 20.5
T12-1010 TUNNEL 19.5 × 12

QUAD

T12-1201 QUAD 13.6 × 8.5
T12-1202 QUAD 10.3 × 10.3
T12-1203 QUAD 12.8 × 12.8
T12-1204 QUAD 17.9 × 17.9
T12-1205 QUAD 23.4 × 17.3

T12-1206 QUAD 22.5 × 16.5
T12-1207 QUAD 15.5 × 15.5
T12-1208 QUAD 15.8 × 15.8
T12-1209 QUAD 8.4 × 8.4

SPATULA

T12-1401 SPATULA 10.4
T12-1402 SPATULA 15.7
T12-1403 SPATULA 21.2
T12-1404 SPATULA 25

T12-1405 SPATULA 32
T12-1406 SPATULA 40

SPECIAL APPLICA-TIONS TYPE

T12-B2Z SHAPE-0.5B (Z)
T12-BC1Z SHAPE-1BC (Z)
T12-BCF1Z*
T12-BC2Z SHAPE-2BC (Z)
T12-BCF2Z*
T12-BC3Z SHAPE-3BC (Z)
T12-BCF3Z*
T12-BZ SHAPE-B (Z)

T12-C4Z SHAPE-4C (Z)
T12-CF4Z*
T12-D12Z SHAPE-1.2D (Z)
T12-D16Z SHAPE-1.6D (Z)
T12-D24Z SHAPE-2.4D (Z)
T12-D4Z SHAPE-4D (Z)

T12-KFZ SHAPE-KF (Z)
T12-KRZ SHAPE-KR (Z)

HEAVY DUTY TYPE

T12-WB2 SHAPE-0.5WB
T12-WD08 SHAPE-0.8WD
T12-WD12 SHAPE-1.2WD
T12-WD16 SHAPE-1.6WD
T12-WD52 SHAPE-5.2WD

T12-WI SHAPE-WI

*Tinned on the soldering surface only.