HAKKO

HAKKO FX-951
SOLDERING STATION

High-output, temperature controlled soldering station

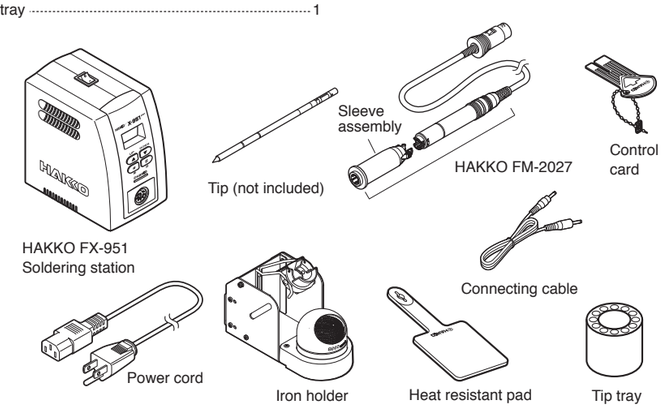
Instruction Manual

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	Heat resistant pad	1
HAKKO FM-2027 soldering iron	1	Iron holder	1
Control card	1	Connecting cable	1
Power cord	1	Instruction manual	1
Tip tray	1		



Connectable irons
- HAKKO FM-2027 (soldering iron)
- HAKKO FM-2026 (N_2 soldering iron)
- HAKKO FM-2032 (soldering iron)

2. SPECIFICATIONS

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

● Station

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

● HAKKO FM-2027 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 was measured using the HAKKO 191 or FG-100 thermometer.
This product is protected against electrostatic discharge.
Specifications and design are subject to change without notice.

■ Electrostatic Protection
This product includes such features as electrically conductive plastic parts and grounding of the handpiece and station as measures to protect the device to be soldered from the effects of static electricity. Be sure to observe the following instructions:
1. The handle and other plastic parts are not insulators, they are conductors. When replacing parts or repairing, take sufficient care not to expose live electrical parts or damage insulation materials.
2. Be sure to ground the unit during use.

HAKKO

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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.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.

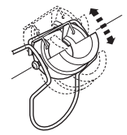
To prevent accidents or damage to the HAKKO FX-951, be sure to observe the following:

- 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.



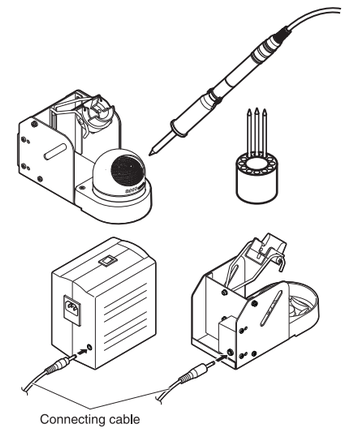
⚠ CAUTION
Do not set up the iron receptacle too high, the temperature of the soldering iron will become very hot.
Do not lay down the iron receptacle too much, it can be easy to fall down.

● Operation:
First, remove any excess solder from the tip by thrusting the tip into the cleaning wire.
(Do not wipe the tip against the wire. This may cause molten solder to spatter.)
When the wire become dirty or loaded with solder, turn the wire until a clean surface is presented.
When changing the cleaning wire, lift the case top vertically to prevent solder debris from falling out.

● Place the spare tips in the tip tray.

● Use of the sleep function
When using the sleep function, insert one end of the connecting cable into the jack at the back of the iron holder and the other end into the jack at the back of the soldering station to connect them.

⚠ CAUTION
Be sure to turn off the power before connecting or disconnecting the connecting cable.



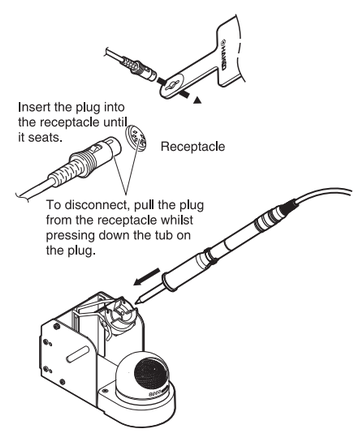
B. Handpiece cord assembly
Pass the iron cord through the hole in the heat resistant pad.

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.

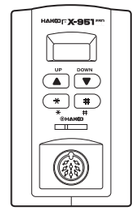
⚠ CAUTION
The HAKKO FX-951 is protected against electrostatic discharge and must be grounded for full efficiency.



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.
- When a foreign substance, an incompatible tip, or the soldering end of the tip is inserted into the HAKKO FM-2027, the display will blink and the buzzer will sound continuously.
- When the error occurs with the HAKKO FM-2027, the buzzer will sound continuously.

NOTE:
The buzzer that sounds when the unit reaches the desired temperature, or when C-E or S-E is displayed, can be switched on or off via the parameter settings.

● 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 (750) starts blinking.

⚠ CAUTION
The HAKKO FX-951 is preset at 750°F 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.

● Setting/changing the temperature

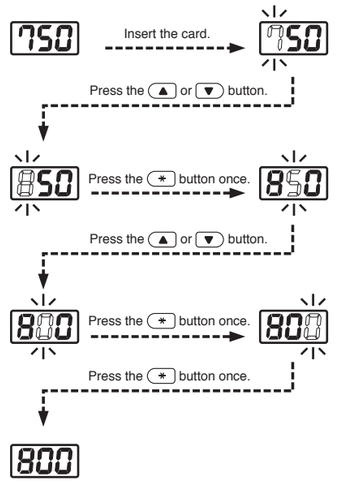
Example: 750°F to 800°F

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.



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.

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

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

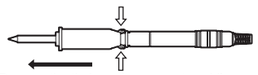
● Replacing the tip

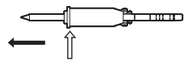
⚠ CAUTION
The tip may be hot. Avoid holding the hot tip for a long time even if using the heat-resistant pad. Otherwise burns may result.

Removing the tip:
- Hold down the lock release buttons in the sleeve assembly, pull out the tip together with the sleeve assembly from the connector.

⚠ CAUTION
- Be sure to keep the lock release buttons hold down while pulling out the sleeve assembly. Failure to do so will damage the locking mechanism.
- Be sure to pull out the tip only after separating the sleeve assembly from the connector. Otherwise, the sleeve assembly may fall down and break.

- Holding the front end of the sleeve assembly, pull out the tip.


Remove the tip from the connector while pressing this part.

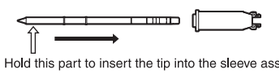

Hold the front part of the sleeve assembly to remove the tip.

Inserting the tip:
Holding the front end of the tip, insert it into the sleeve assembly.

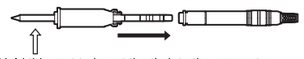
⚠ CAUTION
Insert the tip into the sleeve assembly until it clicks into place. When you hear it clicks, avoid forcing the tip into the sleeve assembly.

- Insert the tip securely into the connector.

NOTE:
Improper insertion of the tip will cause E5 to appear on the display.


Hold this part to insert the tip into the sleeve assembly.

⚠ CAUTION
When holding the head of the tip, there is a danger of burn. Be sure to use the heat-resistant pad.


Hold this part to insert the tip into the connector.

The temperature accuracy of iron tips is ±15℃ (±27℉) except for some tips.
If a higher temperature accuracy is required, use the following offset function:

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

Example 1;
If the measured temperature is 710°F and the set temperature is 700°F, the difference is -10°F (need to decrease by 10°F). 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.

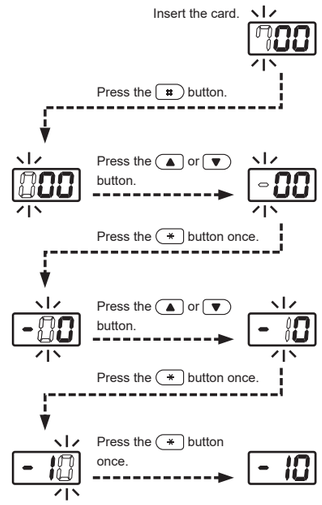
3. Enter the offset value
The allowable ranges for offset values are from -50 to +50°C (In °F mode from -90 to +90°F).

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.



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.

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

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.

6. MAINTENANCE

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. A1536 (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!

Detailed information on the parameters and how to change them can be found in manuals available at the HAKKO Document Portal. Please download and make use of them.

➡ **https://doc.hakko.com**

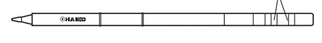
7. TROUBLE SHOOTING GUIDE

⚠ 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 E5 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 : If the connection cord is broken, replace HAKKO FM-2027. If the heater／sensor is broken, replace the tip.

Measure the resistance of the heater and sensor while at room temperature, and it should be 8Ω±10%.



● 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 6).

● The tip temperature is too high.
CHECK : Is the connection cord broken?
ACTION : If the connection cord is broken, replace HAKKO FM-2027.
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 6).
CHECK : Is the entered offset value correct?
ACTION : Enter the correct value.

● The soldering iron error E-E is displayed.
CHECK : Is incorrect soldering iron connected?
ACTION : Connect the HAKKO FM-2027 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 HSE is displayed.
CHECK : Is the tip for HAKKO FM-2027 soldering iron?
ACTION : Turn the power switch OFF and insert the genuine HAKKO FM-2027 tip. Turn the power switch ON.

● Though the soldering iron is placed on the iron holder, the sleep function is not activated.
CHECK : Check that the connecting cable is inserted firmly into the jack.
ACTION : Turn off the power switch and insert the connecting cable again.

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（商品によっては設定の無い言語がありますが、ご了承ください。）
* 各國語言（日語、英語、中文、法語、德語、韓語）的使用説明書可以通過以下网站的 HAKKO Document Portal 下載參閱。
（有一部分的產品沒有設定外語對應、請見諒）
* Instruction manual in the language of Japanese, English, Chinese, French, German, and Korean can be downloaded from the HAKKO Document Portal.
(Please note that some languages may not be available depending on the product.)

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