HAKKO 942
SOLDERING STATION
Instruction Manual

PACKING LIST AND PARTS NAMES

Card chain / Control card	Receptacle / Power switch / Station	Power receptacle / Fuse
Tip tray	Tip (not included)	Hakko 912 Soldering iron
Cleaning sponge / Iron holder base	Heat resistant pad	Power cord
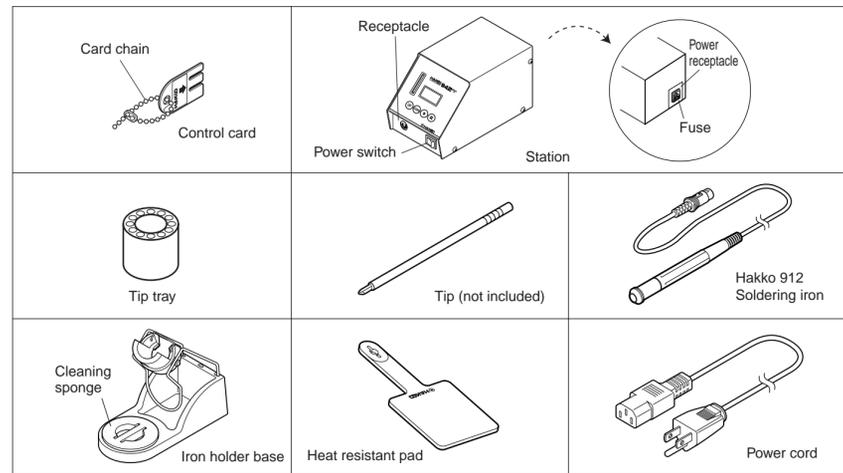
SPECIFICATIONS

● Hakko 942 soldering station

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

● Hakko 912 soldering iron

Power consumption	70 W (24 V)
Tip to ground resistance	< 2 Ω
Tip to ground potential	< 2 mV
Length, less cord	172 mm (when 2.4D tip is inserted)
Weight, less cord	30 g (when 2.4D tip is inserted)
Length of cord	1.2 m

● Station

Output	24 V
Dimensions (l × w × h)	188 × 100 × 106 mm
Weight	2,500 g

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

WARNINGS, CAUTIONS, NOTES AND EXAMPLES

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° and 450°C. (392° to 840°F.) To avoid injury or damage to personnel 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 942.

To prevent accidents or damage to the Hakko 942, be sure to observe the following:

● Do not use the Hakko 942 for applications other than soldering.
● Do not allow the Hakko 942 to become wet, or use it when hands are wet.
● Do not modify the Hakko 942.
● 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.
● Remove power and iron cords by holding the plug – not the wires.
● Be sure the work area is well ventilated. Soldering produces smoke.
● The Hakko 942 is not intended for use by children or infirm persons without supervision.
● Children should be supervised to ensure that they do not play with the Hakko 942.

Note: The model Hakko 942 station is not available for sale or use in the United States.

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SETTING UP

A. Iron holder

1. Insert the iron receptacle holder securely into the iron holder base.

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

3. Place the spare tips in the tip tray.

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

B. Handpiece

1. Insert the tip fully into the handpiece (Hakko 912). There are no orientation requirements.

2. Pass the iron cord through the hole in the heat resistant pad.

1
2

When the plug 'clicks', it is fully inserted.   Receptacle

To remove the cord, draw the plug from the receptacle while pressing the release pin.

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. The Hakko 942 is protected against electrostatic discharge and must be grounded for full efficiency.
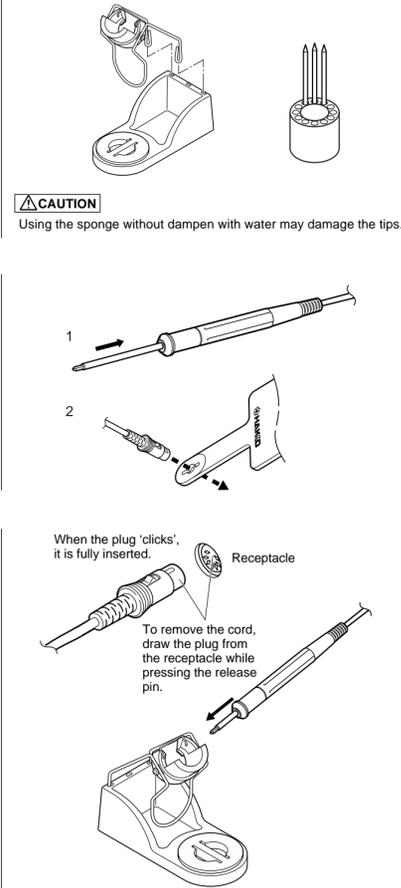
OPERATION

Controls and displays

Controls

HAKKO 942
350.   Heater lamp
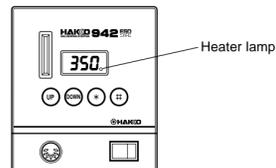
The front panel of the Hakko 942 soldering station has the following controls:
• A power on/off switch.
• Four control buttons:

⊞ – 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.

UP – increases the value in the appropriate display window.

DOWN – decreases the value in the appropriate display window.

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:
Place the iron in the iron holder when not in use.

Displays

The Hakko 942 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, a single heater lamp 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:
1. The station has reached the set temperature. The buzzer will sound once.
2. The low temperature threshold has been crossed. This buzzer will shutoff when the sensed temperature returns to the acceptable range.
3. A failure has occurred in the sensor or heater (including the sensor circuit). The buzzer will sound continuously.
4. The auto power shutoff is activated and the power to the heating element is shutoff, the buzzer will sound three times.

⚠CAUTION:
The Hakko 942 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.

● Changing the temperature setting

Example: *350° to 400°*

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 UP or DOWN 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 UP or DOWN button to set the desired figure. Any value from 0 to 9 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 UP or DOWN button to set the desired figure. 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.
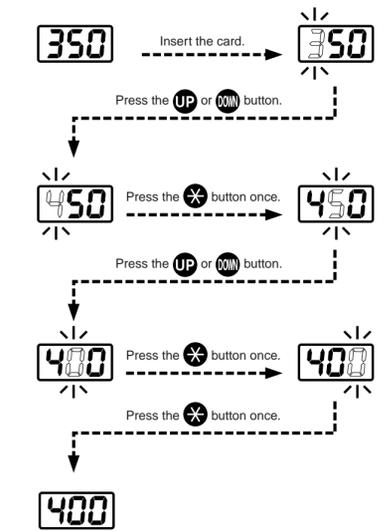
NOTE:
If power is switched off or lost during the execution of this procedure, no data will be entered. The entire procedure must be repeated from step 1.

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

⚠CAUTION:
The card must be inserted into the card slot in the correct direction. The heater is off while you are setting the temperature.

350   Insert the card.   350
450   Press the UP or DOWN button.
450   Press the ✳ button once.   450
       Press the UP or DOWN button.
400   Press the ✳ button once.   400
       Press the ✳ button once.
400

a. Hold the ✳ button down for at least one second.

b. 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.

c. Continue with the procedure of 1-4, above.

NOTE:
When the ✳ button is pressed for less than one second, the current temperature setting is displayed.

● Replacing the tip

a. Always turn the power OFF when removing or inserting a tip.

b. Hold the tip with the heat resistant pad and pull it out.

c. Insert the new tip fully into the Hakko 912. If the tip is not fully inserted, the display will show a sensor error 5-E when power is turned on.

⚠CAUTION:
The tip will be HOT! Use the heat resistant pad to remove it. Do not hold the tip with the heat resistant pad for an extended time.

● How to enter the tip offset value into the Hakko 942

This method requires measuring the tip temperatures with a tip thermometer and is recommended for the most accurate process control.

1. Insert the control card into the slot in the station.
   • The station will default to the temperature setting mode. Set the temperature at 400°C. (750°F.).

2. Press the ⊞ button on the front panel and hold for one second.
   • This will set the station to the data entry mode. The existing offset will be displayed.
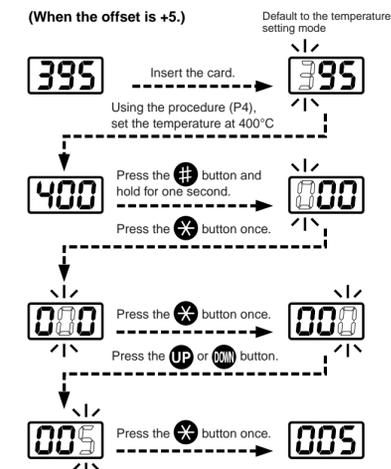
3. Measure the tip temperature.

NOTE:
Allow the tip temperature to become stable. During offset data entry mode, the tip temperature is controlled using an offset value of 0. The flashing value displayed is not meaningful.

4. Enter the offset value
   • Determine the difference, if any, between 400°C. (750°F.) and the measured tip temperature. Record this value. See the example following to determine what value to enter as the offset for that particular tip.
   • When entering the hundred digit, press the UP or DOWN buttons to select either positive (0 is displayed) or negative (– is displayed) sign for the offset to be entered.

EXAMPLE:
If the measured temperature is 395°C. (740°F.), the difference between the set temperature is +5°C. (+10°F.) (the tip is five (ten) degrees too cool) and the offset is thus +5°C. (+10°F.). If the measured temperature is 405°C./760°F., the difference between the set temperature is −5°C. (−10°F.) (the tip is five (ten) degrees too hot) and the offset is −5°C. (−10°F.).

(When the offset is +5.)   Default to the temperature setting mode

395   Insert the card.   395
      Using the procedure (P4), set the temperature at 400°C
400   Press the ⊞ button and hold for one second.   000
      Press the ✳ button once.
000   Press the ✳ button once.   000
      Press the UP or DOWN button once.
005   Press the ✳ button once.   005

PARAMETER SETTINGS

● Entering the parameters

The Hakko 942 comes from the factory with the following values preset:

Temperature scale	Celsius
Auto power shutoff	disabled
Low temperature alarm setting	150°C.
Resetting the supervisor/ operator control setting	4 0
Set temperature	350°C.

(1) °C or °F temperature display

(2) Auto power shutoff

This is an optional setting. When it is activated and the soldering iron is not used for 30 minutes, the power to the heating element is shutoff automatically and the buzzer will sound three times. When the temperature decreases to 100°C./200°F. the display will show `---`. To begin soldering, cycle the power switch OFF, then ON. The power will be turned on if you hit any button before the temperature decreases to 100°C./200°F.
To bypass this procedure and continue to resetting the low temperature alarm tolerance setting press the ✸ button once.

The Hakko 942 has the following four parameters:
1) °C or °F temperature display selection
2) Auto power shutoff
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 **UP** and **DOWN** buttons simultaneously, and then turn power ON.
4. Hold **UP** and **DOWN** buttons down until the display shows `1 C` (Celsius) or `1 F` (Fahrenheit).
When either the display shows either `1 C` or `1 F`, the station is in parameter input mode.
 • Pressing either the **UP** and **DOWN** button will cause the display to alternate between `1 C` or `1 F`.
 • When the desired scale is displayed, select by pressing the ✸ button. The system will automatically sequence to auto power shutoff mode.

To change the auto power shutoff setting, the procedure is as follows.
 • The display will show `2 1` or `2 0` when this mode is entered.
 • Using **UP** or **DOWN** button will change `2 1` and `2 0`. The auto power shutoff is operational only when `2 1` is selected.
 • Press the ✸ button to enter the parameter. This will store the auto power shutoff setting in system memory. The system will automatically sequence to the low temperature alarm tolerance setting.

(3) Resetting the low temperature alarm tolerance setting

This unique function alerts the operator when the sensed temperature falls below a set limit. If the sensed temperature drops below the alarm level, an error message `H-E` will be displayed, and the buzzer will sound. When the temperature returns within the allowable range, the buzzer will stop. The value is stored in the Hakko 942 as described in the example below:

EXAMPLE:
If the set temperature is 350°C. and the low temperature alarm is 100°C., the alarm will trip when the sensed temperature drops below 250°C.

NOTE:
The threshold limits are: 30° – 150°C.; 50° – 300°F.
If a value exceeding these limits should be entered, the system will revert to the beginning of the mode (the hundreds digit will flash) and the procedure must be begun anew.

To bypass this procedure, press the ✸ button three times.

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

(4) Resetting the supervisor/operator control setting

 • When the station enters low-temperature alarm tolerance setting mode, the hundreds digit begun 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, re-enter a correct value.

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

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 **UP** or **DOWN** button will change `4 0` and `4 1`.
When the desired setting is displayed, select by pressing the ✸ button.
The system will exit the parameter setting mode and begin heater control.
It is now ready for normal operation.

MAINTENANCE

● 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 942 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 (provided with the Hakko 942) 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.
a. Set the temperature to 250°C. (482°F.)
b. 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.
c. 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.

CAUTION:
NEVER file the tip to remove oxides!

d. Turn the power OFF and remove the tip, using the heat resistant pad. Set the tip aside to cool.
e. Remaining oxides, such as the yellow discoloration on the tip shaft, can be removed with isopropyl alcohol.

● 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

Measure the resistance across this position.

1. Check for a broken heater or sensor

 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 p.9. If the value still does not decrease, check the connection cord for breakage.

■ Checking the connection cord for breakage

1. Remove the soldering tip and the nipple.
2. Push the socket out from inside the handle assembly.
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 handle assembly.

Green   Black
Socket   Red   White
O-ring spacer
Handle assembly
O-ring
Nipple

CAUTION:
Do not lose the O-ring located inside the nipple.
When reassembling, match the convex part of the handle assembly with the concave parts of the O-ring spacer and socket.

■ 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.

ERROR MESSAGES

● Sensor Error

`S-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 with the buzzer sounding continuously.
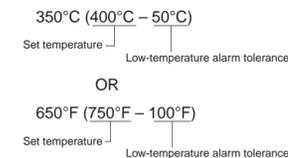
CAUTION:
The sensor error also occurs if the tip is not inserted properly. Once the tip is inserted properly, the HAKKO 942 is restarted.

● Low-temperature alarm tolerance error

`H-E`

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.

350°C (400°C – 50°C)
Set temperature   Low-temperature alarm tolerance

OR

650°F (750°F – 100°F)
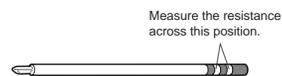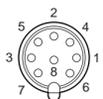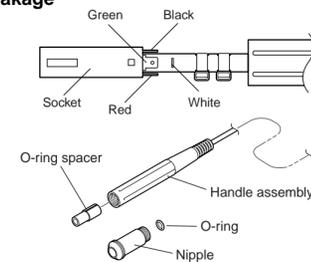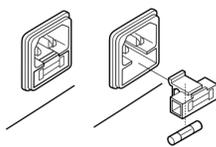Set temperature   Low-temperature alarm tolerance

● Soldering iron error

`t-E`

When the Hakko 909 or Hakko 911 soldering iron is connected to the Hakko 942 station, `t-E` will be displayed.

NOTE:
Only the Hakko 912 iron is to be used with the Hakko 942 station.

TROUBLE SHOOTING GUIDE

⚠ WARNING:
 • Before checking the inside of the Hakko 942 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 `S-E` is displayed.

CHECK: Is the power cord and/or the connection plug disconnected?
ACTION: Connect it.
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 P. 9).

● The tip temperature is too high.

CHECK: Is the connection cord broken?
ACTION: See "Checking the connection cord for breakage" on P. 10.
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 P. 9).
CHECK: Is the entered offset value correct?
ACTION: Enter the correct value.

● The low-temperature alarm tolerance error 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.

● The soldering iron error `t-E` is displayed.

CHECK: Is the Hakko 909 or 911 soldering iron connected?
ACTION: Connect the Hakko 912 soldering iron.