



HAKKO 942

SOLDERING STATION

High - output, temperature controlled
soldering station

Instruction Manual

●

Thank you for purchasing the Hakko 942 soldering station. This high-output, temperature controlled compact soldering station uses a composite tip, incorporating heater and sensor functions into one element. Several process control features, unique to the Hakko 942, make it applicable to a broad range of soldering applications. Please read this manual before operating the Hakko 942. Keep this manual readily accessible for reference.

●

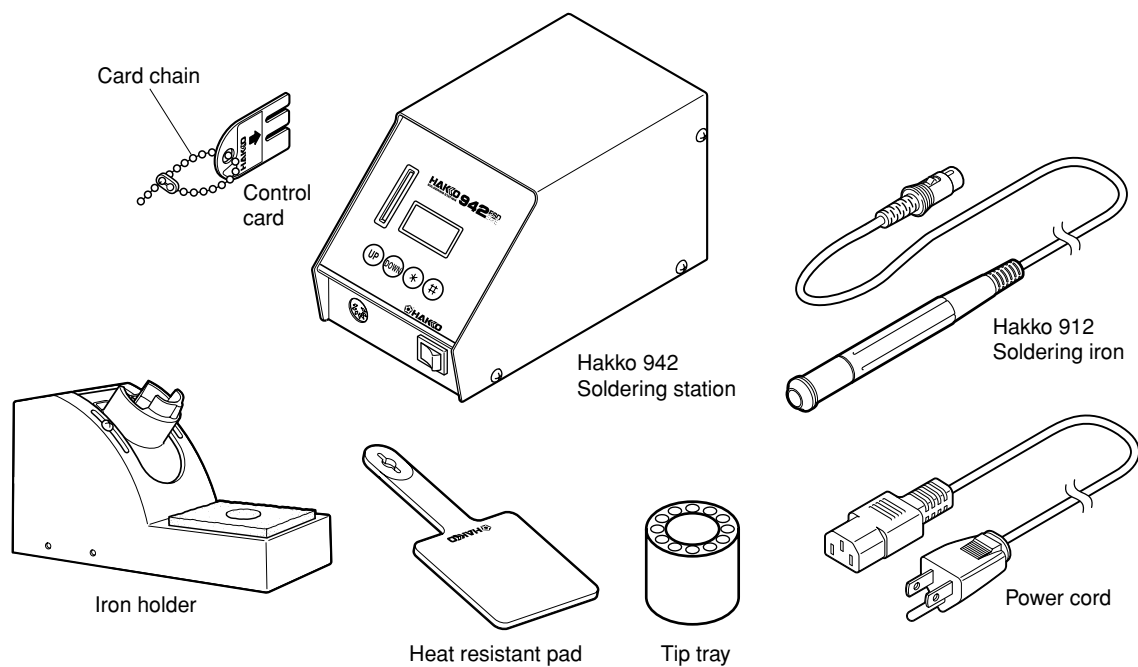
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Note: The model Hakko 942 station is not available for sale or use in the United States.

1. PACKING LIST

Hakko 942 soldering station	1	Tip tray	1
Hakko 912 soldering iron	1	Cleaningsponge	1
Powercord	1	Instructionmanual	1
Controlcard	1	Cardchain	1
Heat resistant pad	1	Tips(notincluded)	
Ironholder	1		



2. 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

● Station

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

● 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 with 2.4D tip
Weight, less cord	30 g with 2.4D tip
Length of cord	1.2 m


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.

3. 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:

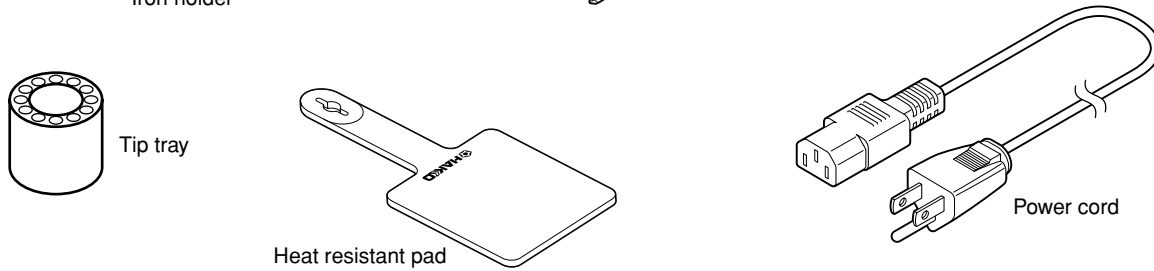
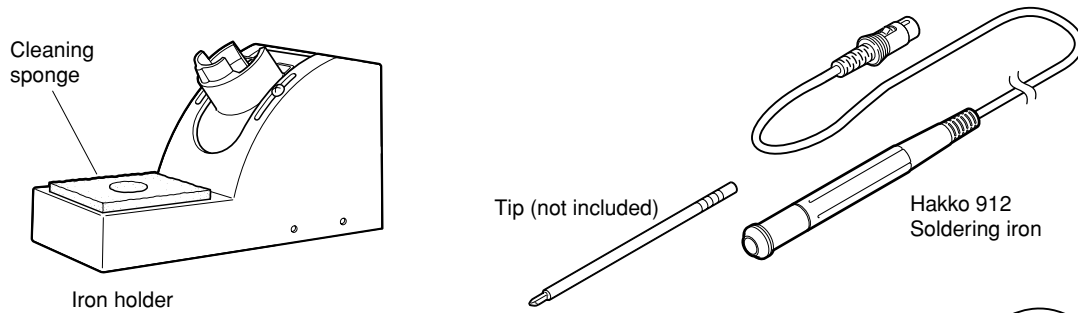
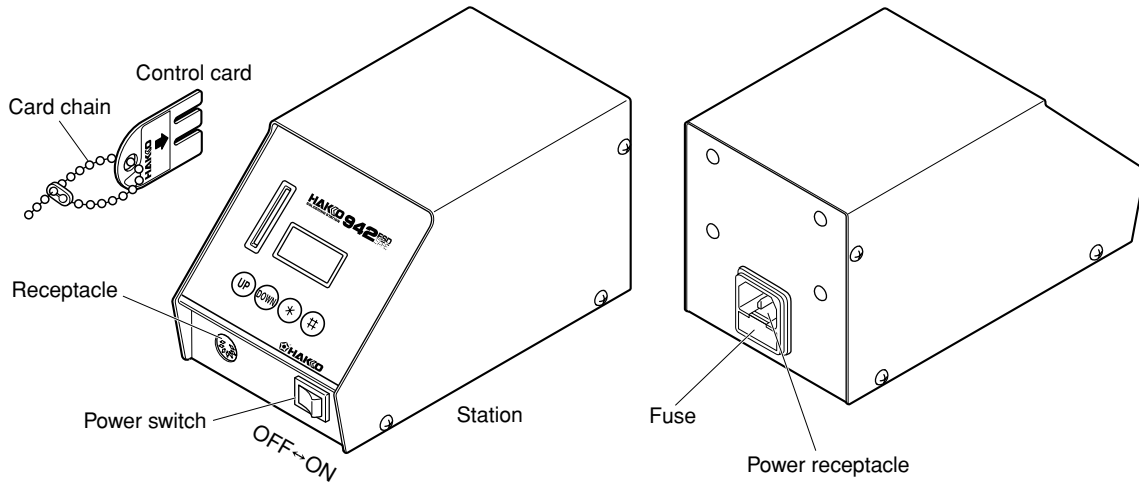
- Do not touch the tip or the metal parts near the tip.
- Do not allow the tip to come close to, or touch, flammable materials.
- Inform others in the area that the unit is hot and should not be touched.
- Turn the power off when not in use, or left unattended.
- Turn the power off when changing parts or storing the Hakko 942.

CAUTION

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.

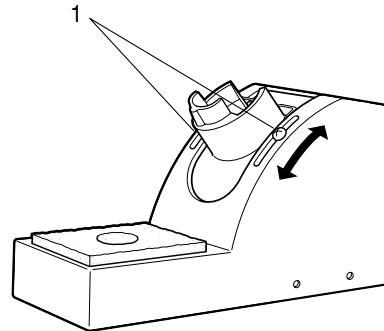
4. PART NAMES



5. INITIAL SETUP

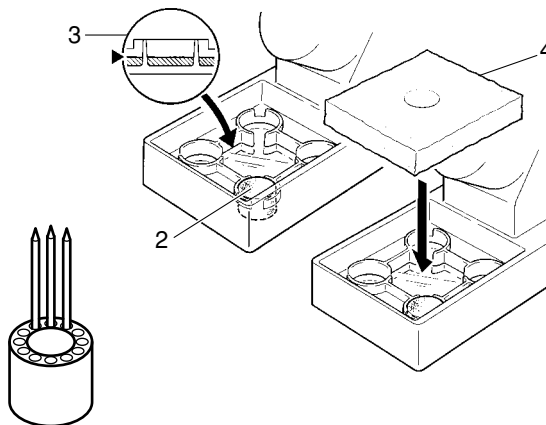
A. Iron holder

1. Adjust the height of the iron holder to suit, as follows:
 - i. Loosen the adjusting screws.
 - ii. Set the iron holder to the desired height.
 - iii. Tighten the screws.
2. Put the small cleaning sponge in one of the four holes in the iron holder base.
3. Add water to the level shown in the accompanying illustration. The small sponge will keep the large sponge moist through capillary action.
4. Wet the large cleaning sponge, squeeze it dry, and put it on the iron holder base.
Procedure 2-4 – OR –
Wet the only large cleaning sponge, squeeze it dry, and put it on the iron holder base.
5. Place the spare tips in the tip tray.



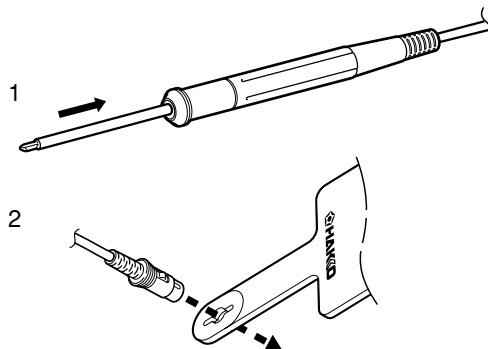
NOTE:

Be sure the cleaning sponge is kept CLEAN and DAMP. A dirty sponge will transfer contaminants to the soldering tip, reducing thermal efficiency and possibly causing defective solder joints. A dry sponge will abrade the soldering tip, reducing its life.



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.

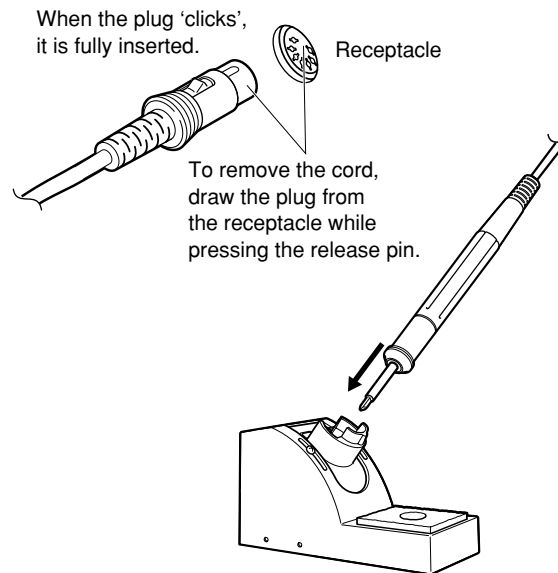


C. Soldering station

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.

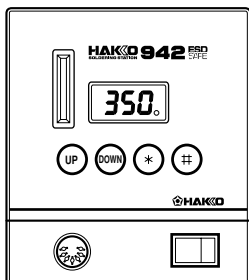
1. Insert the power cord into the receptacle at the back of the station.
Insert the soldering iron cord into the receptacle at the front of the station.
2. Set the iron in the iron holder .
3. Plug the power cord into a grounded wall socket. The Hakko 942 is protected against electrostatic discharge and must be grounded for full efficiency .



6. OPERATION

Controls and displays

Controls



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

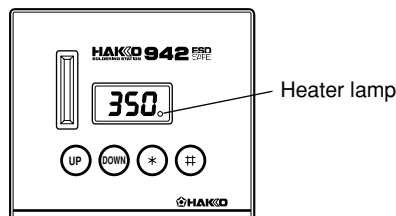
The Hakko 942 has a three-digit display element. Depending upon the selected mode, it will display:

- 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 shut off 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 shut off, 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.

● Factory settings

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

● Control card

Each Hakko 942 comes with a small card, which inserts in the control slot in the front of the unit. This card is used when entering data for the process control functions. Any Hakko 942 card can be used with any Hakko 942 soldering station.

Using the control card

The control card is used when a value is to be changed or data are to be entered. The Hakko 942 will operate normally with the card inserted. If power is turned on with the card inserted, the station will heat to the temperature set before the card was inserted.

● Changing the temperature setting

Example: 350 to 400°C

1. Insert the control card into the slot in the front of the unit.

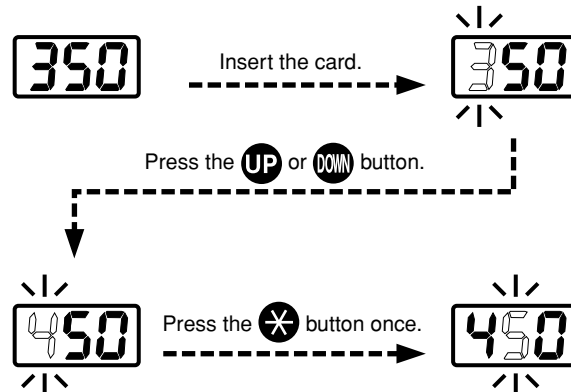
- The *hundreds* digit will begin to flash, indicating that the unit is in the TEMPERATURE SET mode and data may be entered.

2. Entering the *hundreds* digit

- Press the **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 **ENTER** button to enter. The *tens* digit will begin to flash.

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



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.

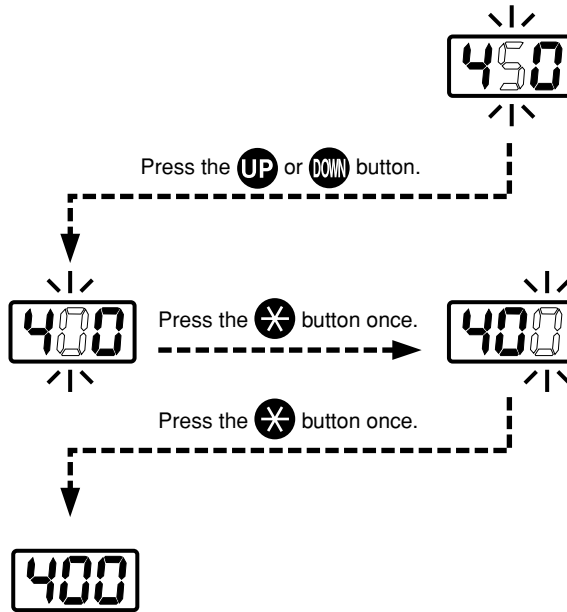
4. Entering the *units* digit

- 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:



- 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 1-4, above.

NOTE:

When the **✖** button is pressed for less than one second, the current temperature setting is displayed.

● Replacing the tip

- Always turn the power OFF when removing or inserting a tip.
- Hold the tip with the heat resistant pad and pull it out.
- Insert the new tip fully into the Hakko 912. If the tip is not fully inserted, the display will show a sensor error **S-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.

7. ENTERING TIP OFFSET VALUES

Soldering tips have different thermal characteristics, depending upon their mass, shape, and surface area. It is obvious that the tip temperature at idle will not be the same for a fine tip as it will be for a heavy chisel tip, although the set temperature may be the same for each tip. The difference between the set temperature and the temperature measured at the tip is called 'Tip Temperature Offset'. The offset value may be entered into the station to either add to or subtract from the set value, thus producing the desired tip temperature.

The Hakko 942 has the ability to electronically compensate for the variations due to tip temperature offset. When a soldering tip is changed, the proper offset temperature value should be programmed into the 942.

● 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.

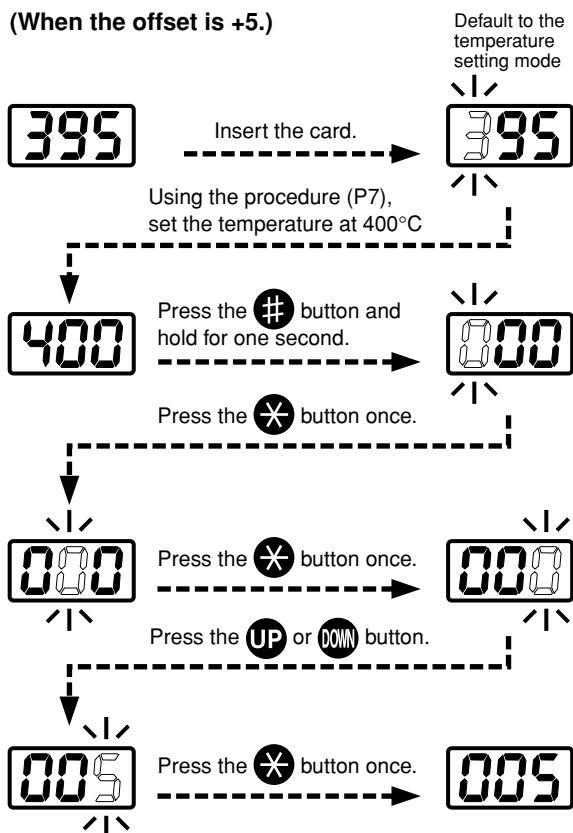
4. Enter the offset value

- 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.)



8. PARAMETER SETTINGS

● Entering the parameters

(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) Autopowershutoff
- 3) Low-temperaturealarmtolerancesetting
- 4) Resettingthesupervisor/operatorcontrolsetting

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 off set 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 ***** button.

The system will exit the parameter setting mode and begin heater control.

It is now ready for normal operation.

9. 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 599 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.

<p>⚠ CAUTION: NEVER file the tip to remove oxides!</p>

- 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

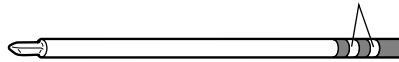
⚠ WARNING:

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

■ Check for a broken heater or sensor

1. Check for a broken heater or sensor

Measure the resistance across this position.

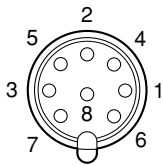


Verify the electrical integrity of the heater and sensor .

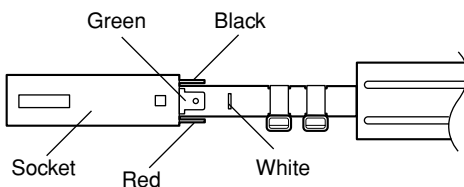
Measure the resistance of the heater and sensor while at room temperature (15 to 25°C; 59 to 77 °F). It should be $8 \Omega \pm 10\%$. If the resistance exceeds these limits, replace the tip.

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

■ Check the grounding line



■ Checking the connection cord for breakage



⚠ CAUTION:

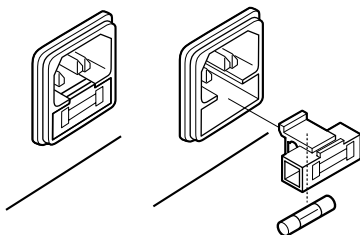
Do not lose the O-ring located inside the nipple. When reassembling, match the convex part of the handle assembly with the concave parts of the O-ring spacer and socket.

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 .

■ 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.

10. ERROR MESSAGES

● Sensor Error



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.

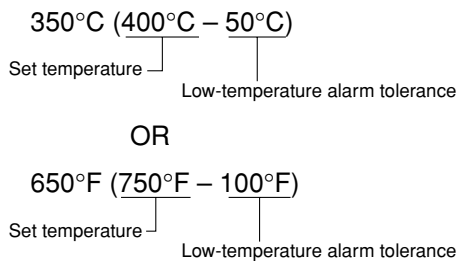
● Low-temperature alarm tolerance error



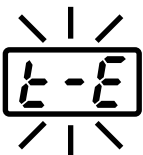
If the sensor temperature falls below the difference between the current temperature setting and the low-temperature alarm tolerance, **H-E** is displayed and the warning buzzer sounds. When the tip temperature rises to a value within the set tolerance, the buzzer will stop sounding.

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.



● Soldering iron error



When the Hakko 909 or Hakko 91 1 soldering iron is connected to the Hakko 942 station, **I-E** will be displayed.

NOTE:

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

11. 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  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.12).

● The tip temperature is too high.

CHECK : Is the connection cord broken?

ACTION : See "Checking the connection cord for breakage" on P. 13.

CHECK : Is the entered of fset 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 . 12).

CHECK : Is the entered of fset 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 .

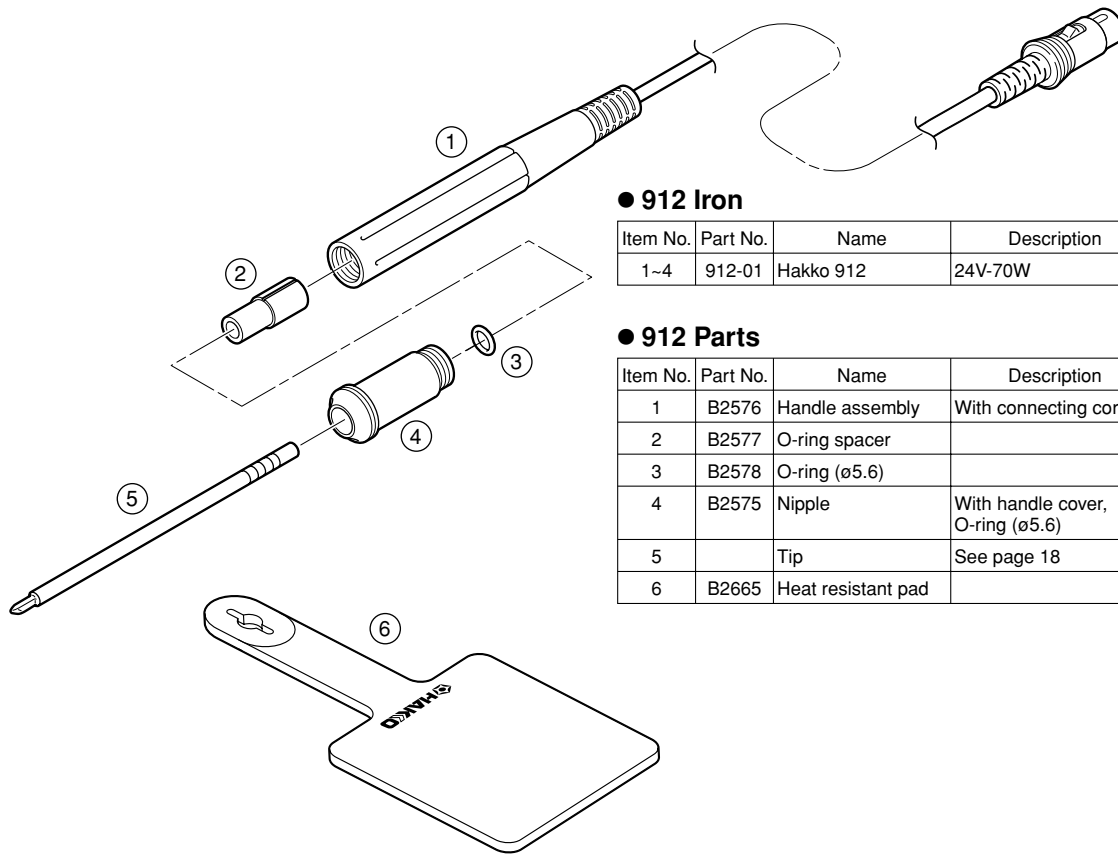
CHECK : Is the setting value for the low-temperature alarm tolerance too low?

ACTION : Increase the setting value.

● The soldering iron error is displayed.

CHECK : Is the Hakko 909 or 911 soldering iron connected?

ACTION : Connect the Hakko 912 soldering iron.

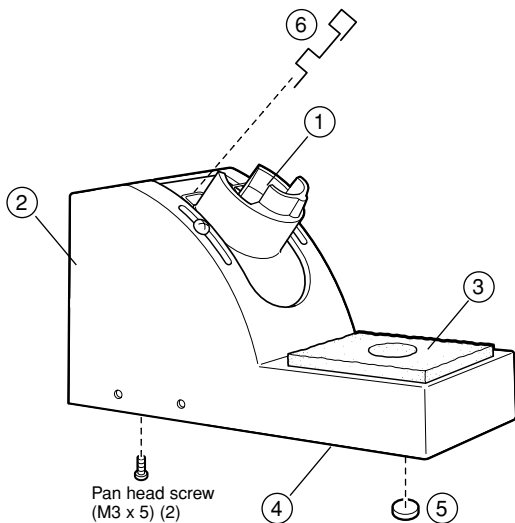


● 912 Iron

Item No.	Part No.	Name	Description
1~4	912-01	Hakko 912	24V-70W

● 912 Parts

Item No.	Part No.	Name	Description
1	B2576	Handle assembly	With connecting cord
2	B2577	O-ring spacer	
3	B2578	O-ring (ø5.6)	
4	B2575	Nipple	With handle cover, O-ring (ø5.6)
5		Tip	See page 18
6	B2665	Heat resistant pad	



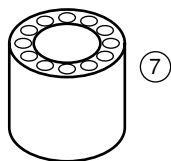
Pan head screw
(M3 x 5) (2)

● Iron Holder

Item No.	Part No.	Name	Description
1~6	C1413	Iron holder	For HAKKO 911, 912

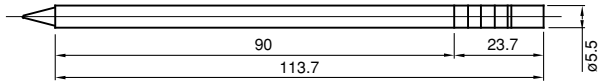
● Iron Holder Parts

Item No.	Part No.	Name	Description
1	B2390	Iron receptacle	With two screws
2	B2389	Iron holder base	(With bottom plate)
3	A1427	Cleaning sponge	
4	B2391	Bottom plate	
5	B2667	Rubber foot	4 ea.
6	B2572	Retaining clip	
7	B2607	Tip tray	

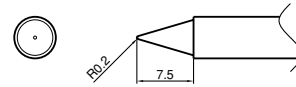


13. TIP STYLES

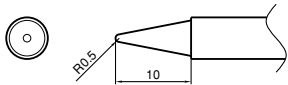
Unit: mm



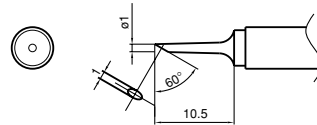
T2-B Shape-B



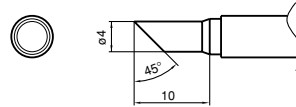
T2-2B Shape-2B



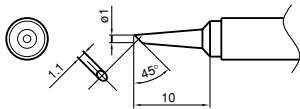
T2-1C Shape-1C



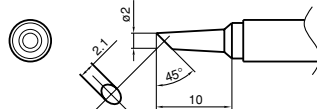
T2-4C Shape-4C
T2-4CF Shape-4C Cut-Surface Pre-tinned



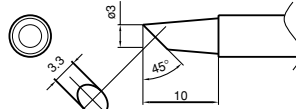
T2-1BC Shape-1BC
T2-1BCF Shape-1BC Cut-Surface Pre-tinned



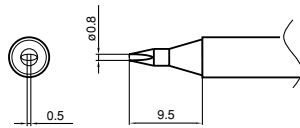
T2-2BC Shape-2BC
T2-2BCF Shape-2BC Cut-Surface Pre-tinned



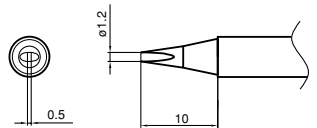
T2-3BC Shape-3BC
T2-3BCF Shape-3BC Cut-Surface Pre-tinned



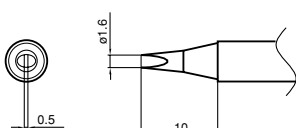
T2-08D Shape-0.8D



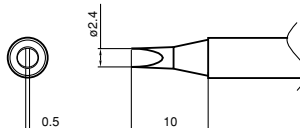
T2-12D Shape-1.2D



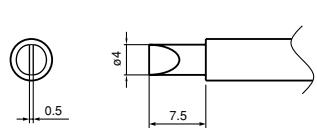
T2-16D Shape-1.6D



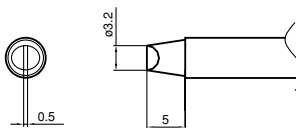
T2-24D Shape-2.4D



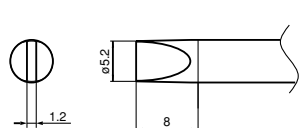
T2-4D Shape-4D



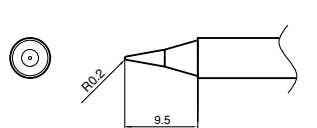
T2-32D Shape-3.2D



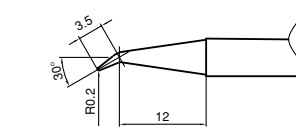
T2-52 Shape-5.2D



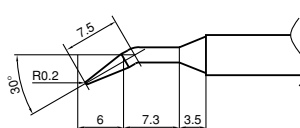
T2-1 Shape-1



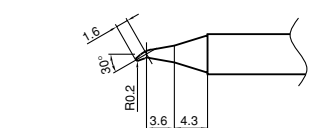
T2-02J Shape-0.2RSB



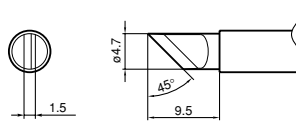
T2-02JL Shape-0.2RLB



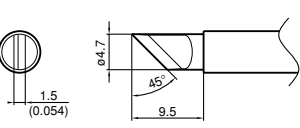
T2-02JS Shape-0.2RSSB



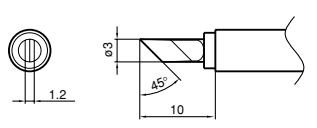
T2-K Shape-K



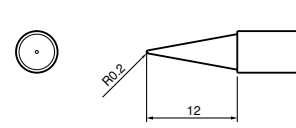
T2-KL Shape-KL



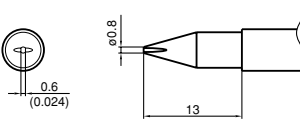
T2-KU Shape-KU



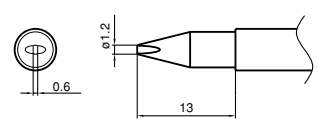
T2-LB Shape-LB



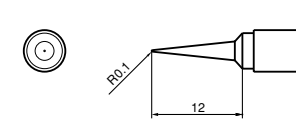
T2-08LD Shape-0.8LD



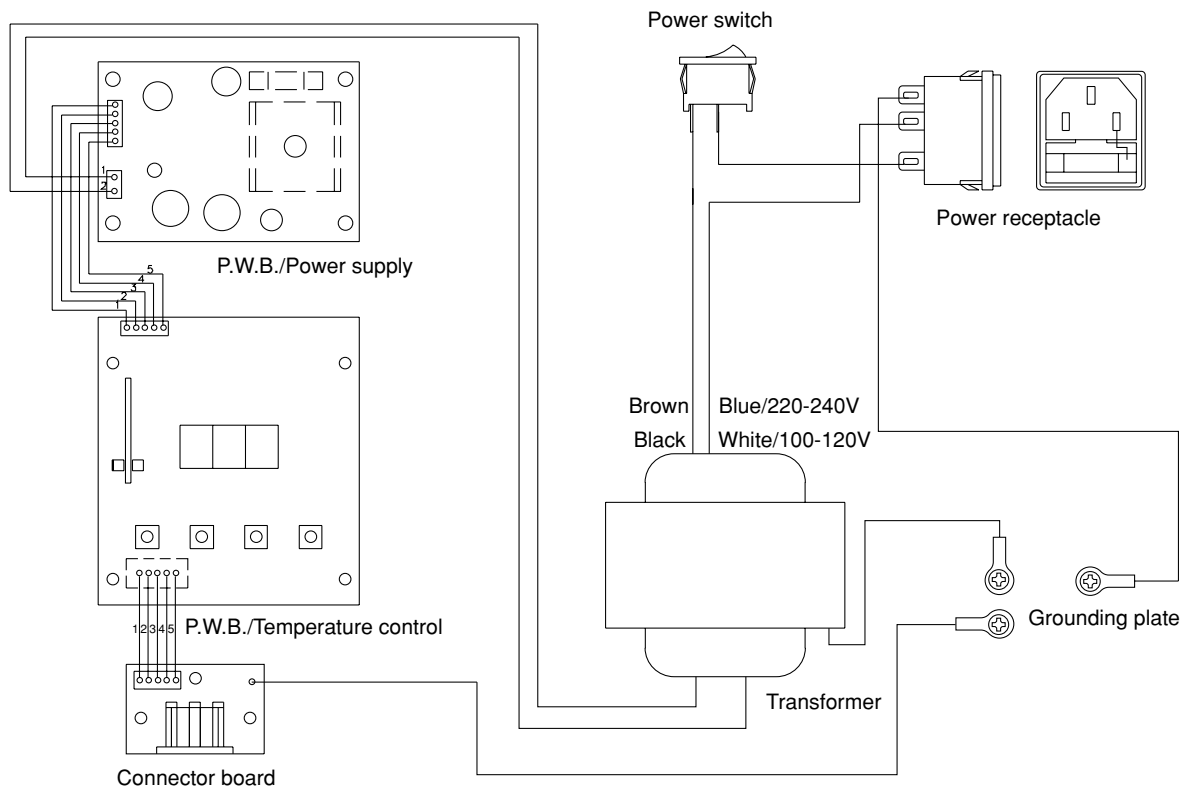
T2-12LD Shape-1.2LD



T2-LI Shape-LI



14. WIRING DIAGRAM



OVERSEAS AFFILIATES
U.S.A.: AMERICAN HAKKO PRODUCTS, INC.
 28920 N. AVENUE WILLIAMS VALENCIA, CA 91355, U.S.A.
 TEL: (661) 294-0090 FAX: (661) 294-0096
 Toll Free (800)88-HAKKO
<http://www.hakkousa.com>
HONG KONG: HAKKO DEVELOPMENT CO., LTD.
 ROOM 1504, EASTERN HARBOUR CENTRE,
 28 HOI CHAK STREET, QUARRY BAY, HONG KONG.
 TEL: 2811-5588 FAX: 2590-0217
<http://www.hakko.com.hk>
 E-mail:info@hakko.com.hk
CHINA: HAKKO DEVELOPMENT CO., LTD.
 ROOM 1112-1115, 11 FLOOR, INTERNATIONAL BANK
 TOWER 191 DONGFENG ROAD WEST, GUANGZHOU
 510180, CHINA.
 TEL: (020)8135-0112, 8135-0113 FAX: (020)8135-0181
<http://www.hakko.com.hk>
 E-mail:hakko@public.guangzhou.gd.cn

HEAD OFFICE
 4-5, SHIOKUSA 2-CHOME, NANIWA-KU, OSAKA, 556-0024 JAPAN
 TEL:+81-6-6561-3225 FAX:+81-6-6561-8466
<http://www.hakko.com/> E-mail:sales@hakko.com

TAIWAN: HAKKO DEVELOPMENT CO., LTD.
 5F, NO.111-1, HSING TE RD., SANCHUNG, TAIPEI
 HSIEN, TAIWAN R.O.C.
 TEL: (02)8512-4588 FAX: (02)8512-4258
 E-mail:hakko110@ms31.hinet.net

SINGAPORE: HAKKO PRODUCTS PTE., LTD.
 1, GENTING LINK #02-04, PERFECT INDUSTRIAL
 BUILDING, SINGAPORE 349518
 TEL: 748-2277 FAX: 744-0033
<http://www.hakko.com.sg>
 E-mail:sales@hakko.com.sg

MALAYSIA: HAKKO PRODUCTS SDN BHD
MALAYSIA HEAD OFFICE
 NO.22,JALAN PEMBERITA U1/49,SEKSYEN U1,
 TEMASYA INDUSTRIAL PARK,40150 GLENMARIE,
 SHAH ALAM,SELANGOR DARUL EHSAN,WEST MALAYSIA.
 TEL: (03)5569-5223 FAX: (03)5569-5221
 E-mail:hakkoki@tm.net.my

PENANG BRANCH
 19,LORONG IKS JURU 3,TAMAN PERINDUSTRIAN RINGAN JURU,
 14100 SEBERANG PERAI TENGAH,PENANG,MALAYSIA.
 TEL: (04)507-0888 FAX: (04)507-0999 E-mail:hakkopp@tm.net.my

JOHOR BAHRU BRANCH
 45A,JALAN SRI BAHAGIA 5,TAMAN SRI BAHAGIA,
 81200 JALAN TAMPOI,JOHOR BAHRU,MALAYSIA.
 TEL: (07)236-7766 FAX: (07)237-4655
 E-mail:hakkobjb@tm.net.my

PHILIPPINES: HAKKO PHILS TRADING CO., INC.
 GROUND FLOOR HAKKO BUILDING 1ST STREET CORNER
 3RD STREET UNITED PARANAQUE 5, SUBDIVISION SAN DIONISIO
 PARANAQUE CITY PHILIPPINES
 TEL: (02)825-5404, 826-6165 FAX: (02)829-3769
 E-mail:hakkophil@pacific.net.ph

INDONESIA
P.T. HAKKO PRODUCTSTAMA INDONESIA
 JALAN LAKSAMANA BINTAN KOMP. GOLD HILL BLOK B, NO.1,
 SUNGAI PANAS, BATAM 29432, INDONESIA.
 TEL: (778)466-580 FAX: (778)466-581 E-mail:hakkobtm@indosat.net.id
JAKARTA BRANCH
 KEBON JERUK PLAZA, BLOK D NO. 6, JALAN RAYA PERJUANGAN,
 JAKARTA BARAT,11530, INDONESIA.
 TEL: (21)532-4083 FAX: (21)532-4082 E-mail:hakkokjt@cbn.net.id