HAKKO

July 1994

HAKKO SOLDERING STATION 929 Instruction Manual

No.929-2

Please thoroughly read this Instruction Manual before operating the Hakko 929 Soldering Station.

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Packing List

Item Name	Count
Soldering Iron (Hakko 903)	1
Hakko 929 Station	1
Card	1
Hakko 631 Iron Holder, consisting of...	
Iron Holder Base	1
Spring Iron Holder	1
Cleaning Sponge	1
Cap Nut Wrench	1
M4 Hex Wrench	1

Specifications

Power Consumption	120V AC±10%, 60W
Output Voltage	24V AC
Heating Element	Ceramic Heater (24V AC, 50W)
Temperature Range[1]	400-899°F (200-480°C)
Tip to Ground Resistance[2]	Under 2.0Ω
Tip to Ground Potential[3]	Under 0.6mV
Temperature Stability[4]	±3°F (±1.6°C)
Power Cord	3-lead cord, 5 ft. (1.5m)
Cord Assembly	4 ft. (1.2m)
Dimensions	Station: 4.3"(W) x 3.2"(H) x 7.5"(D) (110 x 81 x 190mm)
	Iron: 7.5"(L) w/o cord
Weight	Station: 3.5 lbs. (1.6 kg)
	Iron: 0.09 lbs. (40 g), 1.4 oz. w/o cord

1. Although the Hakko 929 can be preset to any temperature between 200°F and 899°F, it is most accurate at temperatures between 400°F and 899°F.
2. Method of measurement is in accordance with MIL-STD-2000, 5-4-14.
3. Method of measurement is in accordance with MIL-STD-2000, 5-4-14.
4. Tolerance at idling time under the following conditions:
   Preset temperature: 700°F
   Room temperature: 73.4°F
   Tip: A1244 (Shape 1.6D)
   Still air

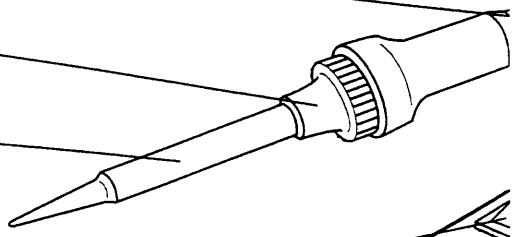
Names of Parts

Soldering Iron (HAKKO 903)

Handle

Cap Nut
Secures the Tip to the Handle.

Tip
Transmits heat to the solder or item to be soldered. Integrated with the Heating Element. Expendable part.



1.6 D Iron Tip
(refer to p.13)

Station

Power Switch
When turned to "ON," starts the process of heating up the Heating Element.

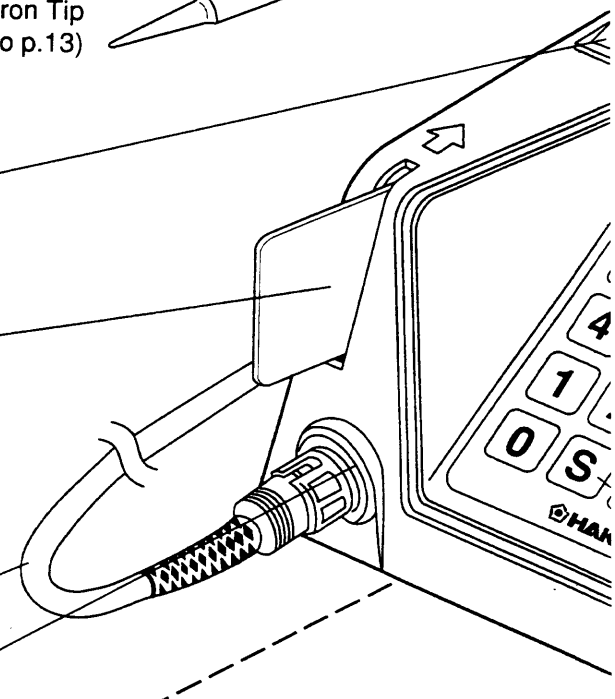
Card
Must be inserted into the Station to change the temperature. When inserted, the Heating Element and the Digital Display are immediately turned off.

Cord Assembly
Connects to the receptacle on the Station.

Receptacle
Connector for the Soldering Iron Cord Assembly.

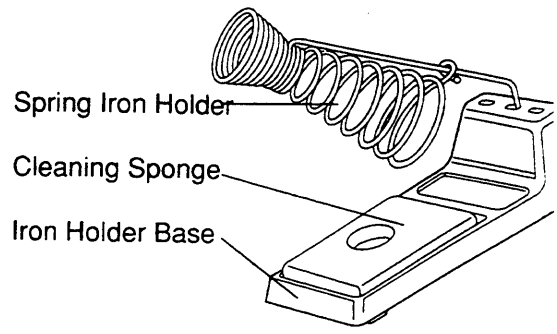
Calibrator
For calibrating the temperature after the Soldering Iron or Tip is replaced. *(Bottom Panel)*

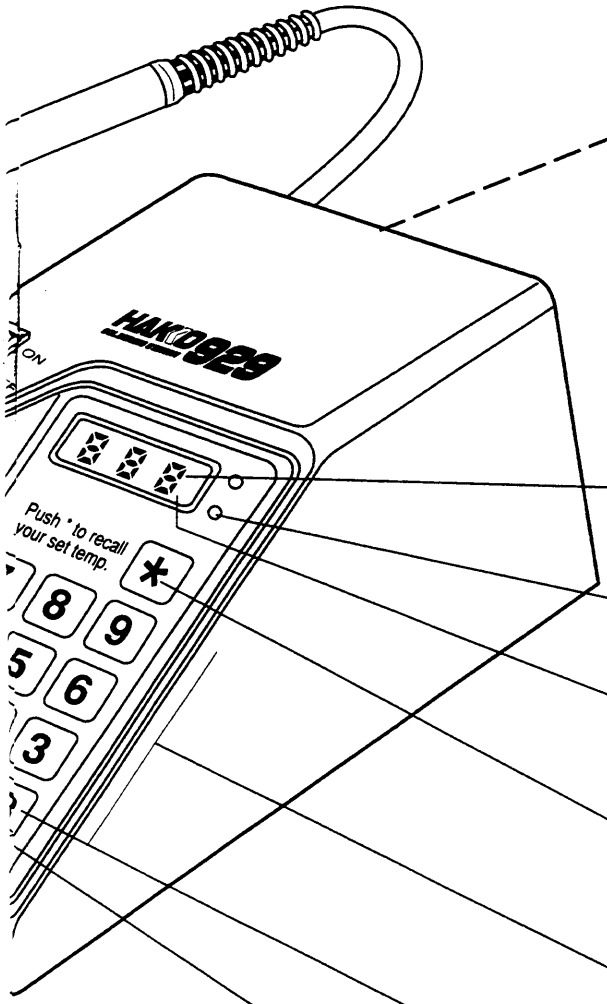
Fuse Holder
Uses 125 V 2 A fuse. *(Bottom Panel)*



Accessories

Hakko 631 Iron Holder





Power Cord

Grounding Terminal

Control Panel

Temperature Display
Range: 400-899°F

Power Lamp
Lights up when Power Switch is turned to "ON."

Heater Lamp
Blinks when Tip reaches preset temperature.

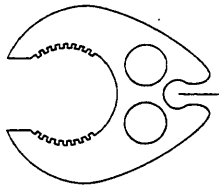
*** Button**
Push to display the preset temperature.

Number Buttons
Push to input the desired preset temperature.

R Button
Push when a mistake is made while inputting the preset temperature.

S Button
Push to set the preset temperature. (Card must be inserted.)

Cap Nut Wrench



Slot for attaching the Cap Nut Wrench to the Soldering Iron Cord

M4 Hex Wrench

Operating the Hakko 929

Using the Pushbuttons

- *The * does not function while the temperature is being set.*
- *The **R** button can be used at any time while the Card is inserted in the Station.*
- *The **S** button and the numeric buttons function only when setting the temperature.*

Assemble the Iron Holder.

1. Insert the Spring Iron Holder into the hole in the base of the Iron Holder.

2. Dampen the Cleaning Sponge with clean water, squeeze it dry, and place it in the base of the Iron Holder.

Connect the Soldering Iron to the Station.

Be sure that the Power Switch is turned to "OFF" before connecting or disconnecting the Power Plug.

1. Insert the 5-pin Connecting Plug into the Receptacle on the Station. Lock the Plug by turning the Plug's outer ring clockwise.

2. Place the Soldering Iron into the Iron Holder.

Plug the Station into a Power Source.

1. Plug the Power Cord into a grounded AC outlet.

2. Turn the Power Switch to "ON."

Input the Desired Preset Temperature.

The Station is preset at the factory to 700°F.

1. Insert the Card into the Card Slot in the Station. The Heating Element and the Digital Display will immediately turn off.

   * If the Card was already inserted, either remove and reinsert it , or press the **R** button.

2. Using the Number buttons, input the desired tip temperature.

   Example: To set the tip temperature to 650, press the **6**, **5**, and **0** buttons consecutively.

   * Although the Hakko 929 can be preset to any temperature between 200°F and 899°F, it is most accurate at temperatures between 400°F and 899°F.

   * If you make a mistake while entering the temperature, press the **R** button and reenter the temperature.

3. Push the **S** button to set the temperature. The tip temperature will now be maintained at the preset temperature.

   * The Heating Element will not begin warming up until the **S** button is pressed.

   * The preset temperature value is displayed for 5 seconds after the **S** button is pressed.

   * To recall the preset temperature, press the ✻ button.

4. When the Tip reaches the preset temperature, begin soldering.

   * The Tip reaches the set temperature about 40-50 seconds after the **S** button is pressed.

   * When the Tip reaches the set temperature, the Digital Display shows the preset temperature and the Heater Lamp begins blinking.

Precautions during operation — Tip

- High soldering temperatures can degrade the tip. Use the lowest possible soldering temperature for each particular job—the Hakko 929's excellent thermal recovery characteristics ensures efficient and effective soldering even at low temperatures.

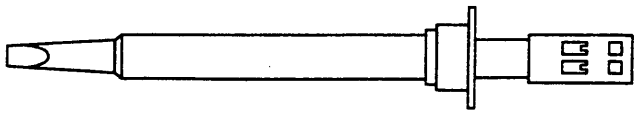
- Be sure to clean the tip regularly with the cleaning sponge as oxides and carbides from the solder and flux can form impurities on the tip which are transferred to the soldering joint where it can result in defective joints. Moreover, these impurities can reduce the tip's heat conductivity, resulting in higher tip temperatures that can damage both the tip and the PWB.

- After each soldering operation, wipe away any accumulated oxide from the tip with the Cleaning sponge and coat the tip with a fresh layer of solder. This will protect the solder plating and ensure a long service life for the tip.

- Never leave the soldering iron sitting at high tip temperatures for long periods of time as the tip's solder plating will become covered with oxide which will greatly reduce the tip's heat conductivity.

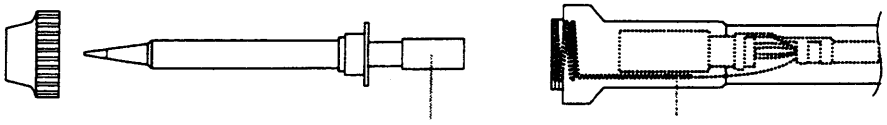
Replacing the Tip

Tips for a wide range of soldering needs are available for your Hakko 929 Soldering Station. A list of these tips can be found on page 13 of this Instruction Manual.



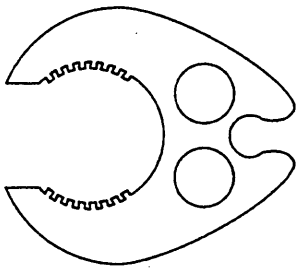
Tip

1. Turn off the Power Switch and disconnect the Soldering Iron from the Station.
2. Using the supplied Cap Nut Wrench, unscrew the Cap Nut securing the Tip to the Handle.
3. Remove the Tip.
4. Connect the Tip Connector to the connector inside the Handle. The connector pins have no specific orientation.



Cap Nut *Tip Connector* *D-sleeve*

5. Replace the Cap Nut and tighten it with the Cap Nut Wrench.
6. Recalibrate the temperature. (See ***Recalibrating the Tip Temperature*** on page 9.)



Cap Nut Wrench

Recalibrating the Tip Temperature

The Hakko 903 Soldering Iron has been tested and calibrated at the factory. Recalibration will be necessary, however, whenever the Tip or Soldering Iron is replaced.

Recalibrating with a tip thermometer

1. Using the Station's number buttons, input a temperature of 700°F (or the desired preset temperature).
2. Measure the temperature at the Tip with a tip thermometer.
3. Using a straight-edge (—) screwdriver, adjust the potentiometer screw (labeled **CAL** on the bottom of the station) until the Tip temperature reads 700°F (or the desired preset temperature).

Note: Turn the screw clockwise to raise the temperature, and counterclockwise to lower it.

Recalibrating with a room thermometer.

1. Allow the Hakko 929 to cool to room temperature for one hour.
2. Press buttons **4** and **5** simultaneously and turn the Power Switch on.

Note: Should you make a mistake, the station will start up normally and the Heating Element will begin warming up. If this should happen, turn the station off and wait until it has again cooled to room temperature.

3. Press and hold down the **0** button. Using a straight-edge (—) screwdriver, adjust the potentiometer screw (labeled **CAL** on the bottom of the station) until the display indicates the room temperature (as noted from the room thermometer).

Calibration Chart

The tip temperature may vary depending on the Soldering Tip being used. Refer to the Calibration Chart at the right for the correct calibration temperature for each type of Tip.

Example: If you are using the A1245 Tip, adjust the **CAL** potentiometer until the Digital Display reads ±4°.

Tip No.	Room Temp.
A1243	±0
A1244	±0
A1245	±4
A1246	±4
A1247	±0
A1248	-8
A1249	±0
A1250	-6

Maintenance

Properly maintained, the Hakko 929 Soldering Iron will provide years of good service.

Inspect the Tip

1. Set the temperature to between 550°F and 600°F.

2. When the temperature stabilizes, clean the Tip with the Cleaning Sponge and check the condition of the Tip.

3. If there is black oxide on the solder-plated portion of the Tip, apply new flux-containing solder and wipe the Tip on the Cleaning Sponge. Repeat until the oxide is completely removed.

   Note: Never use a file to remove oxide from the Tip.

4. If the Tip is deformed or heavily eroded, replace it with a new one.

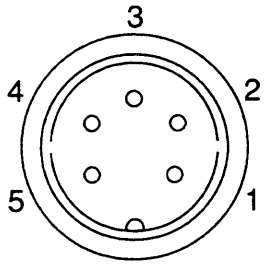
Check the resistance between the Tip and the Grounding Pin

1. Set the temperature to 500-600°F.

2. When the temperature stabilizes, clean the Tip with the Cleaning Sponge and apply new solder.

   Note: If the Tip is coated with flux or oxide the resistance measurement will not be accurate.

3. Measure the resistance between the Tip and the Grounding Pin of the Power Cord. The correct resistance value is less than 2 Ω. If the measured value is outside this range, check the following.



   a. ***Is the Connecting Plug correctly plugged in?***

   b. ***Is there oxide on the surfaces of the Tip Flange and Grounding Spring which would prevent them from contacting cleanly?***
   If so, remove the oxide.

   c. ***Is the Grounding Line of the Cord Assembly damaged?***
   Measure the resistance between pin 3 and the Grounding Spring. If it is broken, the Cord Assembly must be replaced. (See "Replacement Parts" on page 15.)

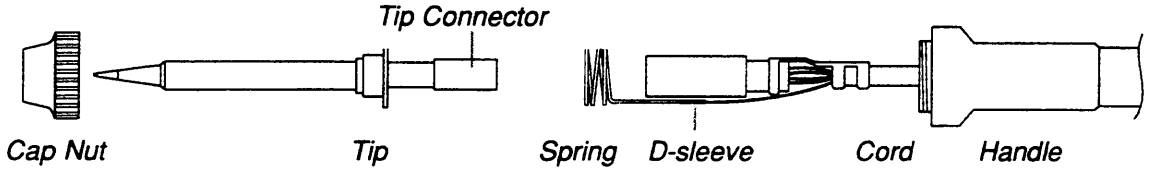
   d. ***Is the Grounding Line of the Power Cord damaged?***
   Measure the resistance between the Grounding Terminal on the rear of the Station Case and the Grounding Pin of the Power Cord.

Disassembly

1. Using the supplied Cap Nut Wrench, unscrew the Cap Nut.
2. Pull off the Tip.
3. Carefully push the Cord Assembly up through the Handle.
4. Holding the D-sleeve connector, remove the Grounding Spring.

Assembly

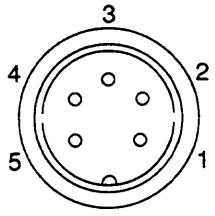
1. Insert the Grounding Spring into the D-sleeve and pull it into place.
2. Place the Grounding Spring in the large groove in the Handle.
3. Align the projection on the inside of the Handle with the small groove in the Housing and gently insert the Housing into the Handle.
4. Pull the Cord Assembly so that the entire assembly slides back into the Handle.
5. Connect the Tip Connector to the connector inside the Handle. The connector pins have no specific orientation.
6. Replace the Cap Nut and tighten it with the Cap Nut Wrench.



Troubleshooting Guide

The Tip does not heat up.

1. *Are the Power Cord and Cord Assembly correctly connected?*
2. *Is the Tip Connector correctly connected?*
3. *Is the Fuse blown?*
4. *Is the Power Cord damaged?*
5. *Has the Heating Element or Sensor failed?*



- **Check the Heater**
  Measure the resistance between pins 4 and 5 of the connecting plug. It should be between 2.5 and 3.5 Ω at 73.4°F (23°C).

- **Check the Sensor**
  Measure the resistance between pins 1 and 2 of the connecting plug. It should be between 43 and 58 Ω at 73.4°F (23°C).

If the measured values are outside the correct ranges, replace the tip.

The operating temperature is too low.

1. *Is the Tip coated with oxide?*
2. *Is the Tip worn out?*

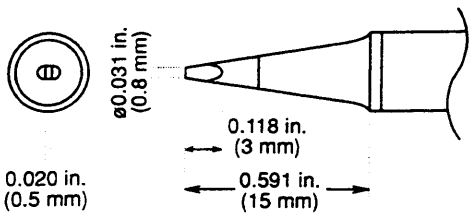
The Tip quickly wears out.

1. *Is the preset temperature too high?*
2. *Is the Iron often left sitting for a long time at a high temperature?*

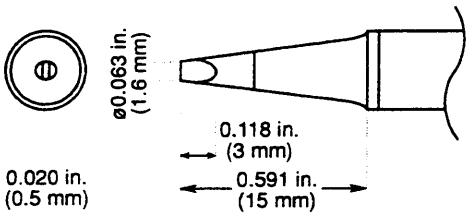
Replacement Parts

Tips

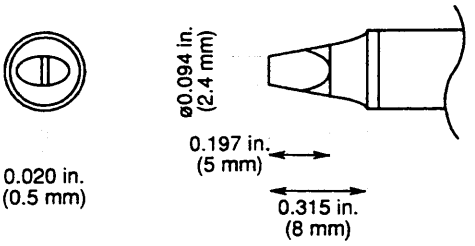
A1243 SHAPE-0.8D Chisel



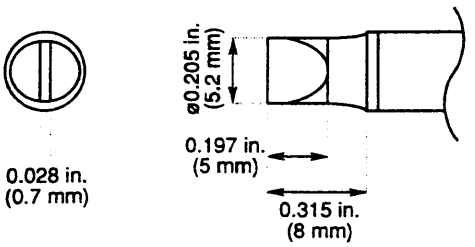
A1244 SHAPE-1.6D Chisel



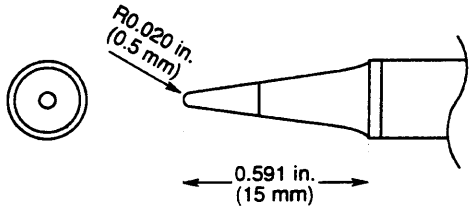
A1245 SHAPE-2.4D Chisel



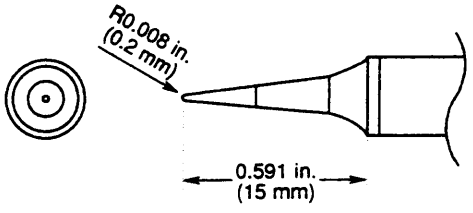
A1246 SHAPE-5.2D Chisel



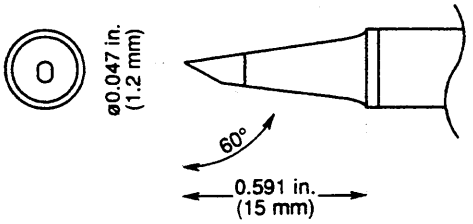
A1247 SHAPE-B Conical



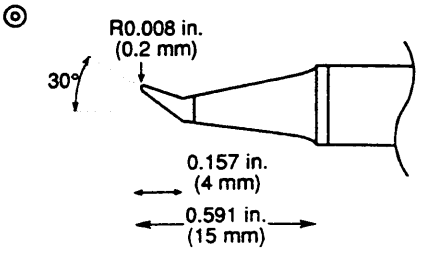
A1248 SHAPE-I Conical Sharp



A1249 SHAPE-1.2C Beveled

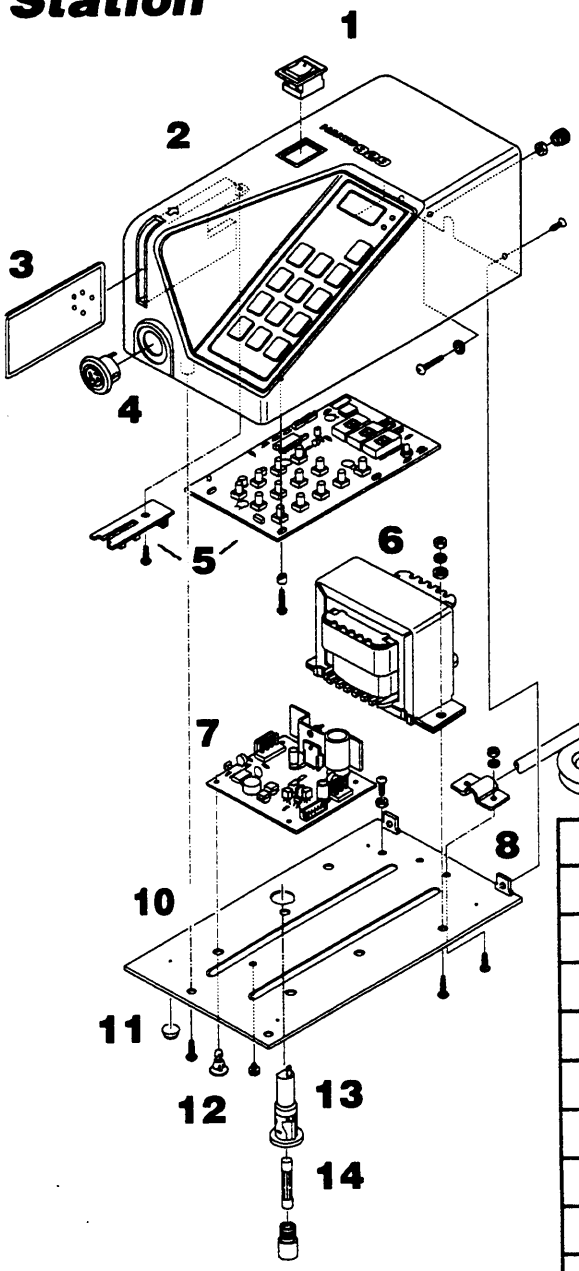


A1250 SHAPE-0.2RB Bent

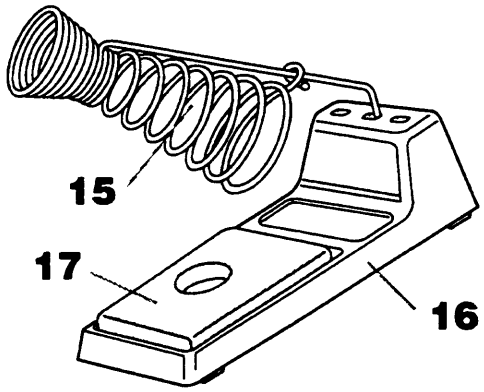


Replacement Parts

Station



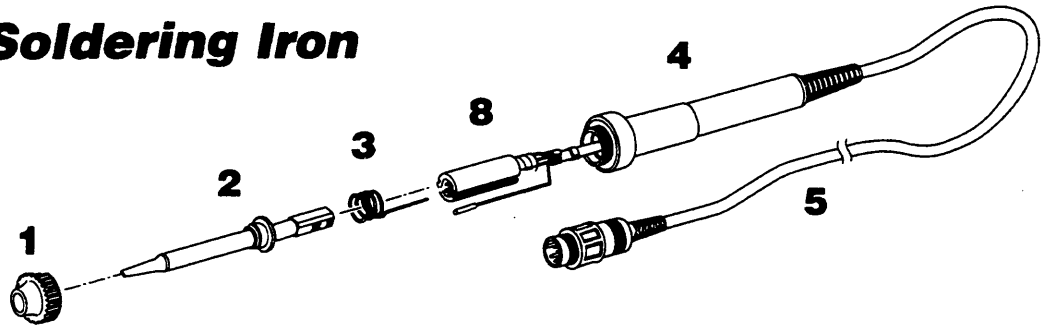
Iron Holder



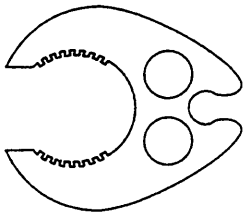
Item No.	Part No.	Part Name
15	B1857	Spring Iron Holder
16	B1470	Iron Holder Base
17	A1042	Cleaning Sponge

Item No.	Part No.	Part Name
1	B1109	Power Switch
2	B1105	Upper Case
3	B1116	Card
4	B1107	Receptacle
5	B1108	P.W.B. for Temperature Setting
6	B1110	Transformer
7	B1113	P.W.B. for Temperature Control
8	B1111	Cord Stopper
9	B1104	Power Cord
10	B1112	Chassis
11	B1115	Rubber Stopper (set of 4)
12	B1114	P.W.B. Locking Spacer (set of 4)
13	B1041	Fuse Holder
14	B1042	Fuse (125 V—2A)

Soldering Iron

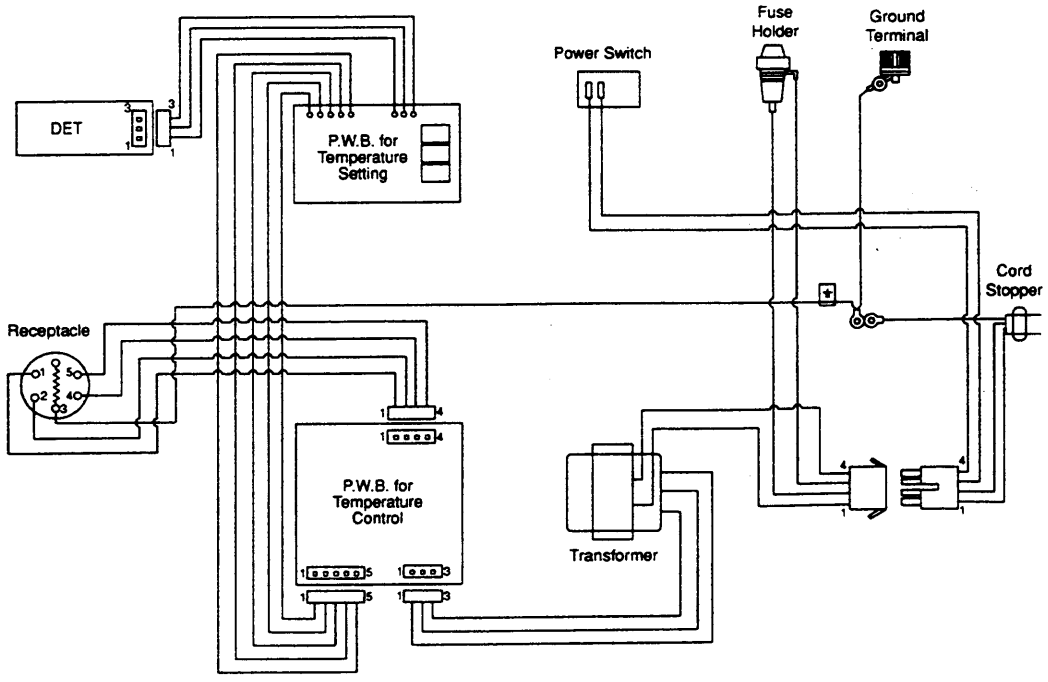


Wrenches



Item No.	Part No.	Part Name
1	B1096	Cap Nut
2	A1244	Soldering Tip (Shape—1.6D)
3	B1549	Grounding Spring
4	B1810	Handle
5	B1101	Cord Assembly
6	B1126	Cap Nut Wrench
7	B1117	M4 Hex Wrench
8	B1550	Terminal

Wiring Diagram



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