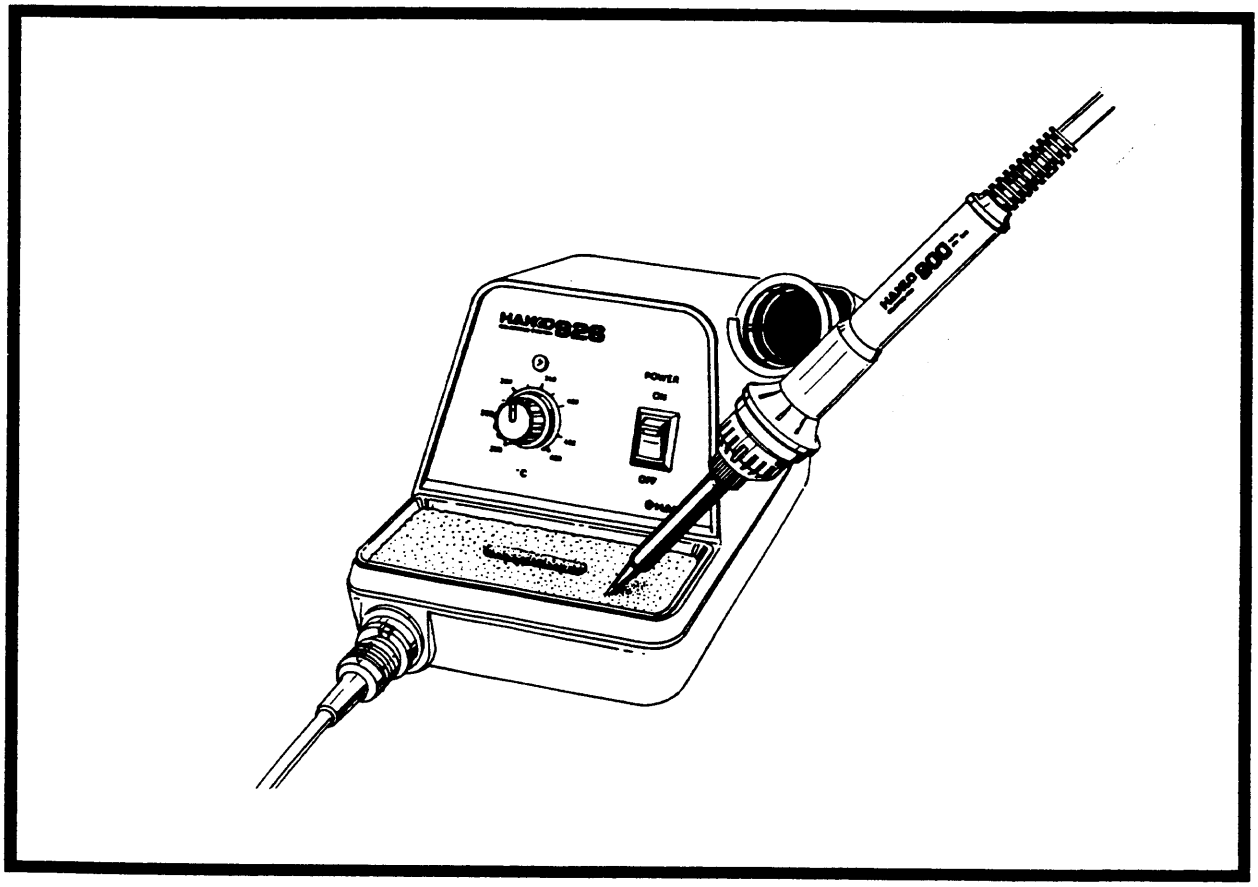
TROUBLE SHOOTING GUIDE

FOR

THE HAKKO 926 STATION



AMERICAN HAKKO PRODUCTS, INC.

TROUBLE SHOOTING GUIDE FOR THE HAKKO 926 STATION

TROUBLE	POSSIBLE CAUSE
The power switch is on, but the power lamp does not light up.	Blown fuse, bad transformer, or bad PCB.
The power switch is on, the power lamp lights up, but the unit does not heat up.	Bad solder iron cord, heating element, or PCB.
The unit overheats when turned on.	Bad solder iron cord, heating element, transformer, or PCB. * First check to see if the LED lights up. If it does not, then the only probable cause is the PCB.
The iron temperature cannot be regulated.	Bad solder iron cord, PCB.

Blown Fuse: A blown fuse is caused when the heating element leads become twisted, causing a short. See Fig. 1 and 2.

Bad Heating Element: When the iron is at room temperature, measure the resistance of the heating element and the sensor. The normal resistance value of the heating element should be between 2.5-3.5Ω; the sensor should be between 43-58Ω. See Fig. 2 and 3. If the tested values of the heating element and sensor do not fall within the respective ranges given here, then the heating element must be replaced. If you find the heating element does need to be replaced, it is very important that you recalibrate the iron temperature after replacing the heating element.

Bad Transformer: The normal resistance value of the input side should be between 8-9Ω when the iron is at room temperature. If this is not the value, the transformer is bad, and must be replaced. See Fig. 4.

Bad Solder Iron Cord: There are two methods of testing the solder iron cord. First, turn the unit "ON", with the temperature dial set at 896°F. Then wiggle and kink the iron cord at various locations along the length of the iron cord, including the strain relief area. If the LED light flickers, then the cord needs to be replaced. See Fig. 5.

The second method of checking the integrity of the solder iron cord is by using an ohmmeter to test the resistance of each individual wire in the cord. Using the diagram below, touch one of the probes to the red terminal on the terminal board, and touch the other probe to the #1 pin on the connector. The value should be 0Ω; if it is greater than 0Ω or ∞, then the cord is bad and must be replaced. Repeat the procedure, touching one probe to a terminal wire, and the other probe to the corresponding pin on the connector. See Fig. 6.

Bad PCB: *Note: Always check for other causes before checking the PCB. Always check the PCB last. First check the triac resistances according to Fig. 8. If they do not match then the triac needs to be replaced. If everything else seems to be in working order, then there may be a problem with the IC1 and/or IC2. First replace IC2, and if the problem is not corrected, then replace IC1. If this does not correct the problem, then replace the whole PCB. See Fig. 7.

REPLACEMENT PARTS

Fuse (2 Amp, Fast Blow)	B1042
Heating Element (900M & 900L)	900M-H
Transformer, 926	926-228B
Solder Iron Cord Assembly (Non-ESD)	900-039
Solder Iron Cord Assembly Cord (ESD)	900-039S
IC1	926-435
IC2	926-436
PCB	926-011B
Triac	B1081

Fig. 1

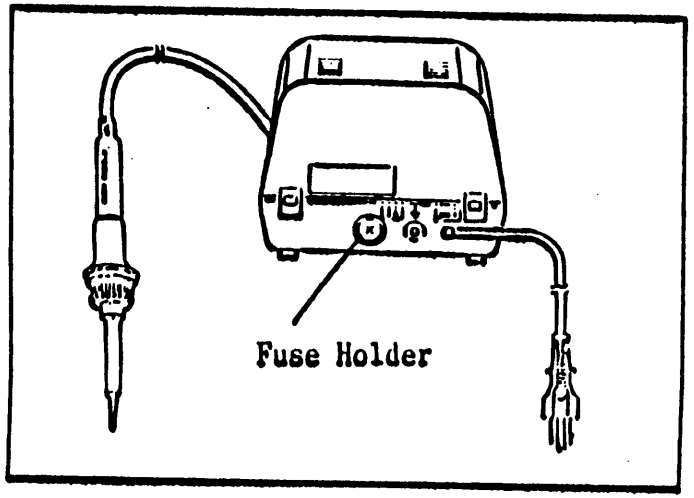


Fig. 2

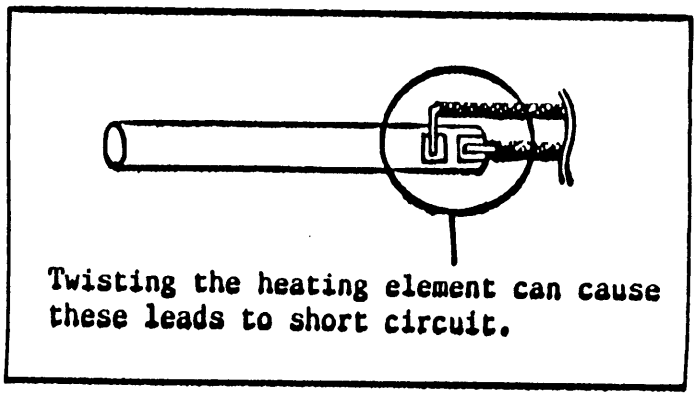


Fig. 3

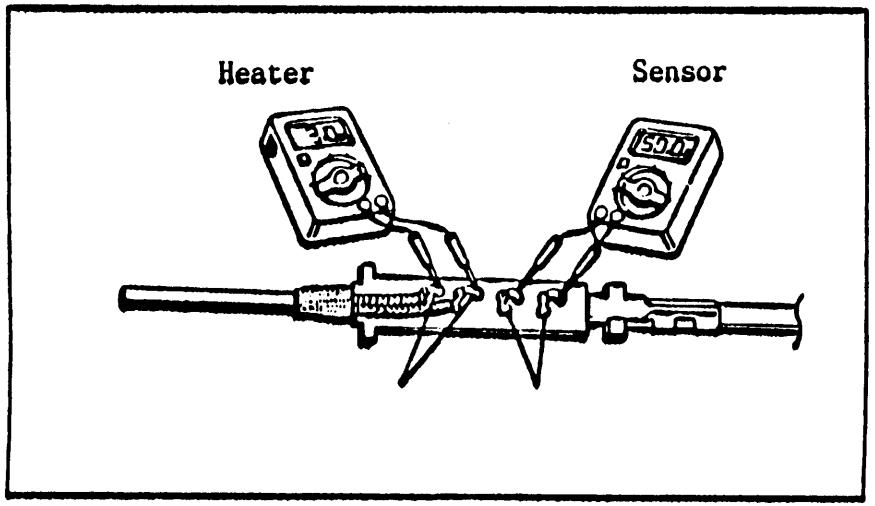


Fig. 4

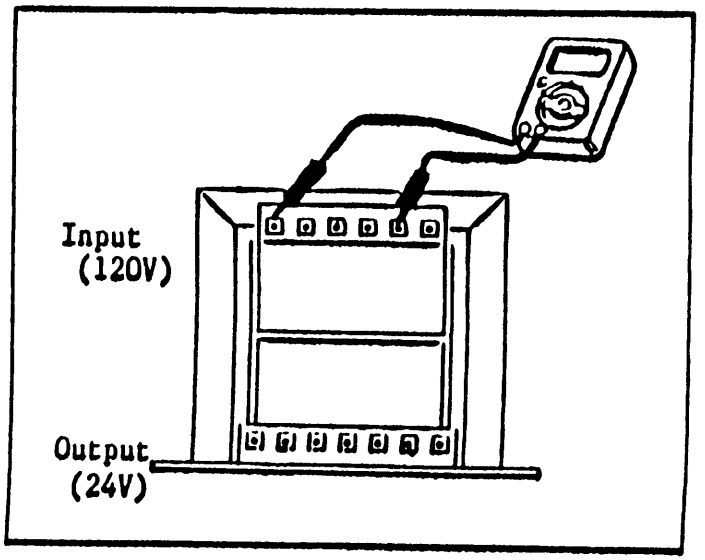


Fig. 5

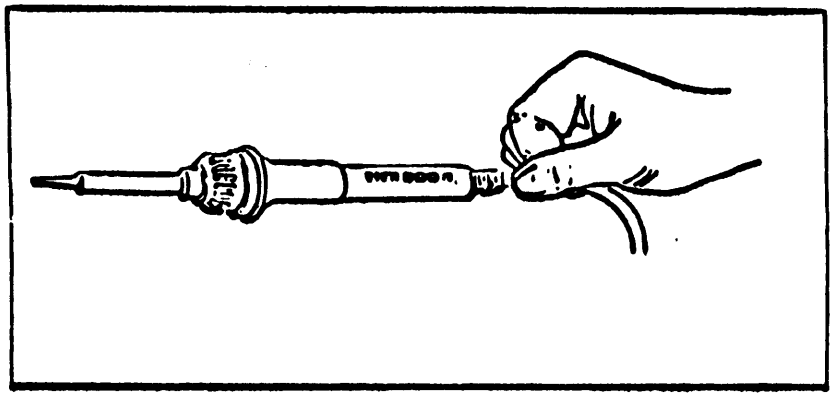


Fig. 6.

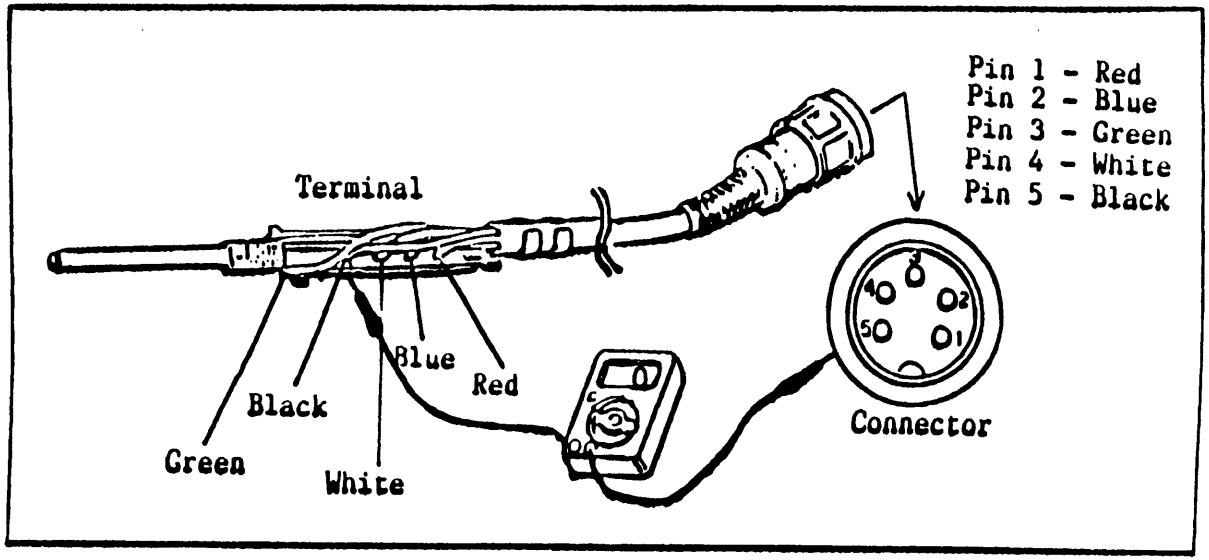


Fig. 7

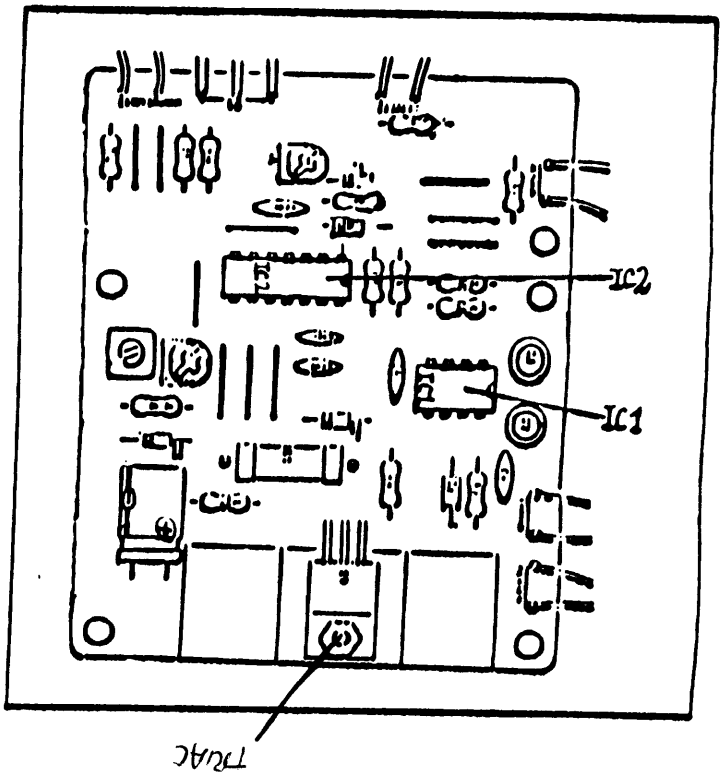
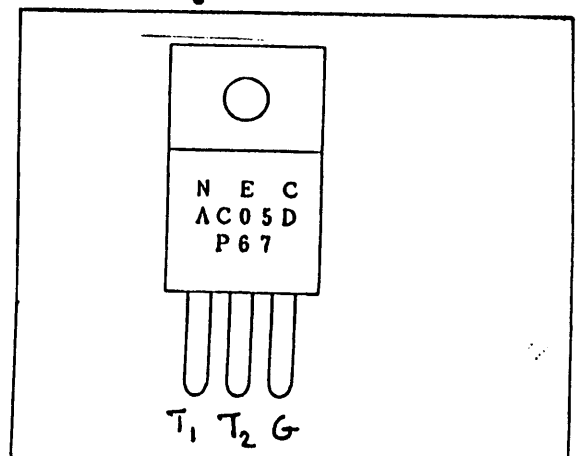


Fig. 8



$T_1 - T_2 = \infty\,\Omega$

$T_2 - G = \infty\,\Omega$

$T_1 - G = 140 - 300\,\Omega$

HAKKO 926 SOLDERING STATION CALIBRATION PROCEDURES

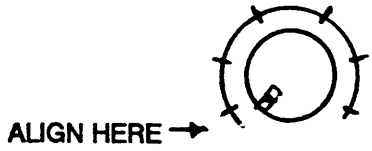
EQUIPMENT REQUIRED:

HAKKO 191 Thermometer
Ohmmeter
Small slotted screwdriver
Solder
Scotch-brite
Pliers or 12mm wrench
Thermo-Coupled tip
Boardvise
Calibration Stickers
Solder station record book

PROCEDURES:

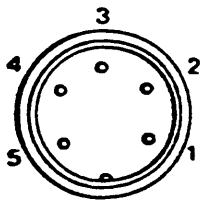
I. Knob alignment:

Set dial on station to lowest setting possible. If it doesn't match up to the lowest setting on the face plate. Adjust the knob by loosening the set screw on knob. Then secure the knob tightly after the dial position is corrected.



II. Checking for heating element and cord assembly for damage:

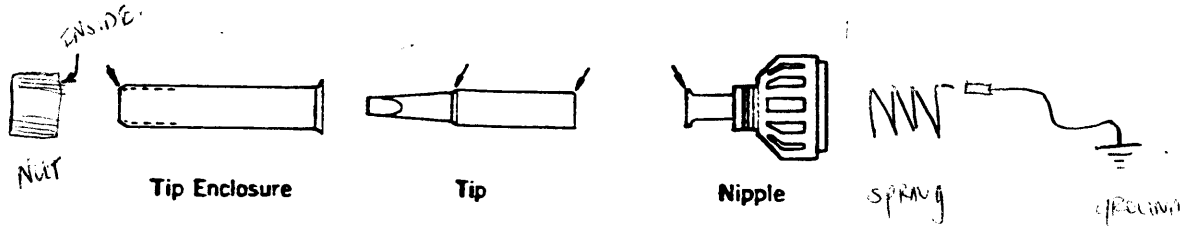
Disconnect the connecting plug and measure, with an ohmmeter, the resistance value between pins of connecting plug as follows:

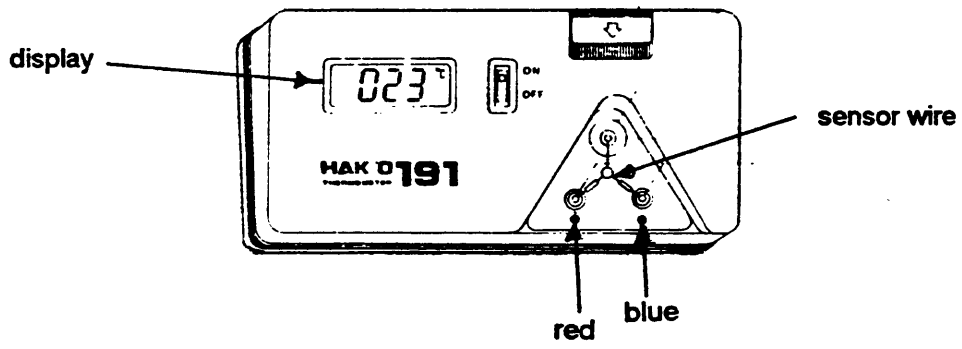


a	Between pin 4 & 5 (Heating Element)	2.5~3.5 ohm (Normal)
b	Between pin 1 & 2 (Sensor)	43~58 ohm (Normal)
c	Between pin 3 & Tip (Grounding)	Under 10 ohm

A. If the value of "a" & "b" is different form above value, replace the Heating Element (Sensor) or Cord Assembly.

B. Before measuring "c" remove tip enclosure, tip and nipple and clean the indicated areas below with scotch-brite. Rubbing lightly will remove oxidation that will cause "c" to read over 10 ohms resulting in the iron not having proper tip grounding. Replace parts correctly and check the "c" value.





III. Temperature calibration using thermo-coupled tip:

A. Replace the tip of soldering iron with the Thermo-Coupled tip.

B. Do not use sensor wire. Leave the sensor wire and attach the connector of Thermo-Coupled tip to the terminals on 191. **Be careful to match the colors of the wires and terminals.**

C. Set dial knob on station to 750°F, then turn on the station. When the 191 thermometer has stabilized it indicates the temperature of the tip on the display. This should take 40 to 50 seconds.

D. If the temperature is different from the setting of the solder iron, recalibrate the solder iron.

E. To recalibrate the tip, set the solder station on its side, find a hole with the label "CAL" by it. Using the small, slotted screwdriver adjust the trim pot in this hole. Clockwise will increase the temperature and counter-clockwise will decrease the temperature. **Be very careful when adjusting this trim pot. It is single turn trim pot and a slight adjustment will vary the temperature tremendously.**

F. When the iron is calibrated to ± 5°F of 750°F the iron is calibrated. Set the unit right side-up and be sure it remains calibrated.

G. Once the temperature is matched and calibrated, turn the station off and allow it to cool before removing the thermo-couple assembly. Place the tip and tip enclosure on the iron and tighten.

IV. Other factors to consider when checking calibration and condition:

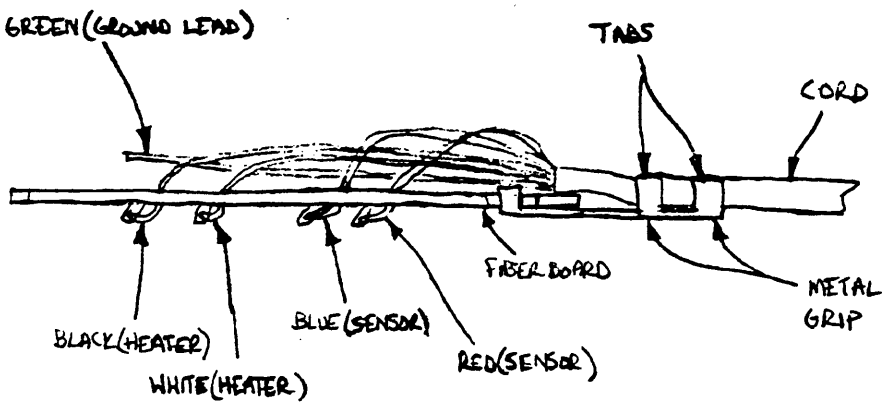
A. Iron condition, solder built up on the tip, sponge wetness, tip condition, tightness of tip shaft to handle, case condition, cord condition, cleanliness of sponge, oxidation.

REPLACING CORD FOR 900M/900L

Drawing #1:

1. Undo the metal grip at the tabs.
2. Desolder the black and white heater leads of the cord.
3. Desolder the blue and red sensor leads of the cord.
4. Insert the new cord into the metal grip and bend the tabs over.
5. Insert the black and white heater leads and the blue and red heater leads through the holes in the fiberboard.
6. Solder these wires to the terminal tabs that protrude from the fiberboard. **CAUTION: IT IS VERY IMPORTANT THAT THESE CONNECTIONS BE SOLDERED WELL. IF THEY ARE NOT, THIS COULD CAUSE THE UNIT TO FAIL.**

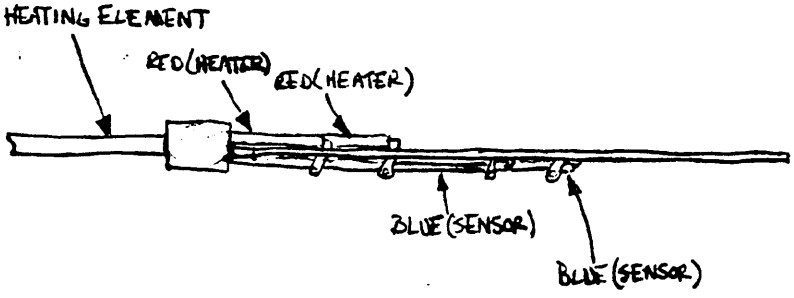
Drawing #1:



Drawing #2:

1. After soldering these leads, check to make sure that the soldered connections from the heating element wires were not damaged by the soldering of the cord wires.

Drawing #2:

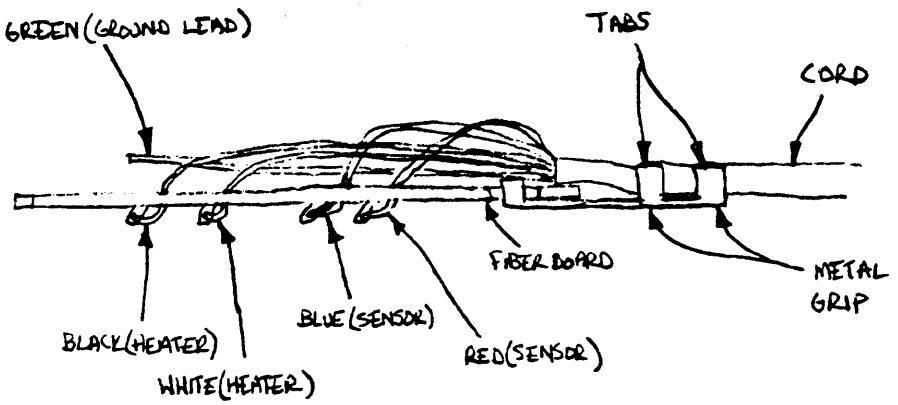


REPLACING THE HEATING ELEMENT 900M/900L

Drawing #1:

1. Desolder both the red and and blue element leads.
2. Remove the element from the fiberboard.
3. Make sure the wires from the cord are attached according to drawing #1. If they are not remove and replace them as shown in this drawing.

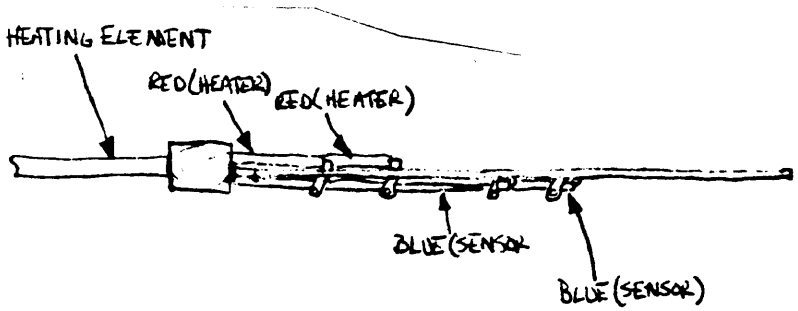
Drawing #1:



Drawing #2:

4. Solder the element wires as shown in drawing #2. **CAUTION: IT IS VERY IMPORTANT THAT THESE CONNECTIONS BE SOLDERED WELL (ESPECIALLY THE RED HEATER WIRES). IF THEY ARE NOT, THIS COULD CAUSE THE UNIT TO FAIL.**

Drawing #2:



INSTRUCTIONS

Mil-Std 2000A States:
"5.1.2.2. Soldering irons. Soldering irons shall be temperature controlled and shall be capable of maintaining the measured idling tip temperature within ±5.5°c (±10°F). Uncontrolled(constant output) soldering irons may be used when approved by the procuring activity. Resistance between the tip of the hot soldering iron and the workstation ground shall not exceed 5.0 ohms. The potential difference between the workstation ground and the tip of the hot soldering iron shall not exceed 2 millivolts RMS. Three-wire cords and tip grounding shall be used. The soldering iron shall be of such design as to provide zero voltage switching. Soldering guns of the transformer type shall not be used."

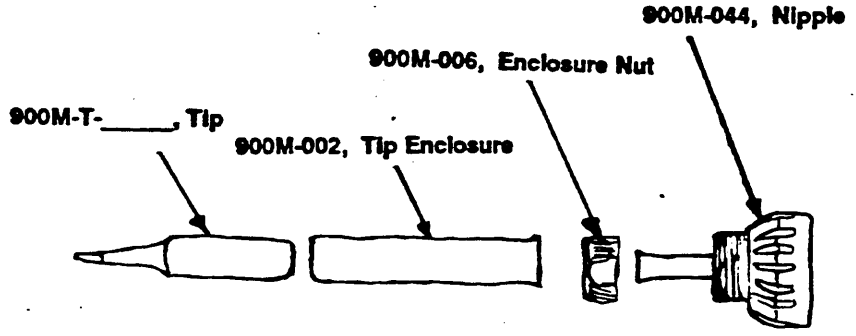
All Hakko soldering irons using the 900M iron meet or exceed all of the above specifications. However, after prolonged use you might notice that during calibration some of specifications of the iron need adjustment in order to meet Mil-Std 2000A. These will be:
(A) Temperature
(B) Tip to ground resistance
(C) Millvolt leakage

TEMPERATURE

Temperature calibration instructions were provided with the specific unit and were placed in the box with the unit. If you need a replacement copy please feel free to call us and we will be happy to fax or send one to you the same day.

TIP TO GROUND RESISTANCE:

In this kit we have provided you with the tools needed to clean off resistive oxides. Cleaning these oxides will bring the tip to ground resistance back below the required 5 Ω.



1) Using the 12mm wrench, remove the tip enclosure nut from the iron.
2) Remove the tip enclosure, and the tip.
3) Remove the nipple.
4) Using the tip enclosure brush, clean the tip enclosure by forcing the brush in and out of the tip enclosure, then using the same brush clean the internal threads on the enclosure nut.
5) Using the thread brush clean the external threads of the nipple and the rim of the tip.
6) Re-assemble the iron and check the tip to ground resistance once again.
7) If the resistance is still high, the above spare parts can be purchased from your local Hakko distributor.

NOTE: If the tip to ground resistance is ∞, then the integrity of the cord should be checked from the grounding spring to the ground pin on the connector.

MILLIVOLT LEAKAGE

If there is excessive millivolt leakage from the tip, the usual cause is high tip to ground resistance. Thus the millivolt leakage should go down once the tip to ground resistance is below 5 Ω.

Should you have any question please feel free to call or fax us at any time.