



May 1999

HAKKO 702B
REWORK SYSTEM

TROUBLESHOOTING GUIDE

THIS TROUBLESHOOTING GUIDE IS DIVIDED INTO TWO PARTS:

1. FLOW DIAGRAMS DEPICTING THE PROCESS OF ANALYZING THE PROBLEM OR PROBLEMS.
2. ILLUSTRATIONS AND DETAILED INSTRUCTIONS FOR CERTAIN OPERATIONS.

- WARNING -

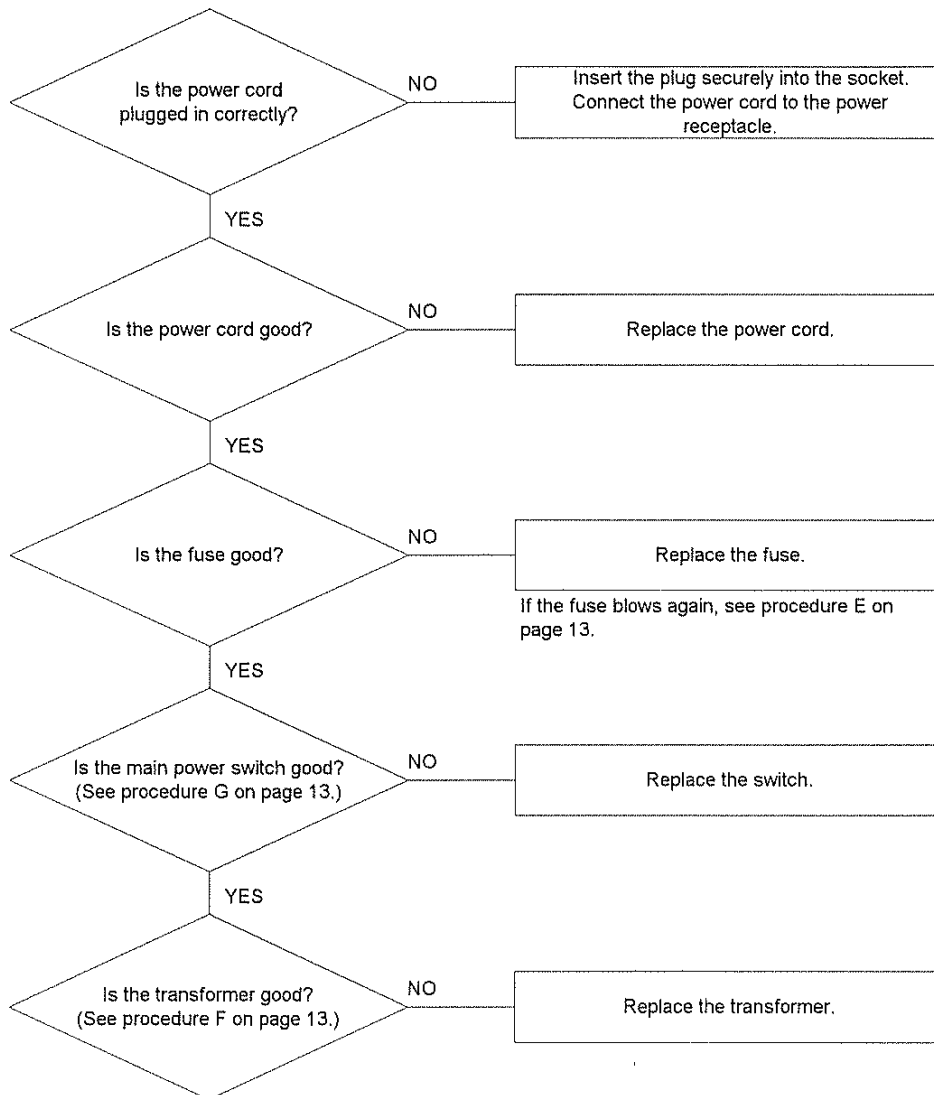
ALWAYS DISCONNECT THE POWER PLUG BEFORE SERVICING THE HAKKO 702B.
FAILURE TO DO SO MAY RESULT IN SEVERE ELECTRIC SHOCK.

1. Basic station problems.

PROBLEM: The unit does not operate.

The power switch is turned ON; each station switch is turned ON.

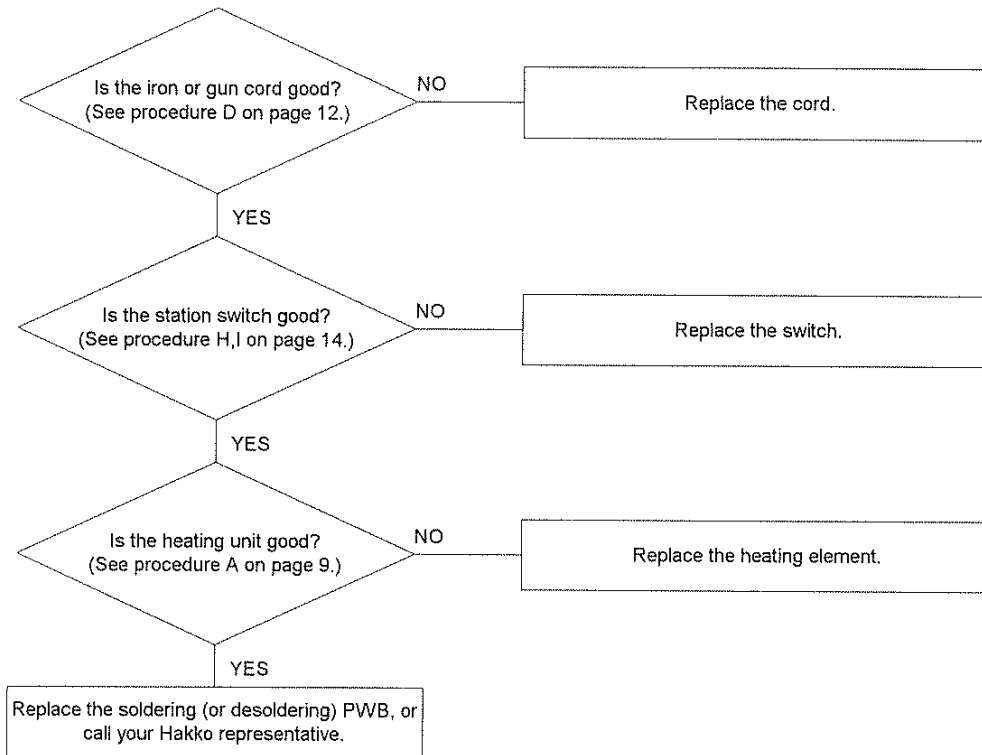
The Hakko 702B does not operate and none of the lamp light.



2. Soldering, Desoldering problems.

PROBLEM: The tip or nozzle does not heat, or heats intermittently.

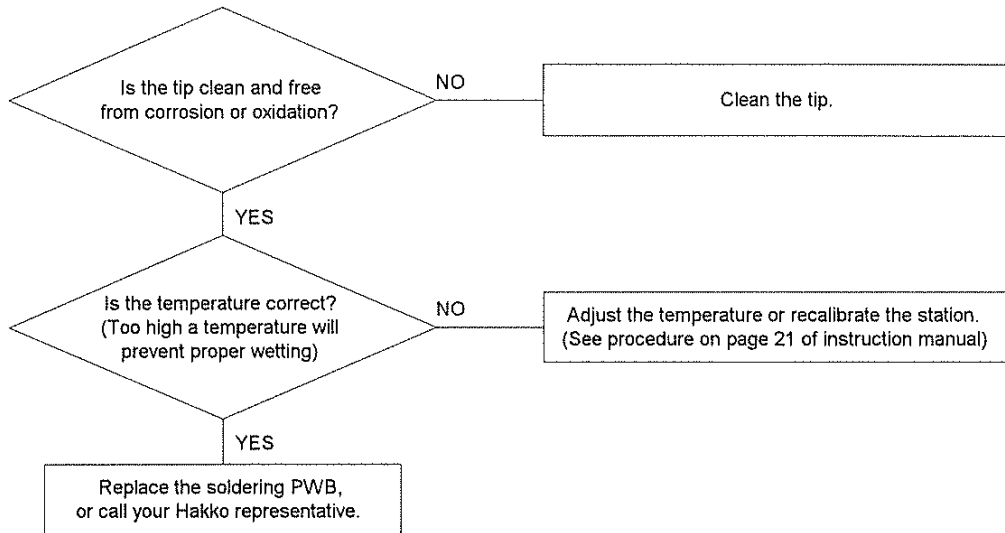
The power switch is turned ON; the selected station switch is turned ON.



3. Soldering problems.

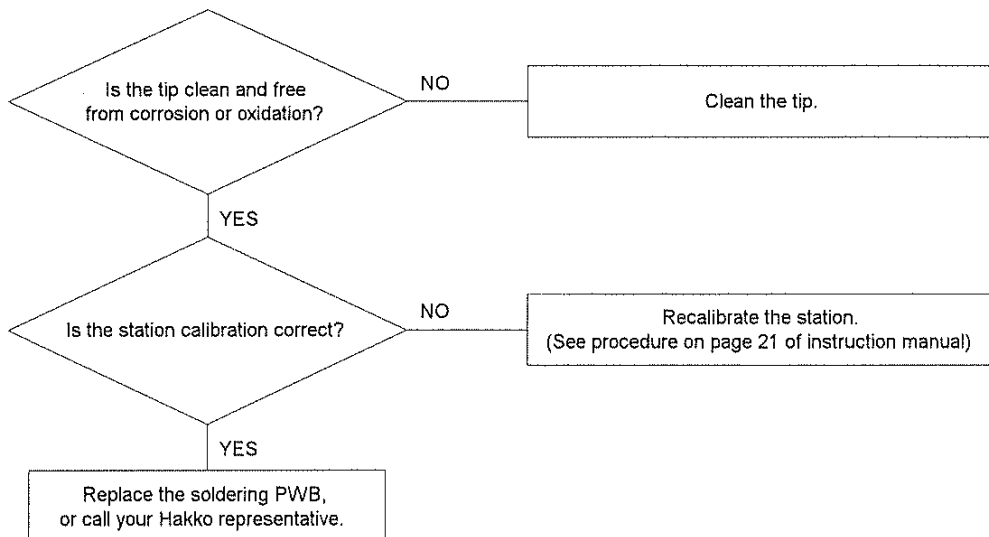
PROBLEM: The tip does not 'wet'.

The power switch is turned ON; the selected soldering station switch is turned ON.



PROBLEM: Soldering temperature is too low.

The power switch is turned ON; the selected soldering station switch is turned ON.

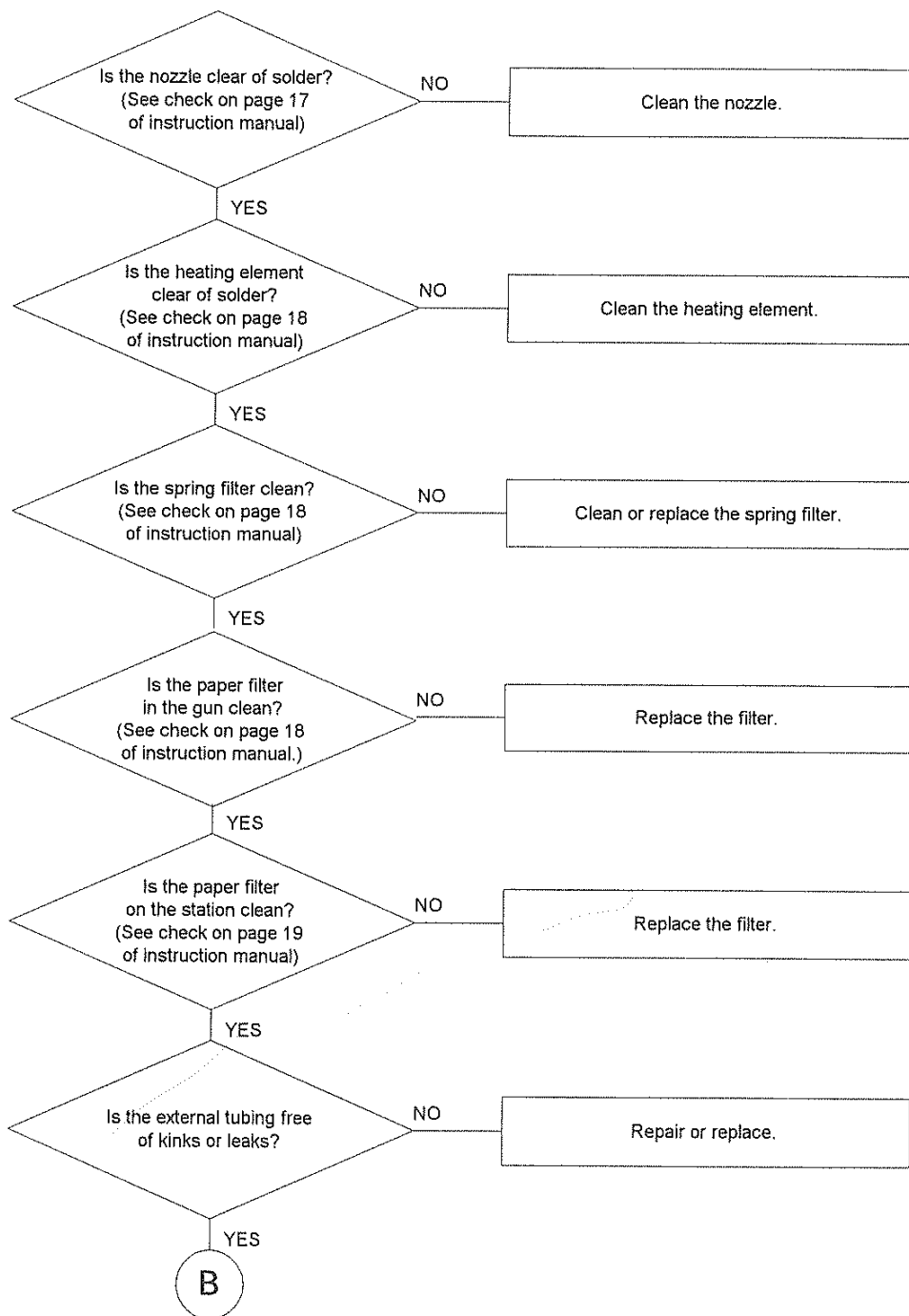


4. Desoldering problems.

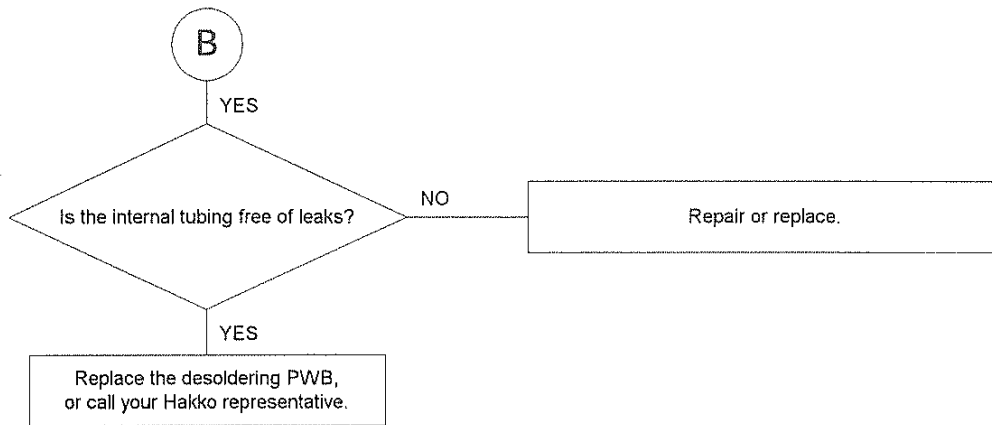
PROBLEM: The station does not extract solder.

The power switch is turned ON; the station switch is turned ON.

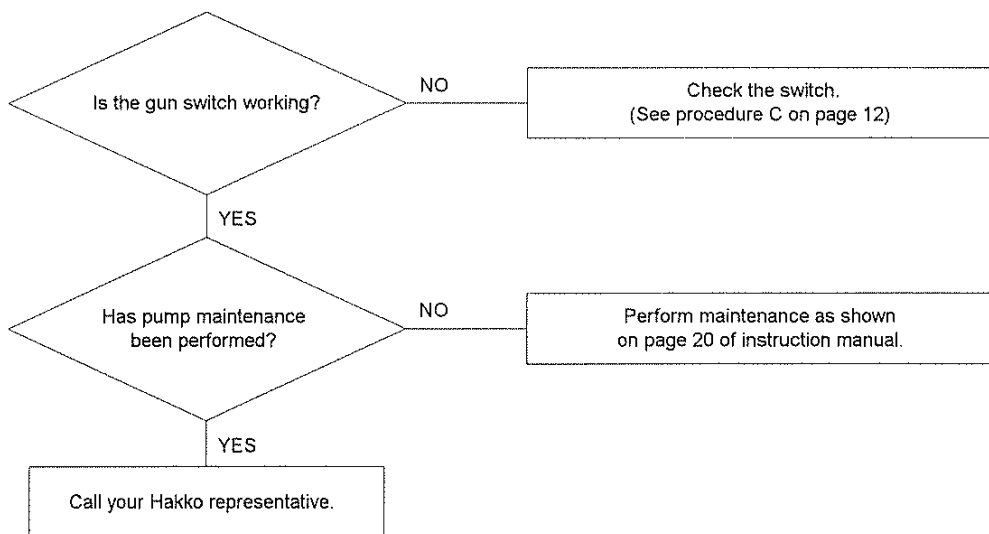
The pump is working.



5. Desoldering problems, continued.

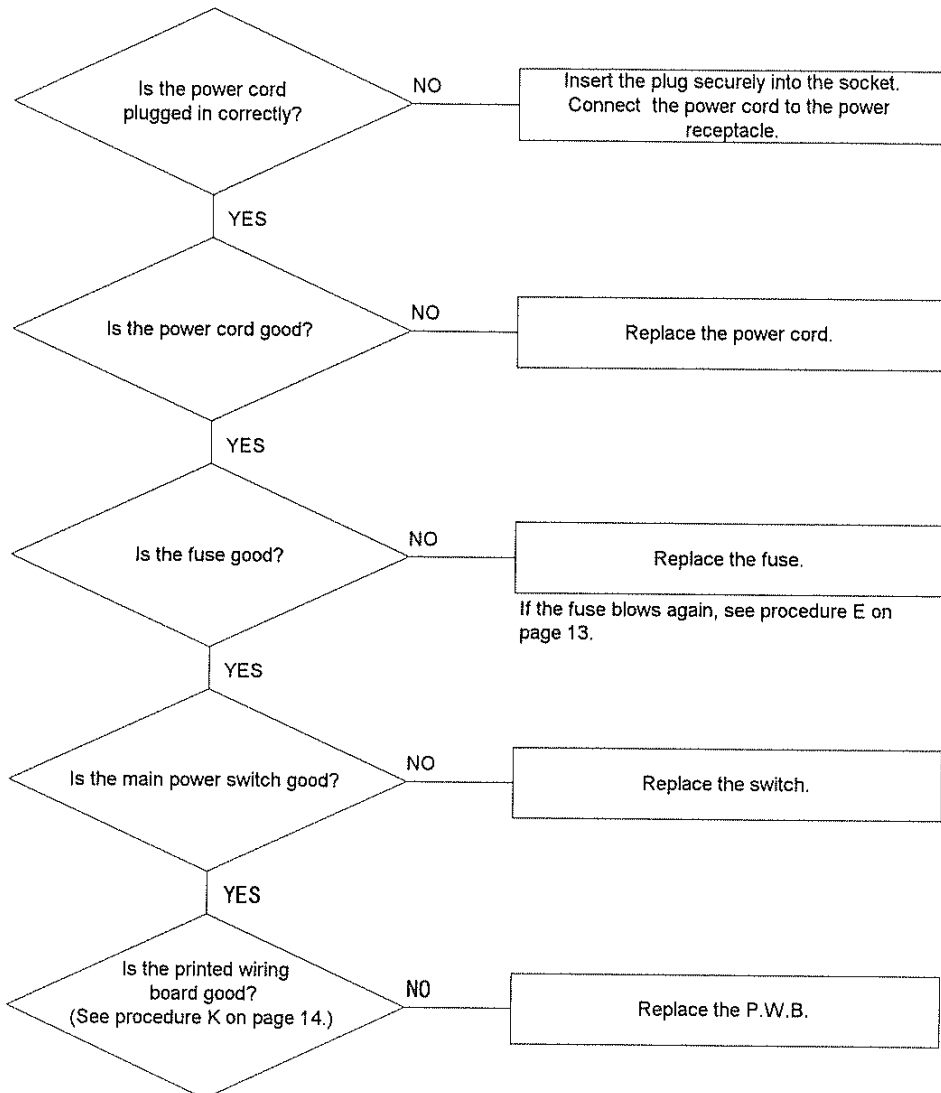


PROBLEM: The pump does not work.

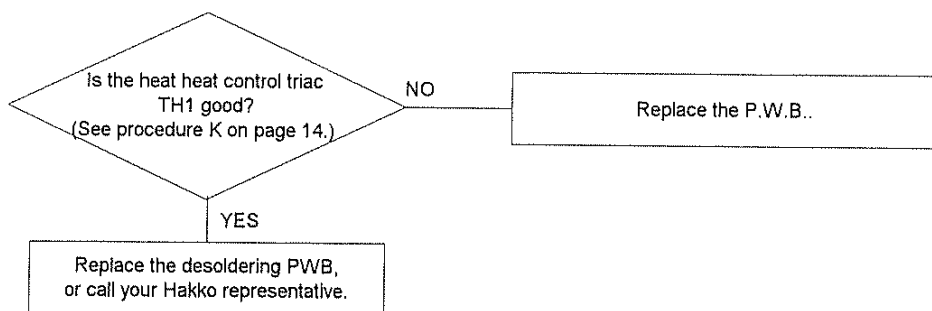


6. SMD Rework Problems.

Problem: The automatic blowing function does not operate when the unit is initially plugged in or the main/ SMD Rework switch is turned off.

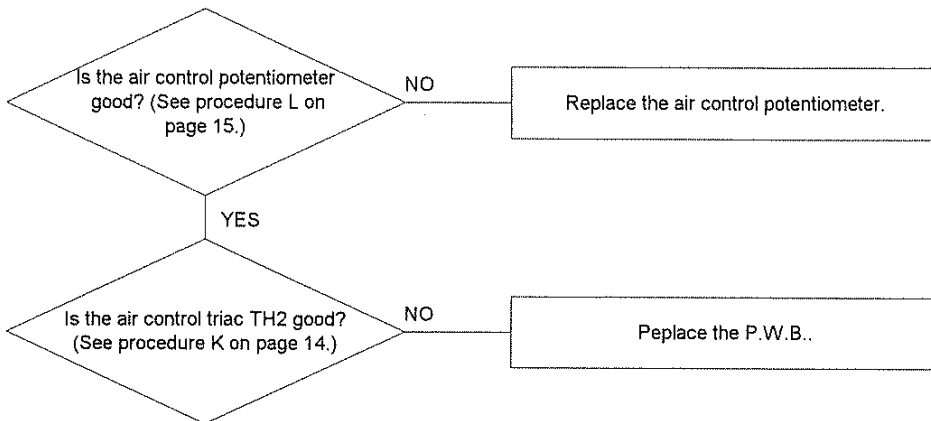


Problem: The LED lamp does not turn on and off.

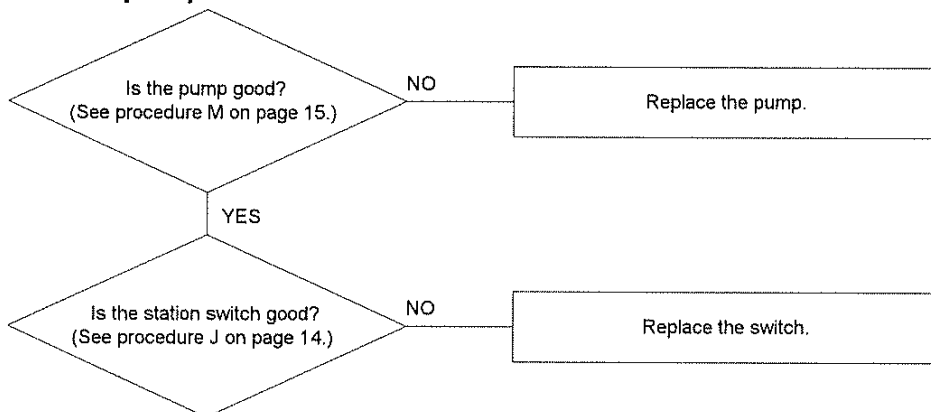


7.SMD Rework Problems, continued.

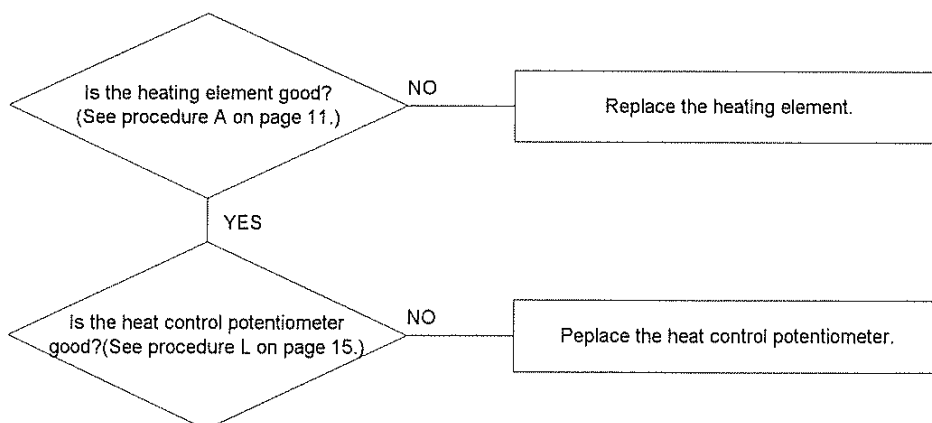
PROBLEM: The air control knob does not control the air.



PROBLEM: The pump does not work.



PROBLEM: The switch is on, but the unit does not heat.



PROCEDURES.

A. REPLACING THE HEATING ELEMENT

SOLDERING IRONS: 907,900S

1. CHECK FOR A BROKEN HEATING ELEMENT OR CORD ASSEMBLY.

- (1) Disconnect the connecting plug.
- (2) Measure the resistance value between pins 1 and 2 (the sensor).
See Fig. 1. It should be between 43Ω and 58Ω .
- (3) Measure the resistance value between pins 4 and 5 (the heating element). See Fig. 1. It should be between 2.5Ω and 3.5Ω .

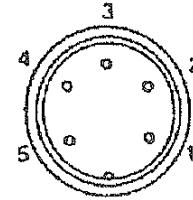


Fig.1

If either of the two measured values are outside their acceptable ranges, it will be necessary to replace the heating element, sensor and/or cord assembly.

- (4) Measure the resistance value between pin 3 and the tip. It should be less than 2Ω . If it is not, there may be oxidation. Using fine sandpaper or steel wool, lightly rub the areas of the tip indicated in Fig. 2.



FIG.2

2. DISASSEMBLE THE SOLDERING IRON

Disassembling the 907 (See Fig. 3.)

- (1) Turn the nut ① counterclockwise and remove the tip enclosure ② and the tip ③.
- (2) Turn the nipple ④ counterclockwise and remove it from the iron.
- (3) Pull both the heating element ⑥ and the cord assembly ⑪ toward the tip of the iron and out of the handle ⑧.
- (4) Pull the grounding spring ⑤ out of the terminal.

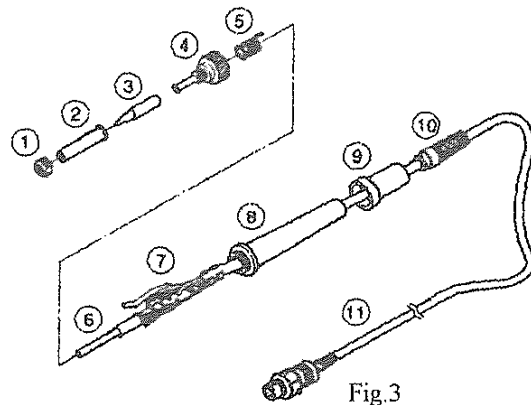


Fig.3

Disassembling the 900S (See Fig. 4.)

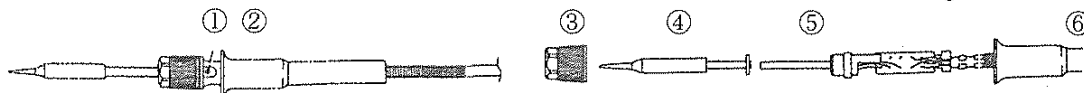


Fig.4

- (1) Slide the handle cover ② toward the cord and remove the screw ① securing the heating element.
- (2) Turn the nut ③ counterclockwise and remove it.
- (3) Remove the tip ④.
- (4) Pull both the heating element ⑤ and the cord toward the tip of the iron and out of the handle ⑥.

3. MEASURE THE RESISTANCE

Measure the resistance when the heating element is at room temperature.

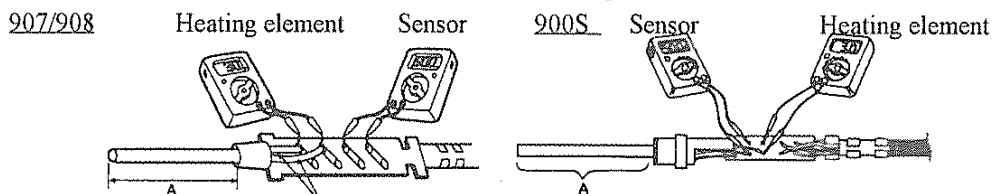


Fig.5

- The resistance value between the blue leads (sensor) should be between 43 Ω and 58 Ω .
- The resistance value between the red leads (heating element) should be between 2.5 Ω and 3.5 Ω .

If either of the resistance values is outside the acceptable range, replace the heating element.

After replacing the heating element, measure the following resistance values.

- Between pin 4 and pin 1 or 2.
- Between pin 5 and pin 1 or 2.

If both values are not ∞ , the heating element and the sensor are touching, which will damage the PWB.

Finally, remeasure the following resistance values to confirm that the leads are not twisted and that the grounding spring is properly connected.

- Between pins 1 and 2 (43 Ω – 58 Ω)
- Between pins 4 and 5 (2.5 Ω – 3.5 Ω)
- Between pin 3 and the tip (under 2 Ω)

Instructions for installing a new heating element for 907/900(S) is included with the replacement part.

DESOLDERING GUN

REPLACING THE HEATING ELEMENT

The resistance values of a working heating element are 2-4 Ω at 23°C .

If the measured values are outside this range, replace the heating element.

1. Unplug the power cord.
2. Disassemble the heating parts.
Separate the housing.
3. Detach the terminal and remove the heating element.

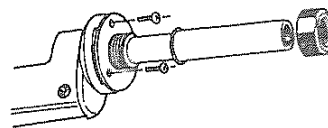


Fig.6

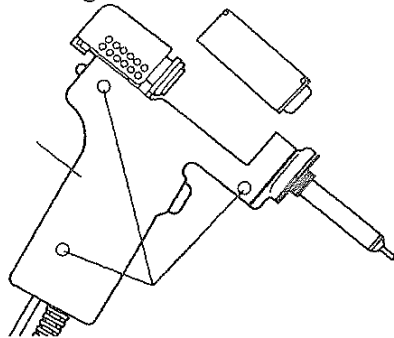


Fig.7

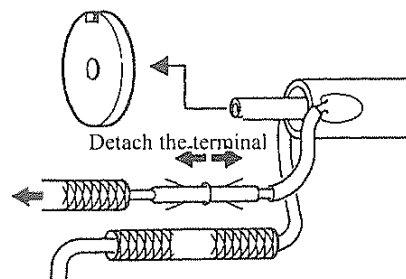


Fig.8

4. Insert a new heating element and reassemble. (Heating element 24V-50W)

⚠ CAUTION

Before reassembling enclosure, make sure connectors are completely covered by the glass tube.

Cover the glass tube
on the connecting part.

Position the leads in groove and
press them into place. Be careful
that the leads do not get caught
in the housing.

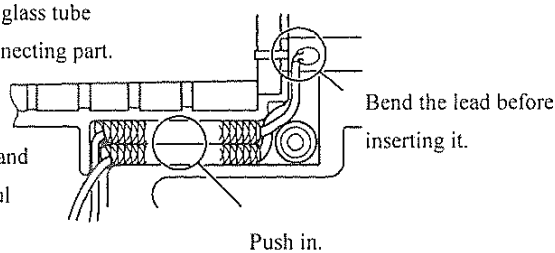


Fig.9

5. Recalibrate the temperature.

The resistance of new heating element varies, resulting in variations in operating temperatures. It is necessary to recalibrate the temperature every time the heating element is replaced. See procedure on page 21 of instruction manual.

SMD REWORK HANDPIECE

1. Remove the screws, slide the tube.

Remove the 3 screws which secure the handle and slide the cord tube.

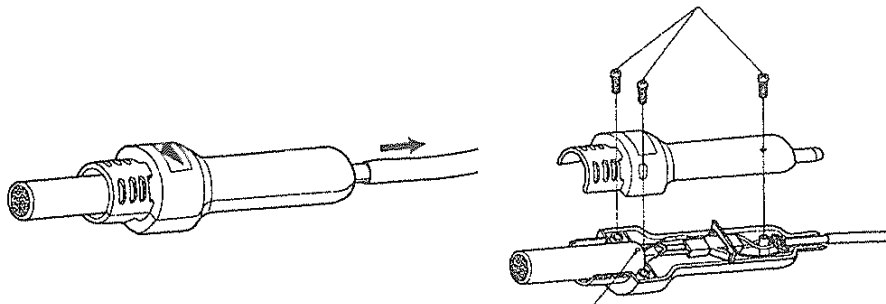


Fig.10

2. Open the handle.

Disconnect the ground wire sleeve and remove the pipe. In the pipe, the quartz glass and heat insulation is installed. Do not drop or miss it.

3. Remove the heating element.

Disconnect the terminal and remove the heating element.

4. Measure the resistance of the heating element.

Put the tester on the terminal of the connector. If the resistance is abnormal, replace the heating element.

100-120V	26 Ω to 40 Ω
220-240V	70 Ω to 100 Ω

B. SOLDERING IRON DESOLDERING GUN TEMPERATURE ADJUSTMENTS

SOLDERING/DESOLDERING STATION CALIBRATION: (SEE PROCEDURE ON PAGE 21 OF INSTRUCTION MANUAL)

C. DESOLDERING STATION MAINTENANCE AND REPAIR

CLEANING NOZZLE AND HEATING ELEMENT: (SEE PROCEDURE ON PAGE 17 OF INSTRUCTION MANUAL)

CHECKING FILTERS: (SEE PROCEDURE ON PAGE 18 OF INSTRUCTION MANUAL)

CHECKING 809 SWITCH:

- Remove desoldering gun cord from 702B.
- Press the switch, and measure resistance between pins 2 and 3 of the cord connector.
- The value should be 0.

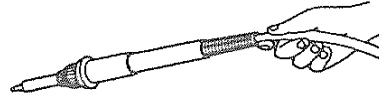
- If the cord is good, replace the switch in the gun.
- Pump maintenance (See procedure on page 20 of instruction manual).

D. TESTING THE IRON CORD

SOLDERING IRONS:

TEST METHOD 1

1. Turn the unit on.
2. Set the temperature to 480°C .
3. Without waiting for the iron to reach the set temperature, wiggle and kink the cord at various points along the length of the cord, including in the strain relief area at the base of the iron handle. If the heater lamp flickers, the cord is broken and should be replaced.



CAUTION:

The heater lamp will flicker if the iron temperature is allowed to reach the set temperature. Before replacing the cord, be sure that this is not the reason for the flickering.

TEST METHOD 2

Check the resistance between each pin on the connecting plug and its associated wire on the terminal board insided the handle. (See the chart below.)

All measured values should be 0 Ω. If any value is greater than 0 Ω is ∞, replace the cord.

Pin Number	Wire Color	Resistance Value
1	Red	0 Ω
2	Blue	0 Ω
3	Green	0 Ω
4	White	0 Ω
5	Black	0 Ω

REPLACING THE IRON CORD

CAUTION:

It is very important that these connections be soldered well. Poor solder joint could cause the unit to fail.

1. Undo the metal grip at the tabs.
2. Desolder the black and white heater leads.
3. Desolder the blue and red sensor leads.
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 terminal board.
6. Solder these wires to the terminal board.

DESOLDERING GUN:

Check the desoldering gun cord. If it is broken, replace it with a new one. The method of checking the cord is same as soldering iron except for the following pin No. and color of the wire.

- Pin 1 — White
- Pin 2 — Black
- Pin 3 — Red
- Pin 4 — Green

E. REPLACING FUSE

IF THE FUSE BLOWS AGAIN:

1. Check the heating element leads of 907 iron. Twisted heating element leads may cause short-circuit and fuse blowout. Also, check the heating element lead of 809.
2. Test the printed wiring board. (See procedure K)
3. Check the transformer. (See procedure F)

F. TRANSFORMER RESISTANCE CHECK

TRANSFORMER RESISTANCE CHECK.

MEASURE BETWEEN	RESISTANCE READING			
	100V	110V	220-230V	240V
TERMINAL 1 OF POWER SWITCH AND WHITE LEAD CONNECTED TERMINAL OF POWER RECEPTACLE	2.3 Ω	2.5 Ω	11 Ω	12 Ω
TRANSFORMER SECONDARY LEAD IN THE SOLDERING OR DESOLDERING P.W.B.	0.2 Ω	0.2 Ω	0.2 Ω	0.2 Ω

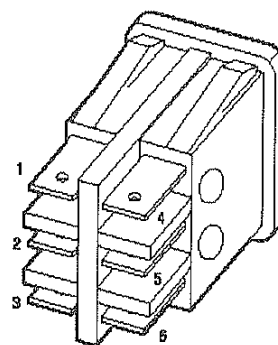
Be sure to measure the secondary resistance with the switch for solder or desolder in off position.

G. MAIN POWER SWITCH CONTINUITY CHECK

Caution: Be sure to disconnect the leads on the switch terminal

MAIN POWER SWITCH CONTINUITY CHECK.

MEASURE BETWEEN	SWITCH ON	SWITCH OFF
TERMINAL 1-2	0 Ω	∞ (OPEN CIRCUIT)
TERMINAL 2-3	∞ (OPEN CIRCUIT)	0 Ω
TERMINAL 4-5	0 Ω	∞ (OPEN CIRCUIT)
TERMINAL 5-6	∞ (OPEN CIRCUIT)	0 Ω



H. SOLDERING STATION SWITCH CONTINUITY CHECK

SOLDERING STATION SWITCH CONTINUITY CHECK.

MEASURE BETWEEN	RESISTANCE READING
INPUT AND OUTPUT SIDES OF SWITCH WITH SWITCH OFF.	OTHER THAN 0 Ω
INPUT AND OUTPUT SIDES OF SWITCH WITH SWITCH ON.	0 Ω

⚠ Caution: Connect the soldering iron cord.

I. DESOLDERING STATION SWITCH CONTINUITY CHECK

DESOLDERING STATION SWITCH CONTINUITY CHECK.

MEASURE BETWEEN	RESISTANCE READING
INPUT AND OUTPUT SIDES OF SWITCH WITH SWITCH OFF.	OTHER THAN 0 Ω
INPUT AND OUTPUT SIDES OF SWITCH WITH SWITCH ON.	0 Ω

ADJUST THE HEATER CIRCUIT BEFORE USE.

⚠ Caution: Connect the desoldering gun cord.

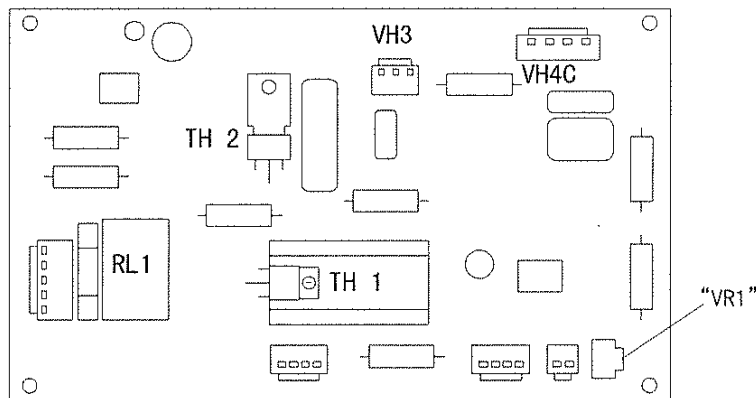
J. SMD REWORK STATION SWITCH CONTINUITY CHECK

DESOLDERING STATION SWITCH CONTINUITY CHECK.

MEASURE BETWEEN	RESISTANCE READING
INPUT AND OUTPUT SIDES OF SWITCH WITH SWITCH OFF.	OTHER THAN 0 Ω
INPUT AND OUTPUT SIDES OF SWITCH WITH SWITCH ON.	0 Ω

K. PRINTED WIRING BOARD TEST

SMD REWORK STATION CAUTION: DISCONNECT THE CONNECTOR.



1. Visually inspect the board for evidence of physical damage
(burns, cracks, lifted leads & component)
2. Measure the resistance value between pin 1 & 4 of the relay switch (RL1). It should be about 6KΩ.
3. Check the resistance between pins of the triac. They should be as follows.
 - Between T1 and T2 — open circuit (∞)
 - Between T2 and ground — open circuit (∞)
 - Between T1 and ground — 150 to 400Ω

- Replace the board if there are signs of damage, or if the triac resistance is not as shown.
4. Check the fuse on the P.W.B.. If the fuse is blown, replace the fuse.

ADJUST THE HEATER CIRCUIT AFTER REPLACING THE PRINTED WIRING BOARD.

How to adjust the heater circuit

1. Set the temperature control knob to "1".
2. Using a regular or small cross point screwdriver, turn "VR1" (potentiometer) in the diagram clockwise until the heater lamp starts flashing.

SOLDERING, DESOLDERING STATION

1. VISUALLY INSPECT THE BOARD FOR EVIDENCE OF PHYSICAL DAMAGE.
(BURNS, CRACKS, LIFTED LEADS & COMPONENT)
2. CHECK THE RESISTANCE BETWEEN PINS OF THE TRIAC. THEY SHOULD BE AS FOLLOWS.
Between T1 and T2 — open circuit (∞)
Between T2 and ground — open circuit (∞)
Between T1 and ground — 150 to 400 Ω

REPLACE THE BOARD IF THERE ARE SIGNS OF DAMAGE, OR IF THE TRIAC RESISTANCE IS NOT AS SHOWN.

L. TESTING THE AIR/HEAT CONTROL POTENTIOMETER

1. AIR CONTROL POTENTIO METER

Remove the air control potentiometer VH-3 on the P.W.B. and check the resistance between sockets 1 & 3 on the connector.

Air control potentiometer

With knob on "1" resistance should be 265K Ω (100-110V)

500K Ω (220-240V).

"8" resistance should be 0 Ω .

If these resistance is different, then the air control potentiometer should be replaced.

2. HEAT CONTROL POTENTIOMETER

Remove the heat control potentiometer connector from VH2 on the P.W.B. and check the resistance between two sockets in the connector.

Heat control potentiometer

With knob on "1" resistance should be 100K Ω .

"8" resistance should be 0 Ω .

If this resistance is different, then the air control potentiometer should be replaced.

M. TESTING THE PUMP

Disconnect the VH4C and check the resistance value between pins 1 and 4 on the connector. Normally it is around 25 Ω (100V), 35 Ω (110V), 120 Ω (220-240V). If the value is ∞ or far from the normal values, replace the pump.