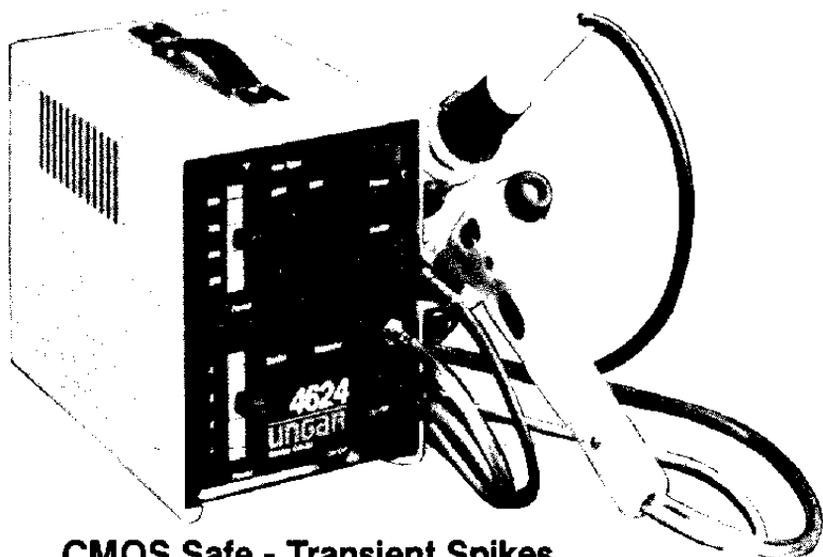


UNGAR®

4624 Service Center



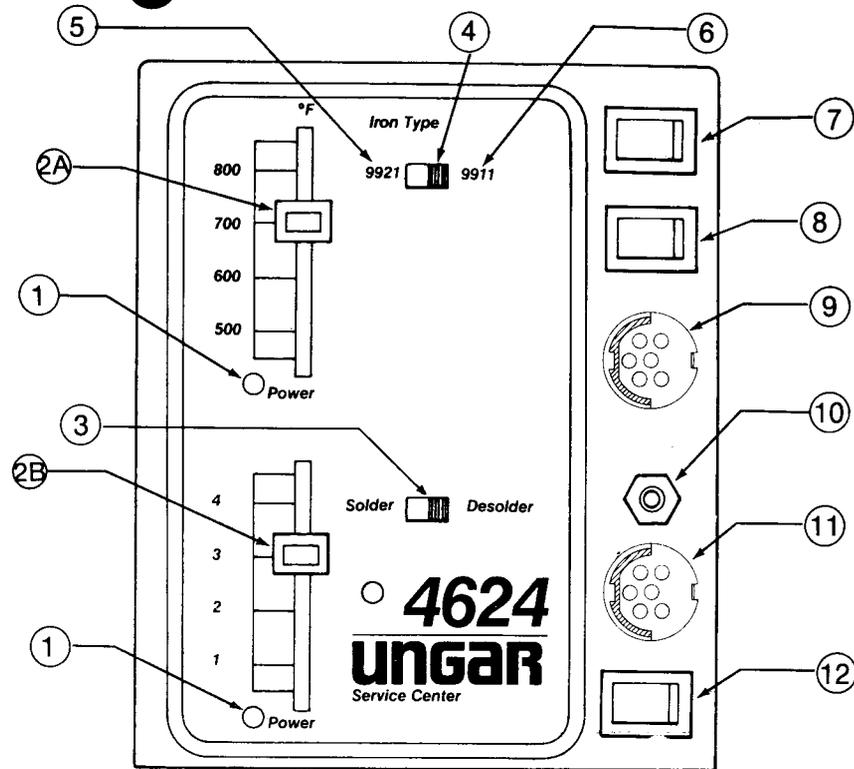
**CMOS Safe - Transient Spikes
Less Than 2mV**

SPECIFICATIONS:

- Variable Temperature
 - Soldering Mode 450°F to 850°F
 - Desoldering Mode 500°F to 1000°F
- Electronic Control - Both Modes
- 24 Volt at the Handles
- 3-Wire Grounded, 120V input 60Hz
- Self-Contained Vacuum - Desoldering Mode
- Dimensions
 - 6.66"H x 5.12"W x 7.5"D
 - Net Weight 6.3 Lbs.

Operating Instructions

4624 Front Panel



- | | |
|---|---------------------------------------|
| ① Power Indicator Light | ⑦ Power Switch |
| ②A Variable Temperature Slide Control/Soldering | ⑧ On/Off Switch/Soldering Mode |
| ②B Variable Temperature Slide Control/Desoldering | ⑨ Quick-Lock Connect Plug |
| ③ Solder/Desolder Mode Selector | ⑩ Vacuum Connection |
| ④ Calibration Selector Switch | ⑪ Quick-Lock Connect Plug/Desoldering |
| ⑤ 9921 Iron Selector Setting | ⑫ On/Off Switch/Desoldering Mode |
| ⑥ 9911 Iron Selector Setting | |

Desoldering Mode

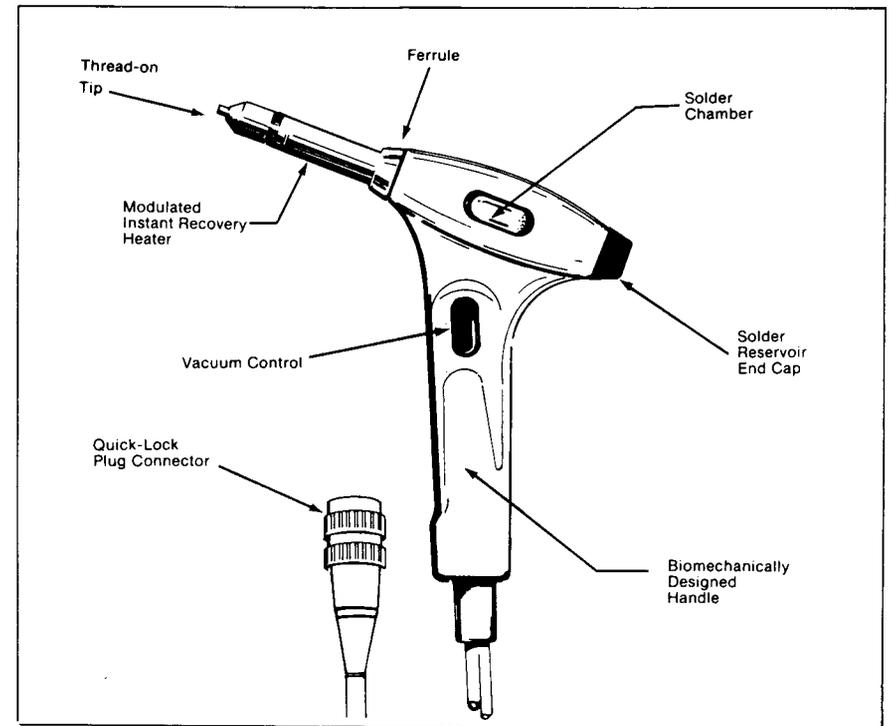
The designed function for this mode is to power the 4098 Desoldering Iron and is factory calibrated for a 500°F to 1000°F range. This system also has the flexibility to control either the UNGAR 9921 Macro-sized Iron (From

450°F to 850°F) or the 9911 Micro-sized Iron (From 500°F to 900°F). Please be certain of the iron being used since there are temperature variations between the irons at any designated power setting, see illustration page 14.

Important

Be certain that when using the 4624 Service Center with the 4098 Desoldering Handle that the Selection Switch (see no. 3) is in the proper mode. If the 4098 Desoldering Handle is used when switch is in the Soldering mode the results will be a temperature of 50°F to 100°F higher than indicated setting.

Desoldering Mode



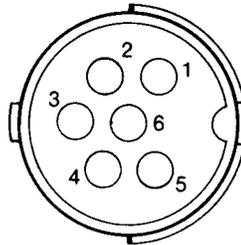
Ungar's Long Life Tips

Ungar tips are available in a variety of sizes, machined from a special Ungar Alloy #24 which is highly resistant to abrasion and erosion by solder. The tips are even strong

enough to straighten clinched leads and they exhibit substantially superior wear characteristics when compared to ordinary copper or composite type tips. Tips are plated to prevent corrosion.

Tips for Ungar Desoldering Handles

*Typical							
#2005 .060" P. O.D. .032" P. I.D.		#2006 .080" P. O.D. .040" P. I.D.		#2007 .100" P. O.D. .062" P. I.D.		#2008 .120" P. O.D. .089" P. I.D.	
#2009 .100" P. O.D. .062" P. I.D.		#2010 .060" P. O.D. .032" P. I.D.		#2011 .080" P. O.D. .040" P. I.D.		#2012 .040" P. O.D. .020" P. I.D.	



VIEW 1

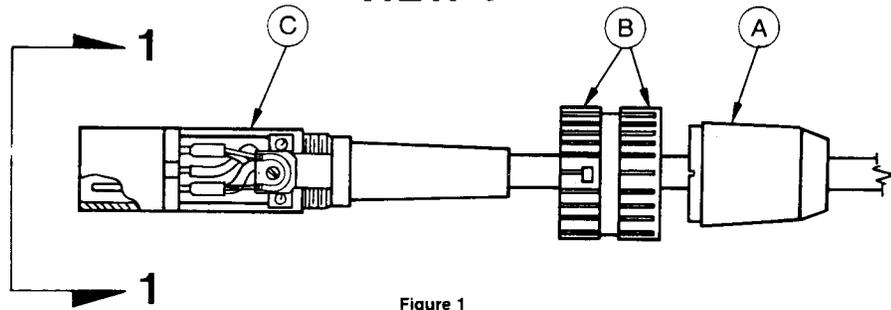


Figure 1

Calibration of the 4624 (4098 Handle)

To properly calibrate the 4624 Service Center to a specific temperature, three items are required.

1. Type K thermocouple wire. (3 ft. max.)
2. The tip to be used for intended application.
3. Pyrometer (preferably digital with at least 4 digit display and a resolution of one or two degrees).

Preparation

To construct the necessary thermocouple, follow the steps below:

1. Strip the ends of the thermocouple wire.
2. Place both ends of the stripped thermocouple wire together at the tip by bending them so that they cross.
3. Bond both wire with an oxygen-acetylene torch by forming a small diameter ball at the crossing.
NOTE: Use slightly more oxygen than normal. Oxidizing flame.
4. Clip excess wire length from thermocouple ball.

To assemble thermocouple to tip, proceed as follows:

1. Drill a .032 in. diameter hole at the split between the tip body and tube, to accommodate the small ball on the thermocouple wires.

NOTE: Tip must be same style and number as tip to be used for the intended application.
2. Insert the ball on the thermocouple into hole drilled in the tip, and silver solder very carefully, using minimum heat possible.

When the tip and thermocouple have been assembled, screw the tip onto the 4098 Handle and place the iron into the holder at a 45° angle, downward.

Ungar will supply thermocoupled tips for the 4098 Handle for a minimal charge.

Calibration

To calibrate the 4624 Service Center to a specific temperature, the following steps are required.

See Figure 1

1. Stabilize the unit to a selected temperature.
2. Unscrew part A counterclockwise, slide both parts A and B down the cord uncovering part C (ceramic potentiometer).

Note: Part B may be left in place to secure connection to unit.
3. Using an appropriate screwdriver, adjust the potentiometer clockwise to raise the temperature or counterclockwise to lower the temperature until the pyrometer reading matches the temperature on the Temperature Setting Indicator.
4. Allow 5 minutes for temperature stabilization between each adjustment; reassemble part A and part B.

Theory of Operation

The power supply has an on-off switch, as well as the heater temperature range slide control. Actuation of the handle vacuum switch controls the operation of the vacuum system. Vacuum air flows through the heated tip and the solder tube carries air, melted solder and fluxes to the solder chamber where the solder and flux collect. The air is evacuated through the handle filter, vacuum line and the in-line filter to the vacuum system (never operate unit without all filters clean and in place).

Initial Setup Instructions for the 4624

1. Depress the switch actuator button on the Hot Vac handle. The sound of the pump will be heard on Model 4624. Releasing the switch actuator will shut off the vacuum pump.

Operation

1. Adjust the Slide Control to 4 or higher. This is the normal setting for most desoldering. The steady-state tip temperature can be varied by setting of the Slide Switch. In use, the tip is rapidly cooled by the actuation of the vacuum system. It is this feature that enables a given solder joint to be melted, desoldered and cooled sufficiently to prevent the reconnection of the joint by reflow.

2. The station is now ready for use. Holding the handle comfortably as before, place the tip over a lead to be desoldered with slight pressure against the solder connection. The solder will quickly melt and the tip will be felt to move slightly farther onto the lead, contacting pad. As soon as this happens, depress the vacuum switch to remove the solder and at the same time, move the lead to prevent reflow. The incoming cool air will cause the outermost extremity of the tip to cool rapidly. The lead movement will prevent the lead from reattaching itself to the pad. Following this, quickly remove the tip from the pad to prevent overheating. If, after some practice this does not result in completely freeing the lead, vary the Slide Switch until success is achieved. Due to the variables in individual tip mass, pad size, operating temperature and the heat sink characteristics of component leads to be desoldered, optimum results can best be achieved by experimentation and use.

Control Unit Breakdown

To open the control unit, first disconnect the power plug and then remove the screws and washers holding the cover to the chassis assembly and slide the cover off. A blowup of each control unit is illustrated on the following page. Removal and replacement of defective parts should be made in accordance with the troubleshooting guide provided in this manual.

WARNING Disconnect Unit Before Servicing

Handle Replacement Parts

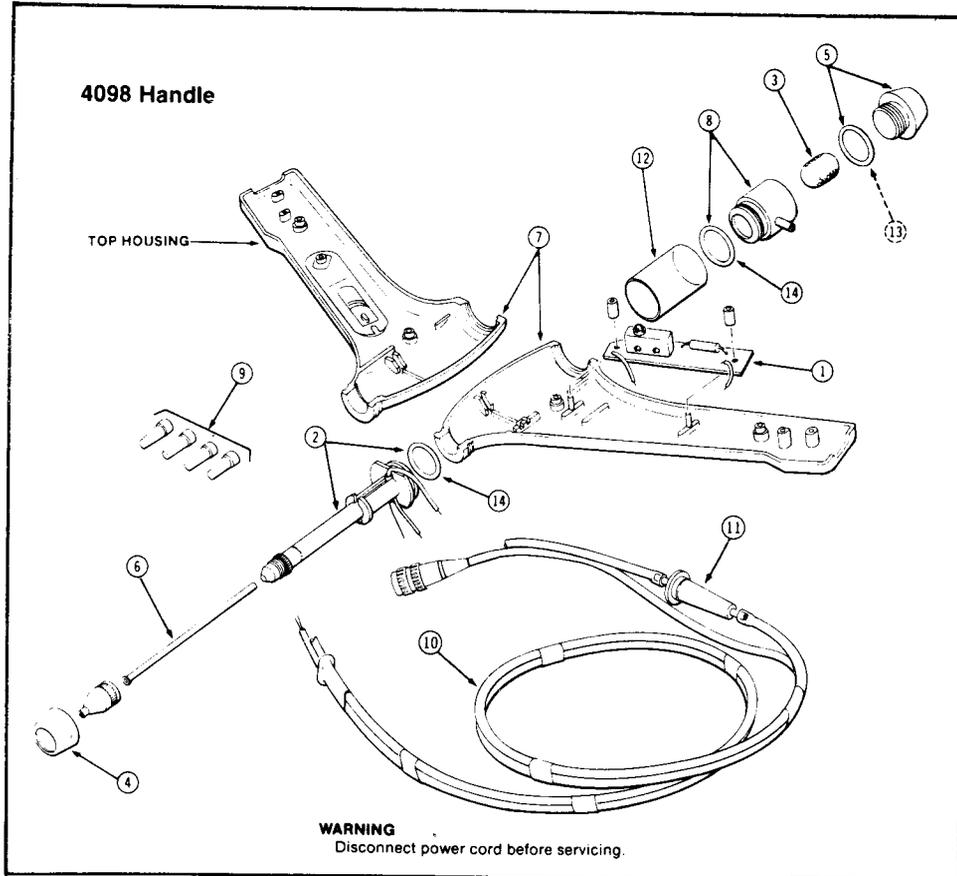
Item	Description	Cat. No.
1	Handle Switch & Circuit Board Assembly	4350
2	Heater Assembly with O-Ring	4351
3	Handle Filter (Pack of 10)	2039
4	Handle Ferrule	2040
5	End Cap with O-Ring	2041
6	Solder Delivery Tube	2042
7	Handle Halves with Switch Actuator & Screws	4824
8	Vacuum Chamber Adapter with O-Ring	2044
9	Wire Nuts - (Pack of 4)	2045
10	Handle Cordset and Vacuum Tube Assembly	4353
11	Secondary Filter	2047
12	Glass Collector Tube	2035
13	End Cap O-Ring (Pack of 3)	2049
14	Heater and Vacuum Chamber Adaptor O-Rings (Pack of 6)	2036

Handle Disassembly

To open the handle, pry off the front ferrule with a flat screwdriver and remove the two Phillips head assembly screws. Separate the two housing halves carefully by raising the switch half away from the main component half. Illustrated is a detailed blow-up of the handle and its components.

Heater Replacement

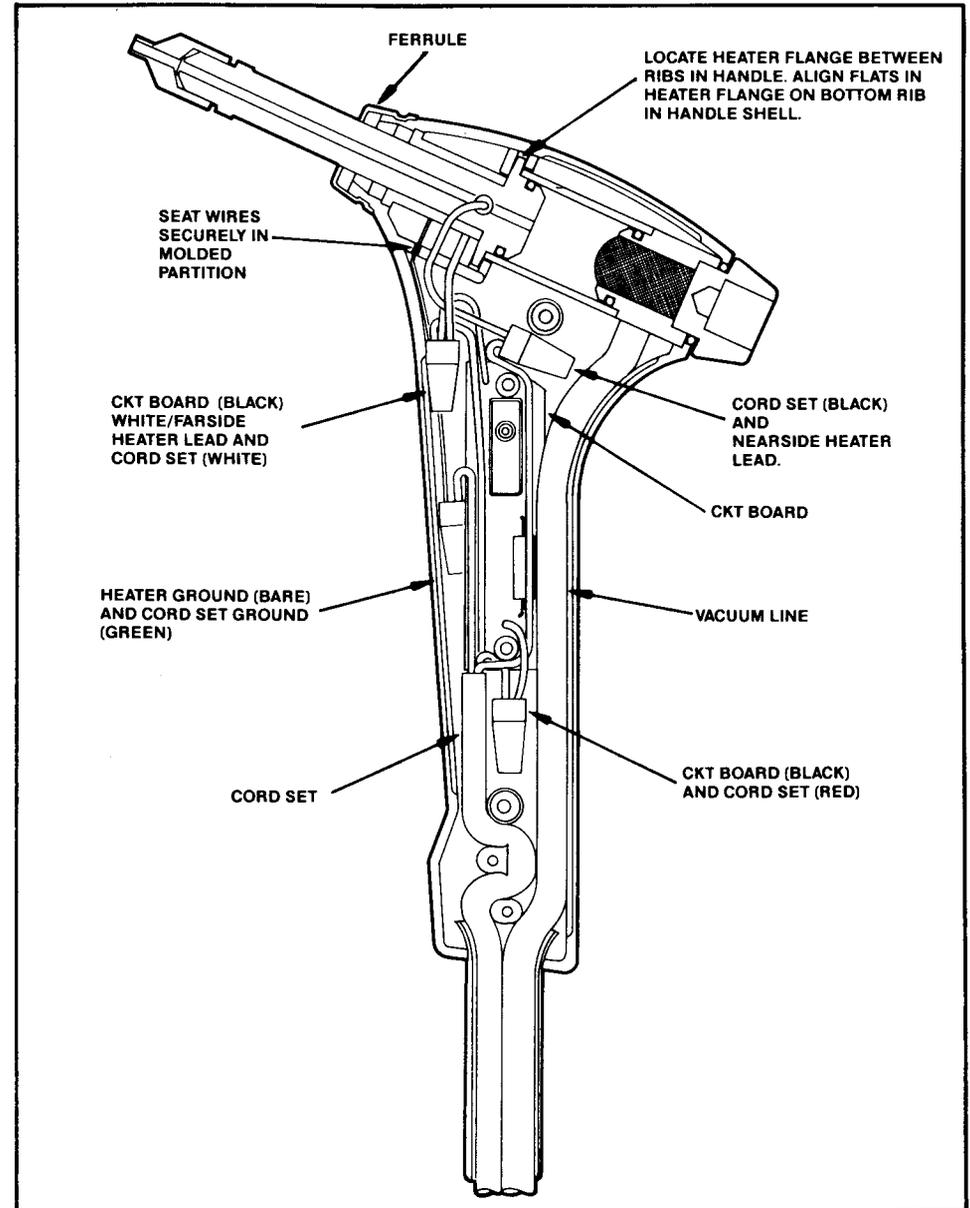
Remove wire nuts and carefully remove heater from handle shell with glass solder chamber assembly intact. Remove heater from glass tube and replace with new heater. Reinstall new heater into handle shell. Assemble solder delivery tube and tip to new heater.



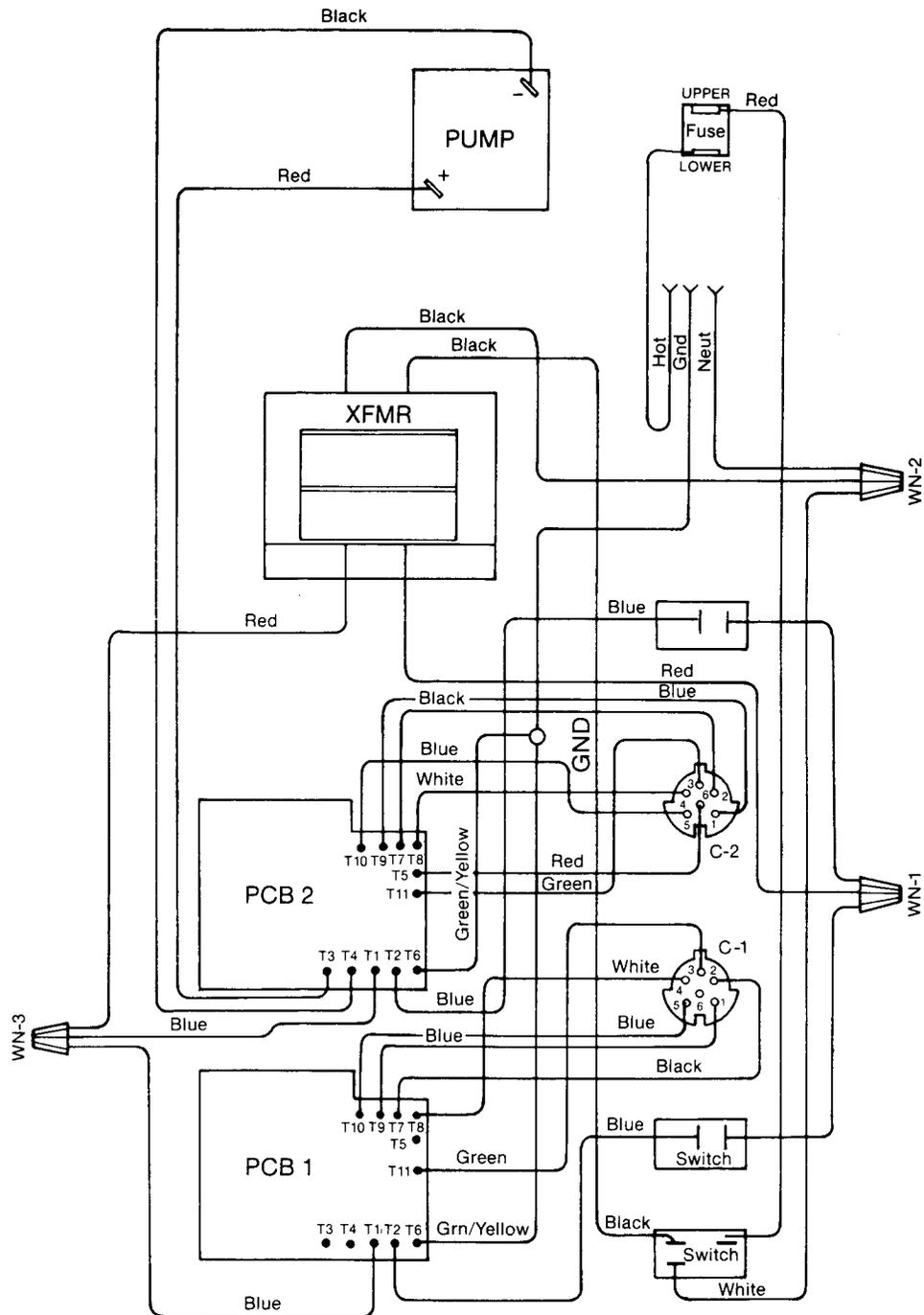
Handle Reassembly

Shown below is the placement of the wire nuts prior to closure of the molded handle halves. All connections must be tight and in place before handle reassembly. If any resistance to closure is felt before screws are tightened, the halves should be opened again and the cause

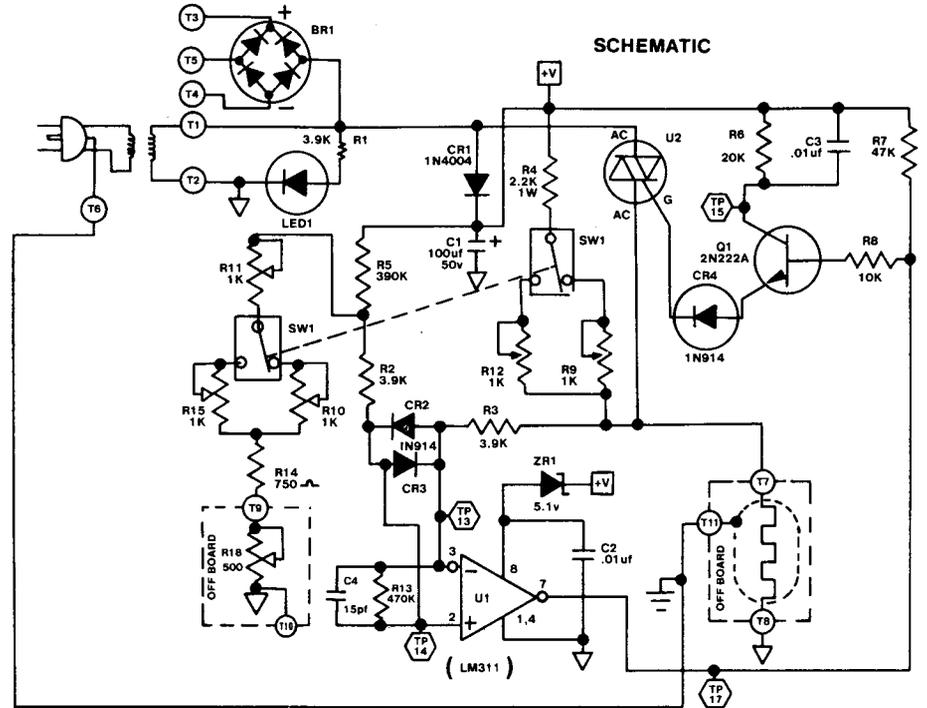
corrected. All heater leads should be seated flush into their respective slots in the molded partition that separates the heater assembly from the wire nuts. The vacuum line must not be pinched. Replace the screws while holding the halves together. Replace the ferrule. Do not allow ferrule to remain in contact with the heater.



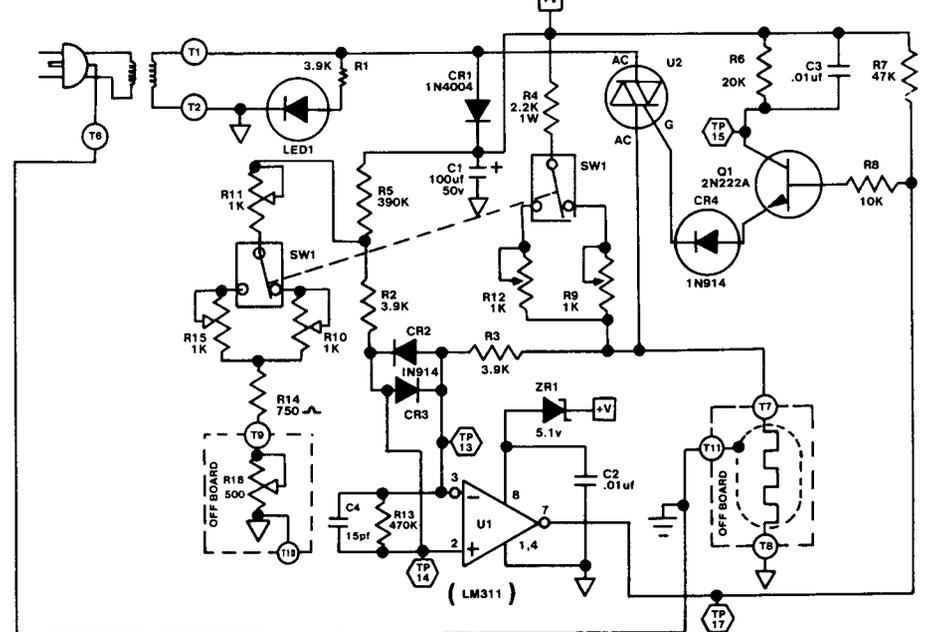
Wiring Diagram for 4624



Desoldering



Soldering

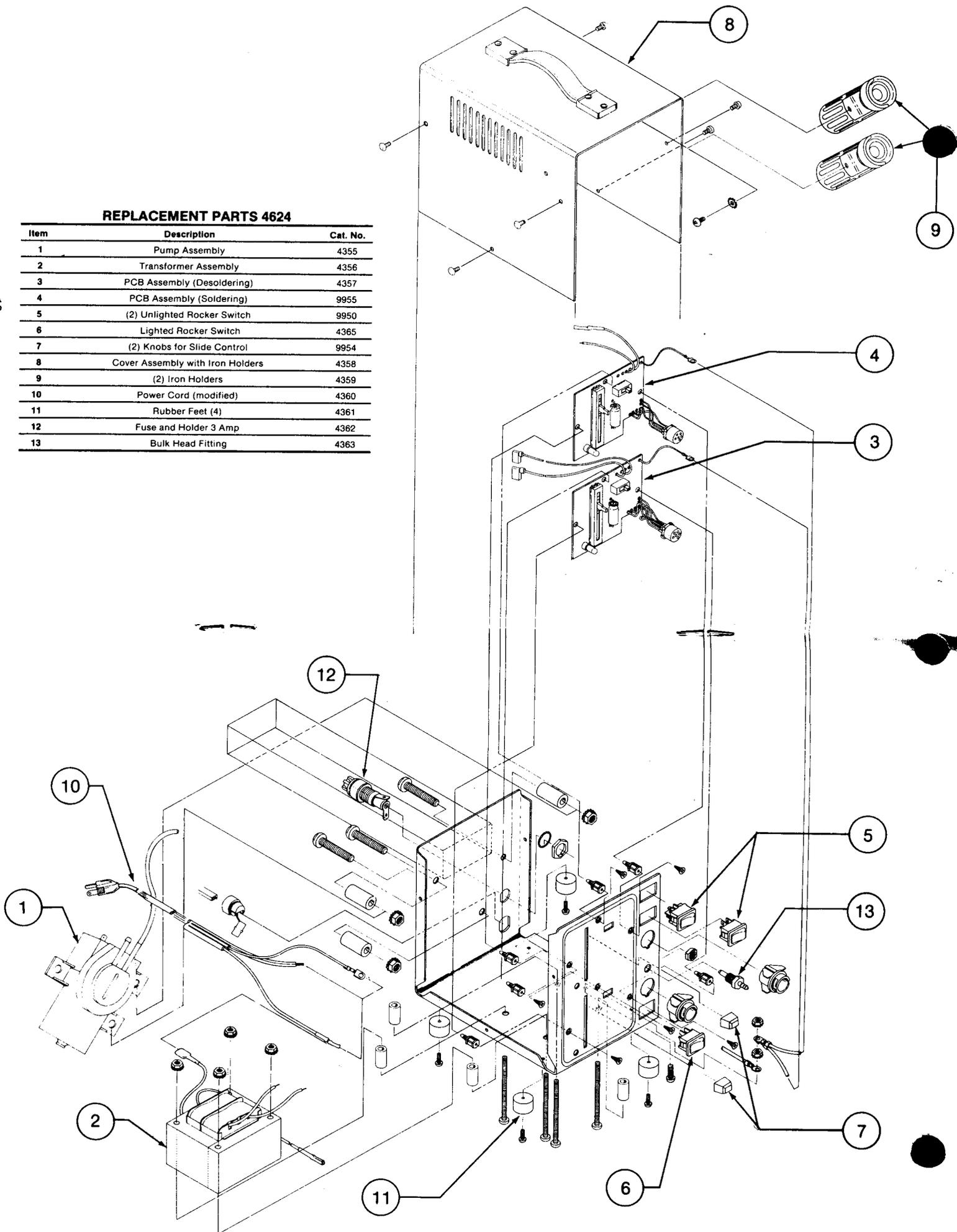


REPLACEMENT PARTS 4624

Item	Description	Cat. No.
1	Pump Assembly	4355
2	Transformer Assembly	4356
3	PCB Assembly (Desoldering)	4357
4	PCB Assembly (Soldering)	9955
5	(2) Unlighted Rocker Switch	9950
6	Lighted Rocker Switch	4365
7	(2) Knobs for Slide Control	9954
8	Cover Assembly with Iron Holders	4358
9	(2) Iron Holders	4359
10	Power Cord (modified)	4360
11	Rubber Feet (4)	4361
12	Fuse and Holder 3 Amp	4362
13	Bulk Head Fitting	4363

10

11



Desoldering Mode

Reinstall the tip.

Always clean the tip and solder delivery tube just prior to shutting the unit off.

Clearance of Solder Tube Clog

In the event that a solder tube does become clogged, it is possible to clear the tube in several ways.

Method A (Figure 2)

1. Move Slide Control to 4 or higher for 5 minutes.
2. Apply vacuum.
3. Use long solder tube cleaning tool.

Method B (Figure 3)

1. Turn unit off and remove tip and solder tube.
2. Turn unit on at maximum heat for approximately 10 minutes.
3. Holding solder tube with a suitable pliers at the flared end, insert the clogged end approximately 1/3 of its length into the heater barrel.

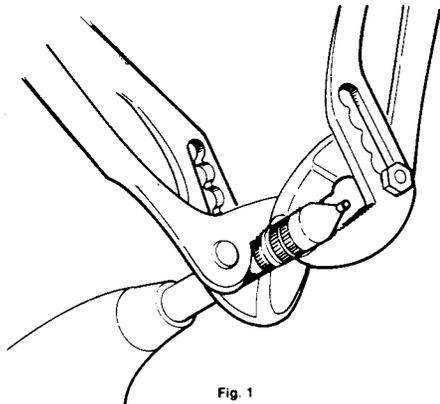


Fig. 1

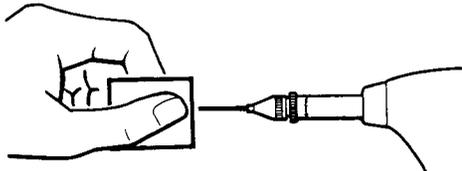


Fig. 2

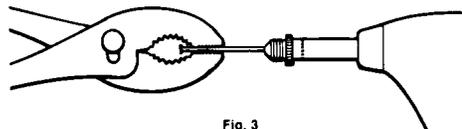


Fig. 3

4. After allowing a short time period for the solder to melt, push the tube all the way back into the heater. Apply vacuum to remove clog immediately after reinstalling tube.

Note:

If fluxes and/or conformal coatings are causing clogs, soak tubes in alcohol or flux cleaner before proceeding with the above.

Solder Chamber Cleanout — The solder chamber should be emptied periodically to prevent poor airflow. Remove the end cap and the cotton filter from solder chamber. Tweezers or a similar tool may be used to remove the cotton. Lightly tap the handle to remove loose solder particles from the chamber. Pick off any solder buildup collected on the filter face and replace cotton filter if necessary.

(See Figure 4.)

Note:

Chamber should be cleaned frequently. If excessive amounts of solder are allowed to



Fig. 4

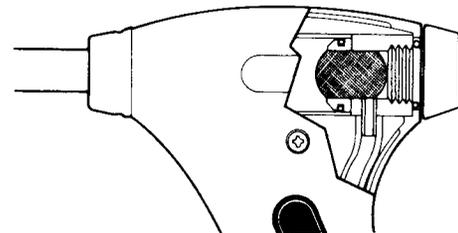


Fig. 5

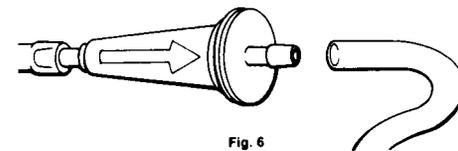


Fig. 6

Desoldering Mode

accumulate, it may require the use of a small screwdriver or soldering iron to remove.

Installation of Filters

Handle Filter — Inset filter into solder chamber so that it clears the threads. Be sure to use enough filter material to completely fill the metal adaptor. Screw the end cap on,

compressing the end cap gasket. Avoid excess tightening. (Figure 5).

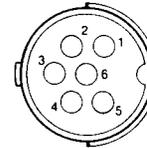
Secondary Filter — After extensive use, the secondary (in-line) filter (Figure 6) may become clogged with flux. It should be removed and cleaned or replaced. It can be cleaned by flushing with isopropyl alcohol or flux solvent.

DESOLDERING TROUBLE SHOOTING

Problems you may encounter are divided into three categories HEAT, CLOGGING and VACUUM. Refer to symptoms listed in each section to determine possible causes and repair procedure.

I. HEAT

SYMPTOM	POSSIBLE CAUSES	REPAIR PROCEDURE
Heater cold	Blown fuse	Pilot lamp is not lit and vacuum does not operate. Replace with a 3 Amp Normal Blo fuse.
	Inadequate input power	Check for full 120V at your outlet. Check that power cord is plugged in securely. Check continuity of power cord and fuseholder. Correct and replace as required.
	Internal connections are loose or broken	Check connections in chassis and handle. Tighten or repair as required.
Heater is defective		Check resistance between Pins #2 and #4, see illustration. If resistance is approximately 2.5-5.0 ohms heater is not defective. Other readings replace with Ungar Catalog No. 4351.
P.C. Board defective		If heater resistance checks out and pilot lamp is on, P.C. Board needs replacing.
Transformer is defective		If pilot lamp is out, replace fuse. If pilot lamp remains out and heater resistance is correct, transformer needs replacing.



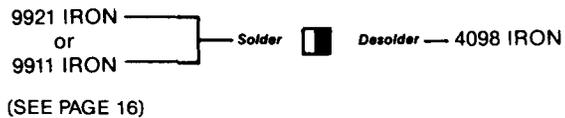
II. CLOGGING

Does not melt solder	Heater control setting is too low	Increase setting of slide control. (If already at maximum, refer to HEAT section.)
	Application too severe	If connections to be desoldered are large or part of a ground plane, they provide an excellent heat sink. You may need to apply heat to the other side of the connection with a soldering iron.
	Tip is corroded	Check tip for corrosion or oxidation and file tip face clean with tool provided. A bright tip face will give best results.
Does not remove solder. (Refer also to VACUUM section)	Clogged tip or tube	Clean with tool kit provided. Increase frequency of routine cleaning operations.
	Secondary (in-line) filter is clogged	Check vacuum by disconnecting tube from the filter. Deadhead vacuum should be 20-25 in. hg. If a gauge is unavailable, wet finger and apply to open end of tube. A strong suction should be evident with vacuum pump running. If not, the secondary filter is clogged and must be replaced with Ungar Cat. No. 2047.
	Handle filter clogged or scorched	If procedure to check in-line filter shows it is OK, replace cotton filter with ONE cotton ball only. Do not pack. Use only Ungar Handle Filter #2039.
	Excessive solder in glass reservoir	Empty solder and increase frequency of cleaning operations.
	Solder in tube or fittings	Check vacuum tubing and adapter fitting for trapped solder. Clean out. NEVER operate unit without all filters clean and in place.

TROUBLE SHOOTING III. VACUUM

SYMPTOM	POSSIBLE CAUSES	REPAIR PROCEDURE
Pump hesitates	Filter system is clogged	Refer to CLOGGING section and replace filters or replace filters tubing as required.
	Inadequate power supply	Check for full 120V at outlet (particularly for hesitation). Check that power cord is plugged in securely. Check continuity of powercord.

SOLDERING/DESOLDERING SELECTOR SWITCH



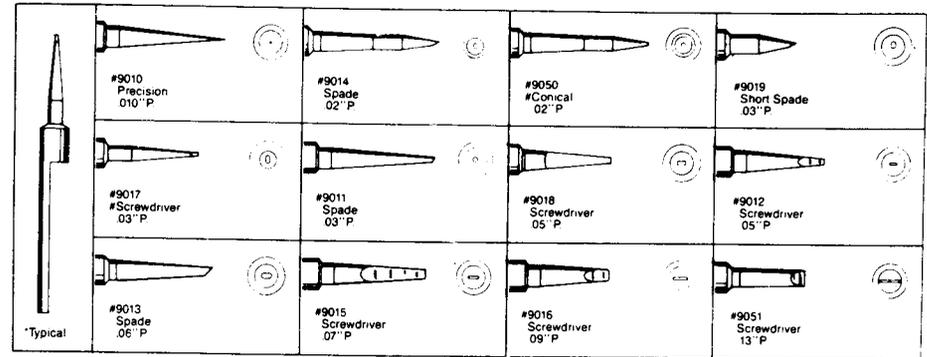
The numbers (1-4) are power settings and the temperature results are a function of the soldering/desoldering iron selected, see illustration below.

POWER SETTING SLIDE CONTROL

*Setting on Solder			Setting on Desolder	
9911 IRON	9921 IRON		4098 IRON	
900°F	850°F	4	1000°F	
825°F	750°F	3	950°F	
725°F	675°F	2	825°F	
650°F	600°F	1	700°F	
575°F	525°F		575°F	
500°F	450°F		500°F	

*These temperatures are approximate

Tips for 9911



Preparation and Care of Soldering Tips

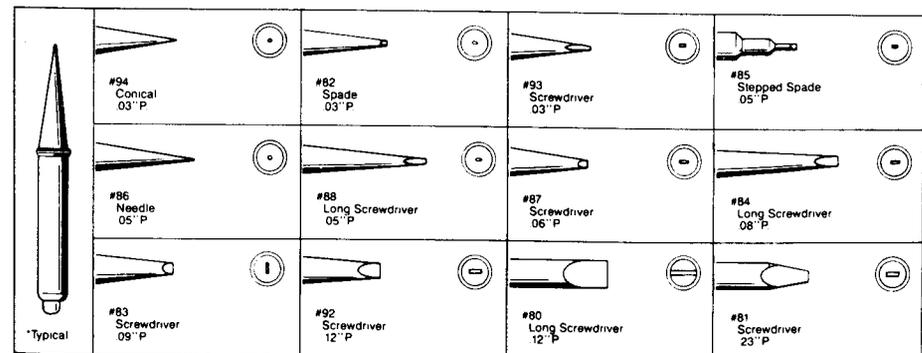
- Keep soldering tip properly tinned. Always use solder with sufficient rosin flux or tip will de-wet. A well-tinned tip will be bright all over when hot, with no dull or discolored spots.
- To tin tip, proceed as follows:
 - Plug in iron and allow to reach solder melt temperature.
 - Apply a liberal amount of solder to tip and let stand for one minute.
 - Apply more solder to tip, allow to idle for one or two more minutes, and wipe lightly on sponge. Do not remove all of the solder, but use sponge to remove excess solder and wipe onto non-tinned areas.

- Always add additional solder before returning tool to holder.
- Do not file or attempt to reshape tip. This will destroy the plating and shorten tip life. Do not use chloride or acid fluxes; they will also shorten tip and heater life.

WARNING: Do not use Anti-Seize or any other lubricant on the tip retainer or heater.

- For maximum tip life, always apply solder to the heated connection or joint. Repeated application of solder directly to the tip will shorten the tip life.

Tips for 9921



Soldering Mode

Micro-Size Soldering Iron Maintenance

WARNING: Disconnect Power Cord Before Servicing

IMPORTANT — Do not put excess pressure on the tips, it can damage the ceramic heater.

Procedure

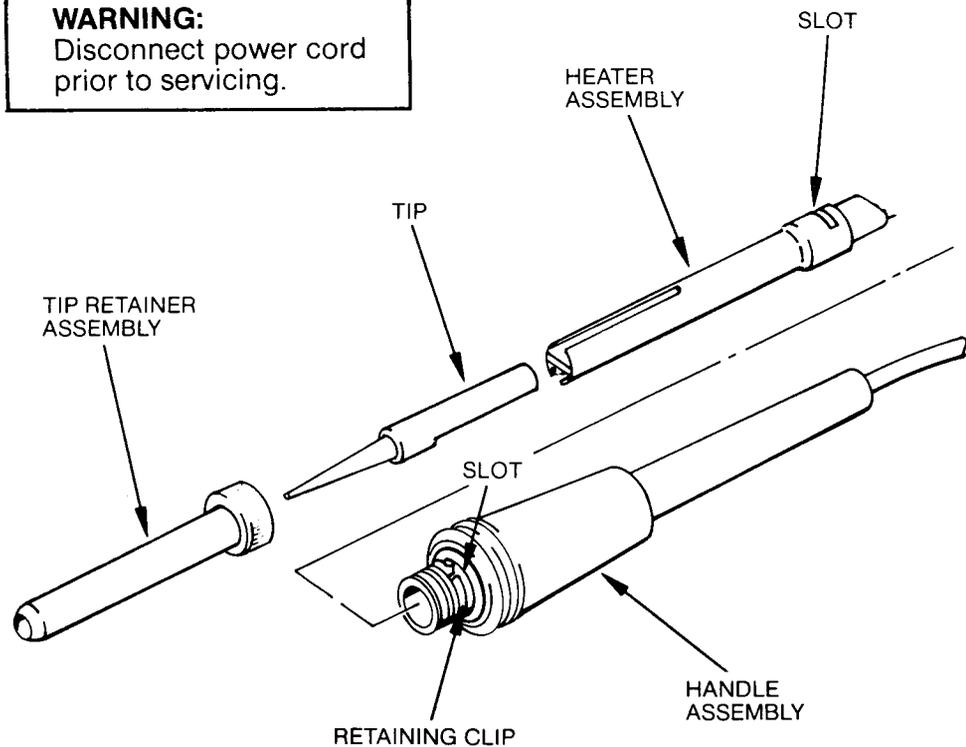
To replace a heater, proceed as follows (see illustration).

- Allow iron to cool (never attempt to remove tip while iron is hot).
- Unscrew tip retainer from heater.
- Carefully pull tip out of heater.
- Lift up retaining clip at base of heater and pull heater straight out of handle.

- Check alignment of connector pins on end of new heater with sockets of receptacle in handle, and insert heater into iron. Align slot on heater with retaining clip slot in handle assembly. **DO NOT FORCE.** Lift retaining clip to allow heater to fully enter handle and engage connector. Release retaining clip to lock heater in iron.
- Making sure flat of tip aligns with flat heating element, insert new tip into heater tube. Tip should slide freely on flat surface of element. Do not force tip when installing.
- Secure tip with tip retainer.

IMPORTANT — Do Not Use Tools To Tighten Tip Retainer Assembly (see illustration). Finger Tight Only!

WARNING:
Disconnect power cord
prior to servicing.



9911 Exploded View

Soldering Mode

Macro-Size Soldering Iron Maintenance

WARNING: Disconnect Power Cord Before Servicing

- TO REPLACE TIP.** Turn power switch off. Allow iron to cool (never attempt to remove tip while iron is hot). Remove tip retainer; if the retainer is tight . . . use pliers but **grasp lightly**. Use another pair of pliers to grasp the **knurled ring** on the heater . . . **not the heater tube**. Grasping the heater tube may damage the heater and control system.

Remove old tip, check tip cavity to see that it is clean. If not twist tip a few times . . . tap heater to remove oxides. Replace new tip in the heater with a slight twisting motion . . . this ensures that the tip will seat firmly in the sensor of the heating unit. Replace tip retainer finger tight.

- TO REPLACE HEATER.** Turn power switch off. Allow heater to cool. Remove heater by unscrewing from handle. Replace heater hand tight. **Do Not Use Pliers.**

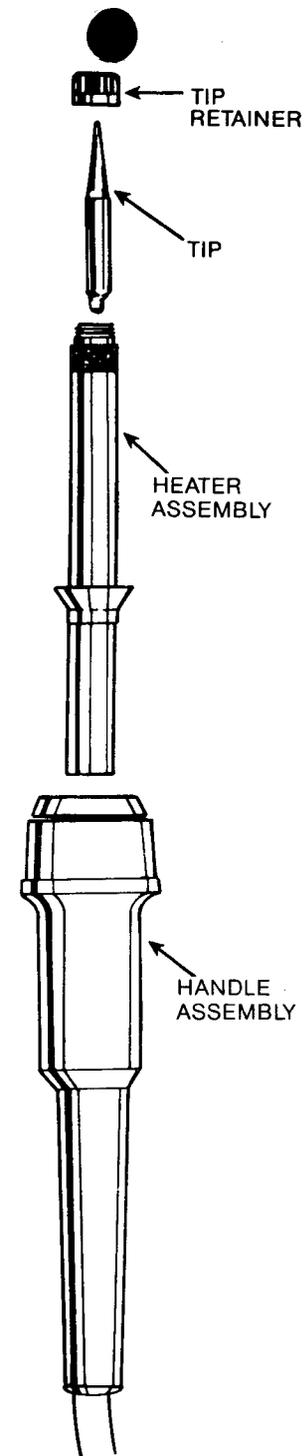
BEFORE PERFORMING ANY OTHER MAINTENANCE, DISCONNECT POWER CORD FROM OUTLET.

Operation

Check the integrity of your grounding system. Switch the power switch "ON" and the pilot light will indicate that power is being supplied to the station.

Tips are pre-tinned. When soldering temperature is reached (approximately 2 minutes), re-tin the tip with solder and your iron is ready to use.

- Use only the iron holder provided with the station.
- Keep the soldering tip tinned; re-tin when storing.
- Use tips as they are manufactured, reshaping will result in shorter life.
- Select tips of proper geometry for the job.
- Anti-seize or other forms of lubricant should not be used on 9921 or 9911 series components.
- Apply solder to the heated connection. Solder applied directly to the tip will reduce the tip life.



9921 Exploded View



Calibration of the 4624 Soldering Mode (9921 & 9911 Irons)

To properly calibrate the 4624 Soldering Mode to a specific temperature, three items are required.

1. Type K thermocouple wire (3 ft. max.).
2. The soldering tip to be used for intended application.
3. Pyrometer (preferably digital with at least 4 digit display and a resolution of one or two degrees).

Preparation

To construct the necessary thermocouple, follow the steps below:

1. Strip the ends of the thermocouple wire.
2. Place both ends of the stripped thermocouple wire together at the tip by bending them so that they cross.
3. Bond both wires with an oxygen-acetylene torch by forming a small diameter ball at the crossing.
NOTE: Use slightly more oxygen than normal. Oxidizing flame.
4. Clip excess wire length from thermocouple ball.

To assemble thermocouple to tip, proceed as follows:

1. Drill a .032 in. diameter hole on the tip centerline a distance of 0.1 in. back from the working end of the tip to accommodate the small ball on the thermocouple wires.
NOTE: Tip must be same style and number as tip to be used for the intended soldering application.
2. Slide retaining sleeve over tip.

3. Insert the ball on the thermocouple into hole drilled in the tip, and silver solder very carefully, using minimum heat possible.

When the tip and thermocouple have been assembled, insert the tip into either the 9921 or 9911 iron and place the iron into the holder at a 45° angle, downward.

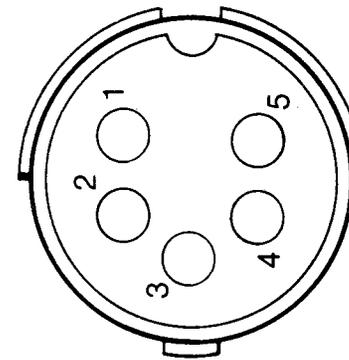
Ungar will supply thermocoupled tips for either the 9921 or 9911 iron for a minimal charge.

Calibration

To calibrate the 4624 Soldering Mode to a specific temperature, the following steps are required.

See Figure 1

1. Stabilize the 4624 to a selected temperature.
2. Unscrew part A counterclockwise, slide both parts A and B down the cord uncovering part C (ceramic potentiometer).
Note: Part B may be left in place to secure connection to unit.
3. Using an appropriate screwdriver, adjust the potentiometer clockwise to raise the temperature or counterclockwise to lower the temperature until the pyrometer reading matches the temperature on the Temperature Setting Indicator.
4. Allow 5 minutes for temperature stabilization between each adjustment, reassemble part A and part B.



VIEW 1

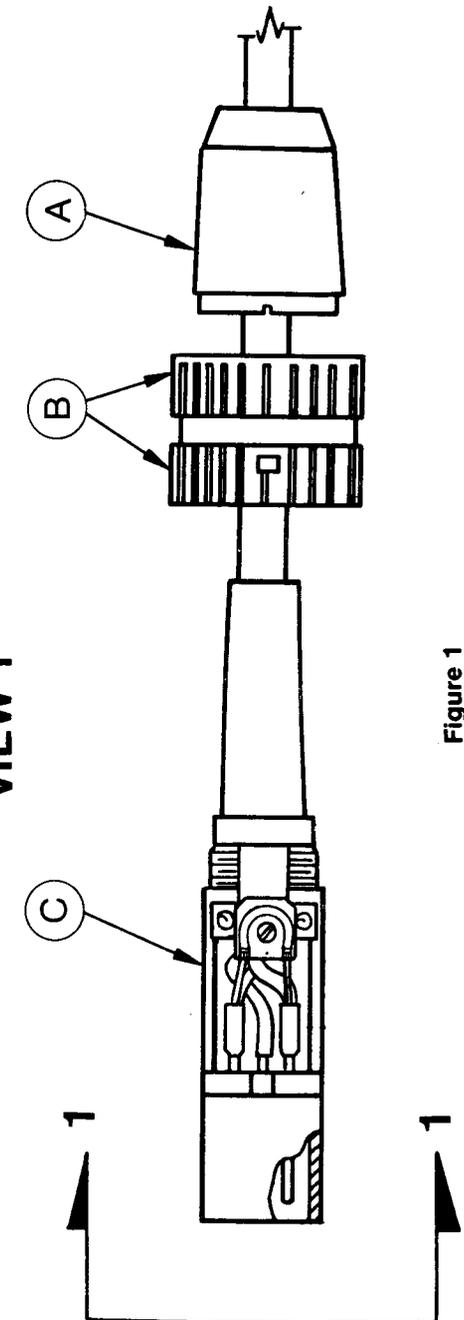


Figure 1