



Soldering/Desoldering Station

988 & 988D

Instruction Manual

Congratulations on selecting Xytronic's - the best solution for all your soldering/desoldering equipment needs! We believe you will be more than satisfied with the many features and the versatility of your new soldering/desoldering station. Xytronic's products have been serving the electronics industry for over 20 years and with its many special features has proven to be the ultimate in a soldering/desoldering instrument. **Place carefully** read the instruction manual to maximize the advantages of using your new soldering/desoldering station.

IMPORTANT: The 988D operates basically the same as the standard 988 with the additional feature of a digital readout for both the soldering and desoldering irons.

KEY FEATURES

- **EXTERNAL CALIBRATION PORT:** Both units have a calibration port on the front panel for quick and convenient precision temperature adjustments.
- **DELAYED SUCTION:** To eliminate the problem of solder clogging up the tip, a delayed switch feature has been incorporated for both units that allow the pump to continue sucking for 1.5 seconds after the actuator switch is released.
- **LIGHTWEIGHT SOLDERING IRON:** Ergonomic mini handle that stays cool and prevents operator fatigue.
- **OPTIONAL TWEEZERS:** This additional feature is specially designed for SMD chips, SOT, Flat pack ICs, etc. rework. Tweezers TWZ60 is equipped with 24V/30W x 2 ceramic heaters, which can be interchangeable with soldering iron 107ESD as an option.
- **ENERGY SAVER:** After the station has been idle for more than 15 minutes, this new feature will automatically kick in. When the "Pause" LED is lit, the energy saver feature has engaged, decreasing tip temperature by 1/3 which cuts power consumption and extends tip life.

Please note that the 988D does not have the Energy saver feature engaged.

PRODUCT DESCRIPTION

Both 988 & 988D have a self-contained vacuum pump which is electronically controlled, eliminating the need for additional shop air. The built-in diaphragm vacuum pump requires no oil, is maintenance free, quiet running and will not overload with continuous use. The vacuum pump provides up to 60 cm/Hg (23 in/Hg) suction power, activated by a push button switching circuit located on the desolder iron housing. Internal solder collector in handpiece is quickly and easily removed for cleaning. The inside mesh aluminum cooling strip has better solder chip adherence. Also the ventilation slots makes for a cooler handle, improving operator comfort.

Melting point	215 °C	(419 °F)
Normal operation	270 °C -320 °C	(518 °F -608 °F)
Production line operation	320 °C -380 °C	(608 °F -716 °F)

When the iron's working temperature is set within the parameters suitable for the type of solder being used, a good joint is assured. Too low of a temperature will slow the rate of solder flow while a high temperature setting might burn the flux in the solder and emit a heavy, white smoke resulting in a dry joint or permanent damage to the printed circuit board (p.c.b.).

DESOLDERING

Recommended tip working temperature are detailed below and can vary from joint to joint.

Operation for small joint	320 °C -360 °C	(608 °F -680 °F)
Operation for large joint	370 °C -400 °C	(698 °F -752 °F)

Too low of a temperature will slow the flow rate of solder and may clog the tip, too a high temperature may burn the p.c.b.

OPERATING INSTRUCTIONS

- Ensure that the working voltage matches your power supply before beginning use.
- Check carefully for any damage during transportation.
- This unit contains:
 - A. DIA60A: Desoldering iron assembly with tip.
 - B. 107ESD: Soldering iron assembly with tip.
 - C. Two iron holders for soldering and desoldering.
 - D. AC Power cord with plug.
- Accessories included:
 - A. Two sponges
 - B. One cleaning brush
 - C. One cooling strip
 - D. One 0.7 φ probe
 - E. 10 pcs of filters
- Optional parts:
 - A. TWZ60: 24/60W tweezers can be interchangeable with 107ESD soldering iron.
 - B. Fume extraction kit: For soldering iron only.

Both units incorporate electronic circuitry which enables the user to fine tune soldering tip temperature from 200°C (392°F) through 480°C (896°F) and desoldering tip temperature from 300°C (572°F) through 450°C (842°F) without changing tips or heating elements. The soldering iron incorporates a highly insulated Japanese made Ceramic heating element and desoldering iron is a precision wound Nichrome heater. The soldering iron 107ESD has an optional fume extraction kit which can be equipped easily.

The temperature is maintained within $\pm 3\text{ }^{\circ}\text{C}$ ($\pm 6\text{ }^{\circ}\text{F}$) of its operating temperature by a PTC sensor (for ceramic heater of soldering iron) and a thermocouple sensor (for nichrome heater of desoldering iron) to ensure maximum temperature as close to the working surface of the tip as possible. This results in both a rapid heat-up, fast recovery and exacting temperature control with minimal overshoot. The ergonomic and slender soldering iron design with a comfortable silicone rubber grip prevents operator fatigue.

The revolutionary "Zero Voltage" electronic switching design also protects voltage and current sensitive components (CMOS devices, etc.) against damaging current and transient voltage spikes commonly produced by less efficient, mechanically switched stations. The power unit is isolated from the A.C. line by a transformer and allows only 24VAC to drive all the heating elements. Both soldering and desoldering are constructed with an individual calibration port locating under the potential meters on the face of the unit for quick and convenient precision temperature adjustments.

Both 988 & 988D have been developed to meet the present and future needs of the electronic production industry and is ideal for use at any AC outlet. Engineered to meet the demanding needs of the hobbyist, service & repair technician as well as production people alike.

WORKING TEMPERATURE

SOLDERING

The most common solder alloys used in the electronic industry are 60% tin and 40% lead (60/40). The working temperature of solder is detailed below and can vary from manufacture to manufacture.

C. HAP60: 24V/60W Hot air blow pencil can be interchangeable with DIA60A.

OPERATING PROCEDURES:

1. Ensure that the base unit's power switch is in the "OFF" position.
2. Plug in "Solder and Desolder" handpiece, connect "Vacuum tube" to "VAC".
3. Connect AC power cord to mains "In-Let".
4. Set "Temperature control knobs" to "MIN".
5. Switch "Mains power switch" to "ON" position, then switch both "SOLDER & DESOLDER" switches to "ON" position, both pilot lamps will be "ON".
6. Tin the surface of both soldering and desoldering tips by applying a new covering of solder to protect it.
7. Set both "Temperature control knobs" to the desired temperature about 3 minutes after being warmed. The unit will be ready for use once it reaches preset temperature - indicated by the pilot light going off.

OPERATING PROCEDURES FOR 988D:

IMPORTANT: The 988D operates basically the same as the standard 988 except paragraph 5 without both "SOLDER & DESOLDER" switches but with additional features:

- 7.(a) A slide switch below the digital display allows the operator to toggle between Fahrenheit and Celsius temperature readout.
- (b) You can preset the temperature setting by pushing the slide switch to "SET" position. Use the temperature controlled knob to set the desired temperature. Then slide the switch to "READ." The temperature will then maintain a $\pm 3\text{ }^{\circ}\text{C}$ ($\pm 5\text{ }^{\circ}\text{F}$) with the display showing actual tip temperature.

PLEASE NOTE:

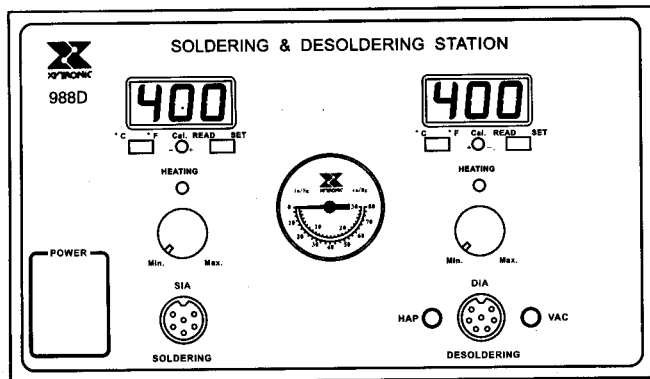
1. Both soldering, desoldering irons can be used at same time.
2. If 988 is idle for more than 15 minutes, an energy saving feature will automatically engage (evident by the green "PAUSE" indicator light), reducing idle temperature by 1/3 and extending your tip life. Activating the red suction button on the desolder handle will disengage the power saving feature and the unit will immediately ramp up to the preset temperature. 988D is omitted.

CAUTION: Do not touch any of the irons at any time while the unit is on or while it's cooling as they will still be hot.

NEW FEATURE ON THE 988 & 988D:

Both 988&988D now have a calibration port on the Front panel. This calibration is to be used in conjunction with an external thermometer. Place the tip on the thermometer, if the actual tip temperature reads higher or lower than the display on the thermometer temperature, then using a 2mm precision screwdriver to calibrate the temperature. For 988, both Soldering and Desoldering sides if turning clockwise that the actual tip temperature will be up (+). Counter clockwise will let the tip temperature down (-). As to 988D, for Soldering side (SIA/TWZ) the clockwise is to increase the actual tip temperature (+). but on the contrary for Desoldering side (DIA) the clockwise is to decrease the actual tip temperature (-).

DRAWING OF 988D



NOTE: The 988D does not have the energy saver feature.

IMPORTANT

DESOLDERING

1. Only activate the vacuum after the solder has completely melted. Melting is accomplished by moving the hot tip around the lead leaving visible melted solder on the component side of the P.C.B. See Fig. 1 & 2.

FIG. 1

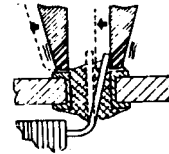
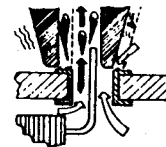


FIG. 2



- 3 -

2. Release the vacuum switch only after the solder on the tip has been removed, otherwise the tip may clog.
3. Add solder to the joint of the component and allow the solder to melt completely for improved desoldering.
4. Remove the solder collector and clean it after no more than 200 applications. However, daily cleaning is strongly recommended.
5. Replace the cotton pad in the solder collector and the in-line filter when they begin to turn yellow.
6. If there is insufficient vacuum, use the spring wire included to clean the tip and also check the in-line filters.
7. Be sure that all filters are in place during operation or damage to the vacuum pump may occur.
8. Follow the steps outlined in the OPERATING PROCEDURE section of this manual if a new tip is to be installed.

SOLDERING

1. Temperature above 410°C (770°F) should not be used for normal soldering purposes. However, irons can be used for short periods of time when occasion demands, but should be used with caution.
2. See the OPERATING PROCEDURES section of this manual for tip replacement.

COMMON CAUSES FOR TIP FAILURES

1. Tip temperatures higher than 410°C (770°F).
2. The tip working surfaces are not tinned while the iron idling.
3. Lack of flux in soldering, wicking, repair, and touch-up operations.
4. Wiping the tip on a high sulfur content, dirty or dry sponge.
5. Contact with organic substances such as plastic, resin, silicone, grease and other chemicals.
6. Impurities in the solder and/or low tin content.

CARE OF TIPS

CAUTION: The soldering, desoldering irons can reach very high temperatures. Be sure to turn the unit off prior to carrying out any maintenance or trouble shooting steps listed below!

IMPORTANT:

Remove the tip and clean after each moderate to heavy use or daily for light usage. Remove any loose build up in the tip retaining assembly to prevent tip freezing.

Both solder, desolder tips supplied are iron clad copper and if used properly should maintain optimum life.

1. Always tin the tip before returning it to the holder, turning off the station, or storing it for long periods of time. Wipe the tip on a wet sponge or our tip cleaner 460 prior to use.
2. Keeping the iron set at high temperatures (more than 400°C or 750°F) will shorten tip life.
3. Do not use excessive pressure on the tip or rub the joint with the tip while soldering and/or desoldering, it does not improve the heat transfer and may damage the tip.
4. Never clean the tip with a file or abrasive materials.
5. Do not use fluxes which contain chloride or acid. Use only rosin or resin activated fluxes.
6. If an oxide film forms, it can be removed by careful buffing with a 600-800 grit emery cloth, isopropyl alcohol or equivalent and then wrapping rosin core solder around the newly exposed surfaces. Coat the tinned areas with rosin-core solder after the resin-core has melted.

NEW TIPS

Applying the following steps give the tip optimum life.

1. Set both temperature to min. then turn the main power switch to the "ON" position.
2. Set soldering tip temperature to 250°C (500°F approx.) and desoldering tip temperature to min. Coat the tinned surfaces with rosin-core solder after reaching 250°C.
3. Set to the desired temperature about 3 minutes after being warmed that the station will be ready for use once it reaches preset temperature.

IMPORTANT: Remove and clean the tip daily. If a new tip is installed, remove any loose build up in the tip and barrel assembly, otherwise the tip may fuse to the heating element or retaining barrel.

METHOD TO CHECK FOR LOSS OF SUCTION

The following procedures should be used on both 988 & 988D to check whether loss of suction is due to the tip, solder collector, tube or in-line filter.

CAUTION: THE DESOLDER SWITCH MUST BE "OFF" AND ALLOW THE IRON TO COOL BEFORE ATTEMPTING THE FOLLOWING PROCEDURES:

1. Disconnect vacuum tube from the fitting on the front panel, place finger over the hole of the fitting, depress vacuum switch and you should have a strong vacuum. If not, send back to your nearest service center for pump repair.
2. Disconnect the in-line filter from the iron assembly, depress vacuum switch, replace filling of the in-line filter if there is little vacuum pressure or the filters are discolored.
3. Remove solder collector from desolder iron assembly, place finger over the hole of the collector, depress vacuum switch. There is little suction, clean or replace the collector tube.
4. Depress vacuum switch, clean the tip tube with spring wire provided if there is no suction per the "Procedure for Cleaning Clogged Tip" section below.

MAINTENANCE

DESOLDER TIP REPLACEMENT AND DRESSING

Desolder tips can be changed or replaced simply by unscrewing the barrel nut assembly. The station must be turned off and allowed to cool before this operation. If the system is left on without a tip in place, damage to the iron assembly may occur!

After removing the tip, blow out any oxide dust that may have formed in the tip receptacle. Be careful not to get dust in your eyes. Replace the tip according to Figures 3-9 and hand tighten the securing screw for the barrel nut assembly. Pliers can be used to avoid contact with hot surfaces BUT SHOULD BE USED WITH CAUTION because over tightening may cause damage to the element or fuse the tip to the element.

PROCEDURE FOR CLEANING CLOGGED TIPS

CAUTION: This procedure is to be working in high temperature. Be careful to avoid burning your fingers during this operation.

1. Be sure that the spring wire (included) will not go through the nozzle of the desoldertip.

2. Adjust the heating element to a higher temperature allowing the clogged solder to melt. Clean the tip by sliding the spring wire up and down until the passage is clear (see fig. 3).

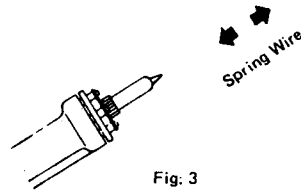


Fig. 3

Clean the stainless steel tube by moving spring wire up and down.

3. Unscrew the barrel nut assembly as in figures 4 & 5.

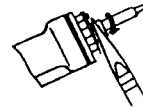


FIG-4

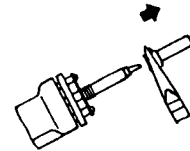


FIG-5

4. Remove the tip by using a pliers as in figures 6 & 7.

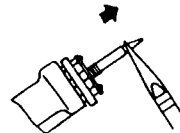


FIG-6

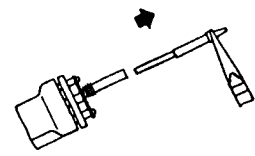


FIG-7

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5. Insert the stainless tube of the tip back in the barrel to melt the solder in around 5 seconds as in figure 8.

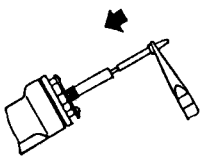


FIG-8

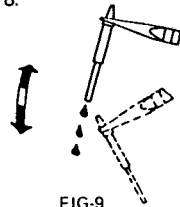


FIG-9

6. Remove again and shake out any loose molten solder in the tip per figure 9, the tip should now be unclogged. Replace the tip and screw back the retaining barrel nut assembly but care should be taken not to over tighten!

PROCEDURES FOR CLEANING THE SOLDER COLLECTOR

CAUTION: The desolder switch must be turned "OFF" and the iron allowed to cool before this operation.

1. Hold iron as in figure 10. Press and turn the red knob at the butt of the iron.

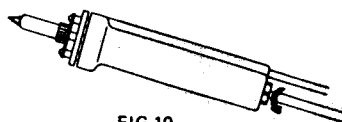


FIG-10

2. Slide out the solder collector as in figure 11. (CAUTION: The solder collector is glass and thus retains heat, handle with care!)

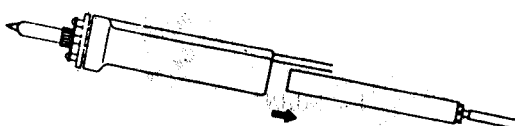


FIG-11

3. Point the collector down while shaking slightly (see figure 12) and the waste solder will fall out. This task must be carried out periodically for proper operation of the station.

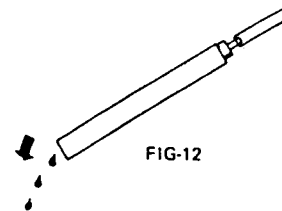


FIG-12

4. Remove cooling strip with a pair of long nose pliers or tweezers (see Figures 13 & 14).

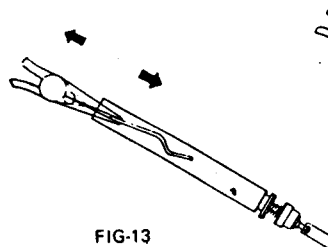


FIG-13

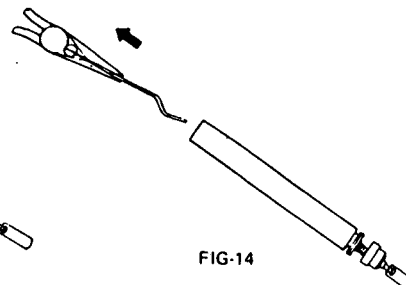


FIG-14

5. Clean the cooling strip and glass collector with wire brush (included).

PROCEDURE FOR REPLACING FILTERS

SOLDER COLLECTOR FILTERS

1. Be sure the iron/filter assembly have cooled.
2. Hold iron as in Figure 10, press/turn red knob on butt of iron.
3. Remove solder collector (see Figure 11).
4. Disassemble the solder collector into 2 parts (see Figures 15 & 16).

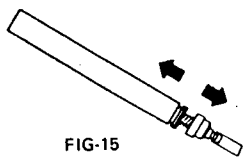


FIG-15

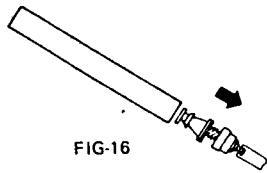


FIG-16

5. Remove old cotton filter and replace (see Figures 17 & 18).

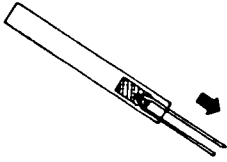


FIG-17

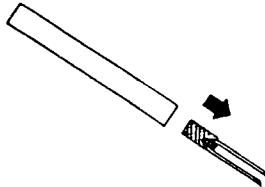


FIG-18

IN LINE FILTERS

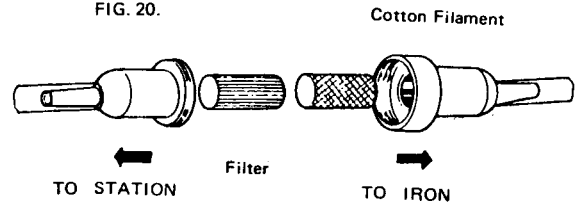
1. Unscrew in line filter (see Figure 19) and then pull apart (Figure 20).

FIG-19



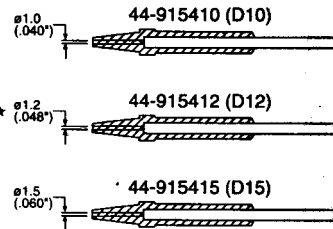
2. Replace the filter (lined portion) and cotton filament (shaded portion) as in Figure 20.

FIG. 20.

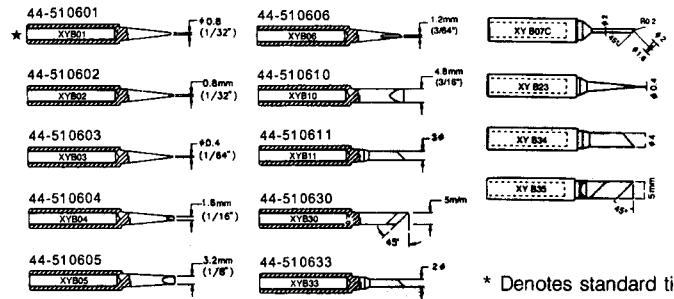


INTERCHANGEABLE TIPS

Desoldering Tip



Soldering Tip

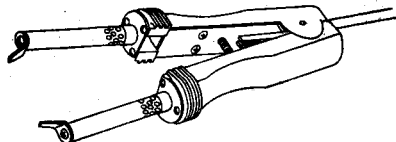


SMD TWEEZERS OPERATION

For Optional TWZ60 SMD Tweezers Operation:

1. Disconnect the 107ESD soldering iron and change to TWZ60 Tweezers. Be sure the solder controlling switch is "OFF" before proceeding this operation to avoid any damage.
2. Throw the solder switch to "ON" position once the TWZ60 is connected properly. Tweezers is ready for use.
- Note: The Tweezers temperature will be lower about 50 °C than the soldering iron temperature.
3. Use only the appropriately designed tips for the job to avoid unnecessary component damage.
4. Gently pick up and remove components while ensuring that a vertical pick up and pull out motion is maintained.
5. Use the same procedure when reconnecting the solder wand.

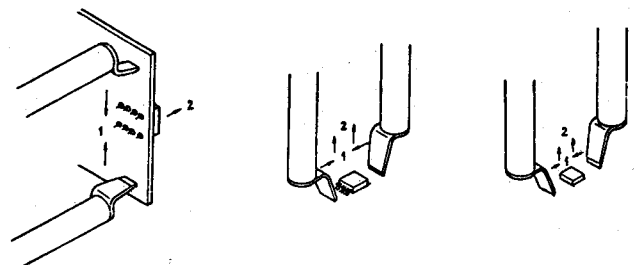
TWZ60-SMD TWEEZERS



SMD TIPS FOR TWZ60

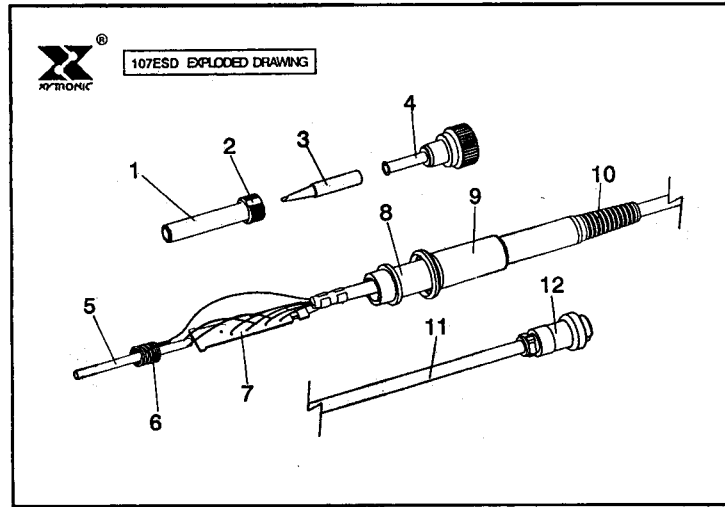
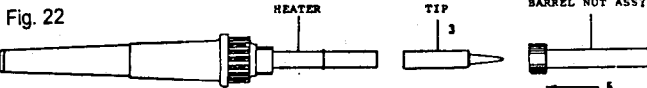
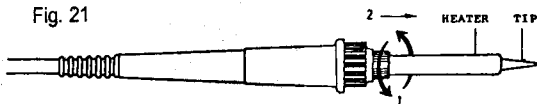
TIP TYPES	SUITABLE COMPONENTS
46-060102 (2mm)	* Chip resistors * Chip capacitors * SOT
46-060103 (3mm)	
46-060105 (5mm)	
46-060110 (10mm)	* Flat pack IC's * Small outlet 8-24 pins * Flat package tunnel types * Dip IC's
46-060115 (15mm)	
46-060120 (20mm)	
46-060130 (30mm)	

Heater type		Ceramic
Heater operation voltage	V.ac	24Vac
Heater power consumption	Watt	60W (30Wx2)
Tweezer (with tip)		TWZ60
Temperature range	°C	150-430°C
	°F	300-800°F
Standard tip	*	46-060102



107ESD SOLDERING OPERATIONS

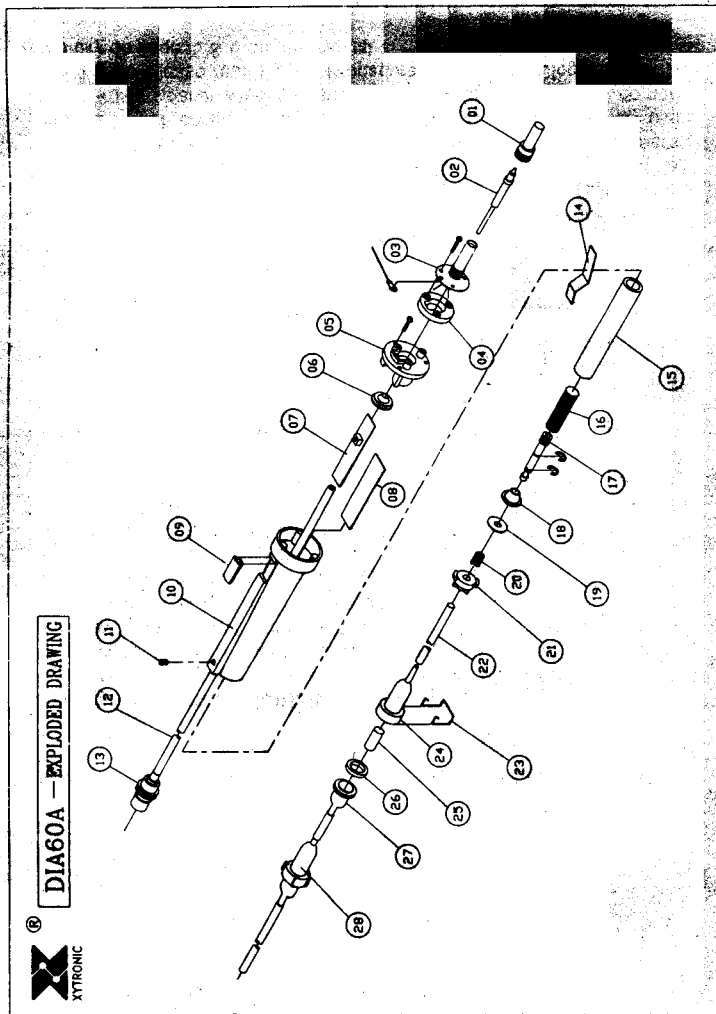
- ★ Replace the soldering tip by unscrewing the knurled barrel nut assembly (see Fig. 21)
- ★ Hand tightening is preferred, but be sure that the heating element is cool before attempting this procedure, otherwise use a pair of pliers to avoid burning your fingers. Choose the suitable tip(s) and screw tightly by hand. (see Fig. 22). Care should be taken not to overtighten the nut.



107ESD SPARE PART LIST

ITEM	PART NO.	DESCRIPTIONS
1	28-020225	BARREL
2	42-030102	NUT
3	44-510600 Series	TIP FROM B01 (44-510601) THRU B07C, B10, B11, B23, B30, B33, B34, B35
4	26A140172	HEATER HOLDER ASSY
5	79A107	CERAMIC HEATER 24V/60W
6	50-210531	SPIRAL SPRING FOR GROUNDING
7	66A213094A	HEATER PCB WITH CABLE FIXING CLIP
8	26-060173	PLASTIC HANDLE
9	52-070039	SILICONE RUBBER COLLAR, ESD SAFE
10	52-020040	BENDING GUARD
11	34-850314	5-WIRE SILICONE RUBBER CABLE, ESD SAFE
12	60-130611	6-PIN CABLE CONNECTOR (FEMALE)

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DIA60A SPARE PARTS LIST

ITEM	PART NO.	DESCRIPTIONS
01	77A100325	BARREL NUT ASS'Y
02	44-915400series	DESOLDERING TIP D10 (1.0 φ), D12 (1.2 φ), D15 (1.5 φ),
03	79-024060D	24V/60W DESOLDER HEATER
3-7	79ADIA60A	DESOLDER HEATER ASS'Y
04	27-020010	RADIATOR SPACER
05	27-020008	BAKELITE HEATER HOLDER
06	52-010013	VACUUM SEAL
07	66A213059	HEATER P. C. B. ASS'Y
08	38-011003	INSULATION PARTITION
09	26-020038	PUSH BUTTON
10	26-100037	DESOLDERING PLASTIC HANDLE
11	26-0114191	PLASTIC SET SCREW M6 × 6
12	34-870414	7-WIRE SILICONE RUBBER CABLE
13	60-130711	7-PIN CABLE CONNECTOR (FEMALE)
14	29-010016	COOLING STRIP
15	75-160110	GLASS SOLDER COLLECTOR
16	76-1411030	COTTON FILAMENT
17	42-040024	FUME REDUCER
18	52-010010	VACUUM SEAL "A"
19	45-106016	VACUUM SEALING STOPPER
20	50-207708	TENSION SPRING
21	26-020039	LOCK
22	37-031030	SILICONE RUBBER TUBE 1.5 METER
23	50-101033-0180	CLIP
24	26-040040	FILTER CAP "A"
25	78-151500	FILTER
26	52-020011	SEAL O-RING
27	26-040041	FILTER CAP "B"
28	26A040040	FILTER CAP ASS'Y

IMPORTANT: Maintenance note for DIA60T Desoldering Iron

Change of Cotton Filament (76-1411030) :

Please note that the cotton filament cannot be washed with the water. Water drops would be sucked into the Pump and may cause the pump damaged within 1 to 2 months. If you wash with the water, Cotton filament will turn solid and will stop the DIA60T working well. Please change at least once 3 to 5 days if you use 8 hours per day.

Change of Charcoal Filter (78-151500) :

Charcoal filter will turn solid if you wash with the water. If you use 8 hours per day that the Charcoal filter has to be changed within 3 weeks. On the other hand, if you wash the Charcoal filter and do not dry properly, water drops would be sucked into the Pump and may cause the pump damaged easily.

Change of Glass Solder Collector (75-160110) :

Glass solder collector will be broken easily if the client knocked the DIA60T against the workbench. The glass collector also needs to be changed every 3 to 5 months usage.

Maintenance for Desoldering Heater and Tip :

To prevent the desoldering tip being stuck by solder, the desoldering tip has to be cleaned by a Probe after every time usage. In such ways, desoldering tip's life can be lasting longer. Desolder Heater would be probably broken when you remove the desoldering tip with a pliers careless in hot condition. Slightly remove the tip with pliers or may use the anti-rusty cleaner when the tip clogged with the heater and do not forced open. Please read the " Procedure for Cleaning Clogged Tips " carefully on page. 5 & 6 on the manual.

 **Warning:**

This appliance is not intended for use by children or other persons without assistance or supervision if their physical, sensory or mental capabilities prevent them from using it safely. Children should be supervised to ensure that they do not play with the appliance.

Das Geratet ist fuer die Benutzung von Kindern oder von anderen Personen nicht ohne Hilfe oder Ueberwachung vorgesehen, wenn Ihre physischen, sensorischen und geistigen Faehigkeiten die sichere Benutzung des Geratetes unmoeglich machen. Kinder sollten ueberwacht werden, um sicher zu gehen, dass sie nicht mit dem Geratet spielen.

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