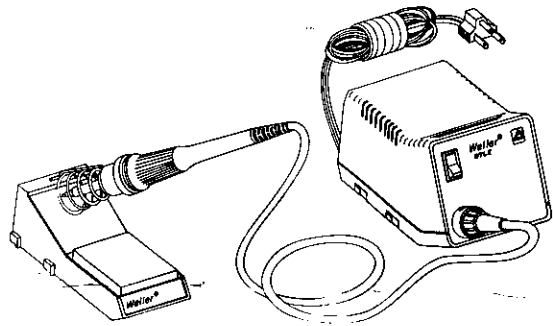


Weller® Tech Sheet

Weller® Thermolock® Precision Soldering Tools Weller® Models WTLE, WTL24, WTL120

Product Description

The Weller® Thermolock® line of precision soldering tools represent the ultimate in soldering tools for production and repair facilities at the lowest possible cost. These tools have been specifically designed to meet the latest Department of Defense (DOD-2000-1) and Department of the Navy (WS-6536) specifications. The Thermolock® tool design controls tip temperature through the use of a Thermolock® "key". The "key" is installed in the handle of the soldering tool and is marked with the calibrated temperature. The "key" contains a precision laser trimmed element that sets the electronic circuitry of the tool to control the tip to the temperature indicated on the "key". The tip temperature set by the "key" is not adjustable by the operator, but it can be changed by replacing one "key" with another "key" marked with a different temperature. The Thermolock® "key" provides the manufacturing engineer with control of the soldering tip temperature selection. The internal electronic circuitry features a custom integrated circuit installed on a hybrid ceramic substrate to give precise temperature control at the tip. The power is controlled by a zero voltage circuit in the I.C. which drives a solid state thyristor to insure that no switching transients are present on the tip. The handle design is lightweight, high impact plastic, with controlled thermal conductivity to allow continuous use with minimum discomfort from heat and fatigue.



The heating element is a fast response, long life, nichrome wound, plug-in unit, encased in stainless steel to eliminate corrosion at high temperature. The Thermolock® tools use the ET series tips that are used on the digital temperature readout EC series tools. The ET tips are available in fourteen different styles, which allow the customer to select a tip to fit his particular application. The tool will meet or exceed DOD-2000-1 and WS-6536 temperature specifications of $\pm 10^{\circ}\text{F}$ with any Weller® ET series tip style when used with the proper temperature "key". There are eight tips in the "A" category which use the standard temperature "key". Long reach tips use different temperature "keys" to allow accurate calibration to be maintained (See Tip Table). The tip temperature is controlled by sensing the temperature deep inside the tip with a precision platinum sensor. The sensor's output is used to drive a fully proportional electronic feedback circuit. The complete circuit is factory laser trimmed and requires no recalibration during its lifetime. All parts (sensors, heating elements, temperature "keys", tips, etc.) are replaceable without requiring recalibration. This is accomplished by use of precision components throughout.

Thermolock® tools are available in two versions: a 24 volt station type tool or a 120 VAC plug-in tool. Model No. WTLE is a 24 volt station and consists of the PU120 power supply and a mating 24 volt Thermolock® tool, Model No. WTL24. Model No. WTL120 is a line voltage Thermolock® tool which plugs directly into a 120 VAC wall outlet. The WTL24 is available separately and allows retrofitting our famous WTCP stations (TC202/PU120 power supplies) with the latest Weller® technology at a minimum cost. All Thermolock® tools have the same specifications, however, the 24 volt station type tools have complete isolation from the 120 A.C. line.

SPECIFICATIONS THERMOLOCK® SOLDERING STATION, MODEL WTLE

Consisting of PU120 Station and WTL24 Soldering Tool

Soldering Tool: Model WTL24

1. Wattage: 42 watts at 24 VAC.
2. Temperature Calibration: $\pm 10^{\circ}\text{F}$ ($\pm 6^{\circ}\text{C}$) of temperature indicated on Thermolock® key. Key must match tip category; see tip table for proper key selection. Temperatures measured at idle.
3. Thermolock® Temperature Controlling Keys: 600°F, 700°F, and 800°F keys are the standard temperatures available for all styles of Weller® ET Series tips. Other keys are available as specials.
4. Tip Design: Weller® ET Series plug-in tips, fourteen styles available. Tips held in place with nut assembly.
5. Temperature Control Type: Electronic feedback sensing circuitry with zero crossing thyristor drive and proportional power control, hybrid ceramic circuit board and long life components.
6. Temperature Sensor: Precision wound platinum RTD.
7. Tip Temperature Fluctuation: $\pm 5^{\circ}\text{F}$ (no load).
8. Tip Temperature Variation with Line Voltage: $\pm 2^{\circ}\text{F}$ with $\pm 10\%$ line voltage.
9. Dynamic Tip Temperature Recovery Time: 10 seconds from 100°F drop.
10. Heating Element: Grounded plug-in design. Nichrome wire wound element is encased in stainless steel for long life.
11. Handle Design: Two piece, heat insulating construction for cool grip area.
12. Tool Cord: Three wire construction, 4 ft. long with burn proof silicone rubber jacket and locking plug.
13. Tip Voltage to Ground: Less than 2mv RMS, 60 Hz measured from tip to cord ground with PU120 power supply grounded.
NOTE: 20 micro amp leakage maximum with an ungrounded tool.
14. Voltage Breakdown Test: 500 VAC, cold.
15. Tool Weight: 60 grams not including cord.
16. Designed and Manufactured to Meet Government Specifications: DOD-2000-1, MIL-S-45743E, WS-6536.

Power Unit: Model PU120

1. Power Unit: 120 VAC $\pm 10\%$, 60 Hz, 60 Watts.
2. Power Output: Isolated 24 VAC (Full Load).
3. Size: 4-1/2" x 5-7/8" x 3-5/8".
4. Line Cord: 3 Wire, UL recognized, 4.5 ft. long.
5. Tool Holder: Wire spring with stainless steel funnel.
6. Extra large wiping sponge and tip holder in separate detachable stand which also contains a self wicking sponge wetting water reservoir.
7. Illuminated on/off switch.
8. Locking receptacle for tool to allow quick tool replacement without disassembly.
9. Voltage breakdown test: 1200 volts for one second.
10. Underwriters Laboratories, Inc. approved.

SPECIFICATIONS THERMOLOCK® 120 VAC TOOL, MODEL WTL120

1. Wattage: 40 watts at 120 VAC.
2. Temperature Calibration: $\pm 10^{\circ}\text{F}$ ($\pm 6^{\circ}\text{C}$) of temperature indicated on Thermolock® key. Key must match tip category; see tip table for proper key selection. Temperatures measured at idle.
3. Tip Design: Weller® ET Series plug-in tips, fourteen styles available. Tips held in place with nut assembly.
4. Thermolock® Temperature Controlling Keys: 600°F, 700°F, and 800°F keys are the standard temperatures available for all styles of Weller® ET Series tips. Other keys are available as specials.
5. Temperature Control Type: Electronic feedback sensing circuitry with zero crossing thyristor drive and proportional power control, hybrid ceramic circuit board and long life components.
6. Temperature Sensor: Precision wound platinum RTD.
7. Heating Element: Grounded plug-in design. Nichrome wire wound element is encased in stainless steel for long life.
8. Tip Voltage to Ground: Less than 2mv RMS, 60 Hz measured from tip to cord ground with tool grounded.
NOTE: 100 micro amp leakage maximum with an ungrounded tool.
9. Tip Temperature Fluctuation: $\pm 5^{\circ}\text{F}$ (no load).
10. Tip Temperature Variation with Line Voltage: $\pm 2^{\circ}\text{F}$ with $\pm 10\%$ line voltage.
11. Dynamic Tip Temperature Recovery Time: 10 seconds from 100° drop.
12. Voltage Breakdown Test: 1200 VAC for one second from power cord to grounded tip.
13. Handle Design: Two piece, heat insulating construction for cool grip area.
14. Power Cord: Three wire, UL recognized.
15. Tool Weight: 65 grams not including cord.
16. Approvals: Underwriters Laboratories, Inc.
17. Designed and Manufactured to Meet Government Specifications: DOD-2000-1, MIL-S-45743E, WS-6536.

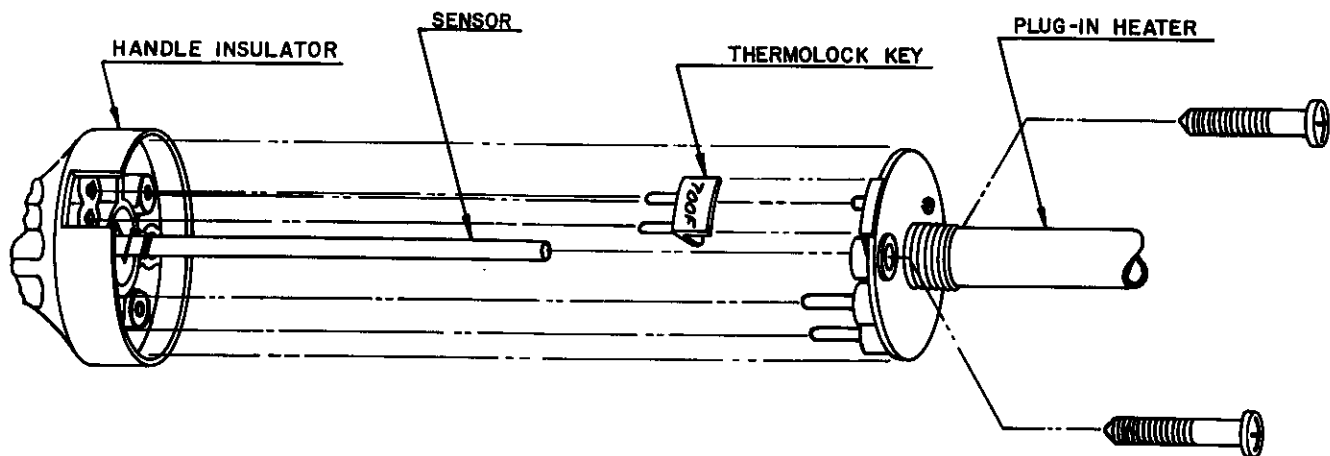
OPERATING INSTRUCTIONS

Carefully unpack unit. Remove tip nut assembly from tool and check sensor for spring movement by placing tip on sensor; the tip should have 1/16" or more of travel before seating in heater. Replace tip nut assembly and tighten finger tight. Connect tool to power source (PU120 power supply for WTL24 and 120 VAC outlet for WTL120). Allow tool to heat for 30 seconds then tin tip with rosin core solder, allow additional 30 seconds for tip to reach operating temperature. Your Thermolock® tool has been provided with an ETA tip and a TLA7 Thermolock® Key (700 F key for category A tips). Please refer to Tip Table for additional tip styles and Thermolock® Keys available.

To replace Thermolock® key with a different temperature or tip category key, proceed as follows:

1. Remove tip.
2. Remove screws (2) from heater.
3. Grasp handle insulator with fingers of one hand and then pull heater straight out of insulator with the other hand.
4. Remove key by grasping with thumb and forefinger, position thumbnail under outside edge of key and pull key straight out of insulator.
5. Install key by aligning grooved edges of key with insulator's edges and insert key pins into female pins in insulator.
6. Install heater in insulator by aligning tab on bottom of heater flange with key and carefully aligning pins on heater with female pins in insulator. Seat heater in insulator.
7. Insert screws (2) through flange holes and tighten. Do not overtighten screws.
8. Replace tip.

USE ONLY ORIGINAL WELLER® SOLDERING TIPS, PARTS, AND ACCESSORIES.

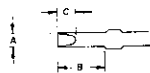


SELECTION OF WELLER® ET SERIES TIPS AND THERMOLOCK® KEYS

Weller® ET tips are solid copper, plated with iron, nickel and chromium. The nickel and chrome are removed in the working area and the tips are pretinned with tin/lead solder. The nickel and chromium protects the shank from corrosion and solder creep. The Weller® WTL24 and WTL120 electronic irons use ET series tips. These tips are designed to mate with the sensor probe. The sensor holes are plated to prevent oxidation and seizing of the sensor.

The Thermolock® keys contain a precision resistor that sets the electronic circuit to the temperature stamped on the key. Keys are available for 600, 700, and 800°F tip temperatures. The temperature specification of +/- 10°F for the Thermolock® tool is accurate only when the proper color coded key is matched to a Weller® ET Series Tip. ET tip styles and matching Thermolock® keys are shown in the tip table.

TIP TABLE



CATAGORY	GRAPHIC VIEW	CATALOG NUMBERS	DESCRIPTION	DIMENSIONS			THERMOLOCK™ KEY COLOR CODE	CATALOG NUMBERS
				-A-	-B-	-C-		
STANDARD TIPS	 SCREWDRIVER	ETA	SCREWDRIVER	1/16	5/8	3/32	CATAGORY A BLUE	TLA6 (600° F) TLA7 (700° F) TLA8 (800° F)
		ETB	SCREWDRIVER	3/32	5/8	3/32		
		ETC	SCREWDRIVER	1/8	5/8	1/8		
		ETD	SCREWDRIVER	3/16	3/4	3/16		
	 CONICAL	ETH	SCREWDRIVER	1/32	5/8	1/8		
		ETP	CONICAL	1/32	5/8	—		
		ETCC	SINGLE FLAT	1/8	5/8	3/32		
		ETDD	SINGLE FLAT	3/16	3/4	3/16		
LONG REACH TIPS	 LONG CONICAL	ETO	LONG CONICAL	1/32	1	—	CATAGORY B RED	TLB6 (600° F) TLB7 (700° F) TLB8 (800° F)
		ETS	LONG CONICAL	1/64	1	—		
	 LONG SCREWDRIVER	ETK	LONG SCREWDRIVER	3/64	1	7/16		
		ETL	LONG SCREWDRIVER	5/64	1	1/2		
MICRO TIPS	 NARROW SCREWDRIVER	ETM	LONG SCREWDRIVER	1/8	1	3/4	CATAGORY C BLACK	TLC6 (600° F) TLC7 (700° F) TLC8 (800° F)
		ETR	NARROW SCREWDRIVER	1/16	5/8	1/8		

CARE OF WELLER® ET SERIES TIPS

1. Keep tip tinned; wipe only before using.
2. Use rosin or activated rosin fluxes. Acid type fluxes will greatly reduce tip life.
3. Remove tip and clean w/suitable cleaner for flux used. The frequency of cleaning will depend on the type of work and usage. Tips in constant use should be removed and cleaned at least once a week.

WARNING:

If tip does not remove easily do not force it. The platinum sensor will be damaged. Try removing the tip while heated. If this does not work, return tool to Weller factory for service. When installing new tips, tips should slide freely over sensor.

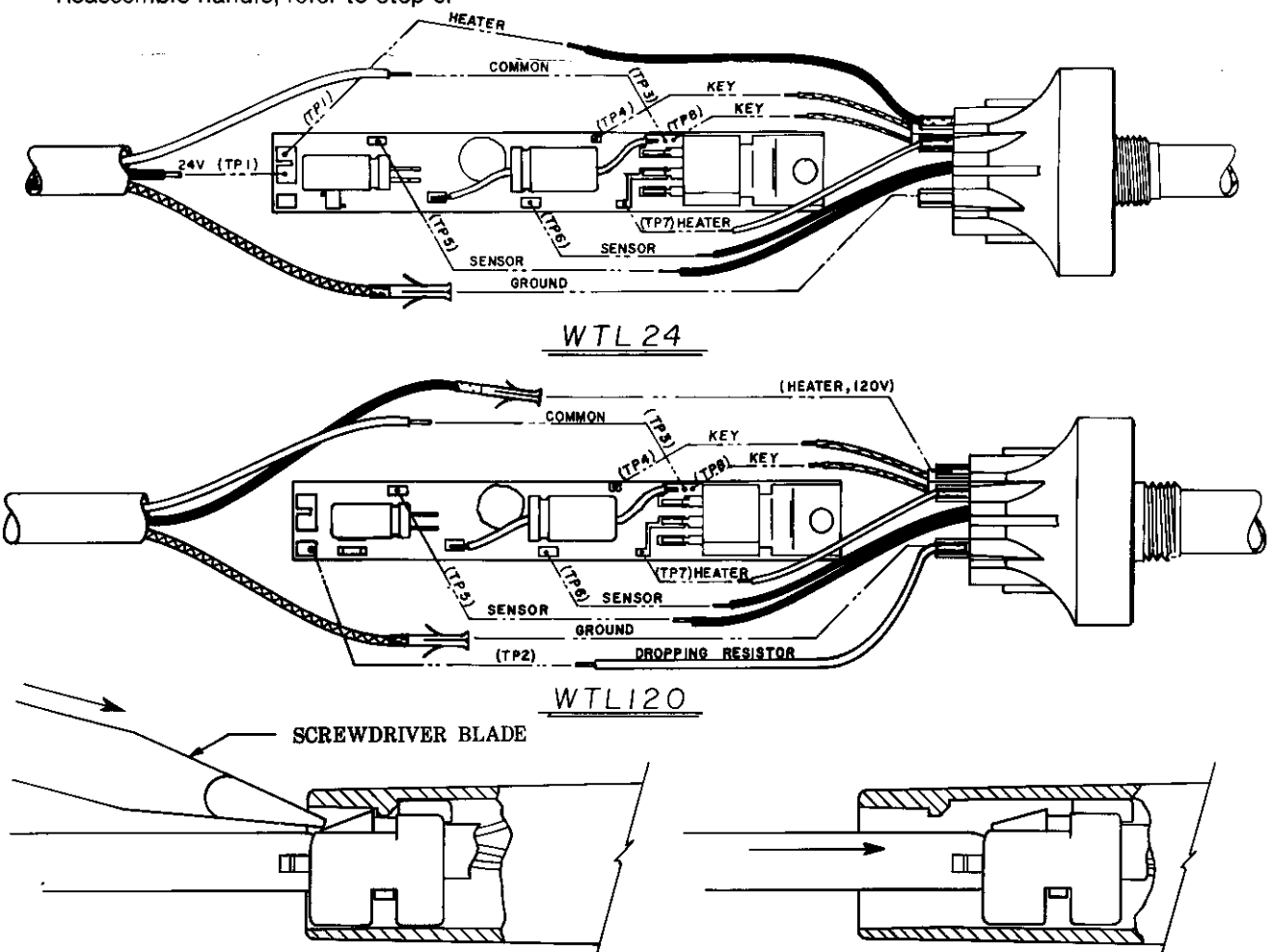
4. Do not use a drill or metal tool to clean sensor hole in tip. Sensor holes are plated for oxidation protection and sharp or abrasive objects inserted into hole could damage the plating and cause the tip to seize onto the sensor.
5. Don't try to clean tip with abrasive materials and never file tip; to do so will greatly reduce tip life. Tip wettability is affected by contact with organics, such as, plastic resins, silicone grease, and other chemicals. If the tip becomes unwettable it may be cleaned cold with a soft steel or brass wire brush. Do not overdo this or the iron plating will be removed and the tip ruined. Retin tip immediately to prevent oxidation.
6. Don't remove excess solder from heated tip before storing. The excess solder will prevent oxidation of the wettable surface when tip is reheated.
7. Do not use any compound or anti-seize material on Weller® tips or sensor probe, they will cause wettability problems and may cause seizing after long heated periods.

Service Instructions

Normally, no service will be required, however, if parts replacement is required the following instructions for parts replacement will be a help. Refer to replacement parts exploded view for identification of parts and features. Refer to the following disassembly instructions (for internal part replacement.)

WARNING: Disconnect tool from A.C. line or station before proceeding.

1. Remove two screws at base of heater barrel. Grasp handle insulator with fingers and remove heater barrel by pulling outward. For heater replacement this is all that is required. For sensor or circuit board replacement continue.
2. Twist cord guard to disengage from strain relief, slide cord guard down cord, and place tool on workbench with flat slot, at rear of handle, up.
3. Insert 3/16" flat blade screwdriver into slot at rear of handle until cord is pushed into handle. This releases the strain relief catch.
4. Slide handle down tool cord by pushing tool cord into handle. Do not pull on heater barrel to separate.
5. For sensor replacement, unsolder two black sensor wires from circuit board. Sensor may then be pulled free and replaced. Use silver bearing solder (3% Ag) to resolder sensor wires to ceramic board.
6. To replace tool cord. Before disassembly note relative position of strain relief on tool cord with respect to circuit board. Remove strain relief. Replace cord by cutting all wires and insulation jackets to exact same dimensions as old cord. Place strain relief parts on cord in dimensions as old cord. Place strain relief parts on cord in the same position noted before removal. Press strain relief together on cord, it should snap together and be retained on the cord. Note position of flat inside handle. Start handle over strain relief and circuit board with flat on strain relief lined up with flat in handle. Grip cord in one hand and handle in other hand, pull firmly on cord until strain relief snaps in place and cannot be pushed out. If difficulty is encountered it is probably due to misalignment of the flat in the handle with the flat on the strain relief. If difficulty is encountered it is probably due to misalignment of the flat in the handle with the flat on the strain relief. These must be aligned for assembly. Replace screws in heater barrel flange. Do not overtighten these screws, they are threaded in plastic.
7. For circuit board replacement follow steps 1 through 5. Circuit board is held in the handle insulator with bonding cement. This is not necessary, however, and is done for ease of assembly. Unsolder remaining wires from ceramic board and replace board. Resolder all wires to board using silver bearing (3% Ag) solder. Reassemble handle; refer to step 6.



PU120 AND PH1201

CUSTOMER SERVICE

Should your Thermolock® Tool require repair, it may be sent to the following address:

Cooper Group - Weller Plant
State Road
Cheraw, SC 29520
Attn: Repair Dept.

Repair parts for Thermolock® Tool Model WTL24
(Please state product model number when ordering.)

Item No.	Part No.	Description
13	TL100	Control Board, 24V
11	TL101	Handle Assembly, 24V
2	TL102	Sensor Assembly, 24V
1	TL103	Heater Assembly, 24V
3	TL104	Cord Assembly, 24V
5	BA60	Barrel and Nut Assembly
12	TLA7	Key 700°F Category A Tips See Tip Table for Other Temperatures

Repair Parts for Power Unit Model PU120 (PU240)
(Please state product model number when ordering.)

Item No.	Part No.	Description
4	SW120	Switch w/light, 120V
	SW240	Switch w/light, 240V
7	TC205	Sponge
8	TC204	Tool Holder
6	PU120	Power Unit, Complete, 120V
	PU240	Power Unit, Complete, 240V
9	PH1201	Iron Stand
10	PL120	Plug/Receptacle Kit

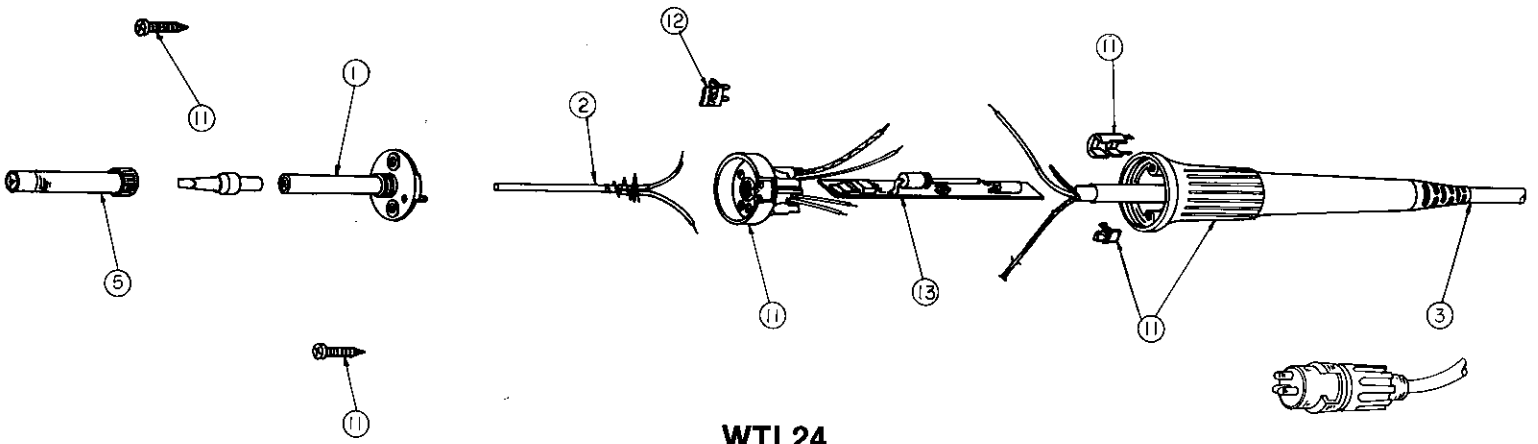
Repair Parts for Thermolock® Tool Model WTL120
(Please state product model number when ordering.)

Item No.	Part No.	Description
13	TL120	Control Board, 120V
11	TL121	Handle Assembly, 120V
2	TL122	Sensor Assembly, 120V
1	TL123	Heater Assembly, 120V
3	TL124	Cord Assembly, 120V
5	WEC205	Tip Nut
12	TLA7	Key 700°F, Category A Tips See Tip Table for Other Temperatures

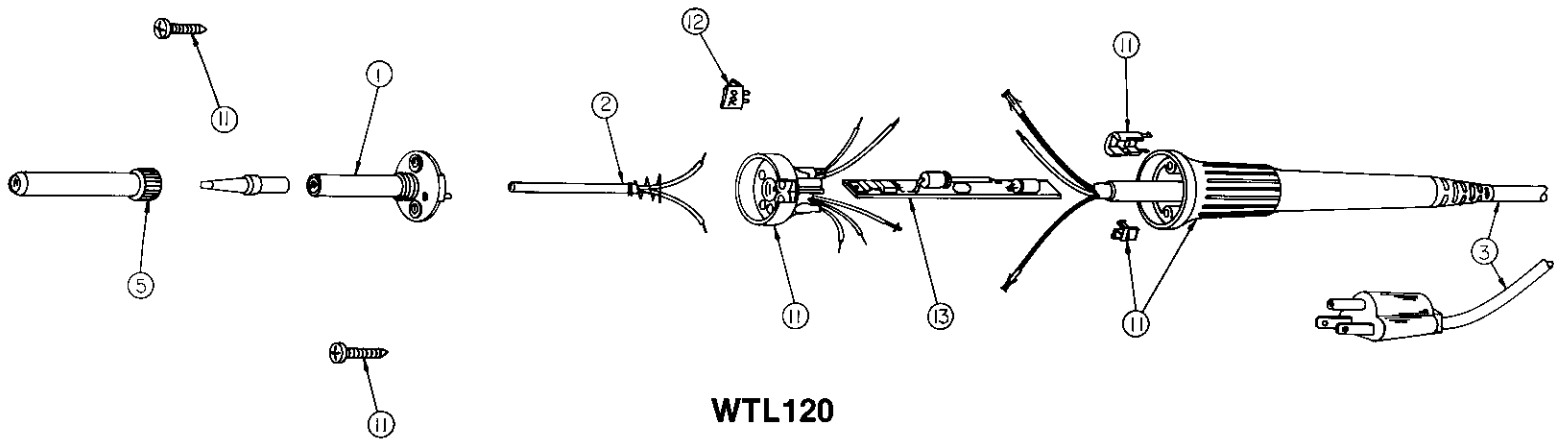
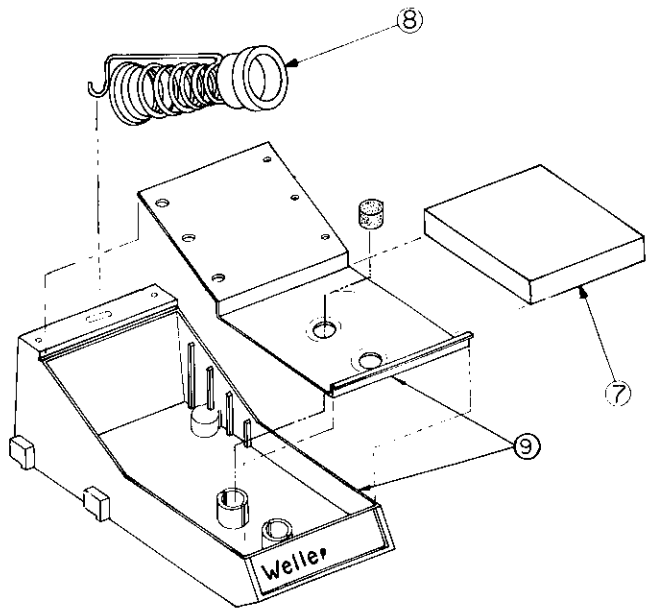
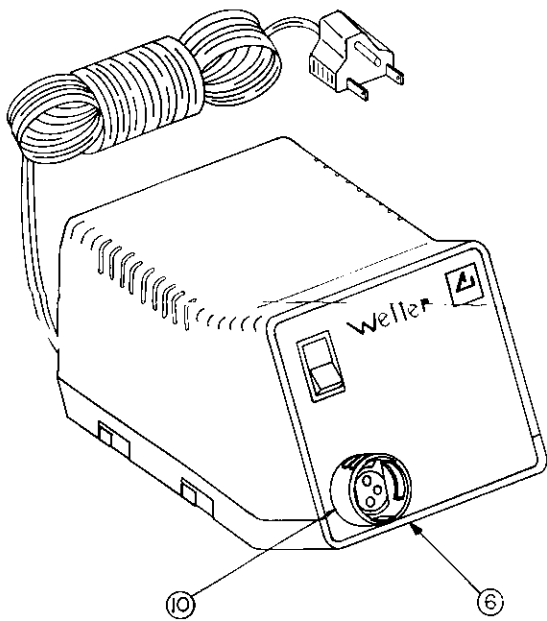
Optional Parts

Item No.	Part No.	Description
Not Shown	SHA1	Cushion Grip Sleeve for Iron Handle

REPLACEMENT PART ILLUSTRATIONS

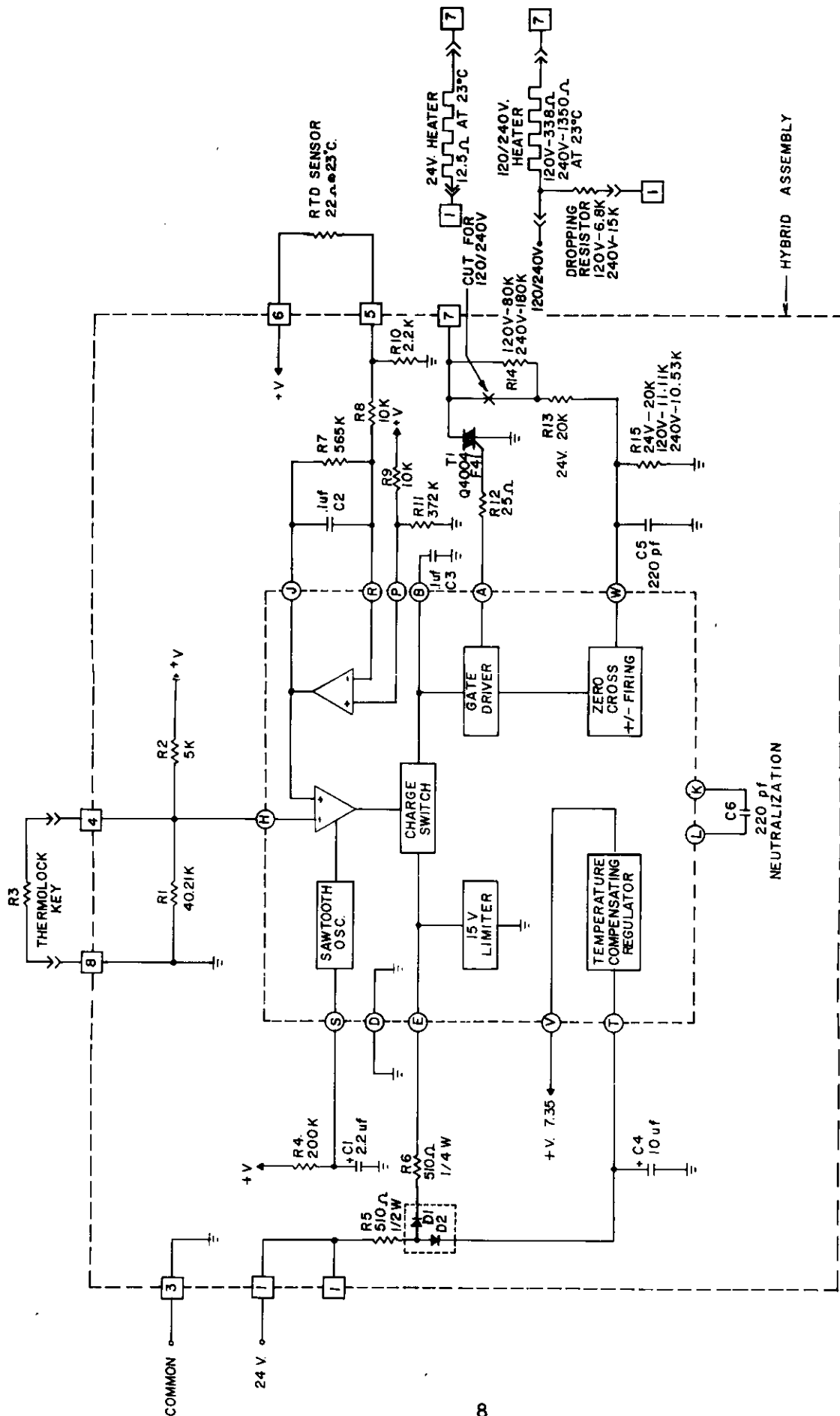


WTL24



WTL120

SCHEMATIC DIAGRAM



SCHEMATIC FOR THERMOLOCK® TOOLS