



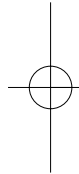
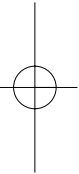
## METCAL SP200 SYSTEM USER GUIDE

**METCAL<sup>®</sup>**

# METCAL SP200 SYSTEM USER GUIDE

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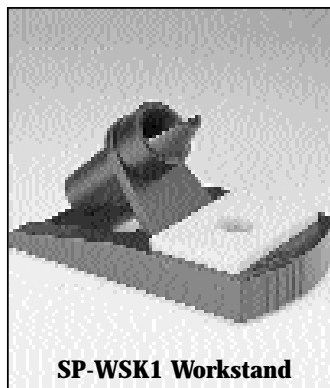


## ASSEMBLY

The Metcal SP200 Soldering System consists of a power supply, workstand with wiping sponge, and a solder handle that uses replaceable tip cartridges. (Tip cartridges are sold separately from the system.)



**SP-PW1 Power Supply**

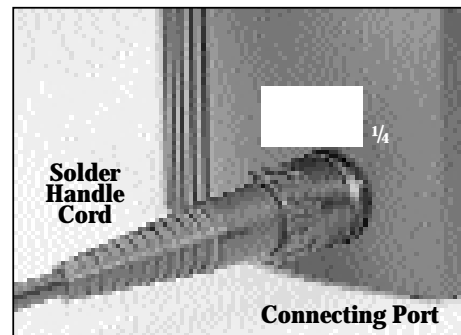
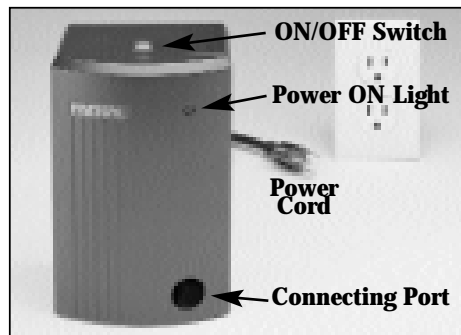


**SP-WSK1 Workstand**

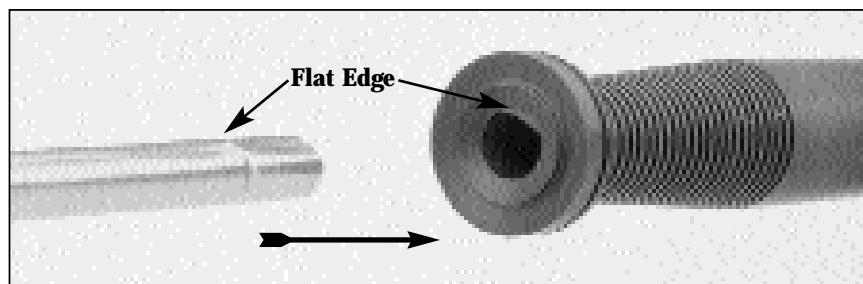


**SP-HC1 Solder Handle  
with Tip Cartridge**

The power supply features a green “Power On” indicator light, power cord, and a connecting port for the solder handle cord. With the power “off”, attach the solder handle cord to the power supply by inserting the cord connector into the power supply connecting port, and turn the nut 1/4 turn clockwise until it locks.



Insert a tip cartridge into the solder handle by aligning the flat end of the cartridge shaft with the opening in the handle. Push the cartridge all the way until it seats. You should feel a slight “click” as it locks into place.



Wet the sponge with deionized water until it is moist but not soaked. Then place it in the workstand tray.

Plug the power cord into a grounded wall socket of the appropriately rated input line voltage. To turn the unit on, push the switch on the top of the power supply. The green indicator light should light up. If it does not, see the “Troubleshooting Guide” in this manual.

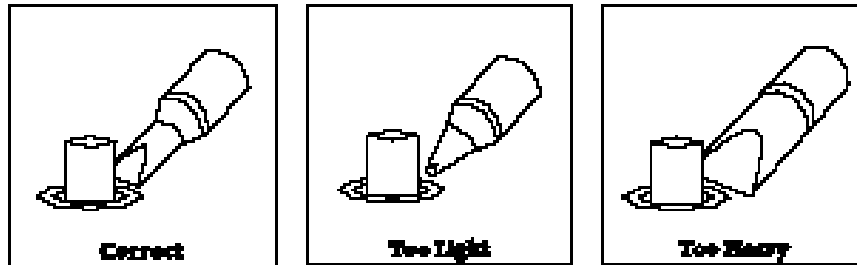
**CAUTION:** To provide continued protection against the risk of electric shock, connect only to properly grounded outlets.

## METCAL SMARTHEAT - NO DIALS TO SET

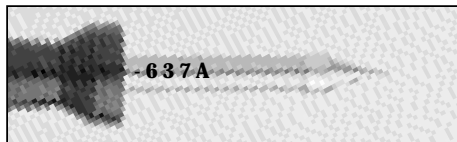
Each tip cartridge contains a self-regulating heater that senses and maintains a set idle temperature. The temperature is determined by the inherent metallurgical properties of the heater; no external adjustment or equipment is required. The power delivered to the tip automatically varies in direct response to the thermal load. This eliminates spikes and transients associated with electrically switched elements found in conventional soldering irons.

### SELECTING TIP CARTRIDGES

Metcal tip cartridges come in a variety of tip geometries and two standard temperature ranges (600 Series and 700 Series). Some tips are available in low temperature 500 Series. These tips cover a broad range of tasks from delicate precision work to heavy ground plane soldering.



1. Pick a tip that **maximizes contact area** between the tip and solder joint. Maximizing contact area gives the most efficient heat transfer, producing high quality solder joints quickly.
2. Pick a tip that allows good access to the solder joint. Shorter tip lengths allow more precise control. Longer or angled tips may be needed for soldering densely populated boards.
3. Pick the lowest temperature tip cartridge that will accomplish the task. This minimizes the potential for thermal damage. Start with a 600 Series cartridge and switch to a 700 Series only if you need more heat. The temperature series is marked on the shaft.

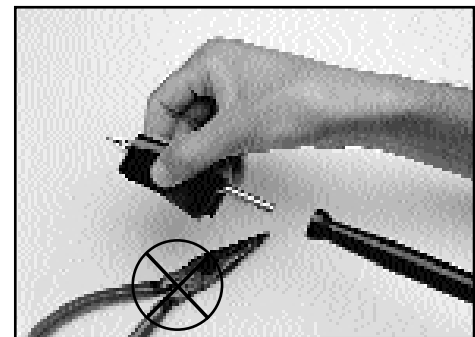


### CHANGING TIP CARTRIDGES

1. **Push the Power Switch "Off."**
2. Pull out the cartridge using the CP1 Cartridge Pad. **DO NOT USE METAL TOOLS (SUCH AS PLIERS) TO REMOVE TIP CARTRIDGES, AS THIS CAN DAMAGE THE HEATER.**

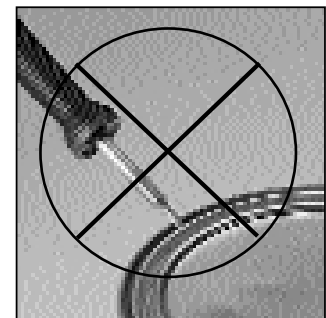
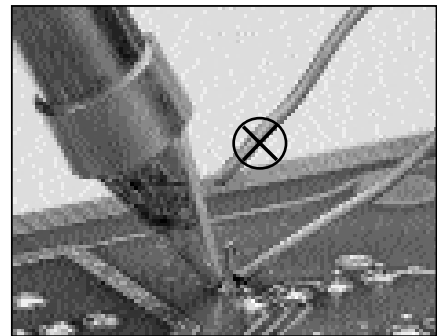
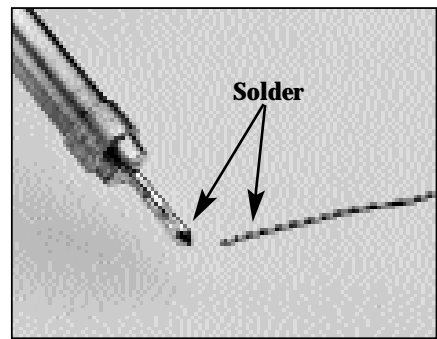
**CAUTION: THE TIP CARTRIDGE MAY BE HOT!**

3. Push a new cartridge into the solder handle with the CP1 Cartridge Pad (as shown on previous page)
4. Push the Power Switch "On." The new tip cartridge will heat up to temperature in less than 20 seconds.



## EXTENDING TIP LIFE

1. Each day, remove, inspect, and clean the cartridge shaft and handle using denatured alcohol and a clean cloth. Stubborn flux deposits on the shaft can be removed using a brass brush. **Do not use a brass brush on the tip itself as it will damage the plating and shorten tip life.**
2. Use the right tip. The plating on fine precision tips is less durable than the plating on blunter tips. Lower temperatures decrease tip oxidation.
3. Do not use the tip as a prying tool. Bending the tip can cause the plating to crack, shortening tip life.
4. Use the minimum activation flux necessary to do the job. Higher activation flux is more corrosive to the tip plating.
5. When making a solder connection, apply fresh solder to the members being joined, **not** to the hot soldering tip.
6. Don't apply pressure to the tip. More pressure does not equal more heat. To improve heat transfer, use solder to form a thermal bridge between the tip and the solder joint.
7. Clean tips on a clean, wet sponge — not on a rag or dirty dry sponge.
8. After you turn on the system, and each time you return the tip to the holder, apply rosin core solder to the tinned surfaces of the tip. The solder protects the tip from oxidation and prolongs the life of the tip.
9. Switch the system off when not in use.



## DETINNED TIP CARTRIDGES

A detinned tip is one not wetted with solder. This exposes the plating to oxidation and degrades the heat transfer efficiency of the tip. Detinning is caused by:

- a. Failure to keep the tip covered with fresh solder during idling periods.
- b. High tip temperatures.
- c. Lack of sufficient flux in soldering operations.
- d. Wiping the tip on dirty or dry sponges and rags. (Always use a clean, wet, industrial grade, sulfur-free sponge.)
- e. Impurities in the solder, iron plating, or on the surfaces to be soldered.

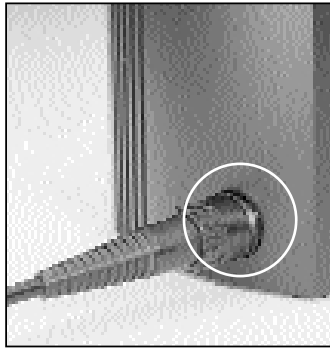
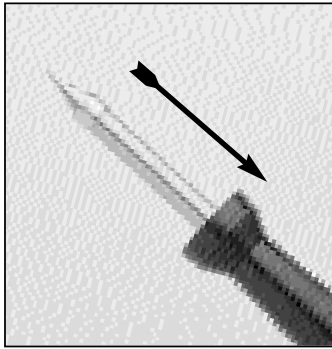
To restore a detinned tip cartridge:

1. Remove the tip cartridge from the solder handle and allow the tip to cool down.
2. Remove scale and oxides from the tinned area of the tip with 80-grit abrasive polyurethane foam stock (Plato AB-3 Polishing Bar or Multicore Tip Tinner/Cleaner or equivalent) or a 100-grit emery cloth.
3. Wrap rosin core solder (0.031" diameter or larger) around the newly exposed iron surface, insert the tip cartridge into the handle, and turn on the system.

**Note:** Detinned tips are preventable with proper daily care!

## TROUBLESHOOTING GUIDE: TIP CARTRIDGE WON'T HEAT

1. Be sure the tip cartridge is pushed all the way into the handle.
2. Check that the handle cord connector is tightened securely to the power supply output connector.
3. Check the power supply "On/Off" indicator light. If it is not lit, make sure the 3-wire power supply cord is properly connected into the wall outlet and the power supply.
4. If the cartridge still won't heat, try a different cartridge. If the new cartridge heats, discard or return (if in warranty) the bad cartridge.



If the above steps do not result in proper performance, call Metcal Customer Care.

## SYSTEM SPECIFICATIONS

### Power Supply

Tip-to-Ground Potential	< 2 mV	True RMS, 50-500 Hz
Tip-to-Ground Resistance	< 2 ohms	DC, unit on
Idle Temperature Stability	±2°F (±1.1°C)	Still air
Ambient Operating Temp.	50-104°F (10-40°C)	
Maximum Enclosure Temp.	150°F (65°C)	
Input Line Voltage	200-260 VAC	
Input Line Frequency	45-70 Hz	
Output Power	35 Watts maximum @ 72°F (22°C)	ambient temperature
Output Frequency	470 KHz	
Length x Width x Height	4.25" x 3/5" x 6.7"	(10.8 x 8.9 x 17.0 cm)
Weight (total unit)	5 lbs (2.3 kg)	
Power Cord (3 wire)	6 ft. (183 cm)	- 18/3 SJT
ESD Materials	10 <sup>5</sup> - 10 <sup>9</sup> ohm/square	as per ASTM D257

### Handpiece

Weight (handle)	2 ounces (57 grams)
Handle Cord Assembly	4 ft. (122 cm) - carbon loaded silicone
ESD Materials	10 <sup>5</sup> - 10 <sup>9</sup> ohm/square as per ASTM D257

### Standards Compliance

MIL-STD-2000, MIL-STD-1686, MIL-STD-45743E, WS-6536D and E

### Agency Approvals

FCC Approval, ETL Listed, CSA Approved

## METCAL WARRANTY

If you need any technical assistance, please call us or access our web page at [www.metcal.com](http://www.metcal.com). Metcal has information on systems, tips, accessories, technical notes, and more. Contact your local Metcal representative for pricing and availability.

Metcal, Inc. warrants Power Supplies against any defects in materials or workmanship for four (4) years from the date of purchase by the original owner. All Handle/Cord Assemblies are warranted against any defects in materials or workmanship for one (1) year from the date of purchase by the original owner.

Metcal warrants all other products except consumables against any defects in materials or workmanship for ninety (90) days from the date of purchase by the original owner. This Warranty excludes normal maintenance and shall not apply to any opened, misused, abused, altered or damaged items.

If the product should become defective within the warranty period, Metcal, Inc. will repair or replace it free of charge at its sole option. The replacement item(s) will be shipped, freight prepaid, to the original purchaser. The warranty period will start from the date of purchase. If the date of purchase cannot be substantiated the date of manufacture will be used as the start of the warranty period.

## SERVICE AFTER WARRANTY

Metcal will repair or replace (at Metcal's sole option) an SP200 Power Supply that fails in normal use within three (3) years after the expiration of the four-year warranty at the then current repair or exchange rate. To return a failed Power Supply for repair or replacement, follow the steps outlined below. This offer does not apply to any previously opened, modified, repaired, altered, misused or damaged Power Supply.

## REPLACEABLE TIP CARTRIDGE WARRANTY

Metcal warrants that the heater in its tip cartridges will operate according to specifications for the lifetime of the tip plating. Because tip plating is mainly dependent upon the user's application and practices, tip cartridges are not warranted for plating wear. Tip cartridges are warranted against any defects in materials or workmanship. Misused, abused, altered or damaged tip cartridges are not warranted.

All tip cartridges that fail to heat will be repaired or replaced at Metcal's option. For returns follow the steps outlined below. Repairs/replacements will be shipped, freight prepaid, to the original purchaser.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state or country to country.

## RETURN PROCEDURE

1. In Europe, call OK International at +44(0) 23 8048 9100. Elsewhere, call your local OK International representative, or OK International at +1-714-799-9910 for a return.
2. Proof and date of purchase must be on file for the returned product(s)