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Warranty

Metcal warrants the MX-5200 System against any defects in materials or workmanship for five (5) years 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 will repair or replace it free of charge at its sole option. The repaired or replacement item 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.

Please visit Metcal's web page (metcal.com) or contact your local Metcal representative where you will find available information on systems, accessories, technical notes, and more.

1. SYSTEM SPECIFICATIONS

Ambient Operating Temperature	10 - 40°C
Maximum Enclosure Temperature	55°C
Input Line Voltage	100 - 240 VAC, grounded circuit
Input Line Frequency	50/60 Hz
Power Consumption	125W
Output Power (Max.)	80 Watts max. Per channel at 22°C ambient temperature
Output Frequency	13.56 MHz
Power Cord 3-Wire	183cm (18/3") SJT
Dimensions w x d x h	12.1 cm (4.8") x 13.0cm (5.1") x 23.5cm (9.3")
Certification / Marking	cTUVus, CE
Surface Resistivity	10 ⁵ - 10 ⁹ Ω/in
Tip-to-Ground Potential	<2mV
Tip-to-Ground Resistance	<2 ohms
Idle Temperature Stability	± 1.1°C in still air
Hand-piece Cable Length	L=122cm (48"), burn proof, ESD safe
Hand-piece Connector	F connector
Workstand Dimensions w x d x h	8.6 cm (3.4") x 19.1 cm (7.5") x 8.3 cm (3.3")

2. SYSTEM DESIGN AND TECHNOLOGY OVERVIEW

The MX-5200 Series is a precision, high-power soldering system with dual switchable ports. It is the newest design of the market leading Metcal soldering systems. It adds ergonomic hand-pieces, a built in power meter, 80 watts of power per channel or 40 watts simultaneous, and includes SmartHeat[®] Technology for quick response and precise control.

a. SMARTHEAT[®] TECHNOLOGY

No Calibration Required

Each cartridge is equipped with a self-regulating heater which 'senses' its own temperature and closely maintains its pre-set idle temperature for the life of the heater-tip; all controlled by OK International's proprietary SmartHeat[®] Technology. The tip temperature is determined by the inherent metallurgical properties of the heater; **no external adjustment or equipment is required**. This eliminates spikes and transients associated with electrically switched elements found in conventional soldering irons. The integrated power indication meter actively monitors power delivered to the tip as it varies in direct response to the thermal load. The power indication meter **requires no calibration**, because it is monitoring an active feedback loop. Please feel free to contact your OK International representative with any questions.

Those companies or individuals requiring periodic verification of system performance may do so in the following ways:

- Measure the performance of the system in 'time required to solder a defined number of loads', or
- Observe start up and idle power with the integrated Power Indication Meter, or
- Measure tip idle temperature as it equates to this performance.

b. SYSTEMS, UPGRADE KITS & ACCESSORIES GUIDE

The MX-5200 Series offers users a choice of systems, upgrade kits and accessories.

Systems	Description	MX-H1-AV	MX-H2-UF	MX-H6-HTD	MX-PTZ	MX-DS1
MX-5210	MX-PS5200 Power Supply, Metcal Advanced™ Soldering hand-piece (MX-H1-AV), TipSaver™ workstand (MX-W1AV)	✓				
MX-5220	MX-PS5200 Power Supply, UltraFine soldering hand-piece (MX-H2-UF), TipSaver workstand (MX-W1AV)		✓			
MX-5250	MX-PS5200 Power Supply, MX-DS1 desoldering hand-piece, workstand (MX-WS5DS)					✓
MX-5241	MX-PS5200 Power Supply, MX-PTZ tweezers hand-piece, Metcal Advanced Soldering hand-piece (MX-H1-AV), TipSaver workstand (MX-W4PT), TipSaver workstand (MX-W1AV)	✓			✓	
MX-5251	MX-PS5200 Power Supply, MX-DS1 desoldering hand-piece Metcal Advanced Soldering hand-piece (MX-H1-AV), workstand (MX-WS5DS), workstand (MX-W1AV)	✓				✓
Upgrades						
MX-UK1	Metcal Advanced Hand-piece & TipSaver workstand	✓				
MX-UK2	UltraFine hand-piece & TipSaver workstand		✓			
MX-UK4	Precision Tweezers hand-piece & TipSaver workstand				✓	
MX-UK5	MX-DS1 hand-piece & TipSaver workstand					✓
Accessories						
MX-H1GR	Grip, Metcal Advanced hand-piece, Ring pattern	✓		✓		
MX-H2GR	Grip, UltraFine hand-piece, Ring pattern		✓			
MX-CP1	Cartridge removal pad, Metcal Logo	✓	✓	✓	✓	✓
AC-BP	Brass Pad, package of 10					
AC-Y10	Yellow Sponge, package of 10					
MX-H1-BSR-5	Sleeve, Black, Adv HP Grip, Ring Pattern (Qty=5)					
MX-H1-BSS-5	Sleeve, Black, Adv HP Grip, Scallop Pattern (Qty=5)					
MX-H1-GSK-5	Rubber Grip, Knob Green, MX-5000					
MX-H2-BSR-5	Sleeve, Black, UFHP Grip, Ring Pattern (Qty=5)					
MX-H2-BSS-5	Sleeve, Black, UFHP Grip, Scallop Pattern (Qty=5)					
MX-H2-GSK-5	Rubber Grip, UFHP Grip, Knob Green, MX-5000					
MX-DAH4	ESD Air Hose, U.S. Standard Fitting					✓
MX-RM8E	DS1 Desolder Cord					✓
MX-W1AV	Workstand, for Adv. & UF Soldering Handpiece					
MX-W4PT	Workstand, MX-PTZ Tweezers Handpiece					
MX-W5DS	Workstand, MX-DS1 Handpiece					

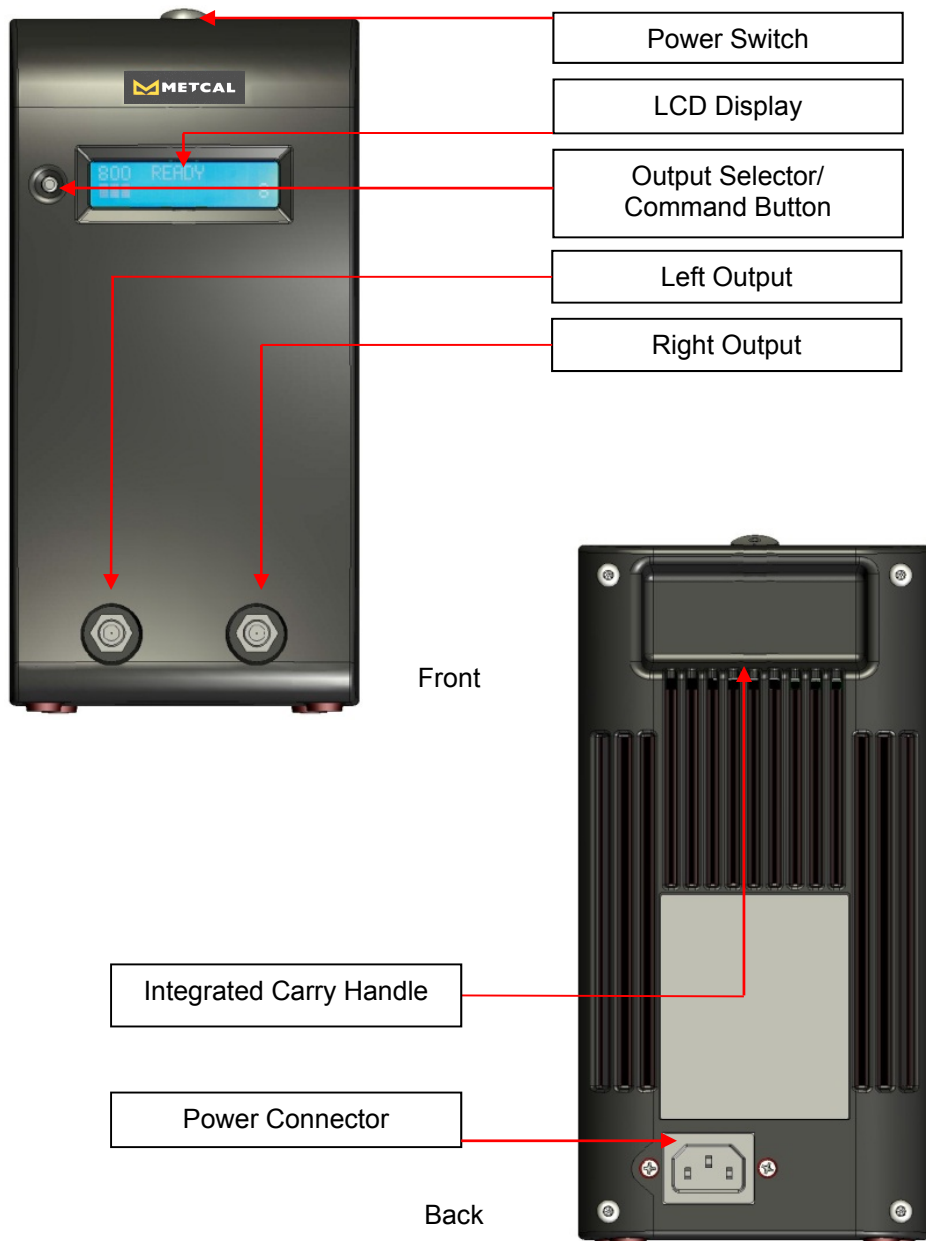
3. POWER SUPPLY OVERVIEW

a. POWER SUPPLY FEATURES

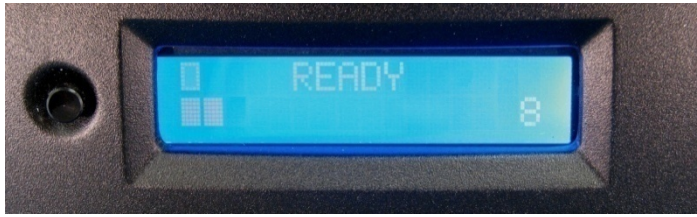
LCD Display

The MX-5200 Series utilizes a built in LCD which displays system information including:

- **Integrated Power Indication Meter**
The MX-5200 Series has a built in power indication meter which will display a graphical and numerical representation of the power.
- **User Programmable PowerSave Mode**
The MX-5200 Series has a user programmable PowerSave Mode. The time to enter PowerSave Mode is adjustable from 10 to 120 minutes.
- **Universal Power Supply**
The MX-5200 Series automatically senses the input line voltage and adjusts accordingly, which allows for worldwide operation without adaptors or a change in performance.



POWER SUPPLY MODE OVERVIEW



READY MODE

1. Hand-piece removed from workstand.
2. System is ready for use.

SLEEP MODE

1. Hand-piece in workstand.
2. Power to the hand-piece is reduced.



POWER MODE

1. Hand-piece removed from stand.
2. System is in use. Power Meter displays power at tip.



POWERSAVE MODE

1. Hand-piece in workstand.
2. Power to the hand-piece is off.
3. LCD Display flashes.
4. Press Command Button to reset.

4. HAND-PIECE OVERVIEW

The MX-5200 Series offers users a choice of hand-pieces to meet the customer's application needs. Each hand-piece has its own range of cartridges with many choices available for tip geometry and temperature.

a. Hand-piece Selection Guide



MX-H1-AV



STTC / SMTC



MX-H2-UF



UFTC



MX-H6-HTD



HCT



MX-PTZ



PTTC



MX-DS1



STDC

NOTE: This is only a small sample of tip styles available for each of the hand-pieces. Please consult your catalog or visit Metcal's website (metcal.com) for a complete listing.

5. CARTRIDGE OVERVIEW

a. About Metcal Cartridges

The soldering and rework cartridges are constructed with a tip, heater, coil, connector and shaft. This assembly is designed for precision and long life provided that the proper tip care procedures are followed. (See Section 8)

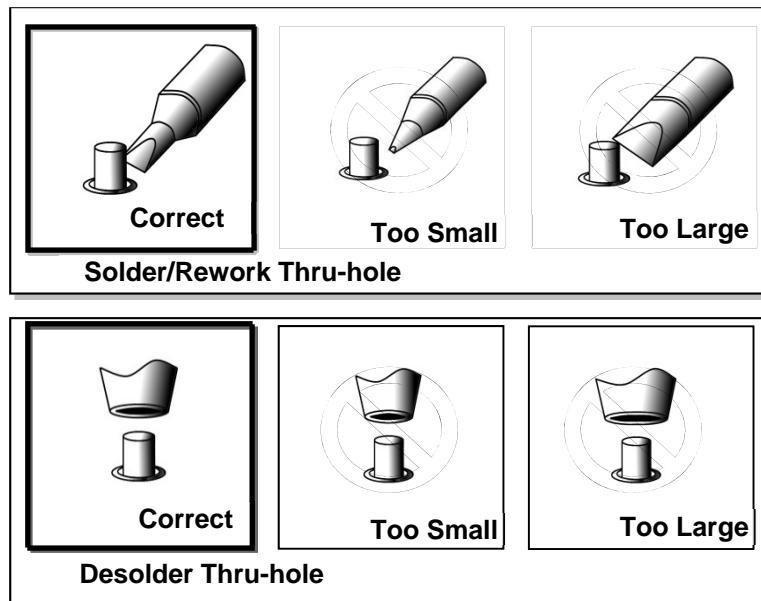
Selecting a cartridge depends on the following variables

- Need for access
- Type of solder
- Size and mass of load
- Component type

The correct choice of cartridge will result in an optimized soldering process. Here are some of the considerations for selecting the soldering or rework cartridge.

b. Choosing the Correct Tip Geometry

Metcal cartridges come in a wide variety of tip geometries and temperature ranges. For a complete up to date listing, visit our website (metcal.com) for more information. These tip geometries cover a broad range of tasks from delicate precision work to heavy ground plane soldering.

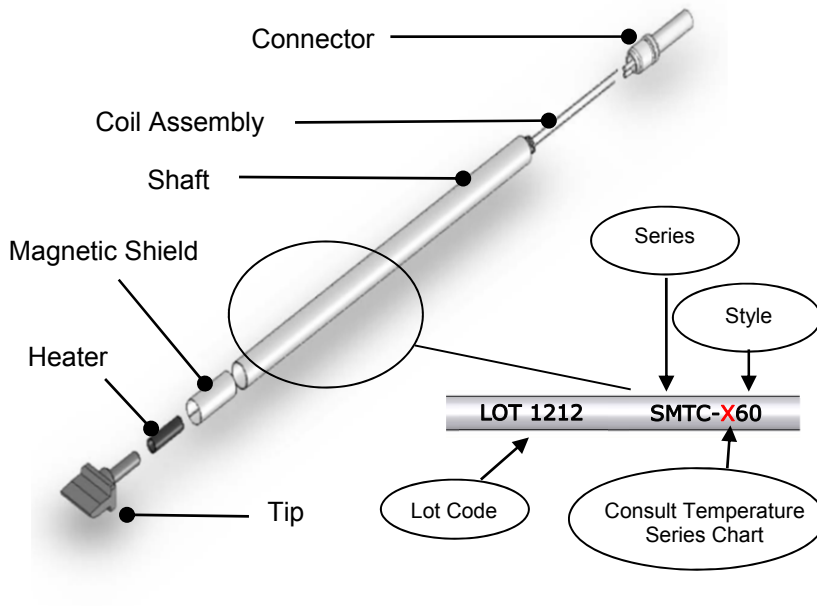


1. Pick a tip that **maximizes contact area** between the solder joint and tip. Maximizing contact area gives the most efficient heat transfer, producing high quality solder joints quickly.
2. Pick a tip that allows good access to the solder joint. Shorter tip lengths allow quicker response. Longer or 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. The temperature series is marked on the shaft of the Heater Tip. (See page 8 for more Information)

c. Choosing the Correct Temperature Series

Each cartridge is specially designed for high power delivery, which means that you can often solder with a Metcal cartridge at a temperature 100°F (40°C) or more lower than with a conventional soldering iron. Since Metcal tip cartridges sense thermal loads and respond to them, you need only approximate the size of the loads you will be working with. Start with a lower temperature, going to a higher temperature only when necessary.

CARTRIDGE CONSTRUCTION AND IDENTIFICATION



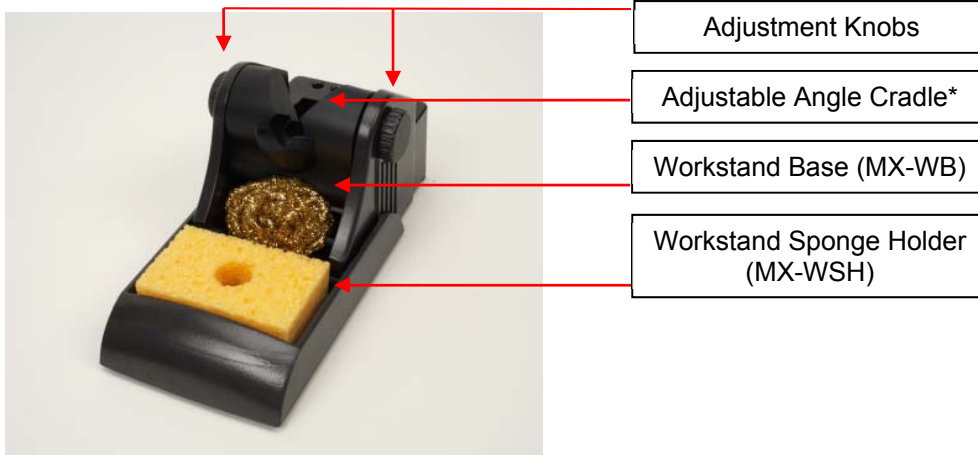
d. Temperature Series Chart

Application	X=Series	STTC	SMTC	UFTC	PTTC	TATC	STDC
High Thermal Sensitivity	500 Series	5	5			5	
Moderate Thermal Sensitivity	600 Series	0	0		6	6	0
Moderate Thermal Mass	700 Series	1	1	7	7		1
Moderate/High Thermal Mass	800V1 Series	8xxxxV1					
High Thermal Mass	800 Series	8	8		8		8

Note: Not all temperature series available for some styles. Please consult Metcal's webpage (metcal.com) or catalog for a complete listing.

6. TIPSAYER WORKSTAND OVERVIEW

a. TipSaver Workstand Features



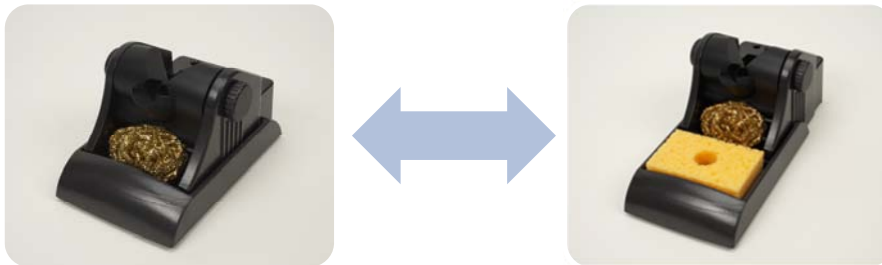
b. Adjustable Angle Cradle Guide*

Workstand	Cradle	Description
MX-W1AV	MX-W1CR	TipSaver cradle, Advanced hand-piece, includes knobs
MX-W1AV	MX-W1CR	TipSaver cradle, UltraFine hand-piece, includes knobs
MX-W4PT	MX-W4CR	TipSaver cradle, MX-PTZ hand-piece, includes knobs
MX-W5DS	MX-W5CR	TipSaver cradle, MX-DS1, includes knobs

c. TipSaver Workstand Configurations

The TipSaver Workstand is designed to accommodate different configurations in a minimal footprint. To change the configuration;

1. Remove the two screws from the underside of the workstand base (MX-WB).
2. Move the Workstand Sponge Holder (MX-WSH) into the desired position.
3. Replace the two screws into the underside of the workstand base.



Coiled Brass Cleaner or Coiled Brass Cleaner with Sponge

d. Cradle Positioning

The TipSaver Workstand incorporates an adjustable angle cradle allowing the insertion angle for the hand-piece to be adjusted for the comfort of the operator. To adjust the angle of the cradle;

1. Loosen the knobs counterclockwise.
2. Adjust the cradle to the desired angle.
3. Tighten the knobs clockwise.



7. OPERATION

a. INITIAL SETUP

1. Connect hand-piece(s) to power unit output connector(s).
2. Insert your selected cartridge into the hand-piece.
3. Push the cartridge all the way until it seats.
 - For TATC cartridges, align the flat side of the cartridge shaft with the opening in the handle. Push in the cartridge until it seats. The cartridge is fully seated when the insertion mark is flush with the handle. Do not push past this mark. Repeat for second cartridge.
4. Place hand-piece(s) into associated workstand(s).
5. Add **distilled water** to workstand sponge (sulfur free) if equipped.
6. Plug the power cord into a grounded wall socket of the rated input line voltage.
7. To turn the unit "ON", push the power switch. **NOTE:** Unit must be grounded, otherwise it will not work. Unit will not work in an electrical network where an isolation transformer has been used.
8. Select the desired output left, right, or simultaneous, using the output selector/command button. The active output will display an animated box cursor (□) to the left or right of the screen, respectively, to indicate the active output.

b. REPLACING ALL TIP CARTRIDGES

1. Make sure the system is turned off.
2. Pull out the cartridge using the Cartridge Removal Pad (MX-CP1). **NOTE: THE TIP CARTRIDGE MAY BE HOT. DO NOT USE METAL TOOLS (PLIERS, ETC) TO REMOVE CARTRIDGES!**
3. Push a new cartridge into the handle.
4. Place hand-piece(s) into associated work stand(s).
5. Push the power switch "ON". The new cartridge will heat up to temperature quickly.

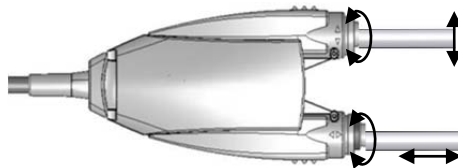
c. MX-PTZ OPERATION

1. Clean, and then tin tips well once heated.
2. Ensure tips contact all leads on device, either the bevel or straight portion of the tip can be used. Use solder across the leads to create a Thermal Bridge.
3. Squeeze tool. Wait for all leads to reflow.
4. Maintaining pressure, lift component.



Thermal Bridge

d. MX-PTZ TIP ALIGNMENT



e. USER PROGRAMMABLE POWERSAVE MODE ADJUSTMENT

1. With the system in the Ready or Power Modes, press and hold the Output Selector/Command Button for 3 seconds until the time flashes.
2. Release the Output Selector/Command Button.
3. Press the Output Selector/Command Button until the desired time is achieved. The time will increment by 10 minutes with each press of the button.
4. Press and hold the Output Selector/Command button for 3 seconds to return to operation.

f. USER SELECTABLE POWER GRAPH

1. With the system in the Ready or Power Modes, press and hold the Output Selector/Command Button for 3 seconds until the time flashes