



## SOLDERING, DESOLDERING AND REWORK SYSTEMS





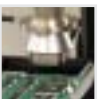
Since 1982, Metcal has been the industry's single source of high-performance, precision systems for the electronics bench. Always ahead of the competition, Metcal's soldering/desoldering stations, BGA/CSP/QFP rework equipment and fume extraction systems continue to set the standard for reliability, flexibility and cost-effective performance.

Recently, Frost & Sullivan awarded Metcal the prestigious "Market Engineering Leadership Award," recognizing Metcal as the leader in the world SMT rework and repair equipment market, in part through dominant market share, but also because of our continuing "technology innovation."

By listening to customers, focusing on their specific needs and working as their technology partner, we continue the quest for excellence, economy and innovation – aimed at helping each customer meet increasingly complex electronics manufacturing challenges.

Welcome to Metcal.





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# SmartHeat®

## SmartHeat® Technology

### The Metcal Difference

In production environments where a single component can cost hundreds of dollars and rework and repair can sometimes be more costly than the components involved, process control is vital. Metcal improves product quality, increases productivity and reduces manufacturing costs with its patented SmartHeat® technology. As SmartHeat® maintains a constant tip temperature, automatically delivering the exact amount of power required for the task, consistent results are guaranteed and component/PCB damage is virtually eliminated. Metcal's SmartHeat® systems offer task-specific versatility with no limits, no barriers and absolutely no compromise.



### What Is SmartHeat®?

Unlike conventional soldering irons, SmartHeat® administers heat directly from the heater to the joint. Metcal tip cartridges detect the thermal load and instantly adjust the power in order to deliver the right amount of heat precisely where it is needed. If the tip cools while transferring heat to a joint, SmartHeat® immediately responds by safely increasing the power to maintain a constant tip temperature. As a result, operators are relieved of the responsibility of regulating the tip temperature, thus eliminating the risk of thermal damage to the component or to the PCB.

SmartHeat® soldering systems comprise three basic elements: a high frequency power supply, a tip cartridge and a hand-piece. The cartridge contains the solder tip, a heater and the wire coil.

When the temperature of the heater (a copper bar coated with a magnetized iron/nickel alloy) reaches a certain level (its Curie Point), it stops absorbing energy and the temperature becomes



constant. Energy from the power supply feeds a steady current to the coil. This creates an electrical field from which the heater absorbs energy, turns it into heat and transfers it to the iron/nickel alloy. When soldering has drawn heat from the heater to the extent that the tip begins to cool, the alloy reacts by taking on more energy in order to reheat the tip. In this way, SmartHeat® self-regulates the tip temperature to within  $\pm 1.1^{\circ}\text{C}$  of a set point regardless of thermal load and without any need for adjustment.

## Trouble-Free Tip Replacement

The heat-resistant pad supplied with the unit allows you to easily insert and remove the tip cartridge. The simplicity of this process ensures there is no loss of productivity, no need for additional tools and no reason for two soldering systems to be heating at the same time.



## The SmartHeat® Route To Lead-Free Hand Soldering

Switching to lead-free hand soldering does not necessarily mean that you will have to invest in new equipment or adjust your existing process. As SmartHeat's variable power and fixed temperature guarantee a repeatable tip temperature under a wide variety of thermal loads, the system can easily adapt to meet the higher temperatures demanded by lead-free applications without any need for modification.

## No Calibration Required For Easy ISO 9000 Compliance

To define the parameters for soldering with a SmartHeat® system, simply record the tip cartridge part number. As the heater's alloy dictates the temperature, calibration is not required. Indeed, there are no dials, buttons or calibration tools, typical of other systems, with which you can adjust SmartHeat's temperature. This avoids all risk of unauthorized operator intervention. Throughout the cartridge's lifetime, temperature drift is less than a few degrees. A letter to confirm SmartHeat's self-calibration capacity is available on request.



# MX-500

## Soldering, Desoldering & Rework System

### Industry Standard, Soldering, Desoldering And Rework System

Metcal's MX-500 Soldering, Desoldering & Rework System is the benchmark against which other soldering, desoldering and rework systems are measured. Flexible, fast and powerful, the MX-500 Soldering, Desoldering & Rework System raises bench-top conduction soldering to a new level of process control, productivity and throughput.



### Higher Throughput At Lower Temperatures

Unlike conventional soldering/rework systems that rely on stored energy, Metcal systems use SmartHeat® for direct power on demand. Despite its capacity to work at lower, safer temperatures, SmartHeat® still delivers the fastest temperature recovery, joint-to-joint, in the industry.

### Versatility Without Compromise

Metcal's MX-500 Soldering, Desoldering & Rework System handles both SMT and through-hole soldering/rework with one power supply at the bench. With two switchable outputs, the system can be adapted to your exact needs, using two of the three tools available (soldering iron, Talon® tweezers, desolder gun) to configure the most powerful bench-top soldering/rework system on the market. In addition, the MX-500 Soldering, Desoldering & Rework System's power supply has an automatic shut-off, which helps maximize tip cartridge life, and a standard four year warranty.

## Unrivalled Comfort And Simplicity

The short tip-to-grip distance, characteristic of the Metcal hand-piece, improves process precision, especially for fine-pitch applications. The easy-squeeze design of Metcal's Talon® tweezers has been ergonomically designed for superior performance, unmatched comfort and optimum control.

### MX-500S SMT SOLDERING/REWORK SYSTEM

| Part No.          | Description                                       |
|-------------------|---------------------------------------------------|
| <b>MX-500S-11</b> | Two Port 100/120 VAC, Solder System               |
| <b>MX-500S-21</b> | Two Port 220/240 VAC, Solder System               |
| <b>INCLUDES</b>   |                                                   |
| <b>MX-500P</b>    | Two Port Switchable Power Supply with Power Cord* |
| <b>MX-RM3E</b>    | Rework Hand-Piece with Cord                       |
| <b>MX-WS4</b>     | Workstand                                         |
| <b>AC-YS3</b>     | Sponge                                            |
| <b>AC-CP2</b>     | Cartridge Removal Pad                             |



### MX-500TS SMT REWORK/TALON® SYSTEM

|                    |                                                   |
|--------------------|---------------------------------------------------|
| <b>MX-500TS-11</b> | Two Port 100/120 VAC, Solder/Talon® System        |
| <b>MX-500TS-21</b> | Two Port 220/240 VAC, Solder/Talon® System        |
| <b>INCLUDES</b>    |                                                   |
| <b>MX-500P</b>     | Two Port Switchable Power Supply with Power Cord* |
| <b>MX-TALON</b>    | Talon® Hand-Piece with Cord                       |
| <b>MX-WSS</b>      | Workstand                                         |
| <b>MX-RM3E</b>     | Rework Hand-Piece with Cord                       |
| <b>MX-WS4</b>      | Workstand                                         |
| <b>AC-YS3</b>      | Sponge (2)                                        |
| <b>AC-CP2</b>      | Cartridge Removal Pad (2)                         |

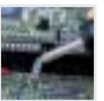


### TALON® UPGRADE KITS

|                    |                                                      |
|--------------------|------------------------------------------------------|
| <b>MX-TALON-01</b> | Talon® Upgrade Kit                                   |
| <b>INCLUDES</b>    |                                                      |
| <b>MX-TALON</b>    | Talon® Hand-Piece with Cord                          |
| <b>MX-WSS</b>      | Workstand                                            |
| <b>AC-YS3</b>      | Sponge                                               |
| <b>AC-CP2</b>      | Cartridge Removal Pad                                |
| <b>SM-TALON-02</b> | Talon® Upgrade with Switchbox for Older STSS Systems |
| <b>INCLUDES</b>    |                                                      |
| <b>MX-TALON</b>    | Talon® Hand-Piece with Cord                          |
| <b>MX-WSS</b>      | Workstand                                            |
| <b>AC-YS3</b>      | Sponge                                               |
| <b>AC-CP2</b>      | Cartridge Removal Pad                                |
| <b>STSS-SW1E</b>   | Switchbox with Storage Tray                          |

Tip cartridges sold separately from all systems. \*220/240 VAC systems do not include power cords.

MX-500



# Soldering, Desoldering & Rework System

## Pistol Grip SMT Desoldering/Rework System

The MX-500DS Desoldering/Rework System converts shop air into a powerful Venturi vacuum to clean through-holes quickly and efficiently. Paper solder collection liners within the hand-piece barrel are easy to maintain and are an improvement upon traditional glass tubes.

**Please note:** The MX-500DS Desoldering/Rework System requires shop air for desoldering. If shop air is not available, Metcal recommends the SP440 Self-Contained Desoldering System.

### MX-500DS SMT DESOLDERING/REWORK SYSTEM

| Part No.           | Description                                       |
|--------------------|---------------------------------------------------|
| <b>MX-500DS-11</b> | Two Port 100/120 VAC, Desolder/Solder System      |
| <b>MX-500DS-21</b> | Two Port 220/240 VAC, Desolder/Solder System      |
| <b>INCLUDES</b>    |                                                   |
| <b>MX-500P</b>     | Two Port Switchable Power Supply with Power Cord* |
| <b>MX-DS1</b>      | Desoldering Hand-Piece                            |
| <b>MX-RM3E</b>     | Rework Hand-Piece with Cord                       |
| <b>MX-RM8E</b>     | Desoldering Cord                                  |
| <b>MX-DAH4</b>     | ESD Air Hose with Fitting                         |
| <b>MX-WS5</b>      | Workstand                                         |
| <b>AC-YS3 (x2)</b> | Sponge (2)                                        |
| <b>AC-CP2 (x2)</b> | Cartridge Removal Pad (2)                         |
| <b>AC-CB1</b>      | Cleaning Brush                                    |
| <b>AC-CB2</b>      | Tube Cleaning Brush                               |
| <b>MX-DCF1</b>     | Chamber Liner and Filter Pack                     |
| <b>AC-TC</b>       | Desoldering Tip Cleaner                           |



### DESOLDER UPGRADE KIT

|                 |                               |
|-----------------|-------------------------------|
| <b>MX-D001</b>  | Desolder Upgrade Kit          |
| <b>INCLUDES</b> |                               |
| <b>MX-DS1</b>   | Desoldering Hand-Piece        |
| <b>MX-RM8E</b>  | Desoldering Cord              |
| <b>MX-DAH4</b>  | ESD Air Hose with Fitting     |
| <b>MX-WS5</b>   | Workstand                     |
| <b>MX-YS3</b>   | Sponge                        |
| <b>MX-CP2</b>   | Cartridge Removal Pad         |
| <b>AC-CB1</b>   | Cleaning Brush                |
| <b>AC-CB2</b>   | Tube Cleaning Brush           |
| <b>MX-DCF1</b>  | Chamber Liner and Filter Pack |
| <b>AC-TC</b>    | Desoldering Tip Cleaner       |



**Tip cartridges sold separately from all systems. \*220/240 VAC systems do not include power cords.**

# STTC Soldering Tip Cartridges

STTC soldering tip cartridges are for use with the MX and the STSS soldering/rework hand-pieces only. They cannot be used with the SP systems, the Talon® or desoldering hand-pieces.

## FREQUENTLY USED TIP CARTRIDGES



### **STTC-X36\*** Chisel 30° .10" (2.5mm)

For medium to heavy load joints requiring extra reach.



### **STTC-X37\*** Chisel 30° .07" (1.78mm)

For a wide variety of tasks. If you are choosing the first tip for your Metcal system, the STTC-037 is ideal.



### **STTC-X38\*** Chisel 30° .06" (1.5mm)

A finer version of the STTC-037. Ideal for medium to light through-hole and general surface mount touch-up.



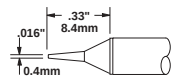
### **STTC-X25** Chisel 30° .04" (1.0mm)

Good for a variety of light soldering tasks. Looking for a surface mount touch-up tip? The STTC-025 should be your first choice.



### **STTC-X07** Conical Sharp .04" (1.0mm)

General-purpose SMT and through-hole tip when access is limited.



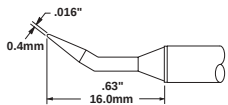
### **STTC-X22** Conical Sharp .016" (0.4mm)

Sharp tip cartridges for soldering SMT components or fine wire applications (not for general through-hole tasks).



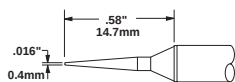
### **STTC-X06** Conical Sharp .016" (0.4mm)

For limited access SMT rework.



### **STTC-X40** Sharp Bent 30° .016" (0.4mm)

Tip for soldering SMT components. The bend makes it much easier to work on small circuits and PLCCs.



### **STTC-X45** Bevel 60° .016" (0.4mm)

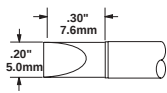
An extended length fine tip for surface mount or fine wire applications (not for general through-hole tasks).

MX Tips



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## OTHER STANDARD TIP CARTRIDGES



**STTC-X17 \***  
Extra Large Chisel  
.20" (5.0mm)



**STTC-X02**  
Conical Sharp  
.07" (1.78mm)



**STTC-X65**  
Large Chisel  
.20" (5.0mm)



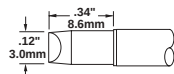
**STTC-X01**  
Conical Sharp  
.04" (1.0mm)



**STTC-X20**  
Long Reach  
Chisel 12°  
.15" (3.8mm)



**STTC-X31**  
Conical Sharp  
.04" (1.0mm)



**STTC-X03 \***  
Chisel 90°  
.12" (3.0mm)



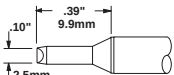
**STTC-X43**  
Conical Sharp  
.02" (0.5mm)



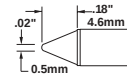
**STTC-X13**  
Chisel 90°  
.12" (3.0mm)



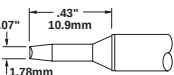
**STTC-X12**  
Conical  
.08" (2.03mm)



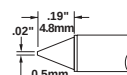
**STTC-X33**  
Chisel 90°  
.10" (2.5mm)



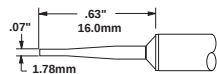
**STTC-X11**  
Conical  
.02" (0.5mm)



**STTC-X04**  
Chisel 90°  
.07" (1.78mm)



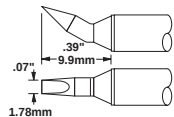
**STTC-X16**  
Conical  
.02" (0.5mm)



**STTC-X42**  
Long Reach Chisel 60°  
.07" (1.78mm)



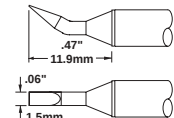
**STTC-X44**  
Sharp Bent 30°  
.02" (0.5mm)



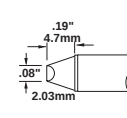
**STTC-X98**  
Chisel Bent 30°  
.07" (1.78mm)



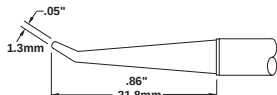
**STTC-X26**  
Sharp Bent 30°  
.016" (0.4mm)



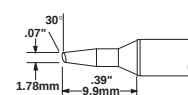
**STTC-X99**  
Chisel Bent 30°  
.06" (1.5mm)



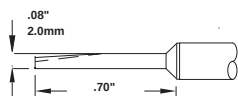
**STTC-X14**  
Bevel 45°  
.08" (2.03mm)



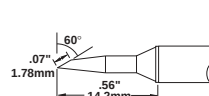
**STTC-X41**  
Chisel 30°  
.05" (1.3mm)



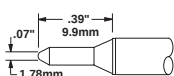
**STTC-X35**  
Bevel 30°  
.07" (1.78mm)



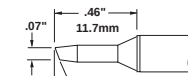
**STTC-X83**  
Conical Grooved  
.08" (2.0mm)



**STTC-X47**  
Bevel 60°  
.07" (1.78mm)



**STTC-X32**  
Conical Sharp  
.07" (1.78mm)



**STTC-X05**  
Bevel 30°  
.07" (1.78mm)

## OTHER STANDARD TIP CARTRIDGES



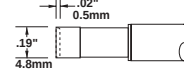
**STTC-X15**  
Bevel 30°  
.05" (1.3mm)



**STTC-X46**  
Long Reach  
Bevel 60°  
.04" (1.0mm)



**STTC-X24**  
Bevel 30°  
.04" (1.0mm)



**STTC-X70**  
Heat Staking  
.19" (4.8mm)



**STTC-X97**  
Grooved Semi-Rigid  
Coax

500 SERIES **X=5** 600 SERIES **X=0** 700 SERIES **X=1** 800 SERIES **X=8**, WHEN FOLLOWED BY AN \*

## SRTC ROBOTIC TIP CARTRIDGES

For use with robotic applications and MX-RM5E or MX-RM8E handles only. Similar to STTC tip cartridges, however, SRTC Robotic Tip Cartridges have a shaft length of 3.15" (80mm) and, therefore, are not compatible with the MX-RM3E handle.



**SRTC-X17\***  
Extra Large Chisel  
.20" (5.0mm)



**SRTC-X37**  
Chisel 30°  
.07" (1.78mm)



**SRTC-X13**  
Chisel 90°  
.12" (3.0mm)



**SRTC-X38**  
Chisel 30°  
.06" (1.5mm)



**SRTC-X36**  
Chisel 30°  
.10" (2.5mm)



**SRTC-X25**  
Chisel 30°  
.04" (1.0mm)

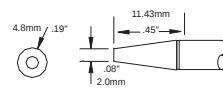
600 SERIES **X=0** 700 SERIES **X=7** 800 SERIES **X=8**, WHEN FOLLOWED BY AN \*

## PTTB BONDING TIP CARTRIDGES

For use in low temperature plastic bonding applications, these aluminum tips can be used with all available MX handles.



**PTTB-501**  
Bonding Tip



**PTTB-503**  
Bonding Tip



**PTTB-502**  
Bonding Tip



**PTTB-504**  
Bonding Tip





# STDC

## Desoldering System Tip Cartridges

Depending on available access, choose one of two desoldering tip cartridge configurations: standard STDC or long reach STDC. Like all Metcal tip cartridges, STDC changeover takes just a few seconds. When desoldering through-hole components, on thermally demanding PCBs, always use the correct geometry for the task. This may mean choosing an 800 series (high temperature) tip.

### STANDARD TIP CARTRIDGES

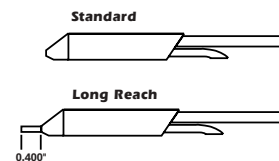
| Part No. | DIAMETERS IN INCHES (mm) |             |
|----------|--------------------------|-------------|
|          | A                        | B           |
| STDC-X02 | .025 (0.64)              | .055 (1.40) |
| STDC-X03 | .030 (0.76)              | .066 (1.68) |
| STDC-X04 | .040 (1.02)              | .070 (1.78) |
| STDC-X05 | .050 (1.27)              | .080 (2.03) |
| STDC-X06 | .060 (1.52)              | .090 (2.29) |
| STDC-X07 | .095 (2.41)              | .125 (3.18) |

600 SERIES X=0    700 SERIES X=1    800 SERIES X=8

### LONG REACH TIP CARTRIDGES

| Part No.  | A           | B           |
|-----------|-------------|-------------|
| STDC-X03L | .030 (0.76) | .066 (1.68) |
| STDC-X04L | .040 (1.02) | .070 (1.79) |
| STDC-X05L | .050 (1.27) | .080 (2.03) |

700 SERIES X=7    800 SERIES X=8



# TATC

## Talon® Tip Cartridges

Designed for the removal of all discrete and SO symmetrical components. TATC tip cartridges for Talon® hand-pieces are always sold in pairs. Due to its shape and design, by simply rotating the Talon®, a single TATC cartridge can remove a 28 pin SOIC, a tantalum or an 0603 chip capacitor without changing tips. Metcal's new Viper Tip is shown in the main photograph below.

| Part No. | Description                    |
|----------|--------------------------------|
| TATC-X01 | Fine Point Tip .20" (5.08mm)   |
| TATC-X02 | Blades Tip .25" (6.35mm)       |
| TATC-X03 | Blades Tip .62" (5.75mm)       |
| TATC-X04 | Blades Tip .81" (20.57mm)      |
| TATC-X05 | TSOP 32 Tip                    |
| TATC-X06 | Blades Tip 1.1" (27.94mm)      |
| TATC-X08 | Angled Viper Tip .05" (1.27mm) |

500 SERIES X=5    600 SERIES X=6



# SMT Rework Tip Cartridges

MX Tips

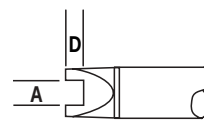


Designed for reworking SMT components, SMTC tip cartridges do it all – assembly, removal and cleaning. The SMTC range includes slot, tunnel and quad tip cartridges. The SMTC range also includes hoof tips for drag soldering, blade tips to remove residual solder from pads, and knife tips for multi-lead soldering of PLCCs in tight places.

**Please note:** SMTC soldering tip cartridges are for use with the MX-RM3E soldering/rework hand-pieces for STSS/MX systems only. They cannot be used with SP systems, Talon® hand-pieces or desolder hand-pieces.

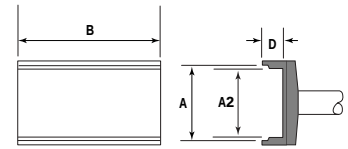


## SLOT TIP CARTRIDGES



| SMT TYPE                       | DIMENSIONS IN INCHES (mm) |             |             | Part No.  |
|--------------------------------|---------------------------|-------------|-------------|-----------|
|                                | A                         | B           | D           |           |
| Chip 0805                      | .090 (2.29)               | .050 (1.27) | .070 (1.79) | SMTC-X01  |
| Chip 1206, 1210                | .140 (3.56)               | .060 (1.52) | .070 (1.79) | SMTC-X02  |
| Chip 1808, 1812                | .190 (4.83)               | .080 (2.03) | .075 (1.91) | SMTC-X03  |
| Chip, Box A (EIA SOPM-3224)    | .135 (3.43)               | .080 (2.03) | .120 (3.05) | SMTC-X35  |
| Chip, Box B (EIA SOPM-3528)    | .150 (3.81)               | .095 (2.41) | .100 (2.54) | SMTC-X32  |
| Melf, Box B (EIA SOPM-4532)    | .190 (4.83)               | .110 (2.79) | .160 (4.06) | SMTC-X36  |
| Chip, Box C (EIA SOPM-6032)    | .250 (6.35)               | .095 (2.41) | .130 (3.30) | SMTC-X33* |
| Chip, Box D (EIA SOPM-7246)    | .300 (7.62)               | .100 (2.54) | .140 (3.56) | SMTC-X34* |
| SOT-23                         | .068 (1.73)               | .100 (2.54) | .050 (1.27) | SMTC-X05  |
| SOT-89                         | .110 (2.80)               | .250 (6.35) | .080 (2.03) | SMTC-X08  |
| Chip 0402, 0603, 0805 (angled) | .080 (2.03)               | .050 (1.27) | .060 (1.52) | SMTC-X88  |
| Chip 0402, 0603                | .070 (1.78)               | .040 (1.02) | .040 (1.02) | SMTC-X96  |

500 SERIES X=5    600 SERIES X=0    700 SERIES X=1    \*=NOT AVAILABLE FOR 500 SERIES



### TUNNEL TIP CARTRIDGES FOR DUAL IN-LINE PACKAGES

| SMT TYPE                 | DIMENSIONS IN INCHES (mm) |              |               |             | Part No.            |
|--------------------------|---------------------------|--------------|---------------|-------------|---------------------|
|                          | A2                        | A            | B             | D           |                     |
| DPAC                     | .335 (8.51)               | .335 (8.51)  | .250 (6.35)   | .200 (5.08) | SMTC- <b>X</b> 47   |
| SO-8                     | .320 (8.13)               | .380 (9.65)  | .750 (19.05)  | .240 (6.10) | SMTC- <b>X</b> 107  |
| SO-16                    | .330 (8.38)               | .330 (8.38)  | .475 (12.07)  | .230 (5.84) | SMTC- <b>X</b> 46*  |
| SO-8                     | .335 (8.51)               | .335 (8.51)  | .665 (16.90)  | .250 (6.35) | SMTC- <b>X</b> 68** |
| SOIC-8                   | .200 (5.08)               | .200 (5.08)  | .170 (4.32)   | .090 (2.29) | SMTC- <b>X</b> 04   |
| SOIC-14,-16              | .200 (5.08)               | .200 (5.08)  | .400 (10.16)  | .090 (2.29) | SMTC- <b>X</b> 06   |
| SOIC-14                  | .204 (5.18)               | .204 (5.18)  | .350 (8.89)   | .100 (2.54) | SMTC- <b>X</b> 142  |
| SOIC-24 (Mini flat pack) | .280 (7.11)               | .280 (7.11)  | .620 (15.75)  | .125 (3.18) | SMTC- <b>X</b> 77   |
| SOIC-16 (Wide)           | .320 (8.13)               | .320 (8.13)  | .470 (11.94)  | .270 (6.86) | SMTC- <b>X</b> 124  |
| SOIC-20                  | .375 (9.53)               | .375 (9.53)  | .520 (13.21)  | .125 (3.18) | SMTC- <b>X</b> 10   |
| SOIC-24                  | .375 (9.53)               | .375 (9.53)  | .620 (15.75)  | .125 (3.18) | SMTC- <b>X</b> 09   |
| SOIC-28, SOL-34          | .375 (9.53)               | .375 (9.53)  | .720 (18.29)  | .125 (3.18) | SMTC- <b>X</b> 07   |
| SOIC-32                  | .520 (13.21)              | .520 (13.21) | .805 (20.45)  | .170 (4.32) | SMTC- <b>X</b> 42   |
| SOJ-28, SOM-36           | .315 (8.00)               | .340 (8.64)  | .740 (18.80)  | .074 (1.88) | SMTC- <b>X</b> 26   |
| SOJ-32, 34               | .315 (8.00)               | .340 (8.64)  | .840 (21.34)  | .125 (3.18) | SMTC- <b>X</b> 140  |
| SOJ-40, SOM-32           | .410 (10.41)              | .450 (11.43) | 1.020 (25.91) | .075 (1.91) | SMTC- <b>X</b> 40   |
| SOJ-42                   | .410 (10.41)              | .450 (11.43) | 1.070 (27.18) | .125 (3.18) | SMTC- <b>X</b> 148  |
| SOMC-14,-16, DB-20       | .270 (6.86)               | .270 (6.86)  | .440 (11.18)  | .090 (2.29) | SMTC- <b>X</b> 20   |
| SOP-20                   | .270 (6.86)               | .270 (6.86)  | .285 (7.24)   | .100 (2.54) | SMTC- <b>X</b> 138  |
| SOP-28                   | .420 (10.67)              | .420 (10.67) | .720 (18.29)  | .125 (3.18) | SMTC- <b>X</b> 39   |
| SOP-40                   | .460 (11.68)              | .510 (12.95) | 1.000 (25.4)  | .125 (3.18) | SMTC- <b>X</b> 134* |
| SOP-44                   | .510 (12.95)              | .565 (14.35) | 1.070 (27.18) | .105 (2.67) | SMTC- <b>X</b> 83   |
| TSOP-28                  | .470 (11.94)              | .505 (12.83) | .320 (8.13)   | .065 (1.65) | SMTC- <b>X</b> 95   |
| TSOP-40                  | .730 (18.54)              | .760 (19.30) | .400 (10.16)  | .120 (3.05) | SMTC- <b>X</b> 154  |
| TSOP-56                  | .730 (18.54)              | .760 (19.30) | .556 (14.12)  | .120 (3.05) | SMTC- <b>X</b> 162  |
| TSOP-32                  | .730 (18.54)              | .760 (19.30) | .320 (8.13)   | .120 (3.05) | SMTC- <b>X</b> 84** |

600 SERIES **X**=0 700 SERIES **X**=1 \* =NOT AVAILABLE FOR 600 SERIES

\*\* =NOT AVAILABLE FOR 700 SERIES



### QUAD TIP CARTRIDGES FOR PLCC

| SMT TYPE      | A2            | A             | B2            | B             | D           | Part No.           |
|---------------|---------------|---------------|---------------|---------------|-------------|--------------------|
| PLCC 18       | .300 (7.62)   | .330 (8.38)   | .500 (12.70)  | .530 (13.46)  | .150 (3.81) | SMTC- <b>X</b> 11  |
| PLCC 20       | .360 (9.14)   | .400 (10.16)  | .360 (9.14)   | .400 (10.16)  | .150 (3.81) | SMTC- <b>X</b> 12  |
| PLCC 28       | .370 (9.40)   | .410 (10.41)  | .570 (14.48)  | .610 (15.49)  | .150 (3.81) | SMTC- <b>X</b> 103 |
| PLCC 32       | .450 (11.43)  | .500 (12.70)  | .550 (13.97)  | .600 (15.24)  | .150 (3.81) | SMTC- <b>X</b> 16  |
| PLCC 28       | .455 (11.56)  | .500 (12.70)  | .455 (11.58)  | .500 (12.70)  | .150 (3.81) | SMTC- <b>X</b> 13  |
| PLCC 44       | .660 (16.76)  | .700 (17.78)  | .660 (16.76)  | .700 (17.78)  | .150 (3.81) | SMTC- <b>X</b> 14  |
| PLCC 68       | .960 (24.38)  | .995 (25.27)  | .960 (24.38)  | .995 (25.27)  | .220 (5.59) | SMTC- <b>X</b> 18* |
| PLCC 68 dual* | .960 (24.38)  | .995 (25.27)  | .960 (24.38)  | .995 (25.27)  | .220 (5.59) | SMTC- <b>X</b> 28  |
| PLCC 84 dual* | 1.165 (29.59) | 1.195 (30.35) | 1.165 (29.59) | 1.195 (30.35) | .220 (5.59) | SMTC- <b>X</b> 29  |
| PLCC 52       | .760 (19.30)  | .800 (20.32)  | .760 (19.30)  | .800 (20.32)  | .150 (3.81) | SMTC- <b>X</b> 17* |
| PLCC 84       | 1.165 (29.59) | 1.195 (30.35) | 1.165 (29.59) | 1.195 (30.35) | .220 (5.59) | SMTC- <b>X</b> 19* |

600 SERIES **X**=0 700 SERIES **X**=1 FOR ALL QUADS USE 700 SERIES TIP CARTRIDGES

\* =NOT AVAILABLE FOR 600 SERIES

**Please note:** •Dual tip cartridges require two power supply units and two hand-pieces. A Dual Hand-Piece Support (MX-DHS) is also recommended.



#### QUAD TIP CARTRIDGES FOR QFP

| SMT TYPE                     | DIMENSIONS IN INCHES (mm) |               |               |               |             | Part No.             |
|------------------------------|---------------------------|---------------|---------------|---------------|-------------|----------------------|
|                              | A2                        | A             | B             | B2            | D           |                      |
| <b>SQFP 48 (EIAJ)</b>        | .330 (8.38)               | .330 (8.38)   | .330 (8.38)   | .330 (8.38)   | .100 (2.54) | SMTC- <b>X</b> 121   |
| <b>SQFP 64 (EIAJ)</b>        | .440 (11.18)              | .440 (11.18)  | .440 (11.18)  | .440 (11.18)  | .100 (2.54) | SMTC- <b>X</b> 120   |
| <b>TQFP 44</b>               | .440 (11.18)              | .480 (12.19)  | .480 (12.19)  | .520 (13.21)  | .110 (2.79) | SMTC- <b>X</b> 159   |
| <b>TQFP 80</b>               | .485 (12.32)              | .525 (13.34)  | .485 (12.32)  | .525 (13.34)  | .110 (2.79) | SMTC- <b>X</b> 132   |
| <b>QFP 48</b>                | .550 (13.97)              | .550 (13.97)  | .550 (13.97)  | .550 (13.97)  | .130 (3.30) | SMTC- <b>X</b> 115   |
| <b>VQFP 100 (EIAJ)</b>       | .570 (14.48)              | .610 (15.49)  | .570 (14.48)  | .610 (15.49)  | .110 (2.79) | SMTC- <b>X</b> 118   |
| <b>QFP 128 (3.2 mm fp)</b>   | .620 (15.75)              | .620 (15.75)  | .860 (21.84)  | .860 (21.84)  | .130 (3.30) | SMTC- <b>X</b> 133   |
| <b>QFP 44</b>                | .635 (16.13)              | .635 (16.13)  | .635 (16.13)  | .635 (16.13)  | .130 (3.30) | SMTC- <b>X</b> 21    |
| <b>QFP 100 (rectangular)</b> | .650 (16.51)              | .650 (16.51)  | .885 (22.48)  | .885 (22.48)  | .130 (3.30) | SMTC- <b>X</b> 43    |
| <b>QFP 64, 80</b>            | .675 (17.15)              | .675 (17.15)  | .910 (23.11)  | .910 (23.11)  | .130 (3.30) | SMTC- <b>X</b> 15    |
| <b>QFP 100</b>               | .805 (20.45)              | .805 (20.45)  | .805 (20.45)  | .805 (20.45)  | .190 (4.83) | SMTC- <b>X</b> 45*   |
| <b>QFP 144</b>               | .805 (20.45)              | .840 (21.34)  | .805 (20.45)  | .840 (21.34)  | .075 (1.91) | SMTC- <b>X</b> 122   |
| <b>QFP 132</b>               | .985 (25.02)              | 1.020 (25.91) | .985 (25.02)  | 1.020 (25.91) | .125 (3.18) | SMTC- <b>X</b> 86    |
| <b>QFP 100 (square)</b>      | 1.040 (26.42)             | 1.040 (26.42) | 1.040 (26.42) | 1.040 (26.42) | .130 (3.30) | SMTC- <b>X</b> 44*   |
| <b>QFP 208 DUAL •</b>        | 1.125 (28.58)             | 1.770 (44.96) | 1.125 (28.58) | 1.170 (44.96) | .114 (2.90) | SMTC- <b>X</b> 81    |
| <b>QFP 120,160 DUAL •</b>    | 1.165 (29.59)             | 1.200 (30.48) | 1.165 (29.59) | 1.200 (30.48) | .120 (3.05) | SMTC- <b>X</b> 48    |
| <b>PQFP 240 DUAL •</b>       | 1.290 (32.77)             | 1.330 (33.78) | 1.290 (32.77) | 1.330 (33.78) | .110 (2.79) | SMTC- <b>X</b> 125   |
| <b>QFP 304 DUAL •</b>        | 1.600 (40.64)             | 1.650 (41.91) | 1.650 (41.91) | 1.600 (40.64) | .200 (5.08) | SMTC- <b>X</b> 158** |

600 SERIES **X=0** 700 SERIES **X=1** FOR ALL QUADS USE 700 SERIES TIP CARTRIDGES

\* = NOT RECOMMENDED FOR 600 SERIES \*\* = NOT AVAILABLE FOR 600 SERIES

**Please Note:** • Dual tip cartridges require two power supply units and two hand-pieces. A Dual Hand-Piece Support (MX-DHS) is also recommended.



#### SOCKET TIP CARTRIDGES (TIP INSIDE SOCKET)

| SMD COMPONENT                | A             | B             | D           | Part No.           | Recommended |
|------------------------------|---------------|---------------|-------------|--------------------|-------------|
|                              |               |               |             |                    | Part No.    |
| <b>PLCC-20 SOCKET</b>        | .360 (9.14)   | .360 (9.14)   | .115 (2.91) | SMTC- <b>X</b> 144 | SMTC-1144   |
| <b>PLCC-32 SOCKET</b>        | .456 (11.58)  | .556 (14.12)  | .120 (3.05) | SMTC- <b>X</b> 109 | SMTC-1109   |
| <b>PLCC-84 SOCKET DUAL •</b> | 1.160 (40.64) | 1.160 (40.64) | .115 (2.91) | SMTC- <b>X</b> 145 | SMTC-1145   |

600 SERIES **X=0** 700 SERIES **X=1** FOR ALL QUADS USE 700 SERIES TIP CARTRIDGES

**Please Note:** • Dual tip cartridges require two power supply units and two hand-pieces. A Dual Hand-Piece Support (MX-DHS) is also recommended.

# Speciality

## Speciality Tip Cartridges

### BLADE TIP CARTRIDGES

| <b>SMTC-X110**</b> | <b>SMTC-X62</b>  | <b>SMTC-X61</b>  | <b>SMTC-X60</b>  |
|--------------------|------------------|------------------|------------------|
| Blade              | Blade            | Blade            | Blade            |
| Dual Heater Quad   | 0.870" (22.10mm) | 0.620" (15.75mm) | 0.410" (10.41mm) |
| 1.55" (39.37mm)    | Long             | Long             | Long             |



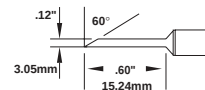
**500 SERIES X=5    600 SERIES X=0    700 SERIES X=1    800 SERIES X=8**

**\*\*=NOT AVAILABLE FOR 500 OR 800 SERIES**

### HOOF AND KNIFE TIP CARTRIDGES FOR DRAG SOLDERING



**SMTC-X147\***  
Hoof



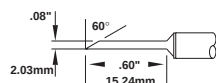
**SMTC-X170\***  
Long Reach Hoof



**SMTC-X167\*\***  
Mini-Hoof



**SMTC-X161\***  
Knife  
(Tinned Area, .08" 2.03mm)



**SMTC-X169\***  
Long Reach Hoof



**SMTC-X173**  
Knife  
(Increased Tinned Area, .23" 5.84mm)

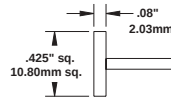
**500 SERIES X=5    600 SERIES X=0    700 SERIES X=1    800 SERIES X=8**

**\*=NOT AVAILABLE FOR 800 SERIES    \*\*=NOT AVAILABLE FOR 500 OR 800 SERIES**

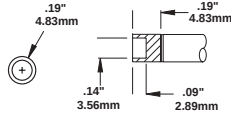
## OTHER SPECIALITY TIP CARTRIDGES



**SMTC-X98\*\***  
SMT Connector  
28 Pin



**SMTC-X136\*\***  
Hot Plate  
.425" sq. (10.8mm sq.)



**SMTC-X100**  
Micro XMT  
Small Package  
Co-Axial Tip

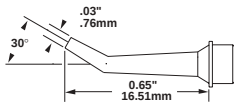
500 SERIES X=5    600 SERIES X=0    700 SERIES X=1    800 SERIES X=8

\*\*=NOT AVAILABLE FOR 500 OR 800 SERIES

# Microfine

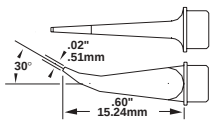
## Microfine Rework Tip Cartridges

The Microfine rework tip cartridge series is designed for reworking 0201 and 0402 or microfine components in tight spaces with the help of a microscope. This series includes tips that can be used to remove 0402 and 0201 components from the topside approach or can also be used for multi-lead drag soldering on micro PLCC and QFP components with access problems. Depending on your application, one of these tips will meet your micro component rework needs.



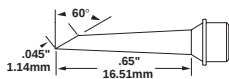
**SMTC-X171**

Use to remove 0201 and 0402 components from a "topside" angle. This design increases microscope viewing when reworking/removing micro chip capacitors/components.



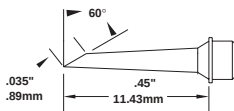
**SMTC-X172**

Designed for fine drag soldering and point-to-point soldering. This tip increases access between components and allows for lead to lead or solder bridge clean-up.



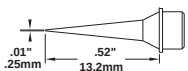
**SMTC-X174**

Long reach micro hoof tip designed with a smaller surface area than the mini-hoof for optimal drag soldering of components in tight spots.



**SMTC-X175**

Micro-hoof tip designed with a smaller surface area than the mini-hoof for drag soldering of small/micro leaded components.



**STTC-X90**

Microfine tip designed for soldering and touch-up of micro components such as 0201s and 0402s.

500 SERIES X=5    600 SERIES X=0    700 SERIES X=1    800 SERIES X=8

MX-Tips



# MX-500

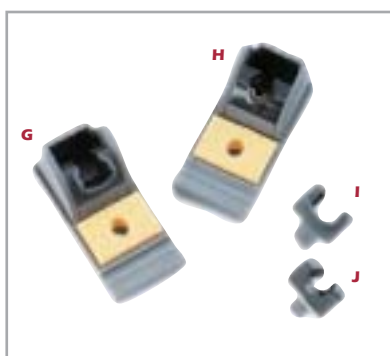
## Accessories & Spare Parts

MX-500



### HAND-PIECES AND CORDS

| Part No.          | Description                                   |
|-------------------|-----------------------------------------------|
| <b>A MX-RM3E</b>  | ESD Solder Handle W/CP2 for MX-500 Systems    |
| <b>B MX-RM6E</b>  | ESD Long Reach Solder Handle W/CP2 for MX-500 |
| <b>C MX-TALON</b> | Talon® Hand-Piece with Cord                   |
| <b>D MX-DS1</b>   | Desolder Hand-Piece                           |
| <b>E MX-RM8E</b>  | DS1 Desolder Cord                             |
| <b>F MX-DAH4</b>  | ESD Air Hose, U.S standard fitting            |
| <b>MX-RM5E</b>    | Standard Robotic Cable, 1-piece, 6' (1.83m)** |



### WORKSTAND ITEMS

|                  |                                                |
|------------------|------------------------------------------------|
| <b>G MX-WS5</b>  | DS1/Talon® Workstand with YS3 Sponge           |
| <b>H MX-WS4</b>  | MX Workstand with YS3 Sponge                   |
| <b>I MX-WSC5</b> | Talon® Cradle                                  |
| <b>J MX-WSC4</b> | MX-RM3E / 6E Cradle                            |
| <b>AC-YS1-P</b>  | WS1 Sponge (1.7" x 2.7" x 1.0") (Pack of 50)** |
| <b>AC-YS3-P</b>  | MX, SP & DP Workstand Sponge (Pack of 50)**    |



### MISCELLANEOUS ACCESSORIES

|                        |                                                  |
|------------------------|--------------------------------------------------|
| <b>K AC-TSTAND</b>     | Tip Stand                                        |
| <b>L AC-CP2</b>        | Cartridge Removal Pad                            |
| <b>M AC-BRUSH-P</b>    | Soft Brass Brush Cleaner (Pack of 6)             |
| <b>N MX-DHS</b>        | Dual Handle Support (use with dual heater SMTCs) |
| <b>O STSS-TEMPLATE</b> | SMTC Tip Selection Template                      |
| <b>P AC-TCASE</b>      | Tip Case for STTC/SSC (holds 10 tips)*           |
| <b>MX-FX2</b>          | Fume Extraction Tube and Clamp**                 |

\* Tips not included \*\* Not shown



## DESOLDERING ACCESSORIES

|                   |                                                    |
|-------------------|----------------------------------------------------|
| <b>Q MX-DCF1</b>  | DS1 Filter Pack: 15 chamber liners, 6 fume filters |
| <b>MX-DCF1L</b>   | DS1 Chamber Liners (Pack of 40)**                  |
| <b>MX-DCF1F</b>   | DS1 Fume Filters (Pack of 20)*                     |
| <b>R MX-DAR1</b>  | Air Regulator and Filter with Fittings             |
| <b>S AC-TC-P</b>  | Desolder Tip Cleaner (Pack of 12)                  |
| <b>T AC-CB1-P</b> | Desolder Chamber Cleaning Brush (Pack of 25)       |
| <b>U AC-CB2-P</b> | Desolder Tube Cleaning Brush (Pack of 6)           |
| <b>V MX-DVC1</b>  | Venturi Cartridge for Desolder Gun                 |
| <b>W MX-DSL1</b>  | DS1 Chamber Seal                                   |
| <b>X MX-DSL2</b>  | DS1 Cartridge Seal                                 |
| <b>Y MX-DSB</b>   | Desolder Gun Swivel Bushing                        |



## DESOLDERING MAINTENANCE KIT

|                   |                                                 |
|-------------------|-------------------------------------------------|
| <b>MX-DMK1</b>    | DS1 Maintenance Kit                             |
| <b>INCLUDES</b>   |                                                 |
| <b>Z</b>          | Long Phillips Screws (Pack of 2)***             |
| <b>AA</b>         | Short Phillips Screws (Pack of 4)***            |
| <b>BB MX-DSB</b>  | Desolder Gun Swivel Bushing                     |
| <b>CC</b>         | Hex Screws (Pack of 2)***                       |
| <b>DD MX-DLA</b>  | Desolder Gun Latch Adjustment (Pack of 10)      |
| <b>EE</b>         | Large Springs (Pack of 2)***                    |
| <b>FF</b>         | Nylon Screws (Pack of 2)***                     |
| <b>GG MX-DSL2</b> | DS1 Cartridge Seal (Pack of 2)                  |
| <b>HH</b>         | Hinge Pins (Pack of 4)***                       |
| <b>II</b>         | O-Rings (Pack of 2)***                          |
| <b>JJ MX-DSL1</b> | DS1 Chamber Seal (Pack of 2)                    |
| <b>KK</b>         | Small Springs (Pack of 6)***                    |
| <b>MX-DUC</b>     | DS1 Upper Chamber (Type II Desolder Tool only)* |

\*\* Not shown \*\*\* Not sold separately



## OTHER SYSTEM COMPONENTS

### POWER SUPPLY AND POWER METER

|                   |                                    |
|-------------------|------------------------------------|
| <b>MX-500P-11</b> | Two Port 100/120 VAC Power Supply  |
| <b>MX-500P-21</b> | Two Port 220/240 VAC Power Supply* |
| <b>MX-NPM</b>     | Net Power Meter                    |

\*220/240 VAC Power Supply does not include power cord.

MX-500



# SP200 Soldering System

## Economical Soldering System Cuts Costs, Not Corners

The SP200 Soldering System is the most cost-effective and easiest to use compact soldering system available today.

For flawless soldering, technicians need only select the correct tip cartridge, insert it into the hand-piece and switch on. As the unit works at a lower temperature than a conventional iron and requires no calibration, operators always apply the correct level of thermal energy needed to produce solder joints of the highest quality without risking component or PCB damage.

In addition, the system's design is extremely reliable, with very few parts that ever need repairing, ensuring that the SP200 Soldering System is practically maintenance-free.

Metcal's SP200 Soldering System, for through-hole soldering and SMT touch-up, is designed to perfectly complement our MX-500 Soldering, Desoldering & Rework System.



## SP200 SOLDERING SYSTEM

System Includes Power Supply With Power Cord\*, Hand-Piece With Cord, Workstand With Sponge And Cartridge Removal Pad

| Part No.        | Description                   |
|-----------------|-------------------------------|
| <b>SP200-11</b> | 115 VAC Soldering System      |
| <b>SP200-21</b> | 220/240 VAC Soldering System* |

\*220/240 VAC system does not include power cords

## ACCESSORIES & SPARE PARTS

|                   |                                           |
|-------------------|-------------------------------------------|
| <b>SP-PW1-10</b>  | Power Supply with Power Cord              |
| <b>SP-PW1-20</b>  | Power Supply with Power Cord*             |
| <b>AC-CP2</b>     | Cartridge Removal Pad                     |
| <b>AC-YS3-P</b>   | Workstand Sponge (Pack of 50)             |
| <b>AC-BRUSH-P</b> | Soft Brass Brush Cleaner (Pack of 6)      |
| <b>AC-TCASE</b>   | Tip Case (holds 10 tips)**                |
| <b>AC-TSTAND</b>  | Tip Stand                                 |
| <b>SP-HC1</b>     | ESD Solder Handle W/CP2 for SP200 Systems |
| <b>SP-OR</b>      | O-Ring Replacement Kit                    |
| <b>SP-WSK1</b>    | SP Workstand with YS3 Sponge              |
| <b>SP-CRADLE</b>  | Universal Cradle                          |

\*220/240 VAC system does not include power cords

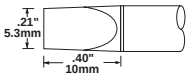
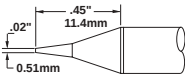
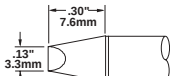
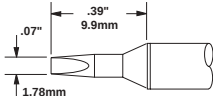
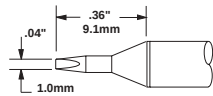
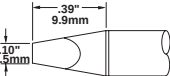
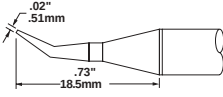
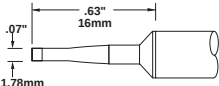
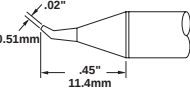
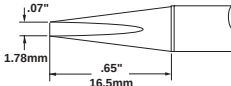
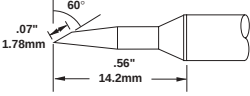
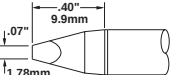
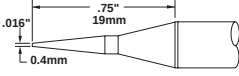
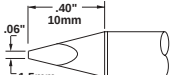
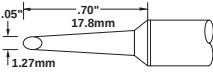
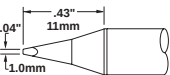
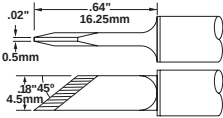
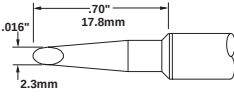
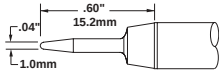
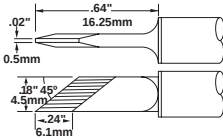
\*\*Tips not included



## Tip Cartridges For Soldering Applications

The SP200 Soldering System's tip cartridges are designed to suit a wide range of soldering applications. For optimum performance, operators should select the tip that allows maximum contact with the work surface. We suggest that you start with a 600 series tip cartridge.

### SP200 SOLDER TIP CARTRIDGES

|                                                                                     |                                                           |                                                                                     |                                                                              |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|    | <b>SSC-X17A</b><br>Extra Large Chisel<br>.21" (5.3mm)     |    | <b>SSC-X22A</b><br>Conical Sharp<br>.02" (0.51mm)                            |
|    | <b>SSC-X13A</b><br>Chisel 90°<br>.13" (3.3mm)             |    | <b>SSC-X72A</b><br>Conical Chisel<br>.07" (1.78mm)                           |
|    | <b>SSC-X46A</b><br>Long Reach Chisel<br>.12" (3.0mm)      |    | <b>SSC-X71A</b><br>Conical Chisel<br>.04" (1.0mm)                            |
|    | <b>SSC-X36A</b><br>Chisel 30°<br>.10" (2.5mm)             |    | <b>SSC-X54A</b><br>Sharp Bent 30°<br>.02" (0.51mm)                           |
|   | <b>SSC-X42A</b><br>Long Reach Chisel 60°<br>.07" (1.78mm) |   | <b>SSC-X26A</b><br>Sharp Bent 30°<br>.02" (0.51mm)                           |
|  | <b>SSC-X70A</b><br>Long Chisel<br>.07" (1.78mm)           |  | <b>SSC-X47A</b><br>Bevel 60°<br>.07" (1.78mm)                                |
|  | <b>SSC-X37A</b><br>Chisel 30°<br>.07" (1.78mm)            |  | <b>SSC-X45A</b><br>Bevel 60°<br>.016" (0.4mm)                                |
|  | <b>SSC-X38A</b><br>Chisel 30°<br>.06" (1.5mm)             |  | <b>SSC-X67A</b><br>Drag Soldering Tip<br>(Mini-Hoof)                         |
|  | <b>SSC-X25A</b><br>Chisel 30°<br>.04" (1.0mm)             |  | <b>SSC-X61A</b><br>Drag Soldering Tip<br>(Knife)                             |
|  | <b>SSC-X74A</b><br>Conical Sharp<br>.055" (1.4mm)         |  | <b>SSC-X39A</b><br>Drag Soldering Tip<br>(Hoof)                              |
|  | <b>SSC-X01A</b><br>Conical Sharp<br>.04" (1.0mm)          |  | <b>SSC-X73A</b><br>Drag Soldering Tip<br>(Increased Tinned Area, .24" 6.1mm) |

# SP440

## Self-Contained Desoldering System

### Powerful, Portable Through-Hole Rework

Metcal's SP440 Self-Contained Desoldering System is specifically designed for through-hole rework, delivering powerful and portable desoldering.

The system's built-in vacuum pump clears through-holes quickly and completely, making it ideally suited to areas without shop air. This lightweight, ergonomic pencil grip desoldering tool maximizes operator productivity and reduces the risk of damage to components and substrates.



Using SmartHeat® technology, the SP440 Self-Contained Desoldering System supplies higher Watt density power at lower temperatures than other desoldering tools with no overshoot. Its 50-Watt power rating and tips, specifically designed to maximize heat transfer, make the system ideal for heavy load desoldering of components on ground-planes and multi-layer PCBs.

## Advanced Operating And Safety Features

The SP440 Self-Contained Desoldering System has a number of features, which combine to ensure that it is the most reliable and cost-effective solution available for self-contained desoldering. The system's time-out feature switches off the power supply after a 30-minute redundancy period, thus significantly extending tip life and conserving energy.

Coupled with these features are elements that reflect our dedication to operator and process safety. The SP440 Self-Contained Desoldering System's ESD cable and vacuum line are burn-proof, which safeguards operators from injury and prevents damage to expensive process elements. The unit's readily accessible paper solder collection chamber renders the former glass cartridges obsolete and speeds the desoldering process.

## Desoldering Tips

The SP440 Self-Contained Desoldering System's tips are available in two temperature ranges: 600 and 700 series. To ensure the best results, choose a tip with an interior diameter only slightly larger than that of the lead on the component to be desoldered.



### TIP RANGE

DIAMETER IN INCHES (mm)

| Part No.       | A           | B           |
|----------------|-------------|-------------|
| <b>SDC-X02</b> | .025 (0.64) | .055 (1.40) |
| <b>SDC-X03</b> | .030 (0.76) | .060 (1.52) |
| <b>SDC-X04</b> | .040 (1.02) | .070 (1.78) |
| <b>SDC-X05</b> | .050 (1.27) | .080 (2.03) |
| <b>SDC-X06</b> | .060 (1.52) | .090 (2.29) |
| <b>SDC-X07</b> | .095 (2.41) | .125 (3.18) |

600 SERIES X=6 700 SERIES X=7

## SP440 DESOLDERING SYSTEM

System Includes Power Supply With Power Cord\*, Hand-Piece Assembly, Workstand Kit With Sponge, Tip Cleaners And Cartridge Removal Pad

|                 |                                                |
|-----------------|------------------------------------------------|
| <b>SP440-11</b> | 115 VAC Self-Contained Desoldering System      |
| <b>SP440-21</b> | 220/240 VAC Self-Contained Desoldering System* |

\*220/240 VAC system does not include power cords

## ACCESSORIES & SPARE PARTS

|                  |                                                  |
|------------------|--------------------------------------------------|
| <b>SP-PW3-11</b> | Power Supply with Power Cord                     |
| <b>SP-PW3-21</b> | Power Supply with Power Cord*                    |
| <b>DP-DSG2</b>   | Hand-Piece Assembly                              |
|                  | (handle, cord, vac line, coil assembly)          |
| <b>DP-WSK2</b>   | SP440 Workstand Kit with YS3 Sponge              |
| <b>DP-SL3</b>    | Front Seal for DSG2                              |
| <b>AC-TC-P</b>   | Tip Cleaners (Pack of 12)                        |
| <b>AC-CP2</b>    | Cartridge Removal Pad                            |
| <b>DP-CA2</b>    | Coil Assembly                                    |
| <b>DP-CC</b>     | Solder Collection Chamber for DSG2               |
| <b>DP-CF</b>     | Filter Pack (12 fume filters, 24 chamber liners) |
| <b>DP-LF</b>     | Filter Pack (5 inline filters)                   |
| <b>DP-VB1</b>    | Valve Body Assembly (clip, valve, ESD vac. hose) |
| <b>DP-VL1</b>    | Vacuum Line, ESD                                 |
| <b>DP-WSC2</b>   | SP440 Cradle                                     |
| <b>AC-YS3-P</b>  | Workstand Sponge (Pack of 50)                    |

\*220/240 VAC system does not include power cords

SP440



# QX2 Convection Rework System

## Convection Rework Made Easy

The QX2 Convection Rework System combines sophisticated process control and wide-ranging capabilities with a user-friendly, ergonomic design to speed and simplify the rework process. With its constant temperature and variable power, the QX2 Convection Rework System minimizes the risk of thermal damage, providing a safe environment for delicate components and substrates.

In comparison with other convection systems, the simplicity and power of this machine is clear. Simplified push-button controls and advanced automation reduce the need for extended operator training while greatly reducing the likelihood of human error. Older convection systems are difficult to operate and require extensive user training. This is not the case with the QX2 Convection Rework System. Even its initial set-up is a fast and easy process, requiring no special tools.

**Please note:** The QX2 Convection Rework System is shown below alongside a Metcal BVX-100 Fume Extraction System which is available separately.



## Precise Nozzles Increase Flexibility

A wide range of focused convection nozzles is available for the QX2 Convection Rework System. These direct heat precisely where it is needed. With Metcal's quick-release system, these nozzles can be changed in seconds, for unsurpassed speed and flexibility.



## Streamlined Operation

The QX2 Convection Rework System's vacuum pick-up gently removes components after reflow. The time of each removal cycle is stored and displayed as a guide to help operators quickly establish a minimum time for component placement. The system then automatically turns off the heat to minimize the risk of thermal shock to adjacent components or to the PCB itself. An integrated under-board pre-heater is also available to prevent the warping of large boards during rework.

Operators can fine-tune the power by adjusting the airflow rate, but to minimize thermal stress, the system automatically sustains the heater exhaust temperature while maintaining a consistently low set point temperature. To accommodate any process change, including the use of new soldering alloys, the manufacturing engineer can easily reprogram this set temperature.

## Advanced Process Control

The system's digital controller clearly displays critical parameters during operation while its automated functions reduce process variability. Its expanded level of process control provides superior quality of operation and final product, with less scrap and greater throughput.



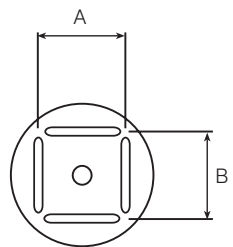
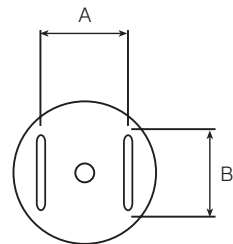
### Remote Controller Functions

- Timer:** By counting up during removal and down during attachment, the timer removes subjective guesswork from the rework process.
  
- Temperature Display:** Displays the temperature of the heater exhaust or the temperature measured by an auxiliary thermocouple in either °F or °C. The heater exhaust temperature is preset at 662°F (350°C) and may be reset by the process engineer to anywhere between 482°F (250°C) and 842°F (450°C) by entering an unlock code.
  
- Attach Mode:** This mode reflows a new component to the PCB. By adjusting the time stored in Remove mode with the + - keys, you can ensure an appropriate reflow time, which may be adjusted on the fly if desired.
  
- Airflow Selector:** The airflow selector determines the rate at which thermal energy is transferred to the component.
  
- Remove Mode:** This mode activates the vacuum pick-up, which applies a gentle upward force to the component. When component lift off is sensed, the heater is automatically turned off.
  
- Start/Stop Button:** Pressing the Start/Stop button initiates or ends the Remove or Attach cycle. In Remove mode, stopping the cycle also shuts off the vacuum, to release components after lift off.

## QX2 Convection Rework Nozzles

Metcal has a comprehensive range of nozzles for the QX2 Convection Rework System. For non-standard components we offer a custom nozzle program. Please contact your local Metcal representative for more information about custom nozzles.

### STANDARD NOZZLE RANGE



#### DIMENSIONS IN INCHES (mm)

| Part No.        | Component Types                       | A         | B         |
|-----------------|---------------------------------------|-----------|-----------|
| <b>NZ-D1113</b> | Nozzle Dual                           | 0.43 (11) | 0.51 (13) |
| <b>NZ-D1116</b> | Nozzle Dual (for SOL 28)              | 0.43 (11) | 0.63 (16) |
| <b>NZ-D1420</b> | Nozzle Dual                           | 0.55 (14) | 0.79 (20) |
| <b>NZ-D2109</b> | Nozzle Dual                           | 0.35 (09) | 0.83 (21) |
| <b>NZ-D2113</b> | Nozzle Dual                           | 0.51 (13) | 0.83 (21) |
| <b>NZ-Q11</b>   | Nozzle Quad (for PLCC 20)             | 0.43 (11) | 0.43 (11) |
| <b>NZ-Q13</b>   | Nozzle Quad (for PLCC 28)             | 0.51 (13) | 0.51 (13) |
| <b>NZ-Q1415</b> | Nozzle Quad                           | 0.55 (14) | 0.60 (15) |
| <b>NZ-Q17</b>   | Nozzle Quad                           | 0.67 (17) | 0.67 (17) |
| <b>NZ-Q18</b>   | Nozzle Quad (for QFP 80)              | 0.71 (18) | 0.71 (18) |
| <b>NZ-Q19</b>   | Nozzle Quad (for PLCC 44)             | 0.75 (19) | 0.75 (19) |
| <b>NZ-Q1925</b> | Nozzle Quad (for QFP 100)             | 0.75 (19) | 0.98 (25) |
| <b>NZ-Q22</b>   | Nozzle Quad                           | 0.87 (22) | 0.87 (22) |
| <b>NZ-Q23</b>   | Nozzle Quad                           | 0.91 (23) | 0.91 (23) |
| <b>NZ-Q27</b>   | Nozzle Quad (for PLCC 68)             | 1.06 (27) | 1.06 (27) |
| <b>NZ-Q28</b>   | Nozzle Quad                           | 1.10 (28) | 1.10 (28) |
| <b>NZ-Q32</b>   | Nozzle Quad (for PLCC 84, QFP 208)    | 1.26 (32) | 1.26 (32) |
| <b>NZ-Q33</b>   | Nozzle Quad (for QFP 120/128/144/160) | 1.30 (33) | 1.30 (33) |
| <b>NZ-Q35</b>   | Nozzle Quad                           | 1.38 (35) | 1.38 (35) |
| <b>NZ-Q38</b>   | Nozzle Quad                           | 1.50 (38) | 1.50 (38) |
| <b>NZ-Q43</b>   | Nozzle Quad                           | 1.70 (43) | 1.70 (43) |

## Box Reflow Nozzles

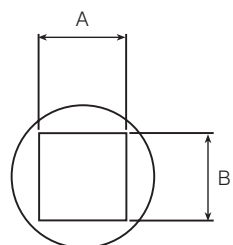
In addition to our broad range of standard nozzles, we also offer a range of box reflow nozzles designed for the removal of shielding cans, connectors and other square components.



### BOX REFLOW NOZZLES

#### INTERNAL DIMENSIONS IN INCHES (mm)

| Part No.      | Component Types | A         | B         |
|---------------|-----------------|-----------|-----------|
| <b>NZ-B23</b> | Nozzle Box      | 0.91 (23) | 0.91 (23) |
| <b>NZ-B27</b> | Nozzle Box      | 1.06 (27) | 1.06 (27) |
| <b>NZ-B33</b> | Nozzle Box      | 1.30 (33) | 1.30 (33) |
| <b>NZ-B35</b> | Nozzle Box      | 1.38 (35) | 1.38 (35) |
| <b>NZ-B40</b> | Nozzle Box      | 1.57 (40) | 1.57 (40) |
| <b>NZ-B44</b> | Nozzle Box      | 1.73 (44) | 1.73 (44) |



# QX2 Convection Rework System

## TECHNICAL SPECIFICATIONS

|                                           | QX2-S-11              | QX2-S-21              |
|-------------------------------------------|-----------------------|-----------------------|
| <b>Input Voltage</b>                      | 90-132 VAC, 50/60 Hz  | 220-260 VAC, 50/60 Hz |
| <b>Convection System</b>                  |                       |                       |
| Heater                                    | 550 W                 | 550 W                 |
| Rated Current                             | 5 Amps                | 2.5 Amps              |
| Airflow                                   | 20-50 l/min           | 20-50 l/min           |
| Source Temperature<br>(Default Set Point) | 662°F                 | 350°C                 |
| Source Temperature Range                  | 482°F - 842°F         | 250°C - 450°C         |
| <b>Pre-Heater</b>                         |                       |                       |
| Heater                                    | 950 W                 | 950 W                 |
| Rated Current                             | 8.5 Amps              | 4.5 Amps              |
| Heating Surface                           | 6" x 6"               | 152mm x 152mm         |
| Board Temperature Range                   | 194°F - 248°F         | 90°C - 120°C          |
| <b>Board Holder</b>                       |                       |                       |
| Minimum Board Size                        | 2" x 2"               | 50mm x 50mm           |
| Maximum Board Size                        | 14" x 18"             | 360mm x 460mm         |
| <b>Weights</b>                            |                       |                       |
| Convection Rework System                  | 18 lb                 | 8.2 kg                |
| Board Holder                              | 5.5 lb                | 2.5 kg                |
| Pre-Heater                                | 6.4 lb                | 2.9 kg                |
| <b>Outer Dimensions (W x D x H)</b>       |                       |                       |
| Convection Rework System<br>(Operating)   | 11.5" x 20.5" x 14.2" | 292mm x 521mm x 361mm |
| (Stored)                                  | 11.5" x 16.8" x 21.0" | 292mm x 427mm x 533mm |
| Board Holder                              | 20.5" x 15.0" x 5.0"  | 521mm x 381mm x 127mm |
| Pre-Heater                                | 8.2" x 15.5" x 2.5"   | 208mm x 394mm x 64mm  |

## FEATURES

|                                  |                                                                                                                                                                                                                              |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Vacuum Operator</b>           | Self-contained<br>Moveable controller with: <ul style="list-style-type: none"> <li>• Start/Stop button</li> <li>• Airflow control</li> <li>• Time control</li> <li>• LCD display</li> <li>• Remove/attach control</li> </ul> |
| <b>Component Removal</b>         | Automatic component lift off<br>and heater shut off                                                                                                                                                                          |
| <b>Component Attachment</b>      | Manual, timer controlled                                                                                                                                                                                                     |
| <b>Nozzle Attachment/Removal</b> | Push on, quick-release                                                                                                                                                                                                       |
| <b>Other</b>                     | Auxiliary thermocouple port for<br>component temperature monitoring                                                                                                                                                          |

## SYSTEMS

|                   |                                                                  |
|-------------------|------------------------------------------------------------------|
| <b>QX2-S-11</b>   | 115V Convection Rework System                                    |
| <b>QX2-SBH-11</b> | 115V Convection Rework System<br>with Board Holder               |
| <b>QX2-SBP-11</b> | 115V Convection Rework System<br>with Board Holder & Pre-Heater  |
| <b>QX2-S-21</b>   | 230V Convection Rework System*                                   |
| <b>QX2-SBH-21</b> | 230V Convection Rework System<br>with Board Holder*              |
| <b>QX2-SBP-21</b> | 230V Convection Rework System<br>with Board Holder & Pre-Heater* |

### 115V CONVECTION REWORK SYSTEM INCLUDES:

|                 |                          |
|-----------------|--------------------------|
| <b>QX2-P-11</b> | Power Supply, 115V       |
| <b>QX2-CT</b>   | QX2 Controller           |
| <b>AC-WT</b>    | Work Tray                |
| <b>AC-RP</b>    | Nozzle Removal Pad       |
| <b>AC-CC1</b>   | QX2 Controller Cable     |
| <b>AC-CC2</b>   | Pre-Heater Control Cable |
| <b>AC-VC</b>    | Vacuum Cup Kit           |

### 230V CONVECTION REWORK SYSTEM INCLUDES:

|                 |                          |
|-----------------|--------------------------|
| <b>QX2-P-21</b> | Power Supply 230V*       |
| <b>QX2-CT</b>   | QX2 Controller           |
| <b>AC-WT</b>    | Work Tray                |
| <b>AC-RP</b>    | Nozzle Removal Pad       |
| <b>AC-CC1</b>   | QX2 Controller Cable     |
| <b>AC-CC2</b>   | Pre-Heater Control Cable |
| <b>AC-VC</b>    | Vacuum Cup Kit           |

## ACCESSORIES

|                 |                                      |
|-----------------|--------------------------------------|
| <b>AC-BH</b>    | Board Holder                         |
| <b>AC-BP-11</b> | Board Holder/Pre-Heater<br>Kit 115V  |
| <b>AC-BP-21</b> | Board Holder/Pre-Heater<br>Kit 230V* |
| <b>AC-PH-11</b> | Pre-Heater 115V                      |
| <b>AC-PH-21</b> | Pre-Heater 230V*                     |
| <b>AC-BS</b>    | Board Support                        |

\* 230V systems do not include power cords

# SMT-1160

## SMT-1160 Hot Air Pencil

SMT  
1160



### Non-Contact Hot Air Rework Station

With its precise forced air convection, Metcal's SMT-1160 Hot Air Pencil is designed for those rework applications requiring very low thermal stress, including SMDs and temperature-sensitive ceramic capacitors. This non-contact system, with variable temperature flow, can also capably remove SMT chip capacitors and SOICs.

The SMT-1160 Hot Air Pencil is equipped with a broad range of features for assured effectiveness and sensitivity of operation. These include an ESD-safe housing and hand-piece, variable airflow control, variable closed-loop temperature control, a nitrogen input facility to suit inert soldering applications and specialized split, fan and fine nozzle options.

The SMT-1160 Hot Air Pencil's capacity for non-contact soldering avoids alignment disruption and eliminates the risk of thermal shock to components.

### SMT-1160 HOT AIR PENCIL

System Includes Hot Air Pencil Hand-Piece, 3 Piece Nozzle Kit (NK-1060A), Workstand And Variable Temperature Module

**SMT-1161-V** 115V Hot Air Pencil Rework Station

**SMT-1162-V** 230V Hot Air Pencil Rework Station



### ACCESSORIES & SPARE PARTS

|                  |                                                   |
|------------------|---------------------------------------------------|
| <b>SHP-1060A</b> | Hot Air Pencil Hand-Piece                         |
| <b>VP-50</b>     | Vacuum Pencil with Nozzle kit                     |
| <b>VTM-1</b>     | Variable Temperature Module                       |
| <b>S6-025</b>    | Fine Nozzle 0.025" (0.64mm)                       |
| <b>S6-FAN</b>    | Fan Nozzle 0.347" x 0.030" (8.8mm x 0.76mm)       |
| <b>S6-SOIC</b>   | Dual Nozzle 0.265" (6.7mm)                        |
| <b>S6-SOL</b>    | Dual Nozzle 0.428" (10.9mm)                       |
| <b>NK-1060A</b>  | 3 Piece Nozzle Kit (includes 16812, 16813, 16846) |
| <b>17319S</b>    | Pump Assembly                                     |
| <b>16806</b>     | Collar Sub-Assembly SHP-1060A                     |
| <b>16844</b>     | Nipple Assembly SHP-1060A                         |
| <b>AC-HAPWS</b>  | Workstand                                         |
| <b>AC-HAPWSC</b> | Replacement Workstand Cradle                      |
| <b>16812</b>     | Nozzle, Oval, .101" (2.57mm)                      |
| <b>16813</b>     | Nozzle, Round, .080" (2.03mm)                     |
| <b>16846</b>     | Nozzle, Sharp 30°, .080" (2.03 mm)                |



# Metcal

## Metcal Product Lines

### Array Package Rework

Metcal Array Package Rework systems are advanced, versatile machines offering the repeatability, accuracy and thermal control essential for the safe and effective rework of today's leading edge BGA, CSP, Land Grid Array (LGA), micro SMD, Micro-lead Frame (MLF) and Bumped Chip Component packages. For more information on the full line of Metcal Array Package Rework products, visit [www.metcal.com](http://www.metcal.com), or contact your local Metcal representative.



### Fume Extraction

For the safety of your operators and working environment, Metcal offers a full line of fume extraction systems. From volume to tip to bench-top fume extraction, Metcal has systems to purify the air by filtering harmful smoke and particulates from the working area. Fume extraction systems are also useful for extracting potentially noxious fumes from the use of certain adhesives and chemicals on the workbench. For more information on the full line of Metcal Fume Extraction products, visit [www.metcal.com](http://www.metcal.com), or contact your local Metcal representative.



# Global

## Metcal Global Locations

Menlo Park, California, is home to Metcal's corporate headquarters, and the central location for research and development, manufacturing and administration.

To meet the needs of customers throughout the world, Metcal has sales, service and distribution centers in North America, Asia, and Europe. Drawing on its organizational strengths and industry experience, Metcal's distribution network offers seamless, proactive support and access to the company's full range of products - around the globe.

Wherever electronics manufacturing facilities are located, Metcal's network of expertly trained distributors is there, to supply essential technical support and advanced process solutions.



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