METCAL

ELECTRONICS BENCH TOOL SOLUTIONS

HAND SOLDERING, DESOLDERING AND REWORK

CONVECTION REWORK

FUME EXTRACTION

FLUID DISPENSING

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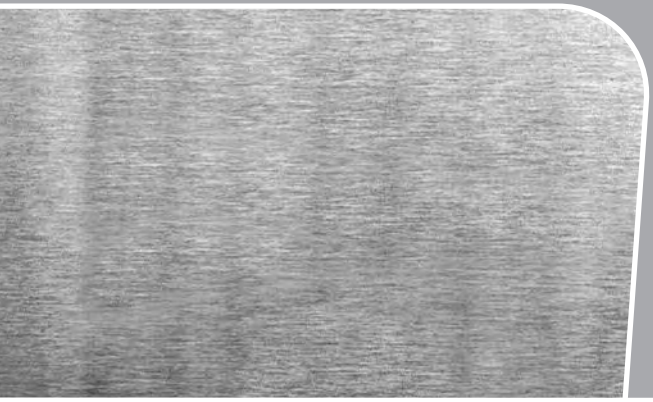
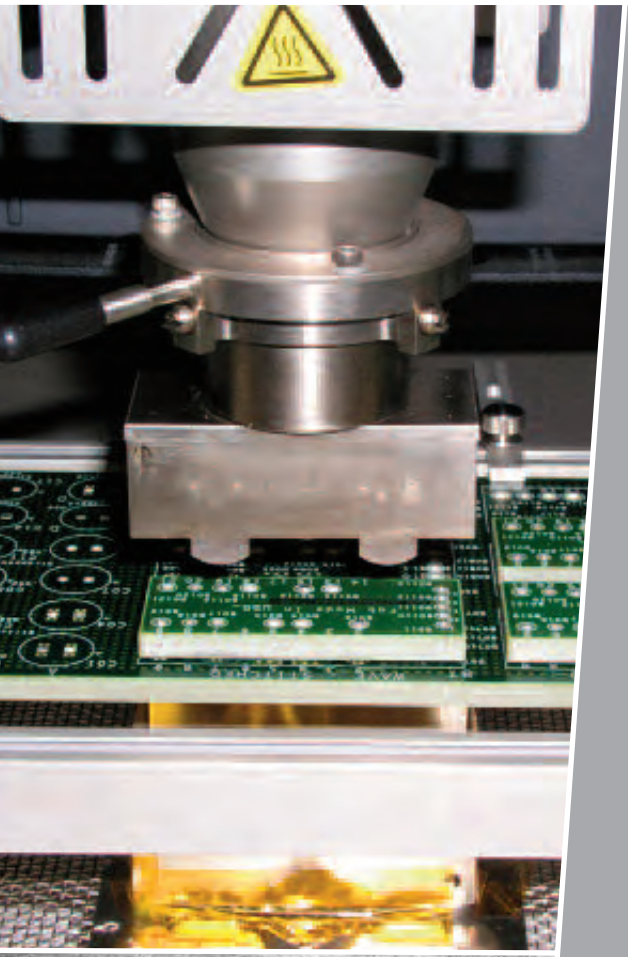


HAND SOLDERING

CONVECTION REW



DELIVERING CORE TECHNOLOGICAL ADVANTAGES WITH BEST-IN-CLASS PERFORMANCE.

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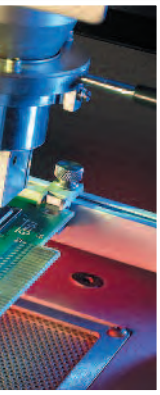
TRAINING ADVANTAGE - APPLICATION ADVANTAGE - PRODUCTIVITY ADVANTAGE



ORK FUME EXTRACTION FLUID DISPENSING

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We are committed to understanding the product needs of our customers, and supply professional grade products that are innovative, reliable, price competitive and easy to use.

METCAL

Metcal is part of the OK International family and provides expert product support and responsive customer service, with localization to meet regional market needs.

SERVING THE ELECTRONICS ASSEMBLY INDUSTRY FOR OVER 30 YEARS

Hand Soldering, Desoldering &

Single Port		Dual Port Switchable	
PS-900	MFR-1100 Series	MFR-1300 Series	MFR-2200 Series

M U L T I F U N C T I O N

PS-900 Tip Hand-Piece

MFR Hand-pieces

SmartHeat® Technology

OK International is the original supplier of SmartHeat® Soldering Technology. SmartHeat® senses the exact thermal requirement for each solder joint and responds by delivering the precise amount of thermal energy required to create a reliable connection.

The result is a high degree of control without resorting to higher tip idle temperatures required by conventional heater process technologies. Consequently, the risk of component and board damage is minimized. This is especially important with the greater thermal demands required by lead-free applications.

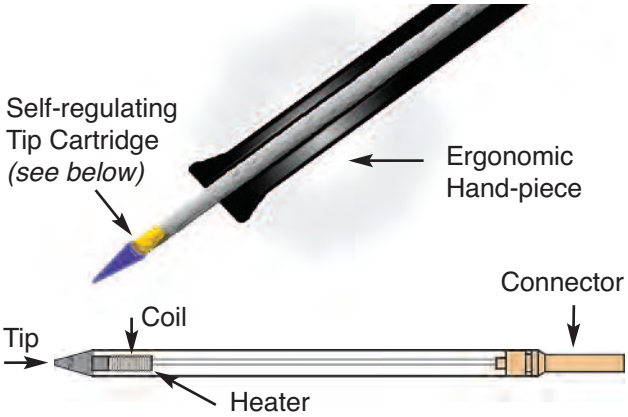
Powered by METCAL SmartHeat®

Rework Systems Overview

Single Port Selectable	Dual Port Simultaneous
MX-500 Series	MX-5200 Series

R E W O R K S Y S T E M S

MX Hand-pieces



SmartHeat® Soldering Technology = Variable Power / Fixed Temperature

- SmartHeat® tips and cartridges sense the load and instantly deliver the right amount of heat directly to the solder joint.
- The required solder joint temperature drives the heating process, as opposed to the idle tip temperature setting (as in a conventional iron).
- Operates at lower and safer temperatures. Power is delivered in proportion to the load. SmartHeat® technology eliminates overshoot.
- No calibration required - saves money and eliminates system down-time.

Watch our SmartHeat® Video on YouTube or www.metcal.com

MX-5200 Dual Simultaneous

Soldering, Desoldering & Rework Systems

The MX-5200 Soldering, Desoldering and Rework Series has the same increased power and process control as the MX-5000 Series, now with dual-simultaneous ports.

For two users or single user with dual applications. The MX-5200 can be operated with two hand-pieces dynamically sharing the 80 watts output power based on demand adding even more application flexibility and speed.

Fast time-to-recovery. Delivers increased production rates and throughput no matter the application. The challenges of high mass components, multilayered boards and lead-free solders are seamlessly tackled by the MX-5200 super-charged power supply.

SmartHeat process control. The technology built-in every Metcal System means that soldering and rework are always performed at safe, controlled temperatures. Metcal users know that moderate fixed temperatures, where power is varied, provides the best assurance for a well controlled soldering and rework process.

TipSaver™ Workstand improves tip life as well as operator ergonomics. This "Auto-Sleep" Workstand reduces the power to the hand-piece when it is placed in the Metcal TipSaver™ Workstand. Reduction in power will substantially decrease tip oxidation, a major cause of reduced tip life.

Ergonomic Hand-pieces. The aluminium hand-pieces for soldering and rework provides a cooler, lighter weight and more comfortable feel for the operator. And, the Metcal UltraFine™ Hand-piece features a new generation of extremely fine diameter cartridges in a slim profiled handle. Both of these hand-pieces uniquely offer users a choice of three interchangeable grips.

ESD safe and features incoming AC ground monitoring circuitry. The AC (mains) ground monitor detects power line ground failure, immediately alerting the operator and shuting down the system. Only after the power line ground has been restored can the MX-5200 be restarted and soldering operations can be resumed.

Built-in power indication meter with digital display and bar graph that visually provides the operator with feedback on the status of the soldering operation. Whether using a large mass rework tip for QFPs or a fine-point soldering tip, the power indication meter is a valuable resource for making consistent, acceptable solder joints.

Four mode indicators:

Ready Mode: The hand-piece is removed from the workstand, ready for soldering or rework.

Power Mode: The hand-piece's tip is in contact with the load. The power indication meter provides graphical and numeric feedback on the system power output.

Sleep Mode : The hand-piece is at rest in the workstand; power is reduced to the hand-piece.

Powersave Mode: Power to the hand-piece is shut off. This programmable sleep feature allows an operator to set the desired time to cut off power to the hand-piece (from 10 to 120 min.).

MX-5200 Dual Simultaneous

Soldering, Desoldering & Rework Systems

SYSTEMS CONFIGURATION

PART NUMBER	MX-PS5200 Power Supply	Hand-pieces				TipSaver™ Workstands		
		MX-H1-AV	MX-H2-UF	MX-PTZ	MX-DS1	MX-W1AV	MX-W4PT	MX-W5DS
MX-5210	✔	✔				✔		
MX-5211	✔	✔ ✔				✔ ✔		
MX-5220	✔		✔			✔		
MX-5241	✔	✔		✔		✔	✔	
MX-5250	✔				✔			✔
MX-5251	✔	✔			✔	✔		✔

SYSTEMS WITH ONE HAND-PIECE

MX-5210 Soldering and Rework System
Configured with the Advanced™ Hand-piece. Highly effective for soldering applications including: lead-free, high mass components or boards, thermally sensitive components requiring low operating temperature, high volume production soldering and touch-up soldering operations.

Soldering cartridges: STTC Series and SMTC Series

MX-5220 UltraFine™ Soldering System
Configured with the UltraFine™ Soldering Hand-piece which is a speciality tool for soldering and touch-up of very small components, restricted access or high density component packaging on a PCB.

Soldering cartridges: UFTC cartridges featuring small tip geometries and low mass, suited for small part soldering.

MX-5250 Plated-Through-Hole Component Desoldering System
Includes the MX-DS1 Desoldering hand-piece designed for through-hole desoldering.

Desoldering cartridges: STDC Series provides fast, high quality results

NOTE: Unit requires shop air for desoldering.

SYSTEMS WITH TWO

MX-5211 Soldering and Rework System
Same features as MX-5210 but configured with two Advanced™ Hand-pieces and two TipSaver™ Workstands.

Best Seller

Soldering cartridges: STTC Series and SMTC Series

MX-5241 Precision Tweezers, Soldering and Rework System
Combines both the Advanced™ Hand-piece and the Precision Tweezers Hand-piece. Users get maximum application flexibility for soldering and reworking the widest range of surface mount components.

Tweezer cartridges: PTTC Series.
Soldering Cartridges: STTC and SMTC Series

MX-5251 Soldering, Desoldering and Rework System
For through-hole desoldering, general soldering, and SMD rework applications. Includes two hand-pieces: the Advanced™ Hand-piece and the MX-DS1 Desoldering hand-piece. Ideal for mixed technology boards. Provides versatility for adressing soldering & rework tasks.

Desoldering cartridges: STDC Series
Soldering cartridges: STTC and SMTC Series.

NOTE: Unit requires shop air for desoldering.

MX-500 Dual Switchable Output

Soldering, Desoldering & Rework Systems

Metcal's MX-500 Soldering and Rework System has been reimagined, adding features and a new look to a bench top icon. The system utilizes SmartHeat® Technology, where 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. The tip temperature is determined by the inherent metallurgical properties of the heater; no external adjustment or equipment is required. The MX-500 retains switchable dual port, 40W operation while introducing numerous new features in a new housing.

Key Features & Benefits

- A built in Net Power Meter which will display a graphical and numerical representation of the power applied to the cartridge.
- User Programmable PowerSave Mode: the time to enter PowerSave Mode is adjustable from 10 to 120 minutes.
- Ground Fault Interrupt: AC ground monitor detects power line ground failures and immediately alerts the operator and shuts down the system.
- Universal Power Supply: automatically senses the input line voltage and adjusts accordingly, which allows for worldwide operation without adaptors or a change in performance.
- Full compatibility with existing and previous MX upgrade kits, tip-cartridges, hand-pieces and accessories.

System with one hand-piece

MX-500S Soldering / Rework System
Power supply, MX-RM3E soldering and rework hand-piece and WS1 sleeper workstand

Soldering cartridges:
STTC Series and SMTC Series

MX-500AV Soldering / Rework System
Power supply, MX-H1-AV Advanced™ hand-piece and MX-W1AV workstand

Soldering cartridges:
STTC Series and SMTC Series

MX-500UF Ultrafine™ Soldering System
Power supply, MX-H2-UF Ultrafine™ hand-piece and MX-W1AV workstand

Soldering cartridges:
UFTC Series

Systems with two hand-pieces

MX-500SPT Rework System
Power supply, MX-PTZ precision tweezer hand-piece with MX-W4PT TipSaver workstand and MX-RM3E soldering and rework hand-piece and WS1 sleeper workstand.

Tweezer cartridges:
PTTC Series.
Soldering Cartridges:
STTC and SMTC Series

MX-500DS Desoldering System
Power supply, MX-DS1 desoldering hand-piece with MX-W5DS TipSaver workstand and MX-RM3E soldering and rework hand-piece and WS1 sleeper workstand.

Desoldering cartridges:
STDC Series
Soldering cartridges:
STTC and SMTC Series.
NOTE: Unit requires shop air for desoldering.

Power Supply with no hand-piece

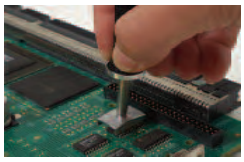
MX-500P
MX-500 dual port switchable power supply

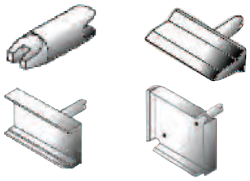
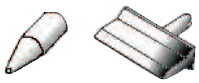
NOTE: Additional Hand-pieces and Upgrade Kits are available, see pages 7 and 8

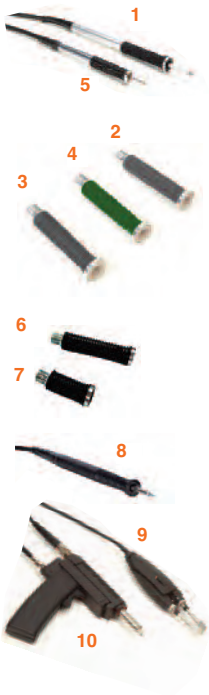
MX Series Hand-pieces

Soldering, Desoldering & Rework Systems

The MX-500 AND 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. The hand-pieces below are compatible with existing MX-500 and MX-5200 Systems as well as backward compatible with previous MX-500 and MX-5000 Systems



Hand-pieces	Cartridges	
MX-RM3E Metcal Hand-piece		**STTC Soldering Cartridges See pages 11-12.**
MX-H1-AV Metcal Advanced™ Hand-piece		**SMTC Rework Cartridges See pages 14-15.**
MX-H2-UF Metcal UltraFine™ Hand-piece		**UFTC Ultra Fine Soldering Cartridges. See page 13.**
MX-PTZ Metcal Precision Tweezer Hand-piece		**PTTC Tweezer Cartridges. See page 17.** Also available are TATC Cartridges for the previous TALON hand-piece and the existing MX-TALON-01 upgrade kit. See page 15.
MX-DS1 Metcal Desoldering Hand-piece		**STDC Desoldering Cartridges. See page 18.**



Hand-pieces and Grips		
MX-H1-AV	1	Metcal Advanced™ Hand-piece with cord, soldering and rework, two grips included (see *)
MX-H1GR	2	Grip Metcal Advanced™ Hand-piece with black sleeve in ring pattern (*)
MX-H1GS	3	Grip Metcal Advanced™ Hand-piece with black scallop pattern
MX-H1GKG	4	Grip Metcal Advanced™ Hand-piece with green knob pattern (*)
MX-H1-BSR-5		Replacement Sleeve only, black ring pattern (pack of 5) - For MX-H1-AV and MX-H1GR
MX-H1-BSS-5		Replacement Sleeve only, black scallop pattern (pack of 5) - For MX-H1-AV and MX-H1GS
MX-H1-GSK-5		Replacement Sleeve only, green knob pattern (pack of 5) - For MX-H1-AV and MX-H1GKG
MX-H2-UF	5	Metcal UltraFine™ Hand-piece with cord, fine soldering, two grips included (see **)
MX-H2GR	6	Grip Metcal UltraFine™ Hand-piece with black sleeve in ring pattern (**)
MX-H2GRS	7	Short grip Metcal UltraFine™ Hand-piece with black sleeve in ring pattern
MX-H2GS		Grip Metcal UltraFine™ Hand-piece with black sleeve in scallop pattern
MX-H2GKG		Grip Metcal UltraFine™ Hand-piece with green sleeve in knob pattern (**)
MX-H2-BSR-5		Replacement Sleeve only, black ring pattern (pack of 5) - For MX-H2-UF and MX-H2GR
MX-H2-BSS-5		Replacement Sleeve only, black ring pattern (pack of 5) - For MX-H2-UF and MX-H2GS
MX-H2-GSK-5		Replacement Sleeve only, black ring pattern (pack of 5) - For MX-H2-UF and MX-H2GKG
MX-RM3E	8	Metcal Soldering / Rework Hand-piece
MX-PTZ	9	Metcal Precision Tweezer Hand-piece, SMD rework
MX-DS1	10	Metcal Desoldering Hand-piece
MX-RM8E		Metcal Desoldering Hand-piece Cord for MX-DS1
MX-RM5E		Standard Robotic cable (1.83m / 6ft) with connector for Soldering/Rework cartridges
MX-RM6E		Metcal Soldering / Rework Hand-piece for long reach cartridge access

NOTE: Cartridges are not included with hand-pieces. A cartridge removal pad (MX-CP1 see page 8) is included with every hand-piece.

MX Series Accessories

Workstands and Accessories		
MX-W1AV	1	Metcal TipSaver™ Workstand, for Metcal Advanced™ and UltraFine™ Hand-pieces
MX-W1CR		Cradle for TipSaver™ Workstand, Advanced™ and UltraFine™ Hand-pieces, incl. knobs
MX-W4PT	2	Metcal TipSaver™ Workstand, for MX-PTZ Hand-piece
MX-W4CR		Cradle for Metcal TipSaver™ Workstand, MX-PTZ Hand-piece, includes knobs
MX-W5DS		Metcal TipSaver™ Workstand, for MX-DS1 Hand-piece
MX-W5CR		Cradle for Metcal TipSaver™ Workstand, MX-DS1 Hand-piece, includes knobs
WS1	3	Sleeper Soldering Workstand for MX-RM3E hand-piece
WST		Talon Workstand for MX-TALON hand-piece
AC-Y10	4	Yellow sponge, pack of 10
AC-YS3-P		Yellow sponge, pack of 50
AC-BP	5	Brass pad, pack of 10
AC-BRUSH		Soft Brass Brush
MX-CP1	7	Cartridge removal pad
AC-CK2		Green Lead Free identification ring for STTC cartridges (pack of 50)

Accessories for MX-DS1 Desoldering Hand-piece		
MX-DCF1		Chamber Liners (pack of 15) and Filters (pack of 6)
MX-DCF1L		Chamber Liners (pack of 40)
MX-DCF1F		Filters (pack of 20)
AC-TC	8	Desolder Tip Cleaner
AC-CB1-P		Desolder Chamber Cleaning Brush (pack of 25)
AC-CB2-P		Tube Cleaning Brush (pack of 6)
MX-DSL2		Seal Cartridge
MX-DSB		Swivel Connector
MX-DLA		Desolder Gun Latch Adjustment (pack of 10)
MX-DMK1		Maintenance Kit
MX-DAH4		ESD air hose for MX-DS1 Desoldering Hand-piece
MX-DSL1		Seal Chamber
MX-DVC1		Venturi Cartridge
MX-DAR1		Air Regulator and Filter

4

5

8

1

2

All Metcal TipSaver Workstands can be configured as shown above.

7

3

UPGRADE KITS GUIDE: HAND-PIECE AND WORKSTAND

PART NUMBER	Hand-pieces					Workstands			
	MX-H1-AV Metcal Advanced™	MX-H2-UF Metcal UltraFine™	MX-PTZ Precision Tweezers	MX-DS1 Desoldering	MX-HPDC	MX-W1AV	MX-W4PT	MX-W5DS	MX-WHPDC
MX-UK1	✔					✔			
MX-UK2		✔				✔			
MX-UK3					✔				✔
MX-UK4			✔				✔		
MX-UK5				✔				✔	

All upgrade kits include a hand-piece and a workstand.

MX-TALON-01 Upgrade kit is also available for the MX-500 Series. It includes the previous MX-TALON hand-piece and WST workstand (as shown right). The TALON hand-piece is for use with TATC cartridges only.

Solder Wire Feeder

Metcal's USF-1000 Solder Wire Feed System adds control and convenience to your soldering process. The digital controls, high performance, and its ability to handle multiple solder diameters provide repeatability and functionality to your process. The USF-1000 pairs with Metcal's SmartHeat® MX-5200 or MX-500 Soldering and Rework Systems.

The soldering system utilizes SmartHeat® Technology, wherein 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.

New Product

Systems Configuration & Upgrade Kits

MX-5200-SF Soldering / Rework System with USF-1000
Power supply, solder feeder, MX-H7-SF solder feeder hand-piece, USF-FTA-12 Feeder Tube Assembly, USF-GTA-12 Teflon Nozzle, AC-FS1 footswitch and WS1 sleeper work stand

MX-500-SF Soldering / Rework System with USF-1000
Power supply, solder feeder, MX-H7-SF solder feeder hand-piece, USF-FTA-12 Feeder Tube Assembly, USF-GTA-12 Teflon Nozzle, AC-FS1 footswitch and WS1 sleeper work stand

Accessories & Spares

MX-H7-SF	Solder Wire Feeder hand-piece for MX system
USF-FTA-06	Feeder Tube Assembly, 0.25-0.39mm wire dia.
USF-FTA-12	Feeder Tube Assembly, 0.56-0.71mm wire dia.
USF-FTA-17	Feeder Tube Assembly, 0.79-1.27mm wire dia.
USF-GTA-06	Guide Tube and Teflon Nozzle
USF-GTA-12	Guide Tube and Teflon Nozzle
USF-GTA-17	Guide Tube and Teflon Nozzle
AC-FS1	Footswitch

Features & Benefits

- Digital Controls with multiple Modes of Operation: Forward Feed, Retraction, Delay, and Speed are programmable parameters in either the automatic, forward, or the backward mode of operation.
- Large LCD Display: displays program parameters and a cycle counter with the selectable unit of measure, millimeters or inches.
- Internal Program Storage: stores internally thirty (30) programs allowing the operator to select the right program for the right application
- Password Protection: prevents unintended changes to stored programs
- Multiple Solder Diameters: compatible with solder diameters 0.4mm to 1.80mm
- Solder Feed Blades: reduces the tendency for solder balls to form at point of use
- Solder Spool Lock: secures the solder spool to the unit

USF-1000: solder feeder, MX-H7-SF solder feeder hand-piece, USF-FTA-12 Feeder Tube Assembly, USF-GTA-12 Teflon Nozzle, AC-FS1 footswitch and WS1sleeper

MX Series Specifications

Soldering, Desoldering & Rework Systems

MX-5200

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
Rated Power Consumption	125W
Output Power	**Single mode: 80 Watts max. per channel *** **Dual Mode: 80 Watts shared dynamically ***
Output Frequency	**13.56 MHz ***
Power Supply Dimensions w x d x h	12.1 cm (4.8") x 13.0 cm (5.1") x 23.5 cm (9.3")
Certification / Marking	cTUVus, CE
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=182 cm (72"), burn proof, ESD safe
Hand-piece Connector	F connector
Weight of the power supply	7.4 lbs (3.35 kg)

*** RF SmartHeat Technology provides greater power. More details at www.metcal.com/smartheat**

MX-500

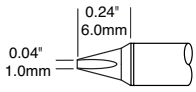
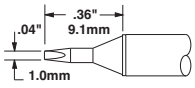
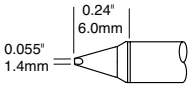
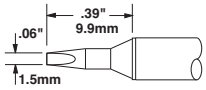
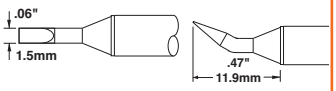
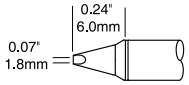
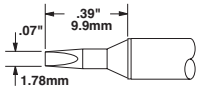
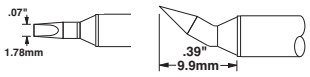
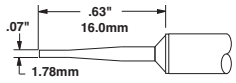
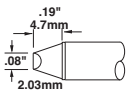
Ambient Operating Temperature	10 - 40°C
Maximum Enclosure Temperature	55°C
Input Line Voltage	100 - 240 VAC, grounded circuit
Input Line Frequency	50/60 Hz
Rated Power Consumption	70 W
Output Power	**40 Watts max. RF SmartHeat Power ***
Output Frequency	**13.56 MHz ***
Power Supply Dimensions w x d x h	12.1 cm (4.8") x 12.1 cm (4.8") x 2.2 cm (8.8")
Certification / Marking	cNRTLus, CE
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=182 cm (72"), burn proof, ESD safe
Hand-piece Connector	F connector
Weight of the power supply	5.85 lbs (2.65 kg)

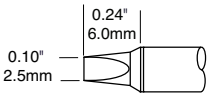
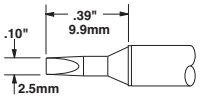
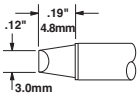
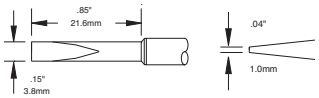
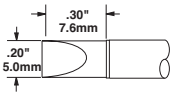
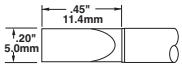
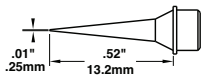
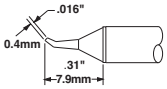
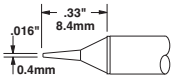
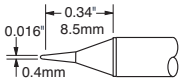
*** RF SmartHeat Technology provides greater power. More details at www.metcal.com/smartheat**

STTC Soldering Cartridges

STTC Soldering Cartridges

Compatible with: MX-500, MX-5000 and MX-5200 Systems / MX-RM3E and MX-H1-AV hand-pieces

CHISEL		STTC-025P STTC-125P STTC-825P
		STTC-525 STTC-025 STTC-125 STTC-825
		STTC-038P STTC-138P STTC-838P
		STTC-538 STTC-038 STTC-138 STTC-838
		STTC-599 STTC-099 STTC-199 STTC-899
		STTC-037P STTC-137P STTC-837P
		STTC-537 STTC-037 STTC-137 STTC-837
		STTC-598 STTC-098 STTC-198 STTC-898
		STTC-042 STTC-142 STTC-842
		STTC-514 STTC-014 STTC-114

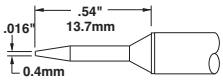
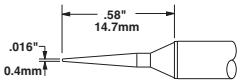
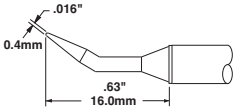
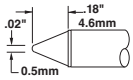
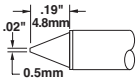
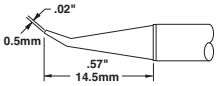
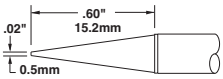
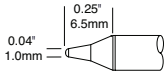
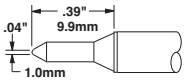
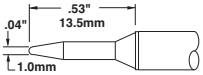
CHISEL		STTC-036P STTC-136P STTC-836P
		STTC-536 STTC-036 STTC-136 STTC-836
		STTC-513 STTC-013 STTC-113 STTC-813
		STTC-020 STTC-120 STTC-820
		STTC-517 STTC-017 STTC-117 STTC-817
		STTC-565 STTC-065 STTC-165 STTC-865
CONICAL		STTC-090 STTC-190 STTC-890
		STTC-526 STTC-026 STTC-126 STTC-826
		STTC-522 STTC-022 STTC-122 STTC-822
		STTC-045P STTC-145P STTC-845P

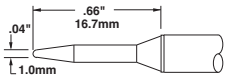
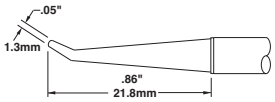
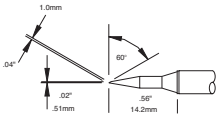
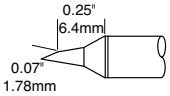
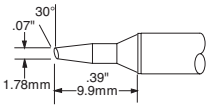
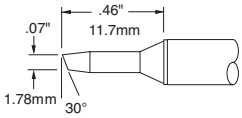
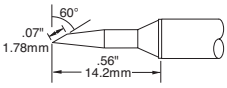
5 = 500 Series and 0 = 600 Series for temperature sensitive applications - 1 = 700 Series for most standard applications.
8 = 800 Series for Ceramic and high thermal demand applications.

STTC Soldering Cartridges

STTC Soldering Cartridges

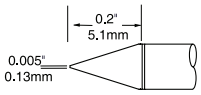
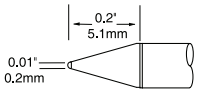
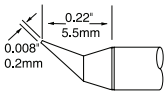
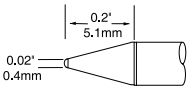
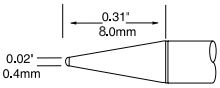
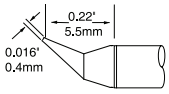
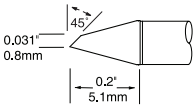
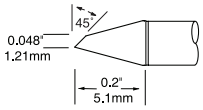
Compatible with: MX-500, MX-5000 and MX-5200 Systems / MX-RM3E and MX-H1-AV hand-pieces

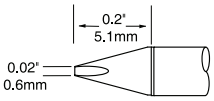
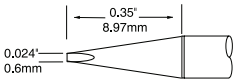
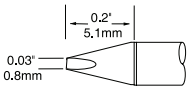
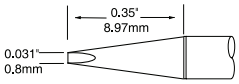
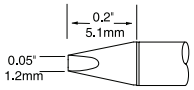
CONICAL		STTC-506 STTC-006 STTC-106 STTC-806
		STTC-545 STTC-045 STTC-145 STTC-845
		STTC-540 STTC-040 STTC-140 STTC-840
		STTC-511 STTC-011 STTC-111
		STTC-516 STTC-016 STTC-116 STTC-816
		STTC-544 STTC-044 STTC-144 STTC-844
		STTC-543 STTC-043 STTC-143 STTC-843
		STTC-101P STTC-801P
		STTC-531 STTC-031 STTC-131
		STTC-501 STTC-001 STTC-101

CONICAL		STTC-007 STTC-107 STTC-807
		STTC-041 STTC-141 STTC-841
BEVEL		STTC-546 STTC-046 STTC-146 STTC-846
		STTC-047P STTC-147P STTC-847P
		STTC-535 STTC-035 STTC-135
		STTC-505 STTC-005 STTC-105
		STTC-547 STTC-047 STTC-147 STTC-847

5 = 500 Series and 0 = 600 Series for temperature sensitive applications - 1 = 700 Series for most standard applications.
8 = 800 Series for Ceramic and high thermal demand applications.

UFTC UltraFine Soldering Cartridges

	UFTC UltraFine Soldering Cartridges	Compatible with: MX-500, MX-5000 and MX-5200 Systems and MX-H2-UF hand-piece
CONICAL		UFTC-7CN01
		UFTC-6CN02 UFTC-7CN02
		UFTC-7CNB02
		UFTC-6CN04 UFTC-7CN04
		UFTC-7CNL04
		UFTC-6CNB04 UFTC-7CNB04
HOOF		UFTC-6DRH408 UFTC-7DRH408
		UFTC-7DRH412

CHISEL		UFTC-6CH06 UFTC-7CH06
		UFTC-6CHL06 UFTC-7CHL06
		UFTC-6CH08 UFTC-7CH08
		UFTC-6CHL08 UFTC-7CHL08
		UFTC-6CH12 UFTC-7CH12

7 = 700 Series for most standard applications
6 = 600 Series for temperature sensitive applications

SMTC Rework Cartridges

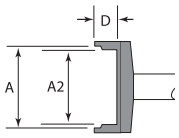
SMTC Rework Cartridges

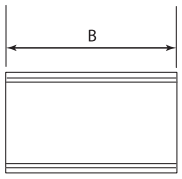
Compatible with: MX-500, MX-5000 and MX-5200 Systems / MX-RM3E and MX-H1-AV hand-pieces
All dimensions shown are in mm (inches)

SLOT

	A	D	B	SMT TYPE
SMTC-505 SMTC-005 SMTC-105	1.7 (.068)	1.27 (.05)	2.5 (.10)	SOT-23
SMTC-596 SMTC-096 SMTC-196	1.78 (.070)	1.02 (.040)	1.02 (.040)	Chip 0402, 0603
SMTC-088 SMTC-188	2.03 (.080)	1.52 (.60)	1.27 (.050)	Chip 0402, 0603, 0805
SMTC-501 SMTC-001 SMTC-101	2.3 (.090)	1.8 (.070)	1.3 (.050)	Chip 0805
SMTC-502 SMTC-002 SMTC-102	3.6 (.14)	1.8 (.07)	1.5 (.06)	Chip 1206,1210
SMTC-132	3.81 (.150)	2.54 (.10)	2.41 (.095)	Chip Box B EIA SOPM-3528
SMTC-536 SMTC-036 SMTC-136	4.8 (.190)	4.06 (.16)	2.8 (.110)	Chip Box B EIA SOPM-4532
SMTC-503 SMTC-003 SMTC-103	4.83 (.190)	1.91 (.075)	2.03 (.080)	Chip 1812

TUNNEL





	A	A2	D	B	SMT TYPE
SMTC-004 SMTC-104	5.08 (.20)	5.08 (.20)	2.3 (.90)	4.32 (.17)	SOIC-8
SMTC-006 SMTC-106	5.08 (.20)	5.08 (.20)	2.3 (.90)	10.16 (.40)	SOIC-14, 16
SMTC-0142 SMTC-1142	5.18 (.204)	5.18 (.204)	2.54 (.100)	8.89 (.350)	SOIC-14
SMTC-047 SMTC-147	8.51 (.335)	8.51 (.335)	5.08 (.200)	6.35 (.250)	DPAC
SMTC-126	8.64 (.340)	8.0 (.315)	1.88 (.074)	18.8 (.740)	SOJ-28, SOM-32
SMTC-007 SMTC-107	9.53 (.375)	9.53 (.375)	3.20 (.125)	18.3 (.720)	SOIC-28
SMTC-009 SMTC-109	9.53 (.375)	9.53 (.375)	3.18 (.125)	15.75 (.620)	SOIC-24
SMTC-010 SMTC-110	9.53 (.375)	9.53 (.375)	3.20 (.125)	13.20 (.520)	SOIC-20
SMTC-040 SMTC-140	11.43 (.450)	10.40 (.410)	1.90 (.075)	25.9 (1.02)	SOJ-40, SOM-32

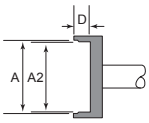
5 = 500 Series & 0 = 600 Series for temperature sensitive applications. 1 = 700 Series for most standard applications.

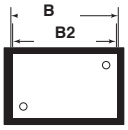
SMTC Rework Cartridges

SMTC Rework Cartridges

Compatible with: MX-500, MX-5000 and MX-5200 Systems / MX-RM3E and MX-H1-AV hand-pieces. All dimensions shown are in mm (inches)

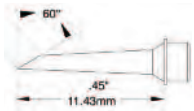
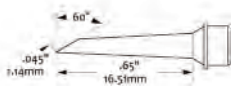
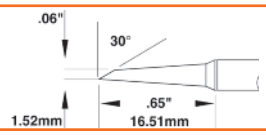
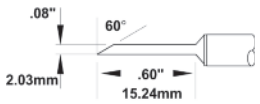
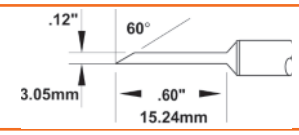
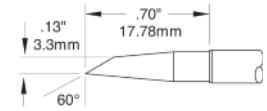
QUAD



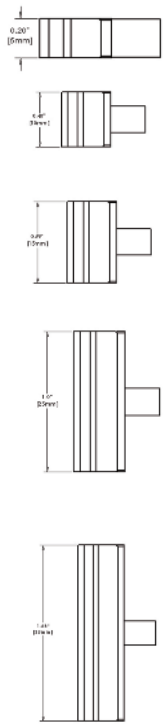


	A	A2	D	B	B2	SMT TYPE
SMTC-0121 SMTC-1121	8.38 (.330)	8.38 (.330)	2.54 (.100)	8.38 (.330)	8.38 (.330)	SQFP 48 (EIJA)
SMTC-012 SMTC-112	10.16 (.400)	9.14 (.360)	3.80 (.150)	10.16 (.400)	9.14 (.360)	PLCC 20
SMTC-0120 SMTC-1120	11.18 (.440)	11.18 (.440)	2.54 (.100)	11.18 (.440)	11.18 (.440)	SQFP 64 (EIJA)
SMTC-1159	12.19 (.480)	11.18 (.440)	2.79 (.110)	13.21 (.520)	12.19 (.480)	TQFP 44
SMTC-013 SMTC-113	12.70 (.500)	11.56 (.455)	3.80 (.150)	12.70 (.500)	11.56 (.455)	PLCC 28
SMTC-116	12.70 (.500)	11.43 (.450)	3.80 (.150)	15.24 (.600)	13.97 (.550)	PLCC 32
SMTC-1132	13.34 (.525)	12.32 (.485)	2.79 (.110)	13.34 (.525)	12.32 (.485)	TQFP 80
SMTC-0118 SMTC-1118	15.49 (.610)	14.48 (.570)	2.79 (.110)	15.49 (.610)	14.48 (.570)	VQFP 100 (EIJA)
SMTC-043 SMTC-143	16.51 (.650)	16.51 (.650)	3.30 (.130)	22.48 (.885)	22.48 (.885)	QFP 100 Rectangular
SMTC-014 SMTC-114	17.78 (.700)	16.76 (.660)	3.80 (.150)	17.78 (.700)	16.76 (.660)	PLCC 44
SMTC-117	20.32 (.800)	19.30 (.760)	3.80 (.150)	20.32 (.800)	19.30 (.760)	PLCC 52
SMTC-118	25.27 (.995)	19.30 (.760)	3.80 (.150)	25.27 (.995)	19.30 (.760)	PLCC 68
SMTC-144	26.42 (1.040)	26.42 (1.040)	3.30 (.130)	26.42 (1.040)	26.42 (1.040)	QFP 100 Square

HOOF

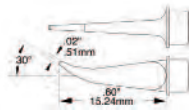
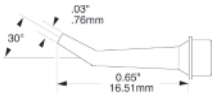
	SMTC-5175 SMTC-0175 SMTC-1175 SMTC-8175
	SMTC-5174 SMTC-0174 SMTC-1174 SMTC-8174
	SMTC-0167 SMTC-1167
	SMTC-0169 SMTC-1169
	SMTC-0183 SMTC-1183 SMTC-8183
	SMTC-0170 SMTC-1170
	SMTC-5147 SMTC-0147 SMTC-1147 SMTC-8147

BLADE

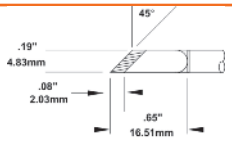
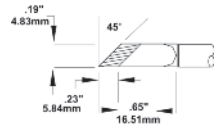
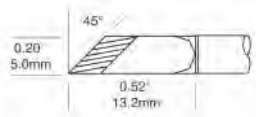


	A	BLADE TYPE
SMTC-064 SMTC-164	5mm (.20")	Short
SMTC-560 SMTC-060 SMTC-160 SMTC-860	10mm (.40")	Long
SMTC-561 SMTC-061 SMTC-161 SMTC-861	15.75mm (.62")	Long
SMTC-062 SMTC-162 SMTC-862	22mm (.86")	Long
	A	**BLADE TYPE**
SMTC-0BL050 SMTC-1BL050 SMTC-8BL050	5mm (.20")	Short
SMTC-0BL100 SMTC-1BL100 SMTC-8BL100	10mm (.40")	Short
SMTC-0BL150 SMTC-1BL150 SMTC-8BL150	15mm (.59")	Short
SMTC-0BL250 SMTC-1BL250 SMTC-8BL250	25mm (1.0")	Long
SMTC-0BL350 SMTC-1BL350 SMTC-8BL350	35mm (1.38")	Long

HOOK & CONICAL

	SMTC-5172 SMTC-0172 SMTC-1172 SMTC-8172
	SMTC-5171 SMTC-0171 SMTC-1171 SMTC-8171

KNIFE

	SMTC-5161 SMTC-0161 SMTC-1161
	SMTC-5173 SMTC-1173 SMTC-8173
	STTC-1173P STTC-8173P

5 = 500 Series & 0 = 600 Series for temperature sensitive applications. 1 = 700 Series for most standard applications.
8 = 800 Series for Ceramic and high thermal demand applications.

Dual and Hoof Cartridge Tips

The success of conduction soldering depends upon the availability and controlled flow of thermal energy into the connection during two critical phases – flux activation and intermetallic bond formation. Higher thermal demand applications such as microwave shields, heavy block type housing and tabbing, preheat applications, BGA removal as an alternative to convection, cell phone shields, and industrial lugs and leads require additional thermal energy during these critical phases.

To address these challenging applications, Metcal offers the MX-HPDC dual cartridge hand-piece with the MX-WHPDC workstand for use with the MX series power supplies, along with a new series of (5) SMTC dual-shaft cartridges. Dual shaft cartridges are available with 700 & 800 series heaters.

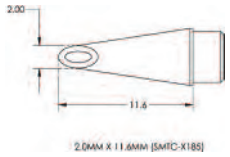
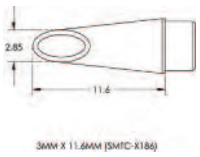
Systems Configuration & Upgrade Kits

- MX-5200 power supply in dual-simultaneous mode to provide 40W of power to both heaters
- 2x MX-5200 power supplies to provide 80W of power to both heaters

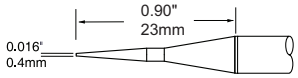
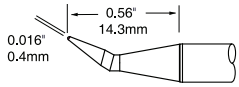
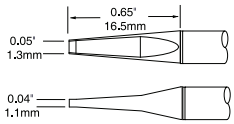
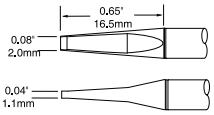
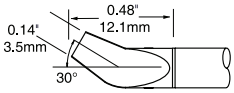
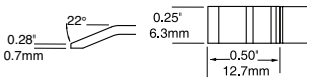
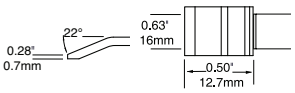
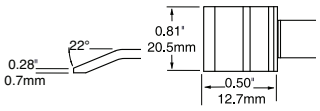
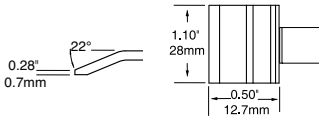
Part Number	Description
MX-HPDC	Dual Cartridge Hand-Piece
MX-WHPDC	Workstand for Dual Cartridge Hand-Piece
MX-UK3	Upgrade Kit, MX-HPDC Hand-Piece & MX-WHPDC Workstand
SMTC-xCH75D	Dual Cartridge Chisel, 7.5mm
SMTC-xCH100D	Dual Cartridge Chisel, 10mm
SMTC-xCH150D	Dual Cartridge Chisel, 15mm
SMTC-xDRH75D	Dual Cartridge, Hoof, Drag, 7.5mm
SMTC-xCHB100D	Dual Cartridge Chisel, Bent, 10mm

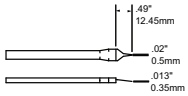
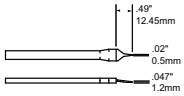
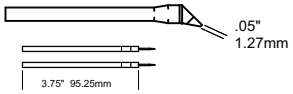
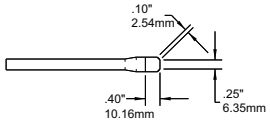
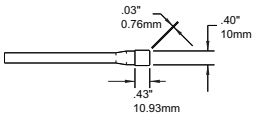
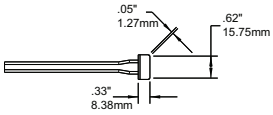
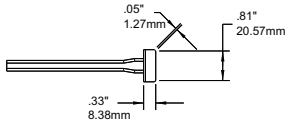
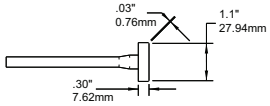
Concave Hoof Cartridges

Metcal is pleased to release our new Concave Hoof geometries to our family of rework cartridges.
The new cartridges consist of 2mm and 3mm geometrics in the SMTC and SxP series.
The concave hoof cartridges improve the drag soldering techniques as the concave face of the tip provides a reservoir of solder. These are ideal for drag soldering multi-lead devices.

	SMTC-0185 SMTC-1185
	SMTC-0186 SMTC-1186

PTTC Tweezer Cartridges
TATC Talon Cartridges

	PTTC Tweezer Cartridges	Compatible with: MX-500, MX-5000, and MX-5200 Systems and MX-PTZ Precision Tweezers hand-piece
CONICAL		PTTC-601 PTTC-701 PTTC-801
CONICAL		PTTC-701B PTTC-801B
BLADE		PTTC-602 PTTC-702 PTTC-802
BLADE		PTTC-603 PTTC-703 PTTC-803
BLADE		PTTC-608B PTTC-708B PTTC-808B
BLADE		PTTC-604 PTTC-704 PTTC-804
BLADE		PTTC-605 PTTC-705 PTTC-805
BLADE		PTTC-606 PTTC-706 PTTC-806
BLADE		PTTC-607 PTTC-707 PTTC-807

TATC Talon Cartridges	Compatible with: MX-500 Systems and MX-Talon hand-piece
	TATC-609
	TATC-601
	TATC-608
	TATC-602
	TATC-605
	TATC-603
	TATC-604
	TATC-606

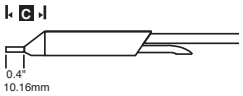
6 = 600 Series for temperature sensitive applications. 7 = 700 Series for most standard applications.
8 = 800 Series for Ceramic and high thermal demand applications.

STDC Desolder Cartridges

STDC Desolder Cartridges

Compatible with: MX-500 MX-5000 and MX-5200 Systems, MX-DS1 Desoldering hand-piece
All dimensions shown are in mm (inches)

Standard



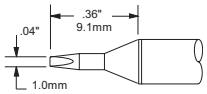
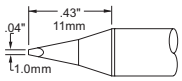
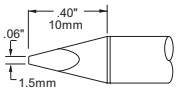
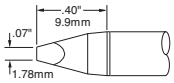
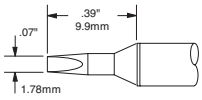
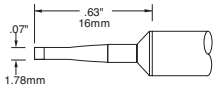
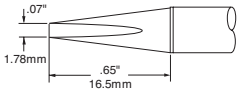
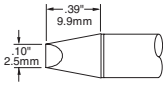
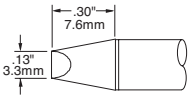
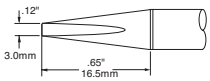
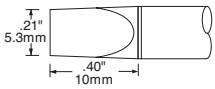
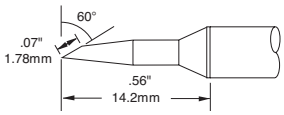
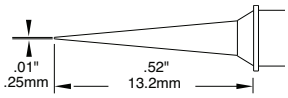
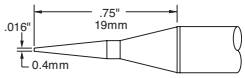
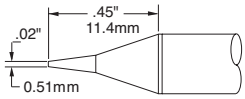
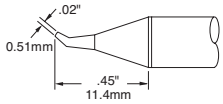
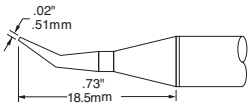
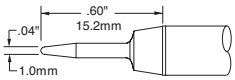
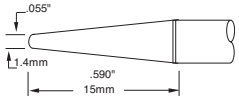
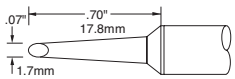
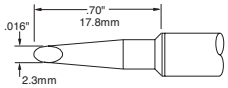
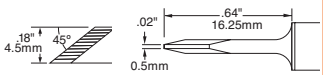
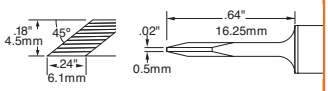
Long Reach

	A	B	C	TYPE
STDC-102 STDC-802	0.64 (.025)	1.40 (.055)	11.43 (.45)	Standard
STDC-103 STDC-803	0.76 (.029)	1.68 (.066)	11.17 (.44)	Standard
STDC-104 STDC-804	1.02 (.04)	1.78 (.07)	10.92 (.43)	Standard
STDC-105 STDC-805	1.27 (.05)	2.03 (.08)	10.66 (.42)	Standard
STDC-106 STDC-806	1.52 (.06)	2.29 (.09)	10.41 (.41)	Standard
STDC-107 STDC-807	2.41 (.09)	3.18 (.12)	9.14 (.36)	Standard
STDC-703L STDC-803L	0.76 (.03)	1.68 (.06)	21.33 (.84)	Long Reach
STDC-704L STDC-804L	1.02 (.04)	1.79 (.07)	21.08 (.83)	Long Reach
STDC-705L STDC-805L	1.27 (.05)	2.03 (.08)	20.82 (.82)	Long Reach

1 = 700 Series (standard length) and 7 = 700 Series (long reach) for most standard applications.
8 = 800 Series for Ceramic and high thermal demand applications.

SSC Soldering Cartridges

Compatible with: Previous SP200 System and new MFR-1160 & MFR-1161 Systems with MFR-H6-SSC Hand-piece

	SSC Soldering Cartridges	
CHISEL		SSC-671A SSC-771A
		SSC-625A SSC-725A
		SSC-638A SSC-738A
		SSC-637A SSC-737A
		SSC-672A SSC-772A
		SSC-642A SSC-742A
		SSC-670A SSC-770A
		SSC-636A SSC-736A
		SSC-613A SSC-713A
		SSC-646A SSC-746A
		SSC-617A SSC-717A
BEVEL		SSC-647A SSC-747A
CONICAL		SSC-690A SSC-790A
		SSC-645A SSC-745A
		SSC-622A SSC-722A
		SSC-626A SSC-726A
		SSC-654A SSC-754A
		SSC-601A SSC-701A
		SSC-674A SSC-774A
HOOF		SSC-667A SSC-767A
		SSC-639A SSC-739A
KNIFE		SSC-661A SSC-761A
		SSC-673A SSC-773A

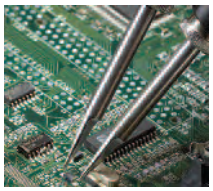
6 = 600 Series for temperature sensitive applications - 7 = 700 Series for most standard applications.

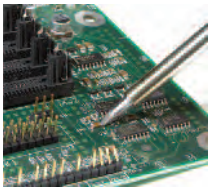
MFR-2200 Series Dual Output

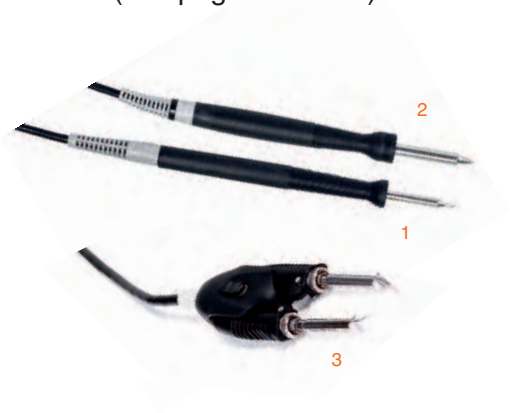
Simultaneous Soldering & Rework Systems

The MFR-2200 Series features dual output capability allowing users to select operation of one hand-piece or two hand-pieces **simultaneously**.

The MFR-2200 Systems below offer a choice of three hand-pieces, however two additional hand-pieces including the desoldering option are also available as upgrade kits (see pages 22 & 25).







Systems	MFR-PS2200 Power Supply	MFR-H1-SC2 Soldering Cartridge Hand-piece	MFR-H2-ST2 Soldering Tip Hand-piece	MFR-H4-TW Tweezer Hand-piece	WS1 Universal Soldering Workstand	MFR-WSPT Tweezer Workstand
Picture Reference		1	2	3		
MFR-2210	1	1			1	
MFR-2220	1		1		1	
MFR-2240	1			1		1
MFR-2211	1	2			2	
MFR-2222	1		2		2	
MFR-2241	1	1		1	1	1

NEW STYLE MFR Tip and Cartridge Hand-pieces.

Slimmer grip for added comfort and handling.

SxP
Soldering Cartridges

RxP
Rework Cartridges

Full range on pages 29-30

SxV
Soldering Tips

CxV
Blade Tips

Full range on pages 26-27

TxP
Tweezer Cartridges

Full range on page 31

MFR-1100 Series Single Output

Soldering & Rework Systems

The MFR-1100 Single Output Series is designed to minimize your training investment, maximize application solutions and increase productivity.

This Series is compact and **versatile** and can be used with either a soldering tip, cartridge or tweezers hand-piece. A shop air desoldering option is also available as an upgrade kit (see pages 22 & 25).

Systems	MFR-PS1100 Power Supply	MFR-H1-SC2 Soldering Cartridge Hand-piece	MFR-H2-ST2 Soldering Tip Hand-piece	MFR-H4-TW Tweezer Hand-piece	MFR-H6-SSC SSC Cartridge Hand-piece	WS1 Soldering Workstand	MFR-WSPT Tweezer Workstand	WS2 Soldering Workstand
Picture Reference		1	2	3	4	5		6
MFR-1110	1	1				1		
MFR-1120	1		1			1		
MFR-1140	1			1			1	
MFR-1160	1				1			1
MFR-1161	1	1			1	1		1

Note: The MFR-1160 replaces the Metcal SP200 Soldering System. The MFR-H6-SSC hand-piece accepts the same SSC cartridges.

SxP
Soldering Cartridges

RxP
Rework Cartridges

Full range on pages 29-30

SxV
Soldering Tips

CxV
Blade Tips

Full range on pages 26-27

TxP
Tweezer Cartridges

Full range on page 31

SSC
Soldering Cartridges (Previous SP200 System)

Full range on page 17

MFR-1100 & MFR-2200 Series

Soldering & Rework Systems

MFR-2200 and MFR-1100 series

MFR-2200, MFR-1100 and MFR-1300 series (shown on page 14)

Key Features & Benefits

- SmartHeat® Technology provides exceptional power for high thermal demand applications
- Single or Dual simultaneous outputs allow for single or dual hand-piece use
- Five hand-pieces available for increased application solutions for soldering, desoldering (upgrade kit) and rework on one system
- Each hand-piece has a comprehensive range of cartridges or tips for maximum flexibility
- Ergonomic hand-pieces for operator safety and comfort

Other Accessories Available:

MFR-CA3	Coil Assembly for Tip Hand-piece (MFR-H2-ST2)
WS1G	Auto-sleep Workstand, Green
MFR-PM70	Power Meter
AC-CP2	Cartridge / Tip Removal Pad
AC-BP	Brass Pad (for Workstand) - Pack of 10

Technical Specifications

Power Supply	**MFR-1100**	**MFR-2200**
Ambient Operating Temperature	10 - 40°C (50°F - 104°F)	10 - 40°C (50°F - 104°F)
Maximum Enclosure Temperature	55°C (131°F)	55°C (131°F)
Input Line Voltage	100 - 240 VAC	100 - 240 VAC
Power Consumption	70 Watts maximum	130 Watts maximum
Input Line Frequency	**50/60 Hz grounded circuit ***	**50/60 Hz grounded circuit ***
Output Power	**60 Watts at 22°C ***	**60 Watts at 22°C per output (2 outputs)***
Output Frequency	450 KHz	450 KHz
Power Cord (3-wire)	183 cm 18/3 SJT	183 cm 18/3 SJT
Dimensions (approx.) W x D x H	90mm (3.5”) x 142mm (5.6”) x 197mm (7.8”)	170mm (7") x 200mm (8") x 152.5mm (6")
Weight	2.3kg (5.05 lbs)	2.97 kg (6.55 lbs)
Surface Resistivity	10^5-10^9 Ohms	10^5-10^9 Ohms
Certification / Marking	cTUVus, CE	cTUVus, CE

Soldering Handle and Coil Assembly		
Tip-to-Ground Potential	< 2 mV RMS	< 2 mV RMS
Tip-to-Ground Resistance	<2 ohms	<2 ohms
Idle Temperature Repeatability	± 1.1°C (2°F) in still air	± 1.1°C (2°F) in still air
Handle Cord Assembly Length	122 cm – burn proof, ESD safe	122 cm – burn proof, ESD safe
Connector	8-pin circular DIN	8-pin circular DIN
Workstand W x D x H	100 mm (4") x 200 mm (8") x 100 mm (4")	100 mm (4") x 200 mm (8") x 100 mm (4")
Workstand Weight	0.69 kg (1.51 lbs)	0.69 kg (1.51 lbs)

*** RF SmartHeat Technology provides greater power. More details at www.metcal.com/smartheat**

MFR-1150 Single Output

Soldering & Desoldering Systems with Venturi

The MFR-1150 Desolder System with Venturi Workstand provides a compact and easy **shop air option.**

Key Features & Benefits

- Venturi workstand
- 2 in 1 Desolder hand-piece (Pistol or Pencil)
- **MFR-H5-DS & MFR-WSDSX are compatible for use with all MFR systems (available under MFR-UK5 upgrade kit)**
- Uses DxP desolder cartridges and replaceable coil assembly (MFR-HDCA)

Part No.	Description
MFR-1150	Complete System
Includes:	
MFR-PS1100	Power Supply
MFR-H5-DS	Desolder hand-piece
MFR-WSDSX	Workstand with venturi box for desolder hand-piece
MFR-FTKIT	Fittings and air hose kit
AC-TC	Desolder tip cleaner tool

DxP

Desoldering Tips

Full range on page 31

Technical Specifications

	MFR-PS1100 Power Supply
Input Line Voltage	100-240 VAC
Power Consumption	70 Watts max.
Input Line Frequency	**50/60Hz ***
Output Power	**60 Watts Max ***
Output Frequency	450 KHz
Dimensions W x D x H	90mm x 200mm x 152.5mm (3.5" x 8" x 6")

*** RF SmartHeat Technology provides greater power. More details at www.metcal.com/smartheat**

	MFR-1150 System
Idle Tip temperature stability	+/- 1.1°C (2°F) in still air
Ambient Operating Temperature	10 - 40°C (50 - 104°F)
Maximum Enclosure Temperature	55°C (131°F)
Tip to ground Potential	<2mV
Tip to ground resistance	<2 Ohms
Surface resistivity	$10^5 – 10^9$ Ohm
Approvals	cTUVus, CE

Collection chamber replacement

Remove grip for Pencil config.

MFR-UK5 Upgrade Kit Compatible with all MFR Series Power Supplies

	MFR-H5-DS Desolder Hand-piece
Power Cord (3-wire)	183cm (72")
Solder Hand-piece cable length	152 cm (60"), burn proof, ESD safe
Hand piece connector	8 pin power connector
	MFR-WSDSX Workstand
Input voltage	24V
Intput power	15W
Workstand dimensions	100mm x 200mm x 140mm (4" x 8" x 5.5")
Noise level	< 55 dB
Recommended Air pressure input	550kPa (80PSI) - Shop air only
Vacuum suction force	0.85 bar (25" Hg)

MFR-1300 Dual Switchable Output

Soldering & Desoldering Systems with Internal Air

The MFR-1300 Desoldering and Rework System features a innovative desoldering hand-piece and a power supply with an **internal pump** providing 0.7 bar of vacuum suction force making through-hole desoldering easy.

Key Features & Benefits

- Self-contained powerful vacuum pump
- 2 in 1 ergonomic and flexible hand-piece
- Recyclable collection chamber with increased capacity
- Quick and easy change collection chamber
- Dual switchable output
- Powered by Smartheat® Technology
- Compatible with previous MFR Desolder range

Part No.	Description
MFR-1350	Desolder System with Internal Pump*
MFR-1351	Solder / Desolder System with Internal Pump**
Includes:	
MFR-PS1300	Power Supply
MFR-H5-DS	Desolder hand-piece*
MFR-H1-SC2	Solder Cartridge hand-piece*
MFR-WSDSU	Workstand for Desolder hand-piece*
WS1	Workstand for Solder hand-piece*

SxP
Soldering Cartridges

RxP
Rework Cartridges

Full range on pages 29-30

DxP
Desoldering Tips

Full range on page 31

Technical Specifications

	MFR-1350/51
Input Line Voltage	100-240 VAC
Input Line Frequency	50/60Hz
Power Consumption	110 Watts max. (Power Supply MFR-PS1300)
Output Power	**60 Watts Max ***
Output Frequency	**450 KHz ***
Idle Tip temperature stability	+/- 1.1°C (2°F) in still air
Ambient Operating Temperature	10 - 40°C (50 - 104°F)
Maximum Enclosure Temperature	55°C (131°F)
Noise level	< 55 dB
Vacuum suction force	0.7 bar (21in Hg at Vacuum pump at sea level)
Power Cord (3-wire)	183cm (72")
Desolder Hand-piece cable length	152 cm (60"), burn proof, ESD safe
Solder Hand-piece cable length	122 cm (48"), burn proof, ESD safe
Hand piece connector	8 pin power connector
Tip to ground Potential	<2mV
Tip to ground resistance	<2 Ohms
Surface Resistivity	10^5 – 10^9 Ohms
Approvals	cTUVus, CE
Dimensions (approx.) W x D x H	170mm x 200mm x 152.5mm (7" x 8" x 6")
Workstand dimensions	100mm x 200mm x 100mm (4" x 8" x 4")

*** RF SmartHeat Technology provides greater power. More details at www.metcal.com/smartheat**

Pencil

Pistol

Accessories and Spare Parts

For MFR and PS Series

Hand-pieces and replacement coils

PS-HC3		Soldering Handle with PS-CA3 Coil Assembly (PS-900)
PS-H3	1	Soldering Handle without Coil Assembly (PS-900)
PS-CA3	2	Coil Assembly for PS-HC3 / PS-H3 Hand-piece (PS-900)
MFR-H1-SC2	3	Cartridge Solder / Rework Hand-piece (MFR)
MFR-H2-ST2	4	Tip Solder Hand-piece (MFR)
MFR-CA3		Coil Assembly for MFR-H2-ST2 Hand-piece (MFR)
MFR-H4-TW	5	Precision Tweezer Hand-piece (MFR)
MFR-H6-SSC	6	SSC Cartridge Solder Hand-piece (MFR)
MFR-H5-DS	7	Desolder Hand-piece
MFR-HSREC		Cartridge Solder / Rework Hand-piece with long cord (1.83m / 6ft)
MFR-HSRLR	8	Cartridge Solder / Rework Hand-piece with long reach access

Workstands

WS1		Universal Auto Sleep Workstand
WS2		Round Auto Sleep Workstand
WS2-NS	9	Solder Workstand (PS-900)
MFR-WSPT	10	Non Sleeper Precision Tweezer Workstand
MFR-WSDSX	11	Venturi Workstand for Desolder Hand-piece
MFR-WSDSU		Non Sleeper Workstand for Desolder Hand-piece
WS1CB		Solder Rework Cradle Replacement for WS1 Workstand
WS2CB		Solder Rework Cradle Replacement for WS2 Workstand
MFR-WSDSCB		Replacement cradle for all MFR Desolder Workstands

* for all rectangular MFR workstands

Upgrade Kits

MFR-UK1	Solder Cartridge Hand-piece (MFR-H1-SC2) and Workstand (WS1)
MFR-UK2	Solder Tip Hand-piece (MFR-H2-ST2) and Workstand (WS1)
MFR-UK4	Tweezer Cartridge Hand-piece (MFR-H4-TW) and Workstand (MFR-WSPT)
MFR-UK5	Desolder Hand-piece (MFR-H5-DS) and Workstand (MFR-WSDSX)
MFR-UK6	Solder Cartridge Hand-piece (MFR-H6-SSC) and Workstand (WS2)
MFR-H5-DS-C	Desolder Hand-piece (MFR-H5-DS) and Workstand cradle (MFR-WSDSCB)

Lead-Free Process Identification

WS1G	12	Green Universal Auto Sleep Workstand
WS2G		Green Solder Workstand (PS-900)
WS1CG		Green Solder Rework Cradle Replacement for WS1 Workstand
WS2CG		Green Solder Rework Cradle Replacement for WS2 Workstand
AC-CK1	13	Green Identification Ring for OKi Cartridges (Pack of 50)
AC-CK3		Green Identification Ring for SSC Cartridges (Pack of 50)
AC-CK4	14	Green Identification Ring for OKi Tips (Pack of 50)

Miscellaneous Accessories

AC-BRUSH	15	Soft Brass Brush
AC-CP2		Cartridge and Tip Removal Pad
AC-FX1	16	Fume Extraction Kit
AC-IK		Interlocking / Mounting Kit
MFR-PM70		Power Meter for MFR Series
PS-PM900		Power Meter for PS-900
AC-Y10		Yellow Sponge for WS1 Workstand (Pack of 10)
AC-YS4		Yellow Sponge Round for WS2 Workstand (Pack of 10)
AC-BP		Brass Pad (Pack of 10)

Desoldering Accessories

MFR-DC10	17	Disposable Collection Chamber for MFR-H5-DS (pack of 10)
MFR-DC100		Disposable Collection Chamber for MFR-H5-DS (pack of 100)
MFR-HDCA	18	Coil Assembly for MFR Desolder Hand-piece
MFR-PG		Replacement Pistol grip for MFR-H5-DS Hand-piece
AC-SK1		Seal Kit Collection Chamber (pack of 2)
AC-VP		Vacuum Port
AC-VL		ESD Air Hose
AC-VPF		Vacuum Port Filter (pack of 5)
LM-PS		Power supply for MFR-WSDSX with multi plug adapters
AC-TC		Desoldering Tip Cleaner Tool

PS-900 Production Soldering

The PS-900 provides power and exceptional SmartHeat® thermal control in a **small benchtop footprint**.

Key Features & Benefits

- SmartHeat® temperature control
- Ergonomic, lightweight handle
- Rugged cast aluminum housing
- Added plating thickness to tips
- Low cost, quick-change heater coil

Part No.		Description
PS-900		Complete System
Includes:		
PS-PW900	1	Power Supply
PS-HC3	2	Hand-piece (PS-H3) and Coil Assembly (PS-CA3)
WS2-NS	3	Workstand, Black
SFV-CH15A	6	Economical and Affordable Chisel Solder Tip 1.5mm (.06")
Other Accessories Available:		
PS-H3	4	Hand-piece only, NO PS-CA3 Coil Assembly
PS-CA3	5	Coil Assembly for SxV Soldering Tips and CxV Blade Tips ONLY
WS2		Auto-sleep Workstand, Black
WS2G		Auto-sleep Workstand, Green
AC-CP2		Tip Removal Pad

SxV
Soldering Tips

Full range on pages 26-27

CxV
Blade Tips

Full range on page 27

ONLY AVAILABLE ON PS-900 SYSTEM AND FOR USE WITH PHT TIPS

PS-CA1	7	Coil Assembly for PHT Soldering Tips ONLY
PS-HC1		Hand-piece (PS-H3) and Coil Assembly (PS-CA1)
PS-H3	8	Hand-piece only, NO PS-CA1 Coil Assembly

PHT
Light Load, Fine Access Soldering Tips

Full range on page 30

PS-900 Production Soldering

Technical Specifications

Power Supply	
Ambient Operating Temperature	10 - 40°C
Maximum Enclosure Temperature	65°C
Input Line Voltage	100 - 240 VAC
Power Consumption	90 Watts max.
Input Line Frequency	**50/60 Hz ***
Output Power	**60 Watts max.***
Output Frequency	450 KHz
Power Cord (3-wire)	183 cm 18/3 SJT
Dimensions W x D x H	80 x 160 x 115 mm (3.1" x 6.3" x 4.5")

*** RF SmartHeat Technology provides greater power. More details at www.metcal.com/smartheat**

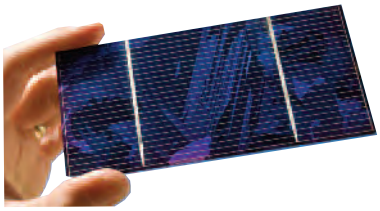
Soldering Handle and Coil Assembly	
Tip-to-Ground Potential	< 2 mV
Tip-to-Ground Resistance	< 2 ohms
Idle Temperature Repeatability	± 1.1°C in still air
Handle Cord Assembly Length	122 cm – burn proof, ESD safe
Connector	3-pin power connector
Overall length (with tip)	230 mm (9.06") with standard tips
Grip diameter	13 mm (0.51")
Tip to grip	58 mm (2.28")
Tip shaft diameter	8.0 mm (0.31")
Tip length	82 mm (3.23") to 93 mm (3.66") (typical)
Workstand W x D x H	105 x 175 x 90 mm (4.1" x 6.9" x 3.5")

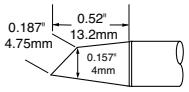
Tip Soldering Hand-Piece with PS-CA3 Coil Assembly

PS-900-Solar

Key Features & Benefits

- Superior photo voltaic tabbing and buss soldering
- SmartHeat reduces thermal stress on solar cells
- Reduces the likelihood of micro-cracking
- Produces a controlled, high quality solder joint
- Calibration-free system
- Specially designed STV-DRH440A hoof tip for high performance





STV-DRH440A
Hoof Tip 4mm (.157")

Part No.	Includes
PS-900-Solar	PS-PW900 Power Supply, PS-900-PC9 Hand-piece with long cord (274cm / 9ft) & PS-CA3 Coil Assembly, STV-DRH440A soldering tip, WS2-NS Workstand, AC-CP2 tip removal pad

SxV
Soldering Tips

Full range on pages 28-29

SxV Soldering Tips

Compatible with: PS-900, MFR-1120, MFR-2220, MFR-2222 Systems, PS-HC3, MFR-H2-ST and MFR-H2-ST2 hand-pieces, PS-CA3, MFR-CA2 and MFR-CA3 Coil Assemblies

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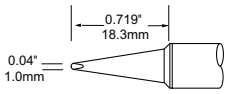
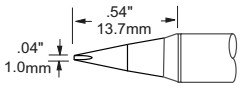
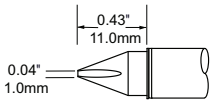
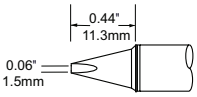
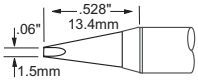
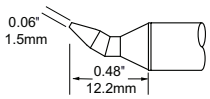
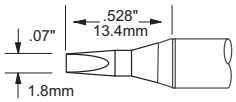
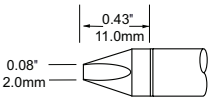
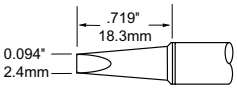
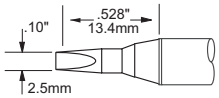
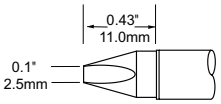
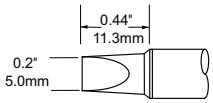
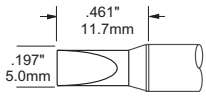
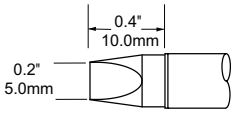
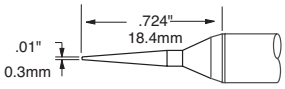
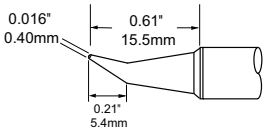
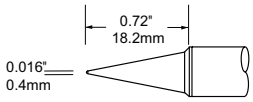
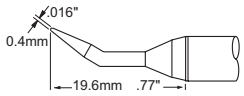
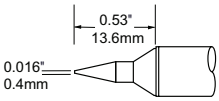
CHISEL		SFV-CH10A STV-CH10A SCV-CH10A
		SFV-CH10AR STV-CH10AR SCV-CH10AR
		SFV-CH10 STV-CH10 SCV-CH10
		SFV-CH15A STV-CH15A SCV-CH15A
		SFV-CH15AR STV-CH15AR SCV-CH15AR
		SFV-CHB15 STV-CHB15 SCV-CHB15
		SFV-CH18AR STV-CH18AR SCV-CH18AR
		SFV-CH20 STV-CH20 SCV-CH20
		SFV-CH24A STV-CH24A SCV-CH24A
		SFV-CH25AR STV-CH25AR SCV-CH25AR
CHISEL		SFV-CH25 STV-CH25 SCV-CH25
		SFV-CH30AR STV-CH30AR SCV-CH30AR
		SFV-CH50A STV-CH50A SCV-CH50A
		SFV-CH50AR STV-CH50AR SCV-CH50AR
		SFV-CH50 STV-CH50 SCV-CH50
CONICAL		SFV-CNL03AR STV-CNL03AR SCV-CNL03AR
		SFV-CNB04A STV-CNB04A SCV-CNB04A
		SFV-CN05A STV-CN05A SCV-CN05A
		SFV-CNB04AR STV-CNB04AR SCV-CNB04AR
		SFV-CNL04 STV-CNL04 SCV-CNL04

F = FR4 / Fiberglass, for most standard applications **T** = Temperature Sensitive **C** = Ceramic for high thermal demand applications.

SxV Soldering Tips
CxV Blade Tips

Compatible with: PS-900, MFR-1120, MFR-2220, MFR-2222 Systems, PS-HC3, MFR-H2-ST and MFR-H2-ST2 hand-pieces, PS-CA3, MFR-CA2 and MFR-CA3 Coil Assemblies

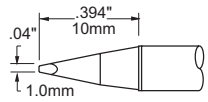
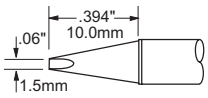
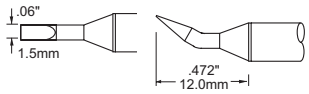
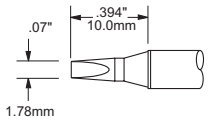
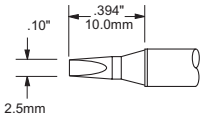
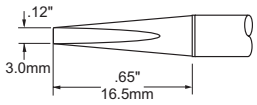
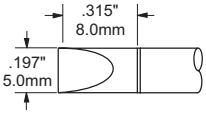
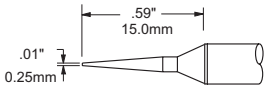
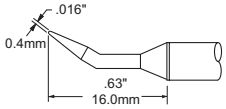
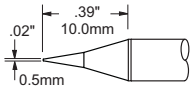
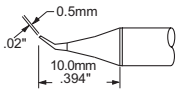
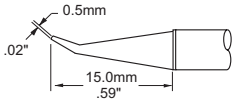
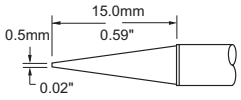
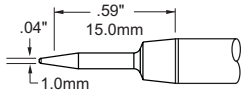
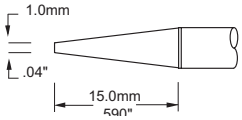
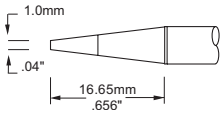
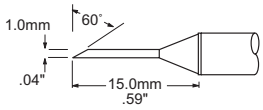
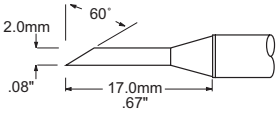
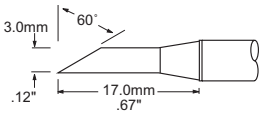
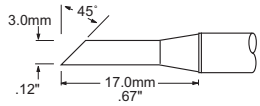
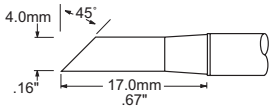
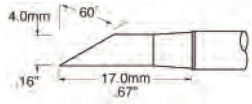
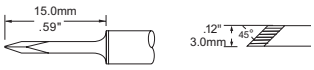
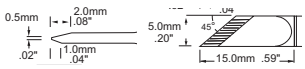
	SxV Soldering Tips	
CONICAL	.53" 13.7mm; .02"; 0.5mm	SFV-CN05AR STV-CN05AR SCV-CN05AR
	0.34" 8.5mm; 0.02" 0.5mm	SFV-CN05 STV-CN05 SCV-CN05
	0.51" 13.0mm; 0.02" 0.5mm	SFV-CNB05 STV-CNB05 SCV-CNB05
	0.71" 18.0mm; 0.04" 1.0mm	SFV-CNL10A STV-CNL10A SCV-CNL10A
	.59" 15.0mm; .04"; 1.0mm	SFV-CNL10AR STV-CNL10AR SCV-CNL10AR
	0.51" 13.0mm; 0.04" 1.0mm	SFV-CNL10 STV-CNL10 SCV-CNL10
	0.59" 15.0mm; 0.056" 1.4mm	SFV-CNL14 STV-CNL14 SCV-CNL14
	0.55" 14.0mm; 0.8" 2.0mm	SFV-DRH20 STV-DRH20 SCV-DRH20
	0.59" 15.0mm; 0.08" 2.0mm	SFV-CNL20 STV-CNL20 SCV-CNL20
	.08" 2.03mm; 0.58" 14.6mm; 0.54" 13.8mm	SFV-WV20 STV-WV20 SCV-WV20
KNIFE	2.4mm 0.095"; 1mm 0.039"; 0.20" 5.0mm; 45°; 2mm 0.079"	SFV-DRK45A STV-DRK45A SCV-DRK45A
	2.4mm .095"; 5.0mm .20"; 45°; 14mm .55"	SFV-DRK50 STV-DRK50 SCV-DRK50

HOOF	2.0mm; 45°; .08"; 20.7mm .81"	SFV-DRH420AR STV-DRH420AR SCV-DRH420AR
	0.10" 2.5mm; 45°; 0.51" 13.0mm	SFV-DRH20CP STV-DRH20CP SCV-DRH20CP
	3.0mm; 45°; .12"; 20.4mm; 0.8"	SFV-DRH430AR STV-DRH430AR SCV-DRH430AR
	.67" 17.0mm; .39" 10.0mm; 60°; .12" 3.0mm	STV-DRH630AR SCV-DRH630AR
	0.137" 3.47mm; 0.48" 12.2mm; 0.079" 2mm	SFV-DRH420A STV-DRH420A SCV-DRH420A
	0.14" 3.6mm; 45°; 0.51" 13.0mm	SFV-DRH30CP STV-DRH30CP SCV-DRH30CP
	.08" 2.0mm; .157" 4.0mm; .474" 12.04mm; .671" 17.04mm; .40" 10mm; .175" 4.45mm; 45°; .02" 0.5mm	SFV-DRH440R STV-DRH440R SCV-DRH440R
	60°; .158" 4.02mm; .670" 17.01mm	SFV-DRH640AR STV-DRH640AR SCV-DRH640AR
	0.18" 4.6mm; 45°; 0.51" 13.0mm	SFV-DRH40CP STV-DRH40CP SCV-DRH40CP
	0.187" 4.75mm; 0.52" 13.2mm; 0.157" 4mm	SFV-DRH440A STV-DRH440A SCV-DRH440A
	.74" 18.7mm; .12" 3.0mm; 45°	SFV-DRK30AR STV-DRK30AR SCV-DRK30AR
	18.7mm .74"; 1.8mm .07"; 4.5mm .18"; 45°	SFV-DRK45AR STV-DRK45AR SCV-DRK45AR

CxV Blade Tips		A
CFV-BL100	CCV-BL100	10mm (.40")
CFV-BL250	CCV-BL250	25mm (1")
CFV-BL350	CCV-BL350	35mm (1.4")
CFV-BL400	CCV-BL400	40mm (1.6")
CFV-BL500	CCV-BL500	50mm (2")

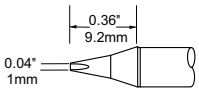
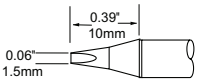
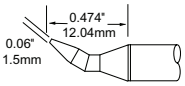
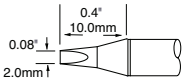
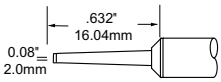
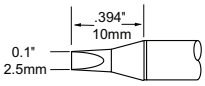
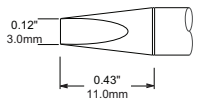
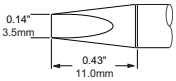
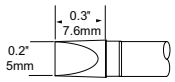
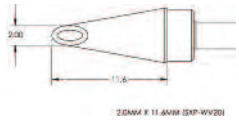
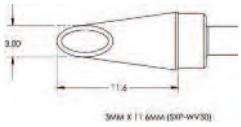
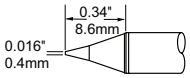
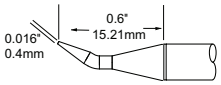
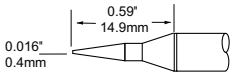
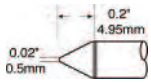
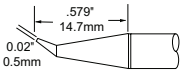
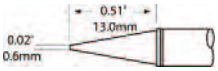
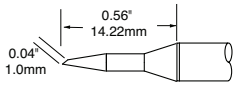
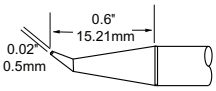
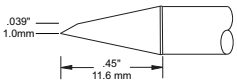
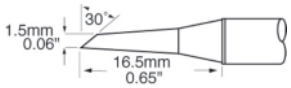
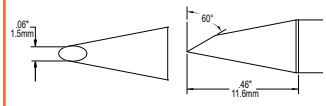
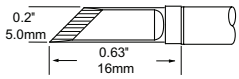
F = FR4 / Fiberglass, for most standard applications **T** = Temperature Sensitive **C** = Ceramic for high thermal demand applications.

PHT Soldering Tips

	PHT Soldering Tips	Compatible with: PS-800, PS-800E and PS-900 Systems and PS-CA1 Coil Assembly
CHISEL		PHT-750315 PHT-650315
CHISEL		PHT-750325 PHT-650325
CHISEL		PHT-750326 PHT-650326
CHISEL		PHT-750335 PHT-650335
CHISEL		PHT-751355 PHT-651355
CHISEL		PHT-751367 PHT-651367
CONICAL		PHT-751384 PHT-651384
CONICAL		PHT-752017 PHT-652017
CONICAL		PHT-752327 PHT-652327
CONICAL		PHT-752035 PHT-652035
CONICAL		PHT-752335 PHT-652335
CONICAL		PHT-752337 PHT-652337
CONICAL		PHT-753035 PHT-653035
CONICAL		PHT-752057 PHT-652057
CONICAL		PHT-753067 PHT-653067
CONICAL		PHT-753077 PHT-653077
HOOF		PHT-754627 PHT-654627
HOOF		PHT-754667 PHT-654667
HOOF		PHT-754687 PHT-654687
HOOF		PHT-754487F PHT-654487F
HOOF		PHT-654497 PHT-754497
HOOF		PHT-654697
KNIFE		PHT-755437 PHT-655437
KNIFE		PHT-755477 PHT-655477

75 = 750 Series for most standard applications - 65 = 650 Series for temperature sensitive applications

SxP Soldering & Rework Cartridges

	SxP Soldering & Rework Cartridges	Compatible with: MFR-1110, MFR-1161, MFR-1351, MFR-2211, MFR-2241 Systems and MFR-H1-SC hand-piece
CHISEL		SFP-CH10 STP-CH10 SCP-CH10
		SFP-CH15 STP-CH15 SCP-CH15
		SFP-CHB15 STP-CHB15 SCP-CHB15
		SFP-CH20 STP-CH20 SCP-CH20
		SFP-CHL20 STP-CHL20 SCP-CHL20
		SFP-CH25 STP-CH25 SCP-CH25
		SFP-CH30 STP-CH30 SCP-CH30
		SFP-CH35 STP-CH35 SCP-CH35
		SFP-CH50 STP-CH50 SCP-CH50
HOOF		STP-WV20 SFP-WV20 SCP-WV20
		STP-WV30 SFP-WV30 SCP-WV30
CONICAL		SFP-CN04 STP-CN04 SCP-CN04
		SFP-CNB04 STP-CNB04 SCP-CNB04
		SFP-CNL04 STP-CNL04 SCP-CNL04
		SFP-CN05 STP-CN05 SCP-CN05
		SFP-CNB05 STP-CNB05 SCP-CNB05
		SFP-CNL06 SCP-CNL06
BEVEL		SFP-BVL10 STP-BVL10 SCP-BVL10
HOOF		SFP-DRH05 STP-DRH05 SCP-DRH05
		SFP-DRH610 STP-DRH610 SCP-DRH610
		SFP-DRH15 STP-DRH15 SCP-DRH15
		SFP-DRH615 STP-DRH615 SCP-DRH615
		SFP-DRH35 STP-DRH35 SCP-DRH35
KNIFE		SFP-DRK50 STP-DRK50 SCP-DRK50

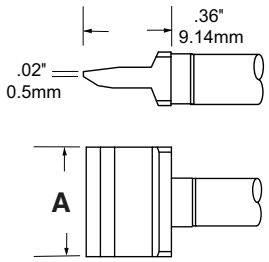
F = FR4 / Fiberglass, for most standard applications **T** = Temperature Sensitive **C** = Ceramic for high thermal demand applications.

RxP Rework Cartridges

RxP Rework Cartridges

Compatible with: MFR-1110, MFR-1161, MFR-1351, MFR-2211, MFR-2241 Systems, MFR-H1-SC and MFR-H1-SC2 hand-pieces. All dimensions shown are in mm (inches)

BLADE



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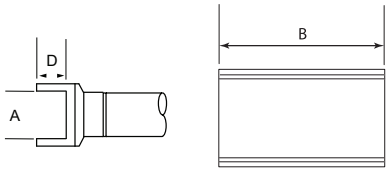

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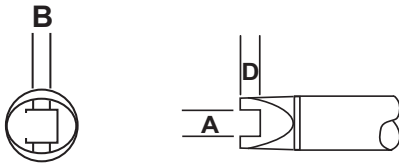
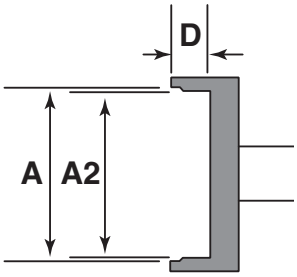
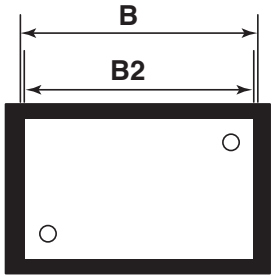


	A	B	D	SMT TYPE
RFP-BL1 RCP-BL1	10 (0.41)	-	-	-
RFP-BL2 RCP-BL2	15.6 (0.62)	-	-	-
RFP-BL3 RCP-BL3	22.1 (0.87)	-	-	-
RFP-DL1 RCP-DL1	5.18 (0.204)	10.16 (0.40)	3.22 (0.127)	Tunnel SOIC-14-16
RFP-DL2 RCP-DL2	5.18 (0.204)	4.32 (0.17)	2.29 (.09)	Tunnel SOIC-8
RFP-DL3 RCP-DL3	6.86 (.270)	11.15 (0.44)	2.29 (.09)	Tunnel SOIC-16
RFP-SL1 RCP-SL1	2.34 (.092)	1.37 (.054)	1.78 (.07)	0805 Chip Package
RFP-SL2 RCP-SL2	3.48 (.137)	1.63 (.064)	1.78 (.07)	1206 Chip Package

QUAD





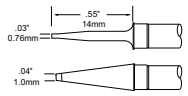
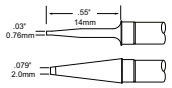
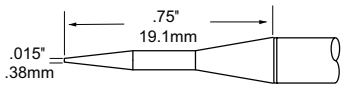
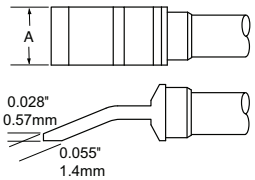
	A	A2	D	B	B2	SMT TYPE
RFP-QD4 RCP-QD4	12.70 (.500)	11.43 (.450)	3.81 (.150)	15.24 (.600)	13.97 (.550)	PLCC 32
RFP-QD6 RCP-QD6	17.78 (.700)	16.76 (.660)	3.81 (.150)	17.78 (.700)	16.76 (.660)	PLCC 44
RFP-QD7 RCP-QD7	25.27 (.995)	24.38 (.960)	5.59 (.220)	25.27 (.995)	24.38 (.960)	PLCC 68
RFP-QD10 RCP-QD10	20.32 (.800)	19.30 (.760)	3.81 (.150)	20.32 (.800)	19.30 (.760)	PLCC 52
RFP-QD15 RCP-QD15	13.34 (.525)	12.32 (.485)	2.79 (.110)	13.34 (.525)	12.32 (.485)	TQFP 80
RFP-QD19 RCP-QD19	16.13 (.635)	16.13 (.635)	3.30 (.130)	16.13 (.635)	16.13 (.635)	QFP 44
RFP-QD20 RCP-QD20	16.51 (.650)	16.51 (.650)	3.30 (.130)	22.48 (.885)	22.48 (.885)	QFP 100

F = FR4 / Fiberglass, for most standard applications **T** = Temperature Sensitive **C** = Ceramic for high thermal demand applications.

TxP Tweezer Cartridges
DxP Desoldering Tips

TxP Tweezer Cartridges

Compatible with: MFR-1140, MFR-2240, MFR2241 Systems and MFR-H4-TW hand-piece

BLADE		TFP-BLP1 TTP-BLP1 TCP-BLP1	1.0mm x 14mm (.04" x .55")
BLADE		TFP-BLP2 TTP-BLP2 TCP-BLP2	2.0mm x 14mm (.08" x .55")
		TFP-CNP1 TTP-CNP1 TCP-CNP1	Conical 0.4mm x 19.1mm (.015" x .75")
HEAVY DUTY			**A**
		TFP-BLH40 TTP-BLH40 TCP-BLH40	6.35mm (.25")
		TFP-BLH50 TTP-BLH50 TCP-BLH50	16mm (.62")
		TFP-BLH60 TTP-BLH60 TCP-BLH60	20.5mm (.81")
		TFP-BLH70 TTP-BLH70 TCP-BLH70	28mm (1.1")

DxP Desoldering Tips

Compatible with: MFR-1150, MFR-1350, MFR-1351 systems with MFR-H5-DS hand-piece and previous MFR-DSX, -DSI, -SDX, -SDI Systems with MFR-HDS hand-piece.
All dimensions shown are in mm (inches)

Standard

Long Reach

	A	B	TYPE
DFP-CN2 DCP-CN2	0.64 (.025)	1.78 (.070)	Standard
DFP-CN3 DCP-CN3	0.76 (.030)	2.03 (.080)	Standard
DFP-CN4 DCP-CN4	1.02 (.040)	2.28 (.090)	Standard
DFP-CN5 DCP-CN5	1.27 (.050)	2.64 (.104)	Standard
DFP-CN6 DCP-CN6	1.52 (.060)	2.84 (.112)	Standard
DFP-CN7 DCP-CN7	2.41 (.095)	3.63 (.143)	Standard
DFP-CNL3 DCP-CNL3	0.76 (.030)	2.03 (.080)	Long Reach
DFP-CNL4 DCP-CNL4	1.02 (.040)	2.28 (.090)	Long Reach
DFP-CNL5 DCP-CNL5	1.27 (.050)	2.64 (.104)	Long Reach

F = FR4 / Fiberglass, for most standard applications **T** = Temperature Sensitive **C** = Ceramic for high thermal demand applications.

Convection Rework Overview

SYSTEMS SERIES

MODULAR SYSTEMS

MRS-1200 SRS Scorpion Rework System

APR Scorpion Rework Systems

FOR MEDIUM

HANDHELD SERIES

PRE-HEATERS

PCT-1000 Programmable Pre-Heater

PCT-100 Pre-Heater

DIGITAL

ANALOG

Convection Rework Overview

SEMI-AUTOMATED SYSTEMS

APR-2000-SCS Scarab Site Cleaning System

APR-5000-XLS Rework Systems

TO LARGE BOARDS

CONVECTION TOOLS

HCT-1000 Programmable Convection Tool

NEW HCT2-120 Hot Air Pencil

HCT-900 Convection Tool

DIGITAL ANALOG

Scorpion Rework System

The Scorpion Advanced Package Rework System ensures both accurate component placement and custom tailored reflow profiles in one user friendly, single platform rework system.

The challenges of array package rework, and the inability to easily inspect placement accuracy, call for a solution that allows for simultaneous viewing of Printed Circuit Board pads and component balls for accurate placement.

The Scorpion Rework System fills this need with quick, accurate placement through the use of an all new vision system employing dual image overlay technology. This new vision system features LED lighting both top and bottom for shadow-free component visualization and component alignment. The HD camera is ready to go out of the box.

The two-head design allows the Scorpion Rework System to be tailored to the users specific rework needs and allows precision alignment of the smallest BGAs, QFNs and Micro SMDs with the highest accuracy. The open-ended board holder fits a wide variety of large, small and odd-shaped boards while allowing precise positioning over the patented dual subzone preheater.

The standard auto-profile mode ensures fast and easy profile creation with a minimum of setup time. By selecting your temperature targets any operator can quickly and accurately create reflow profiles for a wide variety of boards, and then save them in memory for future use.

Source temperatures and time intervals can be modified “On-the-Fly”, eliminating the need to wait for the current profile to terminate before modifications can be made. Precise solder joint temperatures are measured and displayed on a real time graphical display, thus providing the necessary data to accurately and easily establish the optimum reflow profile for each particular application within minutes.

Systems

APR-1200A-SRS
Scorpion Advanced Package Rework System

APR-1200-SRS
Scorpion Rework System, SmartPlace Technology & Precision Placement Package

Upgrade Kits

APR-SRS-UK1
Precision Placement Package

APR-SRS-UK2
Contactless IR Sensor

APR-SRS-UK3
Side-view Camera

(see details on page 38)

Scorpion Rework System

Hardware Features

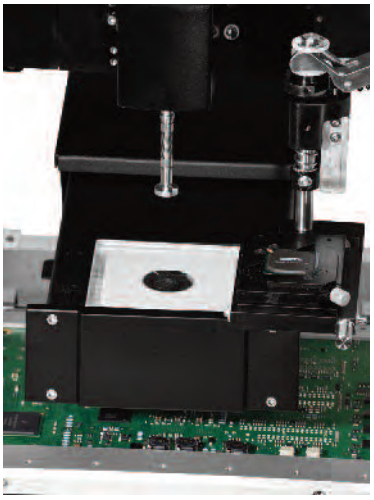
- Desktop sized
- 2800W dual zone preheater with 550W top heater
- Single phase 208-240VAC, 50/60Hz, 13A
- Modular design allows customers to customize the unit to meet their needs
- A 343mm (13.5") x open-ended PCB holder with micrometer adjustment
- Mechanical X and Z axis movement on linear bearings for long-life and minimal maintenance
- Component is retracted automatically at the end of reflow when removing parts
- Linux-based integral computer
- External USB for file transfer
- High definition SmartPlace vision system which uses dual CMOS sensors to assist in the placement of components and requires no calibration
- Optional Precision Placement Head for ultra fine pitch components with placement accuracy of .038mm (0.0015”) (APR-SRS-UK1)
- Contactless IR sensor for auto start at pre-determined temperatures (APR-SRS-UK2)
- New side-view camera for increased reflow visibility (APR-SRS-UK3)

Software Features

- Auto-Profiling
- On the fly profile management of target set points, adding and subtracting time zones, and profile measurement points
- Real time graphical display of solder joint temperatures
- Internal storage of profile data with expansion and transfer via a USB flash drive
- Graphics-based user interface for simple operation
- Simple heater calibration
- Password protection for operators and engineers

Smartplace Technology Vision System Features

- Dual, full color HD camera
- Synchronized 50x zoom
- 45mm x 45mm (1.77" x 1.77") viewing area
- Selectable camera views
- Diffused LED lighting for shadow-free component alignment



Operations Features

- Uses existing APR-5000 Series reflow and vacuum nozzles
- Precision Placement head uses pick and place machine nozzles
- Small footprint, 457mm x 559 mm x 660mm (18” x 22" x 26")
- Made in the USA

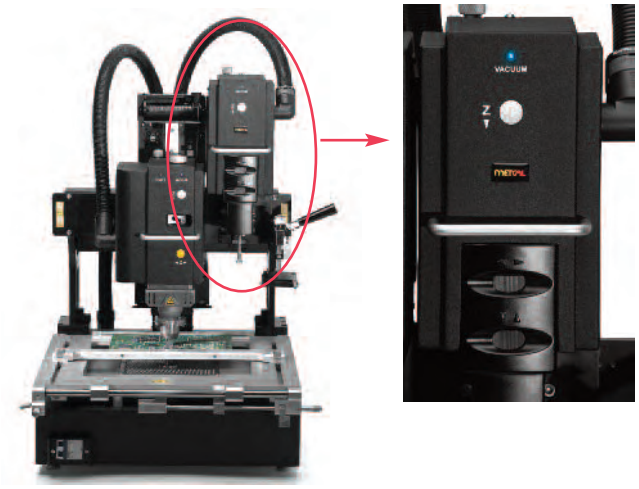
Scorpion Rework System

Upgrade Kits

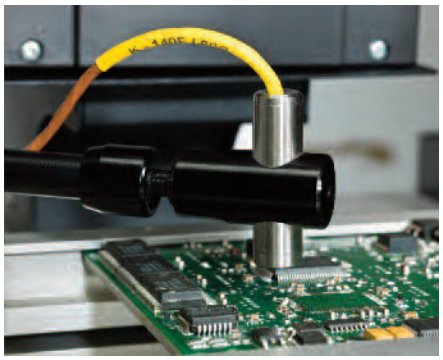
APR-SRS-UK1 Precision Placement Head
For placement accuracy to 0.0015" (.038mm)

Also included with kit:

UBS-SRS	Under Board Support
PNZ-07	Vacuum Pick-Up Nozzle, 0.7mm O/D
PNZ-24	Vacuum Pick-Up Nozzle, 2.4mm O/D
PNZ-60	Vacuum Pick-Up Nozzle, 0.5 Component
PNZ-AD	Nozzle Adaptor for Fine Placer Head



APR-SRS-UK2 Contactless IR Sensor
Features a remote temperature sensor to ensure repeatability



APR-SRS-UK3 Side-view Camera
Facilitate visibility of reflow

TECHNICAL SPECIFICATIONS

Input Voltage	208-240VAC, 50/60Hz, 13 Amp Single Phase

Power Consumption

System Total	2800W

Pre-Heater

Inner Zone*	900W
Outer Zone*	1800W
Reflow Heater	550W

* both heaters can be used at the same time

Temperature Control Type

Closed-Loop Control (Thermocouple)

Maximum Source Temperature

Reflow Head	400°C (752°F)
Pre-Heater (Inner/Outer)	350°C (662°F)
Airflow Control	Pre-Set to 8, 16 & 24/min
Supply	24V DC Blower
Operating Temperature	5°C (41°F) to 40°C (104°F)
Maximum Relative humidity	80% at 31°C (88°F) decreasing linearly to 50% at 40°C (104°F)
Maximum Altitude	2000m (6500 ft)
Pollution Degree	2 per IEC 644
Insulation category	II

Component Handling

Max. Size	45mm x 45mm (1.77" x 1.77")
Min. Size	0.51mm x 0.25mm (0.020" x 0.010")
Max. Weight	55 g (1.94 oz)

PCB Handling Capability

Max. Size	343mm (13.5") x open-ended
Max. Thickness	6mm (0.25")
Rework Area	305mm x 305mm (12" x 12")

Vision

Max. Field of View	45mm x 45mm (1.77" x 1.77")

System

Dimensions W x D x H	457mm x 559mm x 660mm (18" x 22" x 26")
Weight	63.5kg (140 lbs)
System Warranty	One-year parts & labor 90 days heaters & lamps
Approvals	TUV German standards, CE

Accessories

Included with APR-1100-SRS and APR-1200-SRS

FSL-SRS-3	Long spring PCB Finger 3mm (Pack 3)
FSS-SRS-3	Short spring PCB Finger 3mm (Pack 3)
AC-TC-40-36	Thermocouple, 40 Gauge (qty 3)
VNZ-ORINGK	O-Ring Kit (assortment, qty 5 for each of the 4 sizes)
SRS-OVK	Optical Verification Kit
VNZ-12	Vacuum Pick-Up Nozzle,12mm, Reflow Head
VNZ-08	Vacuum Pick-Up Nozzle, 8mm, Reflow Head
VNZ-05	Vacuum Pick-Up Nozzle, 5mm, Reflow Head
VNZ-01	Vacuum Pick-Up Nozzle, 1mm, Reflow Head
AC-RP	Nozzle Removal Pad
20987	CSP Adjustable V Block
19782	BGA Adjustable V Block
KAP-100	Pre-cut Kapton Tape (qty 100)
UBS-SRS	Under Board Support

Included with APR-1200-SRS only

PNZ-07	Vacuum Pick-up Nozzle, 0.7mm O/D
PNZ-24	Vacuum Pick-up Nozzle, 2.4mm O/D
PNZ-60	Vacuum Pick-up Nozzle, 0.5 Component
PNZ-AD	Nozzle adapter for Precision Placement Head

Optional Accessories

FSL-6MM-SRS-3	Long PCB fingers, 6mm clip (pack of 3)
FSS-6MM-SRS-3	Short PCB fingers, 6mm clip (pack of 3)
SRS-AK	Accessories Kit
VAC-P100	Vacuum assist plate kit (pack of 100)
VNZ12-ORING	12mm O-Rings (pack of 50)
VNZ08-ORING	8mm O-Rings (pack of 50)
VNZ05-ORING	5mm O-Rings (pack of 50)
VNZ-005	Vacuum Pick-up Nozzle, 0.5mm O/D, 10mil hole
PF-1	Solder Paste/Flux Prep Plate
SRS-CALKIT	Thermal Calibration Kit
APR-VRT	Vacuum Nozzle Removal Tool
TF-AT-SRS	Tape Feeder, Adjustable
AC-MAG30X	Magnifier

VNZ Nozzles

CSP / BGA Adjustable V Block

Under Board Support

Accessories Kit

NZA Nozzles

Reflow Nozzles & other accessories - See pages 42-44

The Scorpion system accepts the full range of APR and QX series reflow nozzles. Flux transfer plates and solder paste plates are available to ensure repeatable process control during the replacement operation.

NEW PNZ PLACEMENT NOZZLES TIPS AND RUBBER TIPS - See page 42

APR-5000-XL/XLS
Advanced Package Rework System

The APR-5000-XL Advanced Package Rework System provides board capability with small board precision. This system performs precise, cost effective rework of the widest range of PCBs and component types, from large boards up to 24.5" x 24.5" (622mm x 622mm) to components down to 0.020" x 0.010" (0.5mm x 0.25mm).

The flexible APR-5000-XL System incorporates dual stage pre-heaters and has the thermal capacity and control to execute precise profiles of both large and small PCBs, delivering uniform temperature control horizontally, across the surface of PCBs up to 0.25" (6.35mm) thick, and vertically between the die and ball of the reworked component.

Motorized X,Y, Z adjustments speed placement and help ensure process repeatability. In addition, motorized Theta axis provides 360° rotation to simplify component orientation. Together, these advanced controls reduce operator fatigue, improve placement accuracy and provide process repeatability.

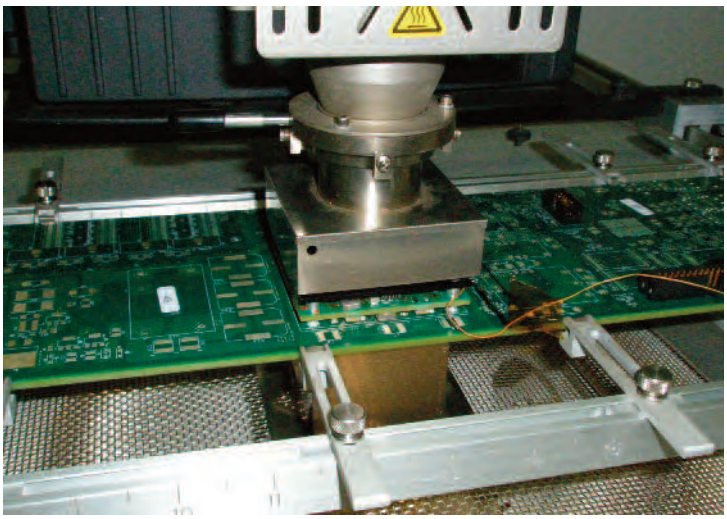
Featured on the APR-5000-XL Advanced Package Rework System is an innovative Split Vision System, which allows operators to view the opposite corners of a component, including splitting on rectangular components, with the necessary magnification to make its placement and registration fast and accurate.

Features

- New dual simultaneously operating subzones provides additional power for faster and safer rework operations.
- New software enables fast and easy profiling
- New dual subzone design speeds up the process while allowing the operating temperatures to remain lower protecting the component and PCB

Key benefits

- Increased Productivity
- Precise thermal control across critical assembly regions
- Reduction of rework cycle time protects the component under rework from thermal damage.
- Better management of the narrow lead-free process window without reaching excessive peak temperatures that damage components, connectors, other solder joints and the PCB substrate

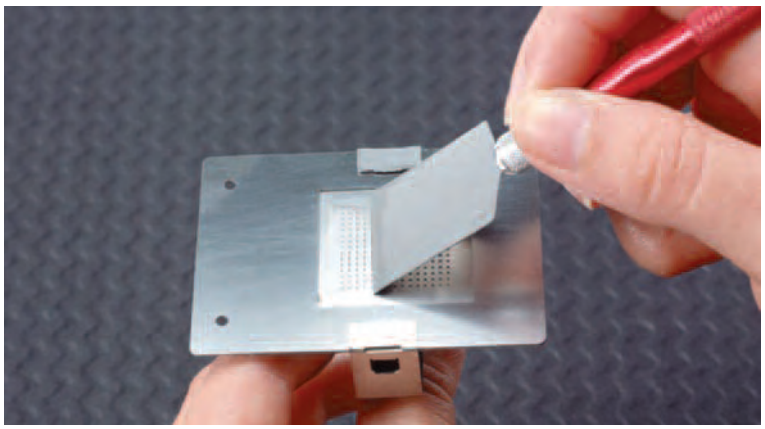


APR-5000-XLS System configurations and technical specifications on pages 44-45

Accessories

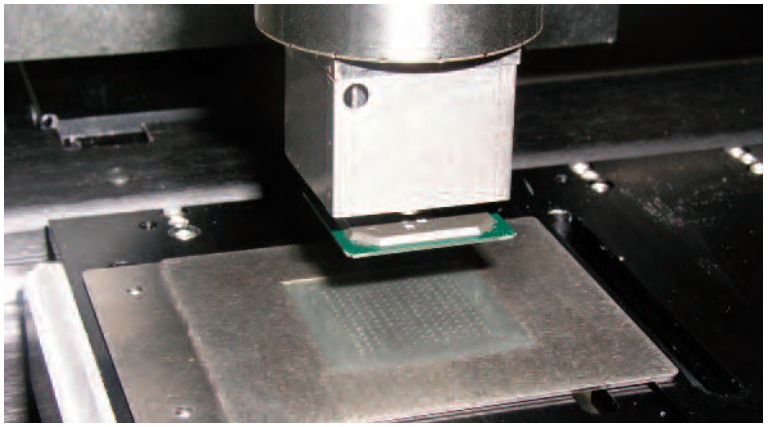
Component Stenciling Templates

Metcal has designed a unique tool, Component Stenciling Templates, for printing on the underside of components. This easy procedure is designed for use on PBGA, CBGA, CSP balled devices as well as Land Grid Array (LGA) components. This is an ideal process for small components and situations where traditional stencil access is limited by the close proximity of adjacent components.



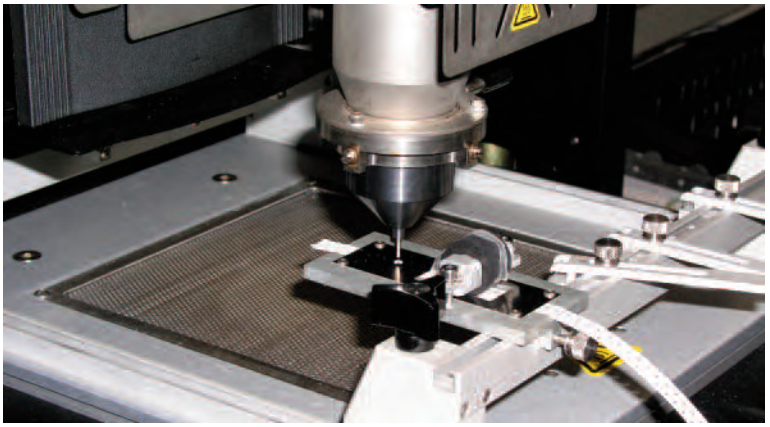
Dip Transfer

This process involves dipping a component into gel flux, depositing an exact amount of flux. This process is quick, consistent and clean, and negates the need to clean after reflow. Available for both solder balled and leaded devices. All kits are supplied with a metal spatula. Ideally select a dip plate that is half the diameter of the solder balls on components.



Tape Feeder

Picking up small surface mount components with tweezers is not practical and may damage the component. This is a unique way of presenting small components to a rework machine.



Nozzles

A comprehensive range of standard reflow nozzles available to suit the most common array packages is available. The reflow nozzle works with vacuum pickup. The tweezer nozzle works with devices with limited pick up area or multilayer structure by providing mechanical tweezer action pickup instead of vacuum pickup e.g. PoP, sockets, connectors, inductors, potentiometers and through-hole components.

Nozzles Tips & Rubber Tips

Placement Nozzle Tips

The new Precision Nozzles (PNZ) are for use with the Scorpion Precision Placement Head. These stainless steel nozzles are precision machined to ensure a secure vacuum connection with a variety of surface mount components

Part No.	DESCRIPTION	COMPONENTS
PNZ-001	Nozzle (0.03mm Ceramic)	01005
PNZ-03	Nozzle (0.013”)	0201, 0402
PNZ-05	Nozzle with taper (0.018”)	0402, 0603, 0805, 1206
PNZ-07	Nozzle (0.028”)	0402, 0805, 1206
PNZ-07C	Nozzle ESD Compliant (0.028”)	0402, 0805, 1206
PNZ-07C-ORING	Seal for PNZ-07C Nozzle, (Pack of 10)	
PNZ-10	Nozzle (0.039”)	0805, 1206, 1210
PNZ-10C	Nozzle, ESD Compliant (0.039”)	0805, 1206, 1210
PNZ-14	Nozzle (0.055”)	1210, 1812, 1825
PNZ-24	Nozzle (0.094”)	1812, 1825, SOT 89, SOMIC16+, SOIC 8+, PLCC 20
PNZ-36	Nozzle (0.141”)	SOIC8+, PLCC18+, SOLIC16+
PNZ-36C	Nozzle, ESD Compliant (0.141”)	SOIC8+, PLCC18+, SOLIC16+
PNZ-36C-ORING	Seal for PNZ-36C Nozzle, (Pack of 10)	
PNZ-50	QE Nozzle (0.5”)	>.50”components, QFP’s
PNZ-60	QF Nozzle (0.5”)	>.50”components, QFP’s
PNZ-70	Nozzle, ESD Compliant (0.5”)	>.50”components, QFP’s
PNZ-80	Nozzle, ESD Compliant, V-RING (0.5”)	>.50”components, QFP’s
PNZ-LED	Nozzle, LED	Lumileds Rebel, RebelES LEDs

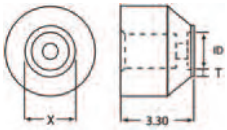
Placement Nozzle Adaptor

PNZ-AD	Placement Head Z-axis adapter
PNZ-AD-ORING	Placement Head Z-axis. Adapter O-ring (Pack of 10)

Replaceable Rubber Tips

The RT10 rubber tip, used with the Scorpion fine placement head, offers outstanding quality and performance features. The pick-up tip has a relieved tip surface, which minimizes surface contact with the component. Precision tolerances of +/-0.025 to 0.050mm ensure a repeatable setup when changing tips, while embossed code numbers help line personnel with identification and control. Together with proprietary ultra-pure and antistatic rubber, the RT10 tip is ideal for component attachment.

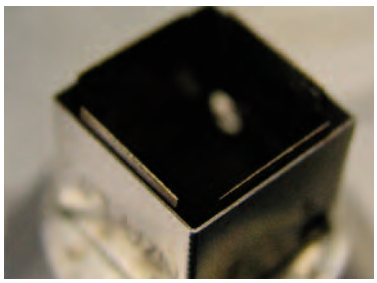
PNZ-RT10-7XX	ESD Compliant Nozzle Body and (1) ESD Tip
PNZ-RT10-7XXT	RT10 Replaceable ESD Rubber Tip Only
PNZ-RT10-BODY	ESD Compliant Nozzle, Body Only

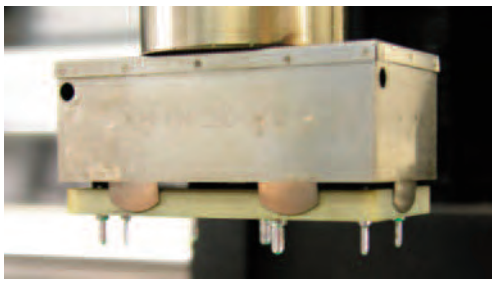


Part No. Body + Tip	Part No. Tip Only	X in	T in	ID in	X mm	T mm	ID mm
PNZ-RT10-700	PNZ-RT10-700T	0.025	0.010	0.004	0.635	0.266	0.101
PNZ-RT10-701	PNZ-RT10-701T	0.030	0.007	0.023	0.75	0.17	0.58
PNZ-RT10-702	PNZ-RT10-702T	0.039	0.010	0.029	1.00	0.25	0.75
PNZ-RT10-703	PNZ-RT10-703T	0.049	0.013	0.036	1.25	0.32	0.93
PNZ-RT10-704	PNZ-RT10-704T	0.059	0.012	0.047	1.50	0.30	1.2
PNZ-RT10-705	PNZ-RT10-705T	0.069	0.012	0.057	1.75	0.30	1.45
PNZ-RT10-706	PNZ-RT10-706T	0.079	0.012	0.067	2.00	0.30	1.7
PNZ-RT10-707	PNZ-RT10-707T	0.089	0.012	0.077	2.25	0.30	1.95
PNZ-RT10-708	PNZ-RT10-708T	0.098	0.012	0.086	2.50	0.30	2.2
PNZ-RT10-709	PNZ-RT10-709T	0.118	0.016	0.102	3.00	0.40	2.6
PNZ-RT10-710	PNZ-RT10-710T	0.138	0.016	0.122	3.50	0.40	3.1
PNZ-RT10-711	PNZ-RT10-711T	0.157	0.016	0.141	4.00	0.40	3.6
PNZ-RT10-712	PNZ-RT10-712T	0.177	0.016	0.161	4.50	0.40	4.1
PNZ-RT10-713	PNZ-RT10-713T	0.197	0.016	0.181	5.00	0.40	4.6

Nozzles & Kits

Part No.	DESCRIPTION
BRP-KIT-LGA100-04	Full kit (3pcs) w/ base fixture, pattern & body plates for LGA100-0.4mm (also incl. clamp & squeegee)
BRP-KIT-BASE	BRP kit base fixture only
BRP-KP-LGA100-04	Kit plates (2pcs), pattern and body plates only (minus base) for LGA100-0.4mm
BST-256-100	Standard BST plate, clamp & squeegee, PBGA 256, 1.0mm pitch
BST-256-127	Standard BST plate, clamp & squeegee, PBGA 256, 1.27mm pitch
BST-388-127	Standard BST plate, clamp & squeegee, PBGA 388, 1.27mm pitch
TF-AT-SRS	Tape Feeder, Adjustable - TF-AT-SRS
NZA-490-490*	APR Reflow Nozzle 49mm x 49mm
NZA-450-450	APR Reflow Nozzle 45mm x 45mm
NZA-400-400*	APR Reflow Nozzle 40mm x 40mm
NZA-350-350*	APR Reflow Nozzle 35mm x 35mm
NZA-300-300	APR Reflow Nozzle 30mm x 30mm
NZA-270-270	APR Reflow Nozzle 27mm x 27mm
NZA-250-290	APR Reflow Nozzle 25mm x 29mm
NZA-230-230*	APR Reflow Nozzle 23mm x 23mm
NZA-280-150	APR Reflow Nozzle 28 mm x 15 mm
NZA-200-200**	APR Reflow Nozzle 20 mm x 20 mm
NZA-180-180***	APR Reflow Nozzle 18 mm x 18 mm
NZA-150-150**	APR Reflow Nozzle 15 mm x 15 mm
NZA-130-130***	APR Reflow Nozzle 13 mm x 13 mm
NZA-100-100***	APR Reflow Nozzle 10 mm x 10 mm
NZA-080-095***	APR Reflow Nozzle 8 mm x 9,5 mm
NZA-080-080**	APR Reflow Nozzle 8 mm x 8 mm
NZA-060-060***	APR Reflow Nozzle 6 mm x 6 mm
NZA-030-ROUND	APR Reflow Nozzle 3mm ID round
NZA-TW-180-180	APR Tweezer Nozzle 18mm x 18mm
NZA-TW-150-150	APR Tweezer Nozzle 15 mm x 15 mm
NZA-TW-130-130	APR Tweezer Nozzle 13 mm x 13 mm
NZA-TW-100-100	APR Tweezer Nozzle 10 mm x 10 mm
NZA-TW-080-080	APR Tweezer Nozzle 8 mm x 8 mm
NZA-TW-060-060	APR Tweezer Nozzle 6 mm x 6 mm
NZA-555-555-CGA	APR Reflow Nozzle 55.5mm x 55.5mm (column grid array nozzle)
NZA-470-470-CGA	APR Reflow Nozzle 47mm x 47mm (column grid array nozzle)
NZA-355-455-CGA	APR Reflow Nozzle 35.5mm x 45.5mm (column grid array nozzle)
NZA-350-350-CGA	APR Reflow Nozzle 35mm x 35mm (column grid array nozzle)
DTP-BGA	Set of 3 plates, apertures 28, 35 & 45mm, depth 0.012" (0.30mm) used for 1.27mm pitch 30 Mil BGA balls (.76mm)
DTP-CSP	Set of 3 plates, apertures 10, 16 & 21mm, depth 0.006" (0.15mm) BGA/CSP used for BGAs with 12 Mil balls (.3mm dia)
DTP-40-8	8 Mil dip plate standard for 1mm pitch BGA with 20 Mil balls 0.02" (0.5mm)
DTBK-USMD	Kit, uSMD Flux Transfer Blocks, set of 2 blocks, depth 0.003" (0.08mm) and 0.004" (0.10mm) used for solder balls 6-8 Mil (.15-2mm dia)
DTBK-FC	Kit, Flip Chip Flux Transfer Blocks, set of 2 blocks, depth 0.001" (0.025mm) and 0.002" (0.051mm)
APR-NK	APR-5000 Nozzle Kit (*Includes 1 of each *** 1 included in both kits)
APR-NK-CSP	APR-5000 CSP and Micro SMD Nozzle Kit (**Includes 1 of each *** 1 included in both kits)





Custom Nozzle Program available including Tweezer versions. Contact us: www.metcal.com

APR-5000-XL/XLS Part Numbers

Part No.	SYSTEMS DESCRIPTION
APR-5000-XLS-ML	200-240 VAC Advanced Package Rework System with Split Vision
APR-5000-XL-ML	200-240 VAC Advanced Package Rework System
Systems will be configured with desktop PC and monitor.	
Systems Include	
VNZ-19	Vacuum Pick-Up Nozzle 19mm O/D
VNZ-12	Vacuum Pick-Up Nozzle 12mm O/D
VNZ-08	Vacuum Pick-Up Nozzle 8mm O/D
VNZ-05	Vacuum Pick-Up Nozzle 5mm O/D
VNZ-03	Vacuum Pick-Up Nozzle 3mm O/D (2.39mm / .094" internal & 3.17mm / .128" external)
VNZ-01	Vacuum Pick-Up Nozzle 1mm O/D (.76mm / .03" internal & 1.56mm / .06" external)
VNZ-005	Vacuum Pick-Up Nozzle 0.5mm OD (.25mm / .010" internal & 1.02-0.76mm / .04-.03" external)
FSS-APR	PCB Support Finger Short (8 included)
FSL-APR	PCB Support Finger Long (4 included with APR-5000, 8 with APR-5000-XLS/XL)
UBS-APR-XL	Under Board Support
APR-TC5	Color Fine Gauge Thermocouples (includes 5)
19782	Adjustable BGA Centering Nest
20987	Adjustable CSP Centering Nest
20534	Squeegee Blade Holder for Printing
SOFT-APR-5000-XL	Installation Software
APR-XL-PHNK	Preheater Nozzle Kit includes: Software, Preheater Nozzle 50mm, Preheater Nozzle 45mm, Preheater Nozzle 35mm, Preheater Nozzle, Base
Optional Accessories	
FS-APR-2	PCB Support Finger Short (Pack of 2)
FS-APR	PCB Support Finger Short (4 included)
FL-APR-2	Large PCB Support Finger Long for PCBs from 2.2mm to 6mm (Pack of 2)
FSL-APR-2	PCB Spring Support Finger Long (Pack of 2)
FSS-APR-2	PCB Spring Support Finger Short (Pack of 2)
FLS-APR-2	Large PCB Finger Short for PCBs from 2.2mm to 6mm (Pack of 2)
FLL-APR-2	Large PCB Finger Long for PCBs from 2.2mm to 6mm (Pack of 2)
FLSS-APR-2	Large PCB Spring Finger Short for PCBs from 2.2mm to 6mm (Pack of 2)
FLSL-APR-2	Large PCB Spring Finger Long for PCBs from 2.2mm to 6mm (Pack of 2)
PF-1	Print Preparation Plate
VAC-P100	Self-adhesive plates for removal of non-uniform components
APR-TC3	Color Fine Gauge Thermocouples (includes 3)
AC-TCK-40-36	Thermocouple, 40 Gauge

Technical Specifications

TECHNICAL SPECIFICATIONS	
	APR-5000-XL/XLS
Input Voltage	200 - 240 VAC 50/60 Hz 25 Amp Single Phase
Power Consumption: System Total	 5100 W
Pre-Heater: Inner Zone Outer Zone Reflow Heater	 1400 W 2800 W 550 W
Temperature **Control Type**	Closed-Loop Control (RTD Sensors)
Maximum Source Temperature: Reflow Head Pre-Heater	 400ºC (752ºF) 350ºC (662ºF)
Airflow Control	Pre-Set to 8,16 &24 l/min
Supply	Self-Contained Pump
Nitrogen Input	Nitrogen capable for the top flow (requires 65 psi or 4.6 bar)
Component Handling / Reflow Nozzles Maximum Size	 55 mm x 55 mm (2.16" x 2.16") XL, XLS Larger reflow nozzles can be ordered, contact us.
Minimum Size	0.51 mm x 0.25 mm (0.020" x 0.010")
Maximum Weight	55g (1.94oz) or 84g (3oz) with VNZ-19
PCB Handling Capability Standard	X x Y 622 mm x 622 mm (24.5" x 24.5")
Rework Area Head Adjustment Aligned inner preheater and reflow heater	X x Y 622 mm x 622 mm (24.5" x 24.5") 445 mm x 445 mm (17.5" x 17.5")
Maximum Thickness	6 mm (0.25")
Vision Maximum Field of View Optional Split Field (APR-5000-XLS) System Dimensions W x D x H Weight	40mm x 40mm (1.6" x 1.6") XL 55mm x 55mm (2.2" x 2.2") XLS Corner crossover on large component 914 x 914 x 838 mm (36" x 36" x 33") 100 kg (220 lbs)
System Warranty	1 Year (Excluding Consumables)
Agency Approvals	CE, cTUVus, GS

Scarab Site Cleaning System

The cost and complexity of today's electronic assemblies are forcing manufacturers to reexamine the tools and techniques in operation today. Contactless cleaning of component pads prior to component replacement is a growing need in the industry.

The **Scarab Site Cleaning System** ensures accurate and repeatable cleaning of the component pad in one user friendly, single system. The Scarab System redefines performance and addresses the technical demands presented by component manufacturers today.

The **Scarab Site Cleaning System** addresses industry needs with an automated system capable of cleaning components pads without contact. The motorized design allows the system to clean without contact component pads up to 50mm x 50mm within a 101mm x 101 mm area.

The system can accurately and repeatedly clean pads with pitches of 0.2mm to 1.5mm. The open-ended board holder fits a wide variety of large, small and odd-shaped boards while allowing positioning over the patented dual subzone preheater.

The **Scarab Site Cleaning System** joins the Scorpion Rework System as a solution to the challenges faced by manufacturers in today's rework environment.

Operation Features

- Compact footprint for easy bench top use
- Multiple reflow and vacuum nozzles available to meet your application requirements
- Precision laser height sensor adjusts the Z-axis automatically for consistent operation over the solder removal area
- The system features an option for removing reworkable epoxy underfill from the pad area
- Easy to change collection change for quick and easy disposal of collected solder and glue

Hardware Features

- Desktop sized
- 2800W dual zone preheater with 550W top heater
- 208-240VAC, 50/60Hz, 15A-13A, Single Phase
- A 343mm (13.5") x open-ended PCB holder
- Motorized X, Y, and Z axis movement on linear rails for long-life and minimal maintenance
- Linux-based integral computer
- External USB for file transfer
- Ethernet connection for remote file management
- Venturi based vacuum system which requires shop air for operation capable of delivering 23inHg.

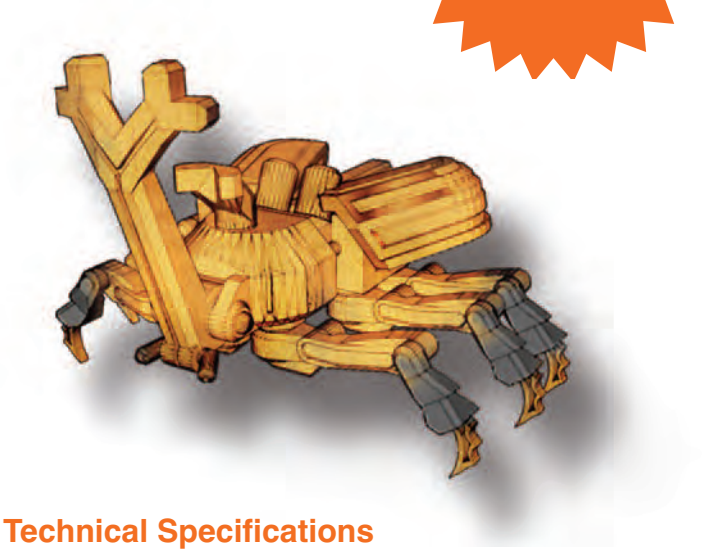
Software Features

- Auto-Profiling allows operators the ability to create successful reflow profiles the first time
- On the fly profile management of target set points, adding and subtracting time zones, and profile measurement points
- Real time graphical display of solder joint temperatures
- Internal storage of profile data with expansion and transfer via a USB flash drive
- Graphics-based user interface for simple operation
- Password protection for operators and engineers

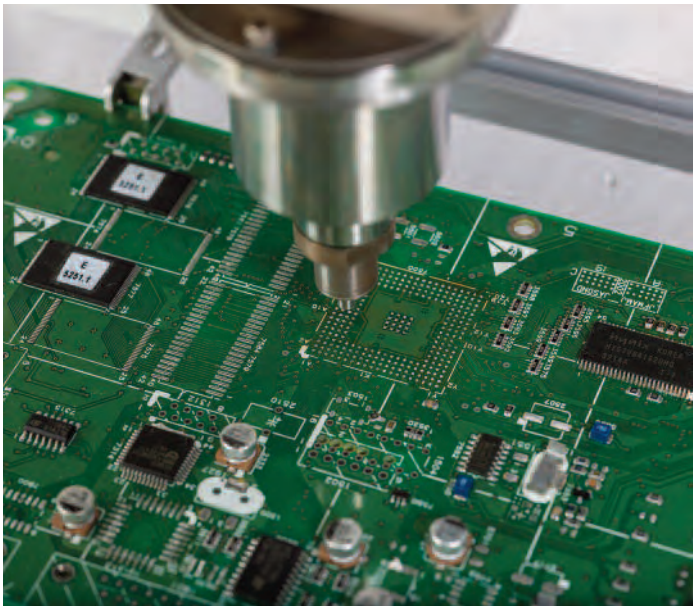
Scarab Site Cleaning System

The standalone **Scarab Site Cleaning System** allows you to add site cleaning capability to your operation without the investment of replacing your current component rework system.

New Product



Part No.	Description
APR-2000-SCS	Scarab Site Cleaning System
APR-2100-SCS	Scarab Site Cleaning System with Underfill Removal Kit
APR-SCS-UK1	Underfill Removal Upgrade Kit



Technical Specifications

Input Voltage	208-240VAC, 50/60Hz, 15 Amp Single Phase
Power Consumption	
System Total	2800W
Inner Zone	900W
Outer Zone	1800W
Reflow Heater	550W
Operating Temperature	41°F (5°C) to 104°F (40°C)
Maximum Relative humidity	80% at 88°F (31°C) decreasing linearly to 50% at 104°F (40°C)
Maximum Altitude	6500 ft. (2km)
Pollution Degree	2 per IEC 644
Insulation category	II
Temperature Control Type	Closed-Loop Control (Thermocouple)
Laser Class	Alignment Sensor FDA Class IIIa
	Laser Height Sensor FDA Class II
Maximum Source Temperature	
Reflow Head	400°C (752°F)
Pre-Heater (Inner/Outer)	350°C (662°F)
Airflow	
Control	Low, Medium, & High
Supply	24V DC Blower
Vacuum (Venturi generated)	23 inHg @80-100 psi
Collection Chamber Capacity	6.3k mm3
PCB Handling Capability	
Maximum Size	13.5" x open (304.8mm x open)
Maximum Thickness	0.25" (6mm)
System Dimensions W x D x H	18" x 22" x 26" (457mm x 559mm x 660mm)
Weight	140 lbs (63.5kg)
System Warranty	One-year parts & labor

MRS-1100A Modular Rework System

The MRS-1100A Modular Rework System is an integrated convection rework system for the removal and reflow of BGA/CSP and SMT components.

The MRS-1100A is comprised of a convection tool, a preheater, an adjustable tool holder, and a free-standing board holder to create a manually assisted rework system. A series of nozzles, targeting a variety of applications round out the product offering for this system.

With standard features such as programmability, a digital display, program storage of up to 50 profiles, this system is not only versatile, but also easy and efficient to work with. A choice of board holders and accessories are available that make the system capable of handling multiple sizes of PCBs.

The MRS-1100A allows you the choice of using either the embedded profiling capability that can be configured to operate at a fixed temperature, or a four zone programming option. The unit also allows the temperature to be controlled either at the heat output (internal) or at the board (external). The “external” control function uses a thermocouple which can be placed on the board or a component.

Key Features & Benefits

- Digital display for repeatable temperature settings and profile control
- Automatic control of the preheater for simple operation
- Easy profile creation for operator repeatability
- Integrated vacuum pickup for easy component removal
- Hand held or tool holder mounted for operator comfort
- Manual mode for quick setup
- External thermocouple for process setup and verification
- Digital controlled airflow for repeatable results
- X, Y, Z and Theta controls for component alignment
- Adjustable PCB holder for easy change outs
- Automatic vacuum lift off at the end of the cycle
- Password lockout of programmed profiles

The 4 components of the MRS-1100A are:

1. HCT-1000 Programmable Hand Held Convection Tool.
2. PCT-1000 Programmable Pre-heater.
3. ATH-1100A Adjustable Tool Holder.
4. BH-2000 Free standing board holder.

Part No.	Description
MRS-1100A	**Modular Rework System**

The 4 components of the MRS system can also be ordered separately.

HCT-1000 Programmable Handheld Convection Tool

The HCT-1000 is a fully Programmable Hand Held Convection Tool offering **fast and easy removal and placement of SMT components.**

The HCT-1000 stands out as a versatile convection rework tool. It can be used on its own or as part of the MRS-1100A Modular Rework System for more complex applications.

The system comes equipped with a 5mm nozzle and nozzle adapter. In addition, a wide range of nozzles are available.

Key Features & Benefits

- Integrated vacuum pickup for easy component removal
- Profile creation for operator repeatability and storage for up to 50 user defined profiles
- Manual mode for quick setup
- External thermocouple for process setup and verification
- Hand-piece controls for heater and vacuum
- Programmable, digitally controlled airflow for repeatable results
- Multiple modes of operation: manual, 4 zone heating (with the MRS-1100A System)
- The HCT-1000 is connected to the PCT-1000 via a cable when used as part of the MRS System
- May be used with ATH-1100A Adjustable Tool Holder

Technical Specifications

Size	229 x 178 x 152mm (9" x 7" x 6 ")
Weight	5.4kg (12 lbs.)
Rated Power	600 W
Input Voltage	100-240 VAC, 50/60 Hz
Storage	0°C to 50°C Temperature (32°F to 122°F)
Air Flow	5-25 l/minute
Source Temperature Range	Up to 450°C (840°F)
Vacuum Pump	15" Hg (381mm Hg)
Noise Level	<55 dBA

Part No.	Description
HCT-1000	Programmable Hand Held Convection Tool
Includes:	
HCT-PS1000	HCT-1000 Power Supply
HCT-HV1	Hand-piece with integral vacuum, cord and connector
HCTA-VC-KIT	Vacuum Cup kit, one of each * (see below)
HCTA-TH1	Hand-piece Tool Holder
HNA-1	Nozzle Adapter
HCTA-NW1	Nozzle Wrench
AC-TCK-36-36	Thermocouple 36 AWG, pack of 2
HCTA-CC	Communications Cable 4ft
HN-J0005	5mm Ø nozzle

Accessories

HCT-FS2 1
Footswitch, Dual, HCT-1000

HCT-HTRASSY
Heater Assembly

AC-TCK-40-36
Thermocouple 40 AWG, pack of 2

HCTA-VC50-5 *
Vacuum Cup, 3/16" (5.00mm), pack of 5

HCTA-VC64-5 *
Vacuum Cup, ¼" (6.4mm), pack of 5

HCTA-VC80-5 *
Vacuum Cup, 5/16" (8mm), pack of 5

HCTA-VC11-5 *
Vacuum Cup, 7/16" (11mm), pack of 5

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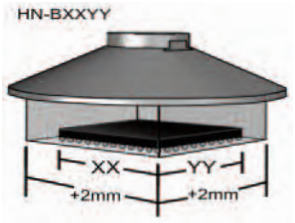
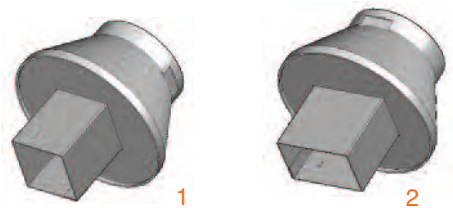
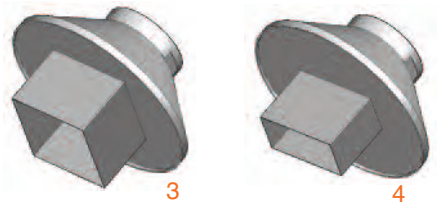
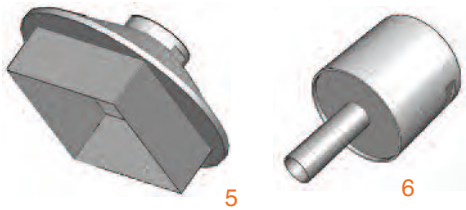
HCT-1000 Programmable Handheld Convection Tool









HN Series Nozzles

A series of 14 Nozzles are available for use with the MRS-1000 / HCT-1000. The nozzles fit applications reworking components of all sizes from (including, but not limited to) BGAs, QFPs, LGAs, PLCC and SOIC. A custom nozzle program is also available.

Nozzle Measurement and Selection

The nozzle part number (the digits after the “B”) represents the size of the component. 2mm have been added to each side of the internal nozzle dimension to allow for component access.

Part Number		Component Size	Components
HN-B0707	1	7mm X 7mm	CSP, LGA44
HN-B1010	1	10mm X 10mm	CSP, LGA178, LCC28
HN-B1414	1	14mm X 14mm	CSP, QFP, TQFP100
HN-B1408	2	14mm X 8mm,	CSP, SOIC24M
HN-B1515	3	15mm X 15mm	BGA
HN-B1818	3	18mm X 18mm	PLC44, CSP, TQFP100, BGA
HN-B2525	3	25mm x 25mm	BGA, PLCC68
HN-B1809	4	18.2mm X 8.5mm	SOLJ28, SOIC28M, TSOP32
HN-B2519	4	24.5mm X 18.5mm	QFP100, QFP80
HN-B2727	5	27mm X 27mm	BGA
HN-B3232	5	32mm X 32mm	BGA
HN-B3535	5	35mm X 35mm	BGA
HN-B4040	5	40mm X 40mm	BGA
HN-J0005	6	5mm Ø Diameter	DISCRETE

Nozzle Accessories

HCT-NC	7	Nozzle Carrier
HNA-1	8	Nozzle Adapter
HCTA-NW1	9	Nozzle Wrench

Metcal offers a full custom program for nozzles not available within the standard offering shown above. Please contact us: www.metcal.com

PCT-1000 Programmable Preheater

The PCT-1000 is a fully Programmable Preheater offering **more heat capacity for soldering with lower temperatures for faster and higher quality results.**

The PCT-1000 provides users exceptional ability to increase heat capacity with highly controlled thermal output.

The PCT-1000 can be used as a stand alone unit or as part of the MRS-1100A Modular Rework System.

Key Features & Benefits

- Adds heat capacity and enables lower process temperatures
- Used in a variety of processes including soldering, desoldering, SMD rework
- Provides faster production rates while lowering overall process temperatures.
- 2 modes: manual for constant heater temperature and profile for greater process control
- 4 programmable heating zones and 1 cooling zone
- Storage for up to 50 user defined profiles for easy set-up
- Heater control with temperature controlled either at the heater output or at the board
- High efficiency vortex heater design maximizes ramp to temperature for increased productivity

Part No.		Description
PCT-1000	1	Programmable Preheater
Includes:		
PCT-FS1	2	PCT-1000 Foot Switch
AC-TCK-36-36	3	Thermocouple 36 AWG, pack of 2

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Technical Specifications

Size	330 x 203 x 76mm (13" x 8" x 3")
Weight	3.4kg (7.5 lbs)
Rated Power	1200 W
Input Voltage	100-240 VAC, 50/60 Hz
Storage Temperature	0°C to 50°C (32°F to 122°F)
Air Flow	19 cfm (538 l/min)
Source Temperature Range	25°C to 400°C (77°F to 752°F)
Operational Modes	Setup, Run, Manual, Active Setup
Display segments	LCD 20 x 4 display
Number of Programs	50 memory locations
Number of Zones	5 (4 Heat Zones, 1 Cool Down Zone)

PCT-100 Focused Convection Preheater

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The PCT-100 is a focused convection preheater that is designed to **provide extra heat capacity** for demanding applications.

Unlike conventional preheaters, the PCT-100 Focused Convection Preheater directly targets the underside of the PCB providing a substantial thermal boost for lead-free processes.

Key Features & Benefits

- For hand soldering, through-hole desoldering, hot air SMT rework, lead-free, multi-layer boards and assemblies with large ground planes
- Improved process time and exceptional control of potentially damaging temperatures
- Vented top plate allows the PCB to be placed directly over the heater for maximum heat transfer
- Integrated or stand-alone board holder
- Optional adjustable-angle arm rest

Part No.		Description
PCT-100-11	1	Preheater 115V
PCT-100-21	1	Preheater 230V
PCT-101-11	2	Preheater 115V with Arm Rest
PCT-101-21	2	Preheater 230V with Arm Rest
PCT-102-11	3	Preheater 115V with Arm Rest and Boardholder
PCT-102-21	3	Preheater 230V with Arm Rest and Boardholder
PCT-103-11		Preheater 115V with Arm Rest and Integrated Boardholder
PCT-103-21		Preheater 230V with Arm Rest and Integrated Boardholder
PCT-1HE-11		Heating Element Replacement for PCT-100 115V
PCT-1HE-21		Heating Element Replacement for PCT-100 230V
BH-010		Integrated Boardholder for PCT-100 (see page 53)
BH-100	4	Boardholder for PCT-100
PCT-AR	5	Arm Rest for PCT-100
PCT-ARPAD		Replacement Pad for Arm Rest PCT-AR

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Technical Specifications

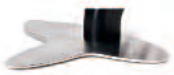
Input Voltage	115 V (PCT-100-11) 230 V (PCT-100-21)
Heater Rating	450 W
Storage Temperature	-10°C—60°C (14°F—140°F)
Environmental Temperature	0°C—40°C (32°F—104°F)
Air Flow	9.88 cfm (280 l/min)
Control Temperature	Variable up to 300°C (572°F)
Surface Resistivity ESD	$10^6\Omega$ - $10^{11}\Omega$
Dimensions (L x W x H)	205 x 155 x 65 mm (8" x 6.1" x 2.6")
Weight	1.6 kg (3.5 lbs)
Certificate/Approvals	cTUVus, CE

Adjustable Tool Holder & Board Holders

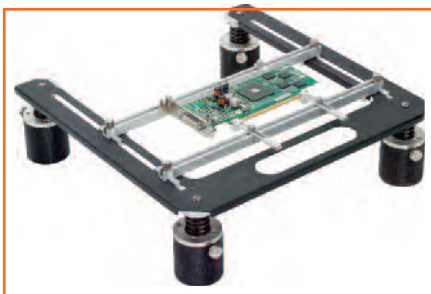
ATH-1100A Adjustable Tool Holder

- Designed to work with the HCT-1000 or as part of the MRS-1100A System.
- Uses the Advanced Head Assembly which features 4” of Z axis adjustment, ½” fine adjustment of the X & Y axis as well as 30° θ adjustment.
- Features locking hand-piece retainer, Z axis stop and mounting configurations for stand-alone operation or integrated as part of the MRS-1100A.
- Sturdy and easy to attach to the PCT-1000 Programmable Preheater when incorporated into the MRS System.
- Can be attached to the PCT-1000 or used as a standalone unit

ATH-BASE Optional Base plate for ATH-1100A when used as a standalone unit.



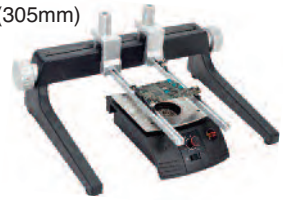
Board Holders



BH-2000

The BH-2000 is a free-standing board holder that provides a solid and stable base for a variety of PCB’s. The unit features easily adjustable rails to accommodate boards 8” (203mm) x open-ended.

Accommodate boards 12” (305mm) x 12” (305mm)



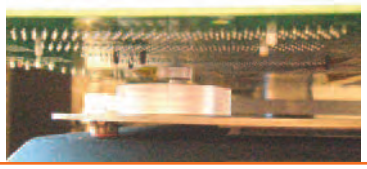
BH-100 Board Holder. Recommended for use with the PCT-100 Pre-heater

Accommodate boards 3.5” (89mm) x 7” (178mm)

BH-010 Integrated Boardholder for PCT-100

Minimum PCB size is 0.60” (15mm)

BH-1000 Post-Rail Board Holder. Includes: 4 posts, 2 rails with sliding clips, 4 support pins and flat-head support



BH-PK1000 Board Holder Pin Kit. Includes: 2 discs,2 long pins, 2 short pins

HCT-900 Handheld Convection Tool

The HCT-900 Hand Held Convection Tool offers a **low cost, versatile rework solution** for a wide variety of production and rework application challenges:

- Rework a wide range of simple and complex SMT components
- Rework pin in-hole devices such as sockets and connectors
- Remove solder shorts and splashes by using it with solder braid and flux
- Plastic applications such as applying shrink wrap to components

A closed loop feedback circuit allows the desired temperature to be achieved and maintained regardless of changes in the volume of airflow.

Key Features & Benefits

- Versatile Hot Air Tool for soldering and desoldering applications
- Robust and compact design
- Analog controls for both airflow and heat
- Closed loop feedback circuit controls the temperature
- Unique low noise air pump (less than 45 db) provides precise airflow control
- Fully ESD compliant

Part No.	Description
HCT-900-11	115V Hand Held Convection Tool
HCT-HE-11	Heating Element, Replacement, 115V
HCT-900-21	230V Hand Held Convection Tool
HCT-HE-21	Heating Element, Replacement, 230V

The HCT-900 can be used for the removal and replacing of electronic components, including lead-free, from 0201 up to 304 pin QFP.

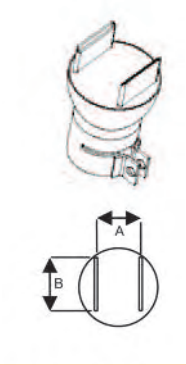
HCT-900 Handheld Convection Tool

Nozzle Selection

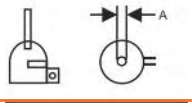
The HCT-900 is supplied with a standard single jet H-D50 (0.2", 5.0mm) nozzle. In addition, two rework nozzle kits, predefined for specific applications, are available, as well as a full selection of nozzles.

NZKT-1	Nozzle Kit for Chip Resistors, SOIC & TSOP Packages. Includes (one each): • **H-D25** • **H-SL16** • **H-SL28** • **H-SOJ40** • **H-TS48**
NZKT-2	Nozzle Kit for PLCC, QFP & BQFP packages. Includes (one each): • **H-P20** • **H-P44** • **H-P84** • **H-Q1420** • **H-Q2626**

Model	Chip Type	A mm (in)	B mm (in)
H-P20	PLCC-20	11.9 (0.47")	11.9 (0.46")
H-P28	PLCC-28	14.5 (0.57")	14.5 (0.57")
H-P32	PLCC-32	16.9 (0.67")	14.3 (0.56")
H-P44	PLCC-44	19.5 (0.77")	19.5 (0.77")
H-P52	PLCC-52	21.0 (0.83")	21.0 (0.83")
H-P68	PLCC-68	27.1 (1.07")	27.1 (1.07")
H-P84	PLCC-84	32.4 (1.28")	32.4 (1.28")
H-Q07	QFP-48	8.4 (0.33")	8.4 (0.33")
H-Q10	QFP-44	13.4 (0.53")	13.4 (0.53")
H-Q14	QFP-52,80	17.3 (0.68")	17.3 (0.68")
H-Q1420	QFP-64,80,100	23.4 (0.92")	18.1 (0.71")
H-Q28	QFP-120,128,144,160	31.2 (1.23")	31.2 (1.23")
H-BQ23	BQFP-100	22.4 (0.88")	22.4 (0.88")
H-Q3232	QFP-240	34.5 (1.36")	34.5 (1.36")
H-BQ38	BQFP-196	37.7 (1.48")	37.7 (1.48")
H-Q2626	QFP-208	29.8 (1.17")	29.8 (1.17")



H-S16	SOIC 14,16	6.8 (0.27")	10.2 (0.4")
H-SL16	SOL 14,16	10.6 (0.41")	10.8 (0.43")
H-SL20	SOL 20,20J	10.6 (0.41")	13.3 (0.52")
H-SL24	SOL 24,24J	10.6 (0.41")	15.9 (0.63")
H-SL28	SOL 28	10.6 (0.41")	18.4 (0.72")
H-SL44	SOL 44	16.0 (0.41")	27.9 (1.1")
H-SOJ32	SOJ 32	13.5 (0.53")	20.6 (0.81")
H-SOJ40	SOJ 40	13.5 (0.53")	25.4 (1.0")
H-TS24	TSOP 20-24	17.0 (0.67")	7.1 (0.28")
H-TS32	TSOP 28-32	21.0 (0.83")	9.1 (0.36")
H-TS40	TSOP 40	21.0 (0.83")	10.8 (0.43")
H-TS48	TSOP 48	21.0 (0.83")	13.3 (0.52")
H-TSW24	TSOP 20-24	10.2 (0.4")	18.4 (0.72")
H-TSW44	TSOP 24-28/40-44	12.7 (0.5")	19.8 (1.78")

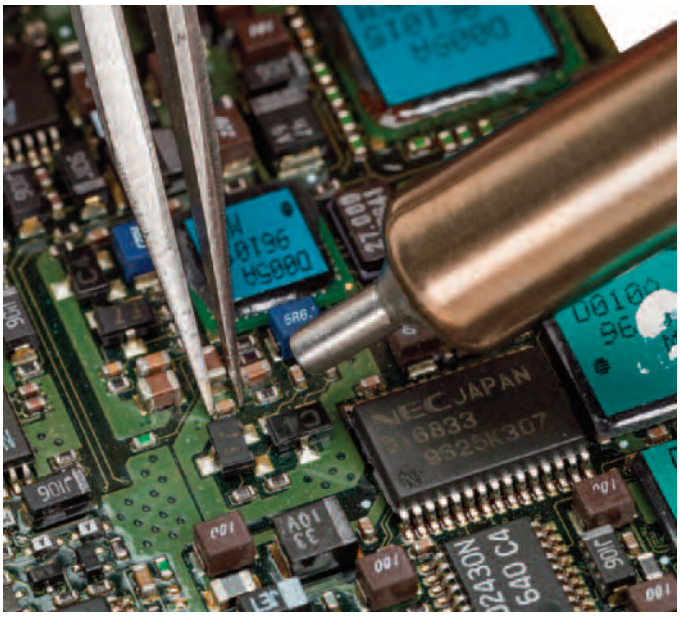


Model	ø A
H-D25	2.5 mm (0.1")
H-D50	5.0 mm (0.2")
H-D120	12.0 mm (0.47")

Technical Specifications

Input Line Voltage	230 V HCT-900-21 / 115V HCT-900-11
Power	320 W
Air Pump Type	Diaphragm
Air Flow	6-25 l/min
Control Temperature	100°C - 500°C (212°F - 932°F)
Dimensions (L x W x H)	210 x 170 x 140 mm (8.7" x 6.7" x 5.5")
Noise Level	Less than 46 dBA
Surface Resistivity	Unit: $10^5\Omega$ - $10^6\Omega$. Hand-piece & tube: $10^7\Omega$ - $10^{11}\Omega$
Weight	4.7Kg (10.4 lbs)
Certification / Approvals	cTUVus, CE

HCT2-120 Digital Hot Air Pencil



The HCT2-120 Hot Air Pencil is the latest addition to Metcal's offering of convection rework tools. This digital handheld convection tool is **ideally suited for light rework applications, which use smaller components and integrated circuits.**

As component miniaturization continues (i.e. 01005 components) the ergonomics of a pencil allow a user more freedom to access and rework components on the board without affecting adjacent parts. Larger hand-held convection systems commonly reflow and dislodge adjacent components due to a higher minimum airflow.

The HCT2-120's small nozzle sizes and precise and controllable airflow and temperature allow the operator to target only the desired component.

Key Features & Benefits

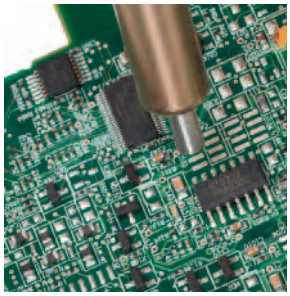
- 120 Watt Ceramic Heater and Dual Stage Air Pump: Provides the power and performance needed to deliver the right amount of thermal energy.
- Digital Airflow and Temperature Controls: Two LED displays provide a graphical and numerical representation of the desired airflow and temperature.
- Fast Response and Performance: A microprocessor controlled, closed loop feedback system provides fast heating, precise and stable temperature control.
- Standby Mode: When the hand-piece is placed into the workstand, the temperature will drop increasing heater life.
- Universal Power Supply: Automatically senses the input line voltage and adjusts accordingly, which allows for worldwide operation without adaptors or a change in performance.
- Ergonomic and Light Weight Hand-Piece that feels like a pencil, with a rubber grip. Increases operator comfort
- Nozzles: Six nozzles (1.5 mm – 4.0 mm) are included in the unit with a nozzle holder inside the workstand.
- Easily Change Heaters and Nozzles: Both can be changed in seconds, as shown below:

HCT2-120 Digital Hot Air Pencil

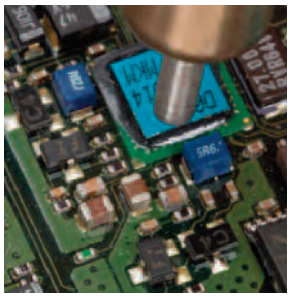
Applications

The HCT2-120 was developed for very small surface mount component sizes (1206's and smaller) and low board densities. For denser PCBA's or applications with heavy copper planes; boards >4 layers; or components larger than 5mm², use of a Metcal preheater (see pages 51 and 52) may be necessary.

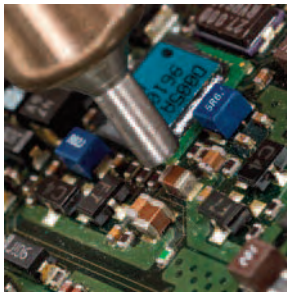
Part No.		Description
HCT2-120		Digital Hot Air Pencil
Includes:		
HCT-HTR120	1	120W Easy Change Heater
HN-120KIT-6	2	Pack of 6 nozzles (1.5mm, 2.0mm, 2.5mm, 3.0mm, 3.5 mm and 4.0 mm)
HCT-WS120	3	Workstand with nozzle holder
AC-CP2		Heatproof nozzle removal pad



SOICs



0201s



1210s

Technical Specifications

Ambient Operating Temperature	10 to 40°C
Input Line Voltage	100 – 240 VAC, grounded circuit
Input Frequency	50/60 Hz
Rated Power	75W
Air Flow	1.5 – 7.0 LPM
Noise Level	Typically under 52dBA at max airflow
Output Temperature Range	100°-450°C
Temperature Stability	10% of display value (> 250°C)
Certifications / Markings	cNRTLus, CE, RoHS + WEEE
Surface Resistivity	105 Ω -109 Ω /sq
Power Supply Dimensions w x d x h	10.6 cm (4.2") x 21.3 cm (8.4") x 17.0cm (6.7")
Workstand Dimensions w x d x h	7.6 cm (3.0") x 16.8 cm (6.6") x 8.6 cm (3.4")
Weight of the Power Supply	5.8 lbs. (2.63 kg)
Weight of the Workstand	0.9 lbs. (.4 kg)

Portable Fume Extraction Systems

BVX-100 Benchtop Single User Arm/Plenum System

- Quiet unit
- Portable, single user unit
- No external ducting or compressor needed
- Powerful 85m³/hr-airflow rate
- Unit easily fits on and under any workbench
- Innovative adaptor transforms the plenum into an arm
- Immediate extraction of fumes, particles and vapors
- Two filtration configurations: heavy soldering and light dust or light duty organic solvent and adhesive applications
- Bi-colored LED light indicates when the filters are blocked and require replacing

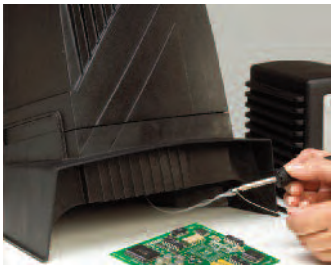
Part No.	Description
BVX-101	Bench-Top, single user arm/plenum system, Pre-HEPA-Gas
BVX-103	Bench-Top, single user arm/plenum system, Pre-Gas

Filters

FG-BVX	Deep Bed Gas Filter
FM-BVX	Main Filter (Combined HEPA/Gas)
FP-BVX	Pre-Filter (Pack of 5)

Accessories

BVX-ADT	Replacement Arm-To-Plenum Adaptor
BVX-IADT	Inverted Arm Adaptor, ESD Safe
BVX-BCK	Under Bench Mounting Bracket
BVX-CH01	Connection hose, 50mm (2") diameter, 1.8m (6') long
BVX-TB01	Table bracket with 2 C-clamps



Filters are easy to remove and replace.

BVX-200 Two Stations Portable Filter Unit

- Two station arm design for dynamic fume extraction
- Quiet brushless motor
- Complete portability, placed under or next to the bench-top
- Fitted with 2 x 50mm (2") Ø arms or 1 x 63mm (2.5") Ø arm
- Main filter has a HEPA efficiency of 99.97% at 0.3 micron, and an activated carbon filter to remove additional gases
- Deep-bed gas filter for high capacity of gas filtration, such as cleaning with solvents or conformal coatings
- Audible alarm informs operators when filters need replacing
- Easy access bench-top on/off remote switch

Part No.	Description
BVX-201	Filter unit for 2 stations, Pre-HEPA-Gas
BVX-203	Filter unit for 2 stations, Pre-Deep Bed Gas
BVX-201-KIT	Filter unit with 2 BVX-ARML, Pre-HEPA-Gas
BVX-201-KIT1	Filter unit with 2 BVX-ARM-K1, Pre-HEPA-Gas

Filters

FP-BVX200	Pre-Filter (Pack of 5)
FM-BVX200	Main Filter HEPA Carbon
FG-BVX200	Deep Bed Gas Filter

Accessories

BVX-ARM-K1	BVX-ARM 760mm (30") with 1.8m (6') long hose & table bracket w/ C-clamps
BVX-ARM-K2	BVX-ARM 760mm (30") & table bracket w/ C-clamps
BVX-ARM	Arm flexible ESD safe, 760mm (30")
BVX-ARML	Arm flexible ESD safe, 1.5m (59") with arm clip
BVX-TB01	Table bracket with 2 C-clamps
BVX-CH01	Connection hose, 50mm (2") diameter, 1.8m (6')
BVX-CH02	Connection hose, 50mm (2") diameter, 3.6m (12')
RPS-1	Remote power switch (for use with BVX-200 only)

Technical Specifications

	BVX-100	BVX-200
Static Pressure (suction force)	1250 Pa (5"WC)	850 Pa (3.5"WC)
Fan Capacity	110m³/h (65 cfm)	250m³/h (150 cfm)
Flow Rate (with filter)	85m³/h (50 cfm)	2 x 75m³/h (45 cfm)
Air Inlets/Number of Stations	1	2
HEPA Efficiency	99.97% at 0.3 micron	99.97% at 0.3 micron
Noise Level	< 55 db A	< 55 db A
Dimensions (W x D x H)	300mm x 230mm x 290mm (11.8" x 9.1" x 11.4")	508mm x 254mm x 388mm (20" x 10" x 15.3")
Weight	9kg (20 lbs)	9kg (20lbs)
Voltage	100-240 VAC	100-240 VAC
Frequency	50-60 Hz	50-60 Hz
Power	85 watt	85 watt
Certification	UL, CSA, CE	UL, CSA, CE
		3.6 m (12') Max duct run

Multi-function Extraction Systems

MFX-2200C Particle Fume Extraction System

The multi-user MFX-2200C Fume Extraction System provides the ultimate performance in a compact size that easily fits under most workbenches. It is ideal for removing solder fumes and filtering laser fumes.

Key Features & Benefits

- Excellent air flow performance
- Large, pleated pre-filter
- HEPA filter rating of 99.97% at 0.3 micron
- Casters as standard
- Dust filter seal keeps filter housing clean
- Minimum operating noise
- Compact size, unit fits under most workbenches
- Connects up to 4 Omniflex arms with rectangular nozzle (EA1122) or large hood (EA1126)
- Connects up to 8 BVX arms or 8 Omniflex arms with tapered nozzle (EA1124)

Part No.	Description
MFX-2200C-A	Particle Fume Extraction System Analog 110V
MFX-2206C-A	Particle Fume Extraction System Analog 230V
MFX-2200C-D	Particle Fume Extraction System Digital 110V
MFX-2206C-D	Particle Fume Extraction System Digital 230V
Filters	
FIL22P030	Prefilter Pleated 60% Efficiency (Pack of 2)
FIL22H070	Combination Filter HEPA/Carbon
Accessories	
AC2204	Top cover with 2 air inlets Ø100mm (4") and 2 air inlets Ø 63mm (2.5")

Technical Specifications

	110V Units	230V Units
Air Inlet Openings	4 x Ø2.5"	4 x Ø63mm
Fan Capacity	600 cfm	900m³/h
Flow Rate	400 cfm	600m³/h
HEPA Efficiency	99.97% at 0.3 micron	99.97% at 0.3 micron
Static Pressure	4.5" WC Max	1075 Pa
Power Supply	100-120VAC, 60Hz	220-240VAC, 50Hz
Power	400 Watt	400 Watt
Noise Level	58 dbA	58 dbA
Dimensions (W x D x H)	17.7" x 20.7" x 26.4"	450 x 525 x 670mm
Weight	93 lbs	43 Kg
Certification	UL, CSA	CE
Max duct run	100'	30 m

Controls and Filter Monitor

- Unit On/Off Switch with power indicator
- Thermal overload protection
- Analog models with filter status gauge
- Digital models with filter status indicator lights and other control options

MFX-2200G Gas Fume Extraction System

The MFX-2200G Fume Extraction System has been specifically designed for the removal of gases and vapors from a range of heavy duty bench-top applications, including solvent cleaning, gluing/bonding and conformal coatings.

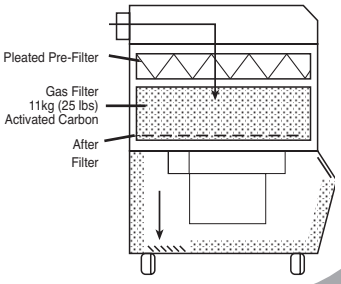
Key Features & Benefits

- High capacity gas filter cartridge ensures a long dwell-time of the gases inside the filter media
- Large, pleated pre-filter
- Casters as standard
- Minimum operating noise
- Provides air flow for two exhaust cabinets
- The unit lid features 100mm (4") and 63mm (2.5") air inlet flanges suitable for the connection of exhaust arms or cabinets

Part No.	Description
MFX-2200G-A	Gas Fume Extraction System Analog 110V
MFX-2206G-A	Gas Fume Extraction System Analog 230V
MFX-2200G-D	Gas Fume Extraction System Digital 110V
MFX-2206G-D	Gas Fume Extraction System Digital 230V
Filters	
FIL22P040	Prefilter Pleated 85% Efficiency
FIL22G010	Gas Filter Cartridge 11kg (25lbs)
FIL22G020	Carbon Refill Kit 11kg (25lbs)
Accessories	
AC2202	Top cover with 4 air inlets Ø 63mm (2.5")

Technical Specifications

	110V Units	230V Units
Air Inlet Openings	2xØ4" & 2xØ2.5"	2xØ100mm & 2xØ63mm
Fan Capacity	600 cfm	900m³/h
Flow Rate	350 cfm	550m³/h
Static Pressure	4.5" WC Max	1075 Pa
Power Supply	100-120VAC, 60Hz	220-240VAC, 50Hz
Power	400 Watt	400 Watt
Noise Level	58 dbA	58 dbA
Dimensions (W x D x H)	17.7" x 20.7" x 26.4"	450 x 525 x 670mm
Weight	115 lbs	52 Kg
Certification	UL, CSA	CE
Max duct run	100'	30 m

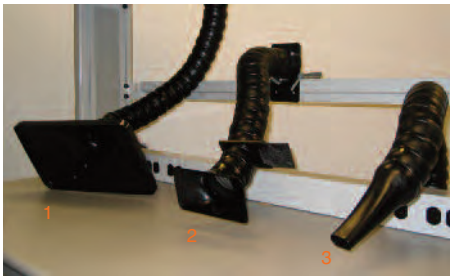


Omniflex & BVX Arms

The **Omniflex Arms** (Ø63mm) are designed for higher airflow rates and effective fume capture from greater distances. A unique ball/socket design provides an unmatched flexibility in maneouvring and positioning. The arms can be adjusted in working length or radius, simply by adding or removing Omniflex components. ESD conformance is ensured through the use of fully conductive material.

Key Features & Benefits

- 140m³/h (85cfm) air flow rating (varies with nozzle)
- 63mm (2.5") diameter
- 0.6m (24") long with optional extensions of 300mm (12")



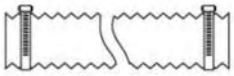
Part No.		Description
EA1122	2	Omniflex Arm ESD with Rectangular Nozzle
EA1124	3	Omniflex Arm ESD with Tapered Nozzle
EA1126	1	Omniflex Arm ESD with Large Hood 350 x 212mm (14" x 8.5")
Q-AD426530		Replacement nozzle - Rectangular
Q-AD426550		Replacement nozzle - Tapered
Q-AD426560		Replacement nozzle - Large Hood
AC1101	4	Damper for Omniflex Arm
AC1102		Omniflex Arm Extension 30cm (12")

**BVX-200 series is only rated for one EA1122 arm, one EA1126 arm or two EA1124 arms.*

The **BVX Arms** (Ø50mm) are the most economical solution while providing good airflow rates and high flexibility. The spiral rolled duct can be tightened in stiffness and can be positioned precisely. The BVX Arm-K2 kit includes a mounting plate and c-clamps for universal mounting. A Y-connection piece is available to connect two BVX Arms to one hose.

Key Features & Benefits

- 75m³/h (45cfm) air flow rating
- 50mm (2") ducting with 40mm (1.75") nozzle
- 760mm (30") long
- BVX Arms compatible with all units



Part No.		Description
BVX-ARM-K1	5	1 BVX-ARM 760mm (30") long with 1.8m (6') long hose and table bracket with C-clamps
BVX-ARM-K2		1 BVX-ARM 760mm (30") long and table bracket with C-clamps
BVX-ARM		Arm flexible ESD safe, 760mm (30") long
BVX-ARML		Arm flexible ESD safe, 1.5m (59") long with arm clip
BVX-NOZ1		Replacement ESD nozzle, 40mm dia

Connection Hoses for Omniflex and BVX Arms

CH0251	6	Connection Hose 2.5m x Ø63mm (8' x 2.5") with clamps
CH0252	6	Connection Hose 3.5m x Ø63mm (12' x 2.5") with clamps
CH0253	6	Connection Hose 7.5m x Ø63mm (25' x 2.5") with clamps
AC2025	7	Y-Piece for Ø63mm (2.5") hose with clamps

BTX-208 Portable Tip Extraction Unit

Key Features & Benefits

- High performance extraction directly from the tip of any iron
- Easy extraction network configuration for up to 8 benches
- Complete portability. Designed for under-bench installation
- Main filter has a HEPA efficiency of 99.97% at 0.3 micron, and an activated carbon filter to remove gases
- Both pre- and main- filters can be changed independently
- Plug-and-play ducting system for simple, flexible low cost solution and fast installations
- Universal hose connection kit

Part No.	Description
BTX-208	Filter Unit for 8 Tip Extraction Stations, Pre/HEPA/Gas
Filters	
FP-BVX200	Pre-Filters (pack of 5)
FM-BVX200	Main Filter, HEPA 99.95% / Carbon

Iron Adapter Kits

AC-FX1	Universal tip extraction iron adapter clip

CONNECTION KITS:

BTX-CK2-25	Connection Kit for 2-4 stations with 2.5m (8') Long Hose
BTX-CK4-50	Connection Kit for 4-8 stations with 5m (16') Long Hose
BTX-CK4-75	Connection Kit for 4-8 stations with 7.5m (25') Long Hose

Individual Parts

CH0121	1	Flexible Hose Ø35mm x 2.5m (8') Long
CH0122	1	Flexible Hose Ø35mm x 5m (16') Long
CH0123	1	Flexible Hose Ø35mm x 7.5m (25') Long
AC-TX001-4	2	Couplings with 2 Glands 5.6mm (pack of 4)
AC-TX002-2	3	T-Piece Connector (pack of 2)

	CONNECTION KITS		BTX-CK2-25	BTX-CK4-50	BTX-CK4-75
	Max number of stations	single-row bench	2	4	4
	when using 5.6mm tubes	double-row bench	4	8	8
			Qty	Qty	Qty
1	Flexible Hose Ø35mm (1.25")		2.5m (8')	5.0m (16')	7.5m (25')
2	Coupling with 2 Glands 5.6mm	2	4	4	
3	T-piece Connector		0	1	1
-	Roll of Vinyl Tape		1	1	1

Technical Specifications

Max. number of stations	8
Flow Rate per station	>28 l/min
Noise Level	< 55 db A
Dimensions (W x D x H)	508mm x 254mm x 388mm (20" x 10" x 15.3")
Weight	9kg (20lbs)
Voltage	100-240 VAC
Frequency	50-60 Hz
Power	85 Watt
Max Duct Run	30m (100')
Certification	UL/CSA/CE

DX-250 / 350 Digital Dispensers

DX-250 Series Digital Dispenser

The DX-250 Series is a high performance Digital Dispenser. Complete with a range of accessories, the micro-air dispensing system unites affordability with high accuracy and repeatability for exceptional results.

These user friendly fluid dispensing systems include a digital timer with a rotary control time knob for easy setup and a vacuum suck-back control for all viscosities of fluids.

Key Features & Benefits

- Small footprint and lightweight
- Economical dispenser
- Highly accurate and repeatable micro-air dispensing
- Digital timer and vacuum controls
- Available in two versions of operating pressure: 0 to 100 psi for general applications, and 0 to 15 psi for specific low viscosity applications
- Packaged ready to use with a universal power supply, foot switch, air hose, sample tips, syringe barrels and adapter.
- I/O Interface for robotic applications

Part No.	Description
DX-250	Digital Dispenser 0 to 100 psi (0 to 6.9 bar)
DX-255	Digital Dispenser 0 to 15 psi (0 to 1.0 bar)

Technical Specifications

Size (W x L x H)	152mm x 165mm x 178mm (6" x 6.5" x 7")
Weight	1.2Kg (2.6 lb)
Cycle Rate	600 cycle/minute
Timing Range	0.020 to 60.000 seconds
Timing Tolerances	+/- 0.001%
Input Voltage	100-240 VAC
Input Frequency	50-60 Hz
Cycle Mode	TIMED, PURGE
I/O Interface	Initiated by voltage or contact closure
Certification	CE, TUV-GS, NRTL
Warranty	1 year

DX-350 Series Digital Dispenser

The DX-350 Series is a microprocessor-driven and fully digital Dispenser. Intuitive to use, the DX-350 dispenses low, medium and high-viscosity fluids accurately and consistently.

The firmware provides the option of programming up to 10 varied, sequenced or individual shots.

The DX-350 includes an adjustable vacuum-driven “suck-back” to control material “tailing” and waste.

Key Features & Benefits

- Small footprint and lightweight
- 10 programmable dispense routines and 4 operating modes
- Digital timer, pressure and vacuum read-outs
- Accurate reproduction of sequences of beads or dots
- Adjustable vacuum suck back feature for controlling drips of fluid between dispense cycles
- Available in two versions of operating pressure: 0 to 100 psi for general applications, and 0 to 15 psi for specific low viscosity applications
- Packaged ready to use with a universal power supply, foot switch, air hose, sample tips, syringe barrels and adapter
- I/O Interface for robotic applications

Part No.	Description
DX-350	Digital Dispenser 0 to 100 psi (0 to 6.9 bar)
DX-355	Digital Dispenser 0 to 15 psi (0 to 1.0 bar)

Technical Specifications

Size (W x L x H)	152mm x 165mm x 178mm (6" x 6.5" x 7")
Weight	1.2Kg (2.6 lb)
Cycle Rate	1200 cycle/minute
Timing Range	0.008 to 60.000 seconds
Timing Tolerances	+/- 0.001%
Input Voltage	100-240 VAC
Input Frequency	50-60 Hz
Memories	10 programmable
Cycle Mode	TIMED, INTERRUPT, TEACH, PURGE
I/O Interface	Initiated by voltage or contact closure
Certification	CE, TUV-GS, NRTL
Warranty	1 year

Dispensing Tips

TE Tips Series

- Stainless-steel cannula with a double Helix polypropylene hub
- Burr-free and electro-polished cannula for unobstructed and consistent material flow
- Silicone and chloride free
- Sold in packs of 50

Gauge	1/4" (6.35mm)	1/2" (12.7mm)	1" (25.4mm)	1-1/2" (38.1mm)
14		914050-TE	914100-TE	914150-TE
15		915050-TE	915100-TE	915150-TE
18	918025-TE	918050-TE	918100-TE	918150-TE
20	920025-TE	920050-TE	920100-TE	920150-TE
21	921025-TE	921050-TE	921100-TE	921150-TE
22	922025-TE	922050-TE	922100-TE	922150-TE
23	923025-TE	923050-TE	923100-TE	923150-TE
25	925025-TE	925050-TE		
27	927025-TE	927050-TE		
30	930025-TE	930050-TE		
32	932025-TE			
34	934025-TE			

TE Bent Tip Series

- Precision bent tips at 45° and 90° angles
- Perfect for dispensing fluid in hard to reach places
- Sold in packs of 50

	1/2" (12.7mm)	1-1/2" (38.1mm)	
Gauge	90°	45°	45°
14	914050-90BTE	914050-45BTE	914150-45BTE
15	915050-90BTE	915050-45BTE	
18	918050-90BTE	918050-45BTE	918150-45BTE
20	920050-90BTE	920050-45BTE	
21	921050-90BTE	921050-45BTE	921150-45BTE
22	922050-90BTE	922050-45BTE	
23	923050-90BTE	923050-45BTE	
25	925050-90BTE	925050-45BTE	
27	927050-90BTE	927050-45BTE	
30	930050-90BTE	930050-45BTE	

Color Coding and Gauge For TE Series and TE Bent Tips

	Gauge	Colour	I.D. (inches)	I.D.(mm)
	14	Olive	0.063	1.600
	15	Amber	0.054	1.371
	18	Green	0.033	0.838
	20	Pink	0.024	0.610
	21	Purple	0.020	0.508
	22	Blue	0.016	0.406
	23	Orange	0.013	0.330
	25	Red	0.010	0.254
	27	Clear	0.008	0.203
	30	Lavender	0.006	0.152
	32	Yellow	0.004	0.102

BT Series

- Double Helix Brush Tips for "spread" applications such as glues and other materials.
- Soft brush is made of Red Sable
- Stiff brush is made of Nylon
- Available in packs of 12.

Gauge	Soft Bristle	Stiff Bristle
16	916BT-SOFT	916BT-STIFF
18	918BT-SOFT	918BT-STIFF
22	922BT-SOFT	922BT-STIFF

TS-P Plastic Series Tips

- Flexible tips allow access to hard to reach areas
- 1-1/2" but length can also be customized
- Ideal for CA applications
- Both hub and cannula are made from polypropylene
- Sold in packs of 50

Gauge	Colour	TS-P Needle
15	Grey	915150-PTS
16	Brown	916150-PTS
18	Pink	918150-PTS
20	Yellow	920150-PTS
22	Black	922150-PTS
25	Red	925150-PTS

TT Series Tips

- Tapered tip prevents blockage and increase flow of high viscosity filled materials
- Standard tips molded in high density polyethylene with UV light block additive
- Rigid tips are molded in polypropylene
- Sold in packs of 50

Gauge	Colour	Standard TT Tips	Rigid TT Tips
14	Olive	914125-DHUV	914125-RIGID
16	Grey	916125-DHUV	916125-RIGID
18	Green	918125-DHUV	918125-RIGID
20	Pink	920125-DHUV	920125-RIGID
22	Blue	922125-DHUV	922125-RIGID
25	Red	925125-DHUV	925125-RIGID
27	Clear	927125-DHUV	927125-RIGID

Dispensing Tip Kit

- Kit contains a selection of most popular TE, TE Bent and TT tips

900-NK	Dispensing Tip Kit

Dispensing Consumables

End Caps

- Designed to seal large end of the syringe barrel
- Ensure no contaminants come in contact with material during storage
- Made from polyethylene
- Available in packs of 50

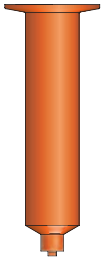
Size	End Cap
3cc	903-ECB
5cc	905-ECB
10cc	910-ECB
30/55cc	93055-ECB

Air Powered Pistons

- Wiper Pistons provide a seal for low to medium viscosity fluids
- Straight Wall Pistons for reduced stringing with medium to high viscosity fluids
- Both styles of pistons are made from polyethylene
- Sold in packs of 50

Size	Wiper Piston (White)	Straight Wall (Red)	Easy Flow (Blue)
3cc	903-WW	903-SWR	903-EFB
5cc	905-WW	905-SWR	905-EFB
10cc	910-WW	910-SWR	910-EFB
30/55cc	93055-WW	93055-SWR	93055-EFB

	700 Series Color	Application Examples
Smooth Piston	Blue	Anaerobic, epoxy, flux, SMA, oil, silicone, UV
Tighter Piston	White	Any fluid used on a mechanical rod/gun including UV
Straight Wall Piston	Red	SMA, Solder paste, viscous grease



Syringe Barrels

- Unique ultra-low draft of inner diameter yield high accuracy and stability
- Industry compliant silicone / chloride free, low friction polypropylene
- 3 colours: Natural for most generic applications, Amber for protection of UV/visible light block (up to 520nm), Black for total light block
- Sold in packs of 50

Size	Natural	Dark Amber	Black
3cc	903-N	903-D	903-B
5cc	905-N	905-D	905-B
10cc	910-N	910-D	910-B
30cc	930-N	930-D	930-B
55cc	955-N	955-D	955-B

Tip Cap

- Use to seal syringe barrel when not in use
- Fits all syringe sizes
- Blue stand up tip cap that enables the syringe barrel to stand upright
- Made from polypropylene
- Sold in packs of 50

900-ORTC	Tip Care Double Helix Thread, Orange
900-BTC	Tip Care Double Helix Thread, Black
900-STC	Stand-up Tip Cap, Blue

Syringe Assembly Kits

- Packaged together in ready-to-use kits of 50 each (syringe and Wiper Piston, without piston inserted)

Size	Natural	Natural with blue piston
3cc	903-NW	903-NBL
5cc	905-NW	905-NBL
10cc	910-NW	910-NBL
30cc	930-NW	930-NBL
55cc	955-NW	955-NBL

Manual Syringe Barrels

- Provide simple and quick dispensing solutions without the need for compressed air
- Molded from Polypropylene resin, manual plungers
- Compatible with a wide range of dispensing fluids
- Pistons are made from thermoplastic rubber
- Available dry or with lubrication
- Sold in packs of 50

Part No.	Description
903-PL	Manual Plunger, 3cc
903-PRD	Manual Piston Rubber, 3cc
903-PRL	Manual Piston Rubber, Lub, 3cc
905-PL	Manual Plunger, 5cc
905-PRD	Manual Piston Rubber, 5cc
905-PRL	Manual Piston Rubber,Lub, 5cc
910-PL	Manual Plunger, 10cc
910-PRD	Manual Piston Rubber, 10cc
910-PRL	Manual Piston Rubber, Lub, 10cc
930-PL	Manual Plunger, 30cc
930-PRD	Manual Piston Rubber, 30cc
930-PRL	Manual Piston Rubber, Lub, 30cc

Foot Valve Dispenser & Accessories

924-DFV Series Foot Valve Dispenser

The 924-DFV Series Foot Valve Dispenser offers increased production combined with dispenser economy. Floor mounted, they have a built in pressure regulator, pressure gauge and a unique fast-dump, three-way air valve. Output rate and shot size are operator controlled.

The 924-DFV is the ideal basic dispensing unit for most general applications of adhesives, sealants, coatings and compounds.

The 924-DFV-VAC features a vacuum suck-back to prevent very thin materials from dripping to reduce tailing or stringing with thicker materials.

Key Features & Benefits

- Ideal for applications where electricity is prohibited
- Robust design
- Floor mounted conserves bench space
- No programming required

Part No.	Description
924-DFV	Foot Valve Dispenser
924-DFV-VAC	Foot Valve Dispenser with Vacuum

Technical Specifications

Size (W x L x H)	124mm x 206mm x 121mm (8.1" x 4.9" x 4.7")
Weight	1.8Kg (4 lb)
Input Pressure	100 psi max (6.9 bar)
Operating Pressure	Up to 100 psi (6.9 bar)
Cycle Mode	Manual
Vacuum Force	Up to 15” of Hg (924-DFV-VAC only)
Warranty	1 year

Receiver Head Assembly

- Connecting link between time/pressure controllers and Syringe assemblies
- Provides a safe connection for accident proof dispensing
- Available with 3 or 6 feet of tubing
- Includes: receiver head with O-ring, tubing and male quick connector
- Receiver heads are made of Delrin®
- Sold individually

Size	3' Hose	6' Hose
3cc	903-3RHB	903-6RHB
5cc	905-3RHB	905-6RHB
10cc	910-3RHB	910-6RHB
30/55cc	93055-3RHB	93055-6RHB

Replacement O-rings for Receiver Head

- Sold in packs of 10

Size	EPR O-ring	VITON O-ring
3cc	P3015EPK	P3019VPK
5cc	P3016EPK	P3020VPK
10cc	P3017EPK	P3021VPK
30/55cc	P3018EPK	P3022VPK

Manual Syringe Gun

- Lightweight barrel applicator gun
- Provides excellent control for medium/high viscosity products
- Easy to use. No dripping or mess

Size	Manual Syringe Gun	Plunger Rod
10cc	910-MSG	71000ROD
30cc	930-MSG	73000ROD
55cc	955-MSG	

Vacuum Pencil

- Use for pick and place function
- Stand-alone vacuum pick-up requires shop air
- Optional Mixed Kit of Vacuum Cups also available

TS8120	Vacuum Pick Up Assembly

Syringe Holder

- Use for 900 Series syringes

SH-300	Syringe Holder

Finger Switch Assembly

- Use with Metcal dispensers and syringes in place of a foot pedal
- Provides control at your finger tip

DX9010	Finger Switch Assembly for DX Series Dispenser

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2016

EST. 1982

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