

# CHAPTER 1 INTRODUCTION

## 1-1. SCOPE

Portable battery powered hot air tool MCH 100, manufactured by Malcom Company, is a state of-the-art, lightweight portable unit designed for field deployment or shop usage to be used for various applications such as contactless soldering and desoldering, shrink tubes, plastic welding, drying, and many more applications that would require hot air.

The MCH 100-A consists of a hot air tool (Fig 1-1) with DC electric fan motor, a interchangeable electric ceramic resistance heating element, as well as a built in switch to turn the power to the heating element on and off as needed. The heat gun is connected to the power pack with a 9 foot power cord. (Fig 1-2). The portable power pack (Fig 1-2) has a built in on/off switch for the main power supply to the hot air tool. The hot air tool and the batteries are connected to the main on/off switch in such a way that when the main switch on the power pack is turned on, the built in electric fan motor in the hot air tool is always operating. The hot air tool electrical DC power is supplied by two 24 volt rechargeable Nickel Metal Hydride batteries (Fig 1-3). The batteries are recharged with a Universal Portable Battery Charger (Fig 1-4).



FIG 1-1.



FIG 1-2.



FIG 1-3.



FIG 1-4.

## **HOT AIR TOOL, MCH-100**

The hot air tool components are housed in a non-conductive, high impact Fiberglass case as shown in Figure 1-1. The hot air tool contains a small carbon brushed electric motor with an attached fan that provides the air flow . A built in on/off switch within the hot air tool allows the operator to turn the heating element on and off as needed during operation. The heating elements are a ceramic resistance two prong plug in type. The heating element is protected by a special mica insulating tube. Changing heating elements is fast and simple, performed in minutes. Changing various heating elements allows temperature adjustments from 200 - 1300°F (94 - 732°C). For DC operation, an integral 9-foot DC two wire power cable is connected to a power pack manufactured by Malcom Company Inc. See hot air tool specifications on page 5 of this manual.

### **24 VOLT BATTERY**

The MCH-100-A hot air tool is powered by two 24 volt rechargeable sealed Nickel Metal Hydride smart batteries with state of charge liquid crystal display (LCD), housed in a durable high impact ABS plastic housing as shown in Figure 1-3. The battery features gold plated brass contacts for extended electrical hookup without corrosion, protection against possible cell reversal, rechargeable with up to 500 cycles and a shelf life of up to five years. Improper charging and overheating of the batteries is prevented by built in temperature sensor system. Precise discharge and low voltage control is featured with a patented safety circuit to protect the batteries. The batteries are housed in a molded fiberglass EMI shielded water tight case with a pressure equalizer relief valve. The weight of the batteries are 3.85 pounds each with the case weight of 4.5 pounds. See battery specifications in Chapter 6 of this manual. Also available are thium ion batteries for longer life and lower weight.

### **UNIVERSAL PORTABLE BATTERY CHARGER**

The MCH-100 24 volt batteries can be charged with the universal portable battery charger. The battery charger is housed in an impact-resistant molded equipment case shown in Figure 1-4. The case is completely water-tight when the cover is latched securely and the pressure equalizer relief valve on the bottom of the case is closed. This battery charger is state-of-the-art high performance lightweight portable unit designed for field-deployment or use in a shop environment to provide fast reactivation of rechargeable batteries. The appropriate battery adapter for the MCH-100-A batteries is installed on the control panel (Chapter 5 section 5-3) and serves as the electrical interface between the batteries being charged and the charger circuits.

Two automatic cycles occur during a typical battery charge: a fast rate charge cycle; and a low current trickle charge which maintains the battery until it is removed. Computer-controlled charge sequencing and switching circuits automatically regulate battery charging at the respective battery adapter ports. Batteries can be recharged in a matter of two hours.

For world-wide deployment, the charger is designed with multi-voltage input power capability. An integral 5-foot power cable can be connected to the local AC supply receptacle when the unit is operated from an AC power source; a separate cable assembly is provided for operation from a 24-volt DC source through the vehicle battery box NATO slave connector. The battery charger can also be used with shipboard 400 Hz AC systems. Please refer to chapter 5 of this manual for the specifications, operation and service manual for the Universal Portable Battery Charger.

## 1-2. TECHNICAL SPECIFICATIONS, MCH-100-A

<b><i>Voltage</i></b>	- 48 Volts
<b><i>Wattage</i></b>	- 325 total watts standard (250 watts or 450 watts available)
<b><i>Airflow</i></b>	- 2.66 CFM (75 l/min)
<b><i>Air pressure</i></b>	- 16 mbar maximum
<b><i>Temperature</i></b>	- 1050° F (550°C) with 300 watt element.
<b><i>Batteries</i></b>	- Nickel Metal Hydride (option of Lithium Ion) Adjustable temperatures by changing wattage of heating elements.
<b><i>Running Time</i></b>	- 45 minutes of power with 200 watt elements, 30 minutes with 300 watt element.
<b><i>Cutoff Voltage</i></b>	- Automatic shut down when batteries reach 35 volts to protect batteries and hot air tool.
<b><i>Thermal Cutoff</i></b>	- Automatic shut down when batteries reach 70°C internal temperature to protect batteries and hot air tool.
<b><i>Case Material</i></b>	- Battery pack is available in molded fiberglass, Grey - Hot air tool case, ABS (Acrylonitrile Butadiene Styrene)
<b><i>Weight Overall</i></b>	- 18 pounds (8.2 Kg) maximum
<b><i>Dimensions</i></b>	- Size of light weight battery box is 9" x 10" x 6.25" - Size of hot air tool is 9.5" long x 3" x 1.6" diameter handle. - Size of portable carry case 12.5" x 11.5" x 7"
<b><i>Battery Case Color</i></b>	- Grey , Olive Drab #34088 per FED-STD-595B available on request.
<b><i>Carry Case</i></b>	- Made out of heavy Duty Vinyl and includes, shoulder strap, internal pockets for battery case, heat gun, power cord, nozzles, tools, and accessories. Color is Olive Drab.
<b><i>Battery Case</i></b>	- Includes handle, latches, pressure relief valve, and on off switch.
<b><i>Hot Air Tool Color</i></b>	- Black
<b><i>Shipment</i></b>	- No restrictions
<b><i>Disposal</i></b>	- In accordance with local environmental regulations.
<b><i>Accessories</i></b>	- Over 500 nozzles are available for many types of hot air applications to fit the hot air heat tool.
<b><i>Mil Standards</i></b>	- Meets or exceeds mil standard 461 for radiated emissions, mil standard 28800 section 4.5.5.4 for drop test, Rain intrusion, mil standard 235 radiated emissions susceptibility test, and Mil-Std 810 explosion environment.

Any questions regarding operation, maintenance, repairs, parts, and accessories can be directed to Malcom Company Inc. through our toll free number from the USA at 800-289-7505 or from other parts of the world by calling 401-625-5099. We also have a web site at [www.malcom.com](http://www.malcom.com) where you can place orders and email us questions at any time.