Services Inc.
DEMTECH®

Pro-XMv2

Pro-XMv2 Operator's Manual

Model: 603-0100/A

Order Number: XM-82999

Revision: A
DOC-0017

Scope of Manual:

This manual contains procedures for safety, general unpacking, set-up, and operation of your DEMTECH Services, Inc. Pro-XMv2 Extrusion Welder.

Notice

Patents have been granted and/or patent applications are pending or are in the process of preparation on all DEMTECH Services, Inc. developments.

The material in the manual is for informational purposes only and is subject to change without notice.

DEMTECH Services, Inc. assumes no responsibility for any errors that may appear in this manual.

Order Number: **603-OPERATOR'S MANUAL/PRO-XMPv2, Revision: A**

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1 Safety Precautions

Safety precautions for operating personnel and equipment:

WARNING 1: Operating personnel should perform only the procedures described and recommended in this manual. Only qualified service personnel familiar with electrical shock hazards and mechanical entanglement hazards present inside the equipment should perform disassembly or corrective maintenance of the equipment.

WARNING 2: To avoid shock hazards, the equipment must be grounded with an adequate earth ground in accordance with local and national electrical codes.

WARNING 3: The locations of potentially dangerous voltages and other hazards are identified and labeled on the equipment. Be careful to observe these warnings when installing, operating, maintaining or servicing the equipment. Observe all warnings in this manual.

WARNING 4: Make sure to turn off the equipment power and remove the ~ (AC) line cord from the power outlet before attempting to service the equipment. Do not perform service unless you are qualified and trained to do so.

WARNING 5: This product is intended for operator attended operation only. This product should never be left unattended at any time while it is plugged in and the power is turned on. Incorrect use of the product such as overheating of the material can present a fire and explosion hazard, especially near combustible materials and explosive gases.

WARNING 6: This product is intended for operation in dry environments only. Higher humidity environments should be kept non-condensing by avoiding large temperature swings.

WARNING 7: Do not touch the main housing, air nozzle and/or output molten material when they are hot as they can cause burns. After use allow sufficient time for the product to cool to room temperature before handling and stowing. Do not point or direct the hot air flow and the output molten material in the direction of personnel.

CAUTION 1: Observe the precautions given on the equipment and within this manual to prevent damage to the equipment.

CAUTION 2: Before connecting the equipment to its electrical power source, check that the ~ (AC) voltage, frequency and current to be supplied to the equipment are correct and match the serial plate affixed to the system.

CAUTION 3: Use proper handling and packaging procedures for Electro-Static Discharge (ESD) sensitive Printed Circuit Boards (PCB's). Assume that all PCB's are sensitive to potential damage from ESD.

CAUTION 4: Unauthorized personnel should not remove from the equipment those panels or covers that are provided for protection and/or require a tool to remove.

2 General Safety & Maintenance Information

The DEMTECH Services, Inc. Pro-XMv2™ Thermoplastic Extrusion Welder, hereinafter referred to as the Pro-XMv2 or welder, is a high temperature and voltage piece of equipment. Always disconnect the power source before performing any service and/or maintenance procedures on the welder. Never lift, pull or carry the welder by the power cord or electrical connection. Always maintain slack in any extension cords connected to the welder while in operation to avoid damage to the power connections. At all times while operating the welder keep hands, fingers and other body parts well clear of the heating element and related mounting components. Always use the Pro-XMv2 in a well-ventilated area when welding materials such as PVC which can produce toxic fumes. Do not inhale toxic fumes when present. Do not operate near flammable materials of any kind. Do not apply flammable materials, including liquids, to seam area. Allow welder to cool to room temperature, at least 15 minutes, before returning to the shipping/storage case. Protect welder from exposure to rain or standing water. Never attempt to weld in standing water.

2.1 Intended Use

The Pro-XMv2 is intended as professional use equipment and is not intended for sale to the general public. The total input power of the Pro-XMv2 is specified as greater than 1 kW although in lightly loaded conditions the actual power may be less than 1 kW.

The Pro-XMv2 has been manufactured utilizing the latest technology and current safety standards and regulations. However, improper use or abuse may lead to hazardous conditions for the user or other personnel or cause damage to the welder.

Always keep this manual with the welder at or near the location where the Pro-XMv2 is being used so that it can be referred to quickly and easily.

The technician assigned to operate this welder must have read through and become familiar with this manual, particularly all safety information, before operating the Pro-XMv2.

No changes and/or modifications shall be made to the Pro-XMv2 especially as it relates to safety.

2.2 Maintenance

Maintenance, inspection and adjustment of the Pro-XM shall only be carried out by qualified personnel. Before removing or installing spare parts or performing other repair operations to the welder, consult DEMTECH Services, Inc. or your authorized DEMTECH service center for advice on proper procedures. This will help insure a safe and successful outcome. Always make sure all screw connections are tight before attempting to operate the welder after maintenance and/or repair procedures. Also make sure all covers, guards, and other safety devices have been fully reinstalled before use.

3 General Product Data

The DEMTECH Services, Inc. Pro-XMv2 Thermoplastic Extrusion Welder, hereinafter referred to as the Pro-XMv2 or welder, dramatically speeds the welding of plastic sheet materials utilizing molten plastic. This function, combined with its simple construction and easy-to-use controls, makes performing welding tasks very efficient. With minimal setup, the welder speeds up processing time while providing a very rugged and reliable welder. You can be assured that the Pro-XMv2 has been built using the highest quality materials available which include billet aluminum and ground and hardened steel. DEMTECH Services, Inc. strives to make our welders easy to use and built to last. Just like all other DEMTECH Services, Inc. products, even a first-time user will be productive in minutes.

4 Operating Environment

The Pro-XMv2 is intended to be operated within the following environmental ranges and conditions. Operating the welder in environments which are less than or greater than the nominal values listed can adversely affect performance.

Temperature .....+65 to +90° Fahrenheit (F); 74° F Nominal
.....(+0 to +38° Centigrade (C); 23°C Nominal)

Humidity .....0 to 90% (non-condensing); 45% Nominal

Elevation .....0 to 7,000 Feet; 2,000 Feet Nom
.....(0 to 2,134 meters; 610 meters Nominal)

5 Site Preparation

Before proceeding with the unpacking and installation instructions in the following section(s) make sure the work site is prepared and ready to use the Pro-XMv2. You should have an adequate power source capable of providing clean Alternating Current (AC) power at 220-240 Volts at the rated current. Refer to the welder serial plate affixed to the front side of the controller housing for the voltage and current requirements of your welder. The install and use area should be clean, dry and free of debris and provide adequate working area to allow efficient and effective use of the welder.

Carefully follow the detailed unpacking and installation instructions provided in this manual.

6 Unpacking & Installation Instructions

This section contains instructions for the unpacking, placement and installation of the Pro-XMv2. Carefully review the following information, sub-sections and each procedure before beginning unpacking and installation of the welder.

The Pro-XMv2 comes complete in a sturdy, reusable, portable shipping/storage case. The custom foam inserts protect the welder from damage during shipping and storage and should always be left inside the case. When the welder is out of the case, make sure to keep the lid closed to avoid dirt, dust, debris and/or water from getting inside. The welder must be removed from the case and placed onto the work site for use. When not in use, the Pro-XMv2 should always be stored in the shipping/storage case to protect it from the elements and potential damage.

Note: The welder illustrated in this manual shows ALL available features for the Pro-XMv2, therefore, your welder may vary slightly in appearance from that depicted.

6.1 Unpacking and Preparation

a. Before opening the shipping/storage case for the first time and unpacking the welder, inspect the outside of the case thoroughly for any signs of mishandling or damage during shipping. Report any damage to the shipping carrier immediately and **do not proceed with unpacking**. You should consult your administration concerning claims for shipping damage. Please notify DEMTECH Services, Inc. or your authorized DEMTECH distributor where the product was purchased in the event of any shipping damage.

b. Unlatch and open the shipping/storage case lid and inspect inside the case and the welder thoroughly for any signs of mishandling or damage during shipping. Report any damage to the shipping carrier immediately and **do not proceed with unpacking**. You should consult your administration concerning claims for shipping damage. Please notify DEMTECH Services, Inc. or your authorized DEMTECH distributor where the product was purchased in the event of any shipping damage.

c. Make note of the orientation of the welder and packing foam inserts inside the shipping case to facilitate repackaging the welder after use.

d. To avoid injury to personnel and/or damage to the welder, be sure to use adequate care when lifting and removing or lowering and replacing the welder into the shipping/storage case.

e. The welder must be removed from the shipping/storage case and placed in an appropriate location suitable for the welding you intend to perform.

6.2 Electrical Plug Connection

a. The Pro-XMv2 is supplied with a power cord, which is permanently connected to the bottom side of the controller housing. Depending on the intended country of use, the plug at the other end of the power cord will vary but, in all cases, must be rated for the voltage and current requirements of the welder. It is highly recommended to use a twist-lock or twist-to-connect type plug with a permanent ground connection. Refer to the welder serial plate affixed to the front of the controller housing for the voltage and current requirements of the welder. Install the power cord plug into an appropriate electrical outlet supplying the proper ~(AC) power. In all cases the connection should only be made to a circuit with a maximum 20A breaker rating.

b. Verify basic operation of the Pro-XMv2 before proceeding with the remainder of the installation. The welder main power rocker switch is white and is located on the front of the controller housing (see Figure 6.1). Toggle the switch to "I" to turn ON the pre-heater fan. Toggle the switch to "O" to turn OFF the pre-heater fan.

Figure 6.1

c. The blower motor should start and air should begin exiting the pre-heat nozzle. Use caution as the exhaust air can be very hot. This procedure verifies the Pro-XMv2 is receiving suitable power and welder is functioning properly. If the welder pre-heater powers-up as described you are now ready to operate the welder. If the welder does not power-up as described please contact DEMTECH Services, Inc. or your authorized DEMTECH service center.

d. The operating voltage requirement for the Pro-XMv2 is 220-240 Volts AC only. This operating voltage range refers to the actual voltage as measured at the welder power cord input plug after any extension cords while operating the welder under load. **The following procedure should only be performed by a qualified electrician**. To measure the voltage under load connect the welder to any extension cord(s) used and the generator supplying power. Start the generator and turn the welder pre-heat power switch to the ON position. Wait for the barrel preheat sensor to trip, illuminating the Green LED allowing operation of the drill motor. Once enabled power the drill motor utilizing the trigger switch. Now separate the plug at the end of the welder power cord just enough to expose the prongs but without disconnecting the power. Using a digital voltmeter measure the voltage under load between the prongs. The measured value must be between 220 and 240 Volts AC.

Electrical Extension Cords

The Pro-XMv2 is capable of welding very long seams. This ability may warrant the use of electrical extension cords. It is imperative to consider the length and wire gauge of any extension cord used, as these factors will ultimately determine the actual welder operating voltage. Extension cords should be a minimum of 12 gauge and regardless of overall length should have a minimum number of plug connections. Table 6.2 lists extension cord gauge and length recommendations.

Conductor Size	3-Wire 10 AWG (5.3 mm^2)	3-Wire 12 AWG (3.3 mm^2)
Length	500 Feet (152 meters)	250 Feet (76 meters)

Table 6.2 Maximum recommended extension cord lengths.

6.3 Generator Recommendations

When operating the Pro-XMv2 using house power from a building circuit use the appropriate plug and power cord configuration. When in-field generators are used they must be rated for a minimum of 5,000 watts, however a rating of 6,500 watts or more is highly recommended in order to obtain the best welder performance and temperature control. As a rule, higher wattage generators provide better welder performance. Keep in mind that the length and wire gauge of any extension cord being used combined with the capacity of the generator ultimately determines the operating voltage and therefore welder performance.

7 Welder Set-Up & Operation

The initial set-up of the Pro-XMv2 is by far the most critical aspect for proper welder operation. Proper set-up not only leads to quality welding results but also minimizes wear and tear on the welder itself. Improper adjusting of the welder can result in excessive wear on critical components.

7.1 Set-Up Preparation

The procedures described in the following sections cover the initial set-up required for welding. Initial operations must be made while the welder is at room temperature.

Install the desired welding shoe onto the end of the welder and orient the shoe and pre-heat shield as necessary for the welding to be performed (refer to Section 7.7).

Adjust the grip handle to the best position for the welding to be performed (see Figure 7.1). Loosen the handle by gripping it and twisting counter-clockwise. This will loosen the handle clamp. Position the handle within its 180° swing and tighten the handle clamp by twisting the handle clockwise.

Figure 7.1

The welder contains a temperature interlock device that prevents operation of the drill motor before the welder has reached proper operating temperature. When the unit reaches operating temperature the Green LED will illuminate telling the operator the drill is ready to use. To prepare the welder for operation turn on the pre-heat rocker power switch and adjust the hot air temperature potentiometer to the desired setting. This setting will vary depending on the material to be welded and the ambient environment. Operating experience will dictate the proper setting. The nominal setting on the potentiometer is using the color coded detail on the back of the pre-heater and the operator's legend on the left side of the unit. Depending on the material to be welded and the ambient temperature one may need to turn the potentiometer knob past the Green welding window Be very cautious as this can cause over heating and the unit to spit out molten plastic which can cause great harm. This provides a operating temperature range of between 450 °F to 525 °F. (these are only approximate).

7.2 Start a Weld

Once the welder has stabilized at the operating temperature insert the end of the welding rod into the feed port while simultaneously powering the drill motor (see Figure 7.2). Once the welding rod starts to feed it will continue to self-feed as you weld. The welder drill motor should only be operated when welding rod is being continuously fed into the welder and should never be run dry. Direct the pre-heat nozzle toward the area to be welded. Pre-warm the welding zone with back-and-forth movements of the welder tip. Position the welder on the prepared welding zone and operate the drill motor trigger switch.

Figure 7.2

7.3 During a Weld

Keep the welding rod being fed into the welder clean and dry. Foreign material such as dust, dirt, sand and water droplets introduced into the feed port can cause premature wear to the welder.

For long welds the Pro-XMv2 drill motor has a locking pin which allows you to lock the drill motor trigger switch in the ON position.

Further adjustments of the pre-heater potentiometer may be required.

7.4 Stop a Weld

To stop welding either release the drill motor trigger or if trigger is locked “ON” pull and release trigger to stop.

If there is going to be a short pause before the next weld, clear the excess molten plastic (refer to Section 7.5) from the tip of the shoe to prevent it from cooling and inadvertently blocking the welder output. If there is going to be a long pause before the next weld it is recommended that the welding rod be cut at the feed port and the plastic within the barrel run out the nozzle. This procedure should also be followed before shutting down the welder in preparation for cooling and storage.

7.5 Between Welds

After the drill motor is stopped if there is going to be a short pause before the next weld, depending on the length of time the excess plastic protruding from the tip can cool and bock the welder output. Before the next weld is begun this plastic “plug” must be removed. Take caution as the plastic is still hot. Use a pair of pliers with insulated handles to perform this procedure. Grab the tip of extrudate protruding from the welding shoe and pull. This will remove a small plug of semi-cooled extrudate with a bit of molten plastic at the end.

With the Plastic Heat enabled the plastic inside the barrel will continue to melt. If the welder sits idle between welds for 30 seconds or more this causes the plastic in the barrel to become “overheated”. Before beginning the next weld, it is important to purge this overheated plastic from the barrel. This should be done off to the side of the work area by activating the drill motor for a sufficient period to push out any “old” plastic and refill the barrel with “new” plastic. This procedure assures good and consistent welds throughout the work shift.

7.6 Checking the Output Temperature

The temperatures of the extruded material and pre-heat air stream should be verified at regular intervals while performing welds over an extended period. An appropriate high-speed electronic temperature meter with matching temperature probes must be used when performing these measurements. To measure the extruded material temperature, place the probe up into the nozzle opening at the center of the output stream. To measure the pre-heat air stream temperature, place the probe up into the slot on the top of the shoe underneath the shield at the center of the output stream (see Figure 7.3).

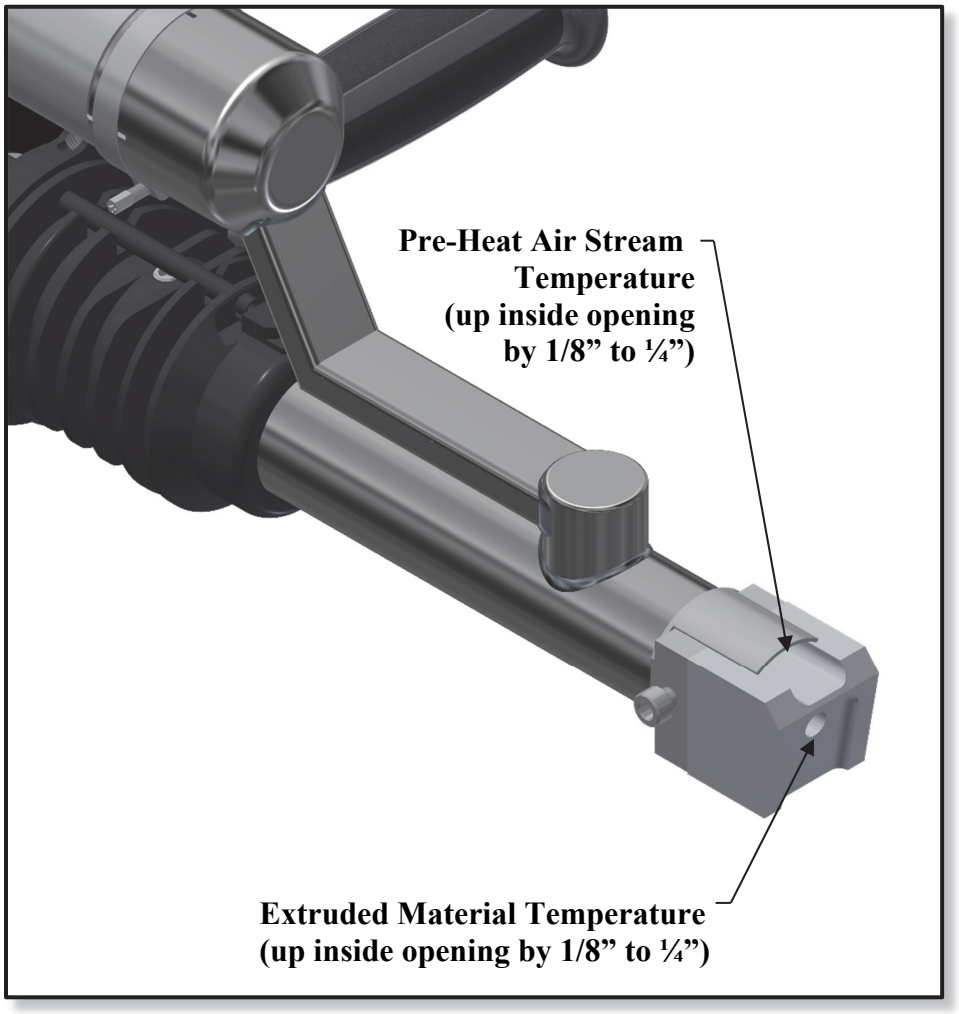

Figure 7.3

7.7 Changing the Welding Shoe

Make sure to turn off the Pre-Heat and Plastic Heat, allow the extruder to cool to room temperature then remove the ~ (AC) line cord from the power outlet before attempting to service the equipment. Do not perform service unless you are qualified and trained to do so.

a. Using a 5mm hex wrench remove the two socket head cap Screws, order number TS-72875, from the Welding Shoe Assembly. The Shoe Assembly may be one of the following: TS-14126, TS-14119 or TS-14118 (see Figures 7.4 and 7.5).

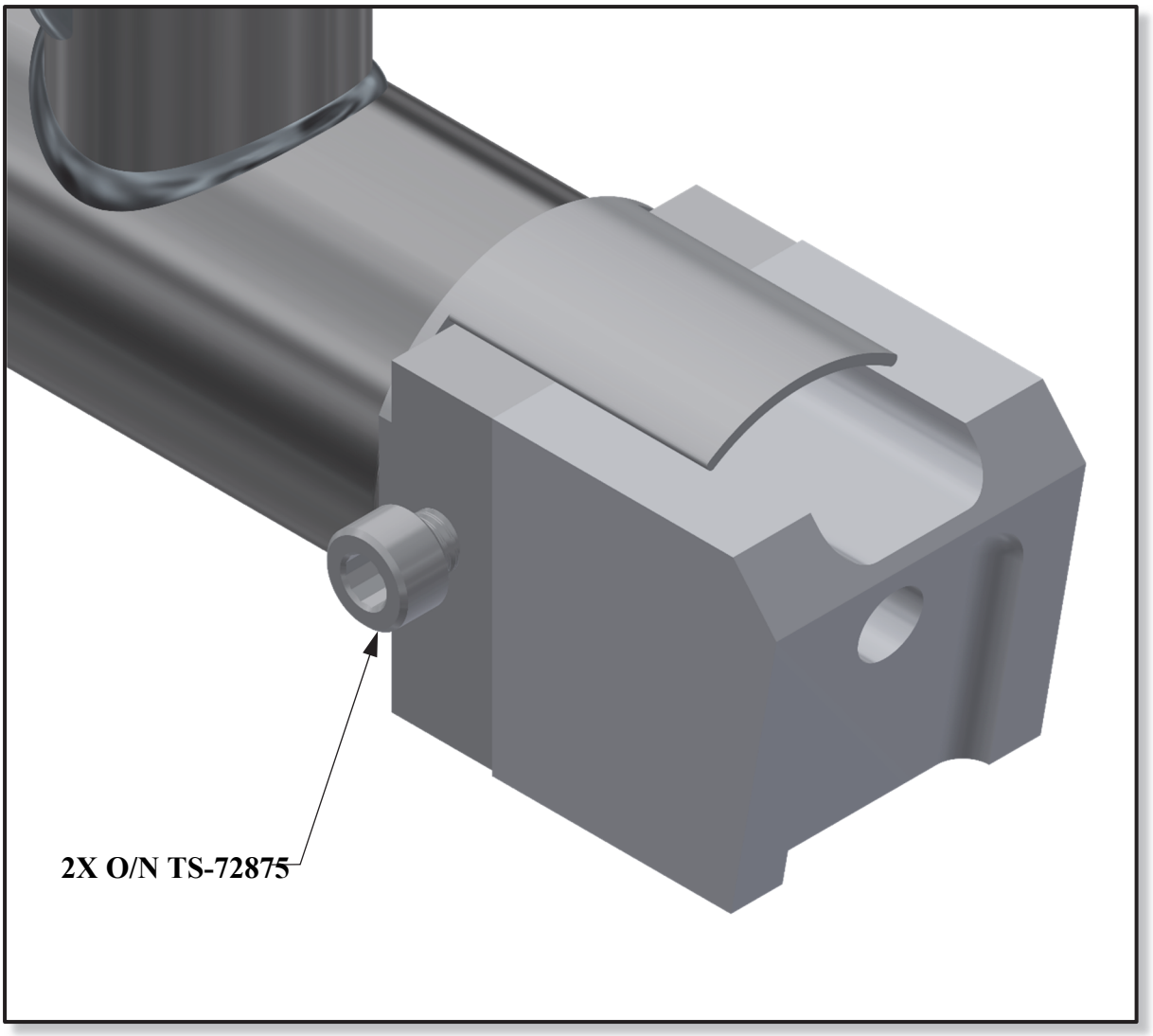

Figure 7.4

b. Remove the Shoe Assembly from the Nozzle, order number XM-71494. Due to melted plastic material buildup removal may require strong twisting clockwise-to-counterclockwise, wiggling from side-to-side and substantial pulling force to remove (see Figure 7.5).

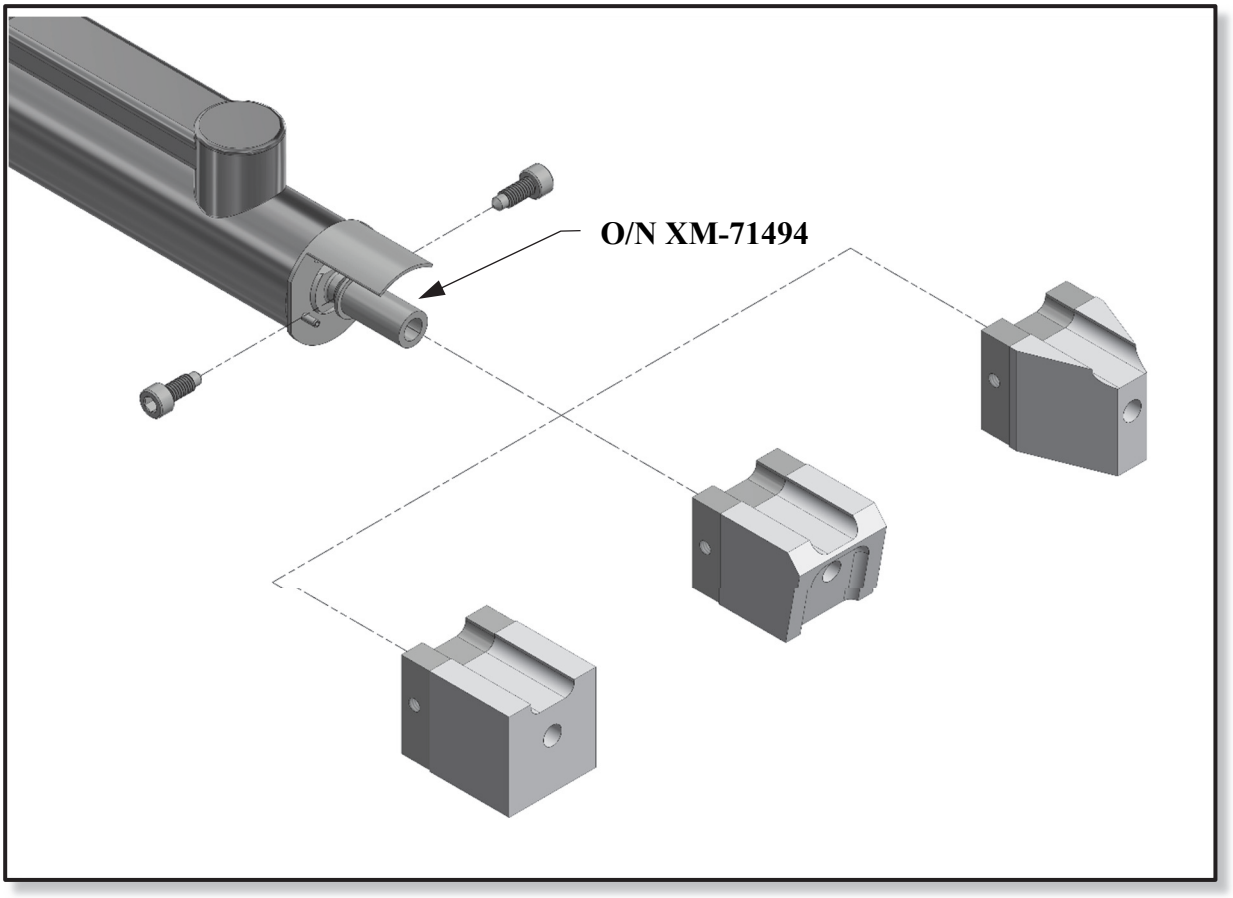

Figure 7.5

c. Clean any residual melted plastic material from the Welding Shoe Assembly and Nozzle to facilitate and ease reinstallation of the new Shoe Assembly.

d. Install the new Welding Shoe Assembly in the reverse order.

8 Factory Servicing

In the event your Pro-XMv2 should require factory service, the entire welder needs to be returned to the factory. Refer to the following step for preparing the Pro-XMv2 for return.

Carefully pack the Pro-XMv2 in the reusable portable shipping/storage case provided with the welder for return to DEMTECH Services, Inc.'s factory for service. Unless previous arrangements are made, shipping charges and insurance are the responsibility of the customer. Ship the packaged Pro-XMv2 to DEMTECH Services, Inc. at:

DemTech Services, Inc
Ship to address: 6414 Capitol Avenue
Diamond Springs, CA 95619
U.S.A.

9 Welder Wiring Diagram

Refer to Diagram 10.1 for the Pro-XMv2 Welder Wiring Interconnect Diagram.

10 Welder Product Warranty

Refer to Page 18 for the DEMTECH Services, Inc. product warranty.

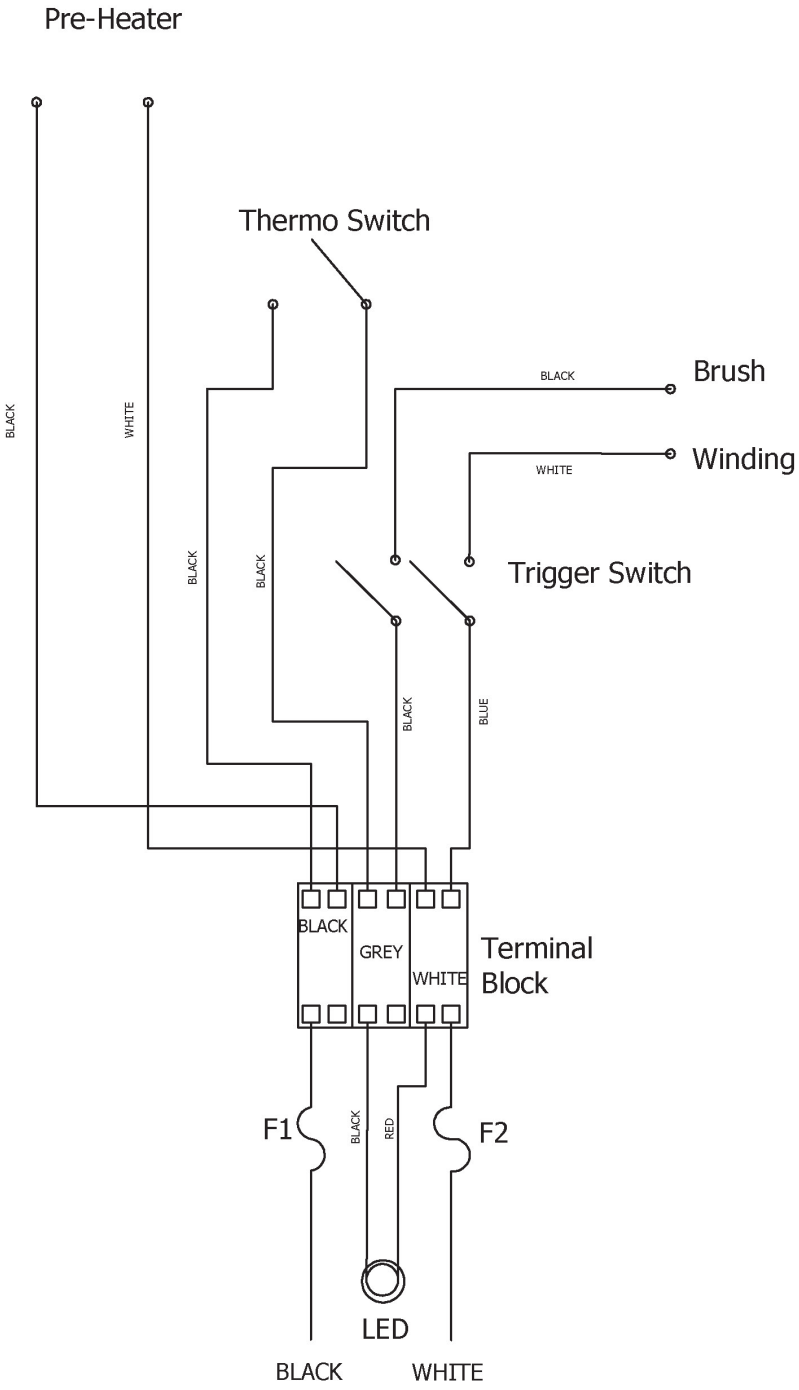
Pre-Heater
Thermo Switch
BLACK
WHITE
BLACK
BLACK
Brush
BLACK
Winding
WHITE
Trigger Switch
BLACK
BLUE
BLACK
GREY
WHITE
Terminal Block
F1
BLACK
RED
F2
LED
BLACK
WHITE

Diagram 10.1

Warranty

DEMTECH Services, Inc. warrants all equipment of its manufacture to be free from defects in materials, workmanship, mechanical parts, and labor for a period of one year from the date of shipment to the original buyer and ninety days for electrical. This warranty excludes normal wear items such as gears, bearings and chains. The liability under this warranty is limited to replacement parts and labor on equipment when the equipment is returned prepaid to the factory or its authorized service center with prior authorization from DEMTECH Services, Inc., and upon examination by DEMTECH Services, Inc., is determined to be defective. At DEMTECH Services, Inc.'s option, a service representative may be dispatched to the equipment location.

As an additional protection, DEMTECH Services, Inc. warrants that for a period of 90 days from the date of shipment to the original buyer, pending prior authorization from DEMTECH Services, Inc., there will be no charge for service related shipping of parts and/or equipment or for authorized travel of a service representative to the equipment location. After 90 days, all costs incurred for shipping the equipment or parts thereof or for travel are the responsibility of the buyer. Our warranty for this equipment is rendered void if the unit has been repaired, taken apart or modified, or attempted to be, unless such actions have been taken in accordance with written instructions received from DEMTECH Services, Inc. The warranty is also void if the equipment has been subjected to abuse, accident or other abnormal conditions.

IF ANY FAULT DEVELOPS,
THE FOLLOWING STEPS SHOULD BE TAKEN:

1. Notify DEMTECH Services, Inc. by calling 1-888-324-9353. Overseas customers should contact the local DEMTECH authorized service center. Please be prepared with the model number, serial number and full details of the difficulty. Upon receipt of this information, service data or shipping instructions will be provided by DEMTECH Services, Inc. Do not return the unit for repair without first contacting the factory or its representative for instructions.
2. After the initial 90 day period, on receipt of shipping instructions, forward the equipment prepaid to the factory or its authorized service center as instructed. If requested, an estimate of the charges will be made before work begins, especially with those cases where the DEMTECH Services, Inc. product is not covered by the warranty.
3. If the original carton and packing are not available, the product should be packed in a container with a strong exterior and surrounded by a protective layer of shock-absorbing material. DEMTECH Services, Inc. advises returning the equipment at full value to the carrier.

DEMTECH Services, Inc. reserves the right to make changes in design at any time without incurring any obligation to install the same changes on units previously purchased.

This warranty states the essence of the obligations or liabilities on the part of DEMTECH Services, Inc. THE FORMAL, COMPLETE AND EXCLUSIVE STATEMENT OF DEMTECH SERVICES, INC.'S WARRANTY IS CONTAINED IN ITS QUOTATIONS, ACKNOWLEDGEMENTS AND INVOICES. DEMTECH Services, Inc. neither assumes, nor authorizes any person to assume for it, any liability in connection with the sale of its equipment other than those set forth herein.