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2023-11

Processes



Induction Heating

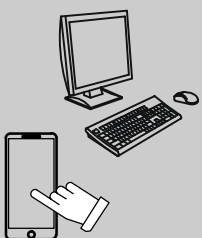
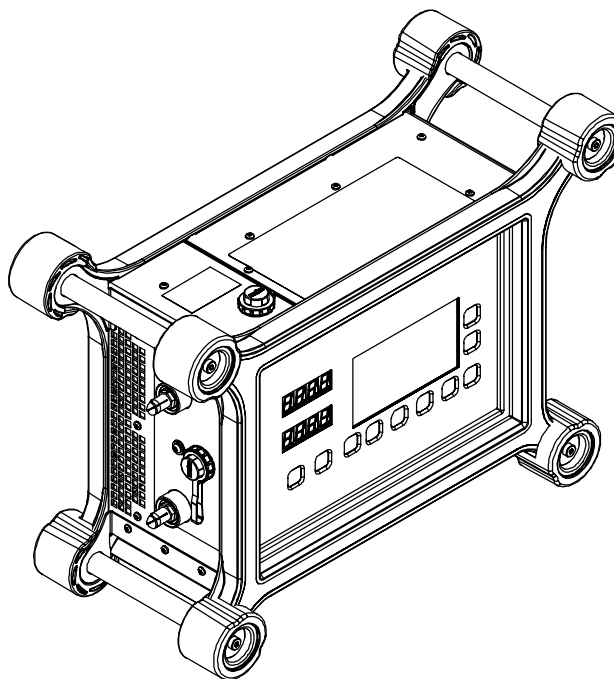
Description



Induction Heating Accessory

ArcReach[®] Heater

With Data Application For CE And Non-CE
Models



For product information,
Owner's Manual translations,
and more, visit

www.MillerWelds.com

OWNER'S MANUAL

From Miller to You

Thank you and congratulations on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety Precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller, you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is, and our extensive service network is there to help fix the problem. Warranty and maintenance information for your particular model are also provided.

Miller Electric manufactures a full line of welders and welding-related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual specification sheets. **To locate your nearest distributor or service agency call**

1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.



Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.



**ISO 9001
Quality**

Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001 Quality System Standard.



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DECLARATION OF CONFORMITY



For European Community (CE marked) products.

MILLER Electric Mfg. LLC, 1635 West Spencer Street, Appleton, WI 54914 U.S.A. declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Council Directives(s), Commission Regulation(s) and Standard(s).

Product/Apparatus Identification:

Product	Stock Number
ArcReach Heater	301591
ArcReach Heater Extension Cable	301451

Council Directives and Commission Regulations:

- 2014/53/EU Radio equipment
- 2011/65/EU and amendment 2015/863 Restriction of the use of certain hazardous substances in electrical and electronic equipment

Standards for conformity with essential requirements of 2014/53/EU:

Standard Reference	Article of 2014/53/EU
EN IEC 60974-1:2018/A1:2019	3.1 (a): Health and Safety
EN 60974-10:2014/A1:2015	3.1 (b): Electromagnetic Compatibility
ETSI EN 300 330 V2.1.1 (2017-02)	3.2: Efficient use of Radio Spectrum

Standards for conformity with essential requirements of 2011/65/EU and amendment 2015/863:

- EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Signatory:

A handwritten signature in black ink, appearing to read "David A. Werba", is written over a horizontal line.

August 5, 2021

David A. Werba
MANAGER, PRODUCT DESIGN COMPLIANCE

Date of Declaration

DECLARATION OF CONFORMITY



For United Kingdom (UKCA marked) products.

MILLER Electric Mfg. LLC, 1635 West Spencer Street, Appleton, WI 54914 U.S.A. declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Regulation(s) and Standard(s).

Product/Apparatus Identification:

Product	Stock Number
ArcReach Heater	301591
ArcReach Heater Extension Cable	301451

Regulations:

- S.I. 2017/1206 The Radio Equipment Regulations 2017
- S.I. 2012/3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Standards for conformity with essential requirements of S.I. 2017/1206:

Standard Reference	Regulation of S.I. 2017/1206
EN IEC 60974-1:2018/A1:2019	6.1 (a): Health and Safety
EN 60974-10:2014/A1:2015	6.1 (b): Electromagnetic Compatibility
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August 5, 2021

David A. Werba
MANAGER, PRODUCT DESIGN COMPLIANCE

Date of Declaration

EMF DATA SHEET FOR INDUCTION HEATING POWER SOURCE



MILLER Electric Mfg. LLC, 1635 Spencer Street, Appleton, WI 54914 U.S.A. is voluntarily providing the following information to assist European employers in carrying out their assessments to show compliance with Directive 2013/35/EU on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields).

Product/Apparatus Identification

Product	Stock Number
ARCREACH HEATER	301390
ARCREACH HEATER,CE	301591

Compliance Information Summary

Applicable regulation Directive 2014/35/EU

Reference limits Directive 2013/35/EU, Recommendation 1999/519/EC

Applicable standards None

Intended use ☒ for occupational use ☐ for use by laymen

Sensory effects need to be considered for workplace assessment ☐ YES ☒ NO

Non-thermal health effects need to be considered for workplace assessment ☒ YES ☐ NO

Thermal health effects need to be considered for workplace assessment ☐ YES ☒ NO

☒ Data is based on maximum power source capability (valid unless firmware/hardware is changed)

☐ Data is based on worst case setting/program (only valid until setting options/welding programs are changed)

☐ Data is based on multiple settings/programs (only valid until setting options/welding programs are changed)

EMF Data for Non-thermal Health Effects

Minimum approach distances to pipe/coil where EMF exposure limit values are not exceeded (ELV Exposure Index ≤ 1)

Output Current	Body Part			
	Head	Trunk	Hand	Thigh
200 A	8 cm	9 cm	3 cm	8 cm

Distance where all occupational ELV Exposure Indices fall below 0.20 (20%) 23 cm

Distance where all general public ELV Exposure Indices fall below 1.00 (100%) 56 cm

The distances above apply if the maximum number of coil turns is five. For applications where the number of coil turns exceeds five, contact Miller Electric Mfg. LLC for assistance.

Assessment performed by: Mike Madsen

Date performed: 2019-09-26

281887B

SECTION 1 – SAFETY PRECAUTIONS – READ BEFORE USING

 Protect yourself and others from injury—read, follow, and save these important safety precautions and operating instructions.

1-1. Symbol Usage

 **DANGER!** – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

 Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

NOTICE – Indicates statements not related to personal injury.

 Indicates special instructions.



This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid these hazards.

1-2. Induction Heating Hazards

 The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Principal Safety Standards. Read and follow all Safety Standards.

 Only qualified persons should install, operate, maintain, and repair this equipment. A qualified person is defined as one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project and has received safety training to recognize and avoid the hazards involved.

 During operation, keep everybody, especially children, away.

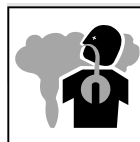


ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The power circuit and output bus bars or connections are electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on.

- Do not touch live electrical parts.
- Enclose any connecting bus bars and coolant fittings to prevent unintentional contact.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, see ANSI Z49.1 listed in Safety Standards. And, do not work alone!
- Disconnect input power before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Use only nonconductive coolant hoses with a minimum length of 18 inches (457 mm) to provide isolation.
- Properly install, ground, and operate this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground—check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.

- When making input connections, attach proper grounding conductor first—double-check connections.
- Keep cords dry, free of oil and grease, and protected from hot metal and sparks.
- Frequently inspect input power cord and ground conductor for damage or bare wiring—replace immediately if damaged—bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or repaired cables.
- Do not drape cables over your body.
- Do not touch power circuit if you are in contact with the work, ground, or another power circuit from a different machine.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Use GFCI protection when operating auxiliary equipment in damp or wet locations.



FUMES AND GASES can be hazardous.

Induction Heating of certain materials, adhesives, and fluxes can produce fumes and gases. Breathing these fumes and gases can be hazardous to

your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- Ventilate the work area and/or use local forced ventilation at the arc to remove welding fumes and gases. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Fumes and gases from heating can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not heat in locations near degreasing, cleaning, or spraying operations. The heat can react with vapors to form highly toxic and irritating gases.
- Do not overheat coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the heated area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if overheated. See coating SDS for temperature information.



FIRE OR EXPLOSION hazard.

- Do not overheat parts.
- Watch for fire; keep extinguisher nearby.
- Keep flammables away from work area.
- Do not locate unit on, over, or near combustible surfaces.
- Do not use unit to thaw frozen pipes.
- Do not install unit near flammables.
- Do not cover an air-cooled blanket with any material that will cause the blanket to overheat.
- Do not operate where the atmosphere can contain flammable dust, gas, or liquid vapors (such as gasoline).
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.

- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Wear body protection made from leather or flame-resistant clothing (FRC). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.



INDUCTION HEATING can burn.

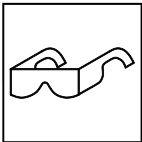
- Do not touch hot parts bare-handed.
- Allow cooling period before handling parts or equipment.
- Do not touch or handle induction head/coil during operation unless the equipment is designed and intended to be used in this manner as specified in the owner's manual.
- Keep metal jewelry and other metal personal items away from head/coil during operation.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

1-3. Additional Hazards For Installation, Operation, And Maintenance



FALLING EQUIPMENT can injure.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use correct procedures and equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.
- Keep equipment (cables and cords) away from moving vehicles when working from an aerial location.
- Follow the guidelines in the Applications Manual for the Revised NIOSH Lifting Equation (Publication No. 94-110) when manually lifting heavy parts or equipment.



FLYING METAL OR DIRT can injure eyes.

- Wear approved safety glasses with side shields or wear face shield.



MOVING PARTS can injure.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance and troubleshooting as necessary.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before reconnecting input power.



ELECTRIC AND MAGNETIC FIELDS (EMF) can affect Implanted Medical Devices.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations.



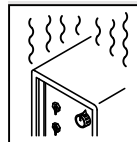
STEAM AND HOT COOLANT can burn.

- Hose may rupture if coolant overheats.
- Never disconnect both ends of hose when installed on hot workpiece.



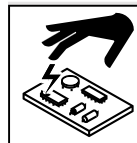
HIGH PRESSURE FLUIDS can injure or kill.

- Coolant can be under high pressure.
- Release pressure before working on cooler.
- If ANY fluid is injected into the skin or body seek medical help immediately.



OVERUSE can cause OVERHEATING.

- Allow cooling period.
- Reduce output or reduce duty cycle before starting to heat again.
- Follow rated duty cycle.



STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.



BATTERY EXPLOSION can injure.

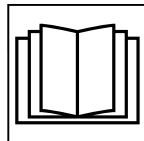
- Do not use induction equipment to charge batteries or jump start vehicles unless it has a battery charging feature designed for this purpose.



H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.

- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut.



READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform installation, maintenance, and service according to the Owner's Manuals, industry standards, and national, state, and local codes.

1-4. California Proposition 65 Warnings

⚠ WARNING – This product can expose you to chemicals including lead, which are known to the state of California to cause cancer and birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, American Welding Society standard ANSI Standard Z49.1. Website: <http://www.aws.org>.

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2 from Canadian Standards Association. Website: www.csagroup.org.

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910.177 Subpart N, Part 1910 Subpart Q, and Part 1926, Subpart J. Website: www.osha.gov.

National Electrical Code, NFPA Standard 70 from National Fire Protection Association. Website: www.nfpa.org.

Canadian Electrical Code Part 1, CSA Standard C22.1 from Canadian Standards Association. Website: www.csagroup.org.

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute. Website: www.ansi.org.

OSHA Important Note Regarding the ACGIH TLV, Policy Statement on the Uses of TLVs and BEIs. Website: www.osha.gov.

Applications Manual for the Revised NIOSH Lifting Equation from the National Institute for Occupational Safety and Health (NIOSH). Website: www.cdc.gov/NIOSH.

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1-6. EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). The current from arc welding (and allied processes including spot welding, gouging, plasma arc cutting, and induction heating operations) creates an EMF field around the welding circuit. EMF fields can interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, restrict access for passers-by or conduct individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep head and trunk as far away from the equipment in the welding circuit as possible.

5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source or wire feeder.

For additional information on induction heating and EMF exposure, see the bulletin at this location: <https://www.millerwelds.com/-/media/miller-electric/files/pdf/safety/bulletins/bulletin-on-induction-heating-and-emf-exposure.pdf>

About Implanted Medical Devices:

Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – CONSIGNES DE SÉCURITÉ - LIRE AVANT UTILISATION

 Pour écarter les risques de blessure pour vous-même et pour autrui — lire, appliquer et ranger en lieu sûr ces consignes relatives aux précautions de sécurité et au mode opératoire.

2-1. Symboles utilisés

 **DANGER!** – Indique une situation dangereuse qui si on l'évite pas peut donner la mort ou des blessures graves. Les dangers possibles sont montrés par les symboles joints ou sont expliqués dans le texte.

 Indique une situation dangereuse qui si on l'évite pas peut donner la mort ou des blessures graves. Les dangers possibles sont montrés par les symboles joints ou sont expliqués dans le texte.

AVIS – Indique des déclarations pas en relation avec des blessures personnelles.

 Indique des instructions spécifiques.



Ce groupe de symboles veut dire Avertissement! Attention! DANGER DE CHOC ELECTRIQUE, PIECES EN MOUVEMENT, et PIECES CHAUDES. Reportez-vous aux symboles et aux directives ci-dessous afin de connaître les mesures à prendre pour éviter tout danger.

2-2. Dangers relatifs au chauffage par induction

 Les symboles représentés ci-dessous sont utilisés dans ce manuel pour attirer l'attention et identifier les dangers possibles. En présence de ce symbole, prendre garde et suivre les instructions afférentes pour éviter tout risque. Les consignes de sécurité présentées ci-après ne font que résumer l'information contenue dans les Normes de sécurité principales. Lire et suivre toutes les Normes de sécurité.

 L'installation, l'utilisation, l'entretien et les réparations ne doivent être confiés qu'à des personnes qualifiées. Une personne qualifiée est définie comme celle qui, par la possession d'un diplôme reconnu, d'un certificat ou d'un statut professionnel, ou qui, par une connaissance, une formation et une expérience approfondies, a démontré avec succès sa capacité à résoudre les problèmes liés à la tâche, le travail ou le projet et a reçu une formation en sécurité afin de reconnaître et d'éviter les risques inhérents.

 Au cours de l'utilisation, tenir toute personne à l'écart et plus particulièrement les enfants.



UNE DÉCHARGE ÉLECTRIQUE peut entraîner la mort.

Le contact de composants électriques peut provoquer des accidents mortels ou des brûlures graves. Le circuit électrique et les barres collectrices

ou les connexions de sortie sont sous tension lorsque l'appareil fonctionne. Le circuit d'alimentation et les circuits internes de la machine sont également sous tension lorsque l'alimentation est sur marche. Des équipements installés ou reliés à la borne de terre de manière incorrecte sont dangereux.

- Ne pas toucher aux pièces électriques sous tension.
- Protéger toutes les barres collectrices et les raccords de refroidissement pour éviter de les toucher par inadvertance.
- Porter des gants isolants et des vêtements de protection secs et sans trous.
- S'isoler de la pièce à couper et du sol en utilisant des housses ou des tapis assez grands afin d'éviter tout contact physique avec la pièce à couper ou le sol.
- D'autres consignes de sécurité sont nécessaires dans les conditions suivantes : risques électriques dans un environnement humide ou si l'on porte des vêtements mouillés ; sur des structures métalliques telles que sols, grilles ou échafaudages ; en position coincée comme assise, à genoux ou couchée ; ou s'il y a un risque élevé de contact inévitable ou accidentel avec la pièce à souder ou le sol. Dans ces conditions, voir ANSI Z49.1 énuméré dans les normes de sécurité. En outre, ne pas travailler seul !

- Couper l'alimentation d'entrée avant d'installer l'appareil ou d'effectuer l'entretien. Verrouiller ou étiqueter la sortie d'alimentation selon la norme OSHA 29 CFR 1910.147 (se reporter aux Principales normes de sécurité).
- N'utiliser que des tuyaux de refroidissement non conducteurs ayant une longueur minimale de 457 mm pour garantir l'isolation.
- Installer le poste correctement et le mettre à la terre convenablement selon les consignes du manuel de l'opérateur et les normes nationales, provinciales et locales.
- Toujours vérifier la mise à la terre — vérifier et assurez-vous que le conducteur de mise à la terre du cordon d'alimentation est bien raccordé à la borne de mise à la terre dans le boîtier de déconnexion ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
- En effectuant les raccordements d'entrée, fixer d'abord le conducteur de mise à la terre approprié et révéifier les connexions.
- Les câbles doivent être exempts d'humidité, d'huile et de graisse; protégez-les contre les étincelles et les pièces métalliques chaudes.
- Vérifier fréquemment le cordon d'alimentation et le conducteur de mise à la terre afin de s'assurer qu'il n'est pas altéré ou dénudé. Le remplacer immédiatement s'il l'est. Un fil dénudé peut entraîner la mort.
- L'équipement doit être hors tension lorsqu'il n'est pas utilisé.
- Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
- Ne pas enrouler les câbles autour du corps.
- Ne pas toucher le circuit électrique si l'on est en contact avec la pièce, la terre ou le circuit électrique d'une autre machine.
- N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretenir l'appareil conformément à ce manuel.
- Porter un harnais de sécurité si l'on doit travailler au-dessus du sol.
- S'assurer que tous les panneaux et couvercles sont correctement en place.
- Utiliser une protection différentielle lors de l'utilisation d'un équipement auxiliaire dans des endroits humides ou mouillés.



LES FUMÉES ET LES GAZ peuvent être dangereux.

Le chauffage à induction de certains matériaux, adhésifs et flux génère des fumées et des gaz. Leur inhalation peut être dangereuse pour votre

santé.

- Ne pas mettre sa tête au-dessus des vapeurs. Ne pas respirer ces vapeurs.
- À l'intérieur, ventiler la zone et/ou utiliser une ventilation forcée au niveau de l'arc pour l'évacuation des fumées et des gaz de soudage. Pour déterminer la bonne ventilation, il est recommandé de procéder à un prélèvement pour la composition et la quantité de fumées et de gaz auxquelles est exposé le personnel.
- Si la ventilation est médiocre, porter un respirateur anti-vapeurs approuvé.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraisseurs, les flux et les métaux.
- Travailler dans un espace fermé seulement s'il est bien ventilé ou en portant un respirateur. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz provenant du chauffage peuvent déplacer l'air, abaisser le niveau d'oxygène et provoquer des lésions ou des accidents mortels. S'assurer que l'air ambiant ne présente aucun danger.
- Ne pas chauffer dans des endroits se trouvant à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur peut réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
- Ne pas surchauffer des métaux munis d'un revêtement tels que l'acier galvanisé, plaqué au plomb ou au cadmium, à moins que le revêtement ne soit enlevé de la zone chauffée, que la zone soit bien ventilée et, si nécessaire, en portant un respirateur. Les revêtements et tous les métaux contenant ces éléments peuvent dégager des fumées toxiques s'ils sont surchauffés. Voir les informations concernant la température dans les spécifications de revêtement SDS.



Risque D'INCENDIE OU D'EXPLOSION.

- Ne pas surchauffer les composants.
- Attention aux risques d'incendie: tenir un extincteur à proximité.
- Stocker des produits inflammables hors de la zone de travail.

- Ne pas placer l'appareil sur, au-dessus ou à proximité de surfaces inflammables.
- Ne pas utiliser l'appareil pour dégeler des tuyaux.
- Ne pas installer l'appareil à proximité de produits inflammables.
- Ne pas couvrir les protections isolantes refroidies par air avec un matériau pouvant entraîner leur surchauffe.
- Ne pas souder là où l'air ambiant pourrait contenir des poussières, gaz ou émanations inflammables (vapeur d'essence, par exemple).
- Une fois le travail achevé, assurez-vous qu'il ne reste aucune trace d'étincelles incandescentes ni de flammes.
- Utiliser exclusivement des fusibles ou coupe-circuits appropriés. Ne pas augmenter leur puissance; ne pas les ponter.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraisseurs, les flux et les métaux.
- Porter une protection corporelle en cuir ou des vêtements ignifuges (FRC). La protection du corps comporte des vêtements sans huile, comme des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.



LE CHAUFFAGE PAR INDUCTION peut provoquer des brûlures.

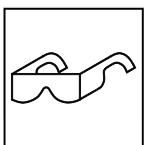
- Ne pas toucher des parties chaudes à mains nues.
- Laisser refroidir les composants ou équipements avant de les manipuler.
- Ne pas toucher ou manipuler les câbles/enroulements d'induction durant l'opération à moins que l'équipement soit conçu à cet effet comme indiqué dans le manuel d'utilisateur.
- Tenir les bijoux et autres objets personnels en métal éloignés de la tête/de l'enroulement pendant le fonctionnement.
- Ne pas toucher aux pièces chaudes, utiliser les outils recommandés et porter des gants de soudage et des vêtements épais pour éviter les brûlures.

2-3. Symboles de dangers supplémentaires en relation avec l'installation, le fonctionnement et la maintenance



LA CHUTE DE L'ÉQUIPEMENT peut provoquer des blessures.

- Utiliser l'anneau de levage uniquement pour soulever l'appareil, NON PAS les organes de roulement, les bouteilles de gaz ou tout autre accessoire.
- Utilisez les procédures correctes et des équipements d'une capacité appropriée pour soulever et supporter l'appareil.
- En utilisant des fourches de levage pour déplacer l'unité, s'assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l'appareil.
- Tenir l'équipement (câbles et cordons) à distance des véhicules mobiles lors de toute opération en hauteur.
- Suivre les consignes du Manuel des applications pour l'équation de levage NIOSH révisée (Publication N°94-110) lors du levage manuel de pièces ou équipements lourds.



DES PIÈCES DE METAL ou DES SALETES peuvent provoquer des blessures dans les yeux.

- Porter des lunettes de sécurité à coques latérales ou un écran facial.



Les PIÈCES MOBILES peuvent causer des blessures.

- S'abstenir de toucher des organes mobiles tels que des ventilateurs.
- Maintenir fermés et verrouillés les portes, panneaux, recouvrements et dispositifs de protection.
- Lorsque cela est nécessaire pour des travaux d'entretien et de dépannage, faire retirer les portes, panneaux, recouvrements ou dispositifs de protection uniquement par du personnel qualifié.
- Remettre les portes, panneaux, recouvrements ou dispositifs de protection quand l'entretien est terminé et avant de rebrancher l'alimentation électrique.



Les CHAMPS ÉLECTROMAGNÉTIQUES (CEM) peuvent affecter les implants médicaux.

- Les porteurs de stimulateurs cardiaques et autres implants médicaux doivent rester à distance.
- Les porteurs d'implants médicaux doivent consulter leur médecin et le fabricant du dispositif avant de s'approcher de la zone où se déroule du soudage à l'arc, du soudage par points, du gougeage, de la découpe plasma ou une opération de chauffage par induction.



LE LIQUIDE DE REFROIDISSEMENT CHAUD ET LA VAPEUR peuvent causer des brûlures.

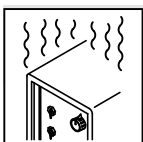
Si le liquide de refroidissement est en surchauffe, un boyau pourrait se sectionner.

- Ne jamais débrancher les deux extrémités du tuyau lorsque l'appareil est installé sur une pièce de travail chaude.
- Si le liquide de refroidissement cesse de s'écouler, laisser une extrémité du tuyau branchée pour permettre au liquide de refroidissement chaud de revenir au refroidisseur et dépressuriser.
- Pour éviter tout risque de dommage, retirer le tuyau de la pièce de travail chaude.
- Effectuer une inspection visuelle des boyaux, cordons et câbles avant chaque utilisation. Ne pas utiliser des boyaux, cordons ou câbles endommagés.
- Laissez refroidir avant d'intervenir sur l'équipement.



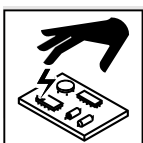
LES LIQUIDES SOUS HAUTE PRESSION peuvent provoquer des blessures ou la mort.

- Liquide de refroidissement sous haute pression.
- Libérez la pression avant d'intervenir sur le refroidisseur.
- En cas d'injection d'un liquide QUELCONQUE dans la peau ou le corps, consultez immédiatement un médecin.



L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

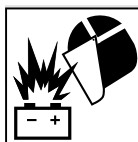
- Prévoir une période de refroidissement.
- Réduire le courant de sortie ou le facteur de marche avant de recommencer le chauffage.
- Respecter le cycle opératoire nominal.



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

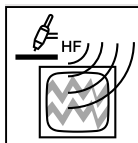
- Établir la connexion avec la barrette de terre AVANT de manipuler des cartes ou des pièces.

- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes de circuits imprimés.



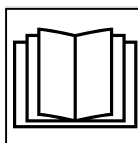
L'EXPLOSION DE LA BATTERIE peut provoquer des blessures.

- Ne pas utiliser d'équipement à induction pour charger les batteries ou une batterie d'appoint pour démarrer des véhicules, sauf si celui-ci est doté d'une caractéristique de charge de batterie conçue à cette fin.



LE RAYONNEMENT HAUTE FRÉQUENCE (HF) risque de provoquer des interférences.

- Le rayonnement haute fréquence (HF) peut provoquer des interférences avec les équipements de radio-navigation et de communication, les services de sécurité et les ordinateurs.
- Demander seulement à des personnes qualifiées familiarisées avec des équipements électroniques de faire fonctionner l'installation.
- L'utilisateur est tenu de faire corriger rapidement par un électricien qualifié les interférences résultant de l'installation.
- Si le FCC signale des interférences, arrêter immédiatement l'appareil.
- Effectuer régulièrement le contrôle et l'entretien de l'installation.
- Maintenir soigneusement fermés les portes et les panneaux des sources de haute fréquence.



LIRE LES INSTRUCTIONS.

- Lire et appliquer les instructions sur les étiquettes et le Mode d'emploi avant l'installation, l'utilisation ou l'entretien de l'appareil. Lire les informations de sécurité au début du manuel et dans chaque section.
- N'utiliser que des pièces de remplacement provenant du fabricant.
- Effectuer l'installation, l'entretien et toute intervention selon les manuels d'utilisateurs, les normes nationales, provinciales et de l'industrie, ainsi que les codes municipaux.

2-4. Proposition californienne 65 Avertissements

AVERTISSEMENT – Ce produit peut vous exposer à des produits chimiques tels que le plomb, reconnus par l'État de Californie comme cancérigènes et sources de malformations ou d'autres troubles de la reproduction.

Pour plus d'informations, consulter www.P65Warnings.ca.gov.

2-5. Principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, American Welding Society standard ANSI Standard Z49.1. Website: <http://www.aws.org>.

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2 from Canadian Standards Association. Website: www.csa-group.org.

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910.177 Subpart N, Part 1910 Subpart Q, and Part 1926, Subpart J. Website: www.osha.gov.

National Electrical Code, NFPA Standard 70 from National Fire Protection Association. Website: www.nfpa.org.

Canadian Electrical Code Part 1, CSA Standard C22.1 from Canadian Standards Association. Website: www.csagroup.org.

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute. Website: www.ansi.org.

OSHA Important Note Regarding the ACGIH TLV, Policy Statement on the Uses of TLVs and BEIs. Website: www.osha.gov.

Applications Manual for the Revised NIOSH Lifting Equation from the National Institute for Occupational Safety and Health (NIOSH). Website: www.cdc.gov/NIOSH.

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2-6. Informations relatives aux CEM

Le courant électrique qui traverse tout conducteur génère des champs électromagnétiques (CEM) à certains endroits. Le courant issu d'un soudage à l'arc (et de procédés connexes, y compris le

soudage par points, le gougeage, le découpage plasma et les opérations de chauffage par induction) crée un champ électromagnétique (CEM) autour du circuit de soudage. Les champs électromagnétiques

produits peuvent causer interférence à certains implants médicaux, p. ex. les stimulateurs cardiaques. Des mesures de protection pour les porteurs d'implants médicaux doivent être prises: par exemple, des restrictions d'accès pour les passants ou une évaluation individuelle des risques pour les soudeurs. Tous les soudeurs doivent appliquer les procédures suivantes pour minimiser l'exposition aux CEM provenant du circuit de soudage:

1. Rassembler les câbles en les torsadant ou en les attachant avec du ruban adhésif ou avec une housse.
2. Ne pas se tenir au milieu des câbles de soudage. Disposer les câbles d'un côté et à distance de l'opérateur.
3. Ne pas courber et ne pas entourer les câbles autour de votre corps.
4. Maintenir la tête et le torse aussi loin que possible du matériel du circuit de soudage.
5. Connecter la pince sur la pièce aussi près que possible de la soudure.

6. Ne pas travailler à proximité d'une source de soudage, ni s'asseoir ou se pencher dessus.
7. Ne pas souder tout en portant la source de soudage ou le dévidoir.

Pour des informations supplémentaires relatives au chauffage par induction et à l'exposition aux champs électriques et magnétiques (CEM), se reporter au communiqué suivant:

<https://www.millerwelds.com/-/media/miller-electric/files/pdf/safety/bulletins/bulletin-on-induction-heating-and-emf-exposure.pdf>

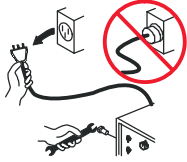
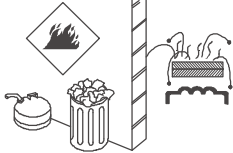
En ce qui concerne les implants médicaux :

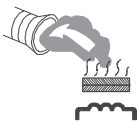
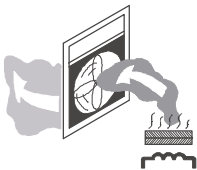
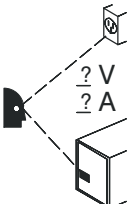
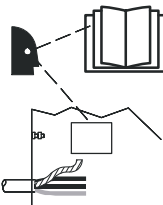
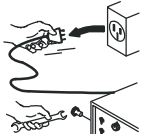
Les porteurs d'implants doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de soudage par points, de gougeage, du coupage plasma ou de chauffage par induction. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.

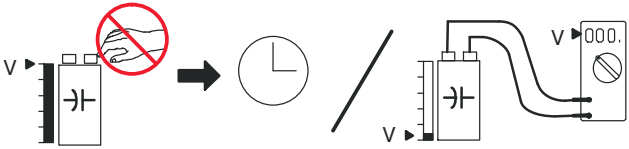
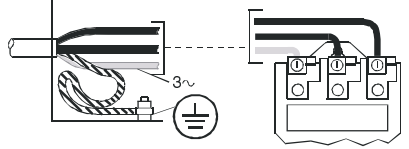
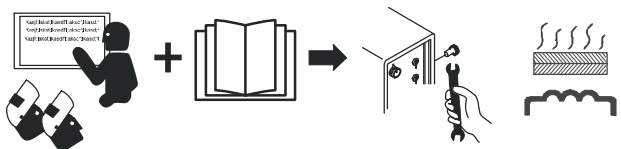
SECTION 3 – DEFINITIONS

3-1. Additional Safety Symbol Definitions

☞ Some symbols are found only on CE products.

	Warning! Watch Out! There are possible hazards as shown by the symbols.
	Wear dry insulating gloves. Do not wear wet or damaged gloves.
	Disconnect input plug or power before working on machine.
	Induction heating can cause injury or burns from hot items such as rings, watches, or parts.
	Do not wear metal jewelry and other metal personal items such as rings and watches during operation.
	Induction heating sparks can cause fire. Do not overheat parts and adhesives.
	Keep flammables away from heating operation. Do not heat near flammables.
	Heating sparks can cause fires. Have a fire extinguisher nearby and have a watchperson ready to use it.
	Breathing heating fumes can be hazardous to your health. Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for material used.

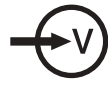
	Keep your head out of the fumes.
	Use forced ventilation or local exhaust to remove the fumes.
	Use ventilating fan to remove fumes.
	Always wear safety glasses or goggles during and around heating operations to prevent possible injury.
	Wear either safety glasses or full goggles depending on type of operation and nearby processes.
	Do not remove or paint over (cover) the label.
	Do not discard product (where applicable) with general waste. Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility. Contact your local recycling office or your local distributor for further information.
	Consult rating label for input power requirements.
	Become trained and read the instructions and labels before working on machine.
	Disconnect input plug or power before working on machine.

	Hazardous voltage remains on input capacitors after power is turned off. Do not touch fully charged capacitors. Always wait 5 minutes after power is turned off before working on unit, AND check input capacitor voltage, and be sure it is near 0 before touching any parts.
	Connect green or green/yellow grounding conductor to ground terminal. Connect input conductors (L1, L2, L3) to line terminals.
	Become trained and read the instructions before working on the machine or heating.
	Hazardous voltage; electric shock can kill.
	Keep away from hot surfaces.

3-2. Miscellaneous Symbols And Definitions

A	Amperage
V	Volts
~	Alternating Current
IP	Degree Of Protection
Hz	Hertz
	Circuit Protection
	Output
	Start of Action
	Stop of Action
	Line Connection

I₁	Primary Current
I₂	Rated Current
U₀	Rated No-Load Voltage (OCV)
U₁	Primary Voltage
U₂	Load Voltage
	Read Operator's Manual
I_{1max}	Rated Maximum Supply Current
P_{1max}	Maximum Power Consumption
?	Help
%	Percent

	Remote
	Panel/Local
	High Temperature
	Voltage Input
	Off
	On
	Induction Heating
	Menu

SECTION 4 – SPECIFICATIONS

4-1. Serial Number and Rating Label Location

The serial number and rating information for the ArcReach Heater is located on the top of the machine. Use the rating labels to determine input power requirements and/or rated output. For future reference, write serial number in space provided on back cover of this manual.

4-2. Software Licensing Agreement

The End User License Agreement and any third-party notices and terms and conditions pertaining to third-party software can be found at <https://www.millerwelds.com/eula> and are incorporated by reference herein.

4-3. Information About Default Weld Parameters And Settings

NOTICE – Each welding application is unique. Although certain Miller Electric products are designed to determine and default to certain typical welding parameters and settings based upon specific and relatively limited application variables input by the end user, such default settings are for reference purposes only; and final weld results can be affected by other variables and application-specific circumstances. The appropriateness of all parameters and settings should be evaluated and modified by the end user as necessary based upon application-specific requirements. The end user is solely responsible for selection and coordination of appropriate equipment, adoption or adjustment of default weld parameters and settings, and ultimate quality and durability of all resultant welds. Miller Electric expressly disclaims any and all implied warranties including any implied warranty of fitness for a particular purpose.

4-4. Specifications

A. Specifications For ArcReach Heater

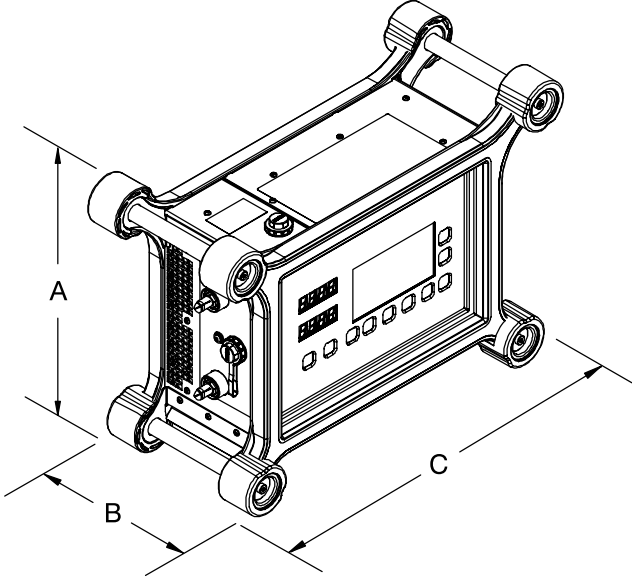
Parameter	Rated Output @ 86° F (30° C) 100% Duty Cycle
Output Power (KW)	7.8
Output Current (A)	200
Output Voltage (V)	300
Source Current (A)	33
Output Frequency (Khz)	5-30
Maximum Workpiece Preheat Temperature:	600° F (316° C)
NOTICE – Part temperatures above 600° F (315° C) may damage the heater, air-cooled cables or air-cooled quick wrap and/or shorten the tool's life.	

B. Specifications RFID Reader

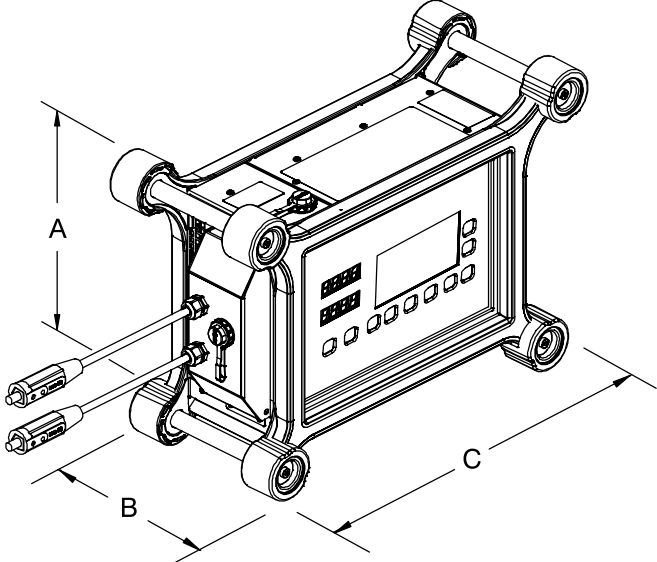
Chip Type	NXP PN7150
Output Frequency (MHz)	13.56
Signal Strength (uA/m)	3.6 dB @ 10 meters

4-5. Dimensions and Weights

A. ArcReach Heater

	Dimensions	
	A	18.6 in. (472 mm)
	B	11.2 in. (285 mm)
	C	26.7 in. (678 mm)
Weight 43 lb (20 kg)		

B. ArcReach Heater CE

	Dimensions	
	A	18.6 in. (472 mm)
	B	11.2 in. (285 mm)
	C	26.7 in. (678 mm)
Weight 50.5 lb (23.4 kg)		

C. ArcReach Heater Extension Cable With ArcReach Heater Series Adapter

FCC Compliance

This equipment has been found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications that are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

ISED RSS-Gen Issue 5 Requirement

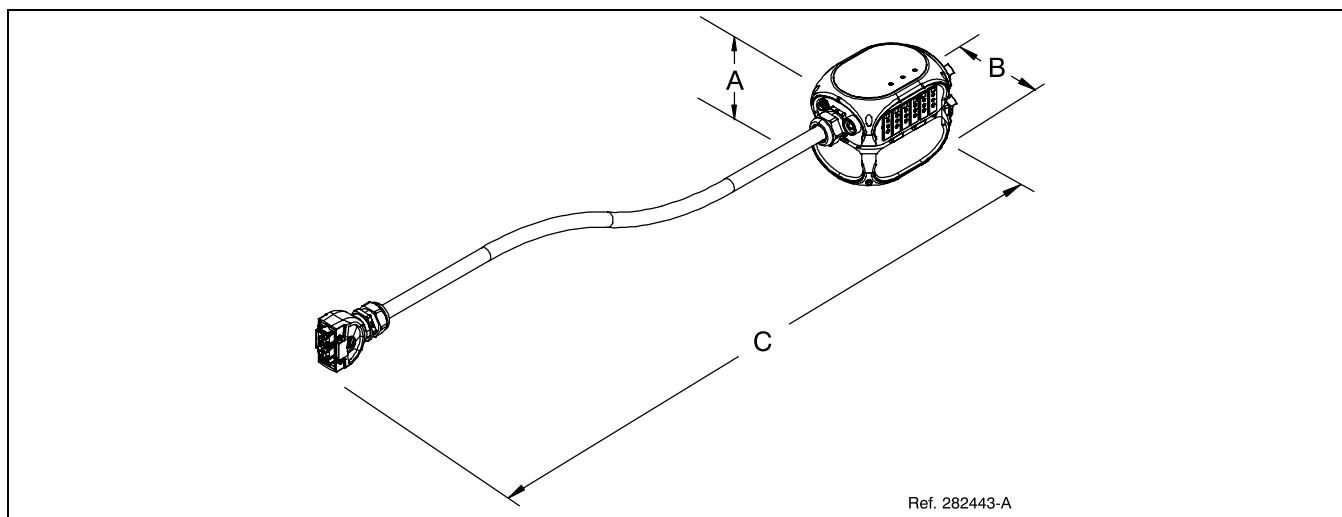
The ArcReach Heater Extension Cable contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- 1 This device may not cause interference.
- 2 This device must accept any interference, including interference that may cause undesired operation of the device.

Exigence ISDE CNR-Gen 5e édition

Le câble d'extension pour réchauffeur ArcReach contient un/des émetteur(s)-récepteur(s) exempt(s) de licence(s) que se conforme(nt) avec Innovation, Sciences et Développement économique Canada. CNR exempt(s) de licence(s). Son fonctionnement est soumis aux deux conditions suivantes:

- 1 Ce dispositif ne doit causer aucune interférence nuisible.
- 2 Ce dispositif doit accepter toutes les interférences, y compris celles qui pourraient provoquer un fonctionnement non désiré du dispositif.



Part No.	Dimensions			Weight
	A	B	C	
301451	3.9 in. (98 mm) 7.5 in. (190 mm) w/ Series Adapter	6.125 in. (155 mm)	10 ft (3 mm)	20 lb (9.1 kg)

D. Air-Cooled Heating Cables

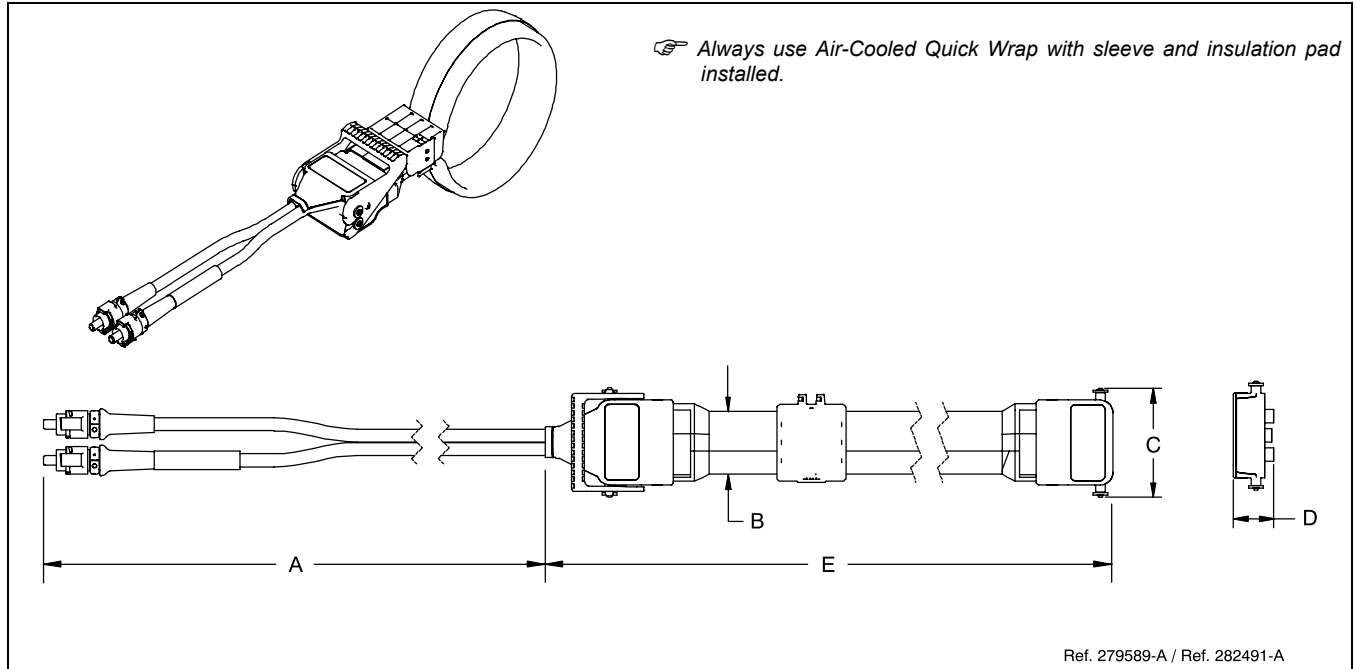
Part No.	Dimensions	Weight
301453030	Length: 30 ft (9.1 m)	15 lb (7 kg)
301453050	Length: 50 ft (15.2 m)	24 lb (11 kg)
301453080	Length: 80 ft (24.4 m)	37 lb (17 kg)

E. Air-Cooled Preheat Cable Covers

Blanket Part No.	Dimensions	Pipe Fit Diameter (w/Induction Blanket Sleeve)
204611	Length: 30 ft (9.1 m)	5 lb (2.2 kg)
204614	Length: 50 ft (15.2 m)	9 lbs (4 kg)
204620	Length: 80 ft (24.4 m)	15 lbs (6.5 kg)

The preheat cover is for mechanical protection only (abrasion / weld spatter). It is not for thermal protection.

F. Air-Cooled Quick Wrap



Part No.	Dimensions					Pipe Fit Diameter (w/Blanket Insulating Pad & Sleeve)	Weight
	A	B	C	D	E		
301452	78 in. (1981 mm)	3.7 in. (94 mm)	6.5 in. (165 mm)	2.4 in. (61 mm)	62.75 in. (1594 mm)	Min. 1.5 in. (38.1mm) Max 10 in. (254 mm)	15 lb (6.8 kg)

Preheat Insulation	
Part No.	Description
195376	Insulation, Preheat 0.50 in (13 mm) X 6 in (152 mm) X 240 in (6096 mm)
204669	Insulation, Preheat 0.50 in (13 mm) X 6 in (152 mm) X 120 in (3048 mm)
211474	Insulation, Preheat 0.50 in (13 mm) X 12 in (305 mm) X 120 in (3048 mm)
301334	Insulation w/straps, Preheat 0.50 in (13 mm) X 16.5 in (419 mm) X 120 in (3048 mm)

Using wider insulation can help retain heat in the workpiece and reduce time getting to temperature. Insulation is also used to protect the tool from damage.

4-6. Environmental Specifications

A. IP Rating

IP Rating
IP23S
This equipment is designed for outdoor use. It may be stored, but is not intended to be used for induction heating during precipitation unless sheltered.

B. Temperature Specifications

Operating Temperature Range	Storage/Transportation Temperature Range
14 to 104°F (–10 to 40°C)	–4 to 131°F (–20 to 55°C)

C. Information On Electromagnetic Compatibility (EMC)

⚠ This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.

D. EU Ecodesign Information

	Do not discard product (where applicable) with general waste. Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility. Contact your local recycling office or your local distributor for further information.
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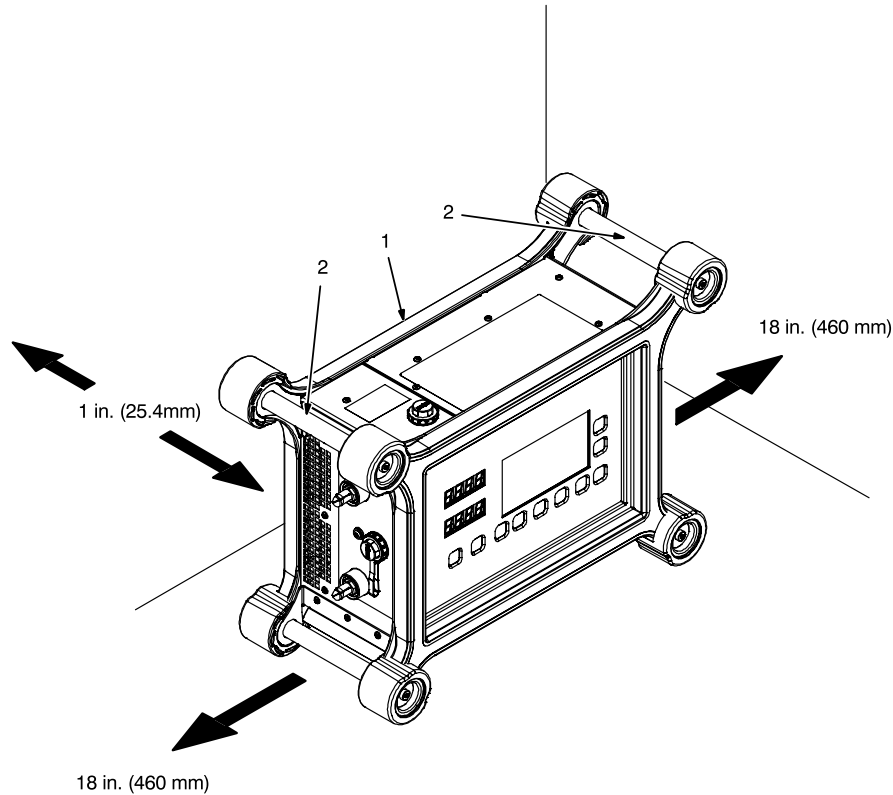
Critical raw materials possibly present in indicative amounts higher than 1 gram at component level	
Component	Critical Raw Material
Printed circuit boards	Baryte, Bismuth, Cobalt, Gallium, Germanium, Hafnium, Indium, Heavy Rare Earth, Light Rare Earth, Niobium, Platinum Group Metals, Scandium, Silicon Metal, Tantalum, Vanadium
Plastic components	Antimony, Baryte
Electrical and electronic components	Antimony, Beryllium, Magnesium
Metal components	Beryllium, Cobalt, Magnesium, Tungsten, Vanadium
Cables and cable assemblies	Borate, Antimony, Baryte, Beryllium, Magnesium
Display panels	Gallium, Indium, Heavy Rare Earth, Light Rare Earth, Niobium, Platinum Group Metals, Scandium
Batteries	Fluorspar, Heavy Rare Earth, Light Rare Earth, Magnesium

SECTION 5 – INSTALLATION

5-1. Selecting a Location



Movement, Location, and Airflow



1 ArcReach Heater

2 Lift Handle

Use lift handles to move and lift induction heating accessory.

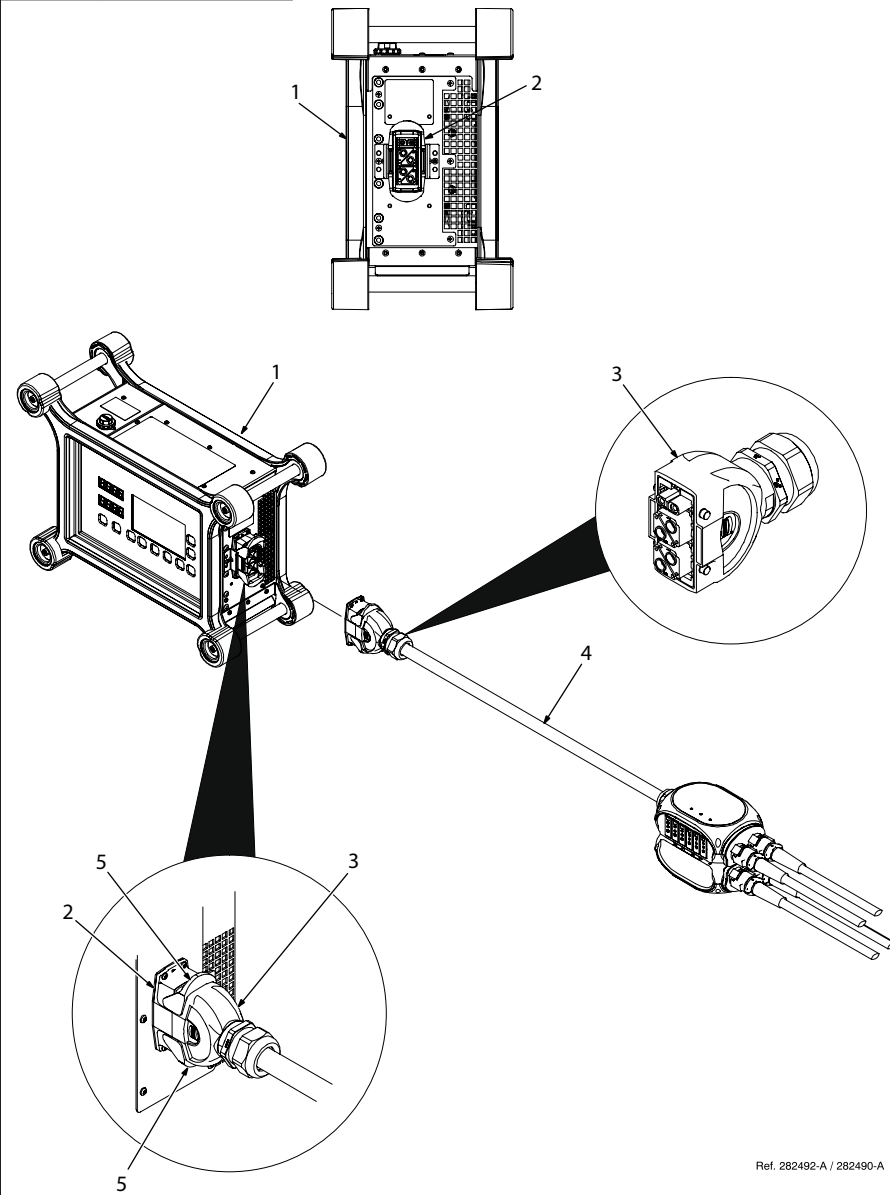
Operate in upright position.

 Do not block air intake. Avoid operating on grass. Concrete is okay.

 Do not move or operate unit where it could tip.



5-2. Connecting ArcReach Heater Extension Cable



- 1 ArcReach Heater
- 2 ArcReach Heater Panel Connector
- 3 ArcReach Heater Extension Cable Connector Plug
- 4 ArcReach Heater Extension Cable
- 5 Panel Connector Locking Tabs

Lock tabs of panel connector to secure cable connector.

Align pins of extension cable connector plug and ArcReach Heater panel connector.

Connect ArcReach Heater extension cable to ArcReach Heater.

Ref. 282492-A / 282490-A

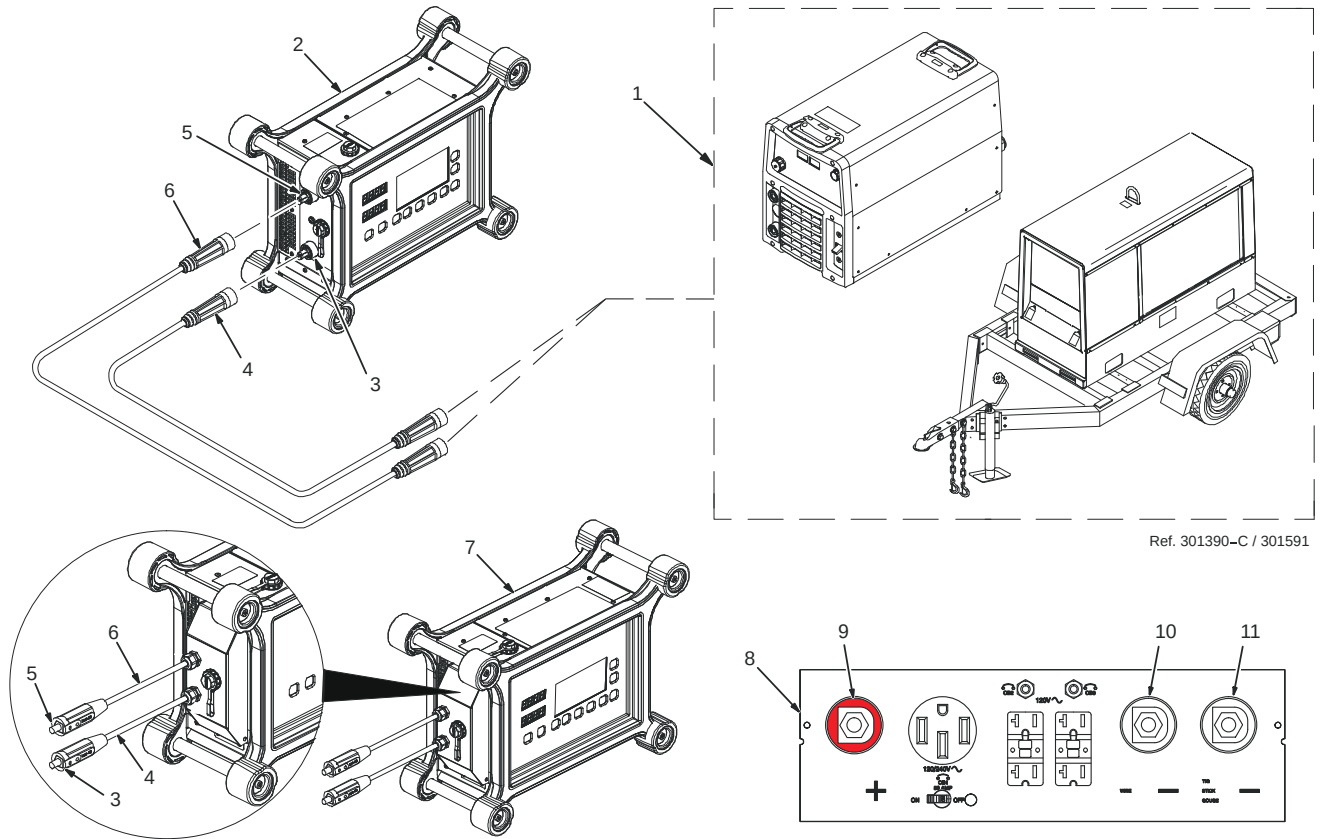
5-3. Selecting Weld Cable Sizes

The ArcReach Heater requires 2/0 (70 mm) minimum cable size to minimize voltage drop in the cable.

Ensure cable connectors are clean and tight to minimize voltage drop in the connectors.

Maximum cable length is 200 ft (61 m) from welding power source, 400 ft (122 m) total loop length.

5-4. Connecting To A Welding Power Source



Ref. 301390-C / 301591

⚠ Do not use worn, damaged, under-sized, or repaired cables.

⚠ Turn off welding power source.

Equipment can be used with static (plug-in) or engine-driven welding power sources.

Compatible welding machines include:

- Big Blue 400 Pro with ArcReach
- Big Blue 400 PipePro with ArcReach
- Big Blue 500/600 Pro with ArcReach
- Big Blue 600 Air Pak with ArcReach
- Big Blue 800 Duo Pro/Air Pak with ArcReach
- Dimension 650 with ArcReach
- PipeWorx 350 FieldPro
- Trailblazer 325 with ArcReach
- XMT 350 FieldPro (NPR And PR)

Not compatible with:

- XMT 350 VS with ArcReach
- XMT 450 VS with ArcReach
- XMT 350 CC/CV with ArcReach
- XMT 450 CC/CV with ArcReach
- WCC Control Boxes

Connection For All Compatible Machines

EXCEPT Trailblazer 325 w/ArcReach

Connect the ArcReach Heater to a compatible welding machine.

- 2 ArcReach Heater
- 3 Electrode (+) Input Terminal
- 4 Electrode Cable
- 5 Work (-) Input Terminal
- 6 Work Cable
- 7 ArcReach Heater CE

Attach welding power source (+) cable to Heater (+) electrode terminal, and welding power source (-) cable to Heater (-) work terminal.

Turn on welding power source. After power is on, the ArcReach Heater will take a few moments to automatically power up and start communication with the welding machine.

Connection For Trailblazer 325 with ArcReach

8 Trailblazer 325 Output Terminal Panel

9 Positive (+) Weld Output Terminal

10 Wire Negative (-) Weld Output Terminal

11 TIG/ Stick/Gouge Negative (-) Weld Output Terminal

Heater Electrode connects to Trailblazer (+) positive stud and Heater Work connects to Trailblazer (-) Wire stud.

Connect cable ends to the correct polarity. Do not reverse the polarities.

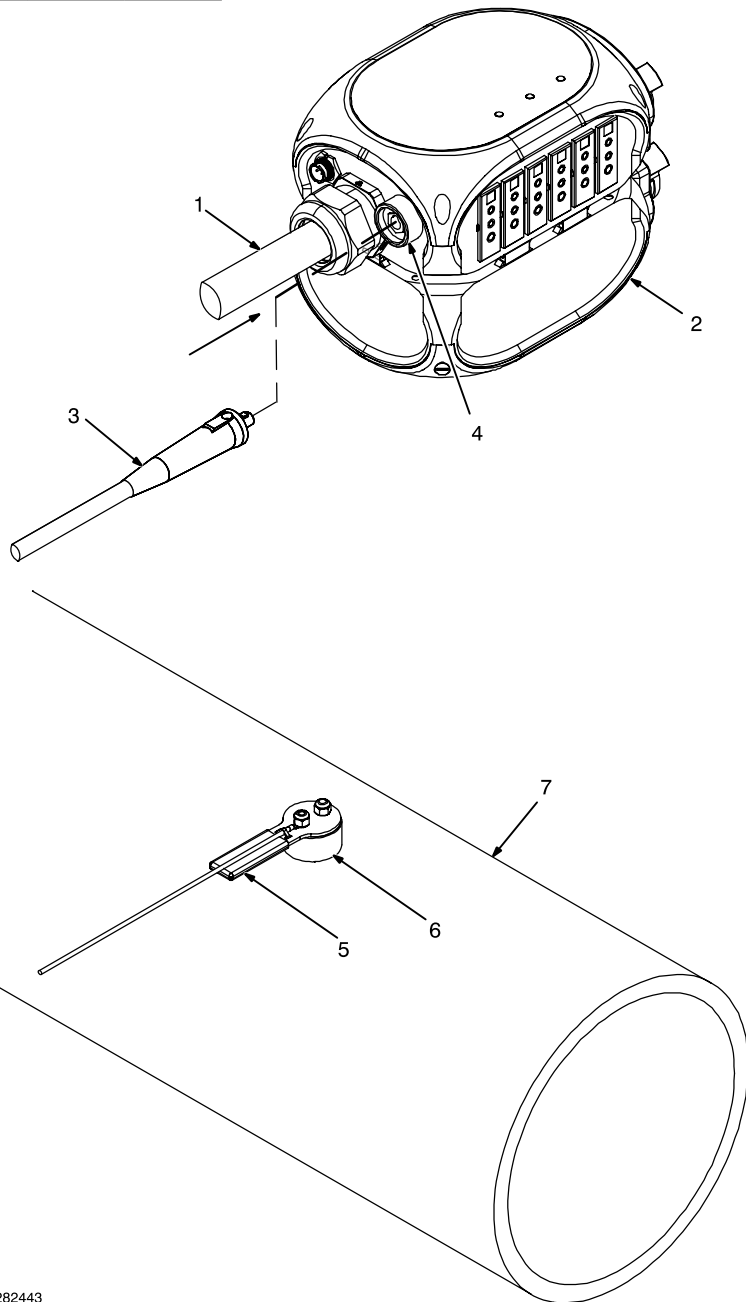
If cables are accidentally reversed, wait for heater to power up and display fault before correcting polarity.

Weld cables must be routed together to ensure proper communication between the ArcReach Heater and the power source. Do not use a structure as part of the power/ communication path.

ArcReach Heater will not operate in GTAW - Lift-Arc TIG Output-On welding mode.

1 Welding Power Supply

5-5. Insulation Fault Detection



Ref. 282443

⚠ Work sense lead must be connected for insulation fault detection circuit to function.

The ArcReach Heater employs secondary insulation leakage test circuitry consisting of an AC test voltage (imposed upon the output conductors), and a current measuring circuit which will shut off output power if it detects excessive test current.

For example, insulation has broken down on a heating blanket causing the conductor to come into contact with the workpiece, or a heating coil touches the workpiece causing a short in the output circuit.

The heater runs this test continuously while the heater is in idle or is heating. The heater also has a test mode, where a known resistance is temporarily placed across the insulation path to trigger the fault and prove that the insulation test circuit works.

This test is performed at power up and every time the run button is pressed. The resistance that trips these circuits into a fault state is higher than the standard human body model resistance as defined in IEC 60479-1.

- 1 ArcReach Heater Extension Cable
- 2 ArcReach Heater Series Adapter
- 3 Work Sense Plug
- 4 Work Sense Receptacle
- 5 Handle
- 6 Magnet
- 7 Workpiece

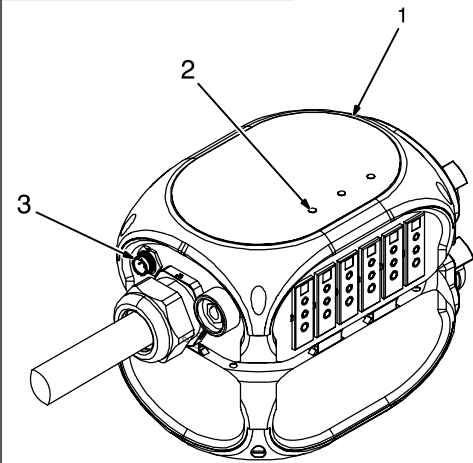
Connect work cable to work connector on ArcReach Heater extension cable with series adapter and to workpiece being heated.

To connect plug, align key with keyway, insert end into receptacle, and rotate plug until tight.

Use handle to place magnet on the workpiece.

⚠ The insulation fault detection magnet must be in contact with bare metal. All rust, paint, or grease must be removed from the metal.

5-6. External Indicator (If Equipped)



- 1 ArcReach Heater Extension Cable Box
- 2 Heating Indicator
- 3 Auxiliary Function Contact

The Auxiliary Function Contact is a dry contact rated for 24V AC/DC, 0.25A max. The contact will close when the blue heating light on the ArcReach Heater and TC Extension cable is lit, and will open when the red fault light is lit or Stop is pressed on the ArcReach Heater.

The blue heating light and auxiliary function indicator will flash on and off when the system is in a temperature hold condition. (See Section 7-2)

An auxiliary function, such as a light, can be connected using the included connector. A customer supplied power supply is required.

5-7. Locating Welded On Thermocouples

If using Thermocouple Temperature Sensor Probes skip next two subsections and refer to instructions later in this section.

Thermocouple location is one of the most critical steps in preheating and bake out.

Thermocouples shall be located as follows to provide a survey of heating uniformly and enable time and temperature control:

Step 1. Locate thermocouples to ensure that the full area of the heat band is monitored.

- One or more control thermocouple are placed directly on the surface of the workplace under the heating tool.

Step 2. Consider all nozzles and other welded attachments that cause potential heat sinks through metal mass or cold spots due to heat convection or conduction, and have additional thermocouples applied.

Step 3. Attach a spare thermocouple beside control thermocouples.

Step 4. Attach thermocouples to ensure uniformity of temperature in both thin and thick workpieces.

Step 5. Physically inspect all thermocouples for continuity and mark them by an identification number corresponding to the recorder channel.

Step 6. Match the drawings of the workpiece indicating the numerous thermocouple locations, controlling thermocouple locations, etc. to weld identification information.

Step 7. The system is equipped with 3-pin thermocouple connections on the side of the Heater Extension Cable Box. Six thermocouples can be attached.

- The system is equipped with 3-pin connectors to accommodate shielded extension cables. The shielded cables protect from electrical interference.

Step 8. Type K thermocouple wire has a positive and negative wire. The positive wire is marked as solid yellow or striped yellow. The connector screw terminals are marked positive and negative. Be sure to attach the wire to the connector with proper polarity.

Step 9. Multiple type K thermocouple devices are supported, such as contact TC probes, and welded on TC wire.

Step 10. The following describes the thermocouple routing from work to power source.

- Type K thermocouple wire (two wire) is attached directly to the workpiece using a Thermocouple Attachment Unit (see next section for information on attaching thermocouples).
- The other end is fitted with a 2-pin type K connector.
- The 2-pin connector plugs into the 3-pin connector on the side of the Heater Extension Cable Box. The pin size locates the position of the 2-pin connector on the extension.

5-8. Attaching Welded Thermocouples

 Do NOT weld thermocouples while connected to power source.

Step 1. Attach thermocouples using a portable Thermocouple Attachment Unit (TAU). This unit spot welds thermocouple wire directly to the workpiece. This method of thermocouple attachment ensures accurate temperature measurement.

Step 2. Clean (file or grind) any loose scale or rust from the workpiece at the places where the wires will be attached.

Step 3. Clean the location for the lead magnet to minimize resistance. Place the magnet as near to the thermocouple positions as possible.

Step 4. Strip 1/4 in. of insulation from the thermocouple wires.

Step 5. Set the output variable control of the TAU to about eighty percent (80%).

Step 6. Grasp one of the stripped wires with the tip of the jaws of the application pliers.

 Do not touch both wires of the thermocouple to the pliers at the same time when energizing the Thermocouple Attachment Unit. This will cause the thermocouple wire to fuse to the pliers, rather than the workpiece.

Step 7. Press the end of the wire to the workpiece at ninety degrees to the surface, and maintain a firm pressure. Make sure the Thermocouple Attachment Unit is charged and wait for the ready light to glow.

Step 8. Press discharge button, and the wire should weld to the workpiece. There will be a sharp crack and a slight arc flash.

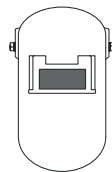
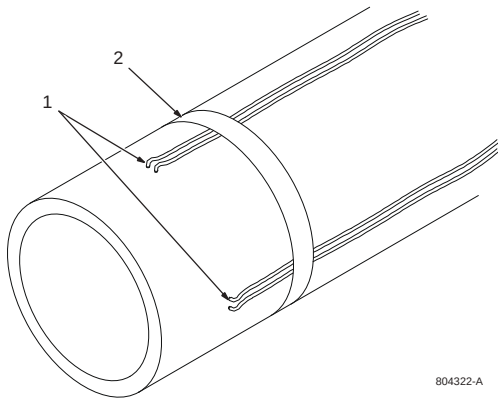
Step 9. Repeat the process with the other wire, placing it approximately 1/4 in. away from the first wire. Attach a spare thermocouple, and support both thermocouples approximately 18 in. back from the connection with a band or fiber tape.

Step 10. Carefully bend the wire over at right angles. This brings the thermocouple wires out along or parallel to the workpiece. It also tests the strength of the weld. If the weld shows signs of breaking, remove the wire, restrip the end, and repeat the process.



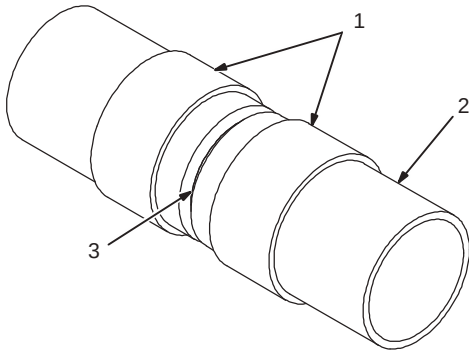
1 Thermocouple Wires

2 Strap or Tape



Welding Helmet

5-9. Installing Preheat Insulation



Ref. 282308-A

☞ Install preheat insulation before installing air-cooled quick wrap if temperature will be above 392°F / 200°C.

☞ Install preheat insulation before installing air-cooled cable if temperature will be above 302°F / 150°C.

☞ Maximum air cooled quick wrap heating tool and air cooled cable preheat temperatures: 392°F (200°C), 600°F (315°C) with added preheat insulation.

☞ Maximum air-cooled cable preheat temperatures for ProHeat 35: 302°F / 150°C, 400°F / 204°C with added preheat insulation.

☞ If using welded thermocouples, attach them prior to installing insulation.

- 1 Preheat Insulation
- 2 Workpiece
- 3 Weld Joint

Wrap preheat insulation around the pipe or on the workpiece where you plan to place the heating tool.

Air-Cooled Quick Wrap		
Part Temp		1/2" Preheat Insulation Required
° F	° C	
Up to 392	Up to 200	—
392-600	200-315	1 Layer

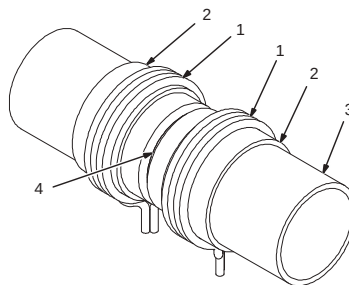
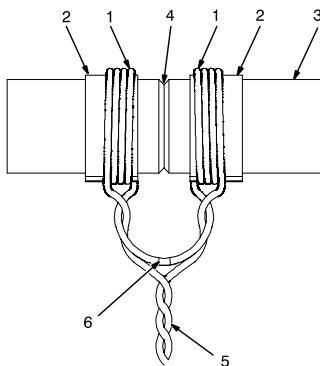
Air-Cooled Cable		
Part Temp		1/2" Preheat Insulation Required
° F	° C	
Up to 302	Up to 150	—
302-482	150-250	1 Layer
482-600	250-315	2 Layers
☞ ProHeat 35 only allows preheating up to 400°F / 204°C with air-cooled cables.		

5-10. Installing Air-Cooled Cables

A. Pipe Installation



This is an example of a typical Air-Cooled coil on small diameter pipe using a single heating cable.



⚠ DANGER! – Do not use wire or metal straps to secure cables in place. Instead, use plastic cable ties, tape or non conductive strap to secure cables.

⚠ DANGER! – Do not hang cables on steel brackets, hangers, or other mechanisms.

⚠ DANGER! – Stop using equipment if plug, receptacle, or cable is damaged.

⚠ DANGER! – Replace cable if braid, red jacket, or bare wire is visible.

⚠ Do not drag cables on the ground.

⚠ Turn off heater output.

⚠ Use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

Keep heating tool leads between the ArcReach Heater/ProHeat 35 Extension Cable and workpiece together to increase heating performance and minimize unintentional heating of nearby objects.

Read welding power source and the ArcReach Heater/ProHeat 35 Owner's Manual before installing cables.

- 1 Air-Cooled Cable(s)
- 2 Preheat Insulation
- 3 Workpiece
- 4 Weld Joint
- 5 Twisted Leads
- 6 Tape marking center of cable

Prior to placing heating cable on part, a preheat cover is recommended to protect the Air-Cooled Cable from abrasion and weld spatter.

- Wrap preheat cover around the air-cooled cable, note this does not act as a layer of insulation but helps protect from job site and workpiece abrasion.

- Put a piece of fiberglass tape or clearly identify the middle of the cable on the wrap to make the cable wrap process more efficient.

- If insulation is being used, apply the heating tool over the insulation.

- To decrease heating time, place the heating tool closer to the weld joint.

Move heating tool away from joint when welding to protect from weld heat.

- Insulation can be secured in place with a non conductive strap or tape such as fiberglass reinforced tape. Do not use metal straps or wire.

Installing Heating Cables:

Step 1. Locate the center of the heating cable.

Step 2. Route the center of the cable over the top of the pipe and pull it through underneath to start the first turn. Route the cable over the top of the pipe again working toward the joint to start the second turn. If there is enough cable, a third wrap can be added by routing the center of the cable over the top of the pipe again.

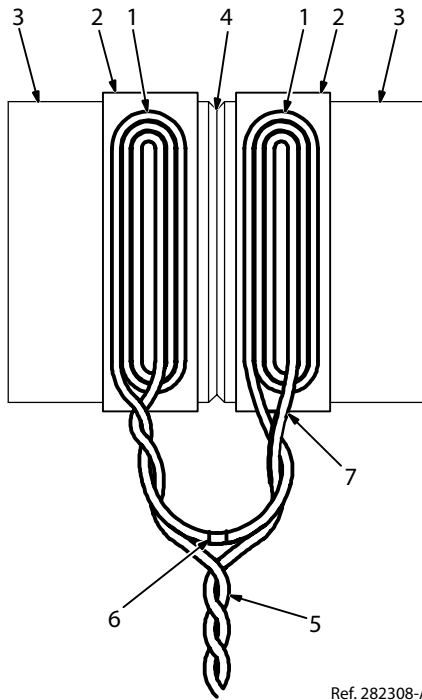
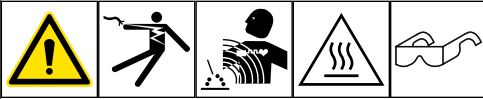
Step 3. Once the desired number of turns are applied, route the outer loose ends of the cable through the center loop a few times each (depending on the loop length) to bring the leads together.

Step 4. Twist the remainder of the cables together from the coil to the TC Extension Cable to cancel the magnetic field between them and minimize incidental heating of nearby metal objects.

A typical induction coil will have 2-4 turns on each side of the joint. Pipe diameters larger than 24" will usually require 2 separate heaters depending on target temperature and time to temp requirements.

If using Thermocouple (TC) Probes, position them under the insulation (under the heating cable) in direct contact with the workpiece.

B. Metal Plate Installation



Ref. 282308-A

- ⚠ **DANGER!** – Do not use wire or metal straps to secure cables in place. Instead, use plastic cable ties, tape or non conductive strap to secure cables.
- ⚠ **DANGER!** – Do not hang cables on steel brackets, hangers, or other mechanisms.
- ⚠ **DANGER!** – Stop using equipment if plug, receptacle, or cable is damaged.
- ⚠ **DANGER!** – Replace cable if braid, red jacket, or bare wire is visible.
- ⚠ Do not drag cables on the ground.
- ⚠ Turn off heater output.
- ⚠ Use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

☞ Read welding power source and ArcReach Heater/ProHeat 35 owner's manual before installing cables.

- 1 Air-Cooled Cables
- 2 Preheat Insulation
- 3 Metal Plate
- 4 Weld Joint
- 5 Twisted Leads
- 6 Tape marking center of cable
- 7 Place insulation between cables and edge of part to prevent overheating the edge and damaging the cables.

Coil air-cooled cables on top of the preheat insulation already installed.

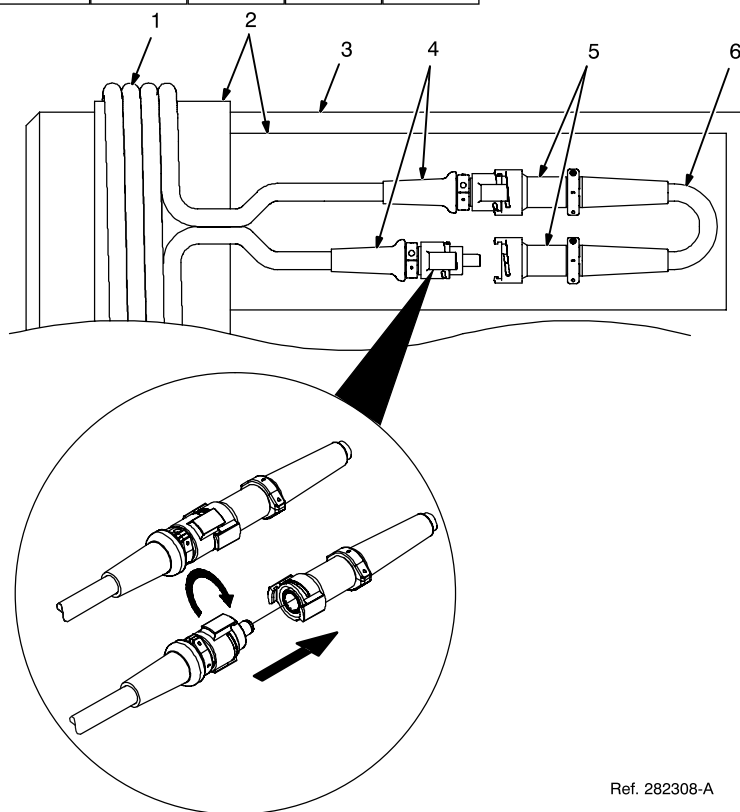
☞ Position the heating cables closer to the weld joint to decrease the time spent to reach the desired temperature.

☞ Twist leads exiting part together to cancel magnetic fields.

☞ Use a welding blanket to protect from abrasion and spatter.

☞ Coils may be moved away from joint while maintaining target temp., but the control thermocouples must be moved with them.

C. Series Adapter Installation



Ref. 282308-A

⚠ DANGER! – Do not use wire or metal straps to secure cables in place. Instead, use plastic cable ties, tape or non conductive strap to secure cables.

⚠ DANGER! – Do not hang cables on steel brackets, hangers, or other mechanisms.

⚠ DANGER! – Stop using equipment if plug, receptacle, or cable is damaged.

⚠ DANGER! – Replace cable if braid, red jacket, or bare wire is visible.

⚠ Do not drag cables on the ground.

⚠ Turn off heater output.

⚠ Use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

☞ Read welding power source and ArcReach Heater/ProHeat 35 owner's manual before installing series adapter.

☞ Used to connect two heating cables on large parts.

- 1 Air-Cooled Cables
- 2 Preheat Insulation
- 3 Pipe
- 4 Air-Cooled Cable Connectors
- 5 Series Adapter Connectors
- 6 Orange Jacketed Series Adapter

On large parts, heating cables can be connected in series using a series adaptor.

Route the ends of the heating cables away from the heat zone.

In order to cancel any magnetic fields between the cables, keep the cables close together.

Connect the cables together using the series adaptor.

Secure cables in place.

☞ Use insulation to protect the cable and connectors from the heat of the part.

☞ Use orange jacketed series adapter on ArcReach Heater system.

D. Cable Length Installation Chart

 Cable lengths determined with:

- Insulation - 1 in.(2.5cm)
- Cable Loop Distance - 24 in.(61cm)
- Cable Off Pipe - 24 in.(61cm)

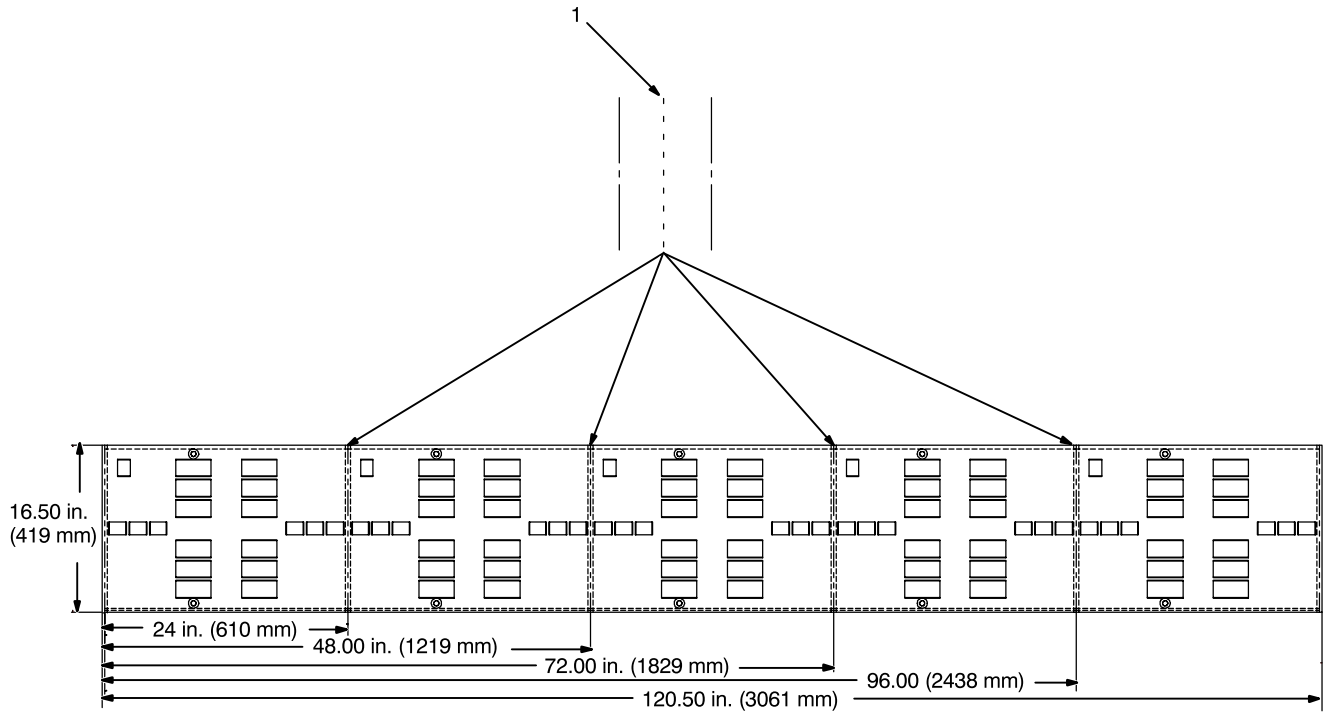
NPS Pipe Size in. (cm)	Cable Length Required For 2 Turns Per Side ft(m)	Cable Length Required For 3 Turns Per Side ft(m)	Cable Length Required For 4 Turns Per Side ft(m)
0.5 (1.3)	30 (9)	30 (9)	30 (9)
0.75 (1.9)	30 (9)	30 (9)	30 (9)
1 (2.5)	30 (9)	30 (9)	30 (9)
1.25 (3.2)	30 (9)	30 (9)	30 (9)
1.5 (3.8)	30 (9)	30 (9)	30 (9)
2 (5.1)	30 (9)	30 (9)	30 (9)
2.5 (6.4)	30 (9)	30 (9)	30 (9)
3 (7.6)	30 (9)	30 (9)	30 (9)
3.5 (8.9)	30 (9)	30 (9)	30 (9)
4 (10.2)	30 (9)	30 (9)	30 (9)
5 (12.7)	30 (9)	30 (9)	30 (9)
6 (15.2)	30 (9)	30 (9)	30 (9)
8 (20.3)	30 (9)	30 (9)	50 (15)
10 (25.4)	30 (9)	30 (9)	50 (15)
12 (30.5)	30 (9)	50 (15)	50 (15)
14 (35.6)	30 (9)	50 (15)	50 (15)
16 (40.6)	30 (9)	50 (15)	50 (15)
18 (45.7)	30 (9)	50 (15)	50 (15)
20 (50.8)	50 (15)	50 (15)	80 (24)
22 (55.9)	50 (15)	50 (15)	80 (24)
24 (61)	50 (15)	50 (15)	80 (24)
26 (66)	50 (15)	80 (24)	80 (24)
28 (71.1)	50 (15)	80 (24)	80 (24)
30 (76.2)	50 (15)	80 (24)	80 (24)
32 (81.3)	50 (15)	80 (24)	80 (24)
34 (86.4)	50 (15)	80 (24)	2 - 50 (15) Cables
36 (91.4)	50 (15)	80 (24)	2 - 50 (15) Cables
38 (96.5)	50 (15)	80 (24)	2 - 50 (15) Cables
40 (101.6)	80 (24)	80 (24)	2 - 50 (15) Cables
42 (106.7)	80 (24)	80 (24)	2 - 80 (24) Cables
48 (121.9)	80 (24)	2 - 50 (15) Cables	2 - 80 (24) Cables
54 (137.2)	80 (24)	2 - 50 (15) Cables	2 - 80 (24) Cables
60 (152.4)	80 (24)	2 - 80 (24) Cables	2 - 80 (24) Cables
66 (167.6)	80 (24)	2 - 80 (24) Cables	2 - 80 (24) Cables
72 (182.8)	2 - 50 (15) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables
78 (198.1)	2 - 50 (15) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables
84 (213.4)	2 - 50 (15) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables
90 (228.6)	2 - 80 (24) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables
96 (243.1)	2 - 80 (24) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables
102 (259.1)	2 - 80 (24) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables
108 (274.3)	2 - 80 (24) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables
120 (304.8)	2 - 80 (24) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables
144 (365.8)	2 - 80 (24) Cables	2 - 80 (24) Cables	2 - 80 (24) Cables

E. Preheat Insulation With Cable Harness 301334



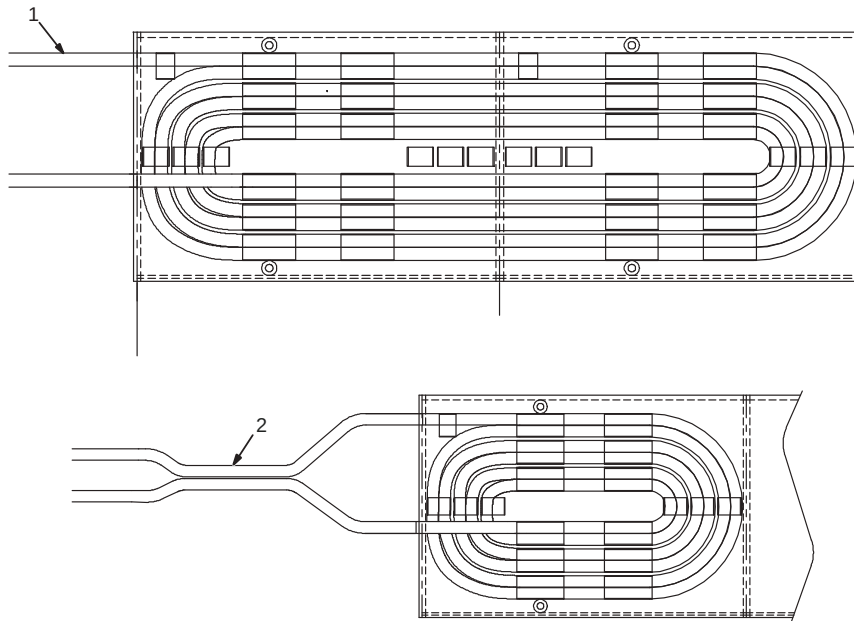
1 Cut Line

Preheat insulation with loops is configured to be cut in multiples of 24 in. (610 mm) lengths. There are double stitched lines at 24 in. intervals. To prevent fraying, cut to desired length between the lines.



Ref. 274541-A

F. Preheat Insulation With Cable Harness (Determine Length Of Starting Lead)



⚠ DANGER! – Do not use wire or metal straps to secure cables in place. Instead, use plastic cable ties, tape or non conductive strap to secure cables.

⚠ DANGER! – Do not hang cables on steel brackets, hangers, or other mechanisms.

⚠ DANGER! – Stop using equipment if plug, receptacle, or cable is damaged.

⚠ DANGER! – Replace cable if braid, red jacket, or bare wire is visible.

1 Starting Lead

To determine the length of the starting lead, subtract the required cable length (from table in Section G.), from the length of the heating cable being used, divide by 2, and subtract 6 inches to account for the hose bunching up while winding the coil.

Example: A four foot long coil with six turns requires 47.4 feet of cable. If a 50 foot cable is used to wind this coil, the formula would be $(50 - 47.4) / 2 - .5 = .8$ feet (9.6 in.) of cable lead off of the insulation.

For the purpose of locating the cable leads, cables are measured from cable end to cable end.

2 Excess Leads Off Insulation

Excess leads off of the insulation should be routed together or twisted to prevent secondary magnetic fields, which reduce energy transfer to the part being heated.

G. Winding Coils On Preheat Insulation With Cable Harness

Table lists the approximate length of cable required to wind various cable configurations.

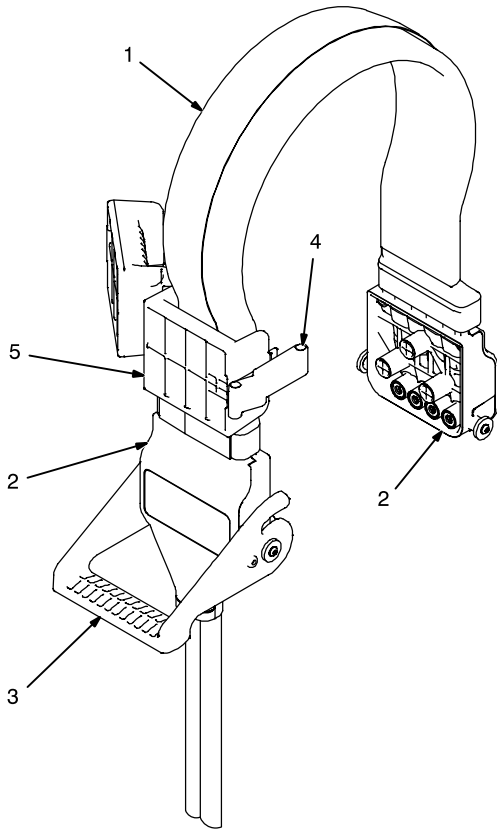
Heating Cable Length Requirements For Various Number Of Cable Turns And Insulation Length					
Insulation Length In Feet	2	4	6	8	10
No. Of Cable Turns	Required Cable Length In Feet				
1	3.3	7.3	11.3	15.3	19.3
2	5.8	13.8	21.8	29.8	37.8
3	8.7	20.7	32.7	44.7	56.7
4	12.1	28.1	44.1	60.1	76.1
5	16.0	36.0	56.0	76.0	96.0
6	23.4	47.4	71.4	95.4	119.4

5-11. Installing Air-Cooled Quick Wrap

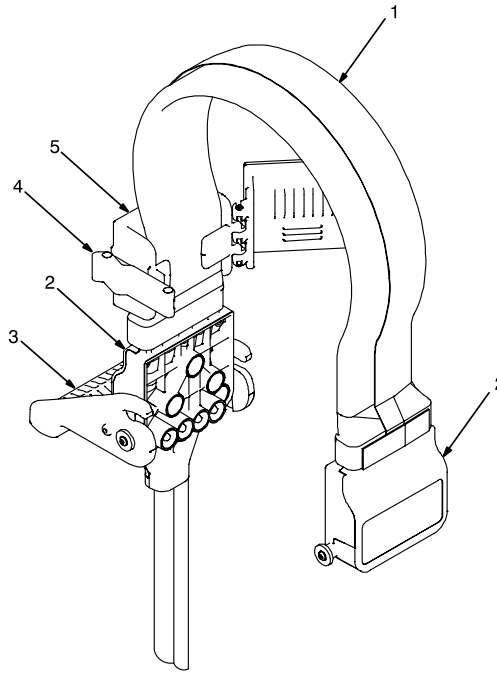
A. Installing Air-Cooled Quick Wrap



- 3 Air-Cooled Quick Wrap
- 4 Housing Connectors
- 5 Housing Connector Latching Handle
- 6 Cinch Clip Latch
- 7 Cinch Clip



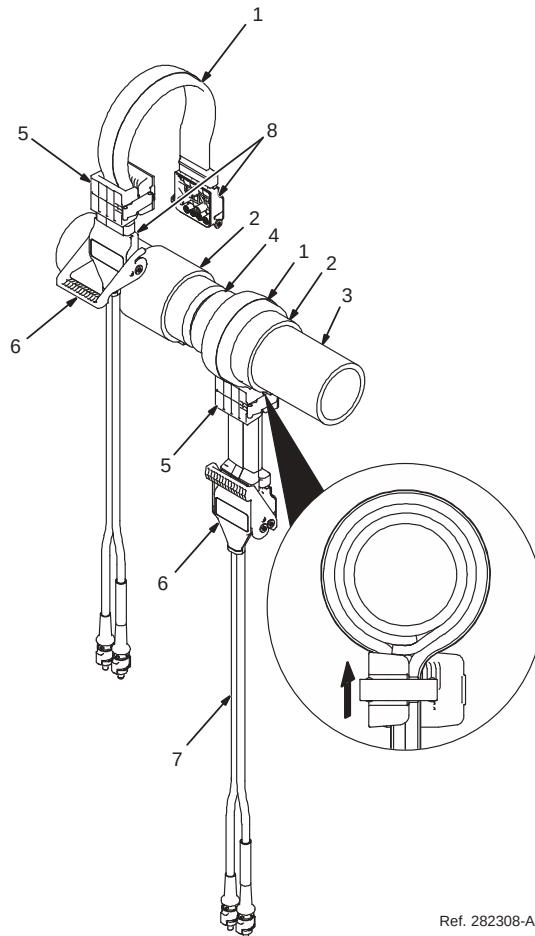
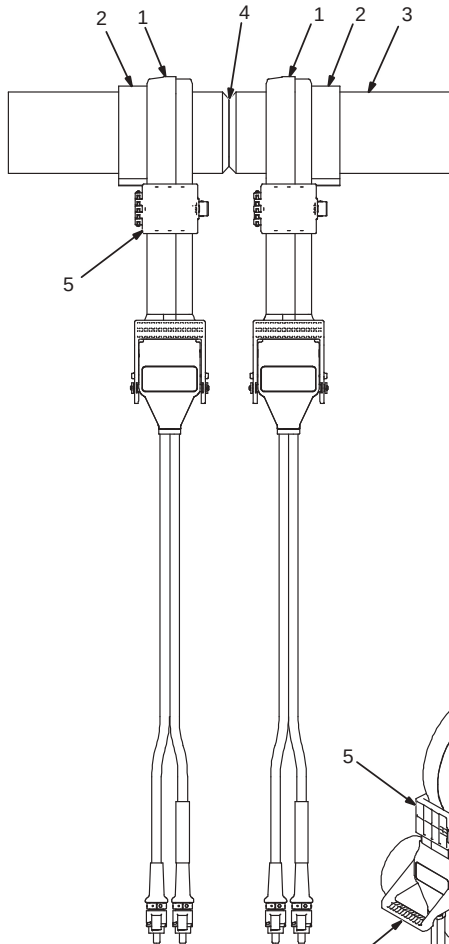
Left Side



Ref. 282308-A

Right Side

B. Installing Air-Cooled Quick Wrap



Ref. 282308-A

- ⚠ DANGER! – Do not use wire or metal straps to secure cables in place. Instead, use plastic cable ties, tape or non conductive strap to secure cables.**
- ⚠ DANGER! – Do not hang cables on steel brackets, hangers, or other mechanisms.**
- ⚠ DANGER! – Stop using equipment if plug, receptacle, or cable is damaged.**
- ⚠ DANGER! – Replace cable if braid, red jacket, or bare wire is visible.**
- ⚠ To prevent damage to the quick wrap do not pull on connector housing or cable ends during or after installation of cinch clip.**
- ⚠ Do not twist quick wrap.**
- ⚠ Do not drag quick wrap on the ground.**

- 1 Air-Cooled Quick Wrap
- 2 Preheat Insulation
- 3 Workpiece
- 4 Weld Joint
- 5 Cinch Clip
- 6 Latching Handle
- 7 Cable Leads
- 8 Connector Housing

Place air-cooled quick wrap around pipe (and insulation if installed).

Keep surface of wrap that contacts metal pipe free of debris at all times.

A single quick wrap is often used directly over a joint or on the end of a pipe.

Two quick wraps can be used to cover a wider heat zone to introduce more power into a larger part.

Keep the heating tool leads between ArcReach Heater extension cable and workpiece together to increase heating performance and minimize unintentional heating of nearby objects.

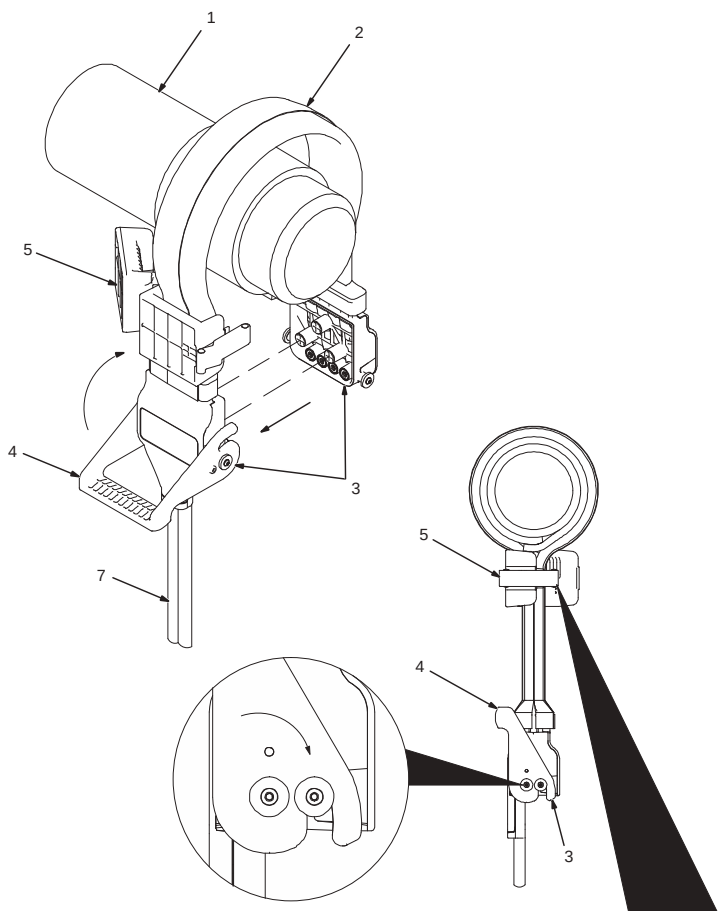
Position the quick wrap close to the weld joint to decrease the time spent to reach the desired temperature. Protect quick wrap from weld heat and grinding with a weld blanket or move quick wrap further from joint.

Cables may be suspended above the workpiece to keep the area under it clear of cables. Use plastic cable ties, tape or non-conductive strap to support cables.

Smaller pipe diameters will provide more of a gap and cause a requirement for a tighter cinch under pipe.

Cinch up tight to minimize the gap as much as possible.

C. Installing Air-Cooled Quick Wrap



⚠ DANGER! – Do not hang cables on steel brackets, hangers, or other mechanisms.

⚠ To prevent damage to the quick wrap do not pull on connector housing or cable ends during or after installation of cinch clip.

☞ Position the quick wraps reasonably close to the weld joint to decrease the time spent to reach the desired temperature.

☞ Heat from the weld process can damage the heating tool. Slide heating tool away from joint while welding or protect with insulation.

☞ Use a welding blanket to protect from abrasion and spatter.

1 Workpiece

2 Air-Cooled Quick Wrap

Place air-cooled quick wrap on pipe to be heated.

3 Connector Housing

4 Latching Handle

Align connector housings and fully engage connector pins.

Close latching handle to hold connectors together.

5 Cinch Clip

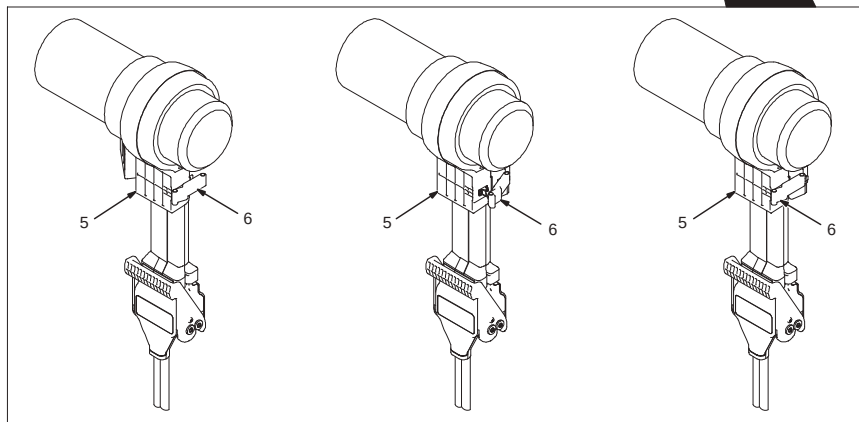
6 Cinch Clip Latch

7 Cable Leads

Hold unused portion of air-cooled quick wrap together and position the cinch clip as close to the pipe as possible.

Close cinch clip to hold leads together and use latch to secure cinch clip in place.

☞ Keep cables from heating tool to extension cable together.



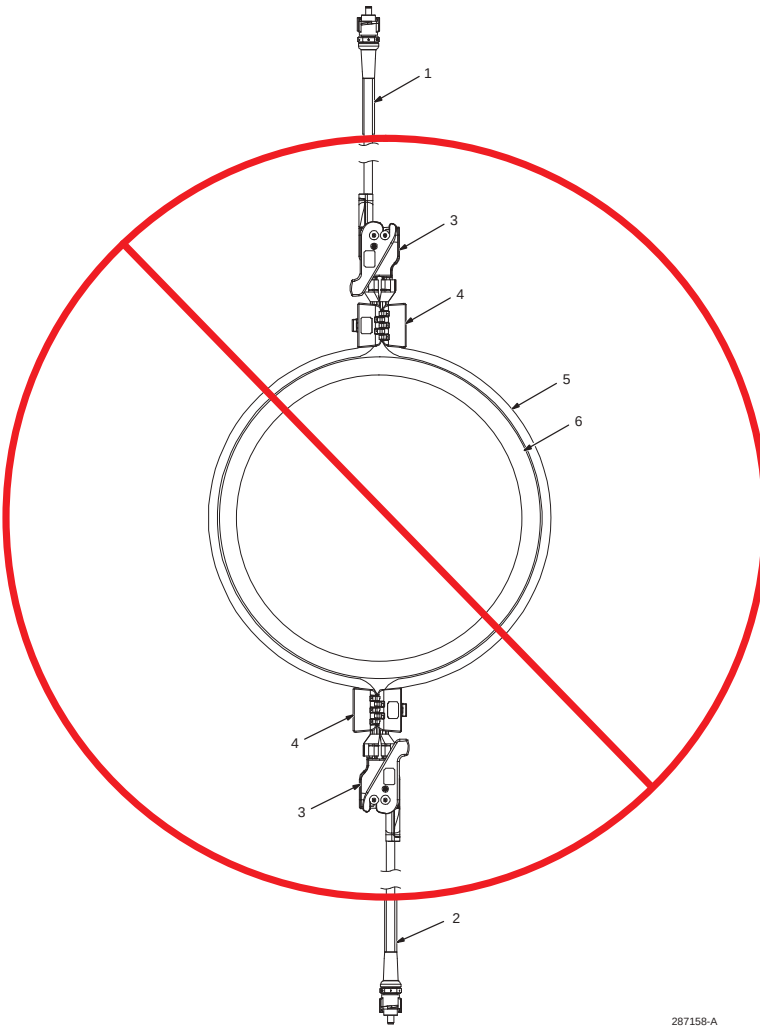
Ref. 282308-A

D. Installing Air-Cooled Quick Wrap



⚠ Do not connect two air-cooled quick wraps in series using the housing connectors.

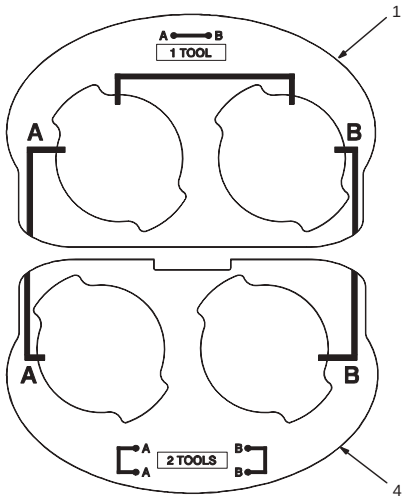
- 1 Air-Cooled Quick Wrap No. 1
- 2 Air-Cooled Quick Wrap No. 2
- 3 Connector Housing
- 4 Cinch Clip
- 5 Quick Wrap Heating Blanket
- 6 Pipe



287158-A

5-12. Connecting Heating Tool To ArcReach Extension Cable

A. Reading ArcReach Heater Extension Cable and Series Adapter Nameplates



The built in series adaptor is needed if two heating tools are being used.

1 ArcReach Heater Extension Cable Nameplate

2 Single Tool w/Horizontal Connections

A single air-cooled cable or air-cooled quick wrap connects from A to B on the upper box.

3 One Tool

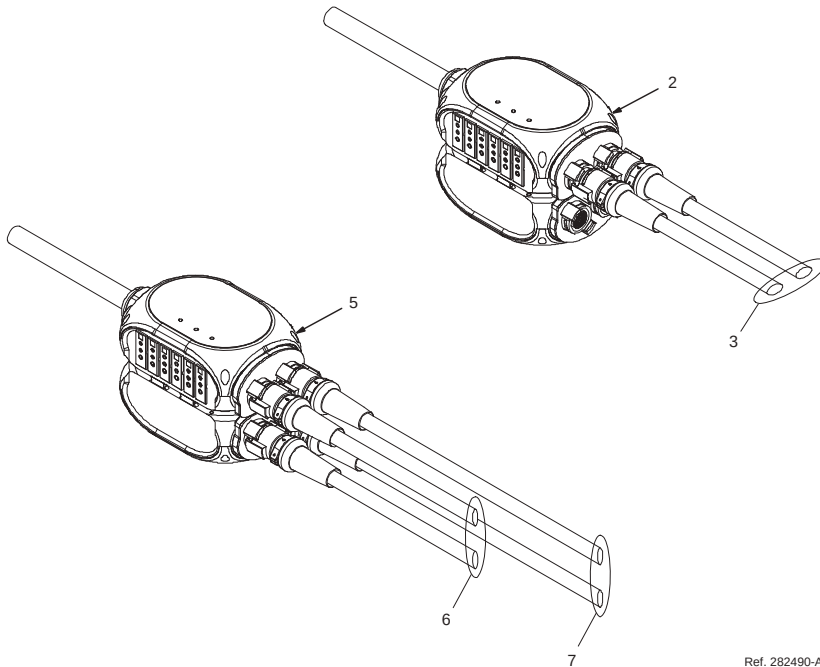
4 ArcReach Heater Series Adapter Nameplate

5 Dual Tool w/Vertical Connections

Dual air-cooled quick wraps connect one tool from A to A and the second tool from B to B.

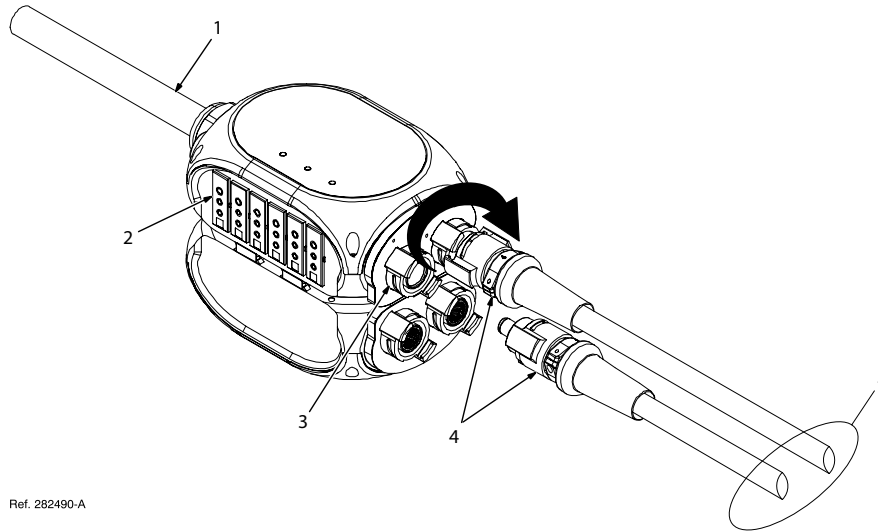
6 Tool 1

7 Tool 2



Ref. 282490-A

B. Connecting Heating Tool Cables To Extension Cable Receptacle (One Tool)



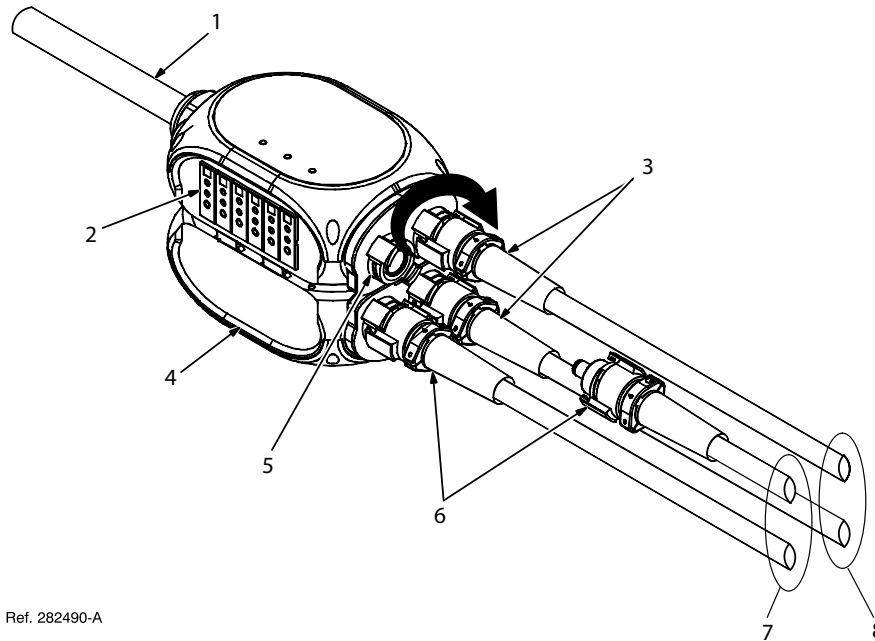
Ref. 282490-A

- 1 ArcReach Heater Extension Cable
- 2 Thermocouple Receptacle
- 3 Heating Tool Connector Socket
- 4 Heating Tool Connector Plug
- 5 One Tool

Connect the air-cooled quick wrap connector plugs to the heating tool connector sockets at the end of the ArcReach Heater extension cable.

Twist connector clockwise to secure in place.

C. Connecting Heating Tool Cables To Extension Cable Receptacle (Two Tools)



Ref. 282490-A

The quick wrap heating tool can be used one at a time or in pairs.

A single quick wrap is often used directly over a joint or on the end of a pipe.

Two quick wraps can be used to cover a wider heat zone and to induce more power into larger parts.

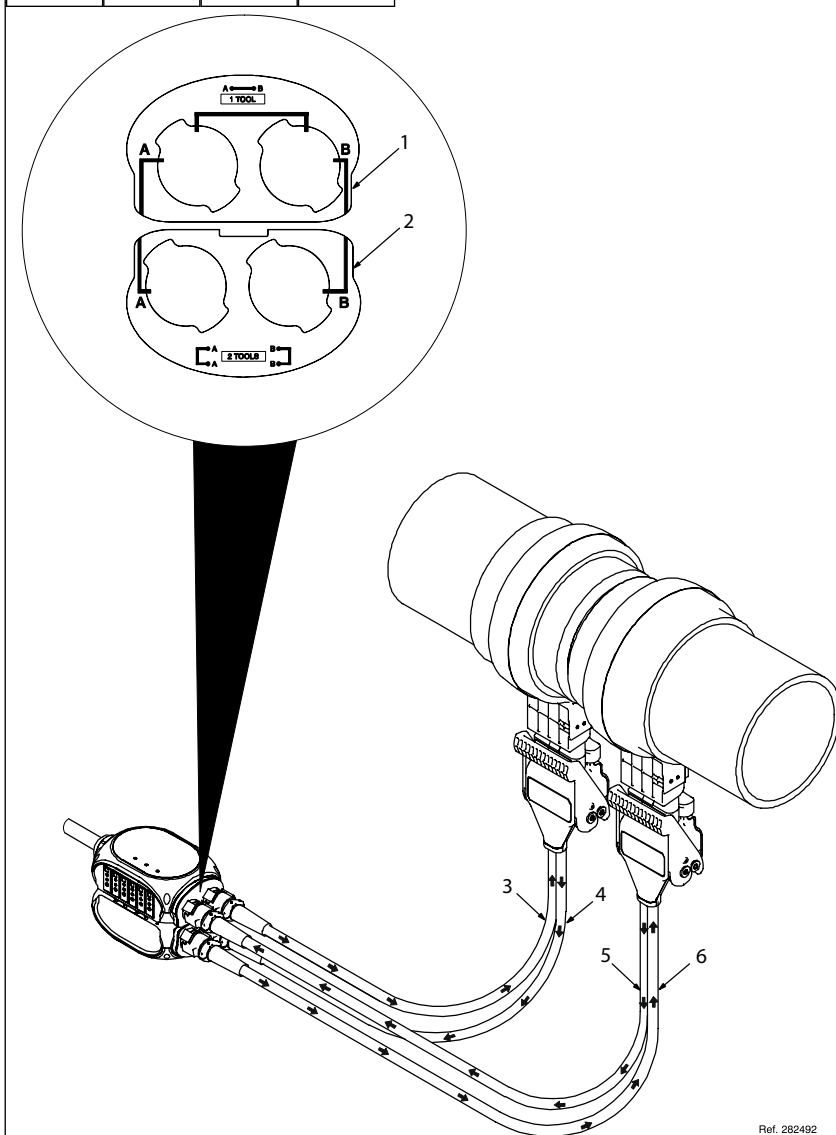
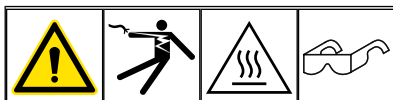
The adapter allows use of two heating tools.

- 1 ArcReach Heater Extension Cable
- 2 Thermocouple Receptacle
- 3 First Heating Tool Cables
- 4 ArcReach Heater Series Adapter
- 5 Cable Connection.
- 6 Second Heating Tool Cables.
- 7 Tool 1
- 8 Tool 2

Connect the air-cooled quick wrap connector plugs to the heating tool connector sockets at the end of the ArcReach Heater extension cable.

Twist connectors clockwise to secure in place. Ref. sec. A. for proper connections.

D. Current Flow



⚠ DANGER! – Do not use wire or metal straps to secure cables in place. Instead, use plastic cable ties, tape or non conductive strap to secure cables.

⚠ DANGER! – Do not hang cables on steel brackets, hangers, or other mechanisms.

⚠ DANGER! – Stop using equipment if plug, receptacle, or cable is damaged.

⚠ DANGER! – Replace cable if braid, red jacket, blue jacket, or bare wire is visible.

👉 Keep the heating tool cable leads between ArcReach Heater Extension Cable and workpiece together to increase heating performance and minimize unintentional heating of nearby objects.

👉 See sections A, B, and C for installation details.

1 ArcReach Heater Extension Cable Nameplate

2 ArcReach Heater Series Adapter Nameplate

Dual air-cooled quick wraps connect A to A and B to B.

3 Heating Tool Cable Lead 1B

4 Heating Tool Cable Lead 2B

5 Heating Tool Cable Lead 1A

6 Heating Tool Cable Lead 2A

Orient leads of heating devices as shown to keep current flow in leads of nearby heating devices aiding.

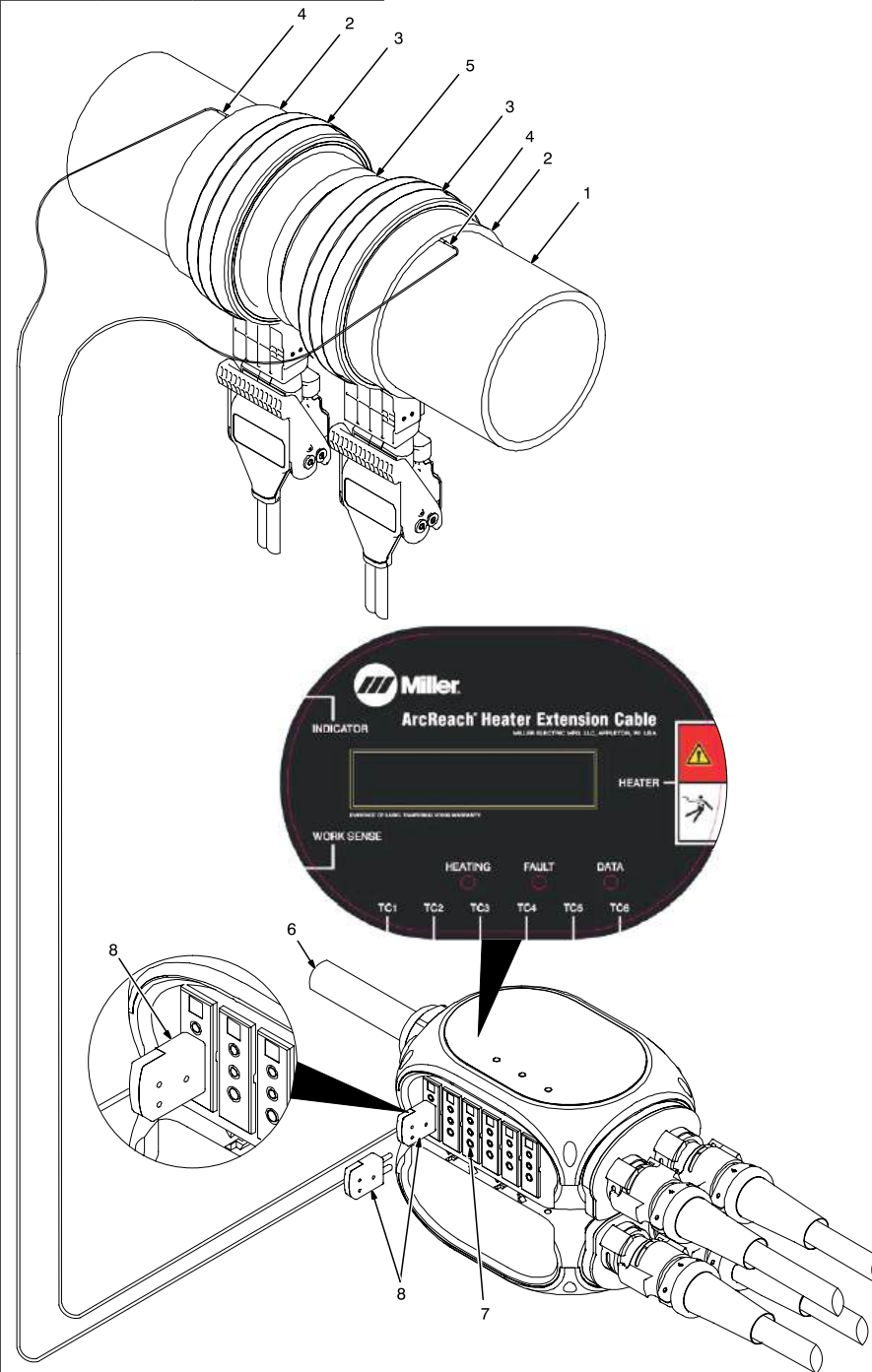
The operating parameters in the quick wrap are affected by the polarity of the cable leads connected to the ArcReach Heater extension cable. Some applications may make it difficult to see which cable lead is which on the quick wrap. In that case, use the parameters display screen on the ArcReach Heater to view the operating parameters. If the average power reading is low, then stop the machine output and try reversing the cable leads of one of the two quick wrap heaters to see if tank current goes down and average power goes up. The system operates best when Tank Current is not the limiting parameter.

Ref. 282492

Current Flow = ➡

5-13. Connecting Thermocouple Temperature Sensor Probes

A. Connecting Thermocouple Temperature Sensor Probes



Ref. 282492-A / Ref. 282490

Thermocouple temp sensor probes are used to control the amount of heat being induced into the metal. They must be placed under each heating tool or preheat insulation, in contact with the workpiece, to prevent damage to the heating tool.

Both thermocouples can be set as control for the entire heating process.

A control thermocouple must be located under the coil when moved to a new position.

If multiple air-cooled heating tools are being used, the user will need to place a thermocouple temp sensor probe under each heating tool connected to the system.

- 1 Workpiece
- 2 Preheat Insulation
- 3 Air-Cooled Quick Wrap
- 4 Thermocouple Temp Sensor Probe
- 5 Weld Joint

Place thermocouple temp sensor probe in contact with the metal being heated by the heating tool.

Place any additional thermocouple temp sensor probes on the workpiece to monitor temperature in accordance with the procedure, QC requirements, and/or code requirements.

- 6 ArcReach Heater Extension Cable.
- 7 Thermocouple Receptacle
- 8 Thermocouple Temp Sensor Probe Connector Plugs

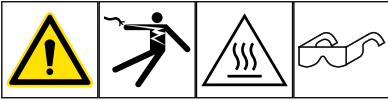
Connect all thermocouple temp sensor probe connector plugs to the thermocouple receptacle at the end of the ArcReach Heater extension cable.

Thermocouples do not need to be sequential; they can skip a slot if needed. For example, connecting TC1 and TC3 only.

Positioning the heating wrap or cable right next to the joint will get the joint up to temperature faster. After the joint is at temperature, the wrap or cable and insulation can be moved further from the joint while maintaining temperature for the welding process.

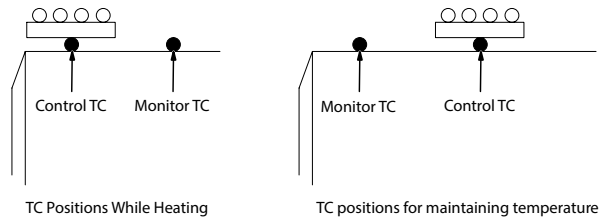
Heating blankets may be slid away from the weld joint while maintaining target temperature, but the control thermocouples must be moved with them.

B. Connecting Thermocouple Temperature Sensor Probes (Continued)



Example:

- The thermocouple (TC) under the wrap or cable, next to the joint, should be used for control. The TC not under the cables should not be a control TC.
- Setting both TCs as control TCs right away will result in a slower time to temperature since the system will see a thermal delay in reading the TC not under the heating wrap or cable.
- Before sliding the coils away from the joint, press **[Stop]** on the ArcReach Heater to de-energize the output.
- When the cables are slid away from the joint to maintain temperature for the welding process, the TC away from the joint (now under the coils) must be set as a control TCs well.
- Press **[Run]** to begin maintaining temperature at the joint.
- Leaving both as control TCs while at target temperature will prevent adding heat under the heating tool if the weld input increases the part temperature above the target temperature.



 The monitor thermocouple can be control or monitor.

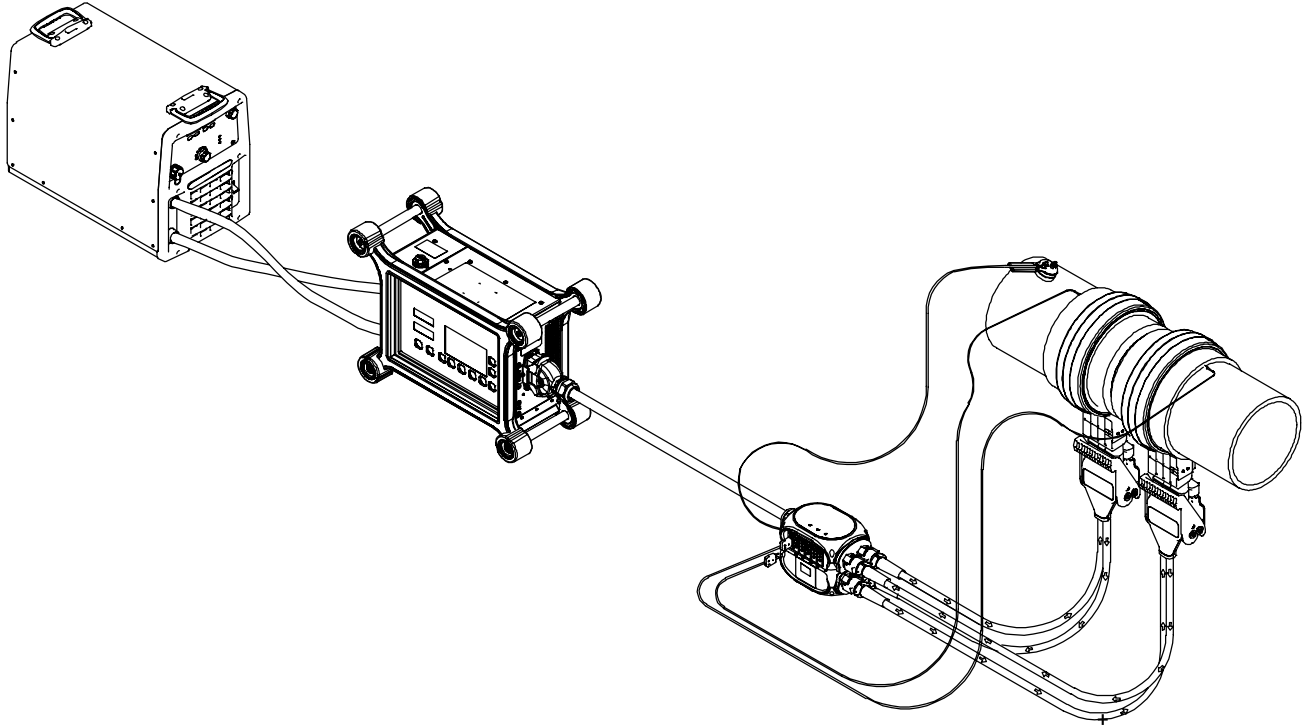
5-14. Complete Setup Summary



☞ Works up to 200 ft (61 m) away.

Turn on welding power source.

After power is on, the ArcReach Heater will take a few moments to automatically power up and start communication with the welding machine.



☞ Route thermocouple (TC) cables separate from heating cables / leads to prevent interaction.

☞ Do not disconnect cables during heating process. Press Red Stop button to stop the heating process before disconnecting cables.

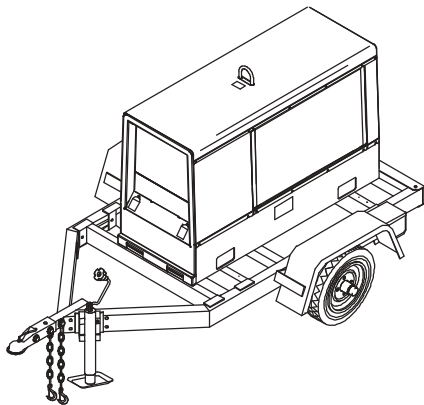
☞ Connect cable ends to the correct polarity. Do not reverse the polarities.

☞ If cables are accidentally reversed, wait for heater to power up and display fault before correcting polarity

☞ Weld cables must be routed together to ensure proper communication between the ArcReach Heater and the power source. Do not use a structure as part of the power/communication path.

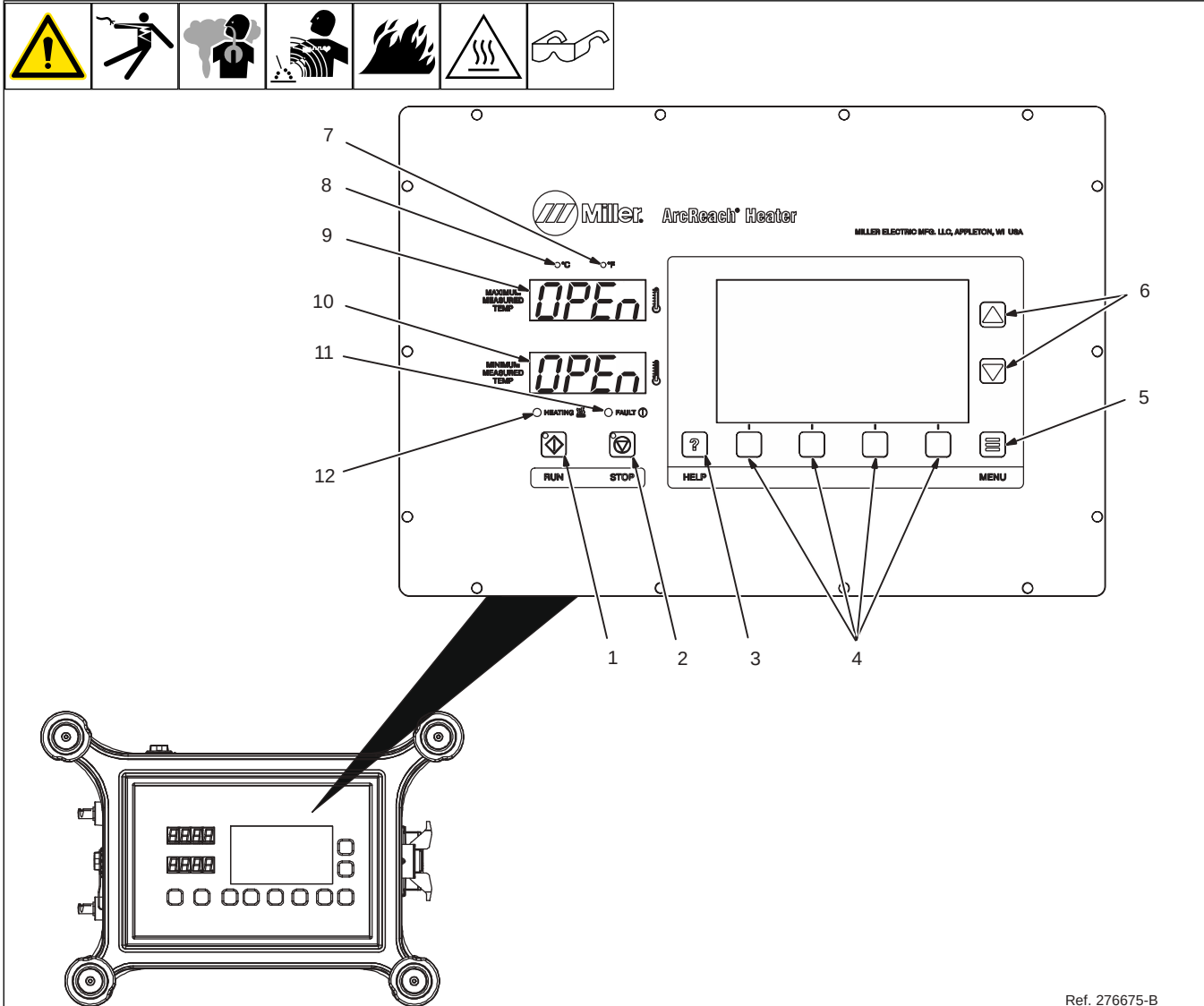
☞ Please refer to Section 5-4 for connecting and disconnecting weld cables.

Optional: Engine Driven Welding Power Source



SECTION 6 – SYSTEM CONTROLS AND COMPONENTS

6-1. System Controls



Ref. 276675-B

⚠ The ArcReach Heater does not have a power up switch. The unit will power up when it is plugged into an active welding power source.

1 Run Button

Press button to start output.

2 Stop Button

Press button to stop output.

3 Help Button

Press button to see a description and instructions for a particular screen.

4 Program Driven Soft Buttons

Use these buttons to change function based on screen selected.

5 Menu Button

Press button to go to the home screen in main menu.

6 Scroll Up/Down Buttons

Press button to navigate through the options list. Use to select language.

7 Temperature LED for °F

When LED is illuminated, the display will show a temperature value in °F

8 Temperature LED for °C

When LED is illuminated, the display will show a temperature value in °C

9 Maximum Temperature Display

Display shows maximum temperature of all connected thermocouples.

☞ Display will read OPEN when no thermocouples are connected.

10 Minimum Temperature Display

☞ Display will read OPEN when no thermocouples are connected.

Display shows minimum temperature of all connected thermocouples.

11 Fault LED

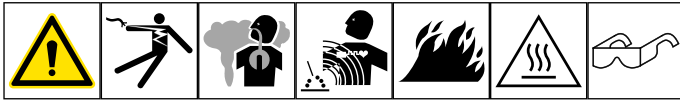
When LED is illuminated, the heating process has stopped.

12 Heating LED

When LED is illuminated, the heating process is active.

SECTION 7 – OPERATION

7-1. Getting Started/Equipment Setup



⚠ There is no power switch on the ArcReach Heater. The unit will power up when it is plugged into an active welding power source.

- Assemble ArcReach Heater system. Install system in proper location and near workpiece to be heated.
- When turning off the heater, power down the welding power source and wait 10 seconds before disconnecting cables.

7-2. Temperature Screen

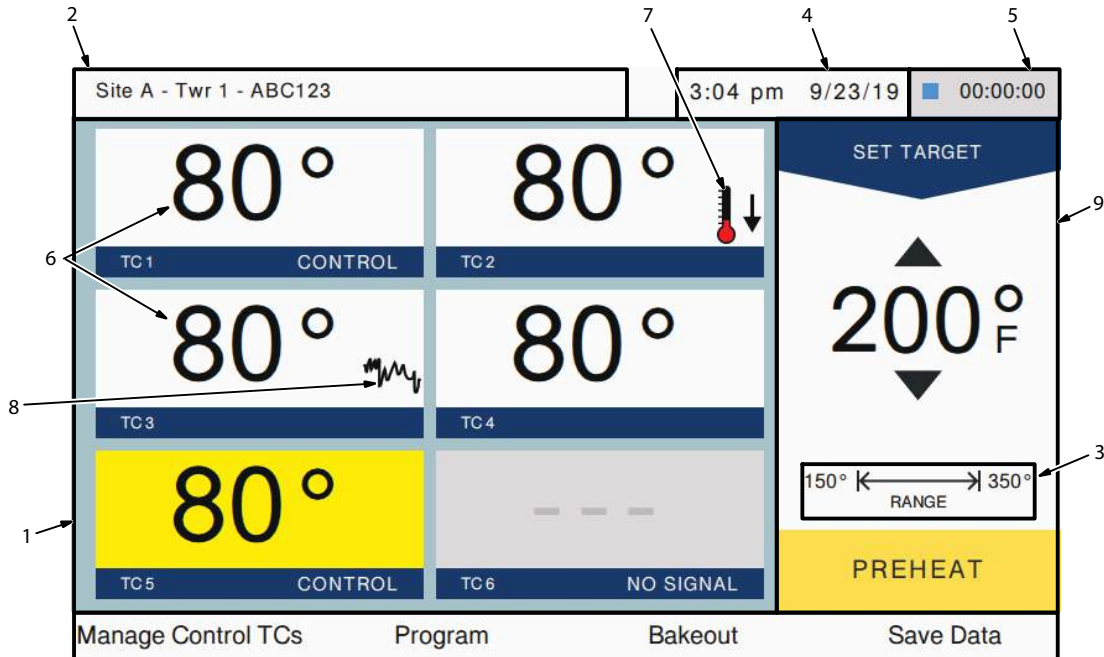


Figure 7-1. Main Screen

- 1 Main Section
- 2 Active Program - Displays the name of the active heating program. To view program details, press **[Program]**.
- 3 Allowed Range - When a program is loaded, the minimum/maximum range is displayed in this area.
- 4 Time/Date - Shows the system time and date, used for time stamping heating data.
- 5 Record Indicator - Red square = recording, Blue square = recording stopped.
- 6 Thermocouple (TC) Temperatures - These boxes show the temperatures of all thermocouples

The bar under each TC shows if it is CONTROL. An unused or open TC will be indicated by NO SIGNAL.

If a CONTROL TC is not acting as expected, the background will be yellow.

If any TC is not acting as expected, one of the following icons may be shown:

- 7 Low Temperature - TC has fallen significantly in a short time.
- 8 Noisy - TC indication is erratic. TC may be insufficiently coupled to workpiece.
- 9 Heating Mode/Setting - Shows the active heating mode and settings. Preheat temperature can be changed using [Up/Down Arrows]. For information related to Bakeout, see Section 7-4.

If the hottest TC is lost (open, indicated bad via. Status icon) the system will continue to heat using the remaining control TCs. If the hottest TC is 25° F (-3.9° C) hotter than any other control TC and opens, the system will enter a hold state, where the system will hold the temperature of the hottest remaining controls TC. (See Figure Figure 7-2)

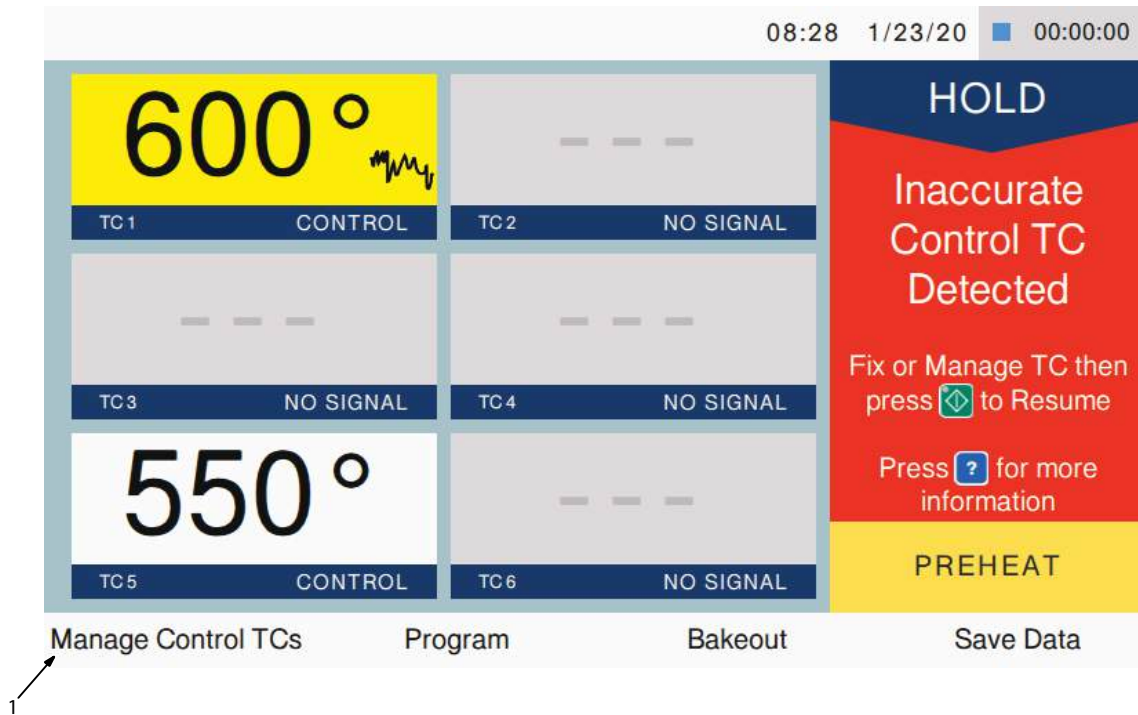


Figure 7-2. Temperature Hold Screen

- 1 Soft Buttons - The actions of these buttons change depending upon the active screen. At the main Temperatures screen, the following is available:

Manage Control TCs - Displays the **Manage Control TCs** screen.

Program - Displays the **View/Load Program** screen.

Bakeout - Displays the **Bakeout** screen.

Save Data - Displays the **Save Temperature Data** screen.

7-3. Initial Setup

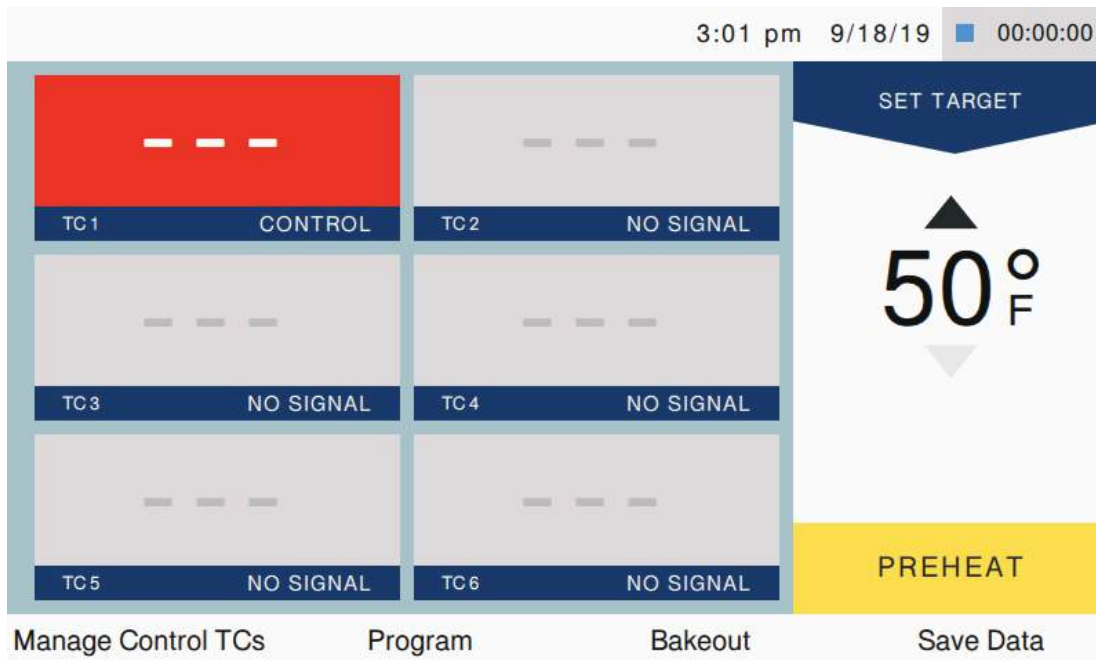
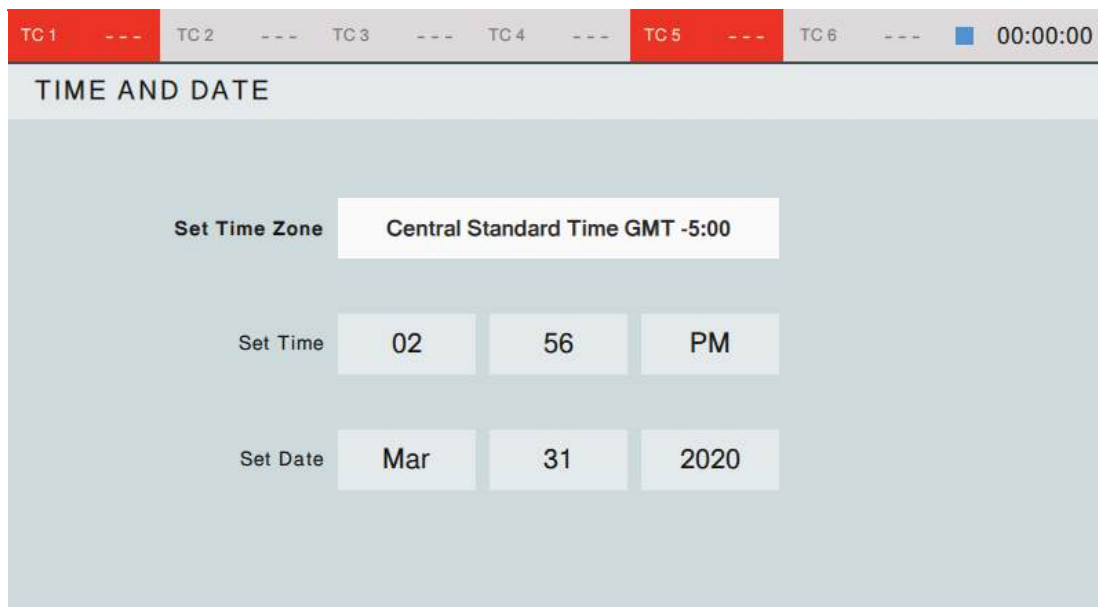


Figure 7-3. Temperature Screen

On power-up, the Arch Reach Heater will display the Temperature Screen.

A. Setting Up Time Zone



TC 1 --- TC 2 --- TC 3 --- TC 4 --- TC 5 --- TC 6 --- 00:00:00

TIME AND DATE

Set Time Zone Central Standard Time GMT -5:00

Set Time 02 56 PM

Set Date Mar 31 2020

Figure 7-4. Time and Date Screen

To set the time zone, follow these steps:

Step 1. Press **[Menu]**.

Step 2. Highlight **[Time and Date]** by pressing **[Up/Down Arrows]**.

Step 3. Press **[Select]**.

Step 4. The time and date screen is displayed.

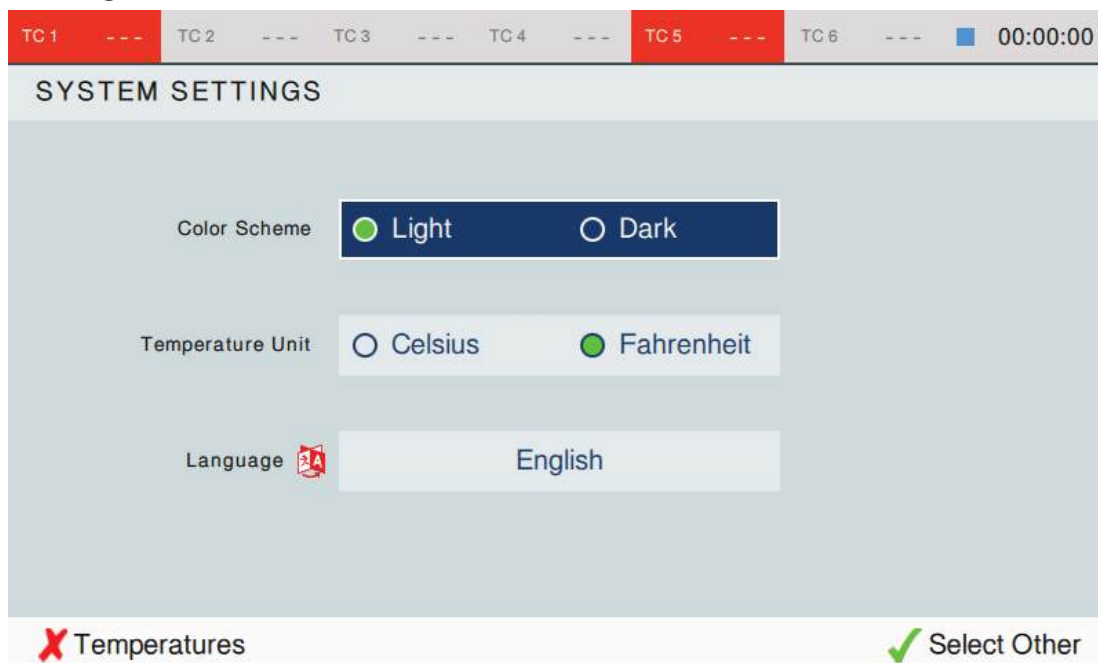
Step 5. Press **[Up/Down Arrows]** to highlight desired field.

Step 6. Press **[Decrease -]** or **[Increase +]** to modify highlighted field.

Step 7. When time is set, press **[Temperatures]** to return.

Step 8. A confirmation window will appear. Select **[Yes]** to save changes or **[No]** to cancel.

B. System Settings



TC 1 --- TC 2 --- TC 3 --- TC 4 --- TC 5 --- TC 6 --- 00:00:00

SYSTEM SETTINGS

Color Scheme ☒ Light ☐ Dark

Temperature Unit ☐ Celsius ☒ Fahrenheit

Language  English

 Temperatures  Select Other

Figure 7-5. System Settings Screen

Color Scheme (Light/Dark Mode), Temperature Unit (C/F), and Time Format (12/24 hr time) can be changed in the system settings screen:

Step 1. Press **[Menu]**.

Step 2. Highlight **[System Settings]** by pressing **[Up/Down Arrows]**.

Step 3. Press **[Select]**.

Step 4. The system settings screen is displayed.

Step 5. Press **[Up/Down Arrows]** to highlight desired item.

Step 6. Press **[Select Other]** to toggle highlighted item.

Step 7. When finished, press **[Temperatures]** to save settings and return to the temperatures screen.

C. Selecting Control Thermocouples

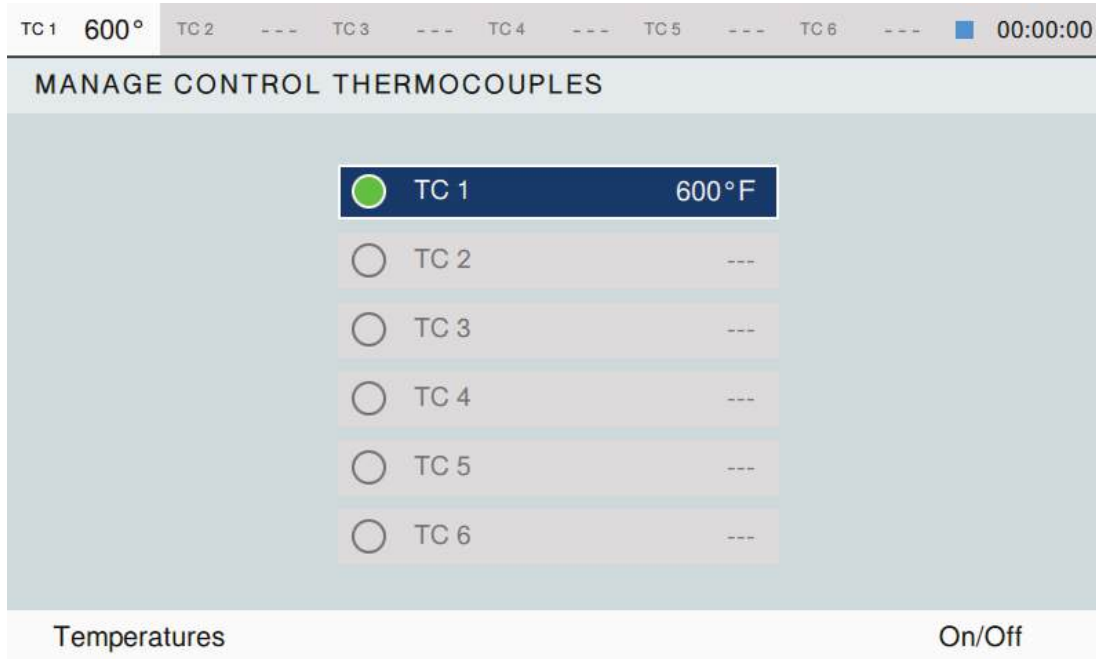


Figure 7-6. Manage Control Thermocouples Screen

Step 1. Press **[Manage Control TCs]** on the temperatures screen to select which thermocouples control the heating process.

The Manage Control Thermocouples screen shows the available Thermocouples (TCs). An indicator at the left of each TC shows whether it is set as a control.

The control TC(s) are used to regulate to the target temperature.

Step 2. To change whether a TC is set as a Control, highlight it by pressing **[Up/Down Arrows]**. Then press **[On/Off]**.

All connected TCs show a reading, but only Control TCs affect the heating process.

Step 3. Press **[Temperatures]** to return to the Temperatures screen. Changes are stored automatically.

☞ At least one TC must be set as Control.

☞ A control TC limits output power at the target temperature setting.

☞ A monitoring TC (Non Control) records temperature setting, but does not stop temperatures from rising above the target temperature.

☞ Press **[Stop]** before adjusting cables.

The target temperature is the maximum control temperature.

When any control TC reaches the target temperature, the heat input is reduced to maintain the target temperature. Add insulation to part or adjust cable coil location to adjust heat input and bring other TCs within the target window.

7-4. Preheating Without A Loaded Program

- Step 1.** Ensure all control thermocouples (TCs) are securely located under the attached heating tools and in positive contact with the part to be heated. The attached TCs will display sensor temperatures.
- Step 2.** Press **[Run]** to start the heating process. The recording indicator will flash and the recording timer will display duration of the heat cycle.
- Step 3.** When target temperature is reached under the heating tool, verify joint temperature is within range before welding.
- Step 4.** Press **[Stop]** to end the heating cycle. A message is displayed asking if recording should be stopped. Press **[Stop Recording]** to end the recording or **[Continue Recording]** to keep recording.

7-5. Bakeout Without A Loaded Bakeout Program

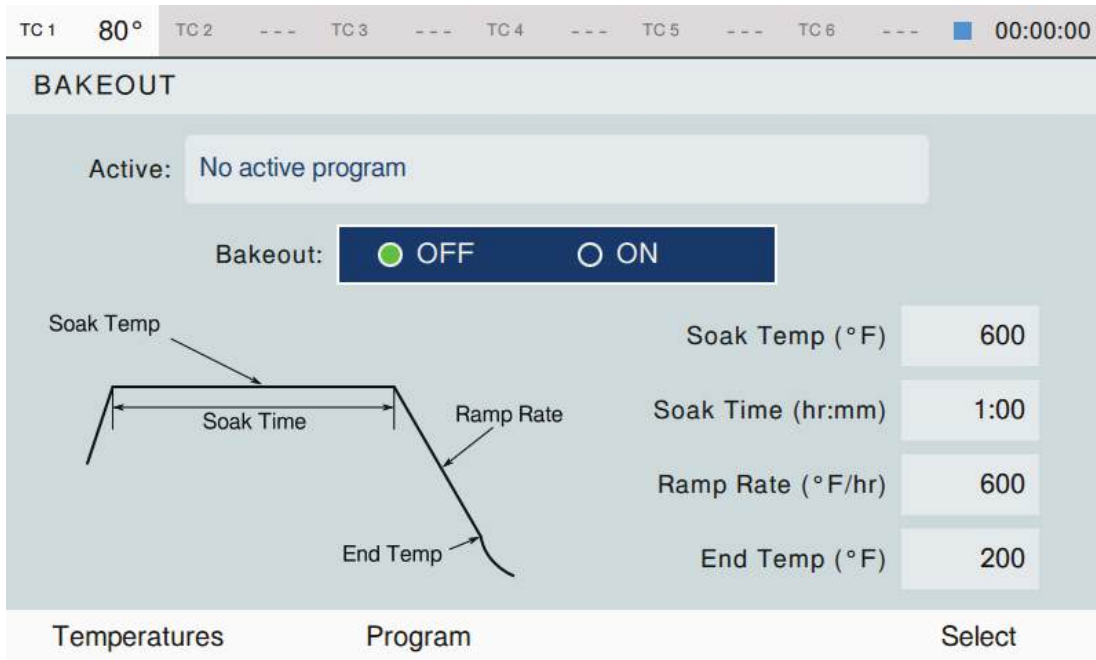


Figure 7-7. Bakeout No Preconfigured Loaded Program w/Parameters Screen

- Step 1.** When on the temperatures screen, press **[Bakeout]** to view the Bakeout menu.
- Step 2.** Press **[Up/Down Arrows]** to select parameter to change.
- Step 3.** Press **[Decrease -]** or **[Increase +]** to adjust values.
- Step 4.** While on the **Bakeout: OFF/ON** field, press **[Select]** to change from **OFF** to **ON** and enable the Bakeout process.

*If output is on, Bakeout will begin as soon as **ON** is selected.*

- Step 5.** Press **[Temperatures]** to return to the thermocouples screen.
- Step 6.** If output is off (SETTINGS is displayed), press **[RUN]** to begin heating. The heater will ramp up to the Bakeout Target Temperature, Soak for the programmed duration and Ramp down to the End Temp. See Figure Figure 7-9 for example screen images.
- Step 7.** When the Bakeout sequence is complete, a message is displayed to press [Stop]. After pressing [Stop], a second message is displayed asking if recording should be stopped. Press [Stop Recording] to end the recording or [Continue Recording] to keep recording. See Figure Figure 7-10.

A. Bakeout Temperature Screen

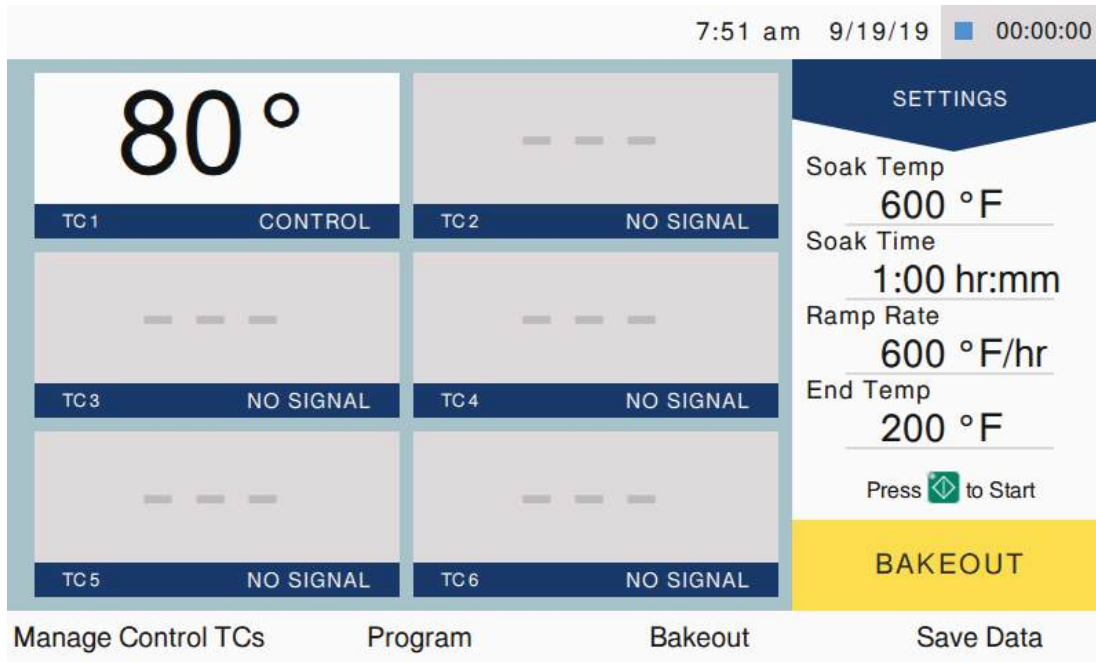


Figure 7-8. Bakeout Heating No Preconfigured Loaded Program Screen

B. Bakeout Sequence Screen

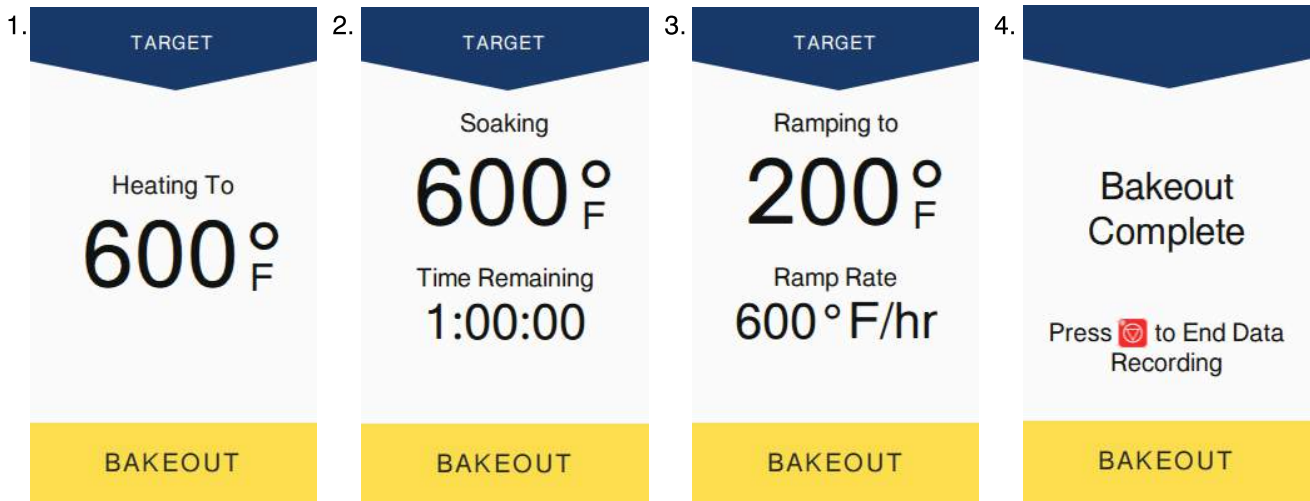


Figure 7-9. Bakeout Sequence Screens

C. Recording Options Screen

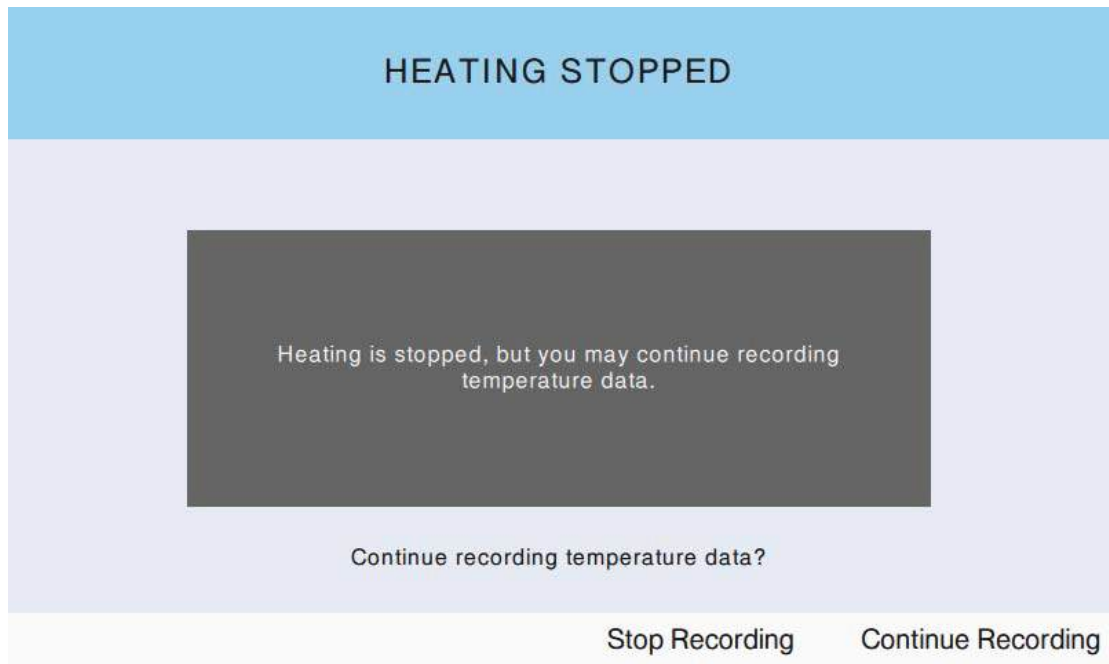


Figure 7-10. Stop Recording Message

 Even though a preloaded program may not have been used, the heat profile is still recorded and the data can be saved to a USB drive. (See Section 7-9)

7-6. Heating From a Preconfigured Loaded Program From PC Data App

A. View/Load Program Screen

TC 1 --- TC 2 --- TC 3 --- TC 4 --- TC 5 --- TC 6 --- 00:00:00

VIEW/LOAD PROGRAM

Active

No active program

Details

PREHEAT

No active program

Available

- Site A - Twr 1 - ABC123
- Site A - Twr 1 - ABC987
- Site A - Twr 2 - ABC678
- Site B - Twr 3 - XYZ345
- Site B - Twr 4 - XYZ562

Temperatures

Clear

Load Selected

Figure 7-11. View/Load Program Screen

Loading a Program:

Step 1. Insert a USB drive into the USB receptacle on the left side of the ArcReach Heater. The USB drive is automatically detected and a menu is displayed. Highlight **[Load Program]** with **[Up/Down Arrows]** and press **[Select]**.

Step 2. Press **[Up/Down Arrows]** to browse through the available program files. Details for the highlighted program is displayed in the Details pane. If the program contains bakeout information, the **[Show Bakeout]** button is available. Press **[Show Bakeout]** to show bakeout information.

Step 3. Press **[Load Selected]** to load the highlighted program.

Step 4. A Program Loaded confirmation screen is displayed. Press **[OK]** to continue to the Temperatures screen.

Clearing a Loaded Program:

Step 1. From the Temperatures screen, press **[Program]**. The View/Load Program screen is displayed.

Step 2. The active program is immediately highlighted. Press **[Clear]**.

Step 3. A Clear Active Program confirmation box is displayed. Press **[OK]** to clear the program, or press **[Cancel]** to cancel.

Step 4. Press **[Temperatures]** to return to the Temperatures screen.

TC 1 --- TC 2 --- TC 3 --- TC 4 --- TC 5 --- TC 6 --- 00:00:00

VIEW/LOAD PROGRAM

Active

No active program

Details

PREHEAT

BAKEOUT

Technician:

Target: 200°F

Max: 350°F

Min: 150°F

Available

- Site A - Twr 1 - ABC123
- Site A - Twr 1 - ABC987
- Site A - Twr 2 - ABC678
- Site B - Twr 3 - XYZ345
- Site B - Twr 4 - XYZ562

Temperatures

Show Bakeout

Clear

Load Selected

Figure 7-12. View/Load Program Screen

B. Start Heating

Step 1. Ensure all control thermocouples (TCs) are securely located under the attached heating tool and in positive contact with the part to be heated. The attached TCs will display sensor temperatures.

Step 2. Press **[Run]** to start the heating process. The recording indicator will flash and the recording timer will display duration of the heat cycle.

Step 3. When target temperature is reached under the heating tool, verify joint temperature is within range before welding.

Step 4. Press **[Stop]** to end the heating cycle. A message is displayed asking if recording should be stopped. Select **[Stop Recording]** to end the recording or **[Continue Recording]** to keep recording.

C. Bakeout Loaded Program

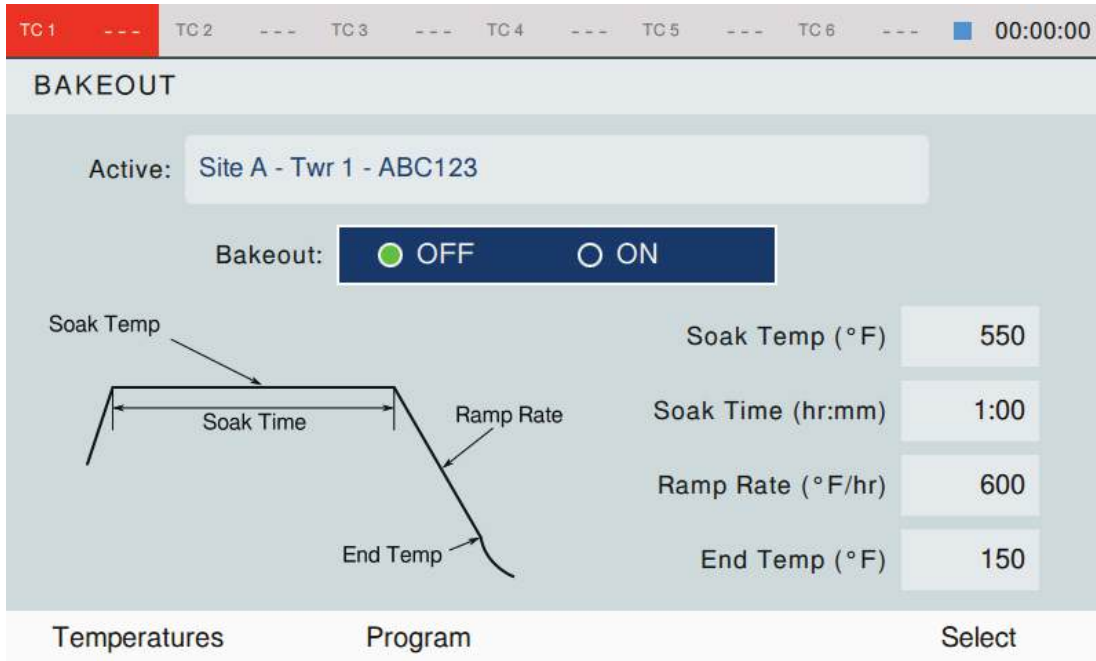


Figure 7-13. Bakeout Loaded Program

Step 1. When on the Temperatures screen, press **[Bakeout]** to view the Bakeout menu.

Step 2. While on the **Bakeout: OFF/ON** field, press **[Select]** to change from OFF to ON and enable the Bakeout process.

No changes are allowed on a loaded Bakeout program.

*If output is already on, Bakeout will begin as soon as **ON** is selected.*

Step 3. Press **[Temperatures]** to return to the temperatures screen.

The Preheat menu has changed to the Bakeout settings.

When **[Run]** is pressed, the heater will ramp to the Bakeout Target Temperature, Soak for the programmed duration and Ramp down to the End Temp. See Figure 7-9 and Figure 7-10.

7-7. Miller ArcReach Software Update Instructions

It is recommended that when performing a software update, the operator **uses a USB Flash drive that has a storage capacity of at least 1 GB** for the update procedure.

Section A instructions only need to be completed if a user does **not** have a USB Flash Drive with a FAT32 or FAT file system format. **Skip to Section B if this does not apply.** If you are unsure about your USB Flash Drive's file system format, please validate the format type by following the steps listed in this section.

Section B instructions outline the steps required to download the ArcReach Heater software update file online and how to store that update file on a proper USB Flash Drive.

Section C instructions explain how to perform the actual system update by taking the USB Flash Drive (that now has the software update file from Section B) and loading the software image into the ArcReach Heater System.

A. Validate the USB Drive has the Proper File System (Skip if FAT32 or FAT)

The following procedure uses File Explorer in Microsoft Windows 10 and Internet Explorer is also used as a reference browser.

1. Insert a **blank** USB Flash Drive into an available USB port on the computer.
2. Press the Windows key to open the Start Menu, then start typing "This PC" and click on its icon when it appears to open This PC in File Explorer. Earlier Windows versions have My Computer instead of This PC.



Figure 7-14. File Explorer Screen

3. Browse to This PC's Devices and drives section, right-click on the inserted USB Flash Drive, and click on properties.

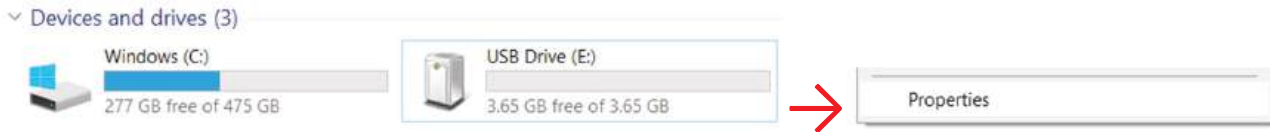


Figure 7-15. Devices and drives Screen

4. In the Properties window that opens, note if the file system is not FAT32 or FAT, then close the Properties window.

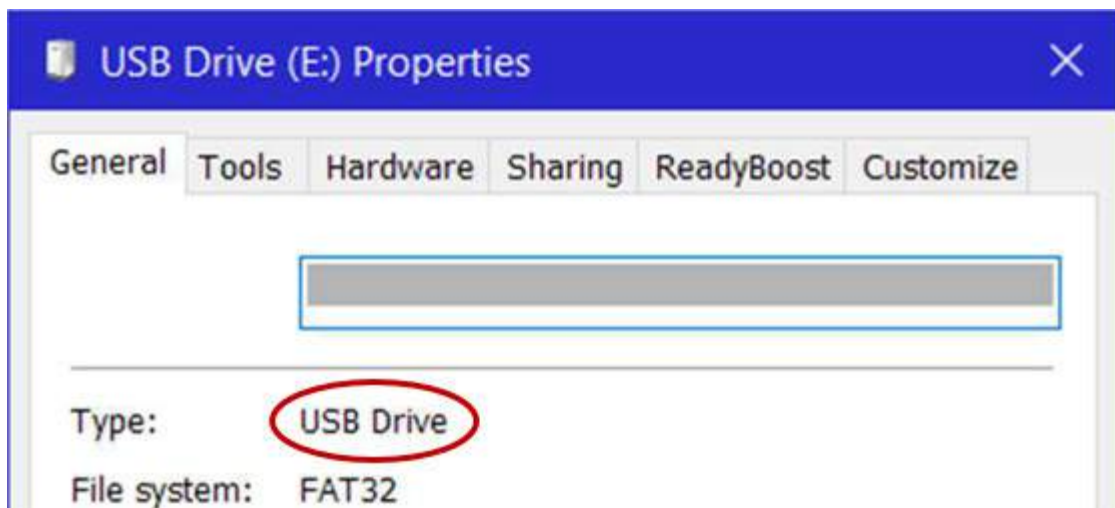


Figure 7-16. Properties Window

5. Complete these next few steps **only** if the USB Flash Drive's file system is **exFAT** or **NTFS**:
 - a. Right-click on the USB Flash Drive and click on "Format..." in the pop-up menu.
 - b. In the window that opens, choose FAT32 from the drop-down list, then click the Start button.
 - c. Click the Close button after formatting is complete.
 - d. Repeat steps 3 and 4 to verify the file system is now FAT32.
 - e. If *FAT32* isn't listed in the Format window, try using a smaller USB Flash Drive (32GB or less).

B. Download the Software Update File Online

1. Use a web browser and connect to the ArcReach Heater Millerwelds.com-Support-Software page:
<https://www.millerwelds.com/support/software/arcreach-heater-software>
2. Download the following update file from the website:**ArcReachHeater-vYYYY.MM.DD.raucb**

*The update file is located under "Operation 2: ArcReach Heater Equipment Software" on the web page. Dates used in the system version format image are for example only and **DO NOT** correspond to the latest version.*



Figure 7-17. File Update Download Screen

3. To save the update file onto your blank USB, find and select the USB Drive on the left and click the "Save" button.

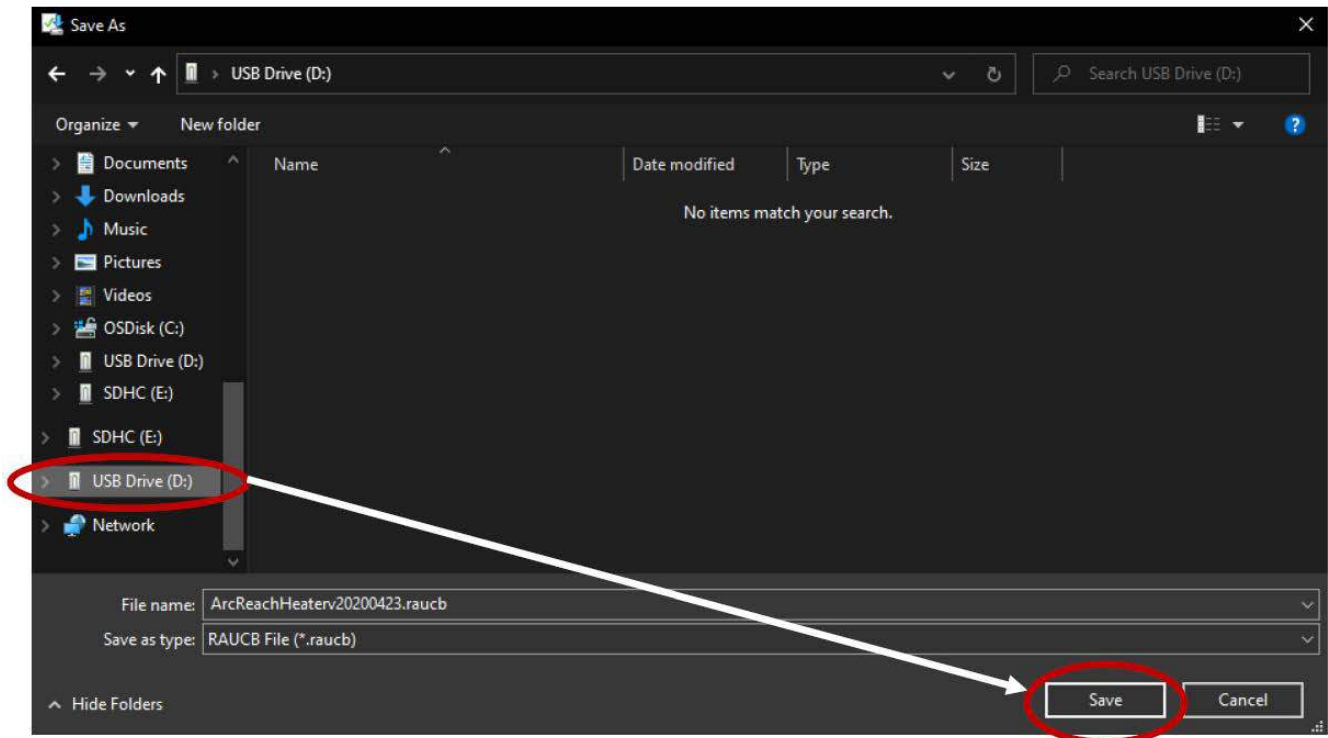


Figure 7-18. Save File Update To USB Screen

4. The USB Flash Drive has been successfully loaded with the ArcReach Heater Software Update.

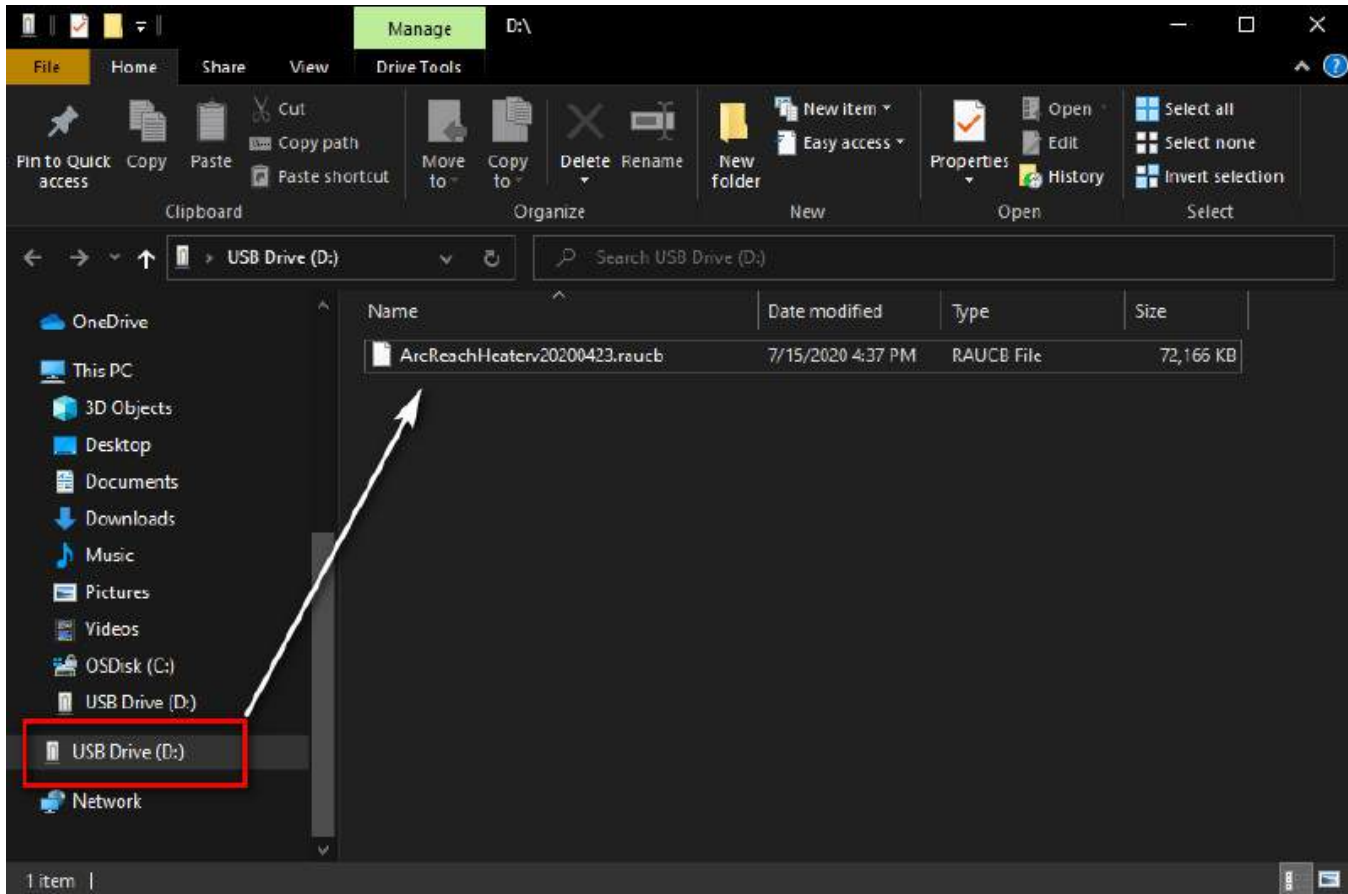


Figure 7-19. Confirm File Update Saved To USB Screen

5. Close any related windows that remain open.
6. Click the **Safely Remove Hardware and Eject Media** icon near the right corner of the Windows Taskbar.



Figure 7-20. Safely Remove Hardware and Eject Media Icon

7. Click **Eject USB DISK**.



Figure 7-21. Open Devices and Printers Screen

8. The computer will display Safe to Remove Hardware.



Figure 7-22. Safe To Remove Hardware Notice

9. Unplug the USB Flash Drive from computer.

C. Loading Software Update into ArcReach Heater System

This plan assumes that the ArcReach Heater is connected to a compatible power-source before following the steps outlined below.

Needed: A USB stick containing the latest firmware image (See Section A).

Step 1. Make sure the ArcReach Heater is powered ON. You should be at a "Temperature" screen showing the temperature read-outs of the 6 Thermocouples.

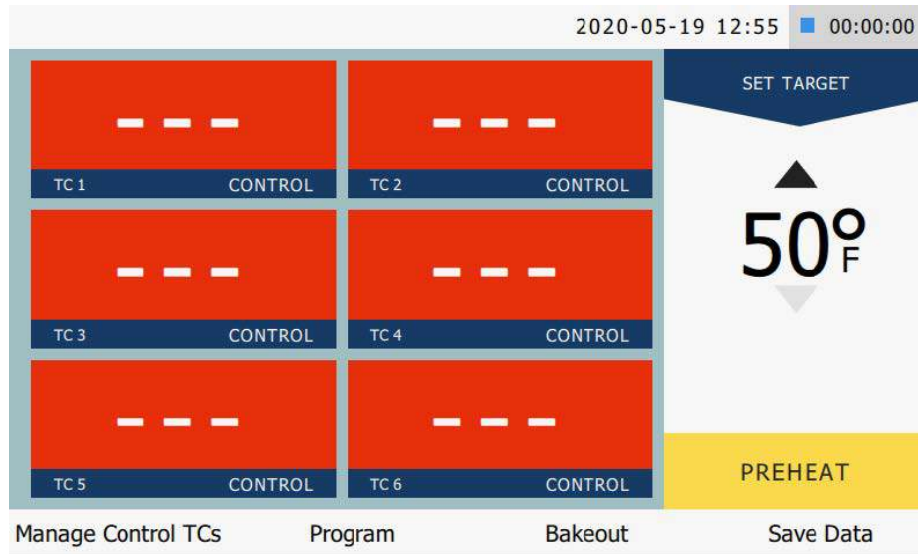


Figure 7-23. Temperature Screen

Step 2. Press the "Menu" button to open the system menu. You should see a list of options to pick from. Please navigate to the "About" option using the soft-button arrows and choose it with the "Select" soft button. In this screen, please note the **System Software Version**. You will later use this value for comparison to ensure that the update successfully took place.



Figure 7-24. System Menu and About Section

Step 3. Insert the USB stick containing the latest firmware image. After a few seconds, you will be prompted with a screen showing various USB options. Please navigate to the **Load System Update** option and press the "Select" soft button. If no 'Load System Update' option is available, the firmware image on the stick is not being recognized correctly/is not present.

Caution! Do not unplug USB Flash Drive or turn off power until updating is complete.

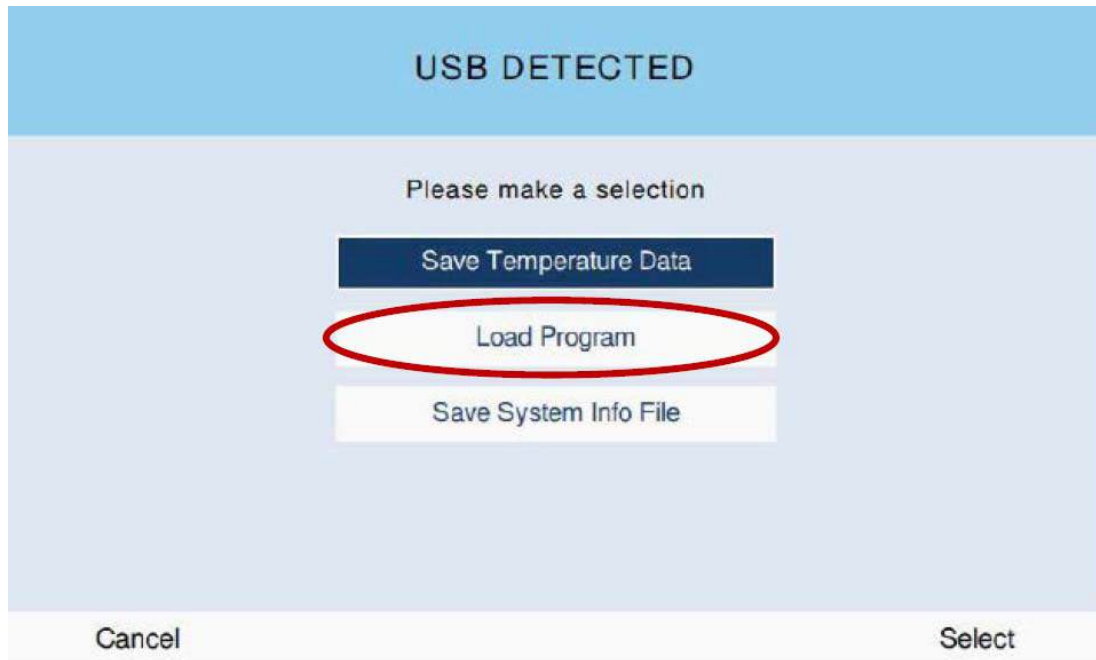


Figure 7-25. USB Detect

Step 4. A screen will appear asking if you would like to update to the revision found on the USB stick. Select "Install".

☞ Dates used in the system version format image are for example only and **DO NOT** correspond to the latest version.

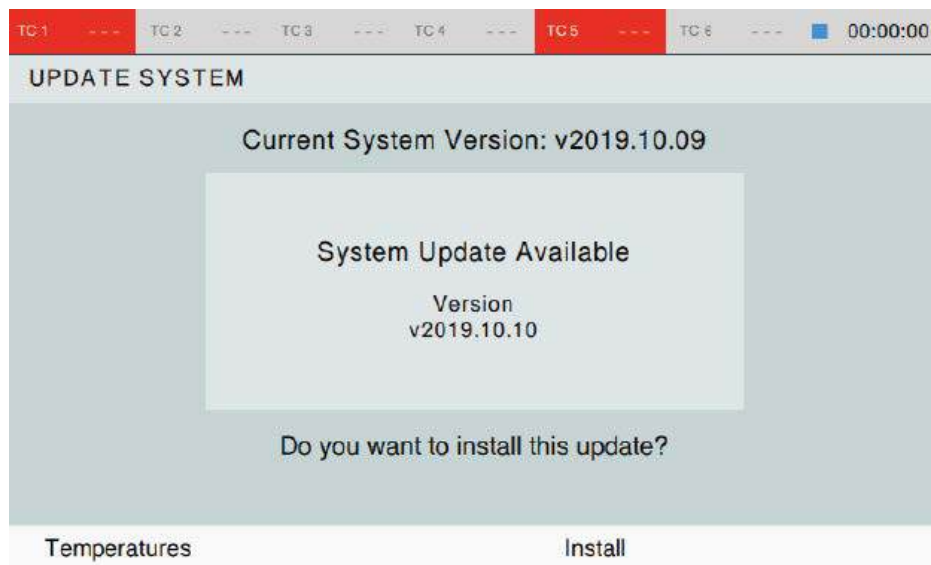


Figure 7-26. Installing Update

Step 5. A progress bar will appear as the firmware update is copied onto the user interface (UI). Once reaching 100%, you will be prompted to remove the USB stick from the ArcReach heater. Do so now.

Step 6. Please wait as the display will go black automatically as the UI reboots. Once power to the UI returns to the UI, a readout will appear depicting that Process Control 1 of 2 is being updated. When the progress bar completes, Process Control 2 of 2 will be updated. After this completes, the unit should return to the "Temperature" screen (see Step 1).

Step 7. Follow the directions dictated by **Step 2**, and note that the **System Software Version** should now be updated.

Step 8. After successfully updating, please turn power OFF at the welder/engine drive, allowing it to be powered off for ~10 seconds.

7-8. Saving System Information

To Save System Information:

Step 1. Insert USB drive.

Step 2. USB Detected Menu comes up.

Step 3. Select **[Saved System Info File]** button.

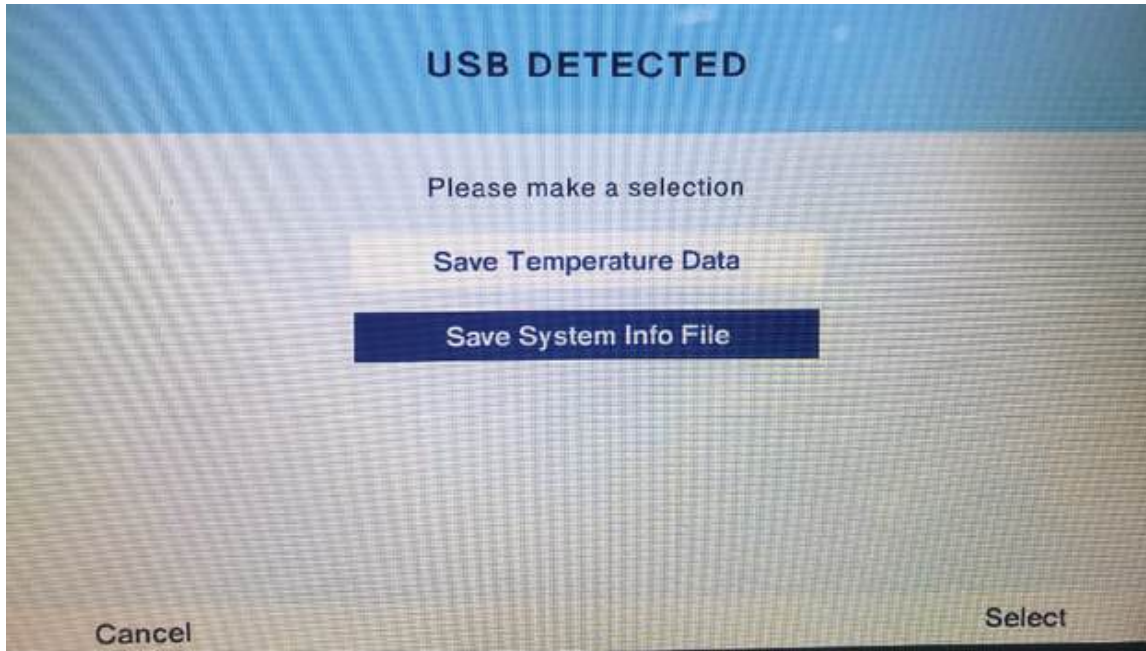


Figure 7-27. USB Menu Screen

Step 4. System Info File is saved onto USB Drive. Hit OK to exit menu.

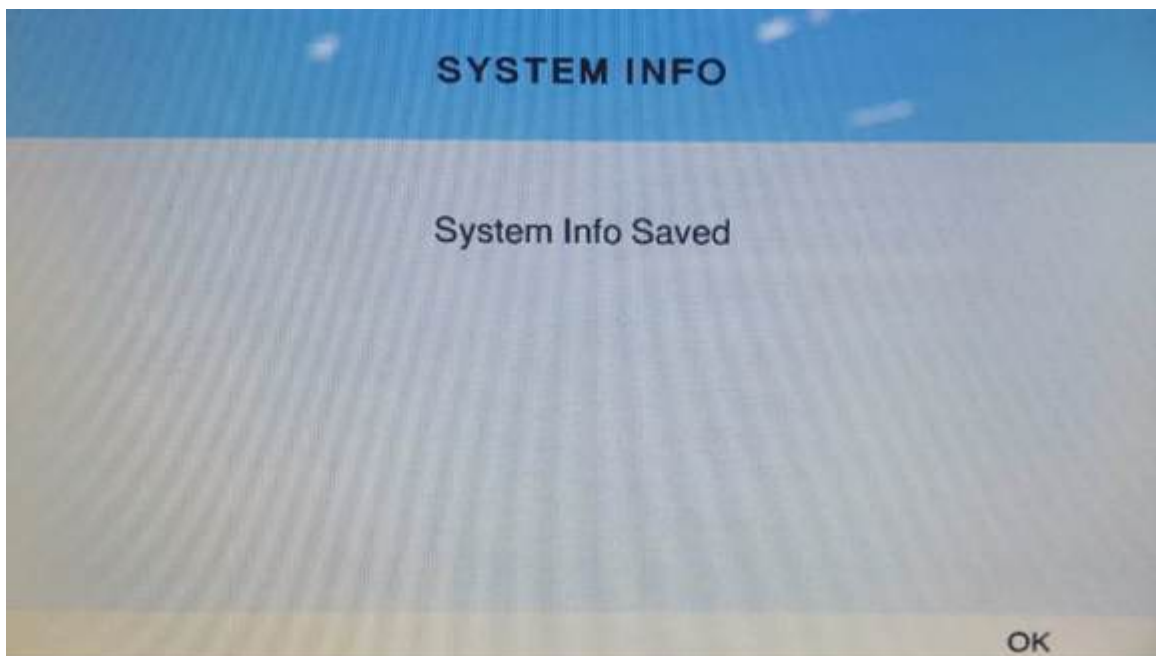


Figure 7-28. System Info Saved Screen

 Save System Info is also in the About Menu.

 Save System Information file contains the history of the last 100 faults that may be used for troubleshooting the system and setup issues.

7-9. Saving Data to USB Drive

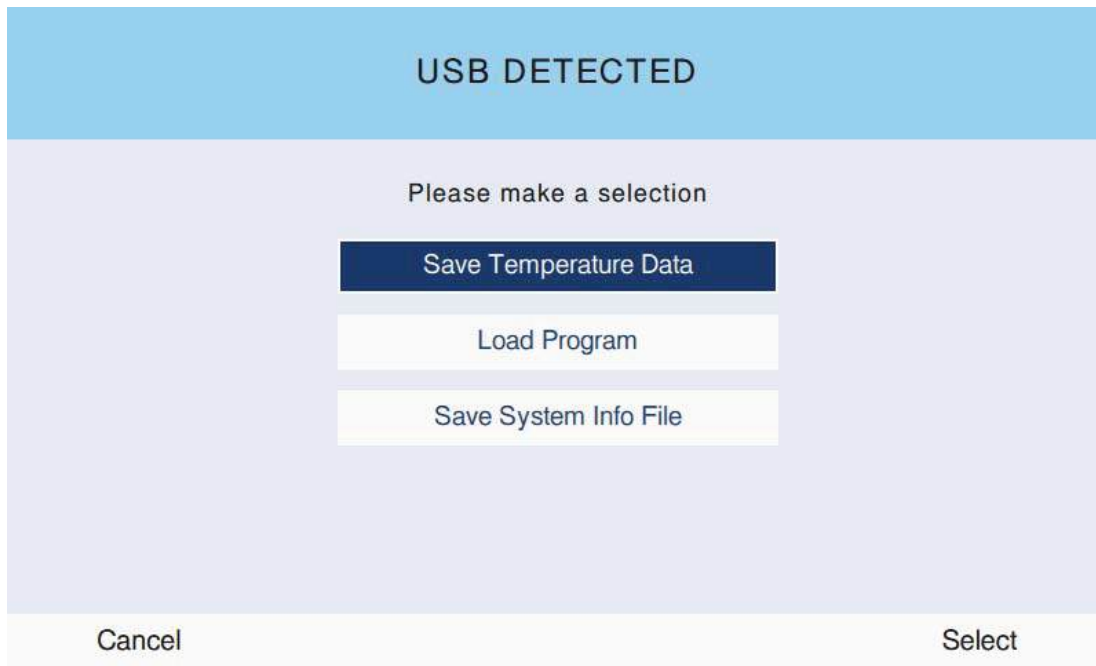


Figure 7-29. USB Menu Screen

Step 1. Insert a USB drive into the USB receptacle on the left side of the ArcReach Heater. The USB drive is automatically detected and a menu is displayed.

Step 2. Press **[Up/Down Arrows]** to highlight Save Temperature Data and press **[Select]**.

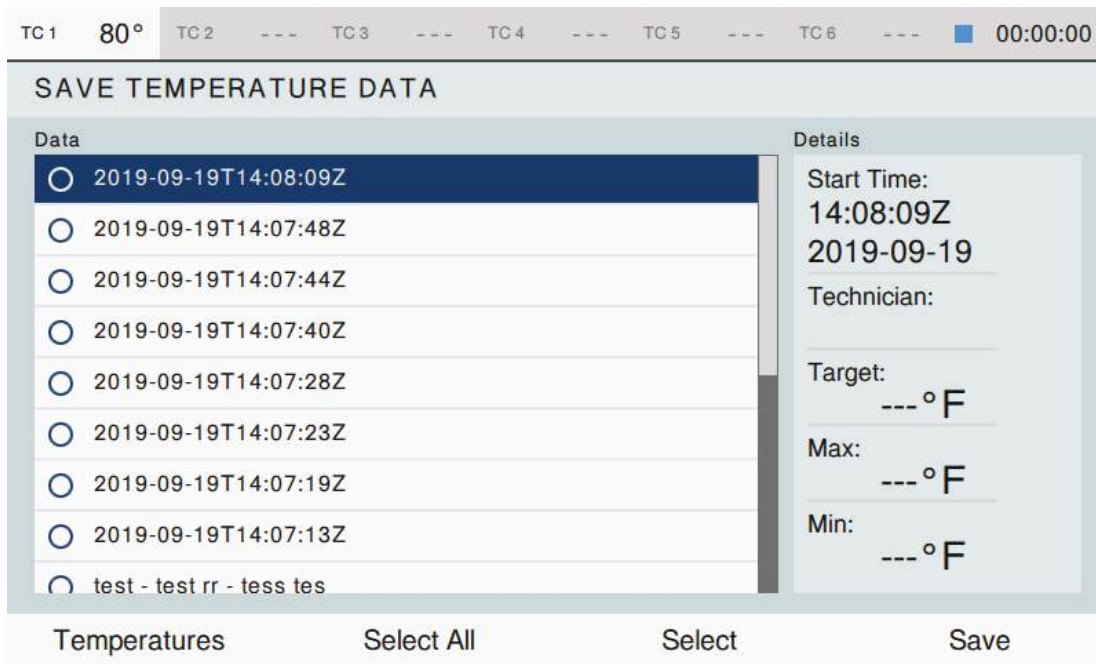


Figure 7-30. Save Temperature Data Screen

Step 3. Follow these steps to select each file to save:

To select individual files:

- Use the **[Up/Down Arrows]** to highlight a desired data file.
- Press **[Select]** to select it for saving (the bullet is filled to show it will be saved).
- Repeat for all desired files.

To select all files:

- Press **[Select ALL]**.

Press **[Save]** button to save all selected files.

7-10. Heating Parameters

TC 1--- TC 2--- TC 3--- TC 4--- TC 5--- TC 6---

00:00:00

HEATING PARAMETERS

	Actual	System Limit	Tool Limit	Heater Limit
Output Power (KW)	5.734	8.000		8.000
Output Current (A)	139	200	250 / 200	200
Output Voltage (V)	202	300		300
Source Current (A)	33	33		33
Output Frequency (KHz)	17.517			

Temperatures

Figure 7-31. Heating Parameters Screen

Heating Parameters Screen:

Heating Parameters screen is a read-only screen that shows limits applied to various electrical parameters. You may set some limits on the Adjustment Limits screen in the System Menu. The Heating Parameters screen also shows limits associated with any attached tool and the heater itself.

The top of the screen shows the TC readings. If a control TC is not sending a reading, its background turns red. At top right, a recording indicator flashes while data is being recorded.

Actual Parameters

This column shows actual parameters while heating. Actual parameters will often be less than heater limit due to coil configuration or the part reaching temperature and requiring less heat. When one of the actual parameters reaches the heater limit value, output is limited and the rest of the Actual parameters will be below the Heater Limit value.

System Limit

In some situations, users may have adjusted the system limits for a specific application to limit one or more of the parameters. The adjusted limits are in the second column.

Tool Limit

ArcReach heating tools communicate their identity and power limits to the TC extension cable. The amperage limits for the tool are displayed in the tool limit column. For example, the air-cooled heating cable displays 250/200 which means it can run at 250A for 15 minutes, then is restricted to 200A continuous.

Heater Limit

The maximum parameters for the heating power source are displayed in this column. Depending on heating tool and part configuration, the actual parameters may be less than the maximum. Output power will be limited when any of the amperage, voltage, frequency or temperature limits are reached.

7-11. Adjust Limits

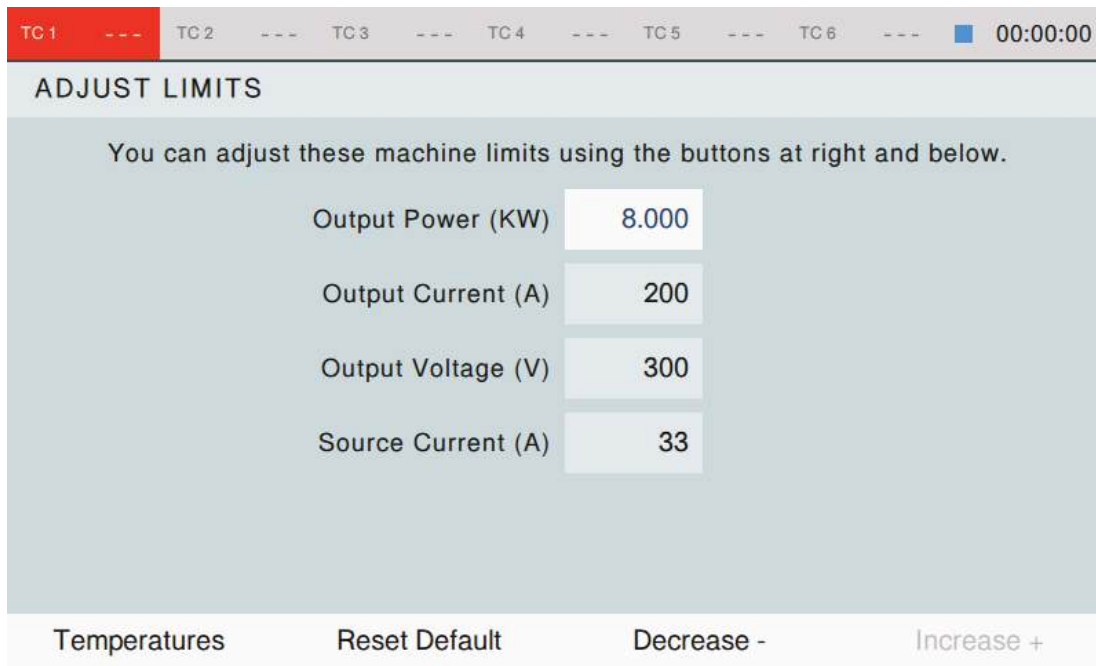


Figure 7-32. Adjust Limits Screen

Sometimes the heating control loop may not be optimized for the size or material of the part being heated. The Power (KW), Current (A) and Voltage (V) limits can be reduced on the Adjust Limits screen in the System Menu. This will result in less power to the part and a longer time to temperature.

An example of when to use this is on a small diameter pipe:

— Induction heating occurs below the surface of the material and the heat is conducted throughout the rest of the material thickness. In some cases, the amount of power going into a small amount of material may heat the part faster than the heat can transfer to the temperature sensor. By the time the temperature sensor reads the target temperature and stops output of the heater, the amount of heat in the part may result in temperature overshoot.

— Reducing the machine limits will slow down the heating and minimize temperature overshoot.

Step 1. Press the **[Menu]** button.

Step 2. Highlight [Adjust Limits] with the **[Up/Down Arrows]**.

Step 3. Press **[Select]**.

Step 4. Follow these steps to change limits:

- Press **[Up/Down Arrows]** to scroll through the list of parameters.
- Press **[Decrease -]** and **[Increase +]** to adjust the values of each parameters.

To set all limits back to maximum:

- Press **[Reset Default]** to set all limits back to maximum.

7-12. Update System

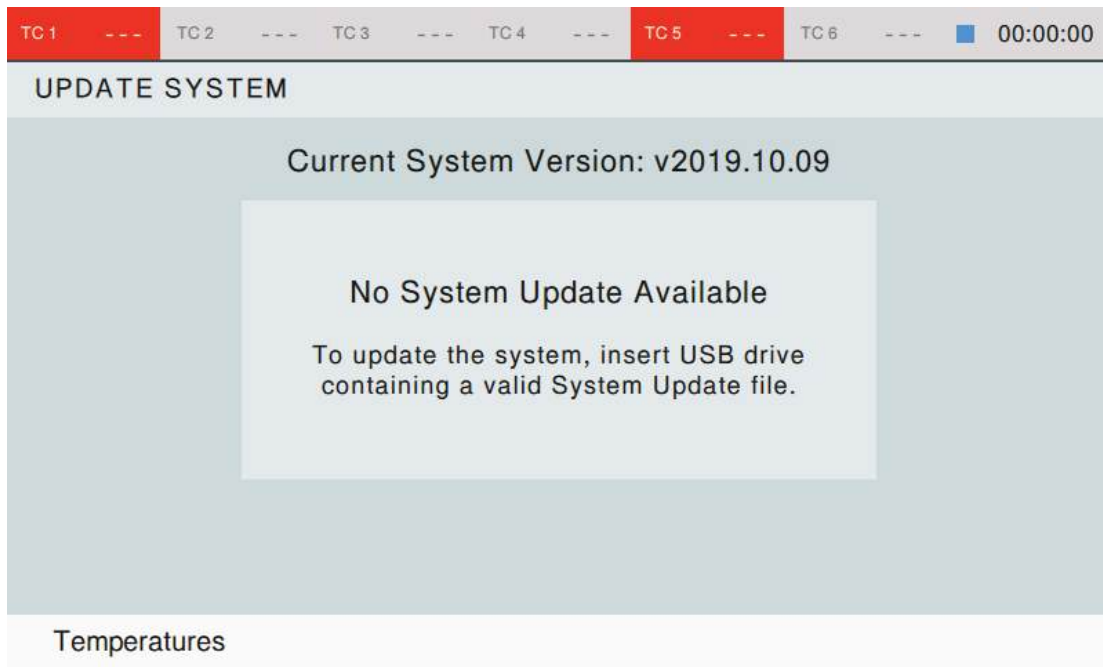


Figure 7-33. Update System Screen When No USB Drive Detected

The Update System screen allows you to update the current system using a USB drive. To update the system, a USB with a valid system software update file must be plugged in.

The version number of the current system is shown at the top of the screen.

If the USB drive with a valid update file is detected, you can press [Install] to proceed with the system update.

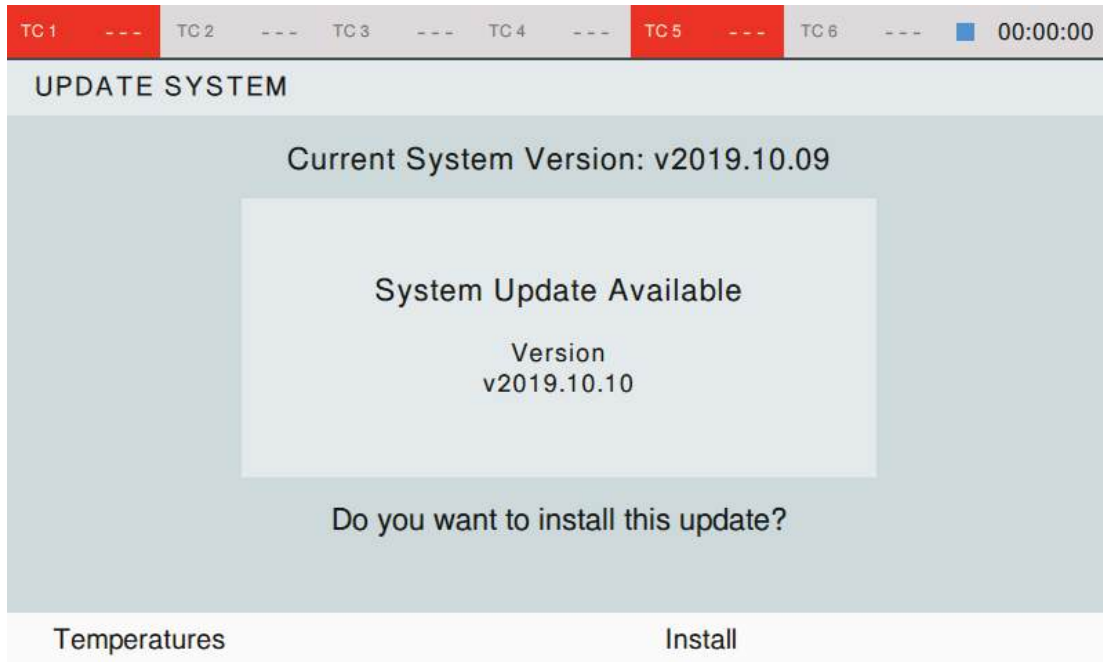


Figure 7-34. Update System Screen When USB Drive Detected

7-13. Fault History



Figure 7-35. Fault History Screen

If a fault was closed (not cleared) on a previous screen, the fault must be manually cleared through the Fault History screen.

Press **[Menu]**, then press **[Up/Down Arrows]** to highlight the Fault History field. Press **[Select]** to open the Fault History screen.

To view details of a specific fault, select it by pressing **[Up/Down Arrows]**, then press **[Show Detail]**. This will display detailed information about the selected fault, including guidance to address the cause.

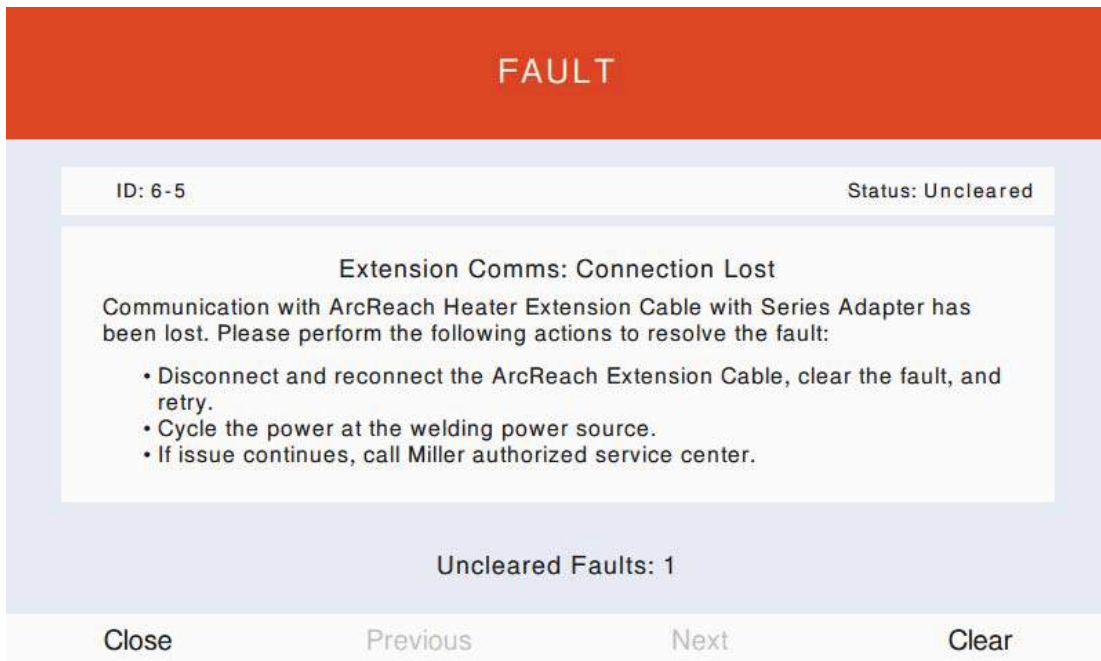


Figure 7-36. Fault History Screen

Pressing **[Previous]** or **[Next]** allow you to scroll through the fault list.

The heater will not run until all faults are cleared. If a specific fault has not been cleared, you may clear it by pressing **[Clear]**.

Press **[Close]** to hide the fault detail panel.

7-14. System Diagnostics

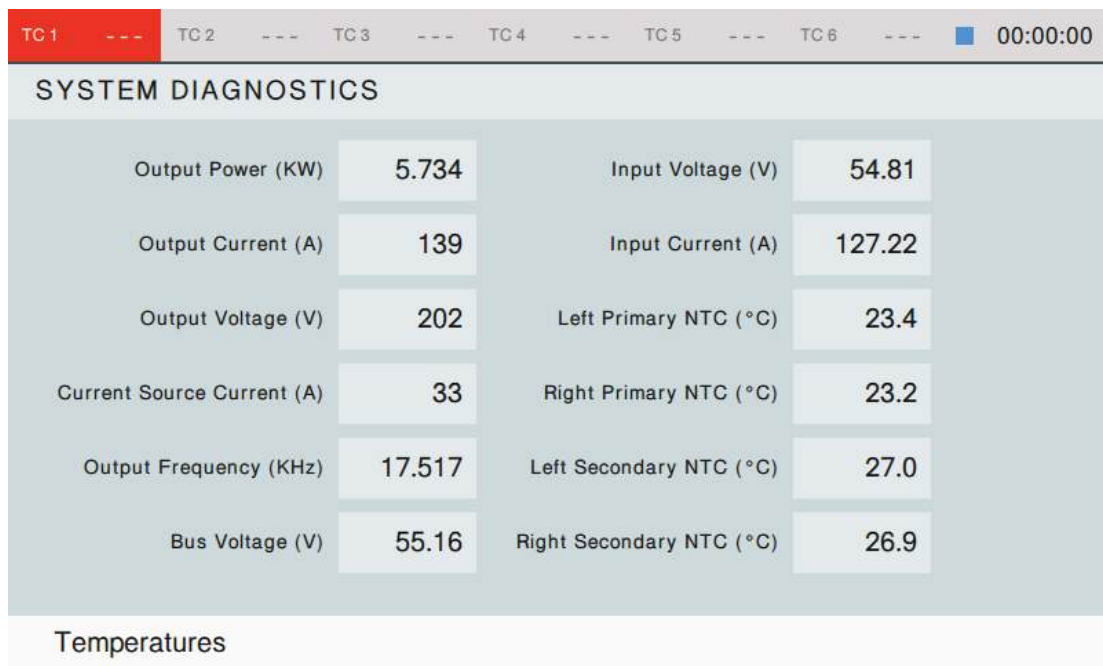


Figure 7-37. System Diagnostics Screen

The System Diagnostics screen shows technical information that may be useful for troubleshooting, technical support and service. Nothing on this screen can be edited.

7-15. About Screen

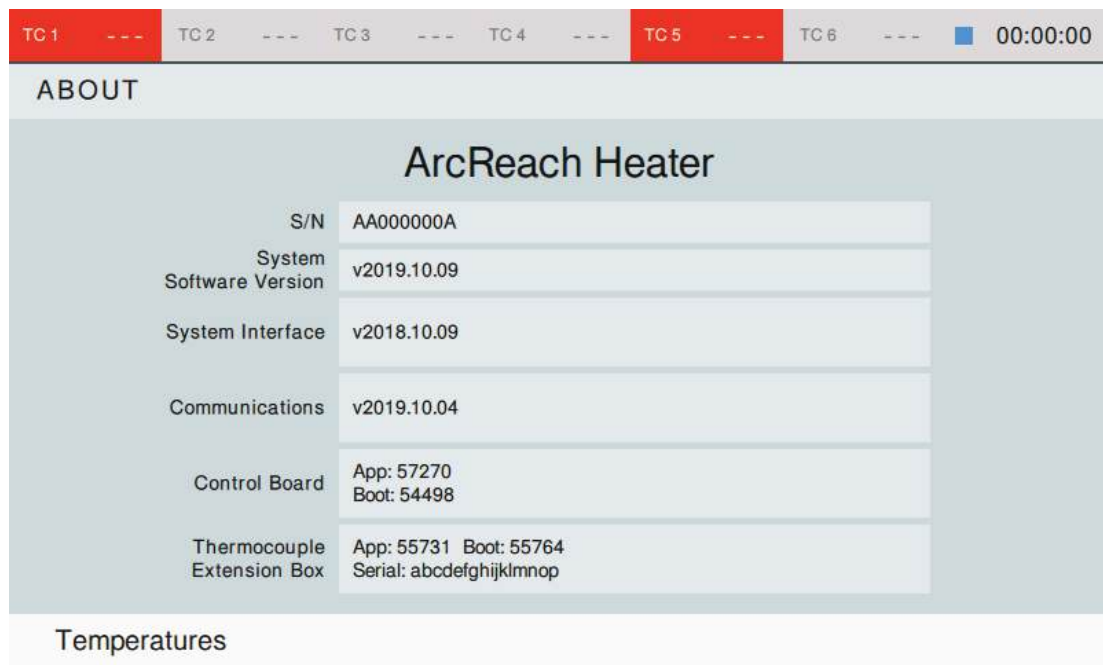


Figure 7-38. About Screen

The About screen displays information about the ArcReach Heater's hardware and software. This information may be useful for technical support and service.

SECTION 8 – PC DATA APPLICATION

8-1. ArcReach Heater Data Application For Preconfigured Heat Files

Windows 10 Download Instructions

The download/install link for the ArcReach Heater data application is listed below.

<https://www.millerwelds.com/support/software/arcreach-heater-software>

- From the download page click on [Download ArcReach Heater Data Application]

8-2. Software Licensing Agreement

The End User License Agreement and any third-party notices and terms and conditions pertaining to third-party software can be found at <https://www.millerwelds.com/eula> and are incorporated by reference herein.

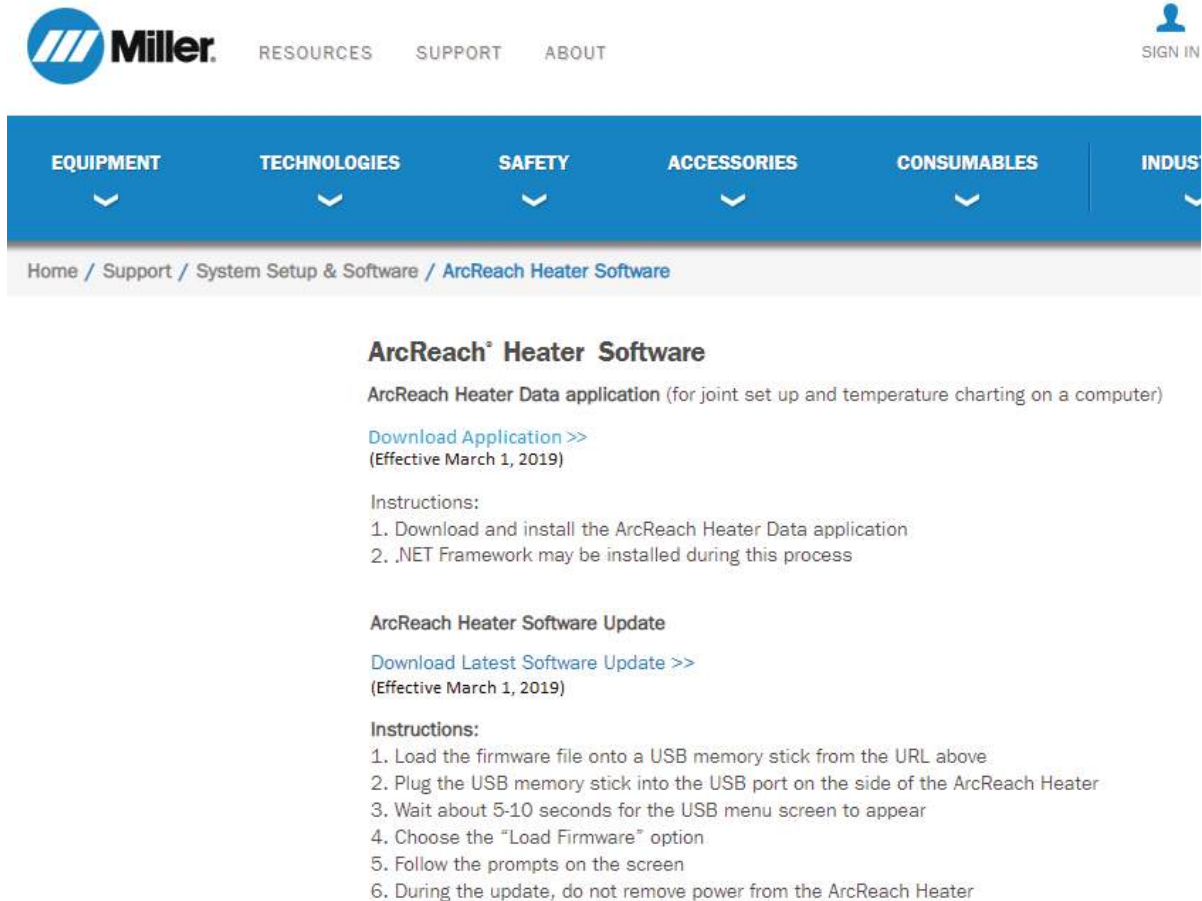


Figure 8-1. Launch Application Screen

☞ Microsoft.NET Framework will be installed on your computer if not installed already.

- Press [Run] to install the application or press [Save] to save the application for a later install.

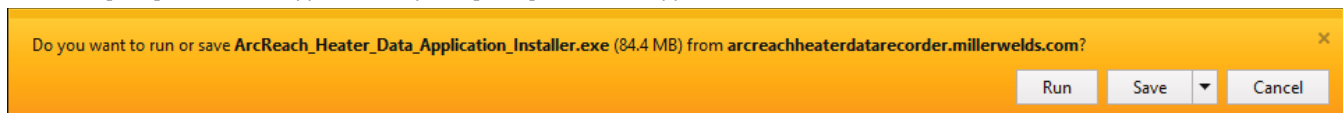


Figure 8-2. Application Installation Screen

- Follow the on-screen prompts to install the application.
- Press **[Finish]** to close the install program window.

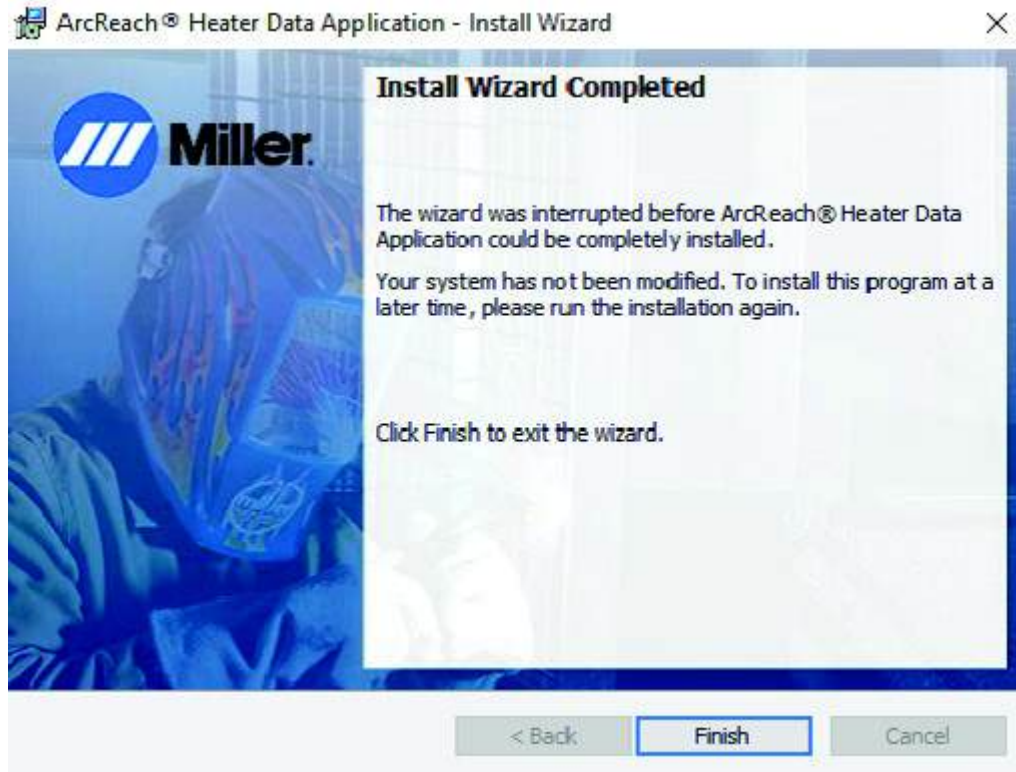


Figure 8-3. Install Wizard Screen

- The ArcReach Heater data program will open automatically after install.

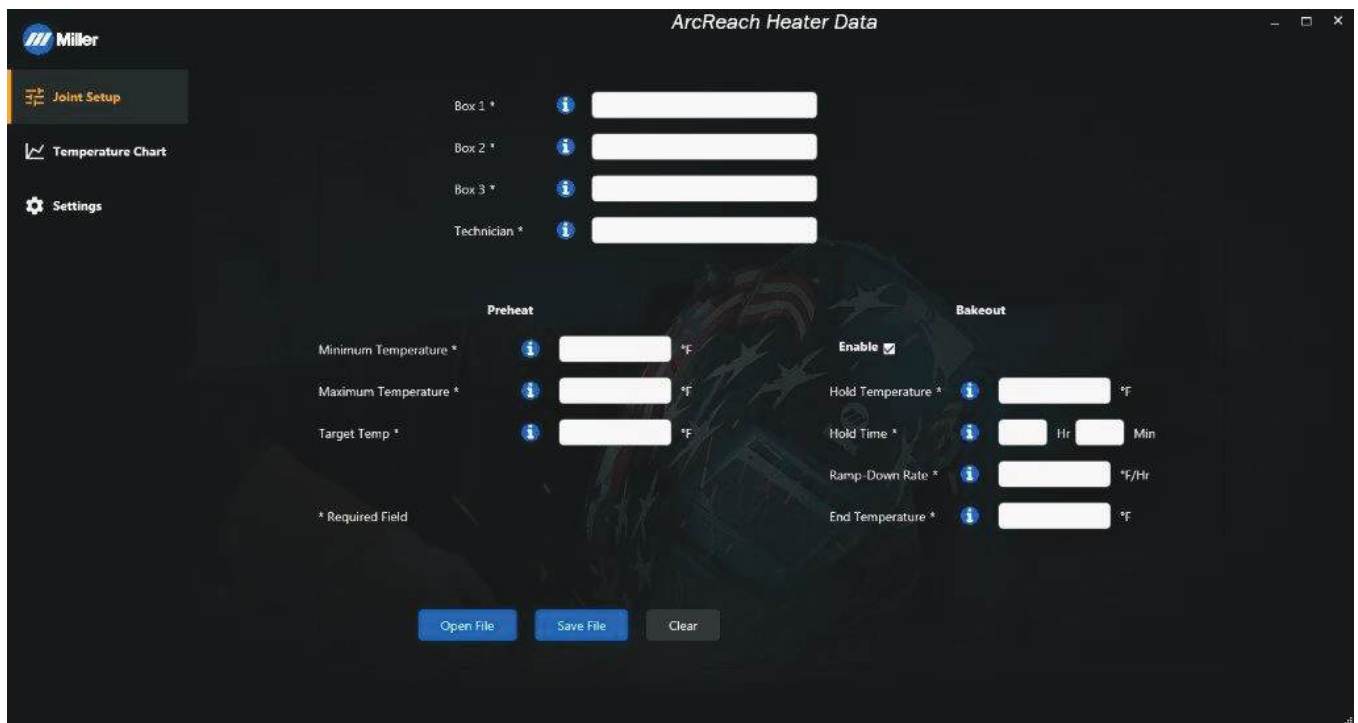


Figure 8-4. ArcReach Heater Joint Setup Screen

- The application will be available from the shortcut installed on the desktop, or in the start menu under **Miller \ ArcReach Heater Data Application**.
- To open the application, navigate to the link in the start menu and click to start the application. The Miller logo will display in the task bar when the program is open.

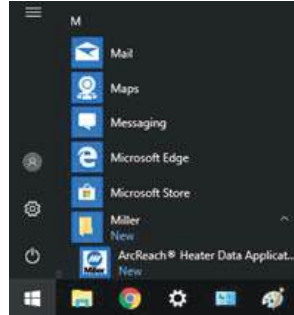


Figure 8-5. Miller Logo On Task Bar

Application Description

The ArcReach Heater data program has three main features. The first feature is creating a setup file that will configure the ArcReach Heater using the Joint Setup screen. The second feature is viewing temperature data generated by the ArcReach Heater using the **Temperature Chart screen**. The last screen is the Settings screen that is used to setup the program.

Joint Setup:

This feature allows a user to create a setup file that can be transferred to the ArcReach Heater. The setup file contains the joint information (field labels are set in the settings screen), minimum temperature, maximum temperature, target temperature and bakeout parameters (if configured) for the joint to be heated. This setup file is transferred to the ArcReach Heater using a 32GB max USB memory stick.

Temperature Chart:

This feature allows a user to view temperature data that was recorded when using the ArcReach Heater to heat a joint. When viewing the data, the joint setup information and a temperature data chart is displayed. The temperature data chart has time on the X-axis and temperature on the Y-axis. The temperature data can also be printed, exported to a csv (Excel) file, or exported to a pdf.

Settings:

The settings screen is used to configure the program to conform to the user's preferences. The following items can be changed or viewed in the settings screen.

- Label Joint identifying information, which will be displayed on the Joint Setup screen.
- Determine required joint identifiers
- Set if Technician, Minimum Temperature or Maximum Temperature are required
- Turn on/off the merge temperature files feature
- Temperature scale (Fahrenheit or Celsius)

First Time Users

Before using the ArcReach Heater data program, the settings should be reviewed by first time users. Reviewing the settings prior to the first use of the software will ensure that the software is setup adequately.

Settings Screen

The settings screen is used to configure the program to conform to the user's preferences. The settings screen options are described below. To review and modify the settings, press [Settings] on the left side of the screen.

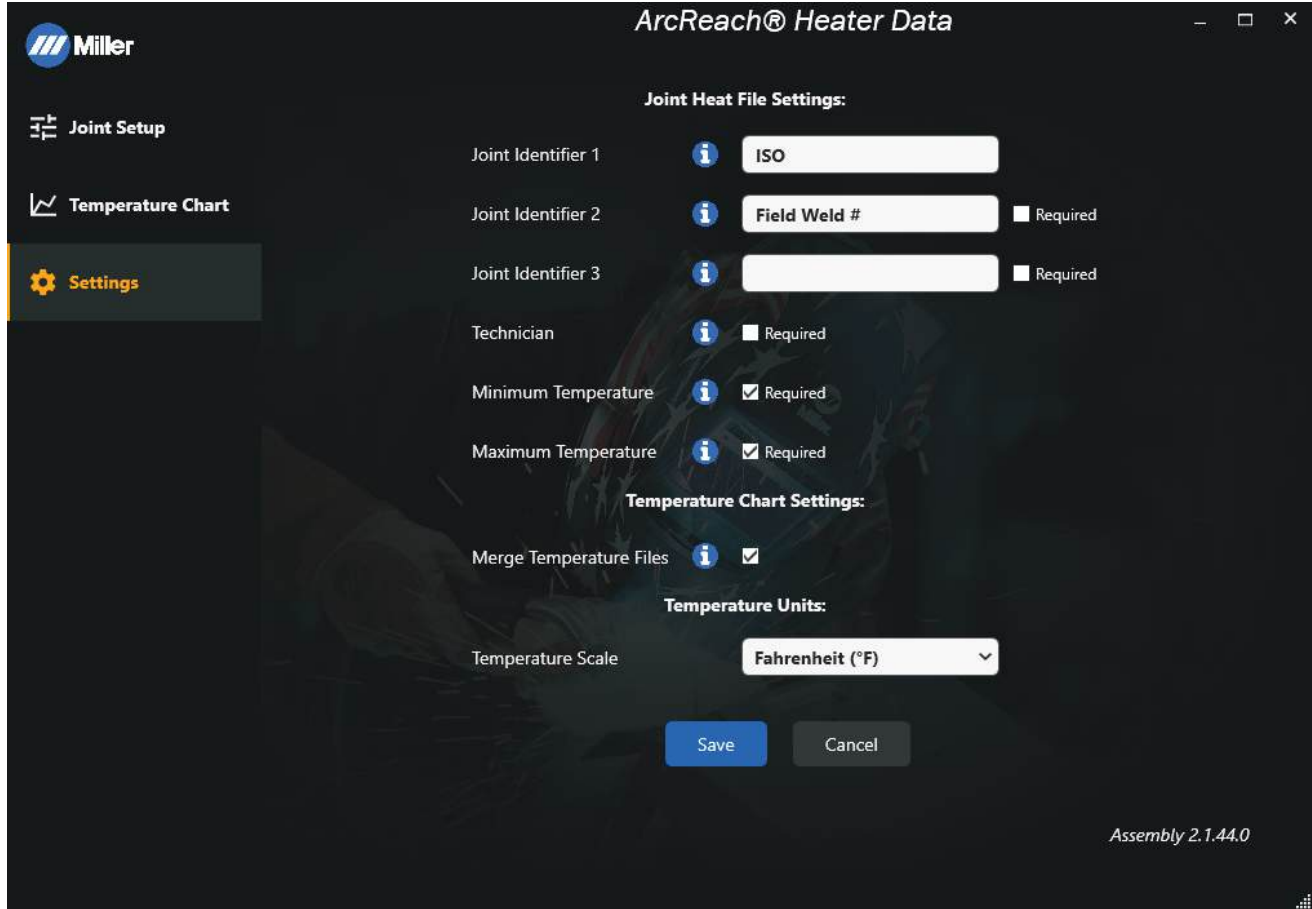


Figure 8-6. ArcReach Heater Settings Screen



Hovering over the **info button** will bring up a text box describing the field next to it.

Joint Identifiers:

The joint identifier fields can be used to enter information about the joint that is to be heated. The joint identifiers can be customized for company or work site requirements. Up to three joint Identifiers can be used to identify each joint being heated. The default setup uses ISO for the first joint identifier and Field Weld # for the second joint identifier.

To change any of the three joint identifier names:

- Select the field next to the **Joint Identifier (1, 2, or 3)**.
- Type the custom name to use for that field. (20 characters maximum)
- If a field is left blank, it will not be displayed on the **Joint Setup** screen.

When a setup file is created, the joint identifier 1 field is required to be entered. The joint Identifier 2 and joint Identifier 3 fields are not required, but the user can choose to make these fields required. To make the joint Identifier 2 or 3 field required, click on the [Required] check box next to the field.

Technician:

The Technician field can be used to enter the name of the person performing the heating. This field is not required to create a setup file. The user can choose to make the technician field required. To make the technician field required, click the [Required] check box next to the field.

Minimum/Maximum Temperature:

The minimum and maximum temperature fields are used to enter the minimum and maximum temperatures that are required for the joint to be heated. The minimum and maximum temperature values will limit the range in which an operator can manually adjust the target temperature. These fields are not required to create a setup file. The user can choose to make the minimum and/or maximum field required. To make the minimum and/or maximum field required, click the **[Required]** check box next to the field.

Merge Temperature Files:

The merge temperature files feature allows a user to merge multiple temperature files into one file when using the temperature chart. This can be useful when a joint is heated at different times which may have resulted in multiple heating data files. This feature is also useful when two ArcReach Heaters are used to heat one joint. A temperature data file will be created by each of the ArcReach Heaters. The merge temperature files feature will allow the user to combine these files from two heaters into one temperature file. To turn on this feature, select the box and to turn it off, deselect the box.

Temperature Scale:

The temperature scale used can be changed at this location. The options are either Fahrenheit or Celsius. To change the temperature scale used, click the drop down box and choose the desired temperature scale.

Save Settings:

After making any changes to the settings, Press **[Save]** to save any changes made. When the save button is clicked, a dialog box will be displayed to confirm that the change was successfully saved. Press **[OK]** to confirm the save of the setting.

Joint Setup

This feature allows a user to create a setup file that can be transferred to the ArcReach Heater. The setup file contains the joint information, minimum temperature, maximum temperature, target temperature and bakeout parameters for the joint to be heated. This setup file is transferred to the ArcReach Heater using a 32GB max USB memory stick. Press **[Joint Setup]** at the left side of the screen to open the Joint Setup screen.



Hovering over the **info button** will bring up a text box describing the field next to it.

Figure 8-7. ArcReach Heater Joint Setup Screen

Joint Identifier Information:

The Joint identifier 1,2,3 fields are used to enter information regarding the joint to be heated. The names of these fields are customizable in the settings section. In this example, the field names are ISO and Field Weld #.

Technician Field:

The **Technician** field can be used to enter the name of the person performing the heating. A name can also be entered when the chart data is viewed.

Preheat Setup Information:

- **Minimum Temperature** – The minimum allowable temperature of the joint prior to welding.
- **Maximum Temperature** – The maximum allowable temperature of the joint to be heated.
- **Target Temperature** – The target temperature of the joint to be heated.
 - The temperature of the part under the heating device (air-cooled heating cable or quick wrap).
 - The **Target Temperature** value must be between the **Minimum Temperature** and **Maximum Temperature** values if they were entered.

Bakeout Setup Information:

Press **[Temperatures]** to return to the temperatures screen

The Preheat menu has changed to the Bakeout settings.

When run is pressed, the heater will ramp to the Bakeout Target Temperature, Soak for the programmed duration and Ramp down to the End Temp.

Create a new Joint Setup File:

- Type information into each of the fields
- In this example, only the first field (ISO) and Target Temperature are required as indicated by the asterisk *
 - In this example, only the first field (ISO) and Target Temperature are required as indicated by the asterisk *
 - The Field Weld #, Technician, Minimum Temperature, or Maximum Temperature are optional; there are no asterisks * next to them. If Bakeout Enable is checked, bakeout parameters must be entered.
- Press **[Save File]** to save the file to a USB memory stick or other location on your computer.
- Use the USB memory stick to transfer the file to the ArcReach Heater.
- Press **[Clear]** to clear all the fields to start a new setup file.

 To open or read an existing Joint Setup File:

To open or read an existing Joint Setup File:

- Press **[Open File]** and navigate to an existing joint setup file.
- All fields will be populated with the information that is in the existing file.
- The joint identifier field names will be changed to those of the opened file.
 - The default joint identifier field names for new joint setup files will not be changed unless they are updated in the setup screen.
- The fields can be modified, and the modified file can be saved.
 - Press **[Save File]** to save the file to a USB memory stick.
- Press **[Clear]** button to clear all the fields to start a new setup file

 Can't use USB stick larger than 32GB.

Temperature Chart

This feature allows a user to view temperature data that was recorded when using the ArcReach Heater to heat a joint. When viewing the data, the joint setup information and a temperature data chart are displayed. The temperature data can also be printed, exported to a csv (Excel) file, or exported to a pdf. Press **[Temperature Chart]** at the left side of the screen to open the temperature chart screen.

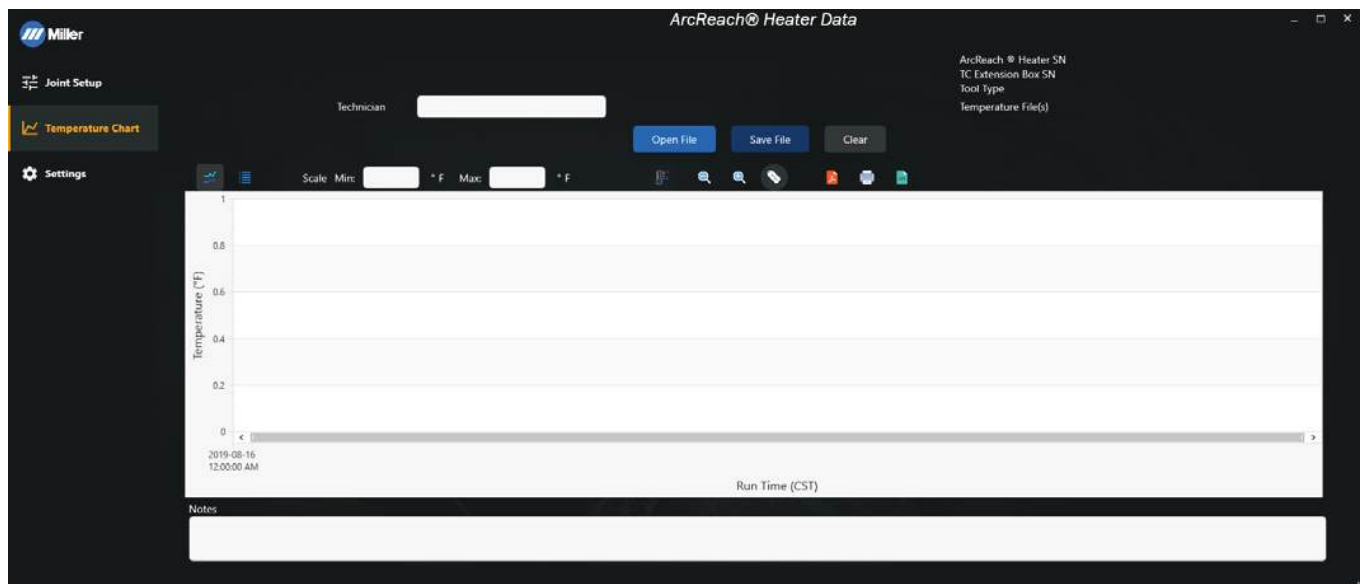


Figure 8-8. ArcReach Heater Temperature Chart Screen

To open or read an existing Temperature Data File:

- Press **[Open File]** and navigate to the file to be opened
- If information was entered on the joint setup screen and used during heating, the joint information will display with the heat data from the ArcReach Heater.
- The temperature data will be displayed in the chart
- If a preconfigured loaded program was not used, as shown above, notes can be entered at the bottom of the screen.

To open multiple Temperature Data Files:

Multiple files can be merged into one file using two different methods. To use this feature, it must be turned on in settings.

Step 1. When initially opening the file, press **[Open File]** and use the control or shift key on your keyboard to select multiple files.

Step 2. After initially opening a file, press **[Add File]** and select the file(s) to be merged into the existing file.

 Files from a maximum of two different heater serial numbers can be merged.

To save a File:

After adding / merging additional files, adding notes, or changing the technician field, then the file can be saved. The **Technician** and **Notes** below the chart are the only information that can be added after the heating is completed.

- Press **[Save File]** and if required, change the file name.
 - The extension must remain “.mlrdat”.
- Browse to the location to save the file.
- Press **[Save]**.
- Press **[Clear]** button to clear all the fields to start a new temperature data file.

 Can't use USB stick larger than 32GB.

 Files cannot be added to a merged file once it has been saved. The original files can be opened and added to.

Joint Information:

The following joint information is shown at the top of the screen. These fields cannot be changed after the heating temperature data is recorded.

- **Minimum Temperature** – The minimum allowable temperature of the joint prior to welding.
- **Maximum Temperature** – The maximum allowable temperature of the joint to be heated.
- **ArcReach Heater Serial Number** – The serial number of the ArcReach Heater(s) used to heat the joint.
- **Output Ext Identifier** – The serial number of the output extension(s) used to heat the joint.
- **Tool Type** – The tool type (air-cooled cable or quick wrap) used to heat the joint.
- **Temperature Files** – The name of the file(s) that are included in this heating data file.
 - Use the scroll bar next to the file names to see additional files included in the chart.
- **Technician** – This is the person that performed the heating.
 - If needed, the technician field can be changed after the data has recorded.

Chart Features and Functions:



Chart View

Select this button to show the heating data in a chart format. The X axis is the time and the Y axis is the temperature in the chart.



Data View

Select this button to show the raw heating data in a table format. The date/time stamp and all temperatures recorded are displayed in the table.

Scale Min: ° F Max: ° F

Scale Min Max

Adjust the values of the charts Y axis.



Display the min and max temperatures on the chart

Select this button to display the maximum and minimum allowable temperatures that were entered during on the joint setup screen.



Zoom Out

Select this button to zoom the chart out and view more data.



Zoom In

Select this button to zoom the chart in and focus on a smaller amount of data.



Add Thermocouple (TC) Labels

Select this button to add labels to each TC



Export to PDF File

Select this button to export the joint information, chart and notes to a pdf file. After selecting the button, type the file name and choose a location for the file. The file extension must remain .pdf.



Print

Select this button to print the joint information, chart, and notes to a printer. After selecting the button, choose the printer to print.



Export to CSV file

The joint information, raw heating data, and notes can be exported by selecting this button. After selecting the button, type the file name and choose a location for the file. The file extension must remain .csv.

SECTION 9 – MAINTENANCE

9-1. Routine Maintenance



Disconnect power before maintaining.

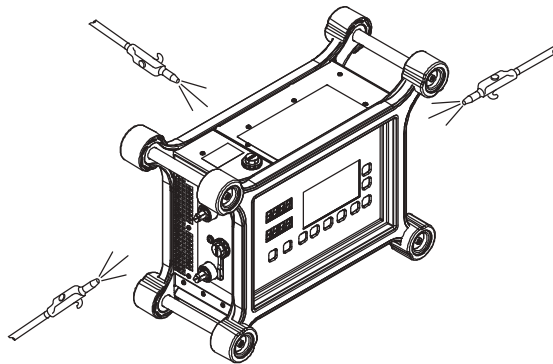
Clean mud or dirt from blanket, straps, cables and connectors on a daily basis to maintain efficient operation and consistent heating.

Do not remove case when blowing out external vent openings of unit.

Service equipment more often if used in severe conditions.

Maintenance Schedule		Daily	Every 6 Months
Connectors	Visually Check condition of Connectors. Replace if damaged.	•	
Cords and Cables	Visually Check condition of Cables and Cords. Replace if damaged.	•	
Labels	Visually Check condition of Labels. Replace if damaged.	•	
Sleeve	Visually Check condition of Sleeve. Replace if damaged.	•	
Straps	Visually Check condition of Straps. Replace if damaged.	•	
Wrap	Visually Check condition of Wrap. Replace if damaged.	•	
External Vent Openings	Blow out inside of External Vent Openings. During heavy service clean monthly.		•

9-2. Cleaning with Low Air Pressure

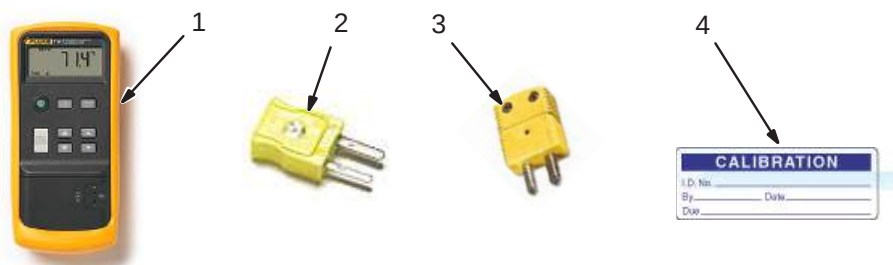


Do not remove case when blowing out external vent openings of unit.

Use low-pressure air (30 PSI).

To blow out unit, direct airflow through external vent openings on the side and back of the heater.

9-3. Calibration Verification For Heater Extension Cable



Calibration Verification Equipment

1 Thermocouple Calibrator

Suggested calibrator from Fluke item 714 or equivalent.

2 Type K Mini Connector

Suggested connector from Fluke item 80CK-M or equivalent.

A length of type K thermocouple wire is required. Connect red to negative and yellow to positive when wiring connectors.

3 Type K 2-Pin Male Connector

Suggested connector from Omega Engineering item OST-K-M or equivalent.

4 Calibration Label

Suggested label from Q-CEES item QCC306BU or equivalent.

5 ArcReach Heater (301390, 301391), *Not Shown*

6 ArcReach Compatible Welding Power Source, *Not Shown*

7 ArcReach Heater Extension Cable (301451), *Not Shown*

9-4. Initial Test Set-up

Step 1. Connect all parts of the Heater system.

Step 2. Turn on ArcReach power source.

Step 3. Let unit idle for a minimum of 15 minutes before checking calibration.

Step 4. Turn on Fluke-714 Thermocouple Calibrator and leave on for a minimum of 15 minutes before checking calibration.

Step 5. Heater front panel screen should be set to show temperatures of all channels.

9-5. Verifying Calibration

1. Verify each TC is calibrated at 662°F (350°C) temperature.

Step 1. Set the calibrator output to 662°F (350°C).

Step 2. Connect Fluke calibrator to TC position 1.

Step 3. The reading on the front panel for TC1 should be between 659°F (348°C) and 665°F (352°C).

- If they are between the values, the test passed.
- If they are NOT between the values, the test failed.

Step 4. Document the temperature that is read on TC1.

Step 5. Repeat step c, d and e for TC positions 2 through 6.

2. Verify each TC is calibrated at 122°F (50°C) temperature.

Step 1. Set the calibrator output to 122°F (50°C).

Step 2. Connect Fluke calibrator to TC position 1.

Step 3. The reading on the front panel for TC1 should be between 119°F (48°C) and 125°F (52°C).

- If they are between the values, the test passed.
- If they are NOT between the values, the test failed.

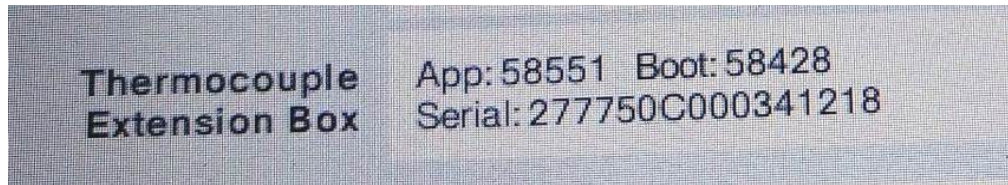
Step 4. Document the temperature that is read on TC1.

Step 5. Repeat step c, d and e for TC positions 2 through 6.

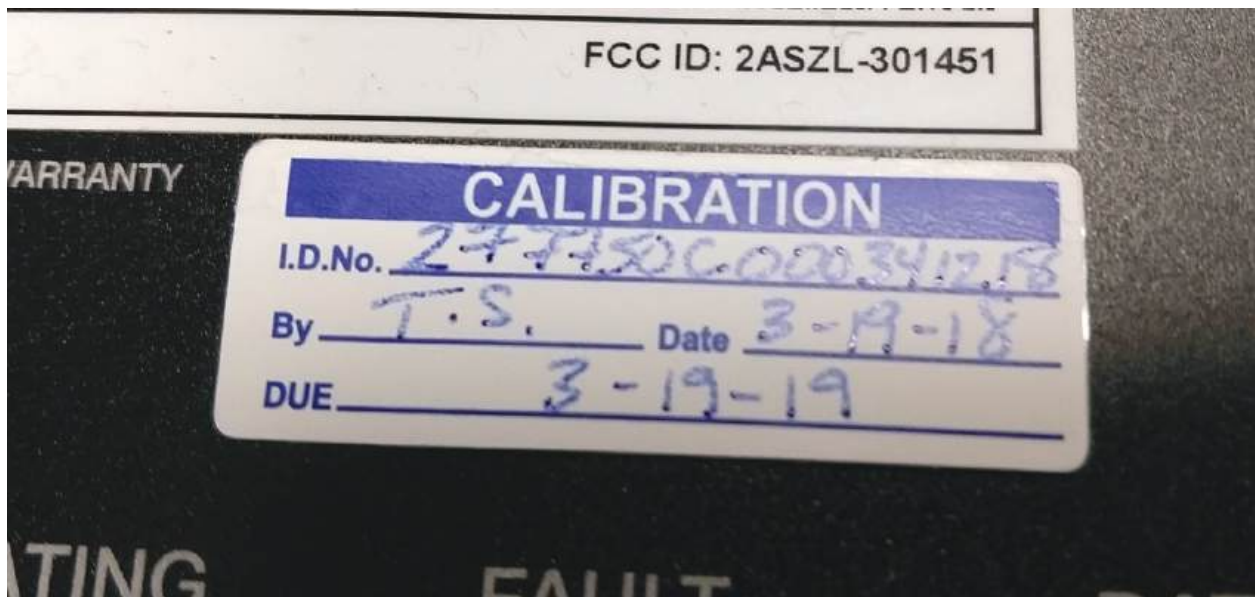
3. Document the temperature calibration data.

Step 1. Save all 12 calibration verification temperatures and associate them with the serial number of the TC Box Extension (301451) and the TC Box Extension Board (277750).

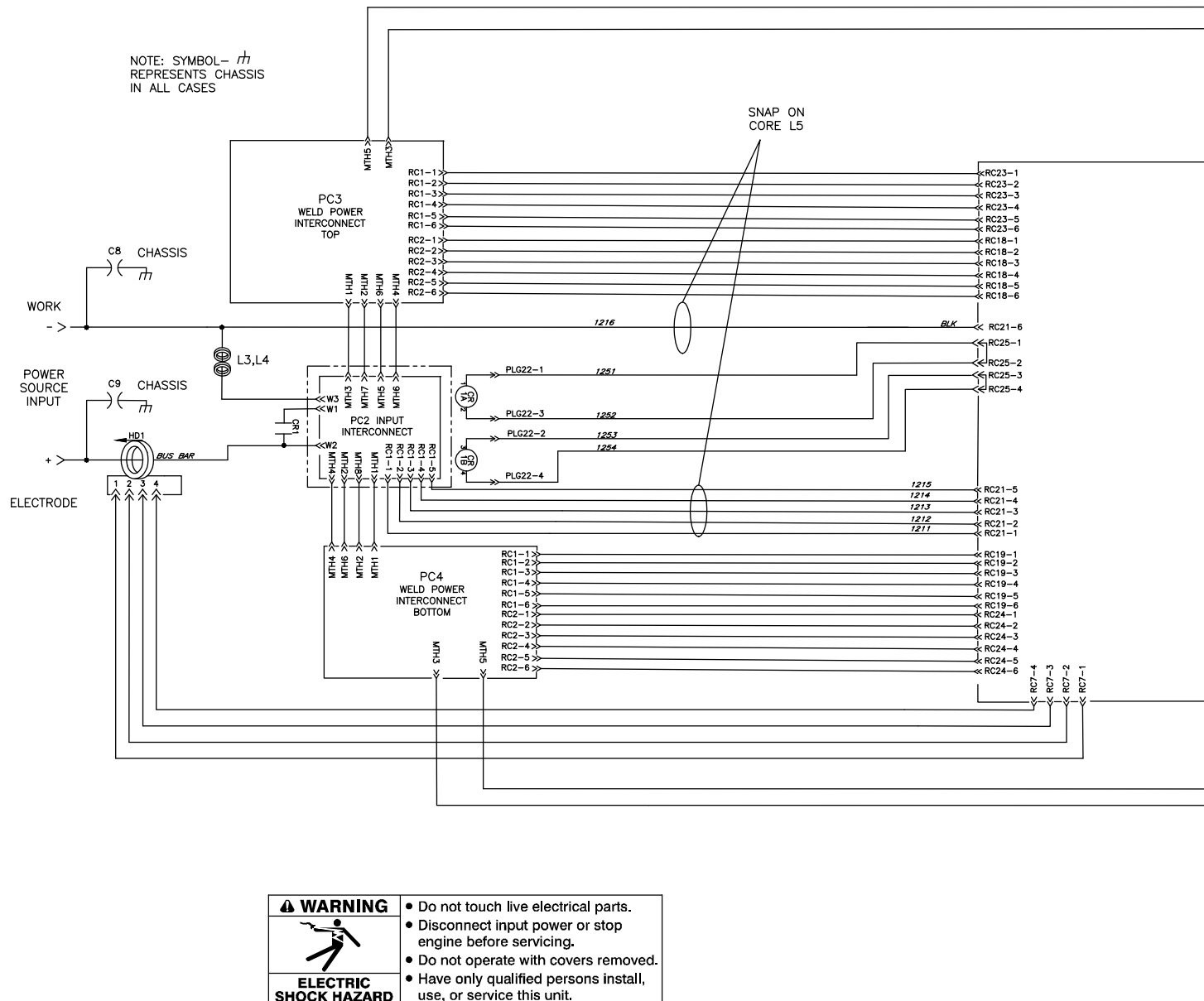
Step 2. The Thermocouple Extension Box Board serial number can be accessed by pressing the home button on the front panel and then navigating to the "About" screen. The TC Extension Box App number is shown in the help screen above the serial number. See below.

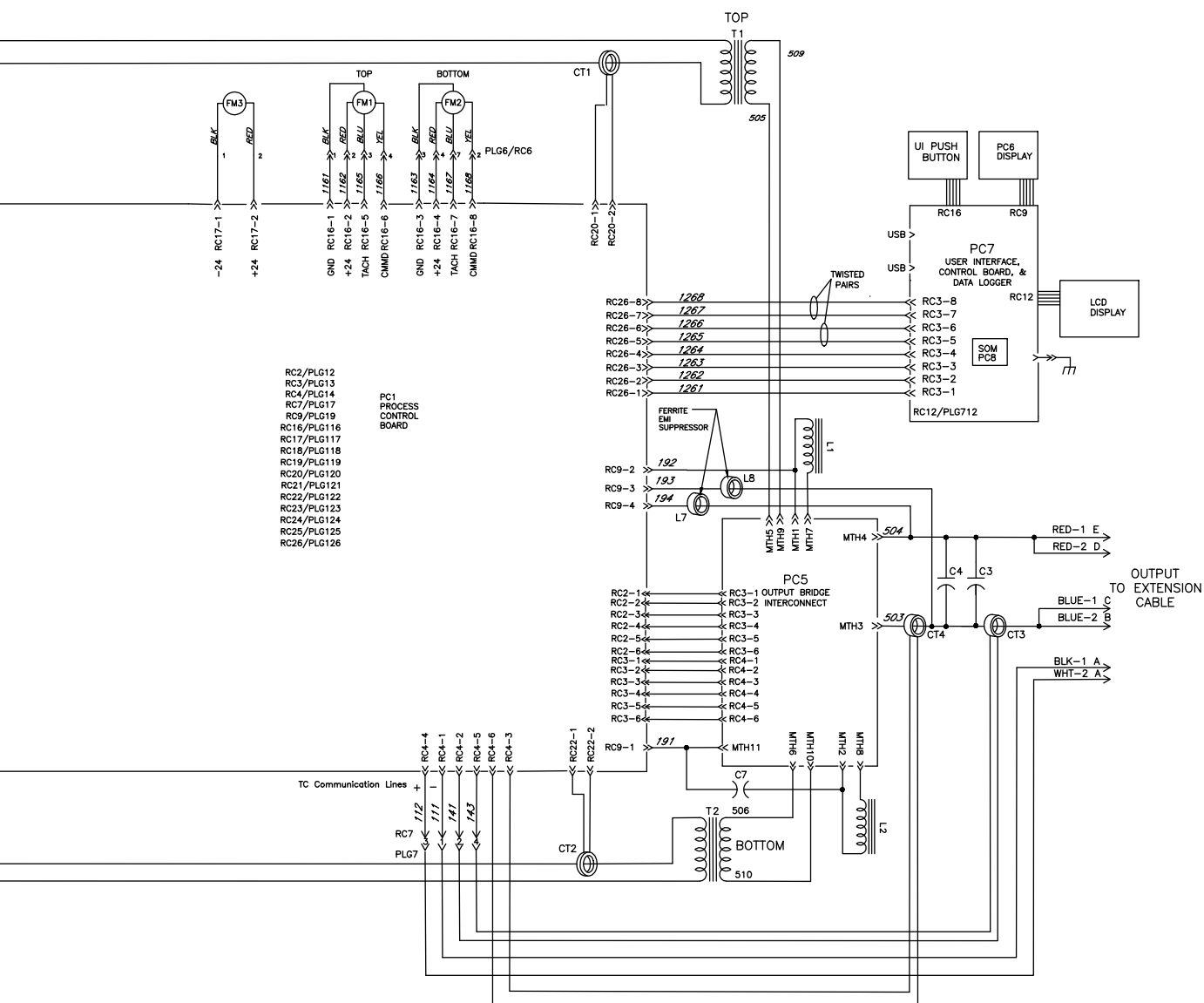


4. Attach and fill out calibration label.



SECTION 10 – ELECTRICAL DIAGRAM





276180-C

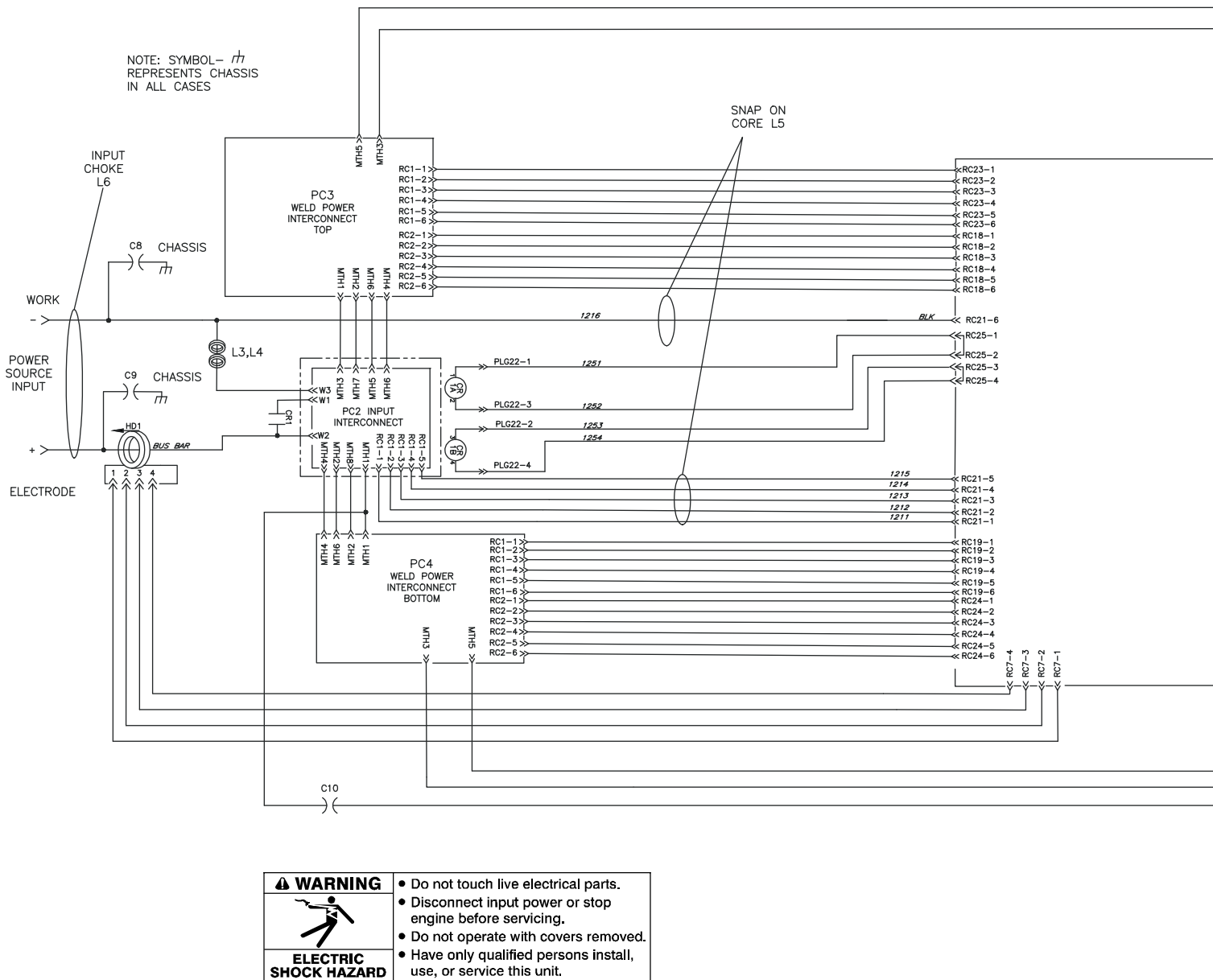


Figure 10-2. Circuit Diagram For ArcReach Heater CE

 Table shows physical lead connections and should be used with circuit diagram (table replaces wiring diagram).

 Apply small amount of conductive electric compound (Miller Part No. 603978) to terminals where factory-applied compound had been present.

 Apply small amount of dielectric grade, nonconductive electric grease (Miller Part No. 146557) to terminals where factory-applied grease had been present.

Table 10–1. Lead List Summary For ArcReach Heater CE And Non-CE Models Eff w/MK470168G And Following

Lead	Connections	Lead	Connections
MTH1	PLG19 (2) TO MTH1 (2)	1215A	(PC1) PLG121 (5) TO PLG21 (5) (PC2)
MTH11	PLG19 (1) TO MTH11 (1)	1216B	(PC1) PLG121 (6) TO OUTPUT WORK STUD (+) (PC2)
MTH3	PLG19 (3) TO MTH3 (3)	1251A	PLG125 (1) TO PLG22 (1)
MTH4	PLG19 (4) TO MTH4 (4)	1252A	PLG125 (2) TO PLG22 (2)
0111A	RC7 (1) TO PLG14 (1)	1253A	PLG125 (3) TO PLG22 (3)
0111B	PLG7 (1) TO OUTPUT (1)	1254A	PLG125 (4) TO PLG22 (4)
0112A	RC7 (3) TO PLG14 (3)	1261A	(PC1) PLG126 (1) TO PLG712 (1) (PC7)
0112B	PLG7 (3) TO OUTPUT (2)	1262A	(PC1) PLG126 (2) TO PLG712 (2) (PC7)
0141A	RC7 (2) TO PLG14 (2)	1263A	(PC1) PLG126 (3) TO PLG712 (3) (PC7)
0143A	RC7 (4) TO PLG14 (4)	1264A	(PC1) PLG126 (4) TO PLG712 (4) (PC7)
0503	OUTPUT 1 TO MTH3 (PC5)	1265A	(PC1) PLG126 (5) TO PLG712 (5) (PC7)
0504	OUTPUT 2 TO MTH4 (PC5)	1266A	(PC1) PLG126 (6) TO PLG712 (6) (PC7)
0505A	T1 TO MTH5 (PC5)	1267A	(PC1) PLG126 (7) TO PLG712 (7) (PC7)
0506A	T2 TO MTH6 (PC5)	1268A	(PC1) PLG126 (8) TO PLG712 (8) (PC7)
0509A	T1 TO MTH9 (PC5)		
0510A	T2 TO MTH10 (PC5)		
1161A	RC6 (1) TO PLG116 (1)		
1162A	RC6 (2) TO PLG116 (2)		
1163	RC5 (1) TO PLG116 (3)		
1164	RC5 (2) TO PLG116 (4)		
1165A	RC6 (3) TO PLG116 (5)		
1166A	RC6 (4) TO PLG116 (6)		
1167	RC5 (3) TO PLG116 (7)		
1168	RC5 (4) TO PLG116 (8)		
1211A	(PC1) PLG121 (1) TO PLG21 (1) (PC2)		
1212A	(PC1) PLG121 (2) TO PLG21 (2) (PC2)		
1213A	(PC1) PLG121 (3) TO PLG21 (3) (PC2)		
1214A	(PC1) PLG121 (4) TO PLG21 (4) (PC2)		

Notes

Notes



Effective January 1, 2023 (Equipment with a serial number preface of ND or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY - Subject to the terms and conditions below, Miller Electric Mfg. LLC, Appleton, Wisconsin, warrants to authorized distributors that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. **THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.**

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed. Notifications submitted as online warranty claims must provide detailed descriptions of the fault and troubleshooting steps taken to diagnose failed parts. Warranty claims that lack the required information as defined in the Miller Service Operation Guide (SOG) may be denied by Miller.

Miller shall honor warranty claims on warranted equipment listed below in the event of a defect within the warranty coverage time periods listed below. Warranty time periods start on the delivery date of the equipment to the end-user purchaser, or 12 months after the equipment is shipped to a US or Canada distributor, or 18 months after the equipment is shipped to an international distributor, whichever occurs first.

1 5 Years Parts — 3 Years Labor

- Original Main Power Rectifiers Only to Include SCRs, Diodes, and Discrete Rectifier Modules in non-inverter products

2 4 Years Parts (No Labor)

- Auto-Darkening ClearLight 2.0 Helmet Lenses

3 3 Years — Parts and Labor Unless Specified

- Auto-Darkening Helmet Lenses (No Labor)
- Engine Driven Welder/Generators (Including EnPak) **(NOTE: Engines are Warranted Separately by the Engine Manufacturer.)**
- Insight Welding Intelligence Products (Except External Sensors)
- Inverter Power Sources
- Plasma Arc Cutting Power Sources
- Process Controllers
- Semi-Automatic and Automatic Wire Feeders
- Transformer/Rectifier Power Sources

4 2 Years — Parts and Labor

- Auto-Darkening Weld Masks (No Labor)
- Fume Extractors - Filtair 215, Capture 5, and Industrial Collector Series

5 1 Year — Parts and Labor Unless Specified

- ArcReach Heater
- AugmentedArc, LiveArc, and MobileArc Welding Systems
- Automatic Motion Devices
- Bernard BTB Air-Cooled MIG Guns (No Labor)

- CoolBelt, PAPR Blower, and PAPR Face Shield (No Labor)
- Desiccant Air Dryer System
- Field Options **(NOTE: Field options are covered for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)**
- RFCS Foot Controls (Except RFCS-RJ45)
- Fume Extractors - Filtair 130, MWX and SWX Series, ZoneFlow Extraction Arms and Motor Control Box
- HF Units
- ICE/XT Plasma Cutting Torches (No Labor)
- Induction Heating Power Sources, Coolers **(NOTE: Digital Recorders are Warranted Separately by the Manufacturer.)**
- Insight Sensors
- Load Banks
- Motor-Driven Guns (except Spoolmate Spoolguns)
- Positioners and Controllers
- Racks (For Housing Multiple Power Sources)
- Running Gear/Trailers
- Subarc Wire Drive Assemblies
- Supplied Air Respirator (SAR) Boxes and Panels
- TIG Torches (No Labor)
- Tregaskiss Guns (No Labor)
- Water Cooling Systems
- Wireless Remote Foot/Hand Controls and Receivers
- Work Stations/Weld Tables (No Labor)

6 6 Months — Parts

- 12 Volt Automotive-Style Batteries

7 90 Days — Parts

- Accessories (Kits)
- ArcReach Heater Quick Wrap and Air Cooled Cables
- Canvas Covers
- Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
- MDX Series MIG Guns
- M-Guns
- MIG Guns, Subarc (SAW) Torches, and External Cladding Heads
- Remote Controls and RFCS-RJ45
- Replacement Parts (No labor)
- Spoolmate Spoolguns

Miller's True Blue® Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, relays, work station table tops and welding curtains, or parts that fail due to normal wear. (Exception: brushes and relays are covered on all engine-driven products.)**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been

improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

4. Defects caused by accident, unauthorized repair, or improper testing.

MILLER PRODUCTS ARE INTENDED FOR COMMERCIAL AND INDUSTRIAL USERS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

The exclusive remedies for warranty claims are, at Miller's option, either: (1) repair; or (2) replacement; or, if approved in writing by Miller, (3) the pre-approved cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon use). Products may not be returned without Miller's written approval. Return shipment shall be at customer's risk and expense.

The above remedies are F.O.B. Appleton, WI, or Miller's authorized service facility. Transportation and freight are the customer's responsibility. TO THE EXTENT PERMITTED BY LAW, THE REMEDIES HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES REGARDLESS OF THE LEGAL THEORY. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT) REGARDLESS OF THE LEGAL THEORY. ANY WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTEE OR REPRESENTATION, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, ARE EXCLUDED AND DISCLAIMED BY MILLER.

Some US states do not allow limiting the duration of an implied warranty or the exclusion of certain damages, so the above limitations may not apply to you. This warranty provides specific legal rights, and other rights may be available depending on your state. In Canada, some provinces provide additional warranties or remedies, and to the extent the law prohibits their waiver, the limitations set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary by province.

Warranty Questions?

Call 1-800-4-A-MILLER for your local Miller distributor.

Your distributor also gives you...

Service

You always get the fast, reliable response you need. Most replacement parts can be in your hands in 24 hours.

Support

Need fast answers to the tough welding questions? The expertise of the distributor and Miller is there to help you, every step of the way.

Owner's Record

Please complete and retain with your personal records.

Model Name	Serial/Style Number
Purchase Date	(Date which equipment was delivered to original customer.)
Distributor	
Address	
City	
State	Zip

For Service

Contact a *DISTRIBUTOR* or *SERVICE AGENCY* near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:	Welding Supplies and Consumables Options and Accessories Personal Protective Equipment (PPE) Service and Repair Replacement Parts Training (Schools, Videos, Books) Welding Process Handbooks To locate a Distributor or Service Agency visit www.millerwelds.com or call 1-800-4-A-Miller
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Contact the Delivering Carrier to:	File a claim for loss or damage during shipment. For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.
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