OM-261823N 2022-03

**Processes**

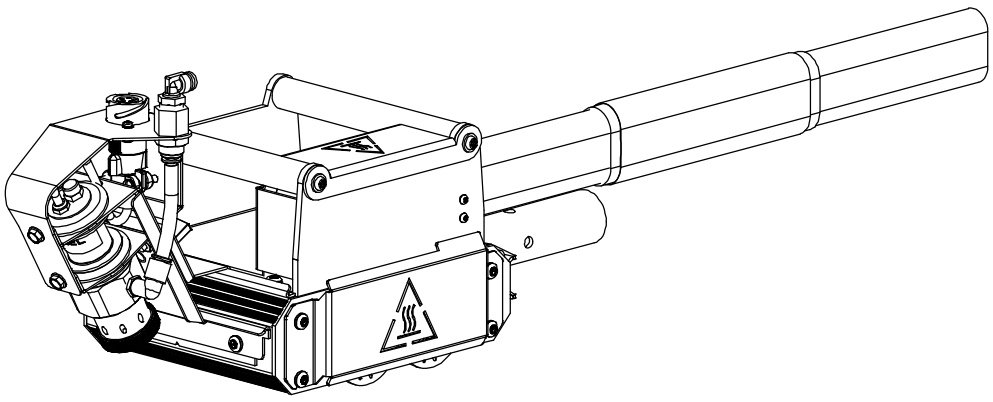
Induction Heating

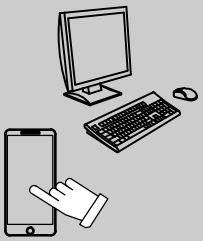
**Description**

DC

Induction Heating Accessory

# ProHeat® Rolling Inductor w/Optional IR And Travel Detect CE





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.

Certified System™

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.

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](http://www.MillerWelds.com) on the web.**

TRUE BLUE® WARRANTY

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

Miller®

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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 Directive(s), Commission Regulation(s) and Standard(s).**

Product/Apparatus Identification:

| | |
|---|---|
| LIQUID COOLED HEATING CABLE, PROHEAT, 30 FT | 300045 |
| LIQUID COOLED HEATING CABLE, PROHEAT, 50 FT | 300046 |
| LIQUID COOLED HEATING CABLE, PROHEAT, 80 FT | 300047 |
| LIQUID COOLED HEATING CABLE, PROHEAT, 140 FT | 300049 |
| LIQUID COOLED HEATING CABLE, 160 FT | 300566 |
| CABLE,POWER OUTPUT, LIQUID COOLED, 25 FT, PROHEAT | 195402 |
| CABLE,POWER OUTPUT, LIQUID COOLED, 50 FT, PROHEAT | 195403 |
| CABLE,POWER OUTPUT, LIQUID COOLED, 10 FT, PROHEAT | 300180 |
| CABLE,POWER OUTPUT, LIQUID COOLED, 75FT, PROHEAT | 300598 |
| PROHEAT ROLLING INDUCTOR | 301117 |
| PROHEAT ROLLING INDUCTOR, 60FT CABLE | 301263 |
| ROLLING INDUCTOR,TRAVEL DETECT SYSTEM | 301183 |
| ROLLING INDUCTOR, INFRARED TEMP SENSOR, 212-750F | 301149 |
| ROLLING INDUCTOR, IR SENSOR CONNECTION BOX | 301182 |

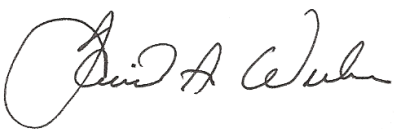
Council Directives and Commission Regulations:

- 2014/35/EU Low voltage
- 2011/65/EU and amendment 2015/863 Restriction of the use of certain hazardous substances in electrical and electronic equipment

Standards:

- IEC 60519-3:2005 Safety in electroheat installations – Part 3: Particular requirements for induction and conduction heating and induction melting installations
- EN IEC 63000:2018 – Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Signatory:



June 15, 2021

**David A. Werba**
MANAGER, PRODUCT DESIGN COMPLIANCE

Date of Declaration

278369B

# 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).**

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Regulations:

- S.I. 2016/1101 Electrical Equipment (Safety) Regulations 2016
- S.I. 2012/3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Standards:

- IEC 60519-3:2005 Safety in electroheat installations – Part 3: Particular requirements for induction and conduction heating and induction melting installations
- EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Signatory:

June 21, 2021

**David A. Werba**
MANAGER, PRODUCT DESIGN COMPLIANCE

Date of Declaration

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# SECTION 1 – SAFETY PRECAUTIONS – READ BEFORE USING

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

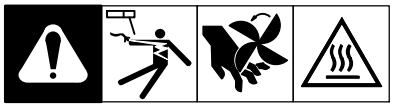
## 1-1. Symbol Usage

**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. Incorrectly installed or improperly grounded equipment is a hazard.

- 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.

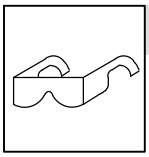
### INDUCTION HEATING can burn.

- 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.

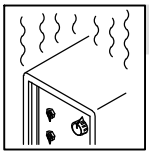
### STEAM AND HOT COOLANT can burn.

Hose may rupture if coolant overheats.

- Never disconnect both ends of hose when installed on hot workpiece.
- If coolant flow stops, leave one end of hose connected to allow coolant to return to cooler and relieve pressure.
- Remove hose from hot workpiece to prevent damage.
- Visually inspect condition of hoses, cords, and cables before each use. Do not use damaged hoses, cords, or cables.
- Allow cooling period before working on equipment.

### 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

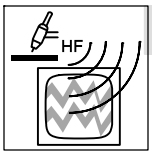
- Allow cooling period.
- Reduce output or reduce duty cycle before starting to heat again.
- Follow rated duty cycle.

### 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.

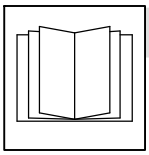

### BATTERY EXPLOSION can injure.

- 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 person 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: 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.

OSHA *Important Note Regarding the ACGIH TLV, Policy Statement on the Uses of TLVs and BEIs.* 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.

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

## 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. Signification des symboles

⚠ **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 présentés ci-après sont utilisés tout au long du présent manuel pour attirer votre attention et identifier les risques de danger. Lorsque vous voyez un symbole, soyez vigilant et suivez les directives mentionnées afin d'éviter tout danger. Les consignes de sécurité présentées ci–après ne font que résumer les informations contenues dans les principales normes de sécurité . Veuillez lire et respecter toutes ces 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 terre du cordon d'alimentation. Vérifier et s'assurer que le fil de terre du cordon d'alimentation est bien raccordé à la borne de terre du sectionneur 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 revérifier 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 par ex. des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.

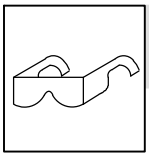
**LE CHAUFFAGE PAR INDUCTION peut provoquer des brûlures.**

- 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 chariots, 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 Nº94–110) lors du levage manuelle de pièces ou équipements lourds.



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

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

**DES ORGANES MOBILES peuvent provoquer 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.

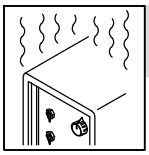
**LE LIQUIDE DE REFROIDISSEMENT CHAUD ET LA VAPEUR peuvent causer des brûlures.**

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.**

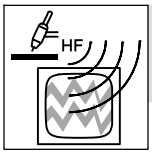
- Prévoir une période de refroidissement
- Réduire le courant de sortie ou le facteur de marche avant de recommencer le chauffage.
- Respecter le cycle opératoire nominal.

**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 PC.

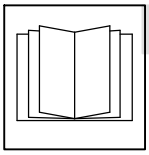

**L'EXPLOSION DE LA BATTERIE peut provoquer des blessures.**

- Ne pas utiliser l'appareil de induction pour charger des batteries ou faire démarrer des véhicules à l'aide de câbles de démarrage, sauf si l'appareil dispose d'une fonctionnalité de charge de batterie destinée à cet usage.




**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 les pièces de rechange recommandées par le constructeur.
- 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: 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.

OSHA *Important Note Regarding the ACGIH TLV, Policy Statement on the Uses of TLVs and BEIs.* 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.

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

## 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: Limiter par exemple tout accès aux passants ou procéder à une évaluation des risques individuels 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–fr.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 Symbols And Definitions

☞ *Some symbols are found only on CE products.*

| | |
|---|---|
|  | Do not discard product (where applicable) with general waste.<br>Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility.<br>Contact your local recycling office or your local distributor for further information.<br>Safe37 2017–04 |

## 3-2. Miscellaneous Symbols And Definitions

☞ *Some symbols are found only on CE products.*

| | |
|---|---|
|  | Cursor Button |
|  | Increase Button |
|  | Decrease Button |

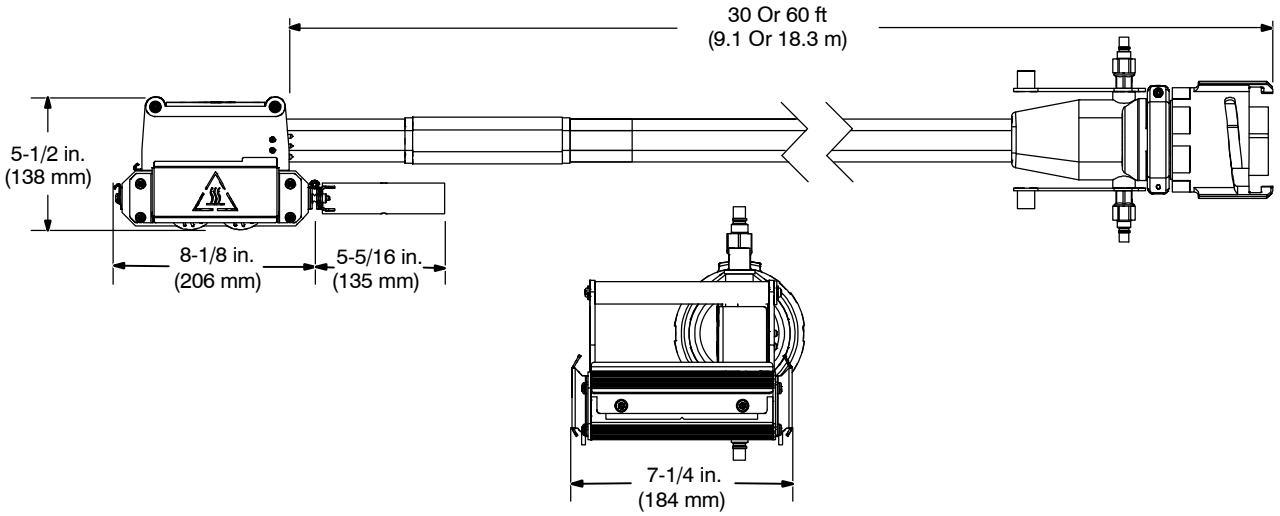
# SECTION 4 – SPECIFICATIONS

## 4-1. Unit Specifications

| | |
|---|---|
| Rated Output @ 70°F (21°C) | 300 Amps At 100% Duty Cycle |
| Maximum Workpiece Preheat Temperature: | 600°F (315°C)* |
| Minimum Cooling Flow Rate Requirements | .30 gpm (1.1 lpm) |
| Cooler | ProHeat Heavy Duty Induction Cooler (Coolant 043810)** |
| ***NOTICE -** Part temperatures above 600 °F (315 °C) may damage the Rolling Inductor and/or shorten its life.* | |
| **A two device setup may require additional cooling capacity. Consult factory for application specific details. | |

## 4-2. Dimensions without Accessories

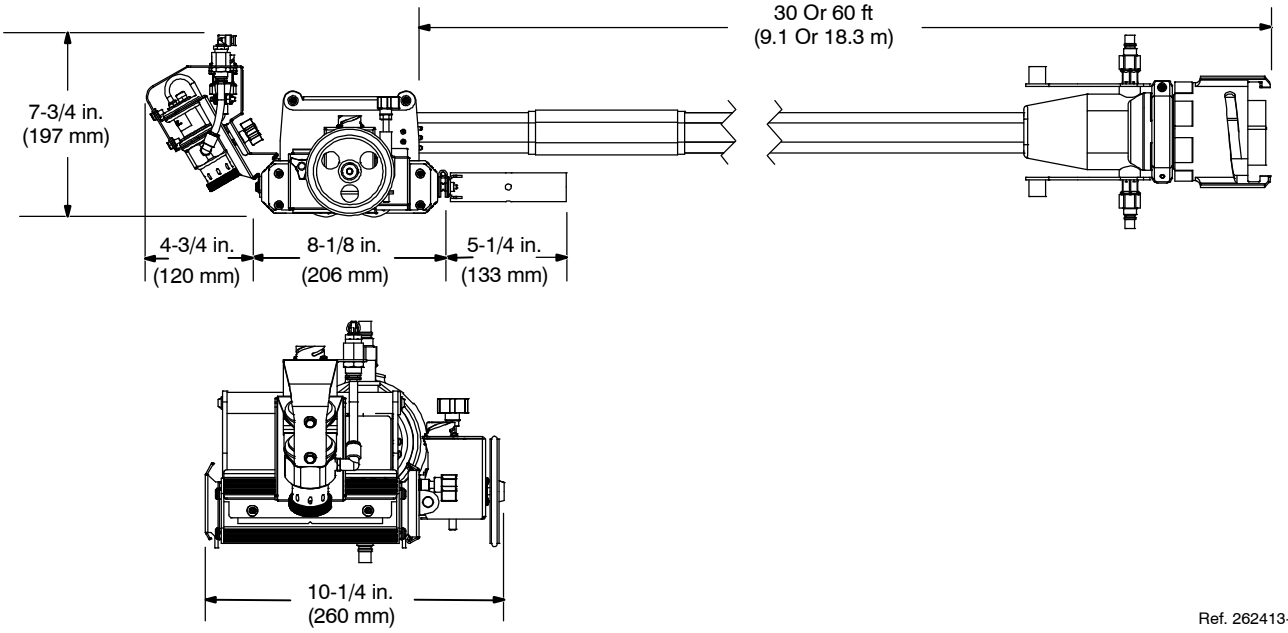
Weight: 40.0 lb (18.1 kg) For 30 Ft. Model
Weight: 69.0 lb (31.3 kg) For 60 Ft. Model




Ref. 262413-F

## 4-3. Dimensions with Optional Accessories

Weight: 43.4 lb (19.7 kg) For 30 Ft. Model
Weight: 72.4 lb (32.8 kg) For 60 Ft. Model

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# 4-4. Environmental Specifications

## A. Temperature Specifications For Miller ProHeat 35 Rolling Inductor Cold Climate Operation

| | | ProHeat | | Cooler | | Rolling Inductor | | Heating Cables | |
|---|---|---|---|---|---|---|---|---|---|
| °C | °F | Storage | Operation | Storage | Operation | Storage | Operation | Storage | Operation |
| 60 | 140 | | Reduced efficiencies above 40°C | | Reduced efficiencies above 40°C | | | | |
| 55 | 131 | | | | | | | | |
| 50 | 122 | | | | | | | | |
| 45 | 113 | | | | | | | | |
| 40 | 104 | | | | | | | | |
| 35 | 95 | | | | | | | | |
| 30 | 86 | | | | | | | | |
| 25 | 77 | | | | | | | | |
| 20 | 68 | | | | | | | | |
| 15 | 59 | | | | | | | | |
| 10 | 50 | | | | | | | | |
| 5 | 41 | | | | | | | | |
| 0 | 32 | | | | | | | | |
| –5 | 23 | | | | | | | | |
| –10 | 14 | | | | | | | | |
| –15 | 5 | | | | Energize system frequently to maintain coolant temperature above 14°F (–10°C). | | Energize system frequently to maintain coolant temperature above 14°F (–10°C). | | Energize system frequently to maintain coolant temperature above 14°F (–10°C). |
| –20 | -4 | | | | | | | | |
| –25 | -13 | | | Store dry | | Store dry | | Store dry | |
| –30 | -22 | | | | | | | | |
| –35 | -31 | | | | | | | | |
| –40 | -40 | | | | | | | | |

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| | |
|---|---|
| | Not Recommended |
| | With Qualifications |
| | Normal Operation With Coolant |

***NOTICE*** – *The Miller ProHeat 35 Rolling Inductor is rated for operation between 14 °F and 140 °F (–10 °C to 60 °C). For operation at -40 °F to 14 °F (–40 °C to -10 °C), take the following precautions to prevent equipment damage:*

• Connect coolant lines to Rolling Inductor when dry, or when ambient temperature is above –4°F (–20°C).

• Operate ProHeat 35 Heavy Duty Induction Cooler only in temperatures between 14° F and 104° F (–10°C to 40°C) while operating Rolling Inductor/ Liquid Cooled Cables.

• Always use Miller Coolant (Miller Part Number 043810).

• Coolant must flow continuously through the Rolling Inductor/liquid cooled cables, and power must be applied to the Rolling Inductor /liquid cooled cables at regular intervals to maintain a coolant temperature of at least 14°F (–10°C).

• Store Rolling Inductor/liquid cooled cables dry. Dry unit by using compressed air at 40 psi (2.75 bar) max to blow coolant out of the Rolling Inductor and power cable.

• Store ProHeat 35 Heavy Duty Induction Cooler at a temperature between –4°F and 131°F (–20°C to 55°C).

☞ *Coolant will not begin to flow until it is 14 °F (–10 °C).*

***NOTICE*** – *For colder storage, the cooler must be stored dry. Dry unit by using compressed air at 40 psi (2.75 bar) max to blow coolant out of coolant lines, filter bowls, pump, flow indicator, and heat exchanger.*

## B. 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.

**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 |

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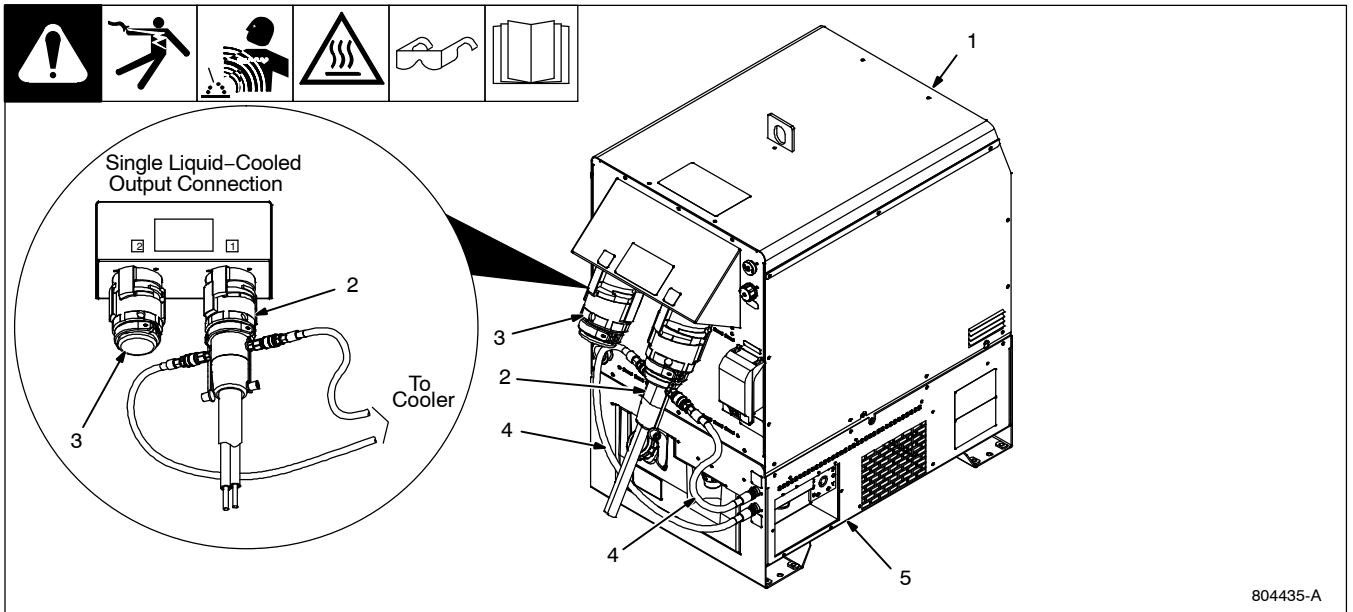
# SECTION 5 – POWER SOURCE/SYSTEM SETUP

## 5-1. Coolant Hose Connections To Single Output Cable




1 Power Source/Cooler Assembly
2 Rolling Inductor Output Cable
3 Protective Cap
4 Coolant Hose
5 Heavy Duty Induction Cooler

Connect output cable to output #1 on power source. Connect protective plug to power source output #2.

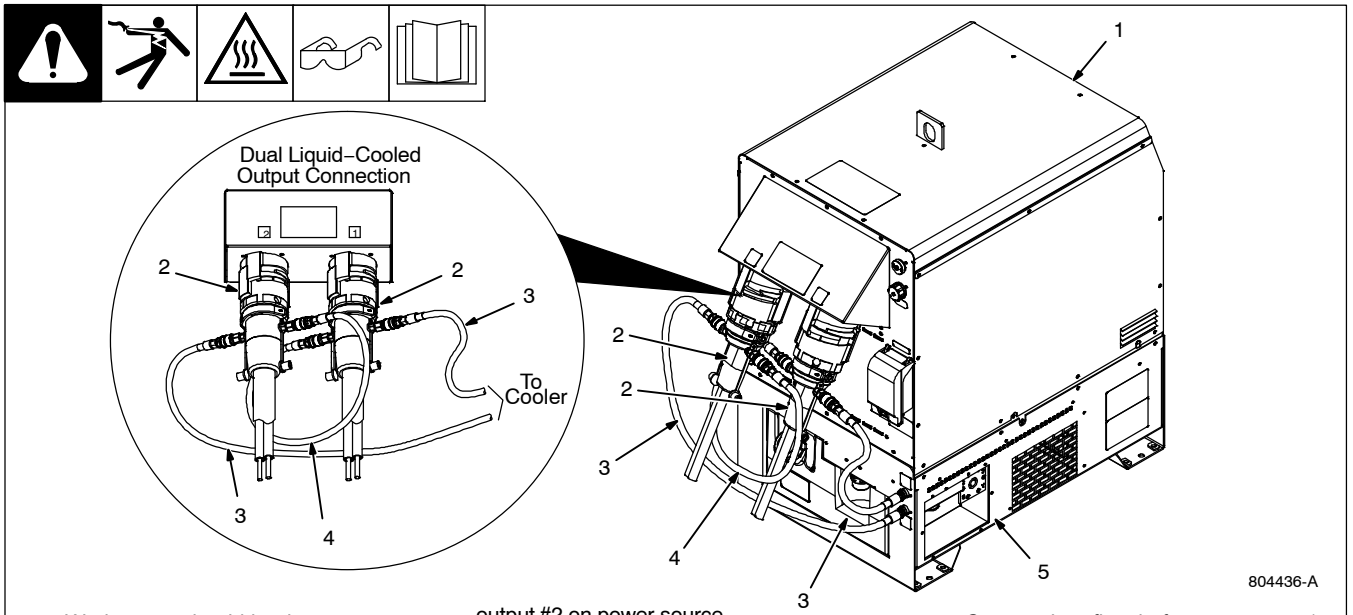
Connect quick-connect fitting on both coolant hoses from cooler to output cable fittings by pushing coolant hose fitting onto output cable fitting.

☞ *Stop coolant flow before connecting/ disconnecting coolant hoses.*

To remove coolant hoses, grasp black ring on coolant hose fitting and pull away from output cable fitting . Coolant hose fitting will separate from output cable fitting.

☞ *Fittings have spring loaded valves inside that close when fitting is disconnected from an output cable fitting to minimize coolant leaks.*

## 5-2. Coolant Hose Connections To Dual Output Cables




☞ *Workpieces should be the same size and material when connecting two Rolling Inductors to one power source.*

1 Power Source/Cooler Assembly
2 Rolling Inductor Output Cable
3 Coolant Hose
4 Dual Output Cable Coolant Hose
5 Heavy Duty Induction Cooler

Connect output cables to output #1 and output #2 on power source.

Coolant hoses between output cables and cooler must be connected in series for dual output operation. Connect dual output coolant hose between output cable #1 and output cable #2 fittings by pushing coolant hose fitting onto output cable fitting. Connect quick-connect fitting on both coolant hoses from cooler to remaining output cable fittings.

☞ *Stop coolant flow before connecting/ disconnecting coolant hoses.*

To remove coolant hoses, grasp black ring on coolant hose fitting and pull away from output cable fitting . Coolant hose fitting will separate from output cable fitting.

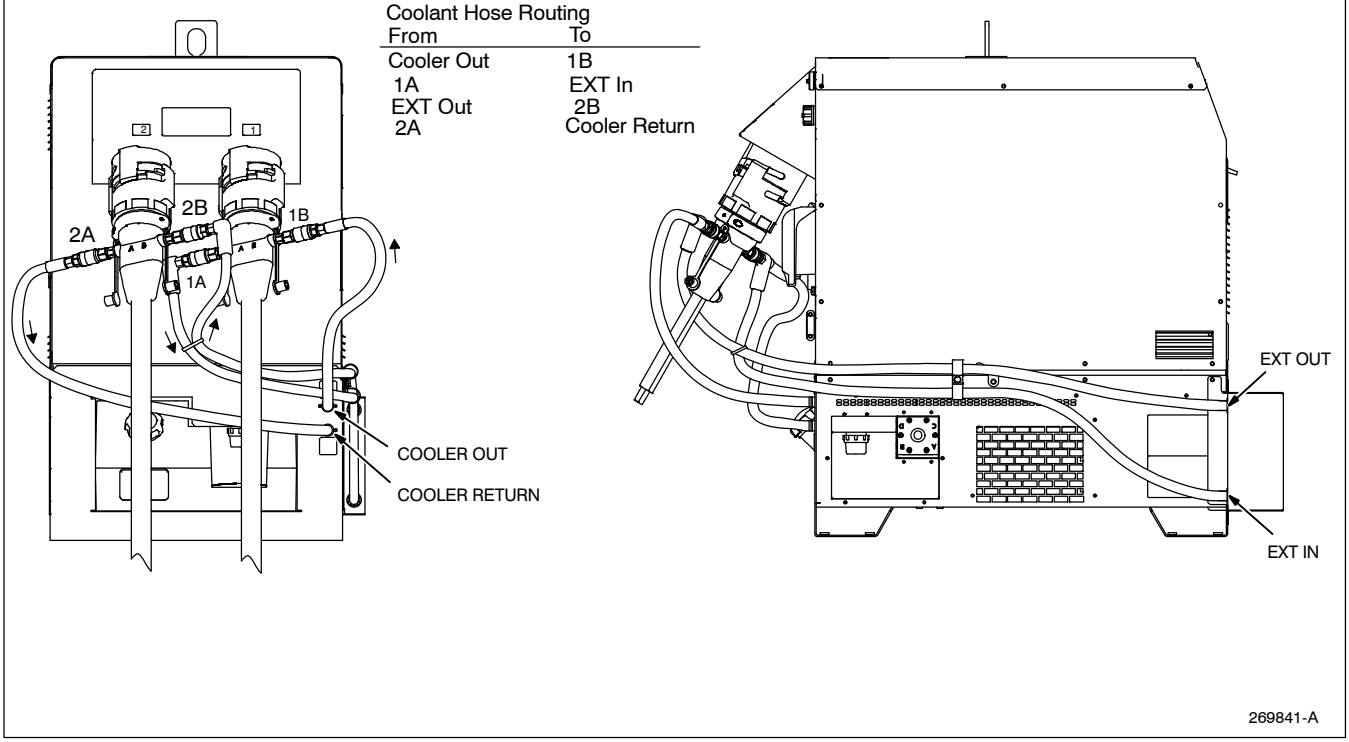
☞ *Fittings have spring loaded valves inside that close when fitting is disconnected from an output cable fitting to minimize coolant leaks.*

## 5-3. Coolant Hose Connections To Dual Output Cables With 300993 Heat Exchanger

***NOTICE*** – *Incorrect Coolant Connections can damage accessories. Ensure both accessories are in the coolant loop.*

Coolant Hose Routing

| From | To |
|---|---|
| Cooler Out | 1B |
| 1A | EXT In |
| EXT Out | 2B |
| 2A | Cooler Return |

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## 5-4. Connecting Thermocouple Cable To Rolling Inductor

**To ensure proper grounding, use a grounded, three-prong thermocouple extension cable from the rolling inductor to the ProHeat power source**

Plug one end of the thermocouple extension cable into TC5 on the power source and the other end into the back of the Rolling Inductor

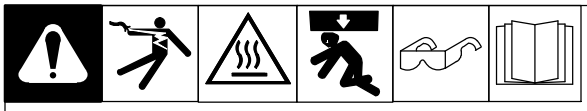
If running two Rolling Inductors on the same power source, connect a second thermocouple extension cable from the second Rolling Inductor to TC6 on the power source.

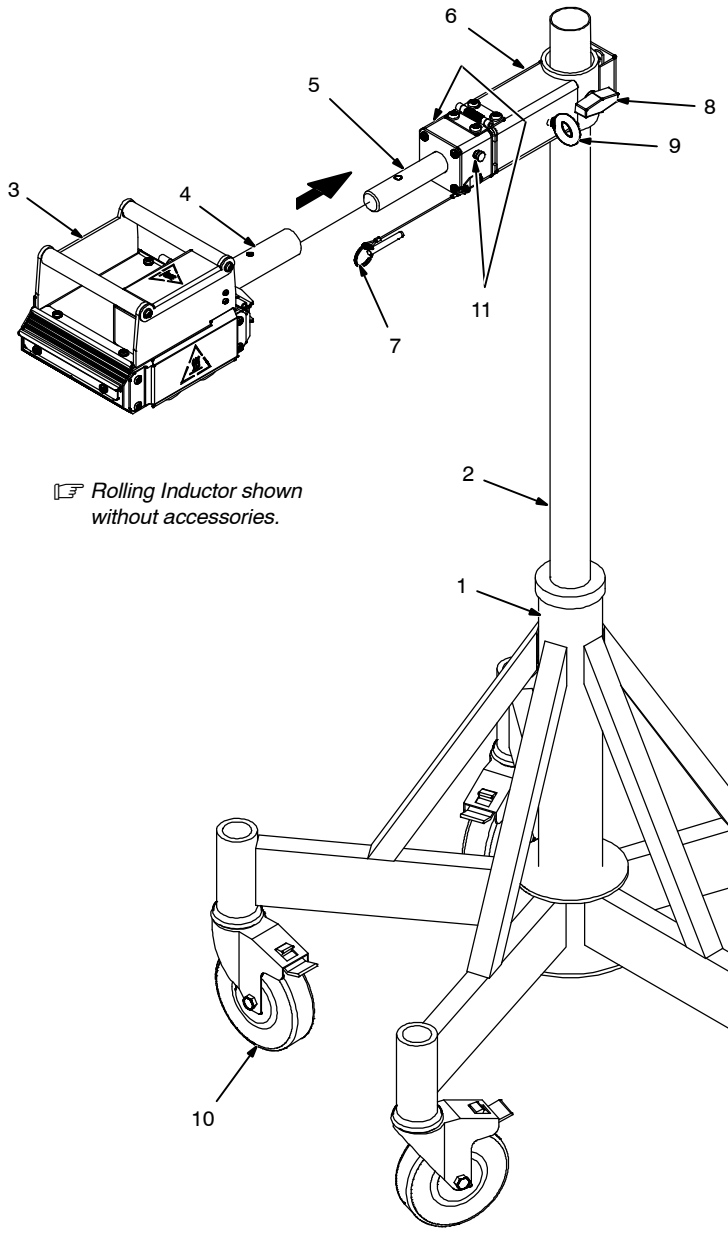
***NOTICE*** – *TC5 and TC6 connect to the Rolling Inductor internal thermocouple which monitors internal Rolling Inductor core temperatures. Measure workpiece temperature with temperature crayons, infrared sensors, or contact thermocouples placed within two inches of the Rolling Inductor.*

☞ *Workpieces should be the same size and material when using two Rolling Inductors on one power source.*

# Notes

## 5-5. Mounting Arm To Stand






☞ *Rolling Inductor shown without accessories.*

**⚠ Customer supplied pipe stand must be capable of maintaining an upright position without tipping with mounting arm, Rolling Inductor, and accessories installed.**

**⚠ Do not step or stand on mounting arm or pipe stand.**

1 Pipe Stand (Customer Supplied)

2 Pipe (Customer Supplied)

1.50 to 2.00 in. (38.1 to 50.8 mm) outer diameter.

3 Rolling Inductor

4 Handle Tube

5 Swivel Shaft

6 Mounting Arm

7 Quick-Release Pin

Attach Rolling Inductor to mounting arm by sliding handle tube over the swivel shaft and secure with quick-release pin.

8 Knob

Tighten knob to secure arm in place.

9 Eye Bolt

Cable tie output cable to eye bolt.

10 Locking Wheels

If customer supplied stand has wheels, lock wheels once Rolling Inductor is positioned on workpiece.

11 Adjustable Thumb Screws

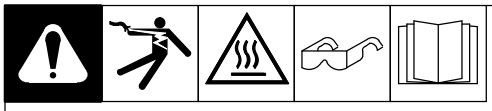
Tighten or loosen screws to control motion of the swivel shaft. If on an elbow, tighten the screw on the elbow side of the arm to keep inductor from rotating down as the elbow rotates.

***NOTICE*** – *When removing the Rolling Inductor from the workpiece, do not release the handle until the Rolling Inductor is in a rest position (straight out or folded back). Dropping the Rolling Inductor may damage it.*

**⚠ Verify the stand setup is stable before running equipment.**

264043-D

## 5-6. Installing Accessory Cables Into Cable Sleeve

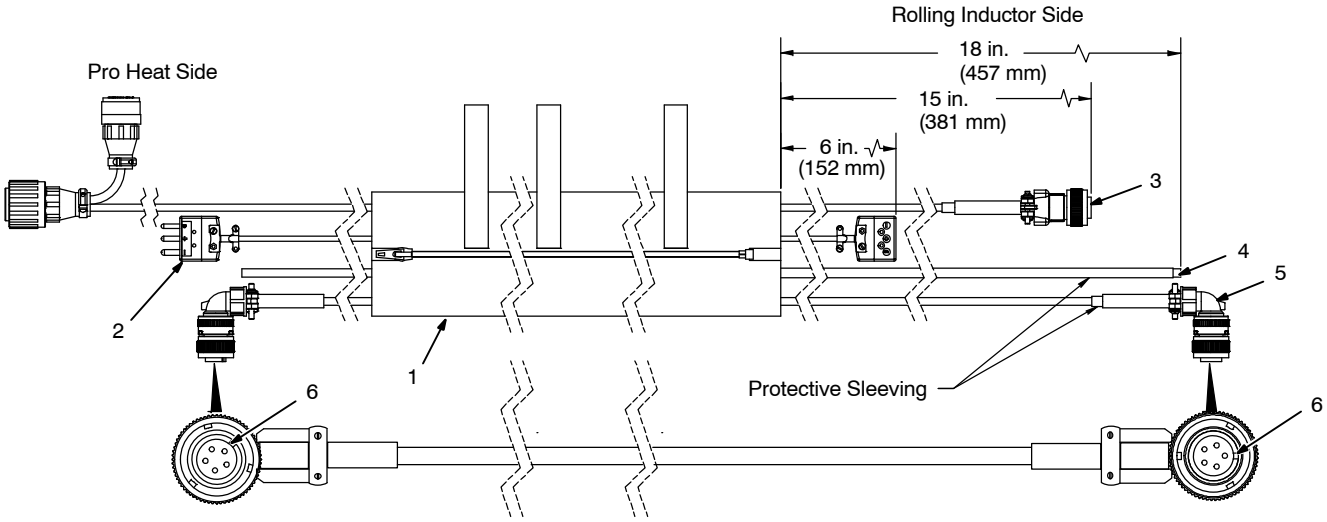


1 Cable Sleeve
2 TC Extension Cable
3 Travel Sensor Cable
4 Pneumatic Tubing Assembly
5 IR Extension Cable
6 Alignment Tabs

Lay the TC extension cable and sleeve assembly out flat.

Unzip the cable sleeve. Position items in the cable sleeve at the approximate dimensions shown on the Rolling Inductor side of the drawing. Make sure items are oriented as shown in the drawing.

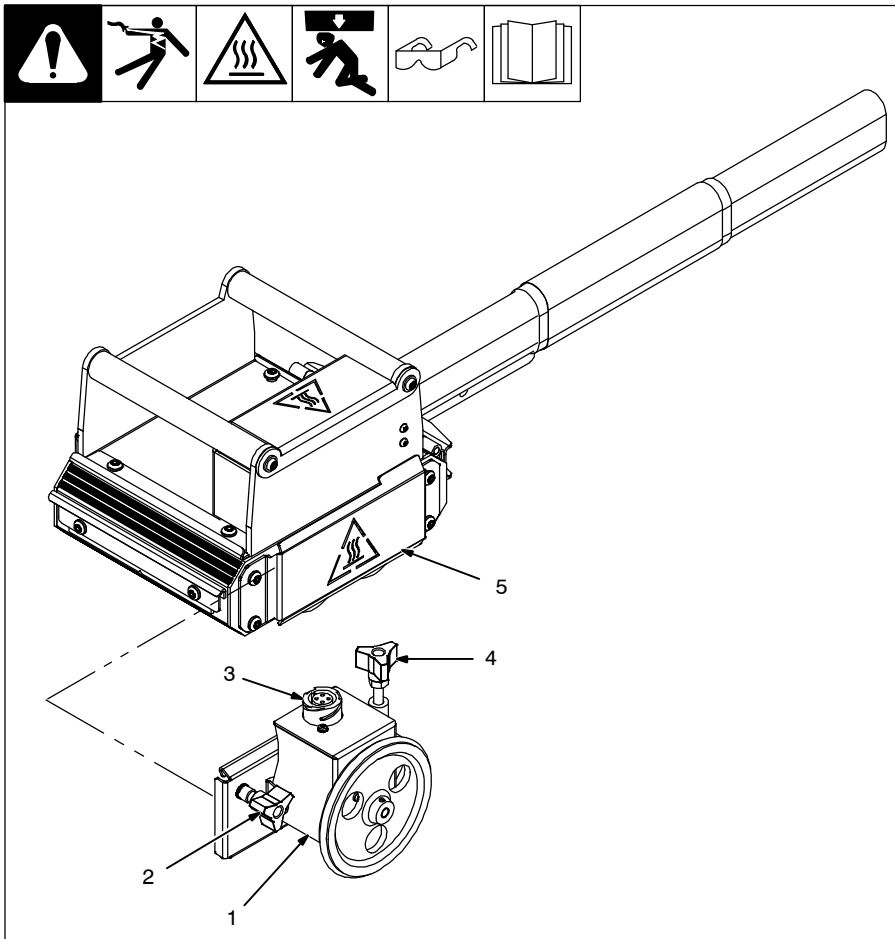
To help aid in correct orientation of the IR extension cable in the cable sleeve, note location of alignment tabs on IR extension cable connectors.




Ref. 265156-C

# Notes

## 5-7. Mounting Travel Sensor Assembly To The Rolling Inductor




1 Travel Sensor Assembly
2 Securing Knob
3 4-Pin Connector
4 Tension Adjustment Knob
5 Mounting Bracket

Slide travel sensor assembly onto the mounting bracket on either side of the Rolling Inductor. Tighten knob to secure assembly in place.

Connect 4-pin end of supplied cable to the travel sensor assembly 4-pin connector. Connect 14-pin end of the cable to the 14-pin connector on back of power source.

Once installed on pipe, use the tension adjustment knob to ensure wheel is tight to pipe. Wheel contact with pipe may loosen during heating causing wheel to slip. Adjust tension again at that point to ensure wheel is rotating. Holes in side of wheel allow user to visually monitor wheel rotation.

***NOTICE*** *– If power source does not have the travel sensor lead installed internally on the 14-pin connector (Pin G), kit #268031 must be installed by a qualified person in order to use the travel sensor.*

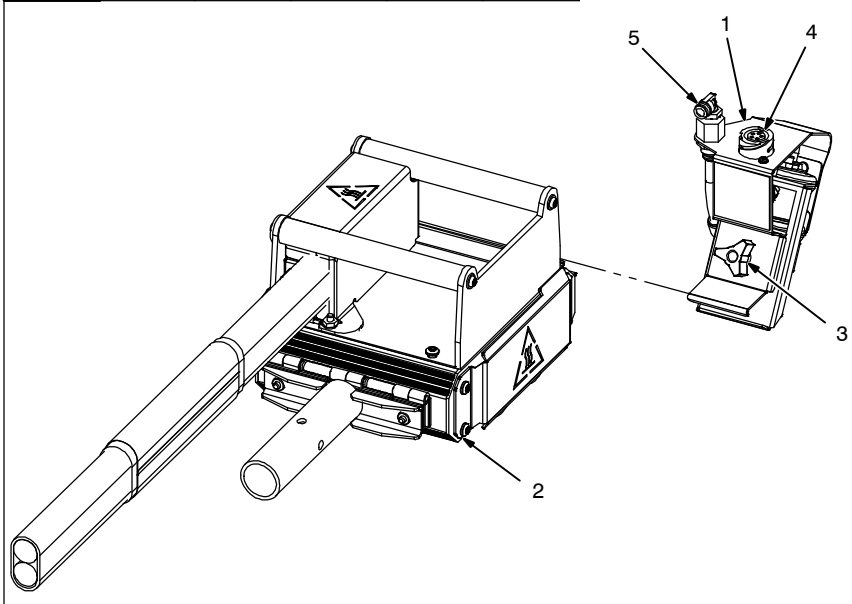
☞ *Power source software revision 1.21 or lower must be updated in order to operate using this accessory.*

***NOTICE*** *– Older Rolling Inductor units may not have mounting bracket installed. Have kit 262527 installed by a qualified person.*

☞ *When using two Rolling Inductors, only one Travel Detect System can be used.*

Ref. 262417-B

## 5-8. Mounting IR Assembly To The Rolling Inductor




Ref. 262417-B

1 IR Assembly
2 Mounting Rails
3 Securing Knob
4 5-Pin IR Connector
5 Air Hose Fitting

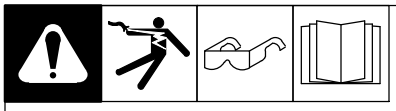
Slide IR assembly onto the mounting rail on the front of the Rolling Inductor. Tighten knob to secure assembly in desired location.

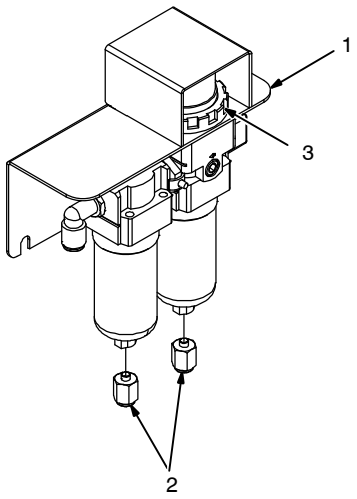
Connect 5-pin connector on the Rolling Inductor side of the IR extension cable (see Section 5-6) to the 5-pin IR connector on the IR assembly. Connect 5-pin connector on ProHeat side of the cable to receptacle RC1 or RC2 on connection box (see Section 6-8).

Connect air hose from air filter-regulator assembly (see Section 5-11) to air-hose fitting on IR assembly.

☞ *In order for this accessory to operate correctly, the software must be updated if the current revision level for the Power Source Micro board is lower than 1.25, or if the current revision level for the Operator Interface Micro board is less than 1.28. The current software revision levels are shown on the front panel display on the ProHeat 35 when it is first turned on. To update software, email the Miller Service Team at ISGservice@millerwelds.com.*

## 5-9. Attaching Quick-Connect Drain Fittings To Air Filter-Regulator Assy






1 Air Filter-Regulator Assembly

2 Quick-Connect Fittings

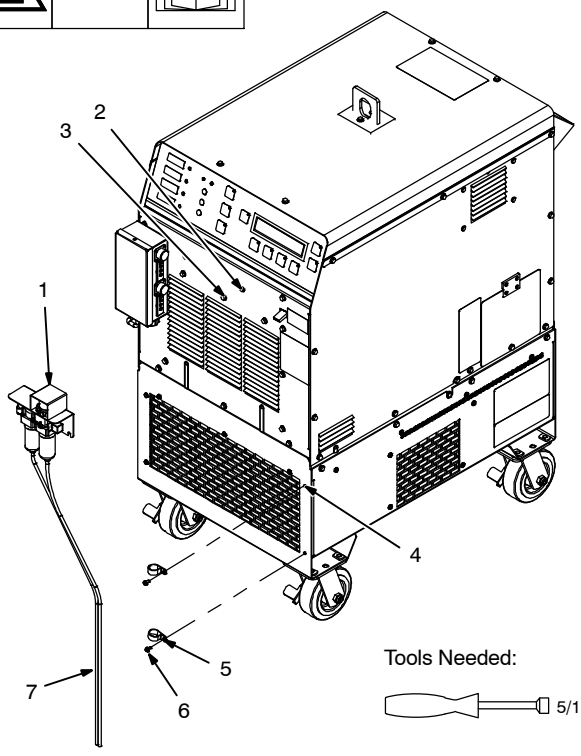
Attach supplied quick-connect fittings to the bottom of the air filter-regulator assembly. Fittings should be finger-tight only. Do not over-tighten.

3 Pressure Setting Knob

***NOTICE*** *– Pressure is factory set to 4 psi (0.28 bar) to achieve .53 – 1.8 cfm (5 – 15 lpm). Do not attempt to change this setting or IR device could be damaged.*

Ref. 277853-A

## 5-10. Attaching Air Filter-Regulator To Power Source




Tools Needed:




1 Air Filter-Regulator Assembly

2 10-32 Hex Head Screw

3 1/4-20 Hex Head Screw

Remove and keep the 10-32 screw from the front of the power source. Loosen the two 1/4-20 screws on the front of the power source. Slide the air filter-regulator assembly onto the loosened screws.

Reinstall and tighten the 10-32 screw.

Tighten the two 1/4-20 screws.

4 10-32 Hex Head Screws (Existing)

5 Hose Clamps

6 10-32 x 1/2 Hex Head Screws (Supplied)

7 Drain Hose

Attach drain hoses to the bottom of the filter and regulator and route them through the two hose clamps.

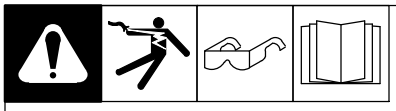
Secure hose clamps by removing the the existing 10-32 screws from the right side of the cooler and replacing them with the two supplied 10-32 x 1/2 screws.

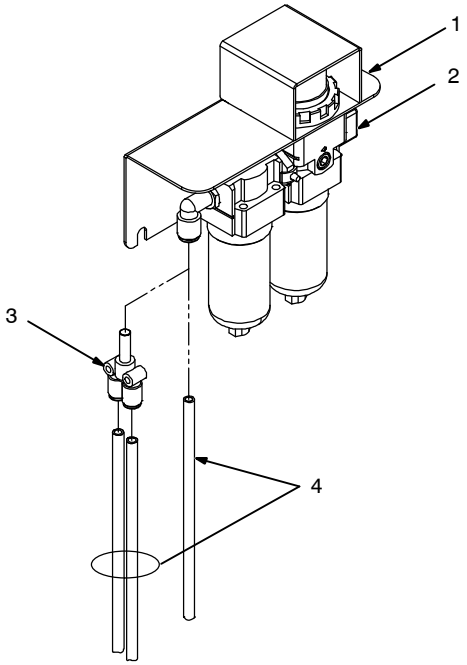
☞ *Replace existing 10-32 screws with the longer supplied 10-32 x 1/2 screws one at a time.*

**Ensure hoses are not draining towards areas of foot traffic.**

Ref. 262416-B

## 5-11. Air Filter-Regulator Assembly Input And Output Connections






1 Air Filter-Regulator Assembly

Filter-Regulator assembly showing drain fittings and hose installation.

2 Air Inlet Fitting

Install customer supplied (1/4 in. NPT) fitting here.

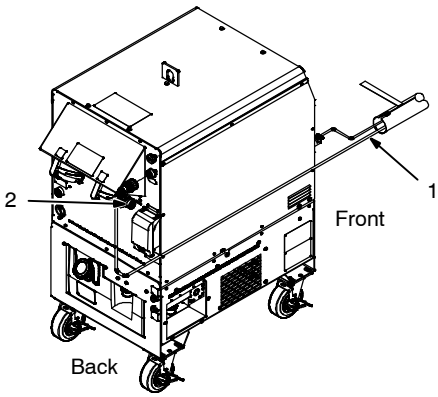
3 Air-Splitter

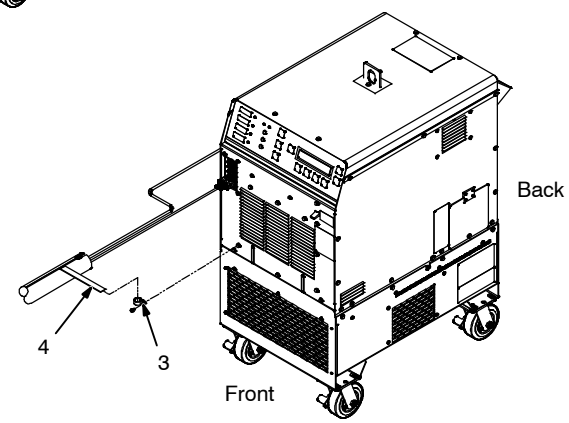
Use air-splitter when using two Rolling Inductors.

4 Pneumatic tubing to IR assembly.

Ref. 277853-A

## 5-12. Connecting Travel Sensor Without An IR Sensor Connected To The Power Source




1 Travel Sensor Cable

Connect 14-pin end of supplied travel sensor to the back of the power source.

Connect 4-pin end of the cable to the travel sensor cable.

2 14-Pin Pigtail

For use with optional on/off remote.

3 Cable Clamp

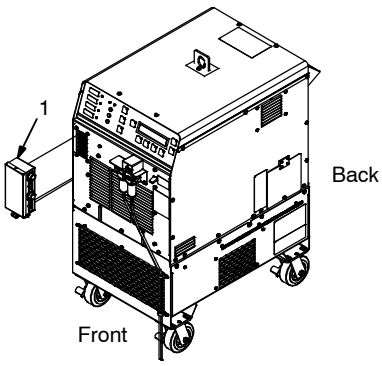
Remove screw from bottom left side of power source. Attach cable clamp to the front of the power source using longer screw provided.

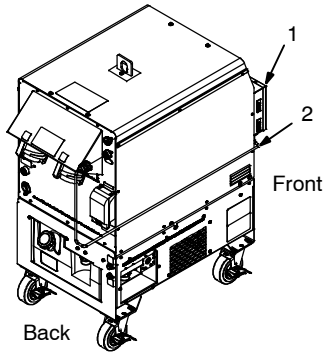
4 Hook And Loop Strap

Once cable clamp is installed and cables are connected to the power source, secure cable assembly to the cable clamp using the hook and loop strap.

262416-A

## 5-13. Connecting IR Connection Box To Power Source




1 Connection Box

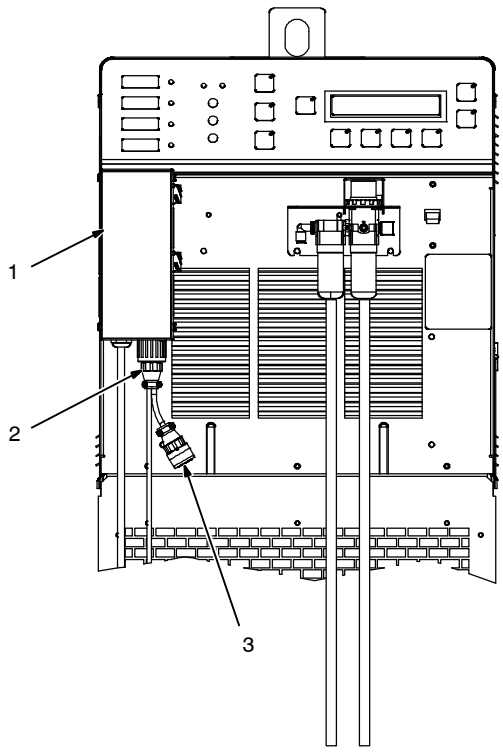
Plug connection box into th thermocouple inputs on the front panel of the power source.

2 14-Pin Cable

Connect 14-pin cable on connection box to the lower 14-pin connector on the back of the power source.

Ref. 262416-B

## 5-14. Connecting Travel Sensor With An IR Connection Box Connected To The Power Source




1 Connection Box

2 Travel Sensor Cable

Connect 14-pin end of travel sensor cable to receptacle RC7 on the connection box.

3 14-Pin Pigtail

For use with optional on/off remote.

277846-A

# SECTION 6 – OPERATION

## 6-1. Power Source/System Setup

☞ *See power source Owner's Manual for complete instructions on operating the power source.*

☞ *Connect Rolling Inductor to power source before turning it on.*

### 6-1-1 Rolling Inductor—Manual Or Temperature Control Mode

***NOTICE*** *– When using a Rolling Inductor, infrared temperature measurement and travel detection are highly recommended. The Rolling Inductor induces up to 20 kW into a small area, which can quickly heat a part to over 600 °F (315 °C) if it is not moving fast enough. This can damage the inductor or part. Using the travel detector, the system reduces output as travel speed decreases and disables output when travel stops.*

☞ *The travel detector is a sensitive instrument that can measure travel speeds down to one IPM. Once the part travel is stopped, there is a three second delay before output can be re-energized.*
*Vibrations that are present for more than three seconds from sources such as fork lift traffic, trains, grinding, and handling the part can trigger the sensor, and energize the output.*
*Always press Stop on the ProHeat front panel when part travel is stopped, to prevent inadvertent heating of the part.*

Travel Detection

The Travel Detector can be mounted on the left or right side of the Rolling Inductor. It can also be mounted off of the inductor in a location that provides a similar travel speed as that of the inductor. A bracket of 3.75 inches long by 2.5 inches wide (96 by 64 mm) will allow for mounting of the Travel Detector.

☞ *Connect Rolling Inductor(s) to power source before turning power on.*

To view the System Setup screen, simultaneously press the Parameters 

and Program  buttons and the following screen will appear on the display:

- Press Cursor  button to move cursor to the parameter to change. Press Increase  or Decrease  button to set parameters.

**SYSTEM SETUP SCREEN 1**

```
Deg Units...:>°F              SYSTEM SETUP1
Tolerance...: ±25
Max Output..: 35 KW       RI Clr Purge: 60S
Control Mode: Temp        RI Init KW: 0.0KW
```

Set Deg Units to F or C as required.

Set Tolerance value if required.

Set Control Mod to Manual or Temp as required.

Set Rolling Inductor Initial kW to a value between 0.0 and 35.0 kW

- The Rolling Inductor Initial kW can be increased when working on larger mass parts. It is recommended that the first part is heated with the kW set to a low value. Observe the maximum kW level that the heat cycle achieves and then set the starting kW to that value or less.
- Max Output kW can be reduced on smaller mass parts to minimize heat input.

Rolling Inductor Cooler Purge Time: 30–240 seconds

- The default Rolling Inductor Cooler Purge Time is set to 60 seconds for applications using the 60-foot inductor cables. This can be set down to 30 seconds for the standard Rolling Inductor with 30-foot cables. The ProHeat automatically doubles the time when two Rolling Inductors are connected.

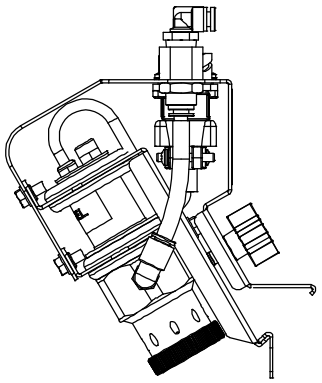
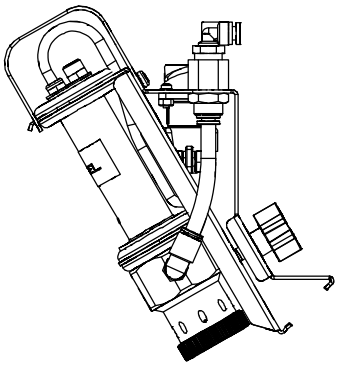
Simultaneously press the Parameters 

and Program  buttons a second time, and the following screen will appear on the display:

**SYSTEM SETUP SCREEN 2**

```
TC1,2 Type...:>IR4-20         SYSTEM SETUP2
IR Input Max.: 752        Trvl Detect..: On
IR Input Min.: 122        Trvl Speed...: IPM
Decouple Fault: On
```

Set proper scaling for IR Sensor. Miller has supplied two different sensors for the Rolling Inductor. The scaling must be set correctly to display the proper temperatures on the temperature display.

| | Present Sensor | Original Sensor |
|---|---|---|
| |  |  |
| Part Number | 283080 | 265076 |
| IR Input Max | 752°F (400°C) | 752°F (400°C) |
| IR Input Min | 122°F (50°C) | 212°F (100°C) |
| Dates Active | 11-06-2018 to Present | 07-21-2015 to 11-06-2018 |

☞ *When using two Rolling Inductors, two IR sensors can be used at the same time.*

☞ *Workpieces should be the same size and material when using two Rolling Inductors on one power source.*

***NOTICE*** *– TC5 and TC6 connect to the Rolling Inductor internal thermocouple which monitors internal Rolling Inductor core temperatures. Measure workpiece temperature with temperature crayons, infrared sensors, or contact thermocouples placed within two inches of the Rolling Inductor.*

Set Trvl Detect to On if using travel detection.

☞ *Must be set to Off if not using Trvl Detect, or unit will not activate heat output.*

Travel detection is recommended for all Rolling Inductor applications. It assists in maintaining an even heat input to the part and regulates output power based on travel speed in Temp mode.

Set Trvl Speed units as needed.

Press Program  button once to enter the Rolling Inductor Program screen.

☞ *If Manual Mode was selected the screen should look as shown below.*

**Rolling Inductor Program Screen**

```
Mode....: Manual          Power...: 0.0 KW
Command.: >0.0 KW         Current: 0 A
Run Time: 00:03:00        Voltage: 0 V
                        Frequency: 4.5 kHz
```

Plug one end of the thermocouple extension cable into TC5 on the power source and the other end into the back of the Rolling Inductor.

If running two Rolling Inductors on the same power source, connect a second thermocouple extension cable from the second Rolling Inductor to TC6 on the power source.

## 6-1-2 Temp Control Mode Using IR Device(s)

☞ *IR sensors are often designed for a specific temperature and emissivity range. The ProHeat 35 with Operator Interface software revision 1.28 enables temperature control with the Rolling Inductor.*
*To verify software revision levels, press the Run Status and Parameters buttons simultaneously for 10 seconds to display the software revision.*
*Operator Interface . . . . . 1.28*
*Bridge Control uP . . . . . 1.25*

•On system setup 1 screen, set Control mode to temperature. •Press cursor button to select Max. Output. Press Increase or Decrease button to set a maximum value. Press cursor button to move to the Control Mode. Press Increase or Decrease button to set parameter to temp.

Press Program button once to enter the Temperature Control Program screen.

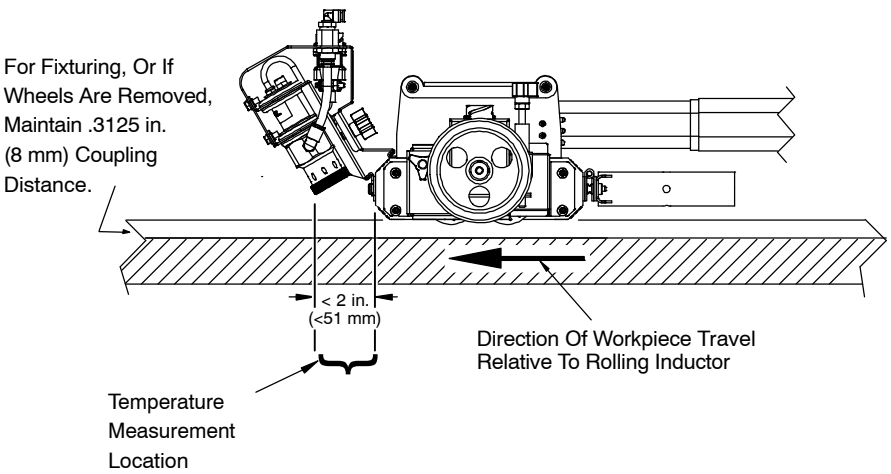
☞ *If Temp Mode was selected the screen should look as shown below (actual values may vary).*

•If using Travel Detection:

On the System Setup Screen 2, press cursor button until Travel Detection is selected. Press Increase or Decrease button to turn the feature on or off.

```
Mode ................ : Rolling Inductor
Control TC: ......... : 1
Temperature. ........ : 400
Max Time ............ : 01:00:00
```

•Press cursor button and Increase or Decrease button to set the Control TC (1 or 1,2), temperature < 600F), and Max Time.




***NOTICE*** *– Damage to workpiece can occur if temp control is used improperly. Do not use welded-on or probe style thermocouples in temp control mode with this device. Always measure temperature directly after the device passes over the heating zone.(within 2 inches of the Rolling Inductor) Keep workpiece or device in motion while output is on.*

***NOTICE*** *– Maintain coupling distance of .3125 in (8 mm) to minimize internal heating of Rolling Inductor.*

In this mode, the thermocouple channels are defined as follows:

TC1 . . . Control TC
TC2 . . . Control TC
TC3 . . . Reference TC
TC4 . . . Reference TC
TC5 . . . Internal Device TC
TC6 . . . Internal Device TC

If using both TC1 and TC2 for control, the power source will control based on the hotter of the two temperature measuring devices.

## 6-2. Temperature Feedback Using An IR Device

**Definitions:**

Infrared Radiation (IR) - Radiation that has a wavelength between the red end of the visible light spectrum and microwaves (approx. 800nm to 1mm). It is emitted in particular by heated objects and can be used to determine temperature.

Emissivity - A dimensionless quantity describing the efficiency with which a material radiates infrared energy. For metals, it varies greatly depending on the type of metal and its surface condition. Emissivity has a range from 0 to 1.

Reflectivity - The ability of an object to reflect energy emitted by other objects.

True Temperature - The actual temperature of an object.

Apparent Temperature - The temperature read by a sensor. It is a function of the true temperature, emissivity, and reflectivity.

Accuracy Range - The range of temperature in which the device is accurate.

**Accuracy and Emissivity:**

The accuracy of the IR will be highly dependent on the surface conditions of the workpiece and the type of sensor purchased.

Typical low end sensors are accurate in a small range of temperatures at a given emissivity. This requires the work piece to have a consistent surface finish. A flat black finish will have an emissivity approaching 1 while a shiny surface will have an emissivity approaching 0. Since typical devices are set to higher emissivity values (0.8 to 1.00), a workpiece with mill-scale/rust will typically provide more accurate feedback than a shiny, prepped joint.

Some higher end devices can accommodate emissivity changes. This is done through filtering the IR signal from the part in different spectrum ranges and results in better accuracy over the low end devices.

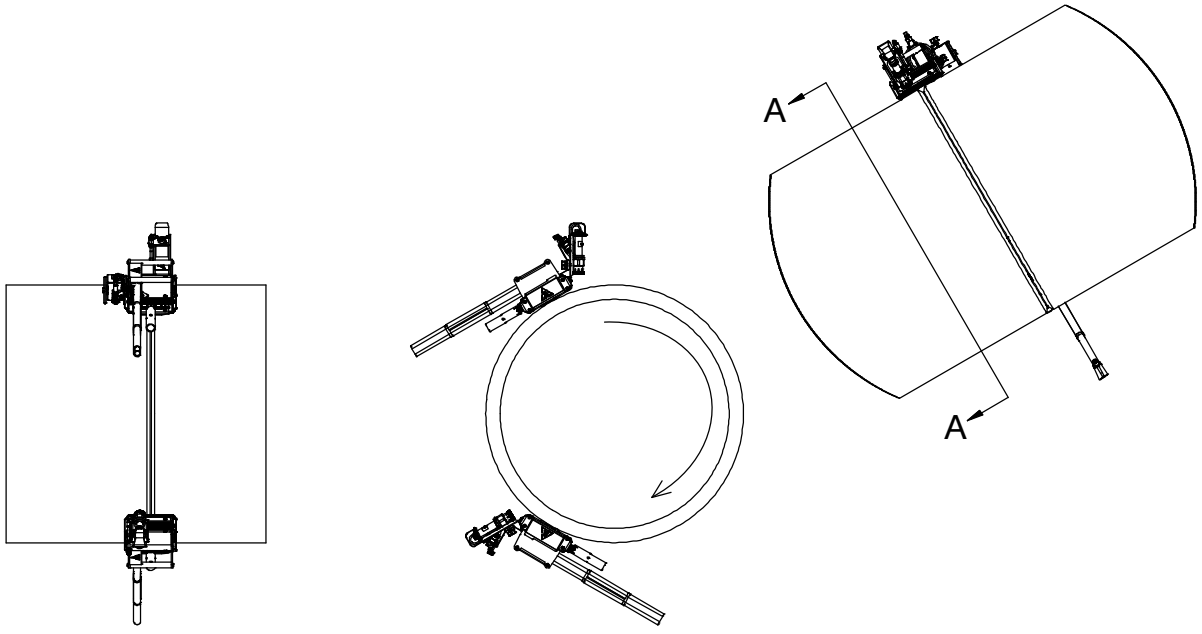
The IR device you choose will depend on the material, surface preparation and the accuracy that you require when monitoring the workpiece temperature.

**Table 6-1. Rolling Inductor Output Characteristics**

| Output Type | Maximum Amperage |
|---|---|
| **Single Rolling Inductor** | 300 A |
| **Dual Rolling Inductor** | 300 A Per Output*<br>*The system maximum power is 35 kW, so each output will have approximately 17.5 kW, which uses less than 300 A |

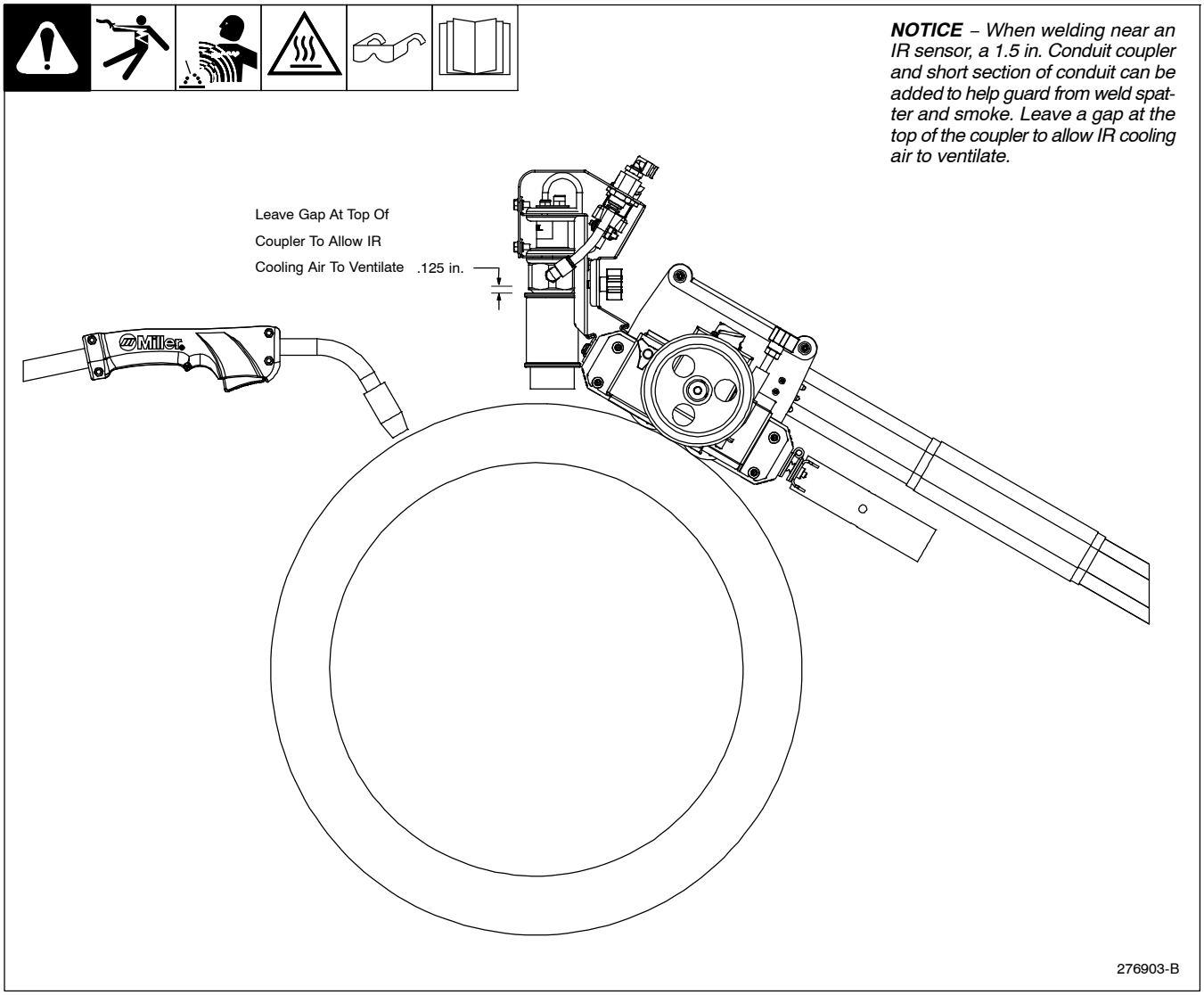
## 6-3. Positioning Of IR Sensor When Using Two Rolling Inductors

☞ *When centering the rolling inductor on a joint, the IR should be centered 1 in. From either edge of the joint.*




276906-A

## 6-4. Shielding Of The IR Cup

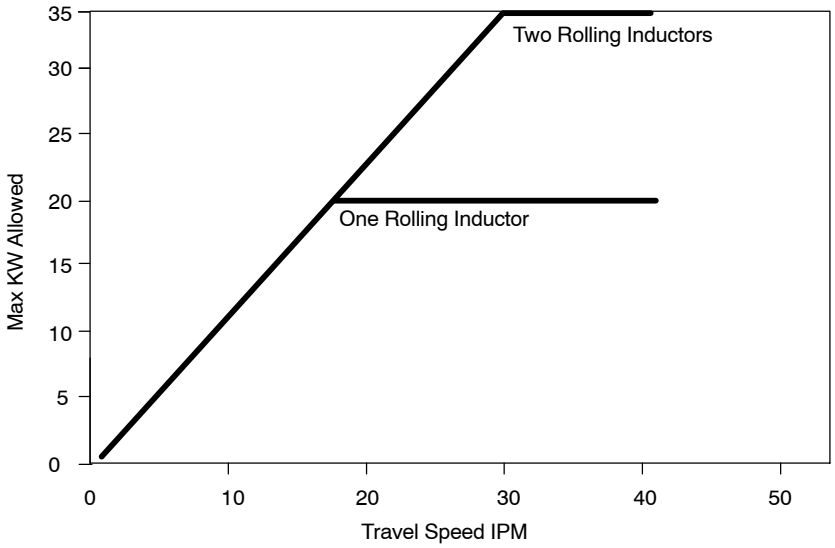



## 6-5. Max KW Allowed Using Travel Detection

The control algorithm has a slow rise rate to minimize temperature overshoot on small parts and to prevent large temperature steps as the heated part of the pipe comes back under the inductor again. Adding a travel detector to the system allows for a faster ramp rate when traveling more than 15 IPM.

| Travel Detect | Control Mode | Travel Speed (IPM) | Approx. Minutes to Max Power Setting |
|---|---|---|---|
| Off | Manual | – | 0 |
| On | Manual | When using travel detect in the manual mode, max output is limited by travel speed. | 0 |
| Off | Temp | – | 6 |
| On | Temp | < 15 | 6 |
| On | Temp | > 15 | 2 |

This Chart Depicts The Maximum KW/IPM When Travel Detect Is Set To On




☞ *The ProHeat 35 can restrict the maximum KW output to the Rolling Inductor when a Travel Detect is utilized.*

It is recommended to test part temperature at various travel speeds to ensure the desired heat input rate. For slower rates, output power level can be reduced in the following screens:

1. **Max Output** setting of the ProHeat 35 in the **System Setup** Screen

2. **Command** in the **Program** screen for Manual Control mode

Travel Speed:

It is recommended to start testing at lower KW output and increase as needed.

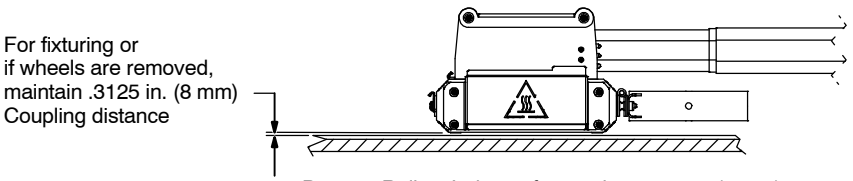
For thin material, slow travel speed may provide thorough heating in one or two passes.

Thicker materials may require multiple passes to bring a part up to the desired temperature. Faster travel speeds provide more frequent heat input and reduce heat loss between passes. It is recommended to test heat times at various travel speeds to achieve the optimum heating rate.

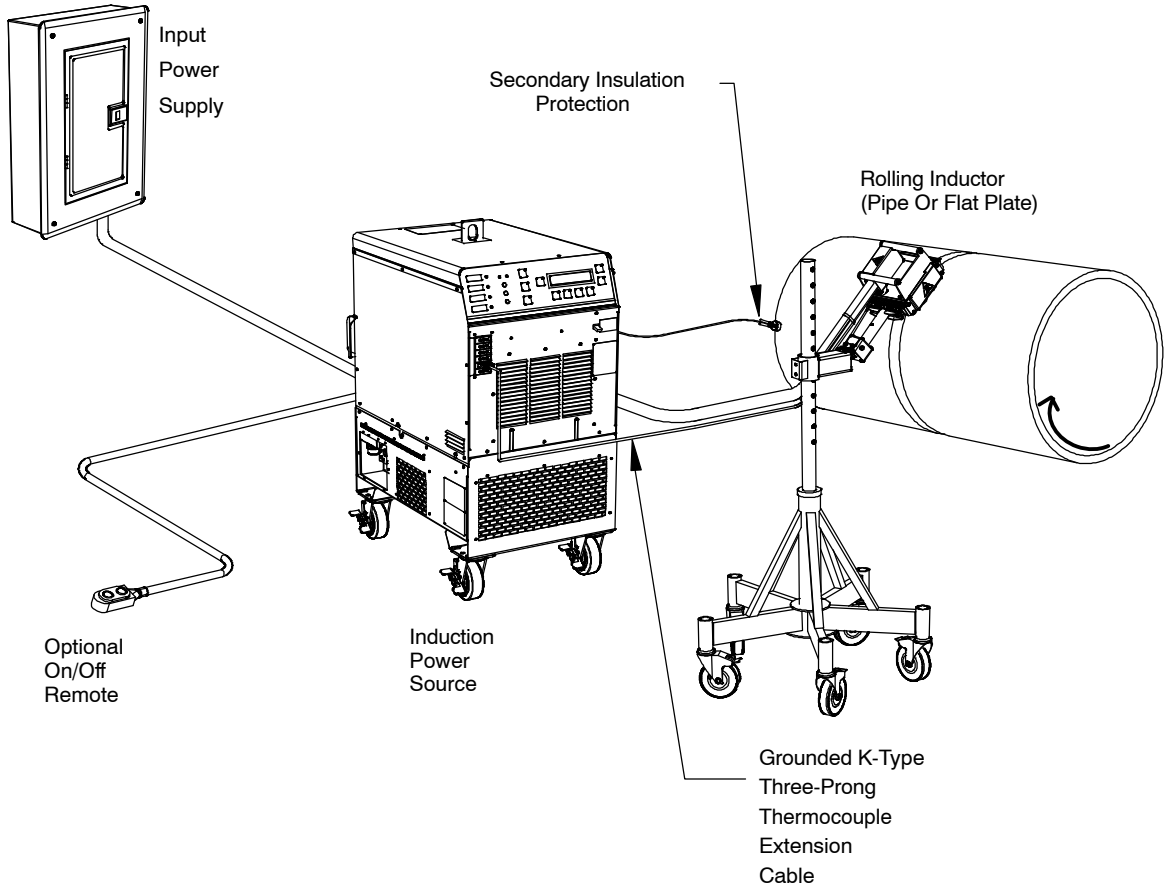
***NOTICE*** – *Excessive heating may damage workpiece.*

# Notes

## 6-6. Single Heating Device Arrangement (Shown Without Accessories) And Duty Cycle




Position Rolling Inductor face within .3125 in (8 mm) of the workpiece. When Rolling Inductor is positioned more than .3125 in. (8 mm) from the workpiece, the Rolling Inductor must be monitored visually for overheating.




☞ *See ProHeat 35 Owner's Manual For Full Description Of ProHeat Setup.*

⚠ **All thermocouple extension cables connecting to the Rolling Inductor must be grounded 3-Prong cables.**

⚠ **Do not touch live electrical parts.**

⚠ **Do not touch or handle induction coils/cords/or cables during operation.**

⚠ **Keep metal jewelry, watches, rings, steel toed shoes, and other metal items away from induction coils/ heating device during operation.**

The liquid-cooled Rolling Inductor is designed for 100% duty cycle at 300 Amps which provides approximately 20 KW depending on coupling to the workpiece.

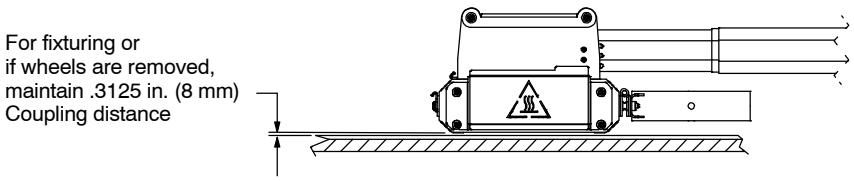
***NOTICE*** – *A single Rolling Inductor arrangement requires a thermocouple extension cable, and a Rolling Inductor connected to a power source.*

***NOTICE*** – *Start part travel before energizing the Rolling Inductor. Failing to do so may damage equipment and/or the work piece. Pipe should be rotating away from the Rolling Inductor as shown.*

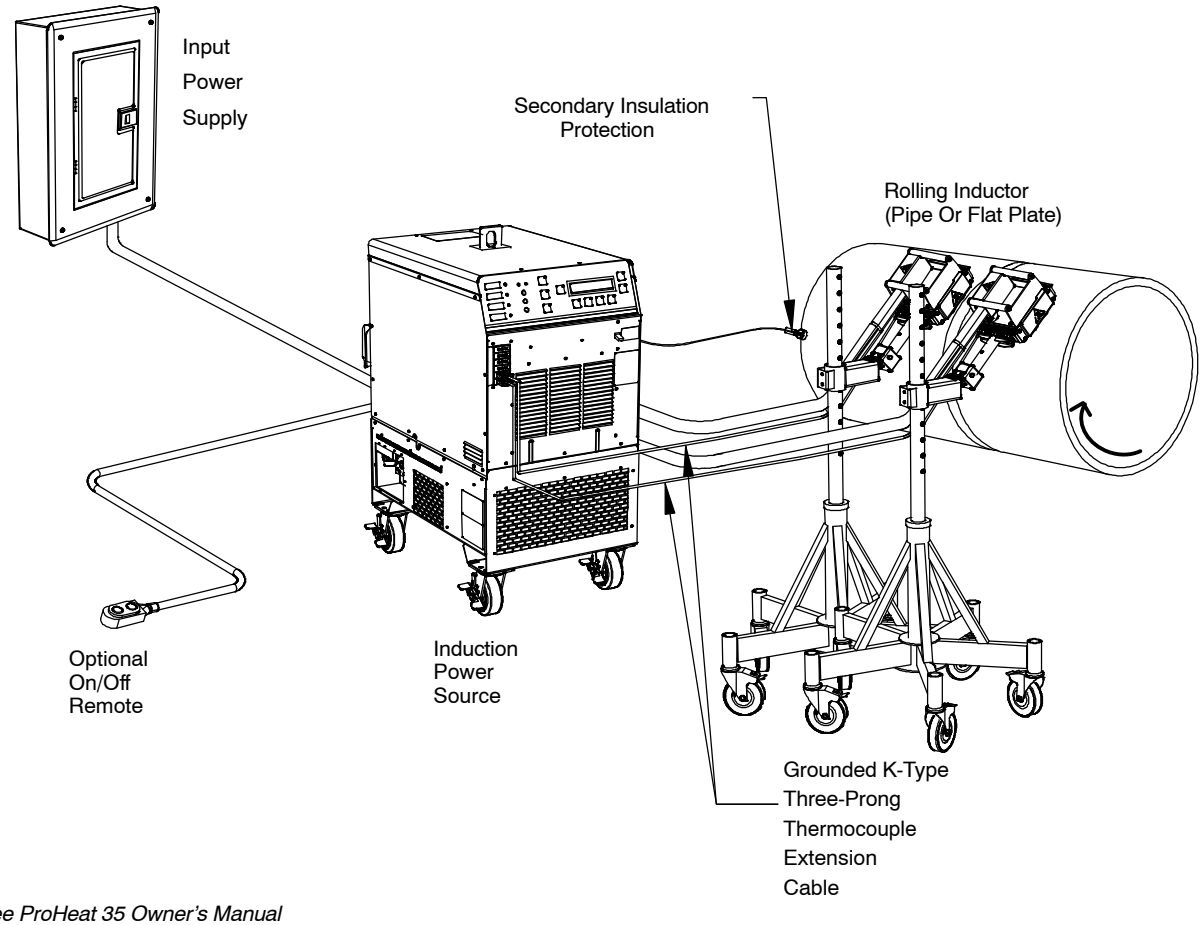
***NOTICE*** – *Only use the Rolling Inductor with a Miller ProHeat power source.*

☞ *Ensure all four wheels are touching the workpiece when setting up device to achieve optimum results. During operation, all four wheels might not touch workpiece at the same time due to imperfections and/or shape of the workpiece.*

## 6-7. Two Heating Devices Arrangement (Shown Without Accessories) And Duty Cycle




Position Rolling Inductor face within .3125 in (8 mm) of the workpiece. When Rolling Inductor is positioned more than .3125 in. (8 mm) from the workpiece, the Rolling Inductor must be monitored visually for overheating.




☞ *See ProHeat 35 Owner's Manual For Full Description Of ProHeat Setup.*

262458-E

⚠ **All thermocouple extension cables connecting to the Rolling Inductor must be grounded 3-Prong cables.**

⚠ **Do not touch live electrical parts.**

⚠ **Do not touch or handle induction coils/cords/or cables during operation.**

⚠ **Keep metal jewelry, watches, rings, steel toed shoes, and other metal items away from induction coils/ heating device during operation.**

The ProHeat 35 is designed to deliver full output power of 35 KW at 100% duty cycle. When running two Rolling Inductors off a single power source, each inductor can achieve approximately 17.5 KW at 280A.

***NOTICE*** *– A two Rolling Inductor arrangement requires two thermocouple extension cables, and two Rolling Inductors connected to a power source.*

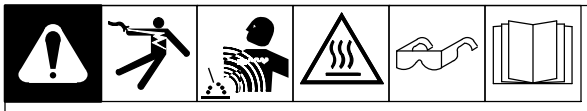
***NOTICE*** *– Start part travel before energizing the Rolling Inductor. Failing to do so may damage equipment and/or the work piece. Pipe should be rotating away from the Rolling Inductor as shown.*

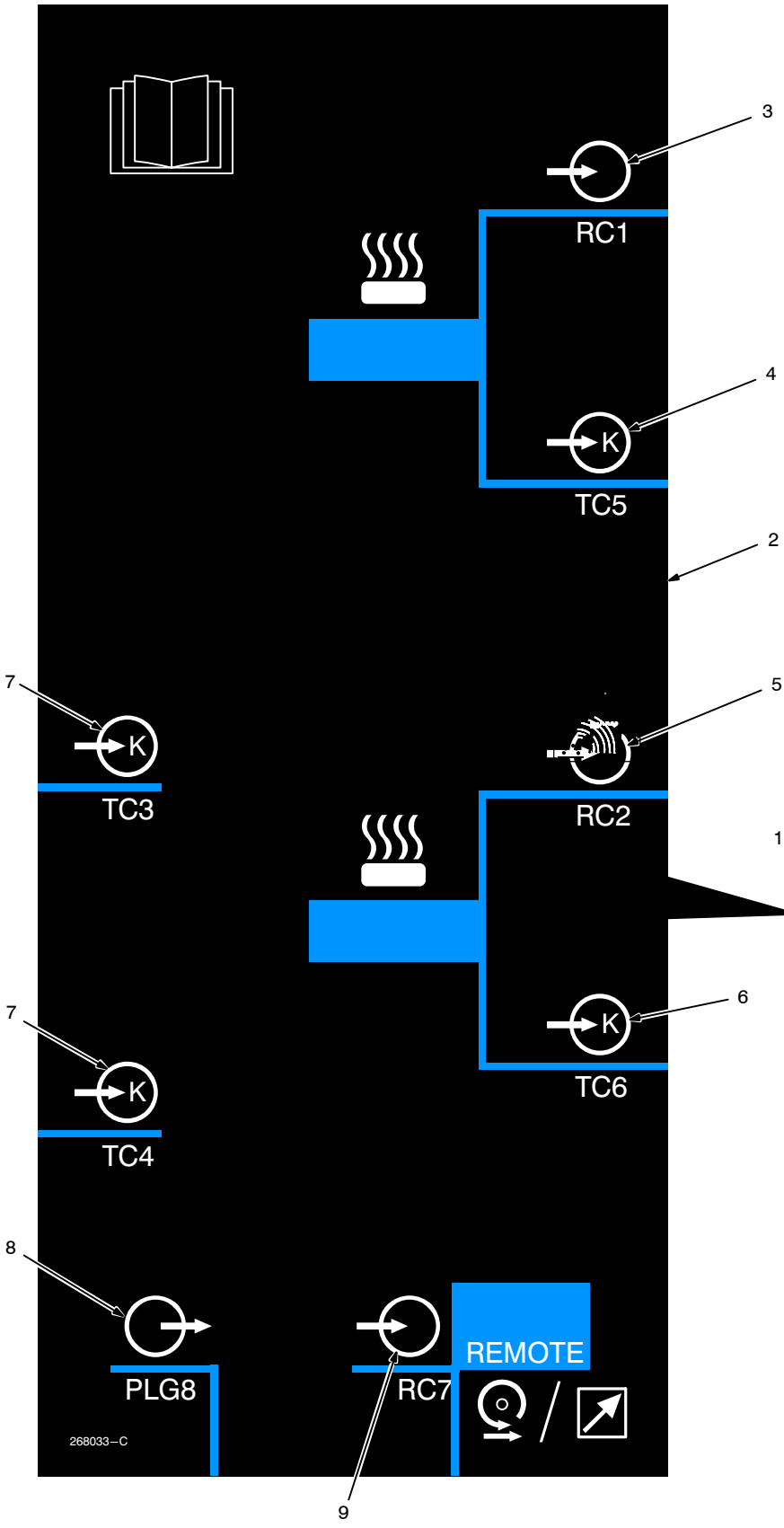
***NOTICE*** *– Only use the Rolling Inductor with a Miller ProHeat power source.*

☞ *Ensure all four wheels are touching the workpiece when setting up device to achieve optimum results. During operation, all four wheels might not touch workpiece at the same time due to imperfections and/or shape of the workpiece.*

☞ *A two device setup may require additional cooling capacity. Consult factory for application specific details.*

## 6-8. Connection Box Label






1 Connection Box

2 Connection Box Label

3 RC1

Make IR connection here when using one Rolling Inductor.

4 TC5

Make TC connection here when using one Rolling Inductor.

5 RC2

Make an IR connection here when using two Rolling Inductors.

6 TC6

Make TC connection here when using two Rolling Inductors.

7 TC3 And TC4

Axillary Thermocouple Connection Points.

8 PLG8

Used to connect connection box to power source.

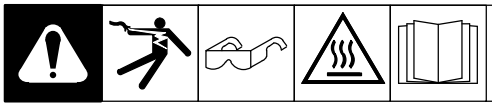
9 RC7

For travel sensor or remote connection.

268033-C / Ref. 262416-B

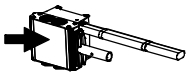
# SECTION 7 – MAINTENANCE AND TROUBLESHOOTING

## 7-1. Routine Maintenance



**Disconnect power before maintaining.**

☞ *Maintain more often during severe conditions.*

| | | | | |
|---|---|---|---|---|
| | ✓ = Check ◇ = Change ● = Clean Δ = Repair ☆ = Replace<br>* To be done by Factory Authorized Service Agent | | | |
| Before Each Use | Check Rolling Inductor and all cables for exposed conductors.<br>✓ Δ☆ | Check wearplate for cracks, wear, holes, debris, etc.<br>  <br>See Parts List (Item 20)<br>✓ ● ◇ or ☆ | Visually inspect unit and cables for damage.<br>✓ Δ☆ | Check Filter Bowl Fluid Levels, And Drain If Necessary<br>✓ |
| Before Each Use |  <br>✓☆ Labels | Verify ground continuity in TC cable (see Section 7-7)<br>✓☆ Δ | Visually inspect cooler heat exchanger ensure it is free of dust and debris.<br>✓● | |

## 7-2. Limit Condition Codes

| Limit Condition | Additional Information |
|---|---|
| L05: TC5 Open | Check Accessory TC connection at power source and Rolling Inductor. |
| L06: TC6 Open | Check Accessory TC connection at power source and Rolling Inductor. |
| L13: Cable Connection Fault | TC5 and TC6 connected with only one Rolling Inductor and a protective plug connected to the ProHeat (disconnect the unused thermocouple to clear the fault). |
| L14: Accessory Temperature Limit | Check Accessory TC connection. Wait for accessory to cool. |
| L15: Low Travel Speed | Increase travel speed. Check travel detector. |

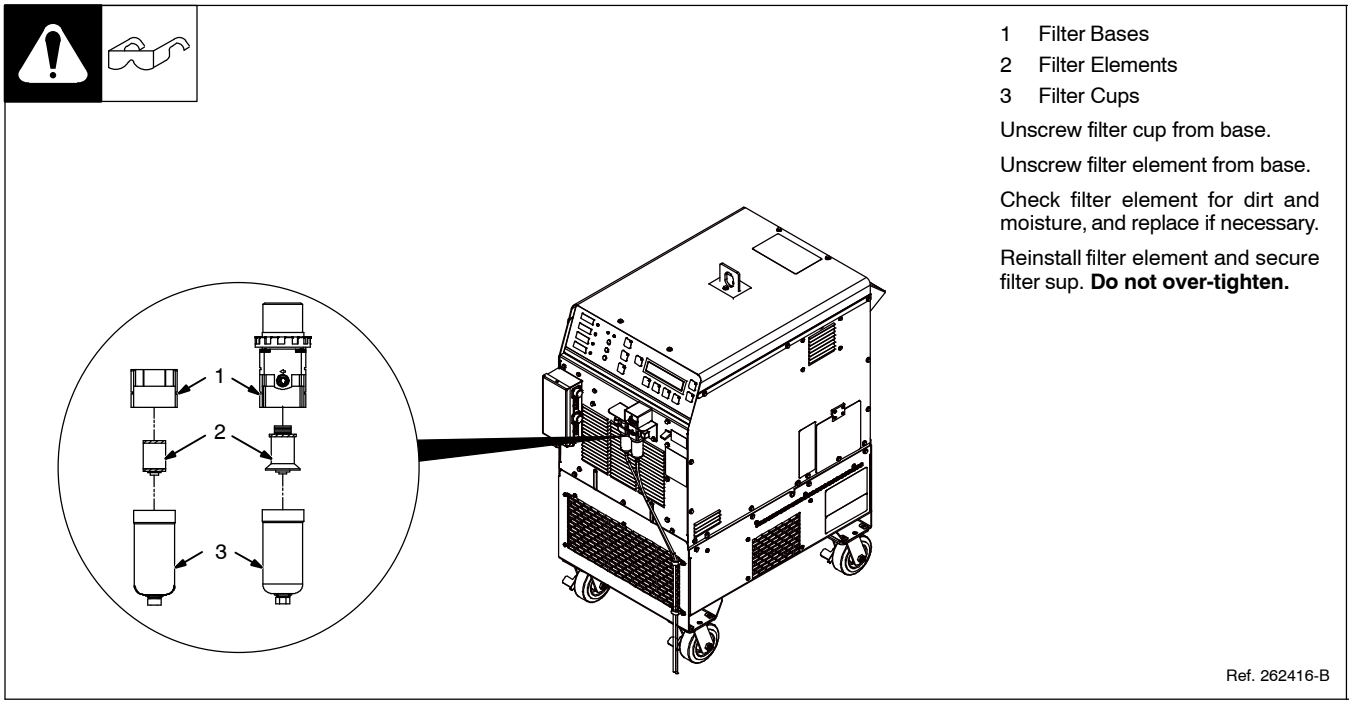
## 7-3. Fault Condition Codes

| Fault Condition | Additional Information |
|---|---|
| F68: Cable Connection Fault | Two non-like accessories are plugged into the same power source. Check that both outputs have the same type of accessory connected, or one accessory and one plug. |
| F79: Accessory 1 Overtemp Fault | Check Accessory TC connection.<br>Wait for accessory to cool. |
| F80: Accessory 2 Overtemp Fault | Check Accessory TC connection.<br>Wait for accessory to cool. |

## 7-4. Infrared Sensor Troubleshooting Guide

| Problem | Cause | Potential Solution |
|---|---|---|
| Err | Infrared sensor is connected but temperature is not in range. | Verify settings on ProHeat are set for IR 4–20 mA, and temp range is set to:<br>Part number - 265076 - 212°F–752°F (100°C–400°C)<br>Part number - 283080 - 122°F–752°F (50°C–400°C)<br>if infrared sensor is attached.<br><br>Verify settings on ProHeat are set for K TC if thermocouple measuring device is attached. |
| Low | Infrared sensor is connected but temperature output is below sensor range. | The "Low" setting is +/– 41°F (5°C) of the low limit of the infrared sensor temperature range of:<br>Part number - 265076 - 212°F (100°C)<br>Part number - 283080 - 122°F (50°C). |
| | | If necessary, use alternative method to verify temperature of material being heated. |
| High | Infrared sensor is connected but temperature output is above sensor range. | The "High" setting is +/– 41°F (5°C) of the high limit of the infrared sensor temperature range of 752°F (400°C). |
| | | If necessary, use alternative method to verify temperature of material being heated. |
| Open | No thermal couple measuring device detected. | If infrared sensor is connected, verify settings on ProHeat are set for an infrared sensor. Verify continuity of cable connections replace if necessary. |
| | | Verify infrared sensor is working correctly, replace if necessary. |
| | | If thermocouple measuring device is connected, verify continuity of extension cable and measuring device, replace if necessary. |
| ProHeat displays a temperature instead of _LO_ at ambient. | Shiny parts may reflect enough light energy to represent a warm spot. | Verify emissivity of part. |

## 7-5. Checking Or Changing Filter Element




1 Filter Bases
2 Filter Elements
3 Filter Cups

Unscrew filter cup from base.

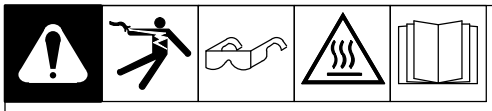
Unscrew filter element from base.

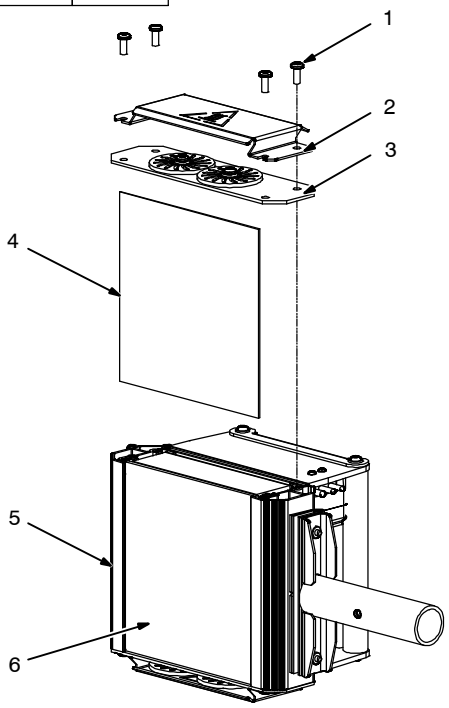
Check filter element for dirt and moisture, and replace if necessary.

Reinstall filter element and secure filter sup. **Do not over-tighten.**

Ref. 262416-B

## 7-6. Replacing The Rolling Inductor Wearplate






Tools Needed:

Torx T25

**Disconnect power before maintaining.**

1 T25 Torx Head Screw
2 Travel Sensor Bracket
3 Side Panel Assembly
4 Wearplate
5 Rolling Inductor
6 Insulation

With Rolling Inductor set on its side, remove and retain screws from side panel assembly. Set Travel Sensor bracket and side panel assembly aside.

Carefully slide worn/damaged wearplate up and out of the Rolling Inductor. Ensure insulation remains inside the device.

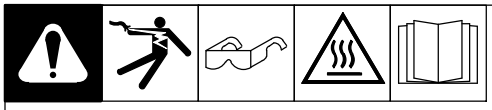
Insert new wearplate into the Rolling Inductor. Insulation may need to be pushed in as the wearplate is slid down to ensure it does not bunch up.

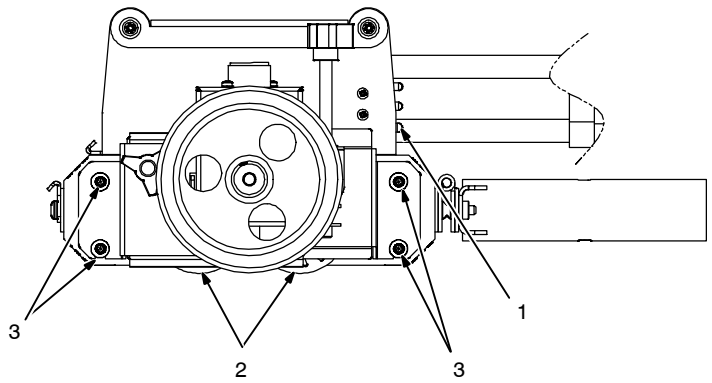
Place side panel assembly and travel sensor bracket back in place and torque screws to 30 in-lb (3.4 N·m). Do not over tighten.

Perform ground continuity test (see Section 7-7).

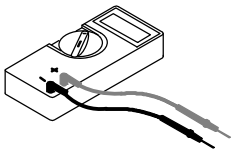
268218-A

## 7-7. Performing A Continuity Test Using A DMM






Tools Needed:



DMM

1 Ground Pin
2 Wheels
3 Case Screws

☞ *Perform continuity test each time case screws are retorqued.*

Use a digital multi-meter (DMM) set to diode mode. Perform continuity test as follows:

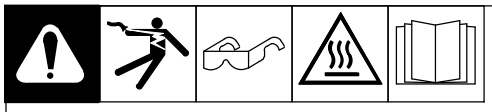
Place black probe on ground pin of TC connector.

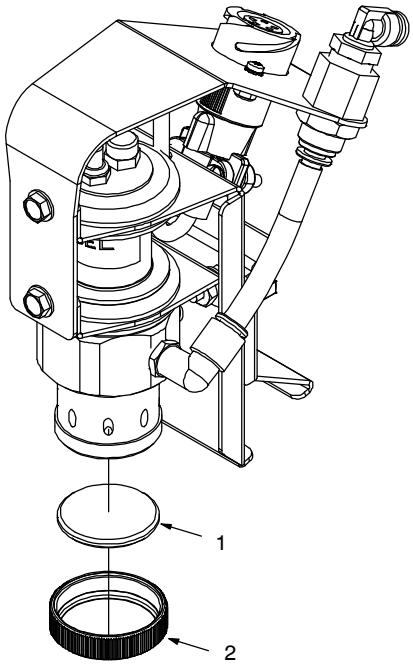
Touch red probe to each case screw and each wheel.

DMM should beep each time the red probe touches a screw or wheel.

Ref. 262413-C

## 7-8. Quartz Window Maintenance






1 Quartz Window

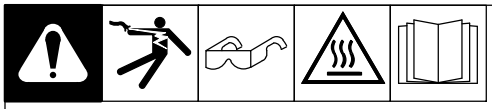
2 Retaining Ring

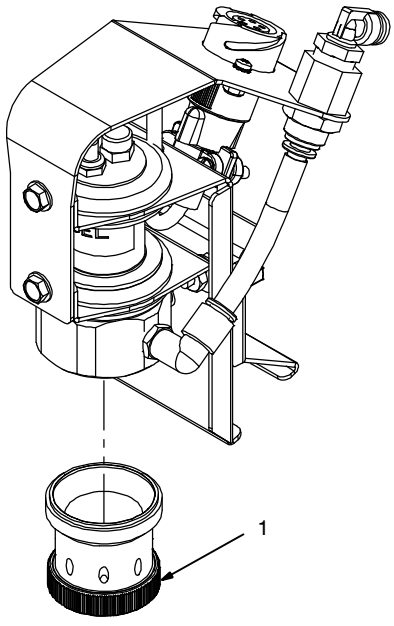
***NOTICE*** *– Window must be kept clean. Remove dust and foreign matter with compressed air. Clean window with 91percent isopropyl alcohol. Do not use cleaners that leave a film. Replace if scratched, chipped, cracked, or if contaminated with weld spatter.*

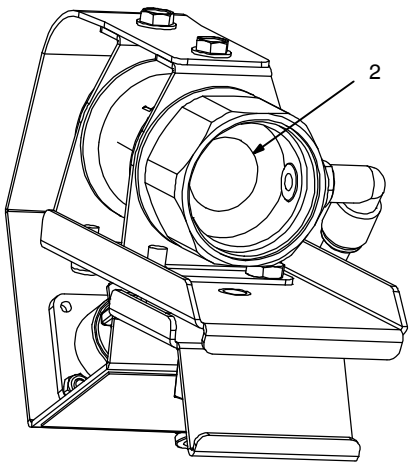
☞ *Finger tighten retaining ring.*

Ref. 265181-F

## 7-9. IR Lens Maintenance






1 Retaining Ring/Lower IR Temperature Sensor Collar

Remove.

2 IR Lens

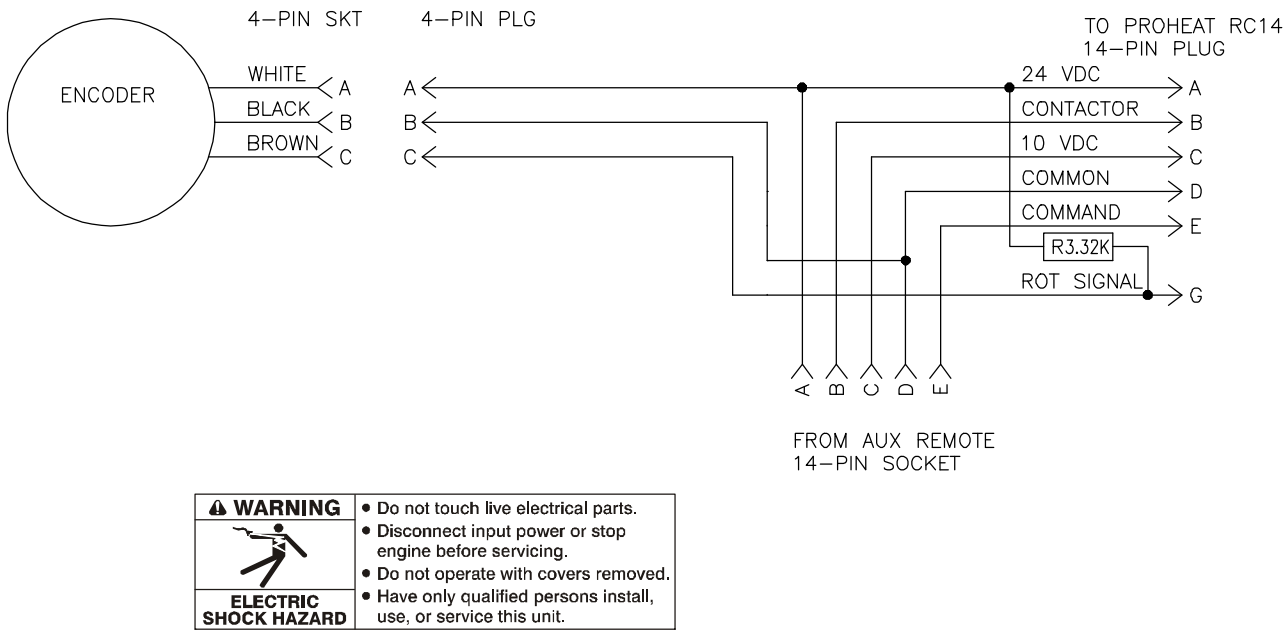
***NOTICE*** *– Gently brush or blow away debris with compressed air. Clean lens with 91percent or higher isopropyl alcohol.*

☞ *After cleaning lens, finger tighten retaining ring.*

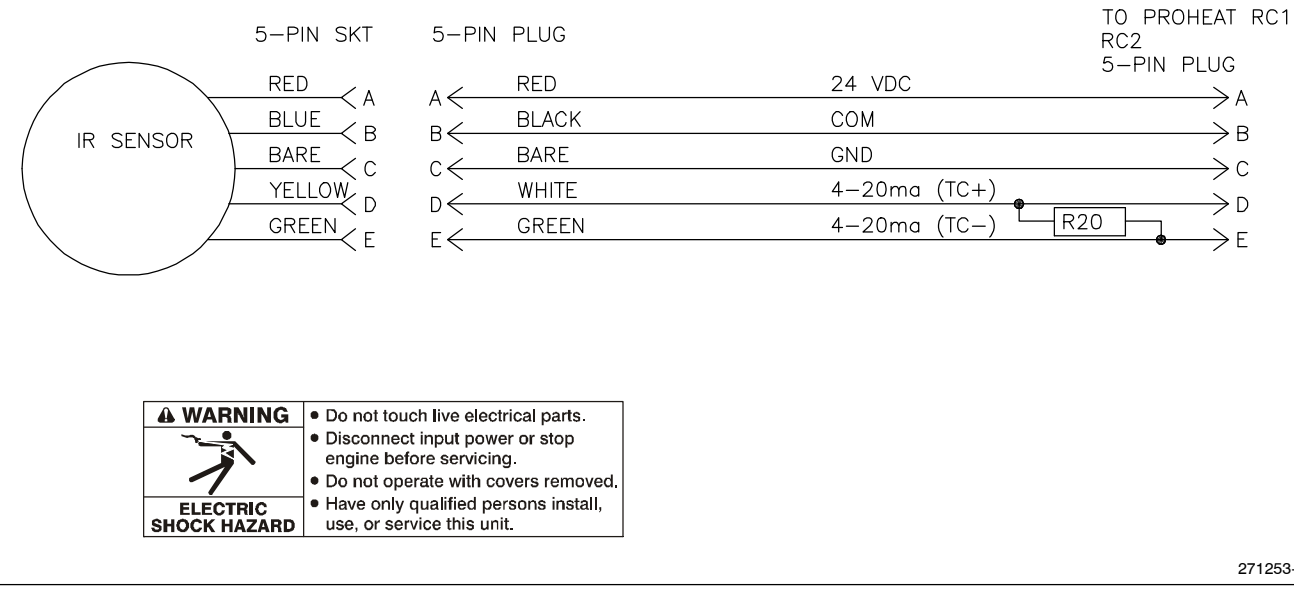
Ref. 265181-F

# SECTION 8 – ELETRICAL DIAGRAMS

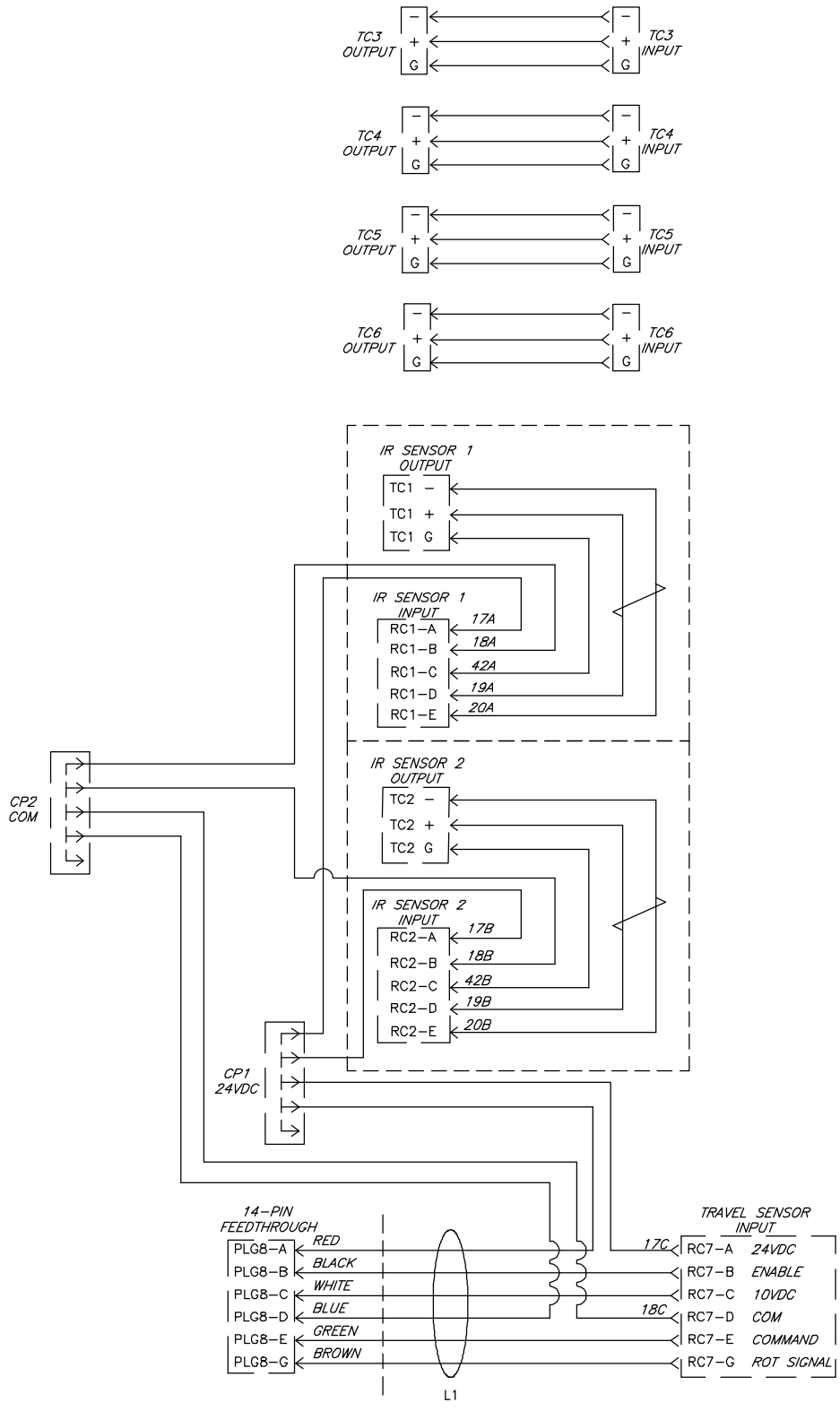
## 8-1. Travel Sensor Circuit Diagram




## 8-2. IR Sensor Circuit Diagram



## 8-3. Connection Box Circuit Diagram




**⚠ WARNING**

**ELECTRIC SHOCK HAZARD**

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

267753-E

☞ *Hardware is common and not available unless listed.*

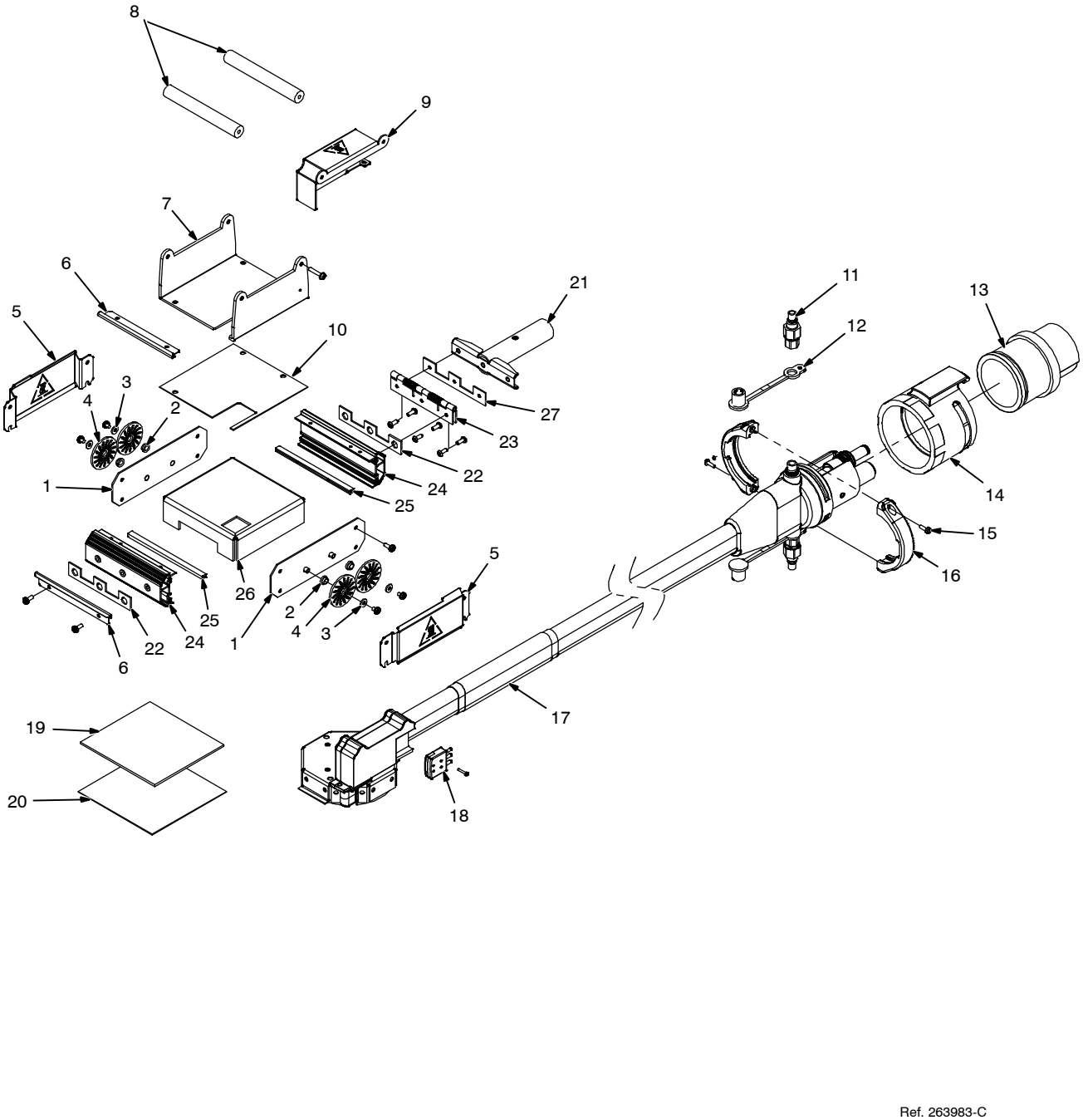



**Figure 9-1. Rolling Inductor Assembly**

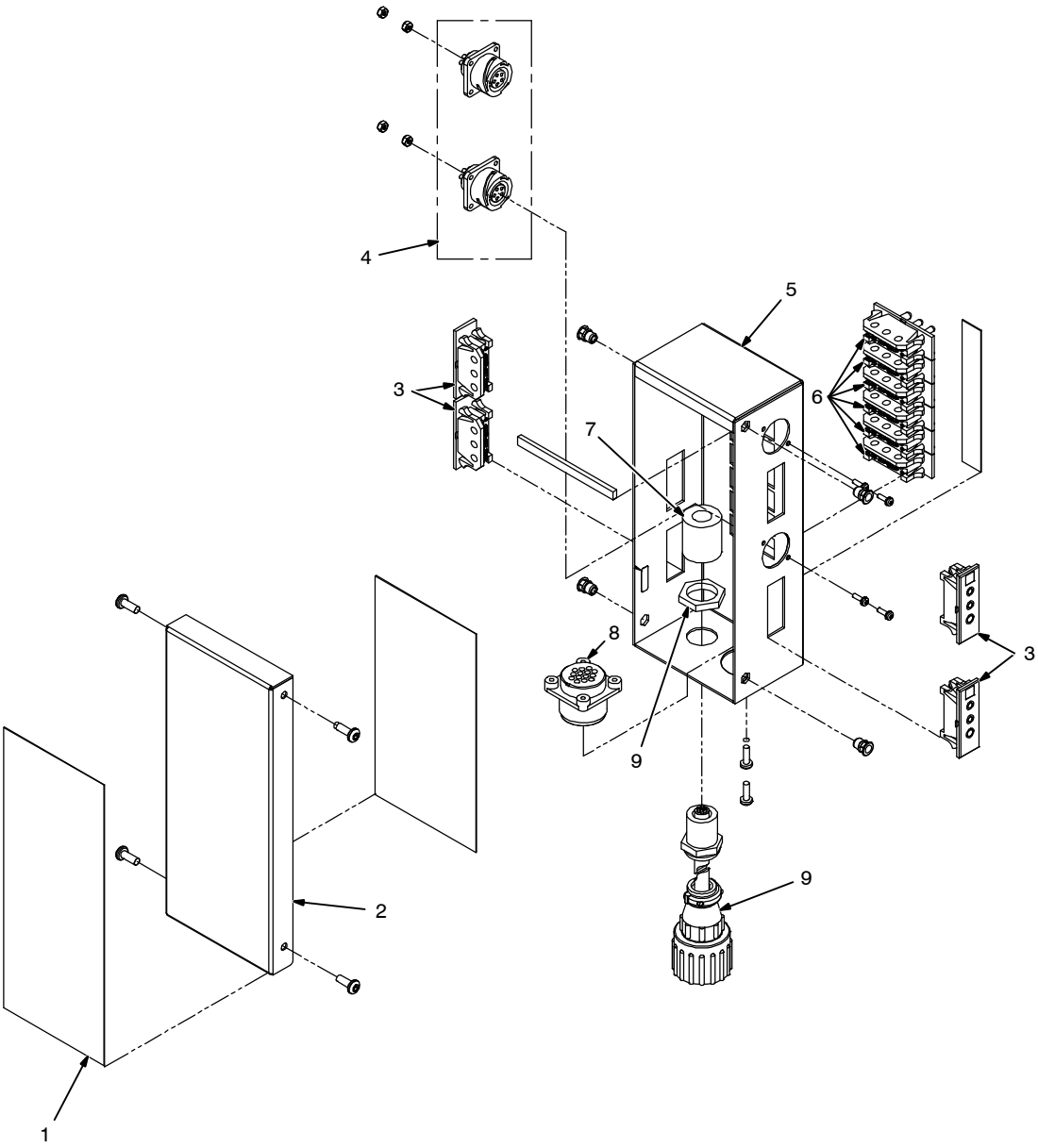
| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|

**Figure 9-1. Rolling Inductor Assembly**

| | | | | |
|---|---|---|---|---|
| 1 | | 262163 | Plate, Side w/Pems Rolling Inductor | 2 |
| 2 | | 263693 | Bearing | 4 |
| 3 | | 263696 | Washer, Thrust | 4 |
| 4 | | 263530 | Wheel, Rolling Inductor | 4 |
| 5 | | 265978 | Bracket,Travel Sensor Mtg Rails (Optional) | 2 |
| 6 | | 263213 | Bracket, Mtg Temperature Feedback | 2 |
| 7 | | 262268 | Plate,Top w/Coating | 1 |
| 8 | | 262166 | Handle, Plastic Rolling Inductor | 2 |
| 9 | | 263854 | Bracket, Rolling Inductor Strain Relief Cover | 1 |
| 10 | | 263690 | Spacer, Glass Polyester | 1 |
| 11 | | 204954 | Ftg, Plstc Nipple Qdisc x 1/4 Npt Female | 2 |
| 12 | | 210912 | Cap, Protective Rbr Quick Connect Nipple Black | 2 |
| 13 | | 264119 | Shell Assy, Connector - Rolling Inductor | 1 |
| 14 | | 254886 | Collar, Coupling | 1 |
| 15 | | 136343 | Screw, K5 0 x 20 Pan Hd-phl Stl Pld Pt Thread Forming | 2 |
| 16 | | 221099 | Clamp, Strain Relief | 2 |
| 17 | | 263904 | Label, Warning Flexible Induction Cords 9672 PSA | 1 |
| 18 | | 194962 | Connector, TC Type K 3-pin Male | 1 |
| 19 | | 262174 | Insulation, Bottom | 1 |
| 20 | | 262194 | Wearplate, Mica | 1 |
| 21 | | 262172 | Handle Assy, Arm | 1 |
| 22 | | 259455 | Spacer, Hinge | 2 |
| 23 | | 263732 | Hinge, Spring | 1 |
| 24 | | 263697 | Extrusion, w/Rivnuts | 2 |
| 25 | | 262173 | Insert, Extrusion Channel | 2 |
| 26 | | 262183 | Insulation, Top | 1 |
| 27 | | 263986 | Spacer, Hinge | 1 |
| | | 265943 | Assembly, TC Cable With Cover (Includes) (Not Shown) | 1 |
| | | 266211 | Cable, Extension 31 FT TC Type K w/Ground | 1 |
| | | 266110 | Label, Warning General Precautionary (EN/SP) | 1 |

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

☞ *Hardware is common and not available unless listed.*




265916-F

**Figure 9-2. IR TC Control Box**

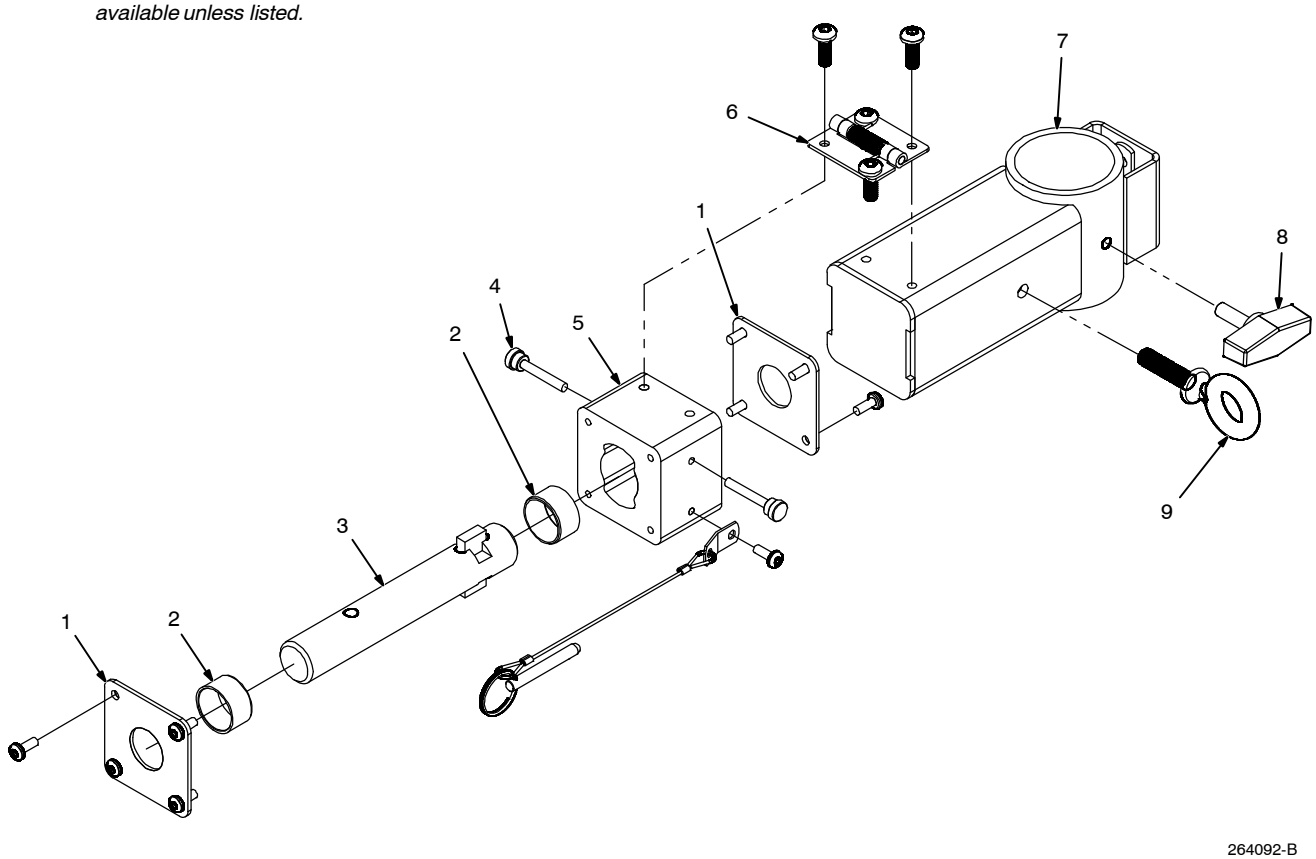
| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|

**Figure 9-2. IR TC Control Box**

| | | | | |
|---|---|---|---|---|
| 1 | | 268033 | Label, IR Connection Box | 1 |
| 2 | | 265118 | Cover, TC Connection Enclosure Assembly | 1 |
| 3 | | 268037 | Receptacle Assy, Thermocouple w/Leads IR Box | 4 |
| 4 | | 268044 | Plug Assy, PC1 | 1 |
| 5 | | 266808 | Enclosure, TC Connection With Rivet Nuts (Includes) | 1 |
| | | 263831 | Enclosure, TC Connection | 1 |
| | | 267916 | Gasket, Epfm 3.500 x .250 x .125 Thk w/Psa | 1 |
| | | 221493 | Label, TC1−6 | 1 |
| | | 260811 | Nut, 010−32 Hex Stl Pld Insert | 0 |
| 6 | | 197063 | Plug, Thermocouple Type K Panel Mount | 6 |
| 7 | | 246958 | Core, Ferrite 25.90mm Od x 12.80mm Id x 28.60mm Lg | 1 |
| 8 | | 134735 | Conn, Circ Ms/Cpc 14skt Size 20 Rcpt Panel Pushin | 1 |
| 9 | | 266220 | Cable, Pigtail w/14-Pin Male | 1 |

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

☞ *Hardware is common and not available unless listed.*



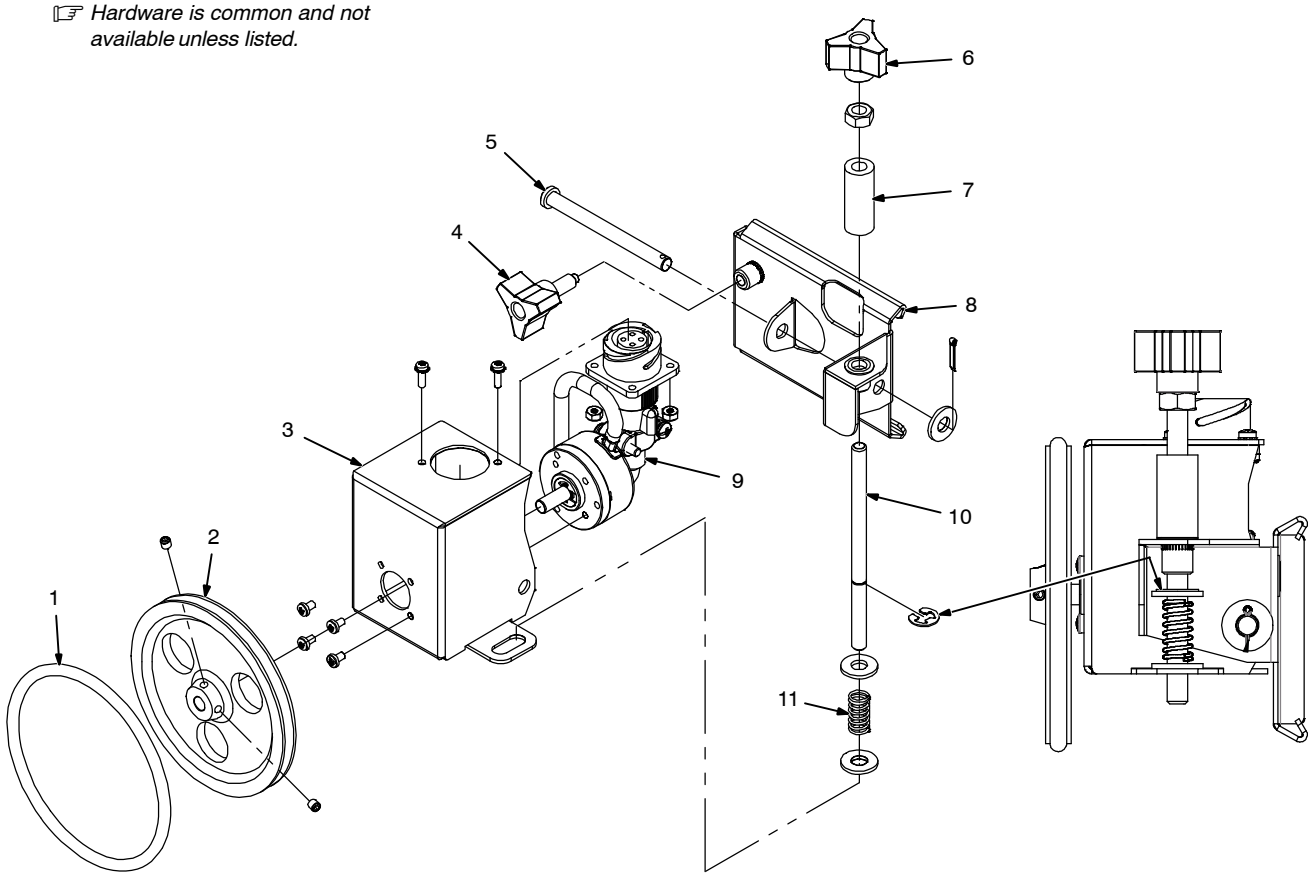

264092-B

**Figure 9-3. Mounting Arm Assembly**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|
| **Figure 9-3. Mounting Arm Assembly** | | | | |
| 1 | | 263529 | Plate, Swivel Induction Arm | 2 |
| 2 | | 263665 | Bushing, Swivel Induction Arm | 2 |
| 3 | | 263533 | Assy, Swivel Shaft Induction Arm | 1 |
| 4 | | 264044 | Screw, Thumb Sst 10-32 x 1.00 Knurled | 2 |
| 5 | | 263528 | Housing, Swivel Induction Arm | 1 |
| 6 | | 261778 | Hinge, Spring Induction Arm | 1 |
| 7 | | 263534 | Assy, Induction Arm Attachment Welded | 1 |
| 8 | | 124778 | Knob, T 2.000 Bar w/.312-18 Stud 1.000 Lg | 1 |
| 9 | | 259968 | Bolt, Eye Shld Thd Stem .375-16 x 1.500 Fbrgls | 1 |

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

☞ *Hardware is common and not available unless listed.*




Ref. 266226-C

**Figure 9-4. Travel Sensor Assembly w/Mounting Bracket**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|
| | | | **Figure 9-4. Travel Sensor Assembly w/Mounting Bracket** | |
| 1 | | 266229 | O-Ring, 3.350 Id x 3.770 Od Silicone | 1 |
| 2 | | 266228 | Wheel, Travel Sensor | 1 |
| 3 | | 266074 | Bracket, Travel Sensor Mtg | 1 |
| 4 | | 267352 | Knob Assy, Bracket Retention | 1 |
| 5 | | 266224 | Pin, Clevis .250 Od x 2.750 Lg w/.094 Hole Stls | 1 |
| 6 | | 262553 | Knob, Threaded Three Arm Phenolic | 1 |
| 7 | | 266751 | Spacer, AL .250 Id x .500 Od x 1.00 Lg | 1 |
| 8 | | 266223 | Clamp, Travel Sensor Pivot Assembly | 1 |
| 9 | | 264069 | Sensor, Travel Assembly | 1 |
| 10 | | 265988 | Shaft, Force Adjustment | 1 |
| 11 | | 266225 | Spring, Cprsn .360 Od x .041 Wire x .750 Free Stn | 1 |
| | | 266215 | Cable, Extension Travel Sensor (Not Shown) | 1 |
| | | 141162 | Housing Plug+ Pins, (Service Kit) 14 - 18 Ga | 1 |
| | | 152568 | Housing Plug+ Skts, (Service Kit) 20 - 24 Ga | 1 |
| | | 267601 | Conn, Circ MS/MET 4-Pin Size 14S Plug Solder | 1 |

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

☞ *Hardware is common and not available unless listed.*

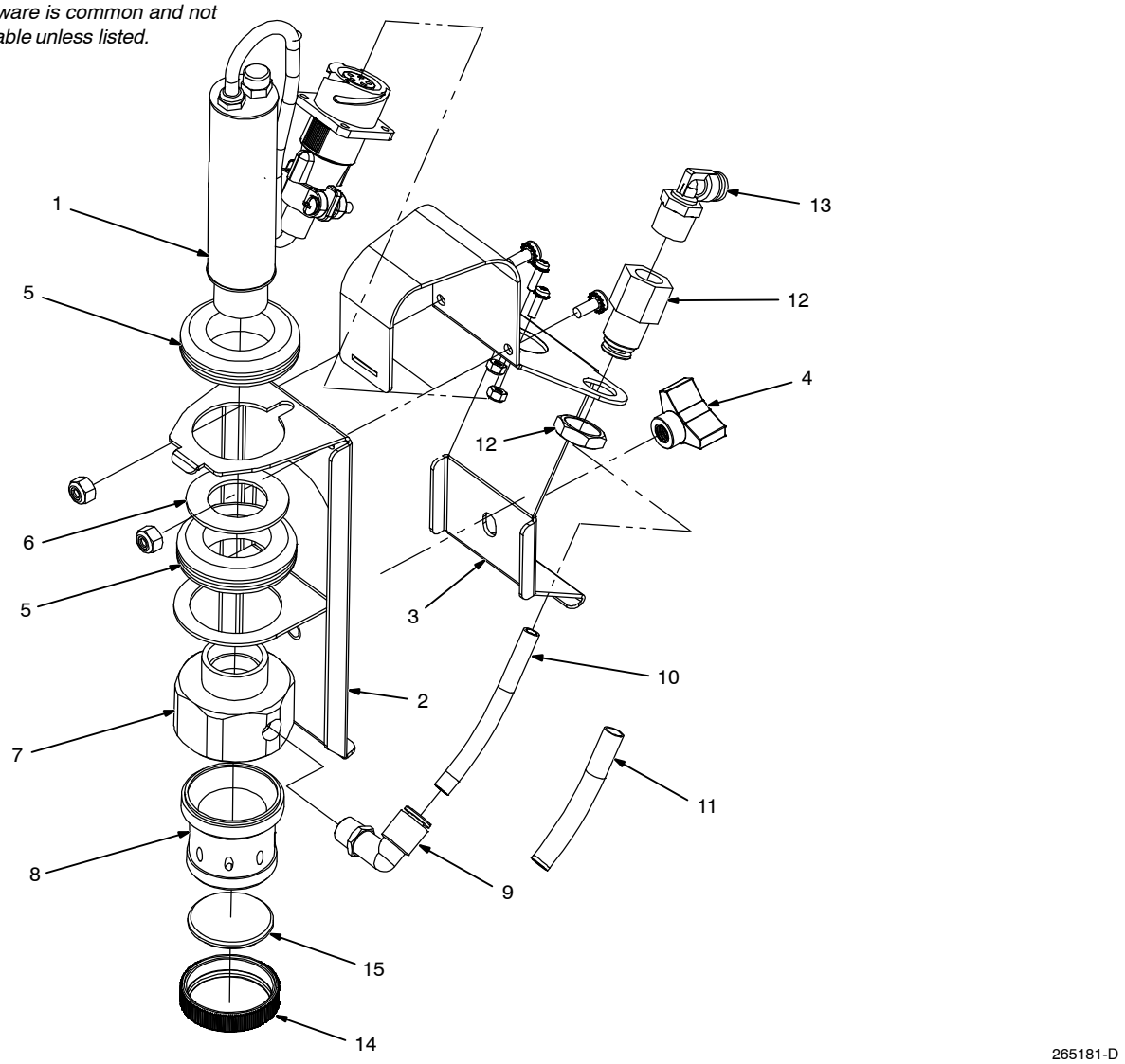
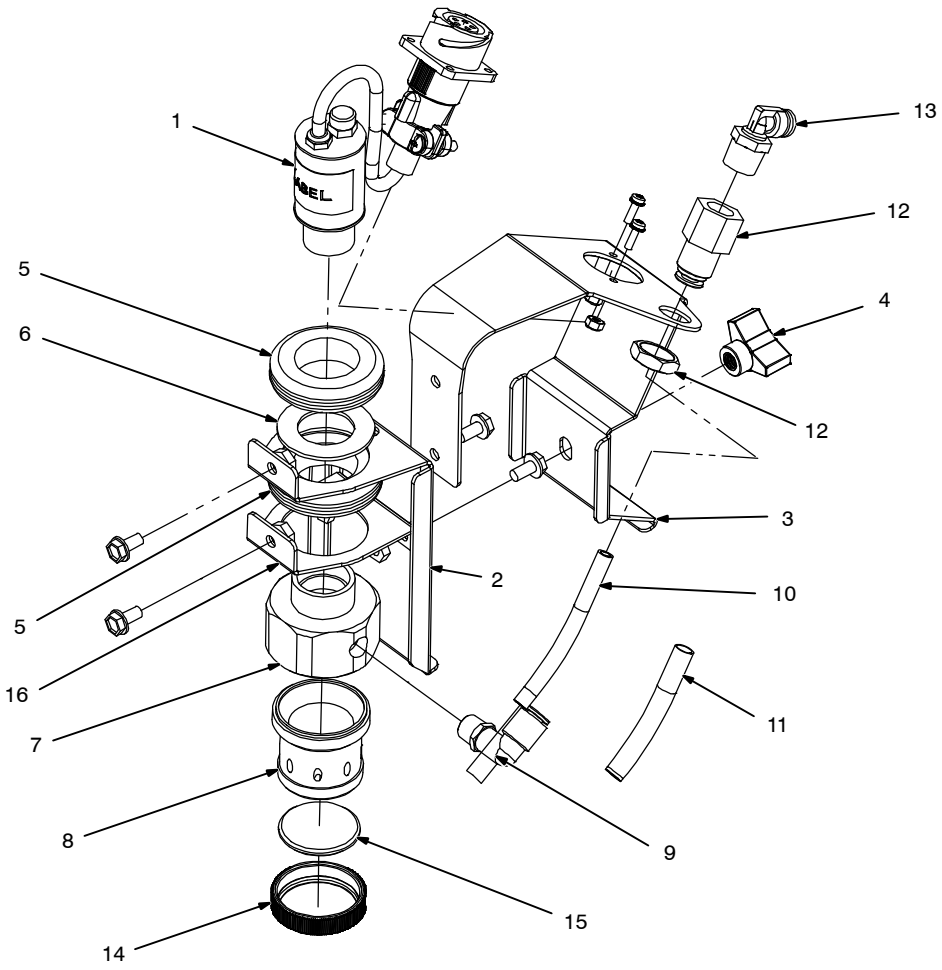



**Figure 9-5. IR Assembly w/Mounting Bracket (Prior to MJ000012J)**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|
| | | | **Figure 9-5. IR Assembly w/Mounting Bracket (Prior to MJ000012J)** | |
| 1 | | 265076 | Sensor, Temperature IR Assembly | 1 |
| 2 | | 265079 | Bracket, IR Mounting Assembly | 1 |
| 3 | | 265081 | Clamp, IR Mounting Bracket | 1 |
| 4 | | 262553 | Knob, Threaded Three Arm Phenolic | 1 |
| 5 | | 265082 | Grommet, Rbr Hi Temp 1.000 Id x 1.375 Mtg Hole .062 | 2 |
| 6 | | 265083 | Washer, Flat .812 Id x 1.375 Od x .062T Stnls Stl | 1 |
| 7 | | 265084 | Collar, IR Temperature Sensor Upper | 1 |
| 8 | | 265085 | Collar, IR Temperature Sensor Lower | 1 |
| 9 | | 263855 | Ftg, Brs Elbow Qdisc 1/8 Npt x .250 Tbg Swivl | 1 |
| 10 | | 265116 | Tubing, Pneumatic V−0 .250 Od x .170 Id | .292 Ft |
| 11 | | 265117 | Tubing, Gl Acryl .258−.278 Id Blk | .250 Ft |
| 12 | | 264070 | Ftg, Air Bulkhead Panel Mtg Qdisc 1/4 Npt x .250 Tbg | 1 |
| 13 | | 267465 | Ftg, Brs Elbow Qdisc 1/4 Npt x .250 Tbg Swivl | 1 |
| 14 | | 270580 | Ring, Quartz Window Retaining | 1 |
| 15 | | 270581 | Window, Quartz | 1 |

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

☞ *Hardware is common and not available unless listed.*




Ref. 265181-G

**Figure 9-6. IR Assembly w/Mounting Bracket (Eff w/MJ000012J)**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|
| | | | **Figure 9-6. IR Assembly w/Mounting Bracket (Eff w/MJ000012J)** | |
| 1 | | 283080 | Sensor, Temperature IR Assembly | 1 |
| 2 | | 283157 | Bracket, IR Mounting Assembly | 1 |
| 3 | | 283158 | Clamp, IR Mounting Bracket | 1 |
| 4 | | 262553 | Knob, Threaded Three Arm Phenolic | 1 |
| 5 | | 265082 | Grommet, Rbr Hi Temp 1.000 Id x 1.375 Mtg Hole .062 | 2 |
| 6 | | 265083 | Washer, Flat .812 Id x 1.375 Od x .062Thk Stnls Stl | 1 |
| 7 | | 265084 | Collar, IR Temperature Sensor Upper | 1 |
| 8 | | 265085 | Collar, IR Temperature Sensor Lower | 1 |
| 9 | | 263855 | Ftg, Brs Elbow Qdisc 1/8 Npt x .250 Tbg Swivl | 1 |
| 10 | | 265116 | Tubing, Pneumatic V−0 .250 Od x .170 Id | .292 Ft |
| 11 | | 265117 | Tubing, Gl Acryl .258−.278 Id Blk | .250 Ft |
| 12 | | 264070 | Ftg, Air Bulkhead Panel Mtg Qdisc 1/4 Npt x .250 Tbg | 1 |
| 13 | | 267465 | Ftg, Brs Elbow Qdisc 1/4 Npt x .250 Tbg Swivl | 1 |
| 14 | | 270580 | Ring, Quartz Window Retaining | 1 |
| 15 | | 270581 | Window, Quartz | 1 |
| 16 | | 283468 | Bracket, IR Sensor Mounting | 1 |

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

☞ *Hardware is common and not available unless listed.*

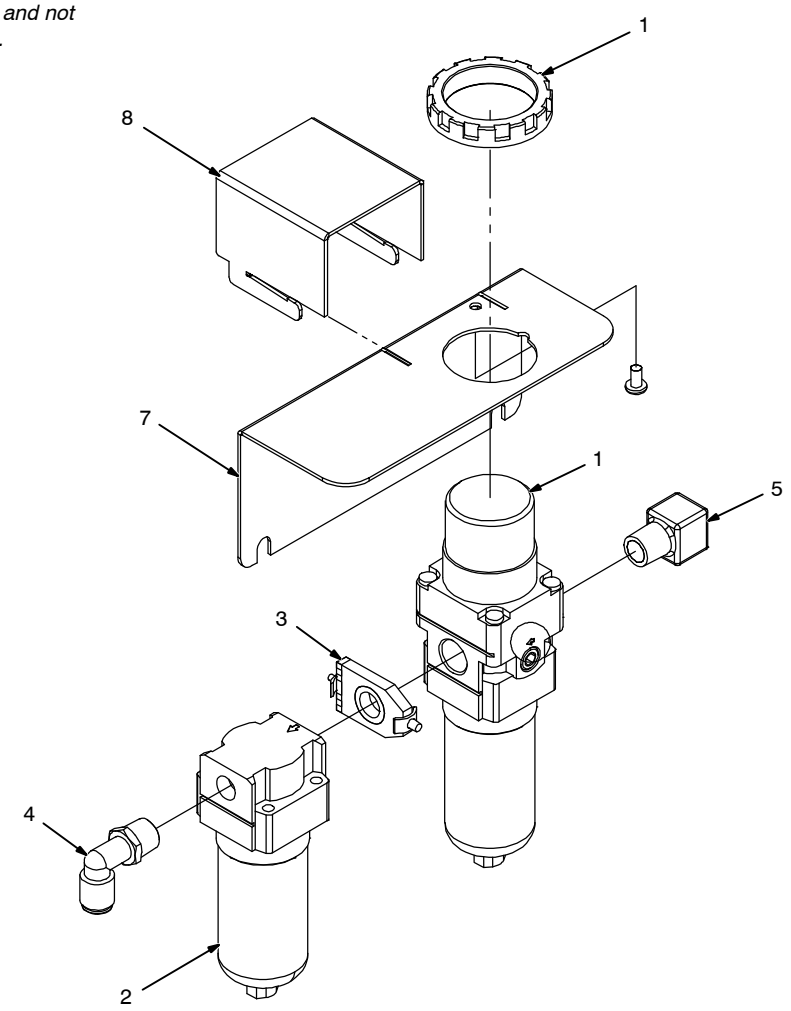


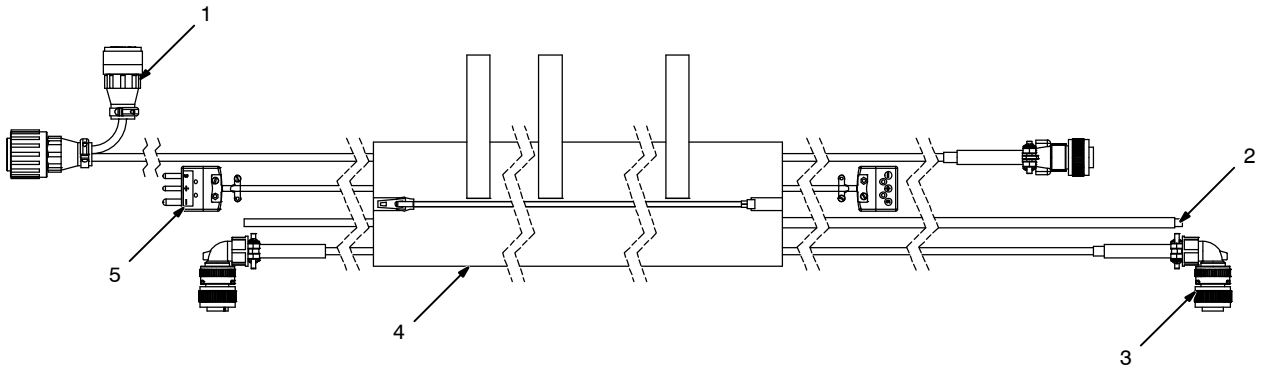

**Figure 9-7. Regulator–Filter Air/Oil Separator Assembly**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|
| | | | **Figure 9-7. Regulator–Filter Air/Oil Separator Assembly** | |
| 1 | | 265146 | Filter–Reg, 1/4 Npt 5 Micron 0–30 Psi Auto Drain w/N | 1 |
| 2 | | 265147 | Separator, Oil/Air Filter Auto Drain | 1 |
| 3 | | 265148 | Coupler, Air Regulator–Filter | 1 |
| 4 | | 204005 | Ftg, Plstc/Brs Elbow Qdisc 1/4 Npt x .250 Tbg Swivl | 1 |
| 5 | | 176518 | Ftg, Pipe Brs Elbow St 1/4 Npt | 1 |
| 6 | | 265155 | Bracket, Mtg Air Regulator–Filter | 1 |
| 7 | | 265075 | Bracket, Cover Air Regulator | 1 |
| 8 | | 265075 | Bracket, Cover Air Regulator | 1 |
| | | *227877 | Filter, Air Element (Not Shown) | 0 |
| | | *264232 | Filter, Oil Separator (Not Shown) | 0 |

*Recommended Spare Parts.

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

☞ *Hardware is common and not available unless listed.*




☞ *Items in Figure 9-7 are shown for parts identification. They are not available as a complete assembly.*

265156-C

**Figure 9-8. Cables And Hoses**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|
| | | | **Figure 9-8. Cables And Hoses** | |
| 1 | | 266215 | Cable, Extension Sensor Travel (Includes) | 1 |
| | | 267601 | Conn, Circ Ms/Met 4-Pin Size 14s Plug Solder | 1 |
| | | 141162 | Housing Plug+Pins, (Service Kit) | 0 |
| | | 152568 | Housing Plug+Skts, (Service Kit) | 0 |
| 2 | | 265116 | Tubing, Pneumatic V−0 .250 Od x .170 Id | 1 |
| 3 | | 266212 | Cable, Extension IR Connection (Includes) | 1 |
| | | 267598 | Conn, Circ Ms/Met 5-Pin Size 14s 90 Deg Plug Solder | 2 |
| 4 | | 266210 | Sheath, Cable IR TC Air Hose | 1 |
| 5 | | 266211 | Cable, Extension 31 Ft Tc Type K w/Ground (Includes) | 1 |
| | | 194962 | Connector, TC Type K 3-Pin Male | 1 |
| | | 194963 | Connector, TC Type K 3-Pin Female | 1 |

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

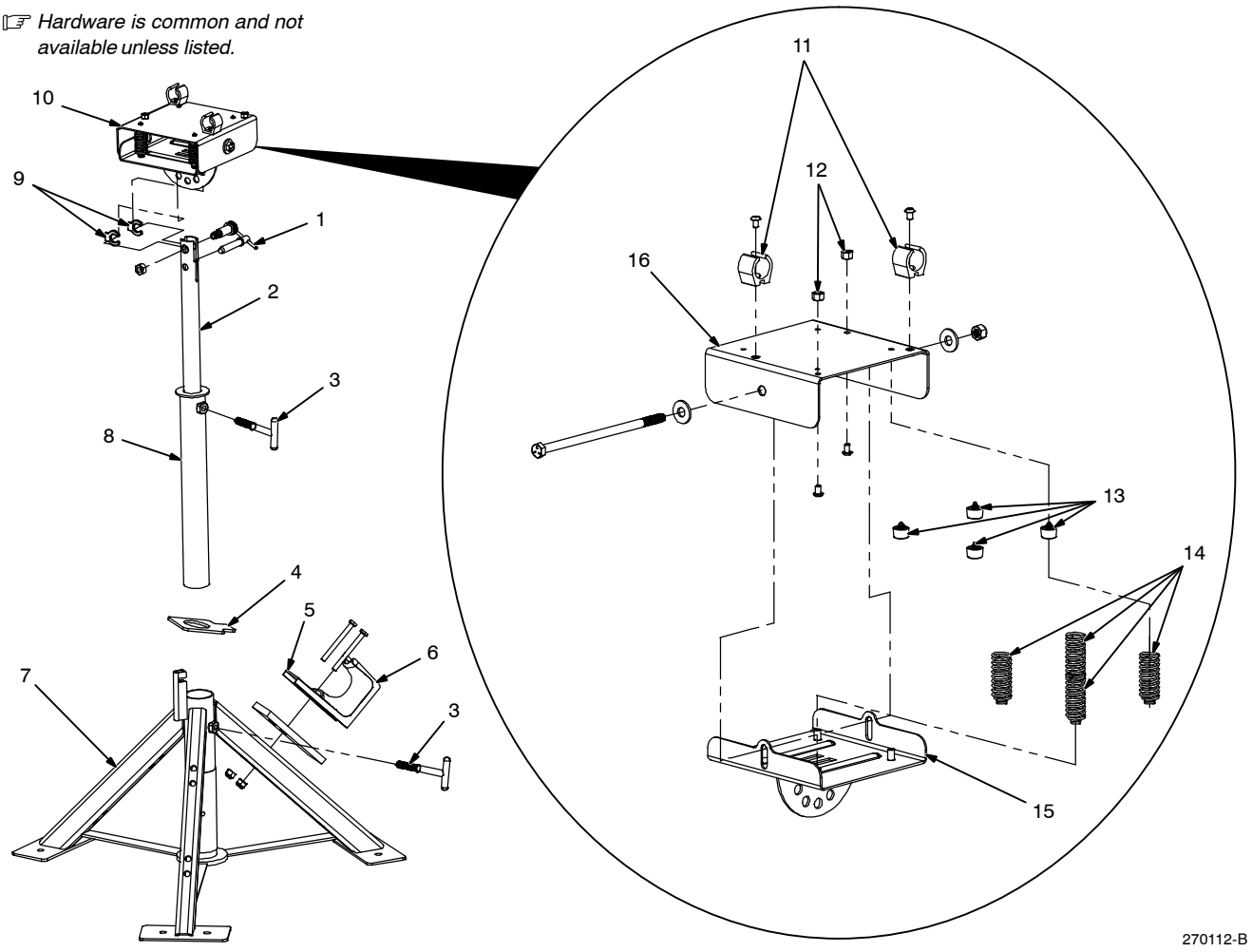



**Figure 9-9. Rolling Inductor Stand**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|
| | | | **Figure 9-9. Rolling Inductor Stand** | |
| 1 | | 269173 | Pin, Quick Release .375 Dia x 1.300 Usable Lg | 1 |
| 2 | | 269165 | Tube Assy, Small Welded Rolling Inductor Stand | 1 |
| 3 | | 269174 | Bolt, T−Handle 375−16 x 3.688 L Stl | 2 |
| 4 | | 269169 | Plate, Locking Rolling Inductor Stand | 1 |
| 5 | | 271153 | Spacer, Cable Mount .375Thk GFPC | 1 |
| 6 | | 271152 | Support, Cable J−Hook Nylon 2.000in Bundle Blk | 1 |
| 7 | | +269153 | Assy, Welded Base Rolling Inductor Stand | 1 |
| | | 269519 | Label, Warning Rolling Inductor Stand | 1 |
| 8 | | 269159 | Tube Assy, Middle Welded Rolling Inductor Stand | 1 |
| 9 | | 269678 | Clip, C .500 Id x .938 Od x .150Thk Nylon w/Tab | 2 |
| 10 | | 269406 | Assy, Head Rolling Inductor Stand (Includes) | 1 |
| 11 | | 192362 | Bracket, Mtg Nyl 1/2 Conduit | 2 |
| 12 | | 269448 | Stand−Off, No 10−32 x .250 Lg .375 Hex SST | 2 |
| 13 | | 269171 | Foot, Push Rivet .59 Od x .35H .04−.08Thk .165 Mtg Blk | 4 |
| 14 | | 269170 | Spring, Rolling Inductor Stand | 4 |
| 15 | | 269161 | Bracket Assy, Welded Rolling Inductor Stand | 1 |
| 16 | | 269166 | Bracket Assy, Top Rolling Inductor Stand | 1 |

\+ When ordering a component originally displaying a precautionary label, the label should also be ordered.

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

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Miller

# TRUE BLUE® WARRANTY

## Effective January 1, 2022
## (Equipment with a serial number preface of NC 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. 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
3. 2 Years — Parts and Labor
   * Auto-Darkening Weld Masks (No Labor)
   * Fume Extractors – Capture 5 and Industrial Collector Series
4. 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)
5. 6 Months — Parts
   * 12 Volt Automotive-Style Batteries
6. 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, GUARANTY, 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.

# 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

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# For Service

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

Always provide Model Name and Serial/Style Number.

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

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