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Processes



Resistance Spot
Welding

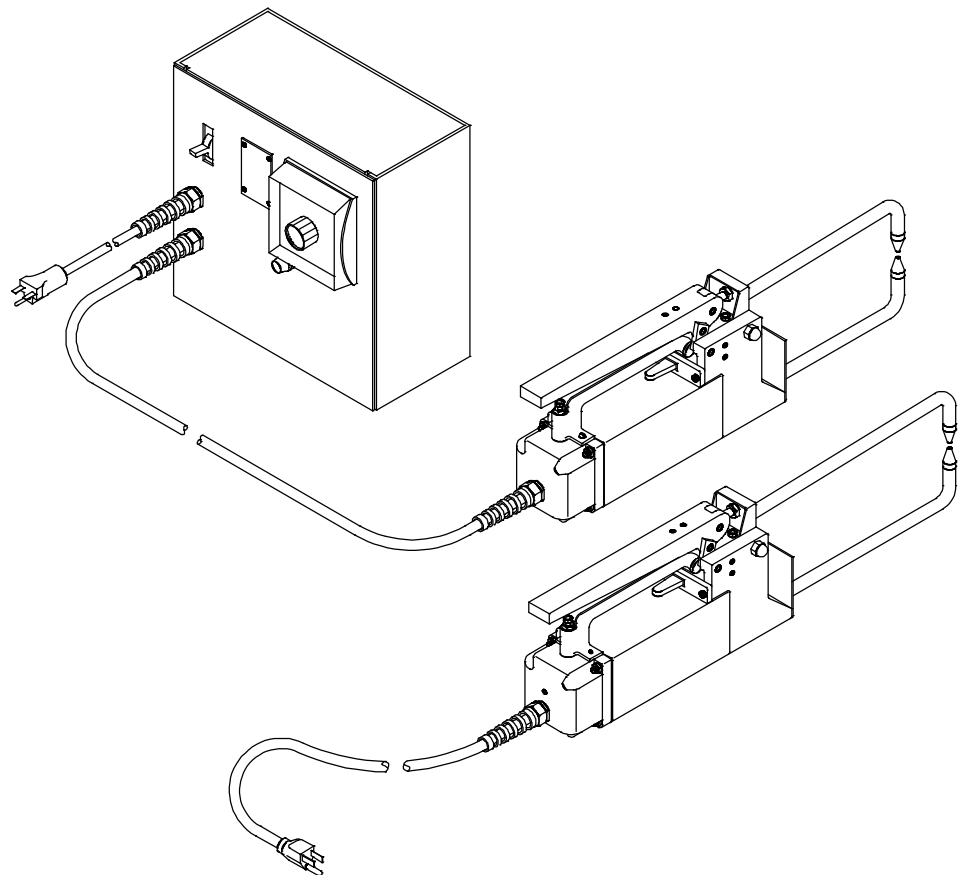
Description



MSW-41, MSW-41T, LMSW-52,

And LMSW-52T

Portable Resistance Spotwelders



Visit our website at
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. The parts list will then help you to decide the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.



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 on the web.**



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



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SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

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 Protect yourself and others from injury — read and follow these precautions.

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.



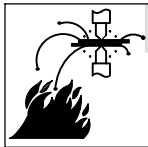
This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Resistance Spot Welding 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 Safety Standards listed in Section 1-5. Read and follow all Safety Standards.

 Only qualified persons should install, operate, maintain, and repair this unit.

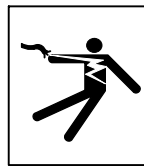
 During operation, keep everybody, especially children, away.



SPOT WELDING can cause fire or explosion.

Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

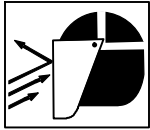
- Remove all flammables within 35 ft (10.7 m) of the weld. If this is not possible, tightly cover them with approved covers.
- Do not spot weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Do not weld where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Do not exceed the equipment rated capacity.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. 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.
- Wear dry, hole-free insulating gloves and body protection.
- 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).
- Properly install and ground this equipment according to this 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 the 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. Check ground conductor for continuity.
- Turn off all equipment when not in use.
- For water-cooled equipment, check and repair or replace any leaking hoses or fittings. Do not use any electrical equipment if you are wet or in a wet area.
- Use only well-maintained equipment. Repair or replace damaged parts at once.
- Wear a safety harness if working above floor level.
- Keep all panels, covers, and guards securely in place.



FLYING SPARKS can injure.

Very often sparks fly off from the joint area.

- Wear approved face shield or safety goggles with side shields.

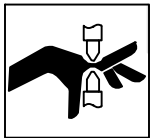
- Wear protective garments such as oil-free, flame-resistant leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap. Synthetic material usually does not provide such protection.
- Protect others in nearby areas by using approved flame-resistant or noncombustible fire curtains or shields. Have all nearby persons wear safety glasses with side shields.



HOT PARTS can burn.

- Do not touch hot parts bare handed.
- Allow cooling period before working on equipment.

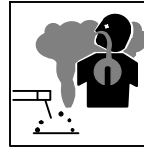
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.



MOVING PARTS can injure.

The tong tips, tongs, and linkages move during operation.

- Keep away from moving parts.
- Keep away from pinch points.
- Do not put hands between tips.
- Keep all guards and panels securely in place.
- OSHA and/or local codes may require additional guarding to suit the application.



FUMES AND GASES can be hazardous.

Welding produces 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.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld 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 welded.

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



FIRE OR EXPLOSION hazard.

- Do not install or place unit on, over, or near combustible surfaces.
- Do not install or operate unit near flammables.

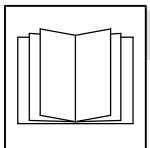
- Do not overload building wiring – be sure power supply system is properly sized, rated, and protected to handle this unit.



FALLING EQUIPMENT can injure.

- Use equipment of adequate capacity to lift and support unit.
- Follow the guidelines in the Applications Manual for the Revised NIOSH Lifting Equation (Publication No. 94-110) when manually lifting heavy parts or equipment.

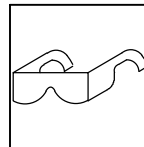
- Secure unit during transport so it cannot tip or fall.



READ INSTRUCTIONS.

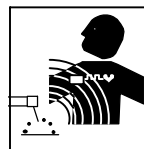
- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.

- Use only genuine replacement parts from the manufacturer.
- Perform maintenance and service according to the Owner's Manuals, industry standards, and national, state, and local codes.



FLYING METAL or DIRT can injure eyes.

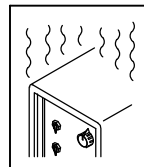
- Wear approved safety glasses with side shields or wear face shield.



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.




OVERUSE can cause OVERHEATING.

- Allow cooling period; follow rated duty cycle.
- Reduce duty cycle before starting to weld again.


1-4. California Proposition 65 Warnings

-  Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)
-  Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. *Wash hands after handling.*
-  This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. *Wash hands after use.*

For Gasoline Engines:

-  Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

For Diesel Engines:

-  Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (phone: 1-866-512-1800) (there are 10 OSHA Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org and www.sparky.org).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (phone: 212-642-4900, website: www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org).

1-6. EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). Welding current creates an EMF field around the welding circuit and welding equipment. EMF fields may interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, access restrictions for passers-by or 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.

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

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! Se protéger, ainsi que toute autre personne travaillant sur les lieux, contre les étincelles et le métal chaud.

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.

NOTE – 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. Consulter les symboles et les instructions ci-dessous y afférant pour les actions nécessaires afin d'éviter le danger.

2-2. Dangers relatifs au soudage à l'arc



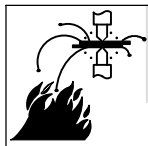
Les symboles présentés ci-après sont utilisés tout au long du présent manuel pour attirer votre attention et identifier les risques de danger. Lorsque vous voyez un symbole, soyez vigilant et suivez les directives mentionnées afin d'éviter tout danger. Les consignes de sécurité présentées ci-après ne font que résumer l'information contenue dans les normes de sécurité énumérées à la section 2-5. 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.



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



LE SOUDAGE PAR POINTS peut provoquer un incendie ou une explosion.

Des étincelles peuvent être projetées de la soudure. La projection d'étincelles ainsi que les pièces et équipements chauds peuvent provoquer des incendies, des brûlures et des incendies. Le contact accidentel de l'électrode avec des objets métalliques peut provoquer des étincelles, une explosion, un surchauffement ou un incendie. Avant de commencer le soudage, vérifier et s'assurer que l'endroit ne présente pas de danger.

- Déplacez toute matière inflammable se trouvant dans un périmètre de 10 m de la pièce à souder. Si cela est impossible, couvrez-les de housses approuvées et bien ajustées.
- Ne soudez pas par points dans un endroit où des étincelles peuvent tomber sur des substances inflammables.
- Protégez-vous, ainsi que toute autre personne travaillant sur les lieux, contre les étincelles et le métal chaud.
- Des étincelles du soudage peuvent facilement passer dans d'autres zones en traversant de petites fissures et des ouvertures.
- Afin d'éliminer tout risque de feu, soyez vigilant et gardez toujours un extincteur à portée de main.
- Ne soudez pas par points sur un récipient fermé tel un réservoir, un bidon ou conduites, à moins qu'ils n'aient été préparés correctement conformément à AWS F4.1 (voir les normes de sécurité).
- Ne soudez pas si l'air ambiant est chargé de particules, gaz, ou vapeurs inflammables (vapeur d'essence, par exemple).
- Avant de souder, retirez toute substance combustible de vos poches telles qu'un briquet au butane ou des allumettes.
- Une fois le travail achevé, assurez-vous qu'il ne reste aucune trace d'étincelles incandescentes ni de flammes.
- Ne dépassez pas la puissance permise de l'équipement.
- Utiliser exclusivement des fusibles ou coupe-circuits appropriés. Ne pas augmenter leur puissance; ne pas les ponter.

- Suivre les consignes de OSHA 1910.252 (a) (2) (iv) et de NFPA 51B pour travaux de soudage et prévoir un détecteur d'incendie et un extincteur à proximité.

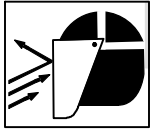


UNE DÉCHARGE ÉLECTRIQUE peut entraîner la mort.

Le fait de toucher à une pièce électrique sous tension peut donner une décharge fatale ou entraîner des brûlures graves. L'alimentation d'entrée et les circuits internes de l'appareil sont également actifs lorsque le poste est sous tension. Un poste incorrectement installé ou inadéquatement mis à la terre constitue un danger.

- Ne touchez pas aux pièces électriques sous tension.
- Portez des gants isolants et des vêtements de protection secs et sans trous.
- 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 énumérées dans les normes de sécurité. En outre, ne pas travailler seul !
- Coupez l'alimentation d'entrée avant d'installer l'appareil ou d'effectuer l'entretien. Verrouillez ou étiquetez la sortie d'alimentation selon la norme OSHA 29 CFR 1910.147 (reportez-vous aux Principales normes de sécurité).
- Installez le poste correctement et mettez-le à la terre conformément aux consignes de ce manuel et aux 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.
- Avant d'effectuer les connexions d'alimentation, vous devez connecter en premier lieu le fil de terre - contrôlez les connexions.
- Les câbles doivent être exempts d'humidité, d'huile et de graisse; protégez-les contre les étincelles et les pièces métalliques chaudes.
- Assurez-vous régulièrement que les câbles d'alimentation et de masse ne sont pas endommagés ou dénudés par endroit. Remplacez-les immédiatement si c'est le cas : un câble dénudé peut provoquer la mort. Contrôlez la continuité de la mise à la terre.
- L'équipement doit être hors tension lorsqu'il n'est pas utilisé.
- Dans le cas d'équipements refroidis par eau, contrôlez les conduites et raccords; remplacez-les s'ils présentent des fuites. N'utilisez pas d'équipement électrique si vous êtes mouillé ou dans une zone humide.

- Utilisez uniquement un équipement en bonne condition. Réparez ou remplacez immédiatement toute pièce endommagée.
- Portez un harnais de sécurité si vous devez travailler au-dessus du sol.
- Maintenez en place les panneaux, couvercles et protections de sécurité.



LES ÉTINCELLES PROJETÉES peuvent provoquer des blessures.

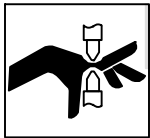
Des étincelles peuvent jaillir de la soudure.

- Portez une visière ou des lunettes de sécurité avec des écrans latéraux approuvés.
- Portez un équipement de protection: gants en cuir résistant au feu, chemise épaisse, pantalon sans revers, chaussures de sécurité et casquette. Les matériaux synthétiques ne garantissent pas une bonne protection.
- Protégez les autres occupants du local à l'aide d'un rideau ou d'un écran ignifuge approprié. Assurez-vous que ces personnes portent des lunettes de sécurité avec protections latérales.



LES PIÈCES CHAUDES peuvent provoquer des brûlures.

- Ne pas toucher des parties chaudes à mains nues.
- Prévoir une période de refroidissement avant de travailler à l'équipement.
- Ne pas toucher aux pièces chaudes, utiliser les outils recommandés et porter des gants de soudage et des vêtements épais pour éviter les brûlures.



Les PIÈCES MOBILES peuvent causer des blessures.

Pendant le soudage, les bras et électrodes se déplacent.

- Ne pas s'approcher des organes mobiles.

- Ne pas s'approcher des points de coincement.
- Ne placez pas les mains entre les électrodes.
- Maintenez en place les panneaux et protections de sécurité.
- Les applications peuvent nécessiter des protections supplémentaires d'après les codes de sécurité locales.



LES FUMÉES ET LES GAZ peuvent être dangereux.

Le soudage génère des fumées et des gaz. Leur inhalation peut être dangereuse pour la 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.
- Si la ventilation est médiocre, porter un respirateur anti-vapeurs approuvé.
- Lire et comprendre les spécifications de sécurité des matériaux (MSDS) et les instructions du fabricant concernant les métaux, les consommables, les revêtements, les nettoyants et les dégraissants.
- Travailler dans un espace fermé seulement s'il est bien ventilé ou en portant un respirateur à alimentation d'air. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz de soudage peuvent déplacer l'air et abaisser le niveau d'oxygène provoquant des blessures ou des accidents mortels. S'assurer que l'air de respiration ne présente aucun danger.
- Ne pas souder dans des endroits situés à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
- Ne pas souder des métaux munis d'un revêtement, tels que l'acier galvanisé, plaqué en plomb ou au cadmium à moins que le revêtement n'ait été enlevé dans la zone de soudure, que l'endroit soit bien ventilé et en portant un respirateur à alimentation d'air. Les revêtements et tous les métaux renfermant ces éléments peuvent dégager des fumées toxiques en cas de soudage.

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



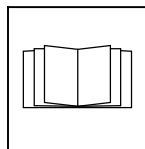
Risque D'INCENDIE OU D'EXPLOSION.

- Ne pas placer l'appareil sur, au-dessus ou à proximité de surfaces inflammables.
- Ne pas installer ni faire fonctionner l'appareil à proximité de substances inflammables.
- Ne pas surcharger l'installation électrique – s'assurer que l'alimentation est correctement dimensionnée et protégée avant de mettre l'appareil en service.



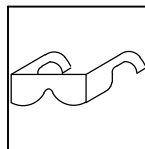
LA CHUTE DE L'ÉQUIPEMENT peut provoquer des blessures.

- Utiliser un équipement de levage de capacité suffisante pour lever l'appareil.
- Suivre les consignes du Manuel des applications pour l'équation de levage NIOSH révisée (Publication N°94-110) lors du levage manuel de pièces ou équipements lourds.
- Durant le transport, immobilisez l'appareil pour éviter qu'il ne bascule.



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'entretien en respectant les manuels d'utilisation, les normes industrielles et les codes nationaux, d'état et locaux.



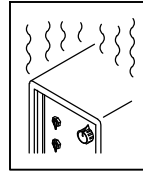
DES PIÈCES DE MÉTAL ou DES SALETÉS peuvent provoquer des blessures aux yeux.

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



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.



L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- Prévoir une période de refroidissement; respecter le cycle opératoire nominal.
- Réduire le facteur de marche avant de poursuivre le soudage.

2-4. Proposition californienne 65 Avertissements

- ⚠ Les équipements de soudage et de coupage produisent des fumées et des gaz qui contiennent des produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des malformations congénitales et, dans certains cas, des cancers. (Code de santé et de sécurité de Californie, chapitre 25249.5 et suivants)
- ⚠ Les batteries, les bornes et autres accessoires contiennent du plomb et des composés à base de plomb, produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des cancers et des malformations congénitales ou autres problèmes de procréation. *Se laver les mains après manipulation.*
- ⚠ Ce produit contient des éléments chimiques, dont le plomb, reconnus par l'État de Californie pour leur caractère

cancérogène ainsi que provoquant des malformations congénitales ou autres problèmes de procréation. *Se laver les mains après toute manipulation.*

Pour les moteurs à essence :

- ⚠ Les gaz d'échappement des moteurs contiennent des produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des cancers et des malformations congénitales ou autres problèmes de procréation.

Pour les moteurs diesel :

- ⚠ Les gaz d'échappement des moteurs diesel et certains de leurs composants sont reconnus par l'État de Californie comme provoquant des cancers et des malformations congénitales ou autres problèmes de procréation.

2-5. Principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, de Global Engineering Documents (téléphone : 1-877-413-5184, site Internet : www.global.ih.com).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, de U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (téléphone : 1-866-512-1800) (il y a 10 bureaux régionaux--le téléphone de la région 5, Chicago, est 312-353-2220, site Internet : www.osha.gov).

National Electrical Code, NFPA Standard 70, de National Fire Protection Association, Quincy, MA 02269 (téléphone : 1-800-344-3555, site Internet : www.nfpa.org et www.sparky.org).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, de Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5N5 (téléphone : 800-463-6727, website : www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, de American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (téléphone : 212-642-4900, site Internet : www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, de National Fire Protection Association, P.O. Box 9101, Quincy, MA 02269-9101 (téléphone : 617-770-3000, site Internet : www.nfpa.org).

2-6. Informations relatives aux CEM

Le courant électrique qui traverse tout conducteur génère des champs électromagnétiques (CEM) à certains endroits. Le courant de soudage crée un CEM autour du circuit et du matériel de soudage. Les CEM peuvent créer des interférences avec certains implants médicaux comme des stimulateurs cardiaques. Des mesures de protection pour les porteurs d'implants médicaux doivent être prises: par exemple, des restrictions d'accès pour les passants ou une évaluation individuelle des risques pour les soudeurs. Tous les soudeurs doivent appliquer les procédures suivantes pour minimiser l'exposition aux CEM provenant du circuit de soudage:

1. Rassembler les câbles en les torsadant ou en les attachant avec du ruban adhésif ou avec une housse.
2. Ne pas se tenir au milieu des câbles de soudage. Disposer les câbles d'un côté et à distance de l'opérateur.
3. Ne pas courber et ne pas entourer les câbles autour de votre corps.

4. Maintenir la tête et le torse aussi loin que possible du matériel du circuit de soudage.
5. Connecter la pince sur la pièce aussi près que possible de la soudure.
6. Ne pas travailler à proximité d'une source de soudage, ni s'asseoir ou se pencher dessus.
7. Ne pas souder tout en portant la source de soudage ou le dévidoir.

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 – INTRODUCTION

3-1. Specifications

Model	AC Input Voltage 50/60 Hz 1-Phase	Work Capacity Combined Thickness Uncoated Mild Steel	Rated Output At 50% Duty Cycle*	Welder Dimensions			Weight	
				Height	Width	Length	Net	Ship
MSW-41T	110	1/8 in.** (3.2 mm)	1.5 kVA	6 in. (152 mm)	4-1/2 in. (114 mm)	13 in. (330 mm)	34 lb (15.4 kg)	38 lb (17.2 kg)
LMSW-52T	220	3/16 in.** (4.7 mm)	2.5 kVA	6 in. (152 mm)	4-1/2 in. (114 mm)	16 in. (406 mm)	42 lb (19.1 kg)	45 lb (20.4 kg)

*Based on 10 second time period; means unit can weld for 5 seconds out of each 10 second time period.


** Not recommended for aluminum or copper alloys.

Model	MSW-41, 41T			LMSW-52, 52T		
Tong Length	6 in. (152 mm)	12 in. (305 mm)	18 in. (457 mm)	6 in. (152 mm)	12 in. (305 mm)	18 in. (457 mm)
Input Volts	110			220		
Output Amps ±10%	5500	4500	3600	6750	5800	4850

SECTION 4 – INSTALLATION

4-1. Installing Or Dressing Tips

A. Installing Tips



⚠ Turn off and unplug welder.

- 1 Threaded Tip
- 2 Tip With Hexhead Screw
- 3 Tong

Coat threads with supplied heat sink compound and install tip onto tong. Do not overtighten.

Tools Needed:

- 3/16 in.
- 9/16 in.
-
-

Ref. 800 155-B / Ref. 800 154

4-2. Installing Or Cleaning Tongs



! OSHA and/or local codes may require additional guarding to suit the application.

! Turn off and unplug welder.

Be sure tong ends are clean and not corroded before installing. Clean tongs with fine steel wool.

Bottom Tong:

- 1 Bottom Tong
- 2 Hole In Spatter Guard
- 3 Bottom Tong Securing Screws (4)

Loosen the four screws. If needed, use a rubber mallet to loosen tong.

Slide tong into bottom tong holder as far as possible, and position so that tip is pointing straight up.

Loosely tighten screws.

Top Tong:

- 4 Top Tong
- 5 Top Tong Holder/Pivot Casting
- 6 Top Tong Securing Screws (4)

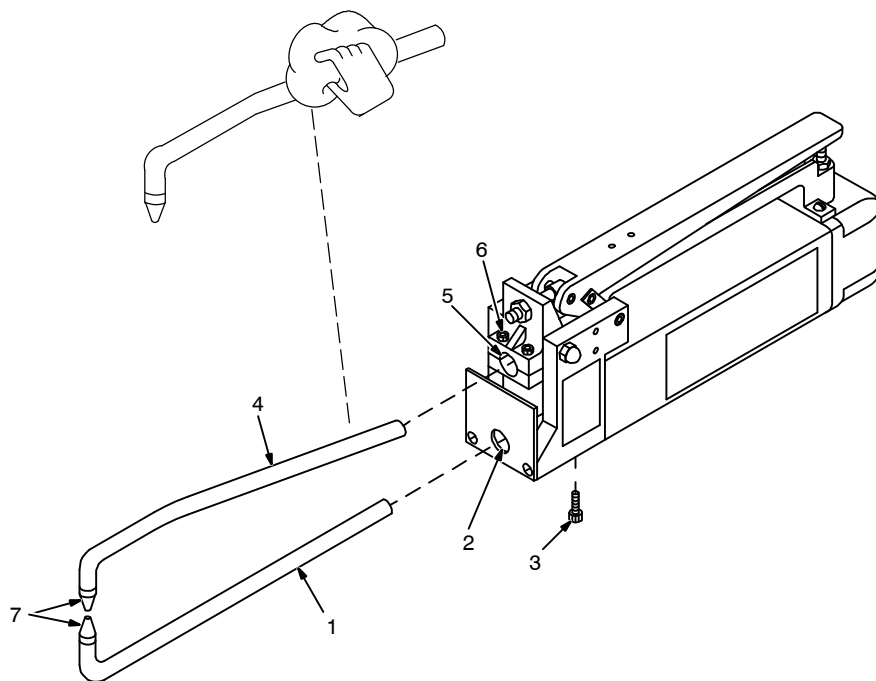
Loosen the four screws. If needed for removal, use a rubber mallet to loosen tong.

Slide tong into pivot casting as far as necessary, so that tip mates with bottom tip when tongs are closed.

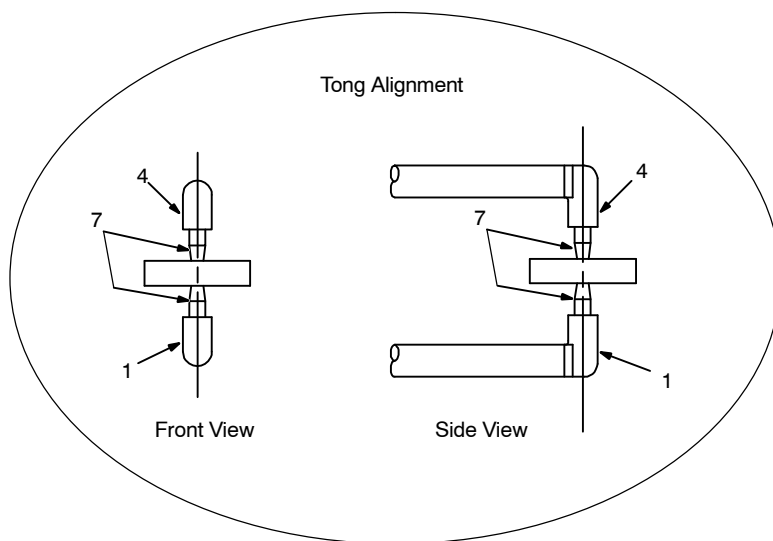
Loosely tighten screws.

- 7 Tips

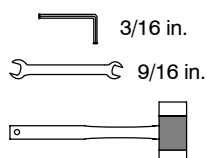
Adjust tong positions to line up centers of tips as shown. Tighten screws.



Tong Alignment



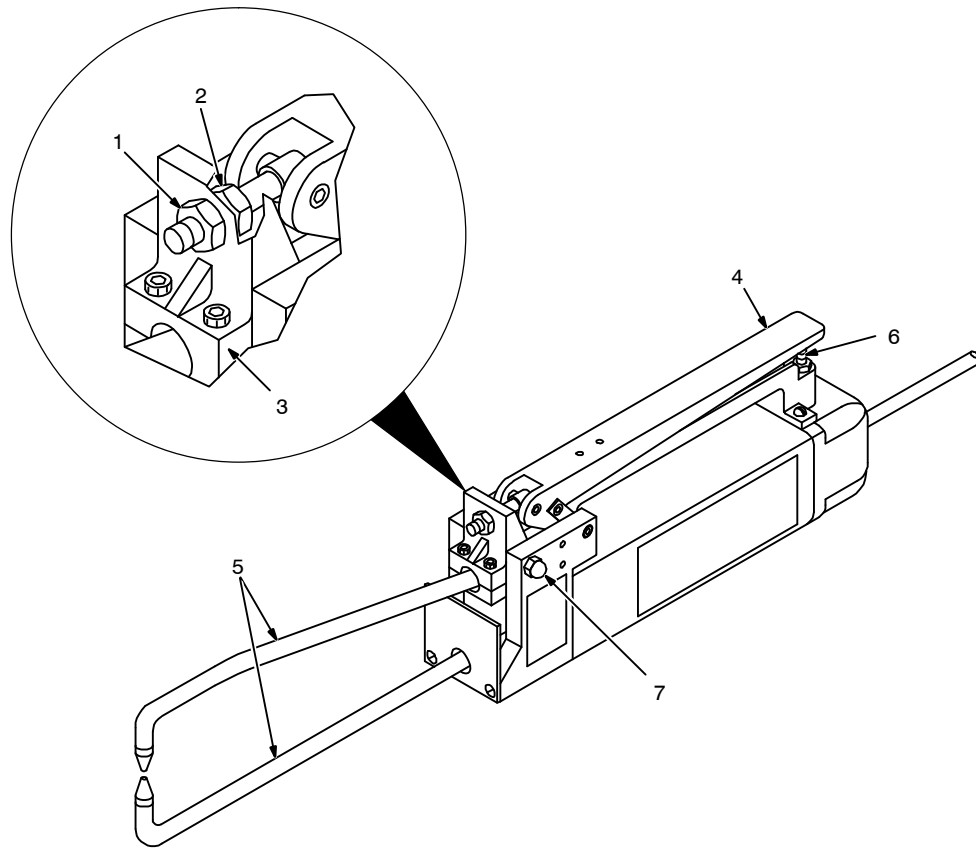
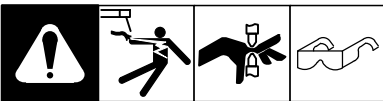
Tools Needed:



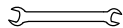
Fine
Steel
Wool

800 155-A / Ref. 800 154-A

4-3. Adjusting Tong And Hand Lever Pressure



Tools Needed:



9/16, 11/16 in.

Ref. 800 156

⚠ Turn off and unplug welder.

⚠ Excessive tong pressure can damage tips. Do not use tongs as a clamp or vice to hold workpiece together. If the two pieces of material to be welded do not make good contact at the point of the intended weld, clamp material to provide good contact between surfaces.

ℹ Tong pressure is adjustable, and must be checked and/or set before operation. Correct tong pressure is necessary to create a quality weld and to prevent damage to tips.

Too much tong pressure causes the weld nugget to dimple and material to

splash out around the nugget area. If tong pressure is too weak, parts are loose when the tongs close, severe arcing occurs between workpieces, and no weld can be made.

- 1 Front Nut
- 2 Rear Nut
- 3 Pivot Casting
- 4 Hand Lever
- 5 Tongs

To increase tong pressure, loosen front nut. The farther the front nut is turned out, the greater the pressure on the tips when the hand lever is closed. Turn the rear nut up to the pivot casting to lock the position.

To decrease tong pressure, loosen the rear nut and turn the front nut up to the pivot casting.

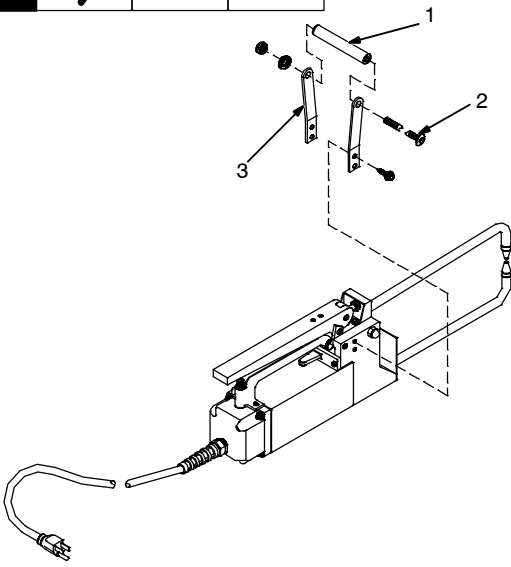
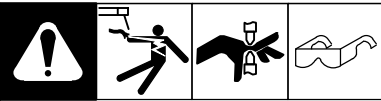
6 Machine Screw

The farther down the screw is turned, the farther the hand lever will close. Adjustment of this screw will determine if the tongs lock on the material, or just pull up tight. Adjust screw to allow lever to be raised easily after the weld has been completed.

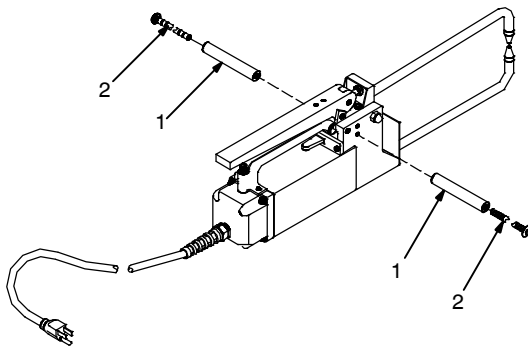
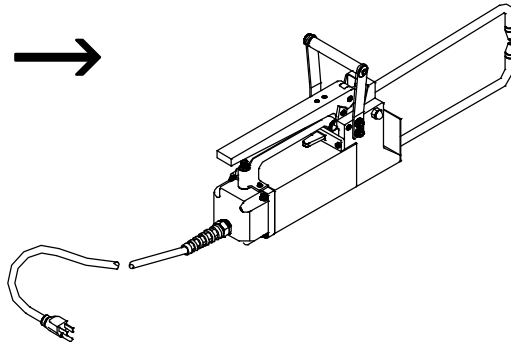
7 Hex Nut

To adjust pressure needed to push down hand lever, turn the hex nuts located on each side of the pivot casting.

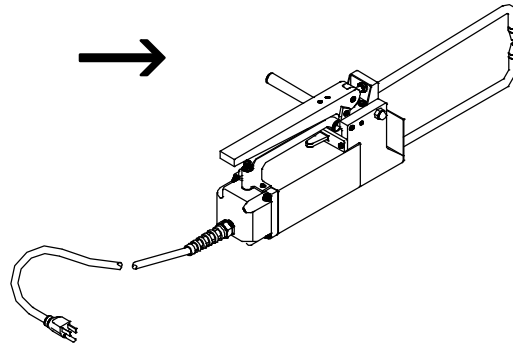
4-4. Installing Handle



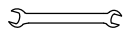
MSW 41 And 41T Models



MSW 52, And 52T Models



Tools Needed:

 7/16, 3/8 in.

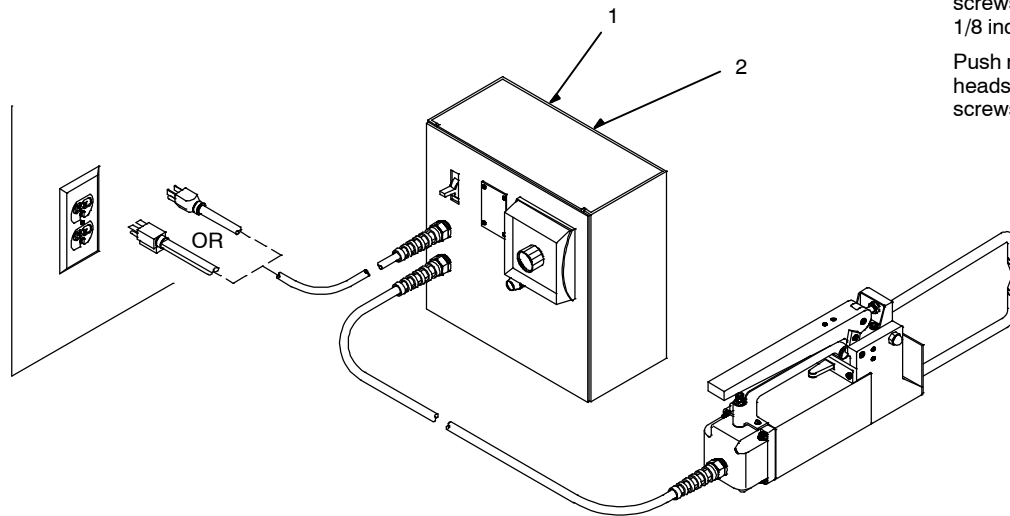
 **Turn off and unplug welder.**

- 1 Wooden Handle
- 2 Handle Bolt
- 3 Brackets (41 And 41T Models Only)

Install handle onto the spot welder as shown above. For 52, and 52T Models, install handle onto either side as desired for either right-hand or left-hand use.

Ref. 802 056-A

4-5. Mounting Control Box



Push-in slots are provided on rear of box for wall mounting if desired. The slots will fit over 1/4 inch hex-head screws. To mount box, proceed as follows:

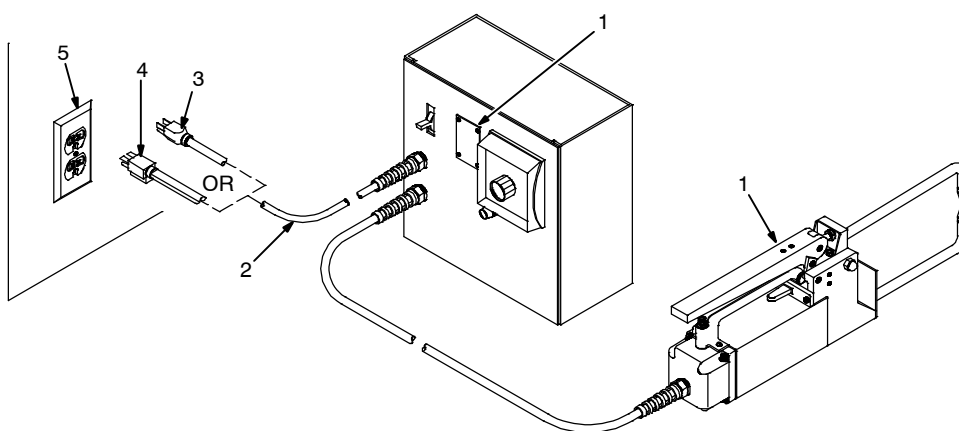
- 1 Control Box
- 2 Push-In Slots (Not Shown)

Use slots as template and install screws at desired locations leaving 1/8 inch stickout.

Push rear slots firmly against screw heads, and slide box down onto screws.

800 233-A

4-6. Connecting Input Power (T Models)



Operate spot welder from a separately fused or circuit breaker protected circuit, and use correct size input conductors.

- 1 Rating Label (Not Visible As Shown On Spot Welder)
- 2 Cord
- 3 Parallel Plug On 110 Volts AC Models
- 4 Tandem Plug On 220 Volts AC Models

Do not cut ground terminal off plug.

5 Grounded Receptacle

Connect plug to matching grounded receptacle.

Model	Input Conductor Size (AWG)	Fuse/Circuit Breaker Size In Amperes
1.5 kVA 110 Volt	No. 10	30
1.5 kVA 220 Volt	No. 12	15
2.5 kVA 220 Volt	No. 10	30

Ref. 800 233-A

4-7. Connecting Input Power (Non-T Models)



⚠ Input power supply wiring and receptacle must meet National Electrical Code and all other code requirements.

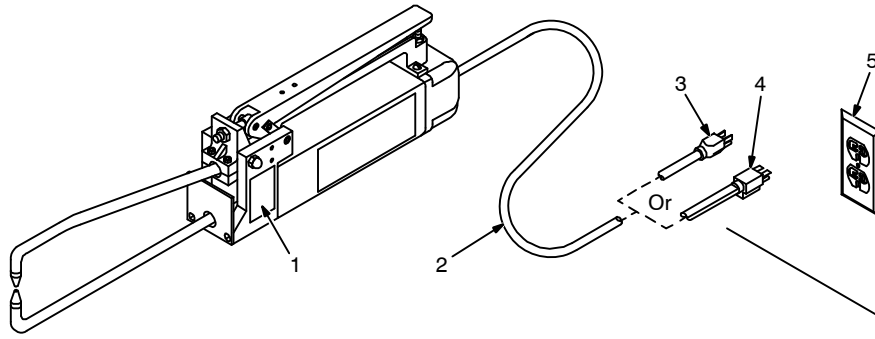
Operate spot welder from a separately fused or circuit breaker protected circuit, and use correct size input conductors.

- 1 Rating Label
- 2 Cord
- 3 Parallel Plug On 110 Volts AC Models
- 4 Tandem Plug On 220 Volts AC Models

Do not cut ground terminal off plug.

- 5 Grounded Receptacle

Connect plug to matching grounded receptacle.



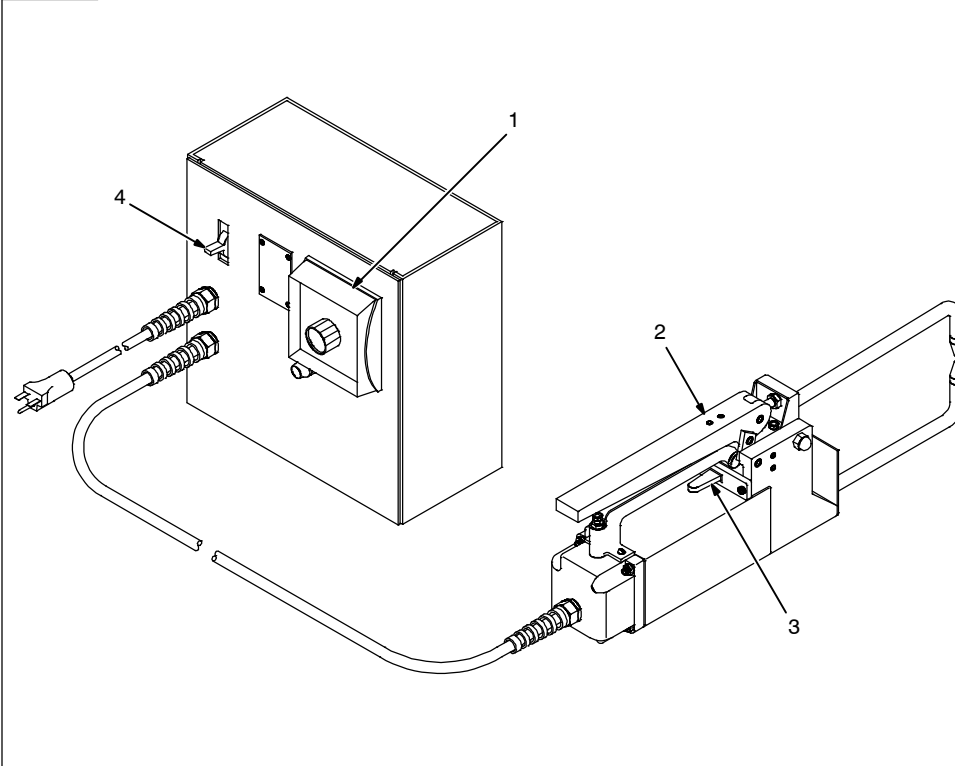
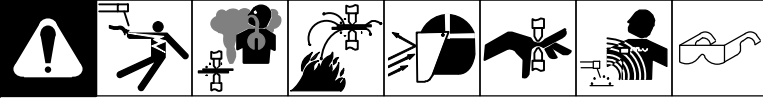
Model	Input Conductor Size (AWG)	Fuse/Circuit Breaker Size In Amperes
1.5 kVA 110 Volt	No. 10	30
2.5 kVA 220 Volt	No. 10	30

Ref. 800 156

Notes

SECTION 5 – OPERATION

5-1. Controls (T Models)



1 Spot Weld Timer And Pilot Light

Weld time adjusts from 0 to 5 seconds. The pilot light turns on when the weld cycle begins and off when the cycle ends.

2 Hand Lever

Use lever to open and close tongs. Close the hand lever during the welding process to compress the material between the tips. To adjust tong pressure, see Section 4-3.

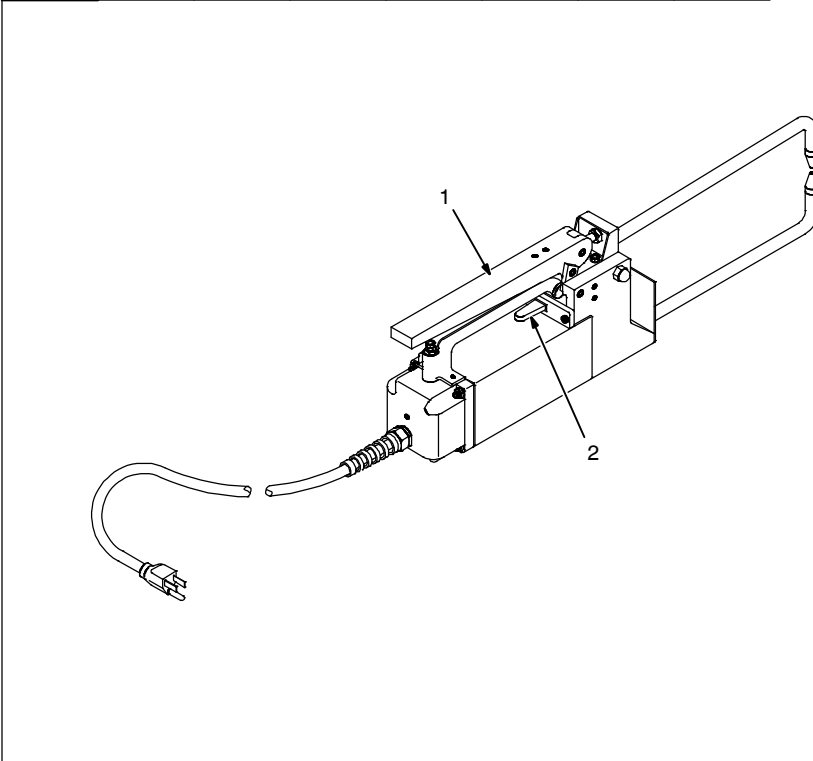
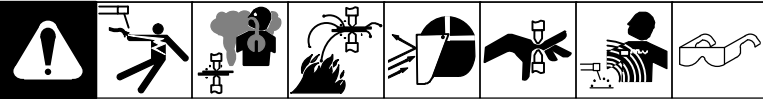
3 Start Switch

Move start switch sideways in either direction to start weld cycle. When weld cycle time ends, or the start switch is released, weld output stops, and the timer resets for another weld cycle.

4 Power Switch

146 013-B

5-2. Controls (Non-T Models)



1 Hand Lever

Use lever to open and close tongs. Close the hand lever during the welding process to compress the material between the tips. To adjust tong pressure, see Section 4-3.






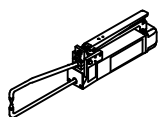

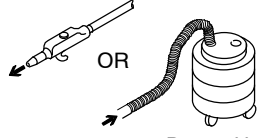
2 Start Switch

Use switch to turn weld current On and Off. Move switch sideways in either direction to start weld current. Release switch to stop weld current.



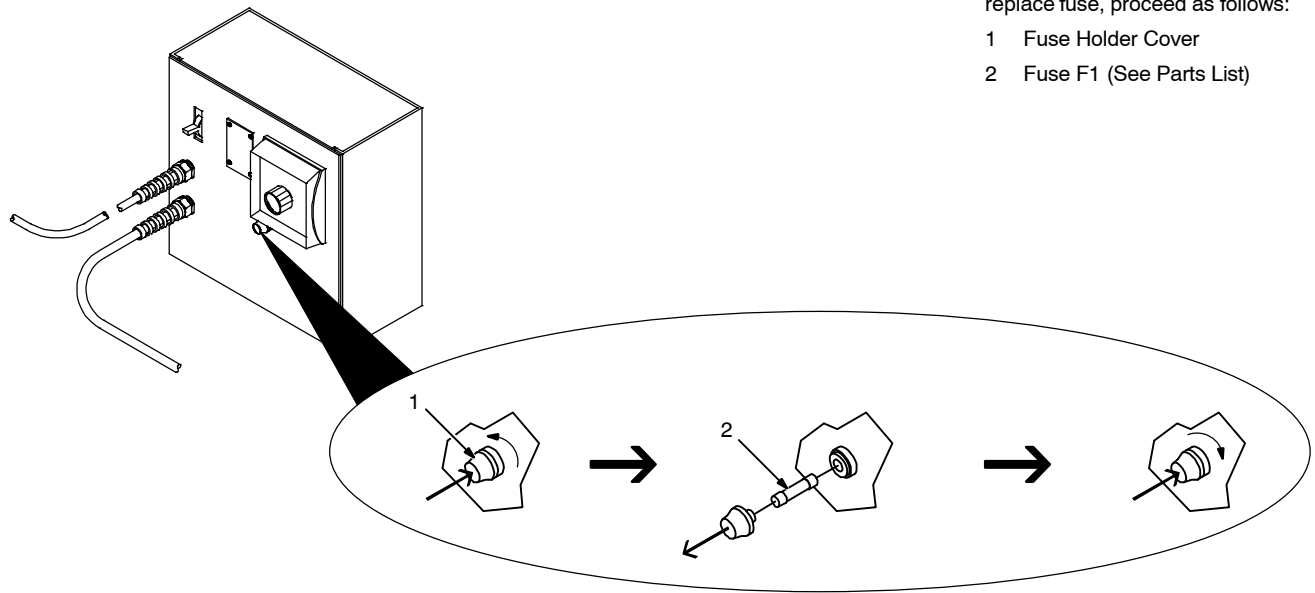
145 104-A

SECTION 6 – MAINTENANCE AND TROUBLESHOOTING


6-1. Routine Maintenance

			 Disconnect power before maintaining.		
 Every Use		 3 Months		 6 Months	
 <p>Inspect Tips</p>		 <p>Replace Unreadable Labels</p>		 <p>Blow Off Or Vacuum Unit</p> <p>During Heavy Service, Clean Monthly</p>	

6-2. Overload Protection For 220 Volts Model

		 Turn Off unit and disconnect input power.	
<p>If fuse opens, unit shuts down. To replace fuse, proceed as follows:</p> <ol style="list-style-type: none"> 1 Fuse Holder Cover 2 Fuse F1 (See Parts List) 			
			
<small>Ref. 800 233-A / Ref. 800 185-A</small>			

6-3. Troubleshooting

	
Trouble	Remedy
No weld output.	<p>Check line fuses, and replace if necessary.</p> <p>For 220 V models, check fuse F1, and replace if necessary (see Section 6-2).</p>
Low weld output.	<p>Dress or replace tips (see Section 4-1).</p> <p>Check tip threads. Replace tips if necessary (see Section 4-1).</p> <p>Remove and clean tongs (see Section 4-2).</p> <p>Clean ends of tongs and tong holders (see Section 4-2).</p> <p>Check power switch (T models only) and/or start switch. Replace if necessary.</p>
Longer than normal weld time required.	<p>Dress or replace tips (see Section 4-1).</p> <p>Clean workpieces.</p> <p>Adjust tong pressure (see Section 4-3).</p> <p>Clean ends of tongs and tong holders (see Section 4-2).</p> <p>Check input line voltage.</p>
Burn through at point of weld.	<p>Shorten weld time (see Section 5-1).</p> <p>Adjust tong pressure (see Section 4-3).</p> <p>Dress or replace tips (see Section 4-1).</p> <p>Realign tips (see Section 4-2).</p>
Tips overheating.	<p>Not enough tong pressure. Increase tong pressure.</p> <p>Weld time too long. Reduce weld time.</p> <p>Material too thick for the spot welding machine.</p>
Tips arcing on material.	<p>Not enough tong pressure. Increase tong pressure.</p> <p>Tips not aligned correctly. Realign tips or dress tips to proper diameter (see Section 4-1).</p> <p>Base material may be welded to tips causing high resistance and poor electrical current flow. Clean or dress tips (see Section 4-1).</p>
Spatter or molten material being expelled out during welding operation.	<p>Incorrect tip alignment. Dress tips so that they align and are flat on the material (see Section 4-1).</p> <p>Excessive tong pressure. Reduce tong pressure.</p> <p>Output amperage too high. Reduce amperage setting, if applicable (not available on air-cooled models).</p> <p>Weld time too long. Reduce weld time.</p>
Inconsistent weld nugget.	<p>Inconsistent weld time. Install a weld timer, if applicable.</p> <p>Not enough tong pressure. Increase tong pressure.</p>
Hole in middle of weld.	<p>Contact area of tips is too large. Change to a smaller tip diameter or dress tips back to original diameter (see Section 4-1).</p>
Poor weld or no weld at tips.	<p>Material too thick for spot welding machine. Check that material thickness is within capacity of spot welding machine.</p> <p>Tongs are too long. Reduce tong length.</p> <p>Remove coating from material for intimate contact between pieces. Remove oxides and chemical compounds including galvanized coating.</p>

SECTION 7 – ELECTRICAL DIAGRAMS

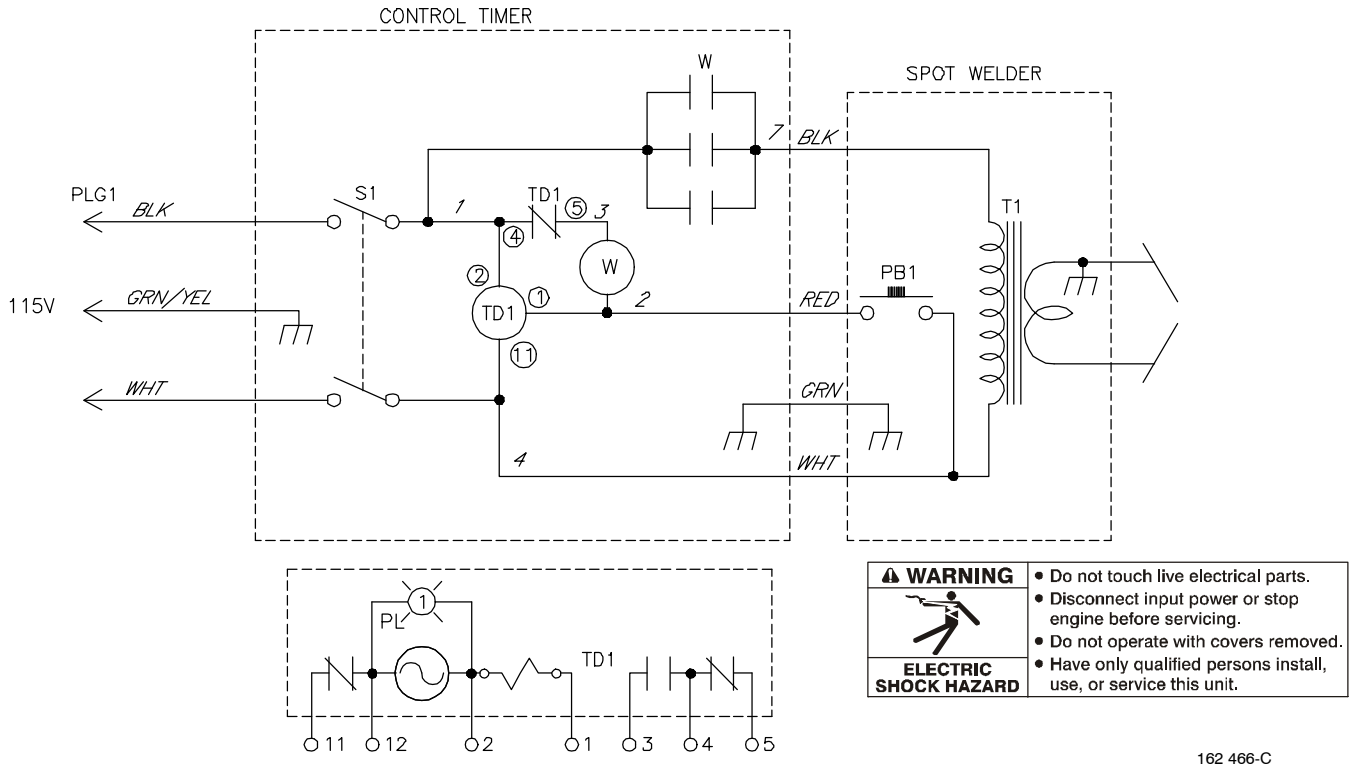


Figure 7-1. Circuit Diagram For 110 Volts T-Models

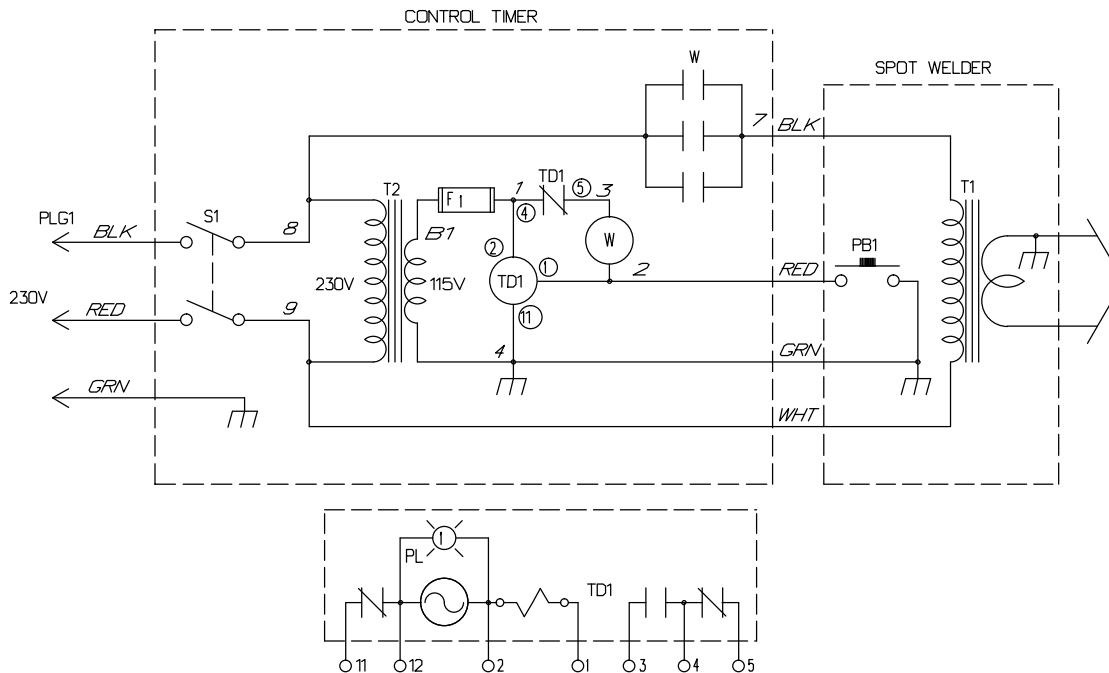

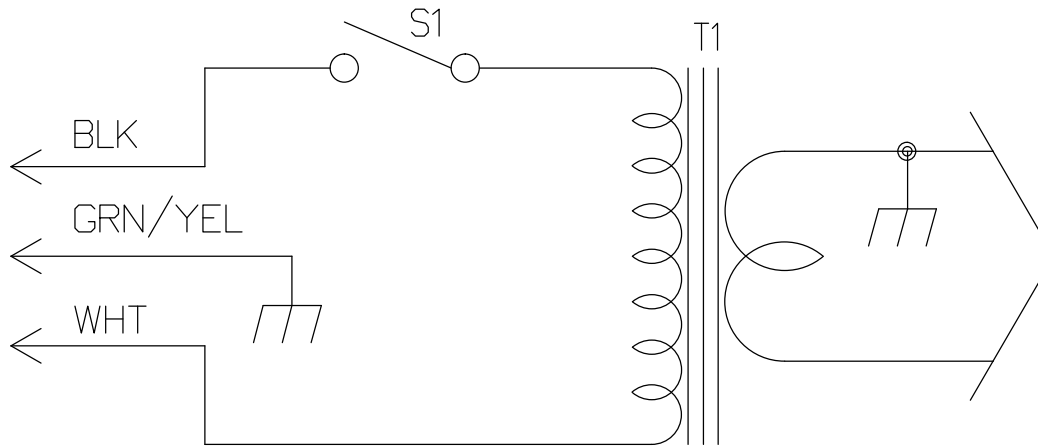


Figure 7-2. Circuit Diagram For 220 Volts T-Model

⚠ WARNING	<ul style="list-style-type: none"> • Do not touch live electrical parts.
	<ul style="list-style-type: none"> • Disconnect input power or stop engine before servicing.
ELECTRIC SHOCK HAZARD	<ul style="list-style-type: none"> • Do not operate with covers removed. • Have only qualified persons install, use, or service this unit.

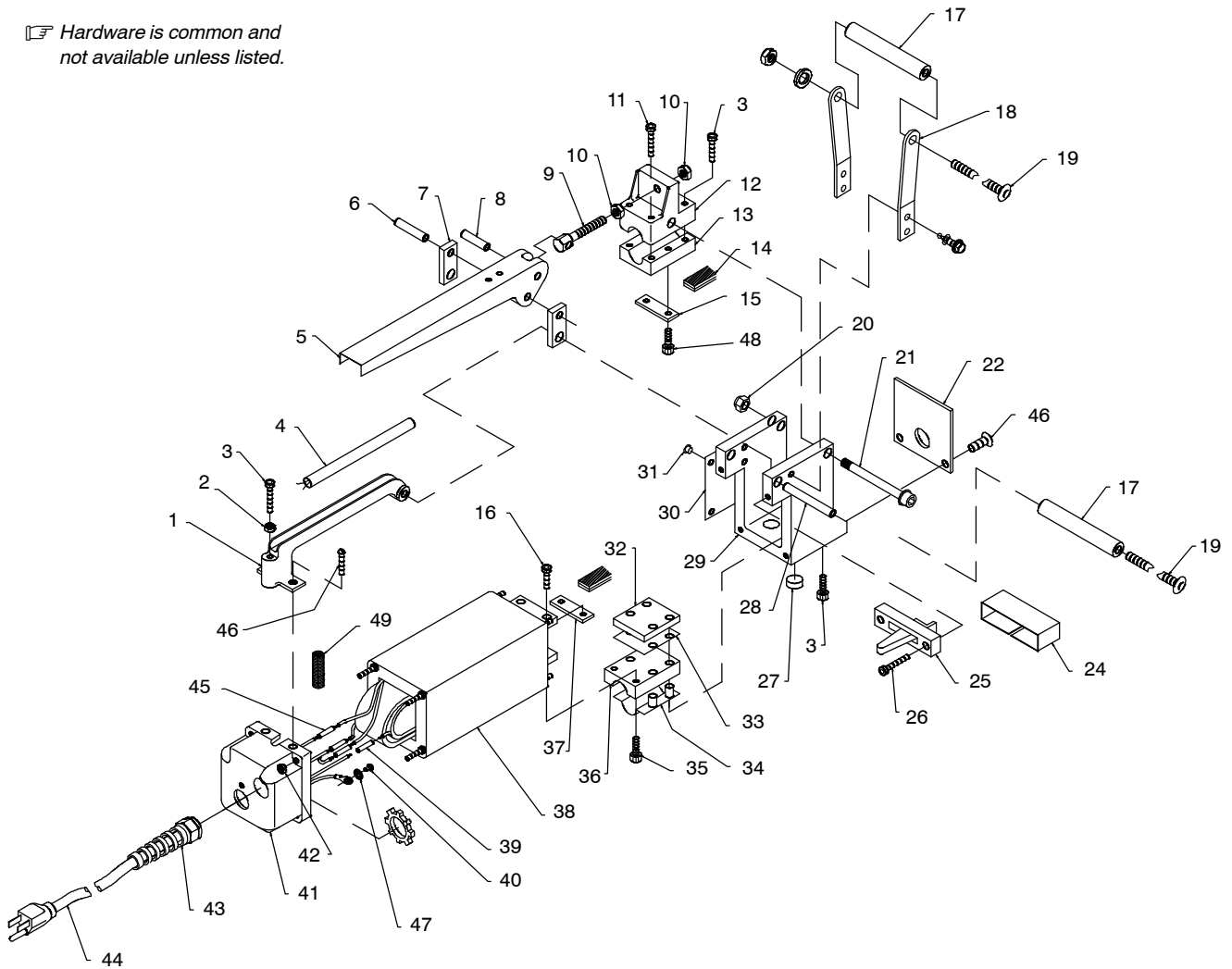


162 467-B

Figure 7-3. Circuit Diagram For 110 And 220 Volts Non-T Models

SECTION 8 – PARTS LIST

☞ Hardware is common and not available unless listed.



145 048-E

Figure 8-1. Main Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				41,41T	52,52T

Figure 8-1. Main Assembly

...	1	019 643	.. HANDLE, carrying	1	
...	1	019 646	.. HANDLE, carrying		1
...	2	601 865	.. NUT, stl hex full fnsh .250-20	1	1
...	3	602 009	.. SCREW, cap stl sch .250-20 x 1.250	7	7
...	4	023 660	.. WIRING HARNESS, switch	1	1
...	5	023 199	.. LEVER, operating	1	
...	5	082 090	.. LEVER, operating		1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				Model	41,41T
Figure 8-1. Main Assembly (continued)					
6		010 714	PIN, spring CS .312 x 1.750	1	1
7		010 712	LINK, tgl connecting	2	2
8		010 713	PIN, spring CS .312 x 1.250	1	1
9		010 715	BOLT, pressure adjustment	1	1
10		601 876	NUT, stl hex jam .437-20	2	2
11		010 668	SCREW, cap stl sch .250-20 x 1.500	2	3
12		017 668	HOLDER, tong top	1	1
13		010 709	CLAMP, tong top	1	1
14		010 623	BRAID, tong set of four	1	1
15		010 716	CLAMP, connecting top tong braid	1	1
16		602 008	SCREW, .250-20 x 1.000soc hexhd	2	2
17		602 262	HANDLE, wood	1	1
18		024 130	BRACKET, mtg handle	2	
19		601 778	BOLT, crg stl .250-20 x 4.500	1	1
20		204 608	NUT, 312-18 .50hex .34h stl pld elastic stop nut	1	1
21		213 080	SCREW, 3/8 X 3 soc shoulder	3	3
22		026 607	GUARD, spatter	1	1
24		070 017	INSULATION, switch	1	1
25	S1	*250 101	SWITCH, control assy	1	
25	S1	*011 746	SWITCH, control (consisting of)		1
		011 291	CONTACT, assembly switch	1	1
		023 987	CONTACT, switch	1	1
		011 292	TOGGLE, switch	1	1
		070 035	BASE	1	1
27		026 759	INSULATOR, plug sec scr	2	2
28		213 080	SCREW, 3/8 X 3 soc shoulder	1	1
29		169 122	HOUSING, front	1	1
30			NAMEPLATE (order by model and style number)	1	1
31		602 024	SCREW, drive U 2 x 3/16	4	4
32		010 708	RETAINER, clamp tong	1	1
33		026 605	INSULATION, bottom clamp	1	1
34		181 179	INSULATION, tong	1	1
35		602 004	SCREW, cap stl sch .250-20 x .750	2	2
36		010 707	CLAMP, bottom tong	1	1
37		039 052	CLAMP, threaded connecting tong braid (included w/Item 5, Fig 8-2)	1	1
38	T1	+095 345	TRANSFORMER, pwr main (Fig 8-2)	1	
38	T1	+095 354	TRANSFORMER, pwr main (Fig 8-2)		1
		143 140	LABEL, warning general precautionary	1	1
39		600 675	SPLICE, butt 16-14 wire	2	2
40		082 193	SCREW,010-32X .37 hexwhd-slt stl pld slffmg tap-rw	1	1
41		019 642	COVER	1	1
42		601 847	NUT, stl slflkg hex mscr 10-32	4	4
43		244 553	STRAIN RELIEF, cable flexible .230-.470 cable	1	1
44		094 503	CABLE, pwr 10ft 16ga 3/C (Not Req On T Models)	1	
44		094 504	CABLE, pwr 10ft 16ga 3/C (Not Req On T Models)		1
45		026 763	TUBING, gl acrylic No. 7 x 2.500	3	3
46		128 237	SCREW, 10-32 x .500hexwhd slt stl	4	4
47		602 205	WASHER, tooth.195idx0.381odx.025t stl pld int #10 a	1	1
48		217 299	SCREW, 250-20X .87 soc hd-hex gr8 pln	2	2
49		110 463	TUBING, corrugated plastic slit .250 dia	1	1

*Recommended Spare Parts.

+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 style number required when ordering parts from your local distributor.

Replace Coils At Factory Or Factory Authorized Service Station.

Item No.	Part No.	Description	Quantity	
			41,41T	52,52T
Figure 8-2. Transformer, Power Main (Fig 8-1- Item 38)			095 345	095 354
... 1	026 601	.. INSULATION	1	
... 1	026 602	.. INSULATION		1
... 2	095 312	.. COIL, pri 115V	1	
... 2	095 308	.. COIL, pri 230V		1
... 3	010 157	.. STUD, stl No. 10-32 x 8.125	4	
... 3	010 156	.. STUD, stl No. 10-32 x 11.125		4
... 4	137 943	.. NUT, core stud	4	4
... 5	+033 123	.. BAR, sec	1	
... 5	+033 122	.. BAR, sec		1

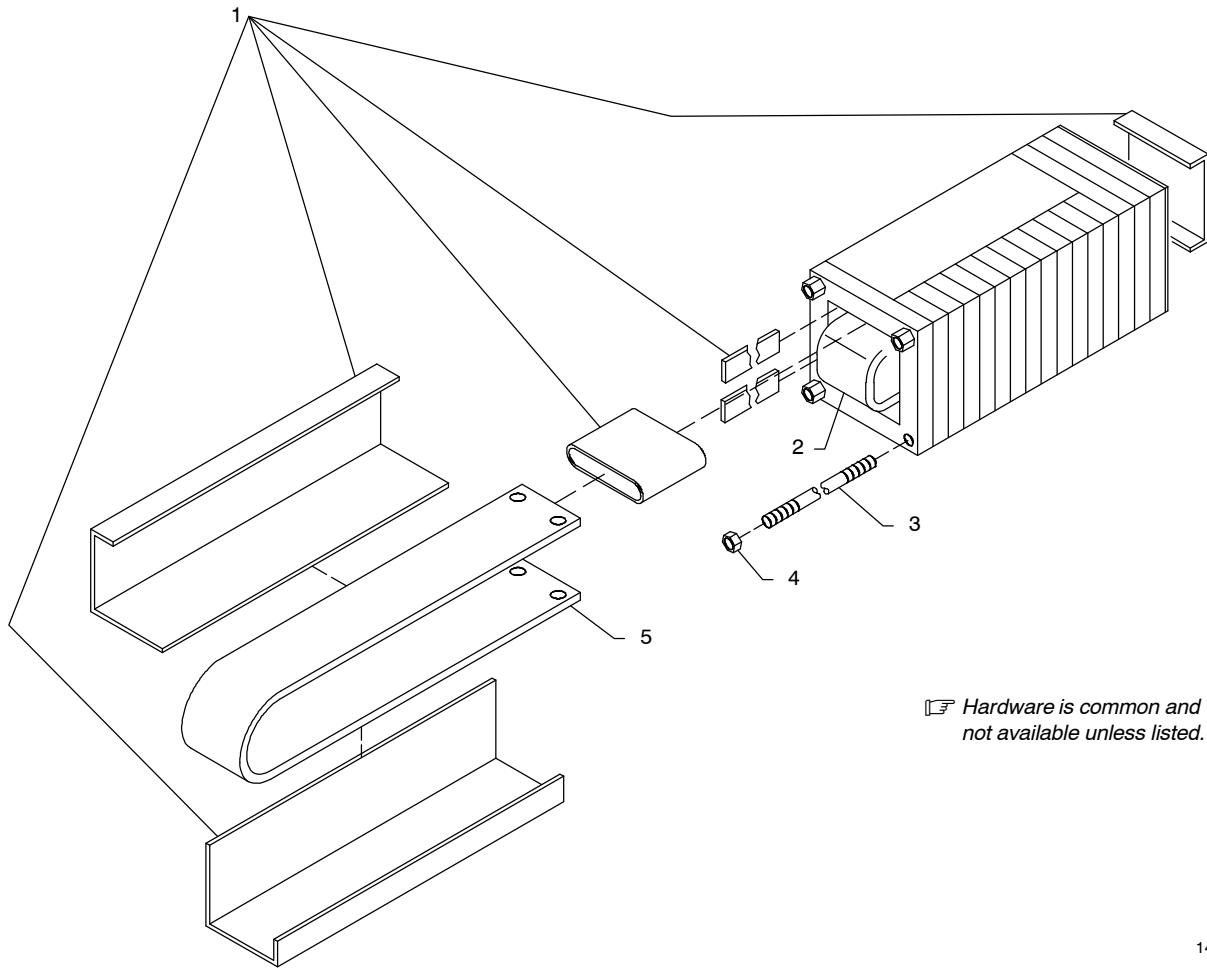


Figure 8-2. Transformer, Power Main

141 482-A

+Item 37 on Figure 8-1 is included when ordering these items as replacement parts.
To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and style number required when ordering parts from your local distributor.

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				Model	
				115V	230V

Figure 8-3. Timer, Spot (230V Illustrated)

041 081 041 082

1			NAMEPLATE, (order by model and style numbers)	1	1
2	S1	124 511	SWITCH, tgl DPST 40A 600VAC	1	1
3	W	190 525	CONTACTOR, def prp 40A 3P 120VAC coil w/links	1	1
4		032 152	CABINET	1	1
5	T2	605 856	TRANSFORMER, control 230/460	1	1
6		168 308	PANEL, front	1	1
7	TD1	605 952	TIMER, delay reset 5sec 120V	1	1
8		046 432	HOLDER, fuse	1	1
9	F1	*012 653	FUSE, mintr gl .5A	1	1
10		087 179	CABLE, interconnecting 10ft	1	1
11	PLG1	096 822	CABLE, pwr 10ft 16ga 3/c	1	1
11	PLG1	096 481	CABLE, pwr 10ft 16ga 3/c	1	1
12		244 553	STRAIN RELIEF, cable flexible .230-.470 cable	2	2

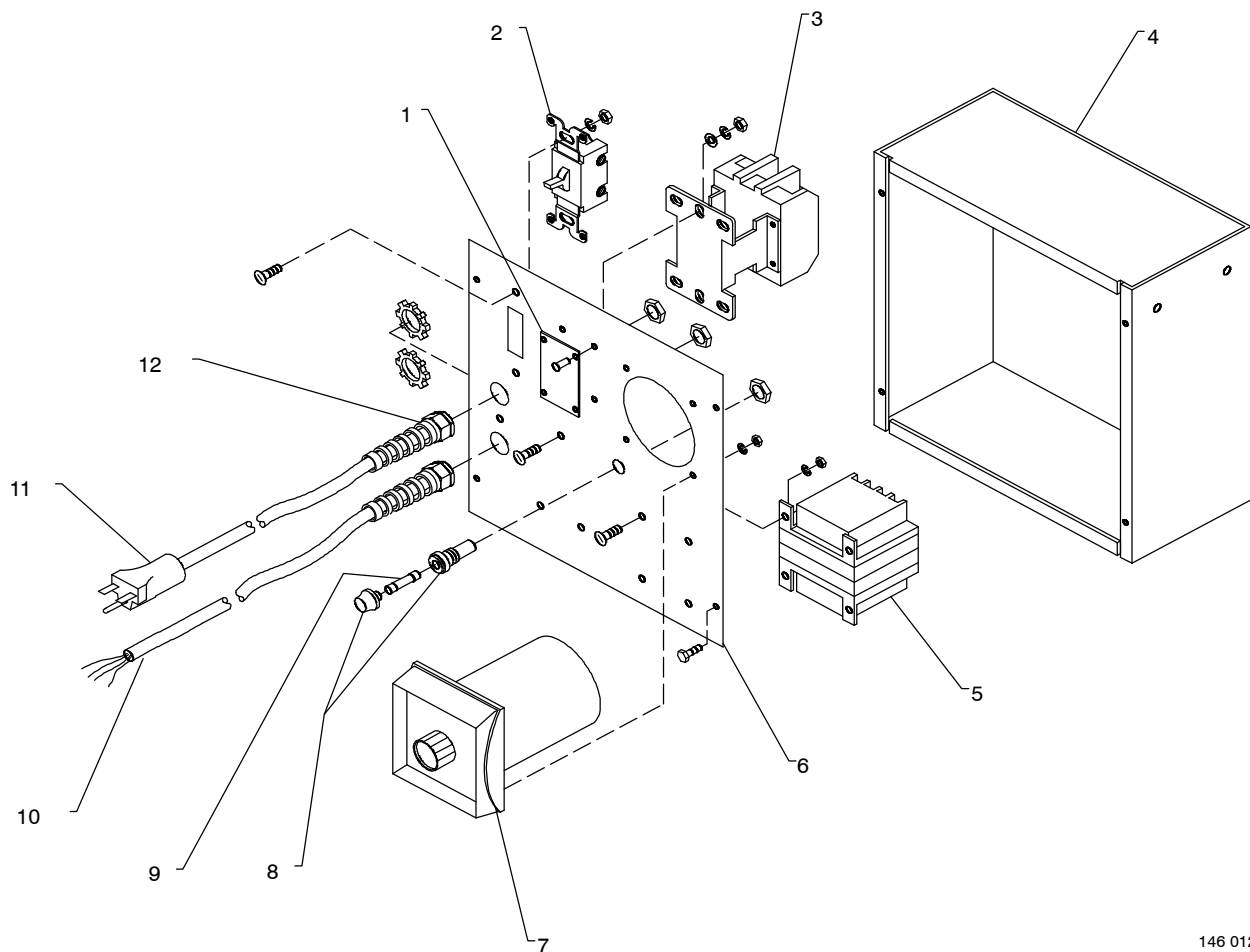


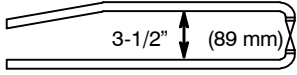


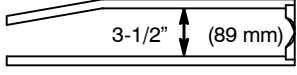

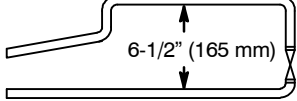


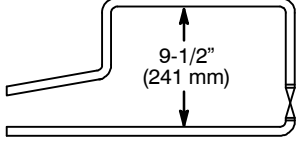


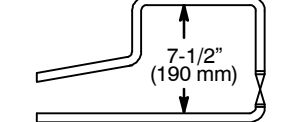




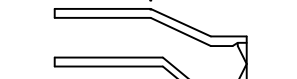

Figure 8-3. Timer, Spot (230V Illustrated)

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*Recommended Spare Parts.

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

Figure 8-4. Spot Welder Tips

 <p>STANDARD</p>	<p>6" (152 mm) 040 197 12" (305 mm) 040 198 18" (457 mm) 040 199</p>	<p>Standard  Flat </p> <p>040 211 040 212</p>
 <p>MO OFFSET</p>	<p>6" (152 mm) 040 200 12" (305 mm) 040 201 18" (457 mm) 040 202</p>	<p>MO Offset </p> <p>040 215</p>
 <p>TT-6</p>	<p>12" (305 mm) 040 203 18" (457 mm) 040 204</p>	<p>Standard  Flat </p> <p>040 211 040 212</p>
 <p>TT-9</p>	<p>12" (305 mm) 040 205 18" (457 mm) 040 206</p>	<p>Standard  Flat </p> <p>040 211 040 212</p>
 <p>G-7</p>	<p>8" (203 mm) 040 207</p>	<p>Standard  Flat </p> <p>040 211 040 212</p>
 <p>FF</p>	<p>8" (203 mm) 040 208</p>	<p>FF </p> <p>040 213</p>
 <p>FH</p>	<p>5" (127 mm) 040 209</p>	<p>FH </p> <p>040 214</p>

S-0550

TRUE BLUE[®]

WARRANTY

Effective January 1, 2010

(Equipment with a serial number preface of MA or newer)

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

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

Your distributor also gives
you ...

Service

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

Support

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

LIMITED WARRANTY – Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser 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.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the delivery date of the equipment to the original end-user purchaser, and not to exceed one year after the equipment is shipped to a North American distributor or eighteen months after the equipment is shipped to an International distributor.

- 5 Years Parts — 3 Years Labor
 - * Original main power rectifiers only to include SCRs, diodes, and discrete rectifier modules
- 3 Years — Parts and Labor
 - * Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer.)
 - * Inverter Power Sources (Unless Otherwise Stated)
 - * Plasma Arc Cutting Power Sources
 - * Process Controllers
 - * Semi-Automatic and Automatic Wire Feeders
 - * Smith 30 Series Flowgauge and Flowmeter Regulators (No Labor)
 - * Transformer/Rectifier Power Sources
 - * Water Coolant Systems (Integrated)
- 2 Years — Parts
 - * Auto-Darkening Helmet Lenses (No Labor)
- 1 Year — Parts and Labor Unless Specified
 - * Automatic Motion Devices
 - * CoolBelt and CoolBand Blower Unit (No Labor)
 - * External Monitoring Equipment and Sensors
 - * 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.)
 - * Flowgauge and Flowmeter Regulators (No Labor)
 - * RFCS Foot Controls (Except RFCS-RJ45)
 - * Fume Extractors
 - * HF Units
 - * ICE Plasma Cutting Torches (No Labor)
 - * Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
 - * Load Banks
 - * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
 - * PAPR Blower Unit (No Labor)
 - * Positioners and Controllers
 - * Racks
 - * Running Gear/Trailers
 - * Spot Welders
 - * Subarc Wire Drive Assemblies
 - * Water Coolant Systems (Non-Integrated)
 - * Weldcraft-Branded TIG Torches (No Labor)
 - * Work Stations/Weld Tables (No Labor)

- 6 Months — Parts
 - * Batteries
 - * Bernard Guns (No Labor)
 - * Tregaskiss Guns (No Labor)

- 90 Days — Parts
 - * Accessory (Kits)
 - * Canvas Covers
 - * Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
 - * M-Guns
 - * MIG Guns and Subarc (SAW) Guns
 - * Remote Controls and RFCS-RJ45
 - * Replacement Parts (No labor)
 - * Roughneck Guns
 - * Spoolmate Spoolguns

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

- 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.)**
- 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.
- 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.

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

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable 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 actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

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In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to 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



For Service

Contact a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:

Welding Supplies and Consumables

Options and Accessories

Personal Safety Equipment

Service and Repair

Replacement Parts

Training (Schools, Videos, Books)

Technical Manuals (Servicing Information and Parts)

Circuit Diagrams

Welding Process Handbooks

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.

For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

Miller Electric Mfg. Co.

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International Headquarters—USA

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