

PRO-TEC® WELDING

100 S



100
AMPS



DC

1
YEAR
WARRANTY

PRO-TEC® 100 S

Operating Manual

PRODUCT
PRO-TEC 100 S
STICK SYSTEM
PART NO.
G1110000

PRODUCT
PRO-TEC 100 S
STICK/TIG SYSTEM
PART NO.
G1110005



protecwelding.com

PWOM-100S-001
6-13-2019

* Approvals: CAN/CSA-E60974-1:12, ANSI/IEC 60974-1:2008



Thank you for the purchase of your new PRO-TEC Welding or Cutting system. We are proud to have you as our customer and will strive to provide you with the best service and support in the industry.

For product warranty registration or support please visit our website at **www.protecwelding.com**.

This Operating Manual has been designed to instruct you on the correct use and operation of your PRO-TEC Welding or Cutting system. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore, please take the time to read the entire manual, especially the Safety Precautions. They will help you to avoid potential hazards when working with this product.

Also, check out our website for YouTube video of this product in action!

PRO-TEC is a brand of Welding and Cutting systems from Global Welding , LLC. We develop optimized solutions for major welding industry sectors including; Manufacturing, Construction, General Fabrication, Automotive, Rural and DIY/Hobbyist.

Behind the brand - A team of experienced, great people working together with passion, enthusiasm and commitment to become a Technology and Innovation leader in Manual Plasma Cutting and Arc Welding by partnering with some of the world's best to develop leading, game changing innovation for the Cutting and Welding Industry.

“Advanced Welding Solutions”



Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment. While the information contained in this Manual represents the Manufacturer's best judgment, the Manufacturer assumes no liability for its use

Operating Manual: PWOM-100S-001 for:

PRO-TEC 100S Stick Arc Welder Package:

Part No. G1110000

PRO-TEC 100S Stick /Lift TIG Arc Welder Package:

Part No. G1110005

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Publication Date: June 2019

Record the following information for Warranty purposes

Place of Purchase:

Purchase Date:

Power Source Serial No.:

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SECTION 1 – SAFETY INSTRUCTIONS: Read Before Using Product



DANGER! – Protect yourself and others around you from possible serious injury or death.

1) Read, follow and understand this Operating Manual before installing, operating or servicing this welding/cutting equipment. 2) Pacemaker wearers keep away until consulting your doctor. 3) Have all installation, operation, maintenance and repair work performed only by a Suitably Trained and Qualified Tradesperson. 4) Keep children away. 5) Do not lose these instructions. 6) When shipped, ownership is passed to the purchaser upon receipt from the transportation company. Accordingly, claims for component damage during shipment must be made by the purchaser against the transportation company at the time the shipment is received.

“NOTE:” Provides information regarding operating recommendations for this welding/cutting equipment.

Welding/cutting equipment and processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety instructions and take precautionary actions.

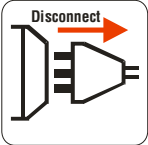
Anyone not extensively trained in welding and cutting practices should not attempt to weld or cut metal. Safe practices are outlined in American National Standards Institute Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides of what you should learn before operating this welding/cutting equipment are listed at the end of these safety instructions.

1.1 Arc Welding/Cutting Hazard Symbols

ELECTRIC SHOCK can kill



Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit are electrically live whenever the output is on. DO NOT WORK ALONE! The Input Power Supply circuit and Power Source internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded welding/cutting equipment is a hazard.



- Do not touch live electrical parts.
- Beware of electric shock from wiring.
- Do not wrap cables around your body.

- Keep all panels and covers securely in place.
- 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;
 - When there is a high risk of unavoidable or accidental contact with the workpiece or ground.

For these conditions, use the following equipment:

- 1) A semiautomatic DC constant voltage (wire) welder, or
 - 2) A DC manual (stick) welder. In most situations a DC welder is recommended.
- Disconnect Input Power Supply before installing or servicing this equipment. Lockout/Tagout Input Power Supply according to OSHA 29 CFR 1910.147.
 - Properly install and ground this Power Source according to its Operating Manual and National, State, and Local Codes.
 - Use only well-maintained equipment. Repair or replace damaged parts at once.
 - Always verify the Input Power Cord ground – check and be sure that Input Power Cord ground wire is properly connected to ground terminal in disconnect box or that Input Power Cord plug

is connected to a properly grounded receptacle outlet.

- When making input connections, attach proper grounding conductor first. **DOUBLE - CHECK ALL CONNECTIONS.**
- Keep all electrical Power Cords dry, free of oil and grease, and protected from hot metal, sparks and sharp metal edges.
- 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. Disconnect power to equipment if it will be left unattended or out of service.
- Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two Power Sources at the same time or touch other people with the holder or electrode.
- Do not use worn, damaged, undersized, repaired or poorly spliced cables.
- Ground the work piece to a good electrical (earth) ground.
- Do not touch electrode while in contact with the work (ground) circuit.
- In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
- Wear a safety harness to prevent falling if working above floor level.
- Do not touch electrode holders connected to two Power Sources at the same time as double open-circuit voltage will be present.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal. Disconnect cable for process not in use.
- Use ground-fault circuit interrupter (GFCI) protection when operating auxiliary equipment in damp or wet locations.

FLYING METAL or DIRT can injure eyes



Welding, chipping, wire brushing, and grinding cause sparks and flying metal.

- Welding slag can be thrown off welds as they cool down.
- Wear approved safety glasses (ANSI Z87.1) with side shields even under your welding helmet.

SAFETY INSTRUCTIONS

ARC RAYS can injure eyes and burn skin



Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin.

- Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
- Wear approved safety glasses with side shields (ANSI Z87.1).
- Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.

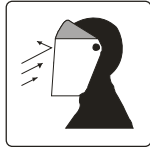
NOISE can damage hearing



Noise from some processes can damage hearing.

- Use approved ear plugs or ear muffs for high noise levels environments.

FLYING SPARKS can injure



Flying sparks and hot metal can cause injury. Chipping and grinding cause flying metal.

- Wear approved face shield and safety goggles.
- Wear proper body protection to protect skin.
- Sparks can cause fire, remove all flammable materials within 35 ft (10.7 m) of the working zone.

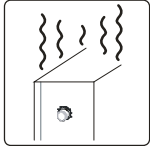
HOT PARTS can burn



Welded parts, cut metal, ground clamp, electrode stub or torch parts can burn bare skin when hot.

- Don't touch hot parts with bare skin.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

EQUIPMENT OVERHEATING



Power Source casing, terminals, cables, ground clamp, electrode stub or torch parts can cause injury when overheated.

- Allow cooling period before touching equipment.

- Allow cooling period; follow rated duty cycle.
- Reduce amperage and/or arc on time before starting to weld again.
- Do not block or filter air vent to Power Source.

FUMES and GASES can be hazardous



FUMES and GASES can be hazardous to your health. 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 exhaust at the arc to remove welding fumes and gases.
- If ventilation is poor, use an approved air-supplied respirator.
- Read the Safety Data Sheets (SDSs) and the manufacturer's instruction for metals, consumables, coatings, cleaners, coolants, degreasers, and fluxes.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have an observer trained in rescue and emergency procedures to monitor the person in a confined space. Shielding gases used for welding can displace air 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 if necessary, while wearing an air supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

BUILDUP OF GAS can injure or kill



Shielding GAS used for wire welding can cause asphyxiation or death in confined places.

- Shut off compressed shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air supplied respirator.

Eye protection filter shade selector numbers for welding or cutting (goggles or helmet)

Welding or Cutting operation	Electrode Size in. (mm)	Arc Amperage (A)	Minimum Filter Shade Number	Suggested * Filter Shade Number
Shielded Metal-Arc Welding (SMAW; STICK)	Less than 3/32 (2.5)	Less than 60	7	7
	3/32 (2.5) – 5/32 (2.5 – 4.0)	60 – 160	8	10
	5/32 – 1/4 (4.0 – 6.4)	160 – 250	10	12
Gas Tungsten Arc Welding (GTAW; TIG)	–	Less than 50	8	10
		50 – 150	8	12
		150 – 500	10	14

* As a rule of thumb, start with a shade that is too dark to see the weld or cut zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. This Lens Shade Selector Guide was adapted from ANSI Z49.1, 2012.

SAFETY INSTRUCTIONS

WELDING/CUTTING can cause fire or explosion



Sparks and spatter fly off from the welding/cutting arc. The flying sparks and hot molten metal, weld spatter, hot work piece and hot equipment can cause fires and burns. Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up.

Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, fire, or explosion. Check the area is safe before doing any welding.

- Protect yourself and others from flying sparks and hot metal.
- Do not weld where flying sparks can strike flammable material.
- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Be aware that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on containers that have held combustibles or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A6.0.
- Do not weld where the atmosphere contains combustible dust, gas, or liquid vapors (gasoline for example).
- Connect work cable to the work as close to the welding area as practical to prevent welding amperage from travelling long, possibly unknown paths and causing electric shock and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from electrode holder or cut off welding wire at contact tip when not in use.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Wear body protection made from durable, flame-resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuff less trousers, high shoes, and a cap.
- Remove any flammables, such as 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.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.

SHIELDING GAS CYLINDERS can explode



Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
- Install and secure cylinder(s) in an upright position by chaining cylinder(s) to a stationary support or equipment cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never allow a welding electrode to touch any cylinder.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and

associated parts in good condition.

- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

MOVING PARTS can cause injury



Moving parts, such as fans, drive gears, rotating wire spools, rotors, and belts can cut fingers and hands and catch loose clothing.

- Keep all doors, panels, covers, and guards closed and securely in place.
- Switch OFF Power Source before installing or connecting it
- Have only Suitably Trained and Qualified Tradesperson remove guards or covers for maintenance and troubleshooting as necessary.
- To prevent accidental starting during servicing, disconnect Power Source from power receptacle outlet or disconnect negative battery cable from battery.
- Keep hands, hair, loose clothing, and tools away from moving parts.
- When servicing is finished, reinstall panels or guards and close doors before starting the engine.

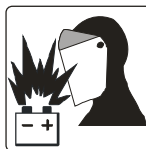
WELDING IN RAIN or WATER can cause electric shock



Welding in rain or in water or near water can increase the risk of electric shock.

- Do not weld when in the rain or leave the Power Source outdoors while it is raining.
- Do not weld when standing in or near water.
- If water enters Power Source, it must be thoroughly dried and properly tested before being reused.

SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes & skin



Batteries contain acid and generate explosive gases.

- Always wear a face shield when working on a battery.
- Stop engine before disconnecting or connecting battery cables.
- Do not allow tools to cause sparks when working on a battery.
- Do not use welder to charge batteries or jump start vehicles.
- Observe correct polarity (+ and -) on batteries.

ELECTRIC and MAGNETIC FIELDS (EMF) can affect Implanted Medical Devices



Consult your doctor and the Implanted Medical Device manufacturer before going near arc welding, spot welding, gouging or plasma arc cutting.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away.

SAFETY INSTRUCTIONS

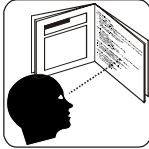
1.2 Additional Installation, Operation and Maintenance Hazard Symbols

READ OPERATING MANUAL



Read and follow all Power Source labels and the Operating Manual carefully before installing, operating, or servicing the Power Source.

- Read the safety information at the beginning of the manual and in each section.
- Perform installation, maintenance, and service according to the Operating Manual, industry standards, and national, state, and local codes.



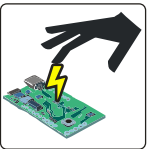
IMPROPER INSTALLATION can cause fire



Improper equipment installation can cause fire.

- Do not install or place Power Source on, over, or near combustible surfaces.
- Do not install Power Source near flammables.
- Do not overload building wiring – be sure Input Power Supply system is properly sized, rated, and protected to handle this Power Source.

Electrostatic discharge can damage electronic components



Touching/handling electronic components or PC Boards without fitting a ground wrist strap can damage these parts.

- Put on grounded wrist strap before touching/handling electronic components or PC Boards.
- Use proper static-proof bags and boxes to store, move, or ship electronic components or PC Boards.

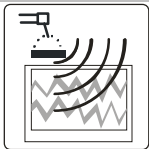
FALLING EQUIPMENT can injure



Use designated lifting device on power source to lift the power source only, NOT cart/running gear, gas cylinders, or any other accessories.

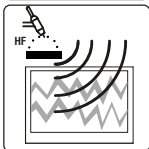
- Use lifting equipment of adequate capacity to lift and support power source.
- If using lift forks to move power source, be sure forks are long enough to extend beyond opposite side of power source.
- Keep cables and Power Cords away from moving vehicles when working from an aerial location.
- Follow the guidelines in the *Applications Manual for the Revised NIOSH Lifting Equation* [DHHS (NOISH) Publication No. 94-110] when manually lifting heavy parts or Power Source.

ARC WELDING and HIGH FREQUENCY (HF) RADIATION can cause interference



Arc Welding and HF radiation produces electromagnetic energy/radio frequencies that can interfere with sensitive electronic equipment.

- Electronics that can be affected are radios, computers, safety services, telecommunication equipment, and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.



- Have only Suitably Trained and Qualified Tradesperson familiar with electronic equipment install this equipment.
- The user is responsible for having a Suitably Trained and Qualified Tradesperson promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment immediately.
- Have the installation regularly checked and maintained.
- Keep spark gaps at correct setting (if applicable) and use grounding and shielding to minimize the possibility of interference.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 300 ft from any sensitive electronic equipment.
- Be sure this Power Source is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the Power Source, using shielded cables, using line filters, or shielding the work area.

1.3 Read Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, is available as a free download from the American Welding Society at (Website: www.aws.org).

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1, from Global Engineering Documents (Website: www.global.ihs.com).

Safe Practices for Welding and Cutting Containers that have Held Combustibles, American Welding Society Standard AWS A6.0, from Global Engineering Documents (Website: www.global.ihs.com).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (Website: www.nfpa.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 14501 George Carter Way, Suite 103, Chantilly, VA 20151 (website: www.cganet.com).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5NS (Website: www.csagroup.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 (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 (Website: www.nfpa.org).

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, (Website: www.osha.gov).

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30329-4027 (Website: www.cdc.gov/NIOSH).

1.4 California Proposition 65 Warnings



This Product contain chemicals, including lead, or otherwise produce chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. Wash hands after handling. (California Health & Safety Code 25249.5 et seq.)

Welding and cutting equipment produce fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. Wear an approved air-supplied respirator for welding and cutting. (California Health & Safety Code Section 25249.5 et seq.)

1.5 ELECTRIC and MAGNETIC FIELDS (EMF) Recommendations

Consult your doctor and the Implanted Medical Device manufacturer before going near arc welding, spot welding, gouging, or plasma arc cutting.

EMFs are produced around welding cables / accessories during the welding operation and can interfere with some medical implants such as pacemakers. All Welding Operators should use the following procedures in order to minimize exposure to EMF when welding.

- Keep electrode / ground cables together by twisting or taping them together.

- Keep electrode / ground cables away from your body.
- Do not place your body in between the electrode and ground cables.
- Do not coil or drape cable around your body.
- Keep Power source and accessories as far away from your body as possible.
- Do not weld whilst carrying the Power source or accessories.
- Connect the ground clamp to the workpiece as close as possible to the weld zone.

SECTION 2 – Instructions De Sécurité: Lire Avant D'utiliser ce Produit



DANGER! - Protégez-vous et les autres autour de vous contre les blessures graves ou mortelles.

1) Lire, suivre et comprendre ce manuel d'utilisation avant d'installer, d'utiliser ou d'entretenir cet équipement de soudage et de découpage. 2) Les porteurs de stimulateurs cardiaques devraient consulter leur médecin avant d'utiliser cet équipement. 3) Les travaux d'installation, de fonctionnement, d'entretien et de réparation devraient être effectués que par des personnes formées et qualifiées. 4) Tenir les enfants à l'écart. 5) Ne perdez pas ces instructions. 6) Lorsqu'expédié, la possession du produit passe de la société de transport à l'acheteur dès réception.

En conséquence, les réclamations pour composants endommagés pendant le transport doivent être effectuées contre la société de transport au moment de la réception de la commande.

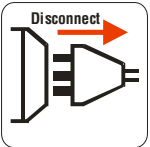
"NOTE:" Fournit des informations concernant les recommandations de fonctionnement de cet équipement de soudage et de découpage.

L'équipement et les procédés de soudage et de découpage peuvent causer des blessures graves ou mortelles, ou endommager d'autres équipements ou biens, si l'opérateur n'observe pas strictement toutes les consignes de sécurité et prend des précautions. Toute personne qui n'est pas formée aux méthodes de soudage et de découpage ne doit pas tenter de souder ou de couper du métal.

Les pratiques sûres sont décrites dans la norme nationale américaine (ANSI) Z49.1 intitulée: SÉCURITÉ EN SOUDAGE ET EN DÉCOUPAGE. Cette publication et d'autres guides sur ce que vous devez apprendre avant d'utiliser cet équipement de soudage et de découpage sont répertoriés à la fin de ces consignes de sécurité.

2.1 Symboles de danger pour soudage et découpage à l'arc

LECHOC ÉLECTRIQUE peut tuer



Toucher les éléments électriques sous tensions peut tuer ou causer des brûlures graves. L'électrode et le circuit de travail sont électriquement sous tension chaque fois que la sortie est activée. NE TRAVAILLEZ PAS SEUL! Le circuit d'alimentation d'entrée et les circuits internes de la source d'alimentation sont également sous tension lorsque l'alimentation est activée. En soudage au fil semi-automatique ou automatique, le fil, la bobine de fil, le rouleau d'entraînement et toutes les pièces métalliques qui touchent le fil à soudage sont sous tension. Un équipement de soudage/découpage mal installé ou inadéquatement mise à la terre est un danger.

- Ne touchez pas les pièces électriques sous tension.
- Faites attention aux chocs électriques causés par le câblage.

- N'enroulez pas les câbles autour de votre corps.
- Gardez tous les panneaux et les couvercles en place.

- Portez des gants isolants, secs et sans trous et une protection pour le corps.
- Isolez-vous du travail et du sol en utilisant des tapis isolants et secs, ou des couvertures suffisamment grandes pour éviter tout contact physique avec le travail ou le sol.
- Des précautions de sécurité supplémentaires sont requises lorsque l'une ou l'autre des conditions dangereuses suivantes sont présentes:
 - Dans des endroits humides ou portant des vêtements mouillés;
 - Sur des structures métalliques telles que des planchers, des grilles ou des échafaudages;
 - Dans des positions confinées telles qu'assises, agenouillées ou allongées;
 - Lorsqu'il existe un risque élevé de contact inévitable ou accidentel avec le travail ou le sol.
- Pour ces conditions, utilisez les équipements suivants:
 - 1) Un soudeur au fil semi-automatique à tension continue DC, ou
 - 2) Une soudeuse à tige manuelle CC. Dans la plupart des cas, un soudeur à courant continu (CC) est recommandé.
- Débranchez l'alimentation électrique d'entrée avant d'installer ou d'entretenir cet équipement. Étiquetez et verrouillez l'alimentation

SAFETY INSTRUCTIONS

électrique d'entrée selon OSHA 29 CFR 1910.147.

- Installez et mettez à la terre correctement cette source d'alimentation selon son mode d'emploi et les codes nationaux, régionaux et locaux.
- Utilisez uniquement des équipements bien entretenus. Réparez ou remplacez les pièces endommagées immédiatement.
- Vérifiez toujours la mise à la terre du câble d'alimentation d'entrée - vérifiez et assurez-vous que le fil de mise à la terre du câble d'alimentation d'entrée est connecté correctement à la borne de terre dans le disjoncteur ou que la prise électrique du câble d'alimentation d'entrée est connectée à une sortie de prise de courant correctement connectée à la terre.
- Lorsque vous effectuez des connexions d'entrée, attachez en première correctement le conducteur de terre. **VÉRIFIER TOUTES LES CONNEXIONS.**
- Gardez tous les câbles d'alimentation électrique secs, sans aucune trace d'huile ou de graisse, et protégés des métaux chauds, d'étincelles et de bords métalliques tranchants.
- Inspectez fréquemment le câble d'alimentation d'entrée et le conducteur de terre pour dommages ou câblage à nu. Remplacez immédiatement s'ils sont endommagés, le câblage à nu peut tuer.
- Fermez tous les appareils lorsqu'ils ne sont pas en service. Débranchez les appareils s'ils seront laissés sans surveillance ou hors service.
- Utilisez des supports d'électrodes complètement isolés. Ne jamais tremper le support dans l'eau pour le refroidir ou le déposer sur le sol ou la surface de travail. Ne touchez pas simultanément les supports connectés à deux sources d'alimentation ou toucher d'autres personnes avec le support ou l'électrode.
- N'utilisez pas de câbles usés, endommagés, sous-dimensionnés, réparés ou mal épissés.
- Mettre la pièce à travailler sur une bonne mise électrique à la terre.
- Ne pas toucher l'électrode lorsqu'elle est en contact avec la mise à la terre.
- Dans les espaces confinés ou les endroits humides, ne pas utiliser de soudeur avec sortie CA, à moins qu'il ne soit équipé d'un réducteur de tension. Utilisez un équipement avec sortie CC.
- Portez un harnais de sécurité pour éviter de tomber si vous travaillez au-dessus du niveau du sol.
- Ne touchez pas les supports d'électrodes connectés simultanément à deux sources d'alimentation car la tension de circuit ouvert sera doublée.
- Isoler la pince de travail lorsqu'elle n'est pas reliée à la pièce à travailler pour éviter tout contact avec un objet métallique.
- Ne relier pas plus qu'une électrode ou un câble de travail à une seule borne de sortie de soudage. Débranchez le câble quand il n'est pas utilisé.
- Utilisez un disjoncteur de fuite de terre (GFCI) lorsque vous utilisez des appareils auxiliaires dans des endroits humides ou mouillés.

PROJECTIONS DE MÉTAL ou PARTICULES peuvent blesser les yeux

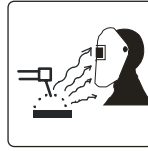


Le soudage, l'écaillage, le broyage des fils et le broyage provoquent les étincelles et les projections de métal.

- Les scories de soudage peuvent être éjectées des soudures lorsqu'elles refroidissent.

- Portez des lunettes protectrices homologuées avec écrans latéraux, même sous votre casque de soudage.

LES RAYONS D'ARC peuvent causer des blessures aux yeux et brûler la peau



Les rayons d'arc du procédé de soudage produisent une chaleur intense et des rayons ultraviolets puissants qui peuvent brûler les yeux et la peau.

- Portez des lunettes protectrices homologuées avec de préférence des écrans latéraux.
- Portez un casque de soudage muni d'une teinte de filtre appropriée (voir ANSI Z49.1 figurant dans les Normes de Sécurité) pour protéger votre visage et vos yeux lors du soudage ou d'une observation.
- Utilisez des écrans ou barrières de protection pour protéger les autres contre les éclats aveuglants et les éclairs; Avertir les autres de ne pas regarder l'arc.
- Portez des vêtements de protection fait de matériaux résistants aux flammes (laine et cuir) et une protection pour les pieds.

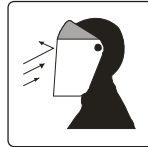
LE BRUIT peut endommager l'ouïe



Le bruit de certains procédés peut endommager l'ouïe.

- Utilisez des boules Quiès ou des cache-oreilles homologuées pour des environnements à niveaux sonores élevés.

LES ÉTINCELLES peuvent blesser



Les étincelles et le métal chaud peuvent blesser. L'écaillage et le broyage peuvent projeter des morceaux de métal.

- Portez un masque protecteur homologué ou des lunettes de protection.
- Portez une protection du corps adéquate pour protéger la peau.
- Les étincelles peuvent provoquer un incendie; retirer tous les matériaux inflammables à moins de 35 pieds (10.7 m) de la zone de travail.

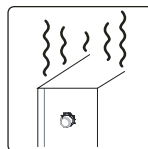
LES PIÈCES CHAUDES peuvent brûler



Les pièces soudées, le métal coupé, la pince de terre, la tige d'électrode ou les pièces du chalumeau peuvent brûler la peau nue lorsqu'ils sont chauds.

- Ne touchez pas les pièces chaudes à la peau nue.
- Pour manipuler les pièces chaudes, utilisez des outils appropriés et / ou portez des gants de soudage lourds et isolés et des vêtements pour prévenir les brûlures.

SURCHAUFFE DE L'ÉQUIPEMENT



Le boîtier de la source d'alimentation, les bornes, les câbles, la pince de terre, la tige d'électrode ou les pièces du chalumeau peuvent blesser quand surchauffés.

- Respecter la période de refroidissement avant de toucher l'équipement.
- Respecter la période de refroidissement; suivre le cycle de service noté.
- Réduisez l'ampérage et / ou l'arc avant de recommencer à souder.
- Ne pas bloquer ni filtrer la bouche d'aération de la source d'alimentation.

LES ÉMANATIONS ET LES GAZ peuvent être dangereux



Les émanations et les gaz peuvent être dangereux pour votre santé. Le soudage produit des émanations et des gaz. Respirer ces émanations et ces gaz peuvent être dangereux pour votre santé.

- Gardez votre tête à l'écart des émanations. Ne pas les respirer.
- Si la ventilation est mauvaise, utilisez un appareil respiratoire à adduction d'air approuvé.
- Lisez les fiches signalétiques (SDS) et les instructions du fabricant pour les métaux, les consommables, les revêtements, les produits de nettoyage, les liquides de refroidissement, les dégraissants, et les flux.
- Travaillez dans un espace clos seulement s'il est bien ventilé ou en utilisant un appareil respiratoire à adduction d'air. Il faut toujours avoir un observateur formé dans les procédures de secours et d'urgence pour surveiller la personne dans un espace clos. Les gaz de protection utilisés pour le soudage peuvent déplacer l'air, pouvant provoquer des blessures ou la mort. Assurez-vous que l'air respirable est sûr.

- À l'intérieur, ventilez la zone et / ou utilisez l'aspiration locale au niveau de l'arc pour enlever les émanations et les gaz de soudage.
- Ne pas souder dans des endroits près d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir avec les vapeurs pour former des gaz hautement toxiques et irritants.
- Ne pas souder sur des métaux revêtus, tels que l'acier galvanisé, plaqué au plomb ou plaqué au cadmium, à moins que le revêtement soit retiré de la zone de soudure, que la zone soit bien ventilée et si nécessaire, en portant un appareil respiratoire à adduction d'air. Les revêtements et tous les métaux contenant ces éléments peuvent dégager des émanations toxiques s'ils sont soudés.

LES ACCUMULATIONS DE GAZ peuvent blesser ou tuer



Le GAZ de protection utilisé pour le soudage au fil peut asphyxier ou tuer dans les espaces clos.

- Fermer l'alimentation du gaz comprimé lorsqu'elle n'est pas utilisée.
- Veuillez toujours bien aérer les espaces clos ou servez-vous d'un appareil respiratoire à adduction d'air homologué.

Numéros du sélecteur de la teinte du filtre de protection des yeux pour le soudage ou le découpage (lunettes ou casque)				
Opération de soudage ou découpage	Taille de l'électrode po. (mm)	Courant de soudage (A)	Le numéro de teinte de filtre minimum	Numéro de teinte * de filtre suggéré
Soudage à l'arc métallique blindé (SMAW; STICK)	Moins que 3/32 (2.5)	Moins que 60	7	7
	3/32 (2.5) – 5/32 (2.5 – 4.0)	60 – 160	8	10
	5/32 – 1/4 (4.0 – 6.4)	160 – 250	10	12
Soudage à l'arc au tungstène gazeux (GTAW; TIG)	–	Moins que 50	8	10
	–	50 – 150	8	12
	–	150 – 500	10	14

*En règle générale, commencez par une teinte du filtre de protection trop sombre pour voir la zone de soudage ou de découpage. Ensuite, passez à une teinte plus claire qui donne une vue suffisante de la zone de soudage ou de découpage sans être inférieure au minimum. Ce guide de sélection de lentille a été adapté d'ANSI Z49.1, 2012.

LE SOUDAGE / DÉCOUPAGE peut provoquer un incendie ou une explosion



Les étincelles et les éclaboussures giclent de l'arc de soudage/découpage. Les étincelles et le métal en fusion, les éclaboussures de métal, les pièces de travail et les équipements chauds peuvent provoquer des incendies et des brûlures. Le soudage sur des conteneurs fermés, tels que des réservoirs, des bidons ou des tuyaux, peut les faire exploser.

Le contact accidentel d'électrode ou de fil de soudage sur des objets métalliques peut causer des étincelles, une surchauffe, un incendie ou une explosion. Vérifiez que la zone de travail est sûre avant de procéder à des travaux de soudage.

- Protégez-vous et les autres contre les étincelles et le métal chaud.
- Ne soudez pas là où les étincelles peuvent frapper des matériaux inflammables.
- Enlevez tous les matériaux inflammables à moins de 10 pieds (10,7 m) de l'arc de soudage. Si cela n'est pas possible, recouvrez-les avec des couvertures approuvées.
- Soyez conscient que les étincelles de soudage et les matériaux chauds provenant du soudage peuvent facilement passer à travers des petites fissures et des ouvertures dans les pièces adjacentes.
- Surveillez pour un feu éventuel et gardez un extincteur à proximité.
- Soyez conscient que le soudage sur un plafond, un plancher, une cloison ou une partition peut provoquer un incendie sur le côté caché.
- Ne soudez pas sur des conteneurs contenant des combustibles ou des récipients fermés tels que des réservoirs, des bidons ou des tuyaux, à moins qu'ils ne soient correctement préparés selon AWS F4.1 et AWS A6.0.

- Ne soudez pas quand l'atmosphère contient des poussières combustibles, des gaz ou des vapeurs (de l'essence par exemple).
- Raccordez le câble de travail au travail aussi près que possible de la zone de soudage, pour empêcher le courant de sillonner une longue distance, et peut-être un parcours inconnu qui pourrait causer des chocs électriques et des risques d'incendie.
- N'utilisez pas la soudeuse pour dégeler les tuyaux congelés.
- Enlevez l'électrode enrobée du support ou coupez le fil de soudage à la pointe de contact lorsqu'elle n'est pas utilisée.
- Utilisez uniquement des fusibles ou des disjoncteurs corrects. Ne les surdimensionnez pas.
- Portez une protection du corps fait d'un matériau durable et résistant aux flammes (cuir, coton lourd, laine). La protection du corps comprend des vêtements sans huile tels que des gants en cuir, une chemise lourde, des pantalons sans ourlets, des chaussures hautes et une casquette.
- Retirez tous les matériaux inflammables de votre personne, tels qu'un briquet au butane ou des allumettes, avant de souder.
- Une fois les travaux achevés, inspectez la zone pour vous assurer qu'il ne reste pas d'étincelles, de braises et de flammes.
- Suivez les exigences de la norme OSHA 1910.252 (a) (2) (iv) et NFPA 51B pour les travaux à chaud et ayez un piquet d'incendie et un extincteur à proximité.
- Lire et comprendre les fiches signalétiques (SDS) et les instructions du fabricant pour les adhésifs, les revêtements, les produits de nettoyage, les consommables, les liquides de refroidissement, les dégraissants, les flux et les métaux.

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LES CYLINDRES DE GAZ DE PROTECTION peuvent explo- ser



Les cylindres de gaz de protection contiennent du gaz sous haute pression. S'il est endommagé, un cylindre peut exploser. Étant donné que les cylindres de gaz font partis du procédé de soudage, assurez-vous de les manipuler avec précaution.

- Protégez les cylindres de gaz comprimés contre la chaleur excessive, les chocs mécaniques et les arcs.
- Installez et sécurisez le(s) cylindre(s) en position verticale en attachant le(s) cylindre(s) à un support stationnaire ou à un cadre pour cylindre pour éviter qu'il tombe(nt) ou ne bascule(nt).
- Gardez les cylindres à l'écart de tout soudage ou circuit électrique.
- Ne permettez jamais qu'une électrode de soudage puisse toucher un cylindre.
- Utilisez seulement des cylindres de gaz de protection, des régulateurs, des tuyaux et des raccords conçus pour l'application spécifique; maintenez-les et les pièces associées en bon état.
- Tournez le visage hors de la portée de la sortie de la vanne lorsque vous ouvrez la vanne du cylindre.
- Gardez le capuchon de protection en place sur la vanne, sauf si le cylindre est utilisé ou prêt à être utilisé.
- Lisez et suivez les instructions sur les cylindres de gaz comprimés, les équipements associés et la publication de la CGA énumérées dans les normes de sécurité.

LES PIÈCES MOBILES peuvent blesser

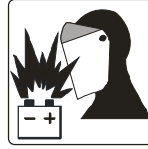


Les pièces mobiles, telles que les ventilateurs, les engrenages d'entraînement, les bobines de fil tournantes, les rotors et les ceintures, peuvent couper les doigts et les mains et accrocher les vêtements amples.

- Gardez toutes les portes, les panneaux, les couvercles et les protecteurs de machines bien en place.
- Fermez la source d'alimentation avant de l'installer ou de la brancher.
- N'utilisez que des personnes qualifiées pour enlever les protecteurs de machines ou les couvercles, pour l'entretien et la résolution de problèmes.
- Gardez les mains, les cheveux, les vêtements amples et les outils à l'écart des pièces mobiles.

- Pour prévenir le démarrage accidentel pendant l'entretien, débranchez la source d'alimentation de la prise de courant ou débranchez le câble à pôle négatif de la batterie.
- Lorsque l'entretien est terminé, réinstallez les panneaux ou les protecteurs de machines et fermez les portes avant de démarrer le moteur.

LES ÉTINCELLES peuvent faire EXPLOSER LES GAZ de BATTERIE; L'ACIDE DE BATTERIE peut brûler les yeux et la peau



Les batteries contiennent de l'acide et génèrent des gaz explosifs.

- Portez toujours un masque protecteur lorsque vous travaillez sur une batterie.
- Arrêtez le moteur avant de débrancher ou de brancher les câbles de la batterie.
- Ne laissez pas les outils créer des étincelles lorsque vous travaillez sur une batterie.
- Ne vous servez pas du soudeur pour recharger des batteries ou démarrer des véhicules.
- Observez la polarité correcte (+ et -) sur les batteries.

SOUDERSOUS LA PLUIE ou DANS L'EAU peut donner un choc électrique



Souder sous la pluie ou dans l'eau ou près de l'eau peut augmenter le risque de choc électrique.

- Ne soudez pas sous la pluie, et ne laissez pas la source d'alimentation à l'extérieur quand il pleut.
- Ne soudez pas debout dans ou près de l'eau.
- Si l'eau pénètre dans la source d'alimentation, elle doit être complètement séchée et bien testée avec d'être utilisée à nouveau.

LES CHAMPS ÉLECTRIQUES ET MAGNÉTIQUES (EMF) peu- vent affecter les appareils médicaux implantés



Consultez votre médecin et le fabricant de l'appareil médical implanté avant de vous approcher du soudage à l'arc, au soudage par points, au gougeage ou découpage à l'arc de plasma.

- Les porteurs de stimulateurs cardiaques et d'autres appareils médicaux implantés devraient se tenir à l'écart.

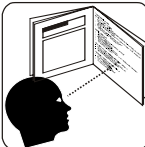
2.2 Symboles supplémentaires de danger pour l'installation, l'utilisation et l'entretien

LIRE LE MANUEL D'INSTRUCTIONS



Lisez et suivez attentivement toutes les étiquettes de la source d'alimentation et le manuel d'instructions avant d'installer, d'utiliser ou d'entretenir la source d'alimentation.

- Lisez les informations de sécurité au début du manuel et dans chaque section.
- Effectuez l'installation, l'entretien et le service conformément au manuel d'instructions, aux normes de l'industrie et aux codes nationaux, régionaux et locaux.



L'INSTALLATION INADÉQUATE peut causer un incendie

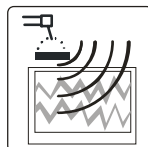


L'installation inadéquate de l'équipement peut causer un incendie.

- Ne pas installer ou placer une source d'alimentation sur, au-dessus ou à proximité de surfaces combustibles.
- Ne pas installer de source d'alimentation à proximité de produits inflammables.

- Ne pas surcharger le câblage du bâtiment - assurez-vous que la source d'alimentation d'entrée est correctement dimensionnée, évaluée et protégée pour gérer cette source d'alimentation.

LE SOUDAGE À L'ARC ET LA RADIATION À HAUTE FRÉ- QUENCE (HF) peuvent causer des interférences



Le soudage à l'arc et la radiation à haute fréquence produisent de l'énergie électromagnétique et des fréquences de radio qui peuvent interférer avec des appareils électroniques sensibles.

- Les appareils électroniques qui peuvent être affectés sont les radios, les ordinateurs, les services de sécurité, les appareils de télécommunication et les appareils informatiques tels que les robots.
- Assurez-vous que tous les appareils dans la zone de soudage sont compatibles au niveau électromagnétique.
- N'ayez que des personnes qualifiées qui connaissent bien ces appareils électroniques pour les installer.
- Vérifiez et faites entretenir l'installation régulièrement.

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- L'utilisateur est responsable d'avoir un électricien qualifié pour corriger rapidement tout problème d'interférence relié à l'installation.
- Si vous êtes avisé par la FCC qu'il y a des interférences, cessez d'utiliser l'équipement immédiatement.
- Gardez les éclateurs bien réglés et utilisez la mise à la terre et le blindage pour minimiser la possibilité d'interférence.
- Pour réduire les interférences possibles, gardez les câbles de soudage aussi courts et proches que possible, et en bas, de préférence sur le sol.
- Localisez l'opération de soudage à 300 pieds de tous appareils électroniques sensibles.
- Assurez-vous que cette source d'alimentation soit installée et mise à la terre conformément à ce manuel.
- Si des interférences se produisent, l'utilisateur doit prendre des mesures supplémentaires telles que déplacer la source d'alimentation, utiliser des câbles blindés, utiliser des filtres de ligne ou blinder la zone de travail.
- Si vous utilisez des fourches de levage pour déplacer la source d'alimentation, assurez-vous que les fourches soient suffisamment longues pour s'étendre au-delà du côté opposé de la source d'alimentation.
- Gardez les câbles et les cordons d'alimentation loin des déplacements de véhicules lorsque vous travaillez en hauteur.
- Suivez les directives du Manuel d'application de l'Équation de levage NIOSH révisée [publication DHHS (NOISH) n° 94-110] lors du soulèvement manuel de pièces lourdes ou de la source d'alimentation.

2.3 Lire les principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, is available as a free download from the American Welding Society at (Website: www.aws.org).

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1, from Global Engineering Documents (Website: www.global.ihc.com).

Safe Practices for Welding and Cutting Containers that have Held Combustibles, American Welding Society Standard AWS A6.0, from Global Engineering Documents (Website: www.global.ihc.com).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (Website: www.nfpa.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 14501 George Carter Way, Suite 103, Chantilly, VA 20151 (website: www.cganet.com).

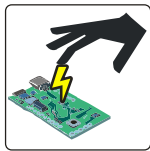
Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N5 (Website: www.csagroup.org).

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 (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 (Website: www.nfpa.org).

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, (Website: www.osha.gov).

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30329-4027 (Website: www.cdc.gov/NIOSH).

La décharge électrostatique peut endommager les composants électroniques



Toucher / manipuler les composants électroniques ou des cartes de circuit imprimé sans porter un bracelet de mise à la terre peut endommager ces pièces.

- Mettez un bracelet de mise à la terre avant de toucher / manipuler des composants électroniques ou des cartes de circuit imprimé.
- Utilisez des sacs et des boîtes antistatiques pour stocker, déplacer ou expédier des composants électroniques ou des cartes de circuit imprimé.

LES APPAREILS QUI TOMBENT peuvent blesser



Utilisez le dispositif de levage conçu pour la source d'alimentation pour soulever uniquement la source d'alimentation, et non PAS le chariot / le mécanisme de roulement, les cylindres de gaz ou tout autre accessoire.

- Utilisez un dispositif de levage de capacité suffisante pour soulever et soutenir la source d'alimentation.

2.4 Avertissements de la Proposition 65 de Californie



Ce produit contient des produits chimiques, y compris le plomb, ou engendre des produits chimiques connus de l'État de Californie pour causer le cancer, des anomalies congénitales et d'autres problèmes reproductifs. Se laver les mains après la manipulation. (Code santé et sécurité de la Californie, 25249.5 et suivants).

Les appareils de soudage et de découpage produisent des émanations ou des gaz qui contiennent des produits chimiques connus de l'État de Californie pour causer des anomalies congénitales et, dans certains cas, le cancer. Portez un appareil respiratoire à adduction d'air approuvé pour le soudage et le découpage. (Section 25249.5 et suivants du Code de santé et de sécurité de la Californie).

2.5 Recommandations relatives aux champs électriques et magnétiques (CEM)

Consultez votre médecin et le fabricant de l'appareil médical implanté avant de vous approcher du soudage à l'arc, au soudage par points, au gougeage ou découpage à l'arc de plasma.

Les CEM sont produits autour de câbles et accessoires de soudage pendant le soudage et peuvent interférer avec certains implants médicaux tels que les stimulateurs cardiaques. Tous les opérateurs de soudage devraient utiliser les procédures suivantes afin de minimiser l'exposition aux CEM lors du soudage.

- Gardez les câbles d'électrode et de mise à la terre ensemble en les tordant ou en les collant ensemble.

- Gardez l'électrode et les câbles de mise à la terre loin de votre corps.
- Ne placez pas votre corps entre l'électrode et les câbles de mise à la terre.
- N'embobinez pas ou ne drapiez pas le câble autour du corps.
- Gardez la source d'alimentation et les accessoires aussi loin que possible de votre corps.
- Ne soudez pas en portant la source d'alimentation ou les accessoires.
- Raccordez la pince de terre à la pièce de travail le plus près possible de la zone de soudage.

INTRODUCTION

SECTION 3 – INTRODUCTION

3.1 Description

The compact PRO-TEC 100S Welding Power Source has infinitely adjustable Welding Amperage from 10 to 100 Amps and is fully compliant to CAN/CSA-E60974-1 & ANSI/IEC 60974-1. It runs standard general purpose Stick SMAW 1/16 in. (1.6mm) electrodes for light gauge work, generally less than 3/32 in. (2.5mm) thick material, and SMAW 5/64 in. (2.0mm) to 3/32 in. (2.5mm) electrodes for 1/8 in. (3.2mm) to 1/4 in. (6.4mm) thick materials. The Power Source also has a Lift TIG (GTAW) welding mode that offers stable TIG welding characteristics when used with a suitable TIG torch, gas regulator and shielding gas.

3.2 Transportation Methods



Disconnect Power Source before moving



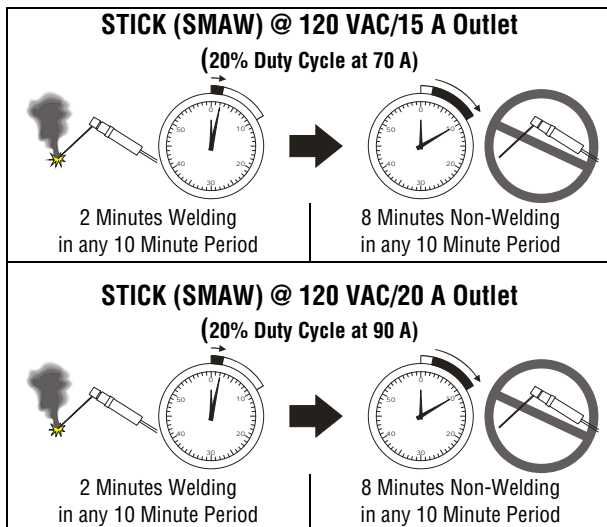
Falling Power Source can cause serious personal injury

Lift the Power Source using both hands.

Use handcart or similar device of adequate capacity and secure Power Source before transporting.

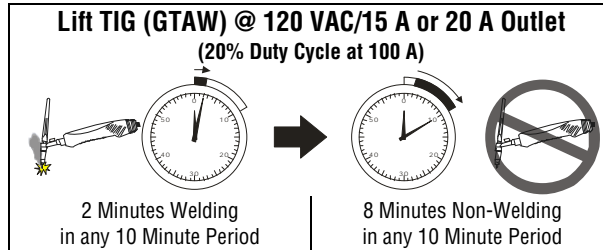
3.3 Duty Cycle for Stick – 100S

The rated duty cycle of the Power Source is a statement of the time it may be operated at its rated welding amperage output.



3.4 Duty Cycle for Lift TIG – 100S

The rated duty cycle of the Power Source is a statement of the time it may be operated at its rated Welding Amperage output.



3.5 PRO-TEC 100S Stick Package

PRO-TEC 100S Stick Package, Part No. G1110000, comes complete with:

- Power Source with 120 V NEMA 5-20P Plug, 6.5 ft 12AWG Cable
- Power Adapter 120 V 20 A to 15 A
- Electrode Holder & 10 ft Lead
- Ground Clamp & 10 ft Lead
- 3/32 in., E6013 Sample Electrodes, Qty 4
- Shoulder Strap
- Carry Toolbox
- Operating Manual



3.6 PRO-TEC 100S Stick/Lift TIG Package

PRO-TEC 100S Stick/Lift TIG Package, Part No.

G1110005, comes complete with:

- Power Source with 120 V NEMA 5-20P Plug, 6.5 ft 12AWG Cable
- Power Adapter 120 V 20 A to 15 A
- 9V TIG Torch, 25 Dinse Style, 10 ft Lead
- TIG Accessory Kit
- Argon Flow-gauge Regulator
- Electrode Holder & 10 ft Lead
- Ground Clamp & 10 ft Lead
- 3/32 in., E6013 Sample Electrodes, Qty 4
- Shoulder Strap
- Carry Toolbox
- Operating Manual

3.7 PRO-TEC 100S Specifications

Power Source Information		
Part Number	G11100099	
Weight	9.7 lb (4.4 kg)	
Dimensions H x W x D	9.0 in. x 5.1 in. x 13.0 in. (230 mm x 130 mm x 330 mm)	
CAN/CSA-ANSI/IEC Standards for Safety Arc Welding Equipment - Part 1: Welding Power Sources	CAN/CSA-E60974-1:12 ANSI/IEC 60974-1:2008	
Cooling Method	Fan Cooled	
Environmental Protection Class	 Welding in rain or near water can cause electric shock.	IP23S [Power Source designed for indoor and outdoor use]
Output Terminal Type	25 Dinse Style	
Input Power Supply (Nominal)	120 VAC @ 15 A Outlet	120 VAC @ 20 A Outlet
Number of Phases	Single Phase	
Input Supply Voltage Range	104 – 127 VAC	
Power Factor	0.8	
Nominal Input Supply Frequency	50/60 Hz	
Effective Input Supply Current STICK ($I_{1\text{ eff}}$)	14.7 A	15 A
($I_{1\text{ max}}$)	Δ 22.0 A	Δ 33.5 A
[^] Minimum Recommended Generator Size	4.8 KVA (3.8 KW)	
Fitted Plug, Input Cable Length, Cable Size	120 V NEMA 5-20P Plug, 6.5 ft, 12 AWG	
Output Welding Power with STICK (SMAW)	120 VAC @ 15 A Outlet	120 VAC @ 20 A Outlet
Welding Amperage Range	10 - 90 A	
Nominal DC Open Circuit Voltage (OCV)	60 VDC	
Maximum Input Supply Current for Stick ($I_{1\text{ max}}$) for Rated Output STICK Welding (SMAW)	22.0 A $I_o = 62A @ 22.5V$; 45% Duty Cycle	33.5 A $I_o = 90A @ 23.6V$; 20% Duty Cycle
Rated Maximum Input KVA	2.6 KVA	4 KVA
Output Welding Power with Lift TIG (GTAW)	120 VAC @ 15 A Outlet	120 VAC @ 20 A Outlet
Welding Amperage Range	10 - 100 A	
Nominal DC Open Circuit Voltage (OCV)	60 VDC	
Maximum Input Supply Current for TIG ($I_{1\text{ max}}$) for Rated Output Lift TIG Welding (GTAW)	17.9 A $I_o = 85A @ 13.4V$; 25% Duty Cycle	22 A $I_o = 100A @ 14V$; 20% Duty Cycle
Rated Maximum Input KVA	2.2 KVA	2.6 KVA

NOTE 1: PRO-TEC reserves the right to change, improve or revise the specifications or design of this product without prior notice. Such updates or changes do not entitle the buyer of equipment previously sold or shipped to the corresponding changes, updates, improvements or replacement. The values specified in the table above are nominal parameters, your products parameters may differ. Individual Power Source may differ from the above specifications due to in part, but not exclusively, to any one or more of the following; variations or changes in manufactured components, installation location/conditions, and local Input Power Supply Grid conditions.

Δ The recommended time delay fuse or circuit breaker size is 30 A. An individual branch circuit capable of carrying 30 amperes and protected by fuses or circuit breaker is recommended for this application. Fuse size is based on not more than 200 percent of the rated input amperage of the Power Source (Based on Article 630, National Electrical Code).

[^] The **Minimum Recommended Generator Size** is greater than the **Rated Maximum Input KVA** due to 0.8 Power Factor of Generators and large variations in performance / specifications of different brands / types of generators. PRO-TEC cannot guarantee Maximum Output Welding Power on various brands / types of generators.

INSTALLATION

SECTION 4 – INSTALLATION

4.1 Environment

This Power Source is designed with an Ingress Protection (IP) Rating of IP23S and is suitable for:

- Weld Indoors when the area is adequately ventilated to remove welding fumes away from user.
- Weld Outdoors ONLY when it is NOT RAINING.
- An environment where –
 - The risk of an electric shock or electrocution by arc welding is low;
 - Normal work practices are used; and
 - It is not possible for a welder or any other workers to be in contact with the workpiece, in the event of coming into contact with a “hot” welding circuit.



DANGER – DO NOT weld in rain or in water or near water or leave the Power Source outdoors while it is raining.

4.2 Location

Be sure to locate the Power Source according to the following guidelines:

- In areas free from oil, steam, corrosive gases moisture, standing water, and dust.
- In areas with ambient temperatures between 32° F to 104° F (0° C to 40° C).
- In areas not subjected to abnormal vibration or shock.
- In areas not exposed to direct rain or sunlight.
- Place at a distance of 12 in. (300mm) or more from walls or similar that could restrict natural air flow for cooling.



DANGER – PRO-TEC advises that this Power Source be electrically connected by a Qualified Electrical Tradesperson

4.3 Explanation of Supply Voltages

110 VAC, 115 VAC, and 120 VAC are often used interchangeably for commonly available lower powered electrical products. However, the use of these various voltage terminologies is largely inaccurate.

110/115 VAC: Are outdated and typically no longer supplied by utilities. 120 VAC replaces 110/115 VAC.

120 VAC: 120 Volts AC is the common low voltage supplied by US / Canadian utilities. See Section 3.7 regarding usage at this voltage.

4.4 Electrical Input Power Guide



Failure to follow these electrical input power guide recommendations could create an electric shock or fire hazard. These recommendations are for a dedicated circuit sized for the rated output and duty cycle of the Power Source. In dedicated circuit installations, the National Electrical Code allows the receptacle outlet or conductor rating to be less than the rating of the circuit protection device. See NEC articles 210.21, 630.11, and 630.12.



NOTE 2: Actual input voltage should not exceed $\pm 10\%$ of indicated required input voltage.

4.5 Connecting 120 VAC to Input Power



Installation must meet all National and Local Codes. This installation must be electrically connected by a Suitably Trained and Qualified Tradesperson.



DO NOT TOUCH any live electrical parts or conductors.

- Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on.



- DO NOT WORK ALONE! The Input Power Supply circuit and Power Source internal circuits are also live when power is on.

Electrical Input Requirements

Operate the Power Source from a single-phase 120 Volt, 50/60 Hz, AC Input Power Supply on SITE. The input voltage must match one of the electrical input voltages shown on the Power Source rating label.

Refer to Figure 1 and Table 1 for connection and Fuse or Circuit Breaker Size.

120 Volts AC Input Power Supply Voltage with Individual Branch Circuit	Time-Delay Fuse or Circuit Breaker Size
120 VAC @ 15 A or 20 A Outlet	30 Amps

Table 1 – 120 VAC Electrical Fuse or Circuit Breaker Size

NOTE 3: The time-delay fuse or circuit breaker of an individual branch circuit may have nuisance tripping when welding with this Power Source due to the amperage rating of the time-delay fuse or circuit breaker.

The recommended time-delay fuse or circuit breaker size is 30 amperes for this application. Fuse/Circuit Breaker size is based on not more than 200 percent of the rated input amperage of the Power Source Refer to National Electrical Code Article 630.12.

Use the Power Adapter to connect the Input Power Cord to a 120V, 15A receptacle.

Use the *Power Adapter* (2 and 3) to connect the Power Source Input Power Cord Plug (1) to the 120V, 15A, 1Ø Receptacle Outlet (4).

- Power Source Input Power Cord plug (Nema 5-20P)
- Power adapter receptacle (Nema 5-20R)
- Power adapter plug (Nema 5-15P)
- Customer Supplied Receptacle Outlet (Nema 5-15R)
- Customer Supplied Receptacle Outlet (Nema 5-20R)

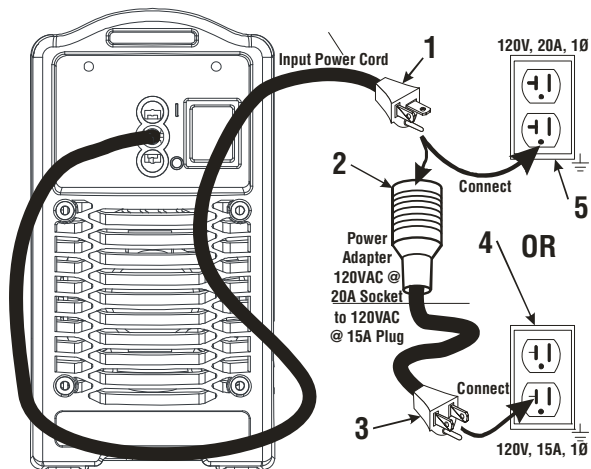










Figure 1 – Electrical Input Power Supply Connections

4.6 STICK (SMAW) Setup

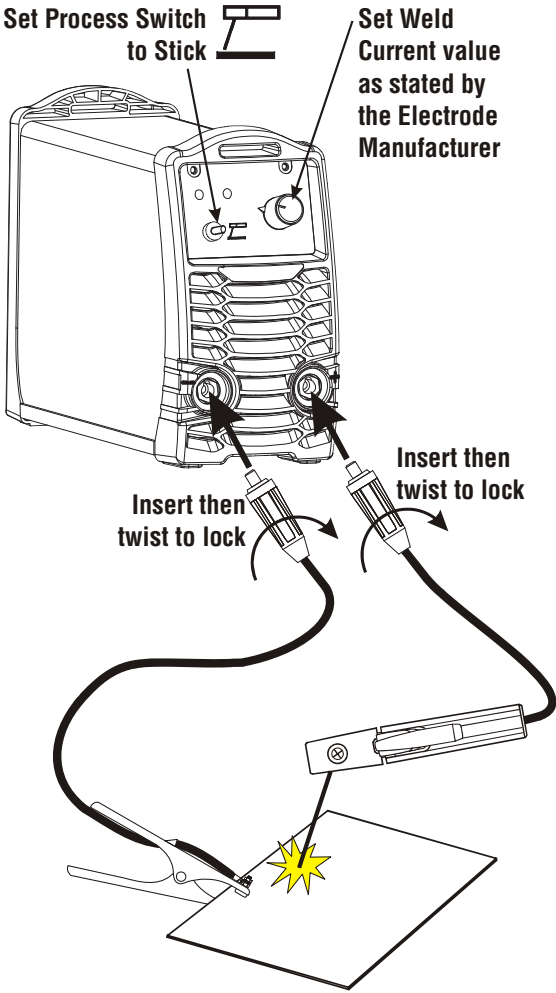
 Danger! Protect yourself and others	 Electric shock can kill	 Flying metal or dirt can injure eyes	 Arc rays can burn eyes and skin	 Fumes and gases can be hazardous	 Welding can cause fire or explosion	 Improper installation can cause fire	 Read Operating Manual
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Refer to Section 5.1 for controls / descriptions.

NOTE 4: Conventional operating procedures apply when using the Power Source, i.e. connect work lead directly to work piece and electrode lead is used to hold electrode. Wide safety margins provided by the design ensure that the Power Source will withstand short-term overload without adverse effects. The Welding Amperage range values should be used as a guide only. Amperage delivered to the arc is dependent on the welding arc voltage, and as welding arc voltage varies between different classes of electrodes, the Welding Amperage at any one setting would vary according to the type of electrode in use. The operator should use the Welding Amperage range values as a guide then fine tune the Welding Amperage to suit the application.



Before connecting the welding cables make sure the Input Power Supply is switched off. Remove any packaging material prior to use. Do not block the air vents at the front or rear of the Power Source.



Stick Sequence of Operation









1. Switch the **ON/OFF Switch** (located on the rear panel) to **OFF**.
2. Connect the earth clamp lead to the Negative Output Terminal and electrode holder lead to the Positive Output Terminal.
NOTE 5: Consult the electrode manufactures packaging for the correct electrode polarity.
3. Connect Power Source to Input Power Supply Voltage. Refer to Section 4.5.
4. Set the **Process Switch** to **Stick**.
5. Set the Weld Amperage control to the desired Welding Amperage.
6. Fix the Stick Electrode into the Electrode Holder.
NOTE 6: Do not let the Stick Electrode touch the earth clamp or work piece.
7. Switch the **ON/OFF Switch** (located on the rear panel) to the **ON** position. This will immediately energize the Power Source up to the output terminals including the Stick Electrode in the electrode holder.
8. Commence welding. If necessary, readjust the Weld Amperage control to obtain the welding condition required.
9. The Power Source should be left turned ON for 2 to 3 minutes after completing the weld. This allows the fan to run and cool the internal components.
10. Switch the **ON/OFF Switch** (located on the rear panel) to the **OFF** position.

Figure 2 – STICK welding (SMAW) Setup

POWER DOWN the Power Source by switching the ON/Off Switch OFF then by unplugging the Input Power Cord from the wall socket or wall Disconnect Device. Lockout/tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device. Disconnect and Lockout/Tagout Input Power Supply Voltage before connecting Input Cord from the Power Source. Follow established procedures regarding the installation and removal of Lockout/Tagout devices.

INSTALLATION

4.7 Lift TIG (GTAW) Setup

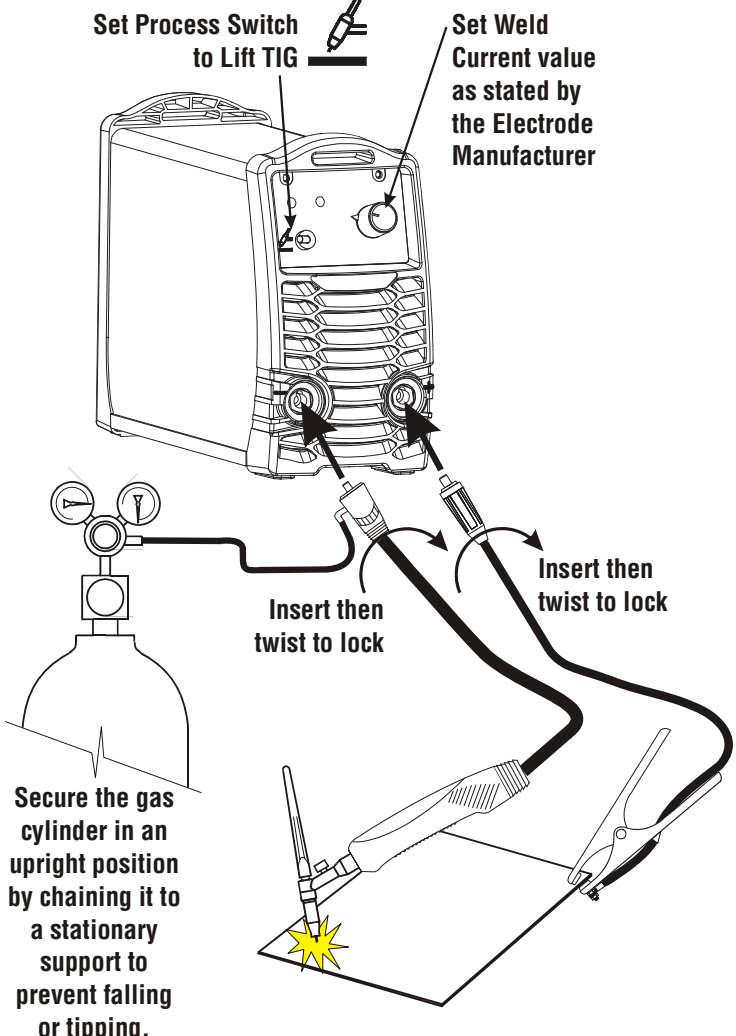
 Danger! Protect yourself and others	 Electric shock can kill	 Flying metal or dirt can injure eyes	 Arc rays can burn eyes and skin	 Buildup of gas can injure or kill	 Shielding gas cylinders can explode	 Improper installation can cause fire	 Read Operating Manual
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Refer to Section 5.1 for controls / descriptions.

NOTE 7: Conventional operating procedures apply when using the Power Source, i.e. connect work lead directly to work piece and TIG torch lead is used to hold tungsten electrode. Wide safety margins provided by the design ensure that the Power Source will withstand short-term overload without adverse effects. The Welding Amperage range values should be used as a guide only. Amperage delivered to the arc is dependent on the welding arc voltage, and as welding arc voltage length varies, the Welding Amperage at any one setting would vary. The operator should use the Welding Amperage range values as a guide then fine tune the Welding Amperage to suit the application.



Before connecting the welding cables make sure the Input Power Supply is switched off. Remove any packaging material prior to use. Do not block the air vents at the front or rear of the Power Source.



Set Process Switch to Lift TIG

Set Weld Current value as stated by the Electrode Manufacturer

Insert then twist to lock

Secure the gas cylinder in an upright position by chaining it to a stationary support to prevent falling or tipping.

Lift TIG Sequence of Operation

1. Switch the **ON/OFF Switch** (located on the rear panel) to **OFF**.
2. Connect the earth clamp to the Positive Output Terminal, torch cable to the Negative Output Terminal and gas hose to the output of the Argon regulator. **DO NOT** over tighten the gas fittings.
3. Connect Power Source to Input Power Supply Voltage. Refer to Section 4.5.
4. Set the **Process Switch** to **Lift TIG**
5. Set the Weld Amperage control to the desired Welding Amperage.
6. Grind the end of the tungsten to a point. Fix the Tungsten Electrode into the TIG Torch with the point protruding.

NOTE 8: Do not let the Tungsten Electrode touch the earth clamp or work piece.

7. Turn on the Argon gas and set to 7 – 12 CFH then turn the TIG Torch valve on to allow the gas to flow out of the TIG torch nozzle.
8. Switch the **ON/OFF Switch** to the **ON** position.
9. Weld by touching then lifting the tip off the work piece to establish the arc. If necessary, adjust the Weld Amperage control.
10. After completing the weld turn off the Argon gas and turn off the TIG Torch valve.
11. The Power Source should be left turned ON for 2 to 3 minutes after you have stopped welding. This allows the fan to run and cool the internal components.
12. Switch the **ON/OFF Switch** (located on the rear panel) to the **OFF**.

Figure 3 – Lift TIG welding (GTAW) Setup

POWER DOWN the Power Source by switching the ON/Off Switch OFF then by unplugging the Input Power Cord from the wall socket or wall Disconnect Device. Lockout / tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device. Disconnect and Lockout/Tagout Input Power Supply Voltage before connecting Input Cord from the Power Source. Follow established procedures regarding the installation and removal of Lockout/Tagout devices.

SECTION 5 – OPERATION

Conventional operating procedures apply when using the Power Source, i.e. connect work lead directly to work piece and electrode lead is used to hold the electrode. The Welding Amperage range values should be used as a guide only. Amperage delivered to the arc is dependent on the welding arc voltage, and as welding arc voltage varies between different classes of electrode, Welding Amperage at any one setting would vary according to the type of electrode in use. The operator should use the Welding Amperage range values as a guide then fine tune the Welding Amperage to suit the specific application.

Refer to the electrode manufactures literature for further information.

5.1 Front Panel

Front Panel

The Power Source is protected by a self re-setting thermostat. The indicator will illuminate if the duty cycle of the Power Source has been exceeded. If the Over Heat light illuminates wait for the Over Heat light to extinguish before resuming welding.

(A) Power On Indicator

The Power ON Indicator illuminates when the ON/OFF switch is in the ON position and the nominal Input Power Supply voltage is connected to the Power Source.

(B) Overheat / Fault Indicator

The Power Source is protected by a self resetting thermostat. The indicator will illuminate if the duty cycle of the Power Source has been exceeded. If the Overheat light illuminates wait for the Overheat light to extinguish before resuming welding.

(C) Stick / Lift TIG Process Switch

Switches between Lift TIG and Stick Welding modes.

(D) Welding Amperage Control

The Welding Amperage is increased by turning the Weld Amperage control knob clockwise or decreased by turning the Weld Amperage control knob counter-clockwise. The Welding Amperage should be set as per the electrode manufactures information.

(E) Negative Output Terminal – Dinse Style 25

(F) Positive Output Terminal – Dinse Style 25

(G) ON/OFF Switch – Located on rear panel (not shown)

This switch controls the Input Power Supply Voltage to the Power Source.



Figure 4 – PRO-TEC 100S controls

TROUBLESHOOTING and MAINTENANCE

SECTION 6 – TROUBLESHOOTING and MAINTENANCE

6.1 STICK Welding Troubleshooting

NOTE 9: Weld quality is dependent on the correct consumables, proper welding technique, and equipment maintenance

Description	Possible Cause	Remedy
1. Gas pockets or voids in weld metal (Porosity).	A Electrodes are damp. B Welding Amperage is too high. C Surface impurities such as oil, grease, paint, etc.	A Dry electrodes before use. B Reduce Welding Amperage. C Clean joint before welding
2. Crack occurring in weld metal soon after solidification commences.	A Rigidity of joint. B Insufficient throat thickness. C Cooling rate is too high.	A Redesign to relieve weld joint of severe stresses or use crack resistance electrodes. B Travel slightly slower to allow greater build up in throat. C Preheat plate and cool slowly.
3. A gap is left by failure of the weld metal to fill the root of the weld.	A Welding Amperage is too low. B Electrode too large for joint. C Insufficient gap. D Incorrect sequence.	A Increase Welding Amperage B Use smaller diameter electrode. C Allow wider gap. D Use correct build-up sequence.
4. Portions of the weld run do not fuse to the surface of the metal or edge of the joint	A Small electrodes used on heavy cold plate. B Welding Amperage is too low. C Wrong electrode angle. D Travel speed of electrode is too high. E Scale or dirt on joint surface.	A Use larger electrodes and pre-heat the plate. B Increase Welding Amperage C Adjust angle so the welding arc is directed more into the base metal D Reduce travel speed of electrode E Clean surface before welding.
5. Non-metallic particles are trapped in the weld metal (slag inclusion).	A Non-metallic particles may be trapped in undercut from previous run. B Joint preparation too restricted. C Irregular deposits allow slag to be trapped. D Lack of penetration with slag trapped beneath weld bead. E Rust or mill scale is preventing full fusion. F Wrong electrode for position in which welding is done.	A If bad undercut is present, clean slag out and cover with a run from a smaller diameter electrode. B Allow for adequate penetration and room for cleaning out the slag. C If very bad, chip or grind out irregularities. D Use smaller electrode with sufficient amperage to give adequate penetration. Use suitable tools to remove all slag from corners. E Clean joint before welding. F Use electrodes designed for position in which welding is done, otherwise slag control is difficult.
6. Difficult to establish an arc.	A Loose connections in welding leads. B Metal is contaminated with oil or rust or grease or dirt.	A Check all welding leads electrical connections for defects like burnt or discoloration connections. Replace/replace electrical connections or welding leads. B Clean metal to remove contamination.
7. The arc wanders away from the joint during welding (Arc Blow).	A Air movement is pushing the arc. B The coating on the stick electrode isn't even around the metal core. C Welding current passing thru the metal sets up a magnetic field which pushes the arc.	A Shield the weld zone from the air movement. B Use a new electrode from another batch. C Reposition the Earth Clamp position to reduce this affect.

TROUBLESHOOTING and MAINTENANCE








6.2 Lift TIG Welding Troubleshooting

NOTE 10: *Weld quality is dependent on the correct consumables, proper welding technique, and equipment maintenance.*

Description	Possible Cause	Remedy
1. Excessive bead buildup or poor penetration/fusion at weld edges.	Welding Amperage is too low	Increase weld amperage and/or change joint preparation.
2. Weld bead too wide or undercut at weld edges or arc burning thru workpiece.	Welding Amperage is too high.	Decrease Welding Amperage.
3. Weld bead too small or insufficient penetration or ripples in bead are spaced widely apart.	Travel speed too fast.	Reduce travel speed.
4. Weld bead too wide or excessive bead build up or excessive penetration in butt joint.	Travel speed is too slow.	Increase travel speed.
5. Uneven leg length in fillet joint.	Incorrect filler rod placement.	Reposition filler rod.
6. Electrode melts when arc is struck.	Electrode is connected to the Positive (+) Output Terminal.	Connect the electrode to the Negative (-) Output Terminal.
7. Dirty weld pool.	A Electrode contaminated through contact with work piece or filler rod material. B Gas contaminated with air.	A Clean the electrode by grinding contaminates off. B Check gas lines for cuts and loose fitting or change gas cylinder.
8. Poor weld finish.	Inadequate shielding gas.	Increase gas flow or check gas line for cuts or leaks.
9. Arc flutters during TIG welding.	Tungsten electrode is too large for the Welding Amperage.	Select the right size electrode. 0.040 in. (1.0 mm) = 5 to 30 Amp 1/16 in. (1.6 mm) = 10 to 70 Amp 3/32 in. (2.4 mm) = 20 to 230 Amps
10. Welding arc cannot be established.	A Work clamp is not connected to work piece or ground/torch leads are not connected to the correct welding terminals. B Torch lead is disconnected. C Gas flow incorrectly set, cylinder empty or the torch valve is off.	A Connect the work clamp to the work piece or connect the work/torch leads to the correct welding terminals. B Connect it to the Negative (-) Output Terminal. C Set gas flow rate to 5 – 12 CFH, change cylinder or turn torch valve on. 0.040 in. Tungsten @ 5–30 A = 5 – 10 CFM 1/16 in. Tungsten @ 10–70 A = 7 – 12 CFM 3/32 in. Tungsten @ 20–230 A = 10 – 18 CFM
11. Electrode melts or oxidizes when an arc is struck.	A No gas is flowing to weld zone. B Torch is clogged with dust. C Gas hose is cut. D Gas hose contains impurities. E Gas regulator turned off. F Torch valve is turned off. G The electrode is too small for the Welding Amperage.	A Check the gas lines for kinks or breaks or cylinder contains gas. B Clean torch. C Replace gas hose. D Raise gas pressure to blow out impurities. E Turn on. F Turn on. G Increase electrode diameter or reduce the Welding Amperage.
12. Arc start is not smooth.	A Tungsten electrode is too large for the Welding Amperage. B The wrong tungsten type is being used for the welding job. C Gas flow rate is too high. D Incorrect shield gas is being used. E Poor work clamp connection to work piece.	A Use smaller diameter tungsten. B Use tungsten suitable for DC. C Use a flow rate of 5 – 12 CFH for the TIG welding job. D Use 100% argon for TIG welding. E Improve connection to work piece.


TROUBLESHOOTING and MAINTENANCE

6.3 Routine Maintenance and Inspection

						
Danger! Extremely dangerous voltages inside Power Source	Disconnect Input Power Supply before opening Power Source	Electric shock can kill	Electrostatic discharge can damage PC Boards	Remove any metallic particles / dirt using vacuum cleaner	Flying metal or dirt can injure eyes	Read Operating Manual


The only routine maintenance required for the Power Source is a thorough cleaning and inspection, with the frequency depending on the usage and the operating environment.

To clean the Power Source, open the enclosure and use a vacuum cleaner to remove any accumulated dirt and dust. The Power Source should also be wiped clean, if necessary; with solvents that are recommended for cleaning electrical apparatus.



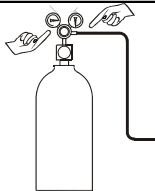





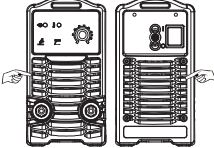

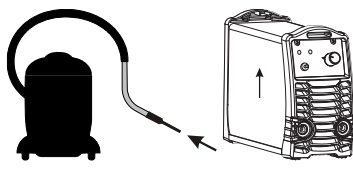
There are extremely dangerous voltages and power levels present inside this Power Source. PRO-TEC advises that any maintenance or repair work performed on this Power Source be carried out by a Suitably Trained and Qualified Tradesperson.

Do not attempt to repair this Power Source unless you are an Accredited PRO-TEC Service Provider and you have had training in power measurements and troubleshooting techniques. If major complex subassemblies are faulty, then the Power Source must be returned to a PRO-TEC Service Provider for repair, refer to SECTION 9 – PRO-TEC WARRANTY POLICY.



A Suitably Trained and Qualified Tradesperson must DISCONNECT the Input Power Supply from the Power Source before opening the enclosure. Wait at least 5 minutes before opening the enclosure to allow the primary capacitors to discharge. There are extremely dangerous voltages and power levels present inside Power Source.

Routine Maintenance Inspection Schedule

Once Per Day	<p>Visual check gas regular, gas hose & gas pressure before Lift TIG Welding</p> 	<p>Visual check the TIG Torch and consumable parts before Lift TIG Welding</p> 
Once Per Week	<p>Visual check electrode lead; ground lead. Repair damaged welding cable or replace damaged welding cable. Replace damaged electrode holder or ground clamp.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Electrode Lead </div> <div style="text-align: center;">  Ground Lead </div> <div style="text-align: center;">  Trash damaged parts </div> </div>	<p>Visual check input power cord and if damaged have it replaced by a Suitably Trained and Qualified Tradesperson.</p>  Input Power Cord
Once Every 3 Months	<p>Remove any accumulated dirt and dust from the Power Source front and rear vents</p> 	
Once Every 6 Months	<p> Do not blow air into the Power Source during cleaning as metallic particles cause can damage to the Power Source.</p> <p>Remove any metallic particles / dirt from inside Power Source. This must be done more frequently in dirty environments.</p>	

TROUBLESHOOTING and MAINTENANCE

6.4 PRO-TEC 100S Power Source Troubleshooting

Description	Possible Cause	Remedy
1. The welding arc cannot be established.	<p>A The Input Power Supply voltage isn't switched ON.</p> <p>B The Power Source switch is switched OFF.</p> <p>C Loose connections internally.</p> <p>D No Open Circuit Voltage in Stick or Lift TIG modes.</p>	<p>A Switch ON the Input Power Supply voltage.</p> <p>B Switch ON the Power Source.</p> <p>C Have an approved Service Provider repair the connection. Refer to SECTION 9 – PRO-TEC WARRANTY POLICY.</p> <p>D Have an approved Service Provider inspect then repair. Refer to SECTION 9 – PRO-TEC WARRANTY POLICY.</p>
2. The welding arc cannot be established when the Over Heat / Fault Indicator is illuminated	<p>A The Power Sources duty cycle has been exceeded.</p> <p>B A fault has occurred.</p> <p>C Fan not working.</p>	<p>A Wait for the Indicator to go out then continue welding at reduce welding time or Welding Amperage.</p> <p>B If indicator does not go out after 10 minutes then have an approved Service Provider inspect then repair the welder. Refer to SECTION 9 – PRO-TEC WARRANTY POLICY.</p> <p>C If fan is clogged with dust then remove dust using a vacuum cleaner with the plastic nozzle. If fan does not rotate then have an approved Service Provider inspect then repair the welder. Refer to SECTION 9 – PRO-TEC WARRANTY POLICY</p>
3. Maximum output Welding Amperage cannot be achieved with nominal Input Power Supply voltage.	Defective control circuit	Have an approved Service Provider inspect then repair the welder. Refer to SECTION 9 – PRO-TEC WARRANTY POLICY
4. Welding Amperage reduces when welding.	Poor work lead connection to the work piece.	Ensure that the work lead has a positive electrical connection to the work piece.
5. Circuit breaker (or fuse) trips during welding.	The circuit breaker (or fuse) is under size.	Refer to Section 4.5 for the recommended circuit breaker (or fuse) size for the Input Power Supply Voltage used.
6. Difficult to establish an arc in Stick mode.	<p>A Loose connections in welding leads.</p> <p>B Metal is contaminated with oil or rust or grease or dirt.</p>	<p>A Check all welding leads electrical connections for defects like burnt or discoloration connections. Have an approved Service Provider inspect then repair/replace the damaged parts. Refer to SECTION 9 – PRO-TEC WARRANTY POLICY.</p> <p>B Clean metal to remove contamination.</p>
7. The arc wanders away from the joint during welding (Arc Blow).	<p>A Air movement is pushing the arc.</p> <p>B The coating on the stick electrode isn't even around the metal core.</p> <p>C Welding current passing thru the metal sets up a magnetic field which pushes the arc.</p>	<p>A Shield the weld zone from the air movement.</p> <p>B Use a new electrode from another batch.</p> <p>C Reposition the Earth Clamp position to reduce this affect.</p>

SPARE PARTS

SECTION 7 – SPARE PARTS



Danger! Extremely dangerous voltages inside Power Source



Disconnect Input Power Supply before opening Power Source



Electric shock can kill



Electrostatic discharge can damage PC Boards



Remove any metallic particles / dirt using vacuum cleaner



Flying metal or dirt can injure eyes



Read Operating Manual

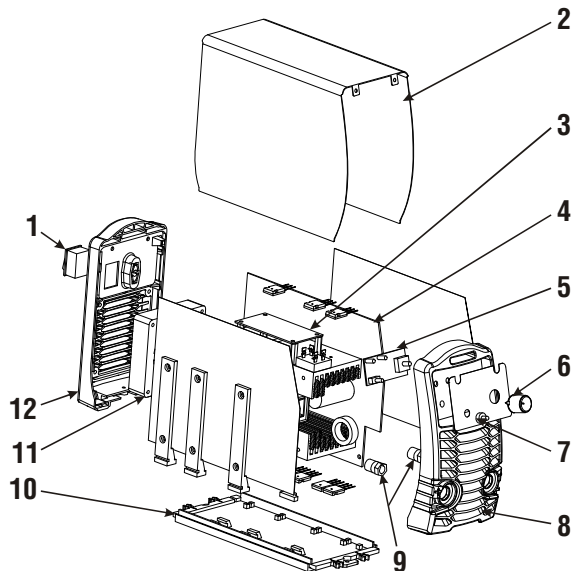


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Do not attempt to repair this Power Source unless you are an Accredited PRO-TEC Service Provider and you have had training in power measurements and troubleshooting techniques. If major complex subassemblies are faulty, then the Power Source must be returned to a PRO-TEC Service Provider for repair, refer to SECTION 9 – PRO-TEC WARRANTY POLICY



A Suitably Trained and Qualified Tradesperson must DISCONNECT the Input Power Supply from the Power Source before opening the enclosure. Wait at least 5 minutes before opening the enclosure to allow the primary capacitors to discharge. There are extremely dangerous voltages and power levels present inside Power Source.



PRO-TEC 100S Spare Parts

Item	Part No.	Description	Quantity
1	G9000101	Switch, On / Off, 16A / 125VAC	1
2	G9000102	Panel, Cover, 100S	1
3	G9000103	PCB, Control, 100S	1
4	G9000104	PCB, Power Inverter, 100S	1
5	G9000105	PCB, User Interface, 100S	1
6	G9000106	Knob	1
7	G9000107	Waterproof Cover, Mode Switch	1
8	G9000108	Panel, Front, 100S	1
9	G9000109	Terminal, Dinse Style, 25	2
10	G9000110	Panel Base, 100S	1
11	G9000111	Fan, 0.24A / 24VDC	1
12	G9000112	Panel, Rear, 100S	1
Not Shown	G9000113	Cary Strap, 63 in. Long x 1 9/16 in Wide	1
Not Shown	G9000100	Warning Label	1

SECTION 8 – DEFINITIONS OF TERMS USED

- Lift TIG (GTAW):** Is gas tungsten arc welding (GTAW) using a non consumable tungsten electrode.
- STICK (SMAW):** Is shielding metal arc welding (SMAW) using a flux coated consumable electrode.
- DC:** Direct Current is electricity flowing in a constant direction.
- 25 Dinse Style:** Welding terminal connector.
- CFM:** Is the shielding gas flow rate in cubic feet per minute.
- Outlet 120 VAC / 15 A (Nema 5-15R):** North American homes / workshops are wired with 15 Amp, 120-volt circuits with 14-gauge wire and is protected by a 15 Amp circuit breaker or fuse.
- Nema 5-15P:** 3 prong power cord plug and rated to 120 V / 15 A.
- Outlet 120 VAC / 20 A (Nema 5-20R):** North American homes / workshops are wired with 20 Amp, 120-volt circuits with 12 or 10-gauge wire and is protected by a 20 Amp circuit breaker or fuse.
- Nema 5-20P:** 3 prong power cord plug and rated to 120 V / 20 A.
- AWG:** American Wire Gauge (AWG) is a standard set of non-ferrous electrical wire conductor sizes.
- Duty Cycle:** The welding time period (arc on time) as a percentage over a 10 minute period.
- KVA:** Kilo volt-ampere is 1000 volt-amperes where volt-ampere is the multiplication of voltage x ampere.
- KW:** Kilo watt is 1000 watts where watt is the multiplication of voltage x ampere.
- OCV:** Nominal Open Circuit Voltage at the welding terminals.
- Delay Fuse:** Time Delay Fuse to UL class RK5.
- IP23S:** Protects fingers or similar objects > ½ in. (12.5mm) entering enclosure and protects against water falling as spray at any angle up to 60 degree from vertical while enclosure is stationary.

SECTION 9 – PRO-TEC WARRANTY POLICY

PRO-TEC is a registered brand of Global Welding LLC. Global Welding and PRO-TEC are used interchangeably in the following Warranty Policy Document.

STATEMENT OF LIMITED WARRANTY

This Limited Warranty is subject to the terms and conditions stated within this document. Global Welding LLC, St. Louis, Missouri warrants to the original retail purchaser (called the “*Purchaser*”) that new PRO-TEC Welding equipment, PRO-TEC Cutting equipment and PRO-TEC Accessories (called the “*Goods*”) are free of defects in workmanship and material.

THIS WARRANTY IS EXPLICITLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY FOR PRODUCTS OR FITNESS FOR PURPOSE.

WARRANTY PERIOD

Global Welding LLC shall honor warranty claims on warranted *Goods* listed within this document in the event of such a defect within the stated warranty time period. All warranty time periods start on the date of purchase of the *Goods* to the *Purchaser*, and not to exceed twelve months after the *Goods* are shipped to a North American Distributor or eighteen months after the *Goods* are shipped to an International Distributor. Please note that the information detailed in this Limited Warranty statement supersedes any prior published data produced by Global Welding LLC.

1 Year Limited Warranty Period

• PRO-TEC 100S Power Source

NOTE: PRO-TEC 100S Stick & Stick / TIG Power Sources are limited to 1-year warranty.

To guarantee full coverage PRO-TEC Power Sources need to be registered on the PRO-TEC Website www.protecwelding.com under Product Registration.

90 Days Limited Warranty Period

• Electrode Lead; Ground Lead; TIG Torch; MIG Gun; Plasma Torch; Repair and Replacement Parts; Gas Regulator

No Warranty Period

• Consumable Parts for TIG Torch, MIG Gun, or Plasma Torch

WARRANTY LIMITATIONS

1. No employee, agent, or representative of Global Welding LLC is authorized to change this warranty in any way or grant any other warranties.
2. Global Welding LLC will not accept responsibility or liability for repairs made by a non- authorized service facility.
3. PRO-TEC liability under this Limited Warranty shall not exceed the original cost of the *Goods* to correct the defect of the *Goods*.
4. Global Welding LLC will not be liable for incidental or consequential damages (such as loss of business, etc.) caused by the defect or the time involved to correct the defect.

5. This written Limited Warranty is the only express Limited Warranty provided by Global Welding LLC with respect to the *Goods*.
6. This Limited Warranty gives the *Purchaser* specific legal rights. The *Purchaser* may also have other rights which may vary from country to country or state to state.
7. Any claim under this Limited Warranty must be made within the warranty period which commences on the date of purchase of the *Goods*.
8. To make a claim under the Limited Warranty please go to www.protecwelding.com. Global Welding LLC reserves the right to request documented evidence of date of purchase. Claims notified via the Website www.protecwelding.com are required within seven days of the *Purchaser* becoming aware of the defect, and at the *Purchasers* own expense return the *Goods* which are the subject of the claim to PRO-TEC or nominated Distributor/Authorized Service Facility.
9. PRO-TEC's Limited Warranty shall not apply if the *Goods* are:
 - a) Not within the warranty period as stated within this document.
 - b) Modified *Goods* by any other party other than an authorized PRO-TEC service facility.
 - c) Used for abnormal operations or operated beyond the specifications established in the Operating Manual.
 - d) Not stored or not installed in accordance with the Operating Manual and recognized standard industry practices.
 - e) Not cleaned or not maintained in accordance with the Operating Manual and recognized standard industry practices.
 - f) Misused, neglected, altered, or accidental damaged.
 - g) Consumable components such as MIG guns, Plasma torches, TIG torches O-rings, fuses, filters or parts that fail due to normal wear.
 - h) Power Sources repaired with non-genuine PRO-TEC spare parts.
 - i) Obsolete *Goods* sold at auction, second-hand *Goods* or prototype *Goods*.

CONTACT DETAILS

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WEBSITE: www.protecwelding.com



Global Welding LLC.

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