

Operations Manual

W-Gun™ Series MIG Guns

Issued Feb 2022 • Index No. WCMAN-1.5

600 Amp W-Gun shown with one piece HD straight handle with rubber overmold.



600 Amp W-Gun shown with curved handle and hang up hook.

See Tregaskiss.com
for detailed specs and
replacement parts information.

All Guns are Not Created Equal.

A MIG gun should be durable, easy to use and customized to your specific application. Our MIG guns put you in control: you choose the options you need and we'll build a gun to last. We even ship most of our guns within 24 hours.

Flexible cable assembly with reinforced synthetic rubber hoses prevents water leakage and provides increased water flow and reduced gas leakage.

Newly designed back end and water block with interchangeable direct plugs and trigger leads connect to wire feeders and machines from major manufacturers and allow for simple maintenance.

Multiple handle and trigger options to increase operator comfort.

Heavy duty water-cooled necks are offered in multiple length and bend configurations to allow for optimal weld accessibility and improved operator comfort.

Contact tip options include Centerfire™, Elliptical and Quik Tip™ and are available in wire sizes from .023" (0.6 mm) to 3/32" (2.4 mm).

Bernard

A Division of Miller Electric Mfg. LLC
449 West Corning Road
Beecher, Illinois 60401 USA

Phone: 1-855-MIGWELD (644-9353) (US & Canada)
+1-519-737-3030 (International)
Fax: 708-946-6726
For more information, visit us at Tregaskiss.com



SECTION 1 — SAFETY PRECAUTIONS — READ BEFORE USING



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

1-1 Symbol Usage



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



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

NOTICE – Indicates statements not related to personal injury.

 – Indicates special instructions.



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

1-2 Arc Welding Hazards



The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in section 1-4 Principal Safety Standards on page 3, and in welding power source Owner's Manual. Read and follow all Safety Standards.



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



During operation, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

- Always wear dry insulating gloves.
- Insulate yourself from work and ground.
- Do not touch live electrode or electrical parts.



- Replace worn, damaged, or cracked guns or cables.
- Turn off welding power source before changing contact tip or gun parts.
- Keep all covers and handle securely in place.

FUMES AND GASES can be hazardous.

- Keep your head out of the fumes.
- Ventilate area, or use breathing device. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.



MOVING PARTS can injure.

- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.



WELDING can cause fire or explosion.

- Do not weld near flammable material.
- 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 (see Safety Standards).
- Watch for fire; keep 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.



BUILDUP OF GAS can injure or kill.

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



ARC RAYS can burn eyes and skin.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.



- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes from arc rays and sparks when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.
- Wear body protection made from leather or flame-resistant clothing (FRC). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

HOT PARTS can burn.

- Allow gun to cool before touching.
- Do not touch hot metal.
- Protect hot metal from contact by others.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.



- Check for noise level limits exceeding those specified by OSHA.
- Use approved ear plugs or ear muffs if noise level is high.
- Warn others nearby about noise hazard.

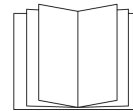
WELDING WIRE can injure.

- Keep hands and body away from gun tip when trigger is pressed.



READ INSTRUCTIONS.

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



1-3 California Proposition 65 Warnings



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

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

1-4 Principal Safety Standards

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

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

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1. Website: www.aws.org.

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

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1 from Compressed Gas Association. Website: www.cganet.com.

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

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B from National Fire Protection Association. Website: www.nfpa.org.

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

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1-5 EMF Information

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

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.

3. Do not coil or drape cables around your body.
4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source wire feeder.

About Implanted Medical Devices:

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

SECTION 2 — CONSIGNES DE SÉCURITÉ — LIRE AVANT UTILISATION

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

2-1 Symboles utilisés

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

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


 – Indique des instructions spécifiques.



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

2-2 Dangers relatifs au soudage à l'arc

 Les symboles donnés ci-après sont utilisés dans tout le manuel pour attirer l'attention sur les dangers possibles et pour indiquer le type de danger dont il s'agit. Quand on voit le symbole, prendre garde et suivre les directives correspondantes pour éviter le danger. Les consignes de sécurité présentées ci-après ne font que résumer l'information contenue dans les Normes de sécurité principales, et dans le Guide d'utilisation de la source de courant de soudage. Lire et suivre toutes les Normes de sécurité.

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

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

UN CHOC ÉLECTRIQUE peut tuer.



- Porter toujours des gants secs et isolants.
- S'isoler de la pièce et de la terre.
- Ne jamais toucher une électrode ou des pièces électriques sous tension.
- Remplacer les pistolets ou câbles de soudage qui sont endommagés, usés ou craquelés.
- Mettre la soudeuse hors tension avant de remplacer un bec contact ou des pièces de pistolet.
- S'assurer que tous les couvercles et poignées sont fermement assujettis.

LES FUMÉES ET LES GAZ peuvent être dangereux.



- Garder la tête hors des fumées.
- Aérer la zone de travail ou porter un appareil respiratoire. Pour déterminer la bonne ventilation, il est recommandé de procéder à un prélèvement pour la composition et la quantité de fumées et de gaz auxquels est exposé le personnel.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyeurs, les consommables, les produits de refroidissement, les dégraissants, les flux et les métaux.

Les PIÈCES MOBILES peuvent causer des blessures.



- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.

Le SOUDAGE peut provoquer un incendie ou une explosion.



- Ne pas souder à proximité de matériaux inflammables
- Ne pas effectuer le soudage sur des conteneurs fermés tels que des réservoirs, tambours, ou conduites, à moins qu'ils n'aient été préparés correctement conformément à AWS F4.1 et AWS A6.0 (voir les Normes de Sécurité).
- Prendre garde aux incendies et toujours avoir un extincteur à proximité.

- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraissateurs, les flux et les métaux.

L'ACCUMULATION DE GAZ risquent de provoquer des blessures ou même la mort.



- Fermer l'alimentation du gaz comprimé en cas de non utilisation.
- Veiller toujours à bien aérer les espaces confinés ou se servir d'un respirateur d'adduction d'air homologué.

LE RAYONNEMENT DE L'ARC peut brûler les yeux et la peau.

Le rayonnement de l'arc du procédé de soudage génère des rayons visibles et invisibles intenses (ultraviolets et infrarouges) susceptibles de provoquer des brûlures dans les yeux et sur la peau. Des étincelles sont projetées pendant le soudage.



- Porter un casque de soudage approuvé muni de verres filtrants approprié pour protéger visage et yeux pendant le soudage (voir ANSI Z49.1 et Z87.1 énuméré dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.
- Avoir recours à des écrans protecteurs ou à des rideaux pour protéger les autres contre les rayonnements les éblouissements et les étincelles ; prévenir toute personne sur les lieux de ne pas regarder l'arc.
- Porter une protection corporelle en cuir ou des vêtements ignifu- ges (FRC). La protection du corps comporte des vêtements sans huile, comme des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.

LES PIÈCES CHAUDES peuvent provoquer des brûlures.



- Laisser refroidir le pistolet avant de le toucher.
- Ne pas toucher d'objets métalliques chauds.
- Abriter les objets métalliques contre tout contact par les personnes à proximité.

Le BRUIT peut endommager l'ouïe.

Le bruit des processus et des équipements peut affecter l'ouïe.



- Vérifier si les niveaux de bruit excèdent les limites spécifiées par l'OSHA.
- Utiliser des bouche-oreilles ou des serre-tête antibruit approuvés si le niveau de bruit est élevé.

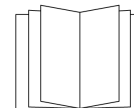
- Avertir les personnes à proximité au sujet du danger inhérent au bruit.

LES FILS DE SOUDAGE peuvent provoquer des blessures.



- Éloigner les mains et le corps de la buse du pistolet après avoir appuyé sur la gâchette.

LIRE LES INSTRUCTIONS.



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

2-3 Proposition californienne 65 avertissements



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

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

2-4 Principales normes de sécurité

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

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

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

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2-5 Informations relatives aux CEM

Le courant électrique qui traverse tout conducteur génère des champs électromagnétiques (CEM) à certains endroits. Le courant issu d'un soudage à l'arc (et de procédés connexes, y compris le soudage par points, le gougeage, le découpage plasma et les opérations de chauffage par induction) crée un champ électromagnétique (CEM) autour du circuit de soudage. Les champs électromagnétiques produits peuvent causer interférence à certains implants médicaux, p. ex. les stimulateurs cardiaques. Des mesures de protection pour les porteurs d'implants médicaux doivent être prises: par exemple, des restrictions d'accès pour les passants ou une évaluation individuelle des risques pour les soudeurs. Tous les soudeurs doivent appliquer les procédures suivantes pour minimiser l'exposition aux CEM provenant du circuit de soudage:

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

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

En ce qui concerne les implants médicaux :

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

SECTION 3 — PRECAUCIONES DE SEGURIDAD — LEA ANTES DE USAR



Protéjase usted mismo y a otros contra lesiones — lea, cumpla y conserve estas importantes precauciones de seguridad e instrucciones de utilización.

3-1 Uso de símbolos



PELIGRO! – Indica una situación peligrosa que, si no se la evita, resultará en muerte o lesión grave. Los peligros posibles se muestran en los símbolos adjuntos o se explican en el texto.



Indica una situación peligrosa que, si no se la evita, podría resultar en muerte o lesión grave. Los peligros posibles se muestran en los símbolos adjuntos, o se explican en el texto.

AVISO – Indica precauciones no relacionadas a lesiones personales.

 – Indica instrucciones especiales.



Este grupo de símbolos significa ¡Advertencia!, ¡Cuidado! CHOQUE O DESCARGA ELÉCTRICA, PIEZAS QUE SE MUEVEN, y peligros de PARTES CALIENTES. Consulte los símbolos y las instrucciones relacionadas que aparecen a continuación para ver las acciones necesarias para evitar estos peligros.

3-2 Peligros en soldadura de arco



Los símbolos mostrados abajo se usan en todo este manual para llamar la atención a e identificar los posibles peligros. Cuando vea el símbolo, preste atención y siga las instrucciones relacionadas para evitar el peligro. La información de seguridad dada abajo es solamente un resumen de la información más completa de seguridad que se encuentra en los estándares de seguridad, y la fuente de alimentación para soldadura del Manual del usuario. Lea y siga todas las normas de seguridad.



Solamente personal cualificado debe instalar, utilizar, mantener y reparar este equipo. La definición de personal cualificado es cualquier persona que, debido a que posee un título, un certificado o una posición profesional reconocida, o gracias a su gran conocimiento, capacitación y experiencia, haya demostrado con éxito la capacidad para solucionar o resolver problemas relacionados con el trabajo, el proyecto o el tema en cuestión, además de haber asistido a una capacitación en seguridad para reconocer y evitar los peligros que implica el proceso.



Durante su operación mantenga lejos a todos, especialmente a los niños.

UNA DESCARGA ELÉCTRICA puede matarlo.



- Siempre use guantes aislantes secos.
- Aíslese usted mismo del trabajo y la tierra.
- No toque electrodo eléctricamente vivo o partes eléctricamente vivas.
- Reemplace antorchas o cables desgastados, dañados o rotos.
- Repare o reemplace aislamiento de la pistola o del cable que esté desgastado, dañado o agrietado.
- Apague la máquina de soldar antes de cambiar los tubos de contacto o piezas de la antorcha.
- Mantenga todas las tapas y asa bien seguras en sitio.

HUMO y GASES pueden ser peligrosos.



- Mantenga su cabeza fuera del humo.
- Ventile el lugar o use un aparato para respirar. El método recomendado para determinar la ventilación adecuada es tomar muestras de la composición y cantidad de humos y gases a los que está expuesto el personal.
- Lea y entienda las Hojas de datos del material (SDS) y las instrucciones del fabricante relacionadas con los adhesivos, metales, consumibles, recubrimientos, limpiadores, refrigerantes, desengrasadores, fundentes y metales.

Las PIEZAS MÓVILES pueden provocar lesiones.



- Aléjese de toda parte en movimiento.
- Aléjese de todo punto que pellizque, tal como rodillos impulsados.

EL SOLDAR puede causar fuego o explosión.



- No suelde cerca de material inflamable
- No suelde en recipientes que han contenido combustibles, ni en recipientes cerrados como tanques, tambores o tuberías, a menos que estén preparados correctamente de acuerdo con la norma AWS F4.1 y AWS A6.0 (vea las normas de seguridad).
- Siempre mire que no haya fuego y mantenga un extinguidor de fuego cerca.
- Lea y entienda las Hojas de datos del material (SDS) y las instrucciones del fabricante relacionadas con los adhesivos, metales, consumibles, recubrimientos, limpiadores, refrigerantes, desengrasadores, fundentes y metales.

EL AMONTONAMIENTO DE GAS puede enfermarle o matarle.



- Cierre el suministro de gas comprimido cuando no lo use.
- Siempre dé ventilación a espacios cerrados o use un respirador aprobado que reemplaza el aire.

LOS RAYOS DEL ARCO pueden quemar sus ojos y piel.



Los rayos del arco de un proceso de solda producen un calor intenso y rayos ultravioletas fuertes que pueden quemar los ojos y la piel. Las chispas se escapan de la soldadura.

- Use una careta para soldar aprobada equipada con un filtro de protección apropiado para proteger su cara y ojos de los rayos del arco y de las chispas mientras esté soldando o mirando. (véase los estándares de seguridad ANSI Z49.1 y Z87.1).
- Use anteojos de seguridad aprobados que tengan protección lateral.
- Use pantallas de protección o barreras para proteger a otros del destello, reflejos y chispas, alerte a otros que no miren el arco.
- Use protección para el cuerpo hecha de cuero o de prendas resistentes a las llamas (FRC). Entre la protección para el cuerpo se incluye la ropa sin aceite, como guantes de cuero, una camisa gruesa, pantalones sin vuelta, calzado alto y una gorra.

PARTES CALIENTES pueden causar quemaduras severas.



- Permita que la antorcha se enfríe antes de tocarla.
- No toque metal caliente.
- Proteja a otros del contacto con el metal caliente.

EL RUIDO puede trastornar su oído.



Ruido proveniente de algunos procesos o equipo puede dañar el oído.

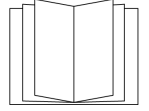
- Chequee los límites del nivel del ruido si exceden aquellos especificados por OSHA.
- Use tapas para los oídos o cubiertas para los oídos si el nivel del ruido es demasiado alto.
- Advierta a otros que estén cerca acerca del peligro del ruido.

El ALAMBRE de SOLDAR puede causarle heridas.



- Mantenga las manos y el cuerpo lejos del tubo de contacto de la antorcha cuando se haya presionado el gatillo.

LEER INSTRUCCIONES.



- Lea y siga cuidadosamente las instrucciones contenidas en todas las etiquetas y en el Manual del usuario antes de instalar, utilizar o realizar tareas de mantenimiento en la unidad. Lea la información de seguridad incluida en la primera parte del manual y en cada sección.
- Utilice únicamente piezas de reemplazo legítimas del fabricante.
- Los trabajos de instalación y mantenimiento deben ser ejecutados de acuerdo con las instrucciones del manual del usuario, las normas del sector y los códigos nacionales, estatales y locales.

3-3 Advertencias de la Proposición 65 del estado de California



ADVERTENCIA: Este producto puede exponerlo a químicos, incluso plomo, que el estado de California conoce como causantes de cáncer, defectos de nacimiento u otros daños reproductivos.

Para obtener más información, acceda a www.P65Warnings.ca.gov.

3-4 Estándares principales de seguridad

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

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

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

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B from National Fire Protection Association. Website: www.nfpa.org.

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

SR7_spa 2022-01

3-5 Información sobre los campos electromagnéticos (EMF)

La corriente que fluye a través de un conductor genera campos eléctricos y magnéticos (EMF) localizados. La corriente del arco de soldadura (y otras técnicas afines como la soldadura por puntos, el ranurado, el corte por plasma y el calentamiento por inducción) genera un campo EMF alrededor del circuito de soldadura. Los campos EMF pueden interferir con algunos dispositivos médicos implantados como, por ejemplo, los marcapasos. Por lo tanto, se deben tomar medidas de protección para las personas que utilizan estos implantes médicos. Por ejemplo, aplique restricciones al acceso de personas que pasan por las cercanías o realice evaluaciones de riesgo individuales para los soldadores. Todos los soldadores deben seguir los procedimientos que se indican a continuación con el objeto de minimizar la exposición a los campos EMF generados por el circuito de soldadura:

1. Mantenga los cables juntos retorciéndolos entre sí o uniéndolos mediante cintas o una cubierta para cables.
2. No ubique su cuerpo entre los cables de soldadura. Disponga los cables a un lado y apártelos del operario.

3. No enrolle ni cuelgue los cables sobre su cuerpo.
4. Mantenga la cabeza y el tronco tan apartados del equipo del circuito de soldadura como le sea posible.
5. Conecte la pinza de masa en la pieza lo más cerca posible de la soldadura.
6. No trabaje cerca de la fuente de alimentación para soldadura, ni se siente o recueste sobre ella.
7. No suelde mientras transporta la fuente de alimentación o el alimentador de alambre.

Acerca de los aparatos médicos implantados:

Las personas que usen aparatos médico implantados deben consultar con su médico y el fabricante del aparato antes de llevar a cabo o acercarse a soldadura de arco, soldadura de punto, ranurar, hacer corte por plasma, u operaciones de calentamiento por inducción. Si su doctor lo permite, entonces siga los procedimientos de arriba.

Part I General Description

The Bernard W-Gun is a water-cooled gun that is designed for processing mild steel electrode under GMAW (Gas Metal Arc Welding), MIG (Metal Inert Gas), MAG (Metal Active Gas), FCAW (Flux Cored Arc Welding), and MOG (Metal without Gas).

The Bernard W-Gun provides longer consumable life while reducing operator fatigue, which can increase overall welding effectiveness. Bernard W-Guns can reduce the downtime and expenses associated with changing consumables during the welding process. Lightweight and flexible design allows for easier movement during welding between standard horizontal welding, overhead, and hard-to-reach side angles. Bernard W-Guns can effectively reduce your operating cost and improve the productivity of your welding operation.

The Bernard W-Gun meets or exceeds NEMA (National Electrical Manufacturer's Association) EW3 and CE EN50078 requirements for guns used in a wide variety of applications including aluminum, silicone bronze, and hard facing alloys to name a few. With Bernard's flexibility, many applications can be accommodated with field installed options, increasing performance and maneuverability.

Part II Installation

1. Your gun has been shipped with a specific feeder connector and sized for electrode as per the part number indicated on its package. Please inspect the received gun against this part number for accuracy.
2. Turn off power prior to any installation.
3. Fully extend gun and cable. Press liner fully into power pin.
4. Safely expose approximately 2" (51 mm) of electrode beyond feeder or adaptor block.

5a. **Bernard Quick Disconnect**

If you have purchased a Bernard Quick Disconnect gun, it is necessary to connect this unit to an adaptor kit providing the shielding gas, control circuit, and arc power. If this is a new installation, install the adaptor kit as per the kit instructions. With the Bernard adaptor installed, perform the following:

Orient power pin and gas pin with the adaptor receptacle. Slide the electrode into the liner and push the power pin into the socket. Rotate the locking sleeve until the locking pins of adaptor drop into the receiver of locking sleeve. Continue to engage power pin while twisting locking sleeve to make connection. Shielding gas, control circuit, and power are now engaged.

5b. **Direct Plug**

Connect the power pin of the direct plug gun by sliding the electrode into the liner and the power fitting into the drive housing of the feeder. Fully seat the unit in position and tighten into place as designated in the manufacturer's instructions. On initial installations, a thin film of silicone lubricant will aid installation and prevent O-ring damage.

Attach control lead wires to the appropriate plug, terminals, or lead kit. Plug or wire into the control circuit of the feeder as designated in manufacturer's instructions.

If a gas hose is provided, connect to the feeder's solenoid circuit to deliver shielding gas to the arc. If no gas hose is provided, gas is delivered through the power pin. Refer to the manufacturer's instructions for proper gas connection at the feeder block or solenoid.

6. Connect water lines to a water coolant source. Each hose is identified for proper connection by a tethered drip cap (blue: water inlet, red: water outlet) and label. If a water hose hook-up kit is

used, make all runs as short as possible. Always use hoses with at least a 3/16" inside diameter for extended runs. Reinforced hoses of high quality are recommended to prevent damage due to operating pressures, heat, and hose contamination. The coolant system must produce a minimum of 0.5 gpm at 60 psi. Run coolant through gun for approximately 2 minutes to purge system of entrapped air before applying power. Water must flow through the gun at all times while the power supply is on.

7. Remove nozzle from gas diffuser.
- 8a. Centerfire Tip – Remove tip holder by turning counterclockwise and then pull tip from gas diffuser. An unobstructed electrode path has now been established.
- 8b. Elliptical Tip – Remove tip with a 1/8-1/4 turn counterclockwise while pulling. An unobstructed electrode path has now been established.
- 8c. Quik Tip – Remove tip with a 1/4 turn counterclockwise. An unobstructed electrode path has now been established.
9. Safely feed electrode through the gun and approximately 1" (25 mm) beyond gas diffuser.
- 10a. Centerfire Tip – Reinstall the tip over the electrode and lock into position by reinstalling the tip holder. Reinstall nozzle.
- 10b. Elliptical and Quik Tip – Reinstall the tip over the electrode locking into position with a clockwise motion. Reinstall nozzle.



NOTICE *Coolant must flow through the gun prior to and during welding. Welding current and duty cycle should not exceed published specification of this product. If such conditions exist, product life and performance will be reduced.*

Part III Helpful Operating Tips

Nozzles:

1. If anti-spatter is used, do not coat nozzle insulator as this may degrade insulating material.
2. Nozzle should be cleaned as often as possible. Spatter buildup can often lead to poor gas shielding or short circuiting between the contact tip and the nozzle.
3. Spatter should be removed with the proper tools designed for spatter removal.
4. In high temperature welding applications, heavy duty consumables are recommended.

Contact Tips, Gas Diffusers:

1. Centerfire and Elliptical contact tips may be removed and rotated in gas diffuser, providing additional wear surfaces and extending the service life of the product.
2. Electrical stickout of the elliptical contact tip can be altered by positioning the contact tip in the desired location of the gas diffuser and rotating clockwise locking in place.
3. Inspect nozzle for spatter adhesion, blocked gas ports, and carbonized contact surfaces. Clean as often as possible.
4. If anti-spatter is used, periodically check gas ports for blockage.
5. When using dual shield electrode, periodically check gas ports for clogging caused by flux from within the electrode.

Cable:

1. Periodically check torques of neck and end fittings. Loose fittings can cause overheating and premature failure of the gun.
2. Sharp bends and loops in the cable should be avoided. Often the best solution is to suspend the wire feeder from a boom or trolley, thus eliminating a large number of bends and keeping the cable clear of hot weldments.
3. Do not immerse liner into solvents for cleaning; the liner may be periodically blown out with compressed air.
4. Avoid rough surfaces and sharp edges that can cause tears and nicks in cable jacket which can cause premature failure.
5. Periodically check all cables and ground connections.
6. Use anti-seize on all threaded connections.

Feeder:

1. Check drive rolls for wear; be sure drive rolls and guide tubes are clean and free of debris. Do not overtighten drive rolls; set as per manufacturer's specifications.
2. Use clean, non-corroded electrode.
3. When installing or replacing electrode, you may: remove burrs from end of electrode, remove gas diffuser and tip, and/or straighten the first few inches of electrode.

End User Stocking Recommendations:

Nozzles.....	5 for every 1 gun in service
Tips.....	30 for every 1 gun in service
Gas Diffusers	4 for every 1 gun in service
Triggers.....	1 for every 10 guns in service
Necks.....	1 for every 20 guns in service
Handle Kits.....	1 for every 20 guns in service
Replacement Cables.....	1 for every 20 guns in service
Strain Relief Kits	1 for every 20 guns in service
Adaptor Kits	Order as Necessary
Direct Plug Kits	Order as Necessary

These stocking recommendations are only initial guidelines based on an 80 hour work period. You should work closely with your distributor to tailor a stocking program that suits your specific needs. Results will vary.

Part IV Maintenance and Repair

See Replacement Parts page of www.BernardWelds.com for complete parts lists and specs



Disconnect gun from equipment, allow gun to cool, and remove electrode from liner before servicing.

Section 1. General Inspection

1. Inspect gun periodically for worn or loose parts. Tighten, repair, or replace as necessary.
2. Periodically inspect outer cable cover for nicks or cuts that can cause short circuiting or allow the cable assembly's internal components to become exposed. Replace as necessary.
3. Inspect adapter and direct plug connection for wear that may cause overheating. Replace as necessary.

4. Change or rotate contact tip when arc tracking or arc instability is incurred. Please note; a tip may look worn but produce a stable arc with good results.
5. Clean the nozzle as often as possible to prevent spatter build-up. Excess spatter can lead to poor gas shielding or short circuiting. Replace the nozzle when worn.
6. Periodically check torques of all water connections to maintain cool and dry operation. Tighten as described in the following sections.
7. Replace liner system as electrode feeding becomes erratic.

Section 2. Nozzle

A. Removal

The nozzle is a friction fit which can be removed with a twisting and pulling motion.

B. Service

Inspect nozzle for cracks and degradation of insulation. Clean the nozzle as often as possible to prevent spatter build-up which can lead to poor gas shielding or short circuiting. Replace the nozzle when loose, worn, or producing erratic gas shielding.

C. Installation

Replace with a pushing and twisting motion.

Section 3. Contact Tip

Bernard has designed its contact tips to allow rapid installation and adjustment.

A. Removal

Cut electrode and remove all burrs before removing tip.

Centerfire Tip – Remove tip holder by turning counterclockwise and then pull tip from gas diffuser.

Elliptical Tip – Remove tip with 1/8-1/4 turn counterclockwise.

Quik Tip – Remove tip with a 1/4 turn counterclockwise.

B. Service

To extend contact tip life, reface front of tip and clean the bore. Centerfire and Elliptical tips may be rotated in gas diffuser socket providing additional wear surface and extending the service life of the product. Electrical stickout may be altered when using Elliptical tips by positioning the contact tip in the desired location of the gas diffuser before locking into place.

C. Installation

Centerfire Tip - Reinstall the tip over the electrode and lock into position by reinstalling the tip holder. Reinstall nozzle.

Elliptical and Quik Tip – Reinstall the tip over the electrode locking into position with a clockwise motion. Reinstall nozzle.

Section 4. Gas Diffuser

A. Removal

The gas diffuser may be removed with an appropriate wrench in a counterclockwise rotation.

B. Service

Inspect gas diffuser and Centerfire tip holder for spatter, blocked gas ports, and carburized surfaces. Clean as often as possible. Replace with new gas diffuser or Centerfire tip holder when wear prevents engagement of contact tip or nozzle.

C. Installation

Firmly secure gas diffuser with an appropriate wrench in a clockwise rotation. Always reinstall gas diffuser insulator to decrease the chances of short circuiting. Note that Centerfire gas diffuser does not require a gas diffuser insulator.

Section 5. Liner

A. Removal

Remove nozzle, contact tip, and gas diffuser. Lay cable straight. Grasp liner lock which protrudes from power pin (some direct plugs may require removal of additional components to access the liner lock) and remove from cable assembly by pulling.

B. Service

Inspect for excessive wear and debris on the inside diameter. Do not dip liner in solvents for cleaning. Liner may be periodically blown out with compressed air. Replace with new liner when excessive wear or debris produces poor electrode feed.

C. Installation

Insert liner into power pin with cable laying straight. Continue until liner lock is fully seated into power pin. A twisting motion may be necessary to seat o-ring (some direct plugs may require installation of additional components to secure liner). Trim and deburr the liner 3/8" (9.5 mm) past the nozzle end of the neck. Install gas diffuser and nozzle.

Section 6. Handle/Switch Assembly

I Curved Handle

A. Removal

Remove screws, post fasteners, and hang-up hook (See Figure 1). Separating handle halves will expose interior connections and trigger switch assembly. Slide switch assembly out of cavity and remove terminals from trigger.

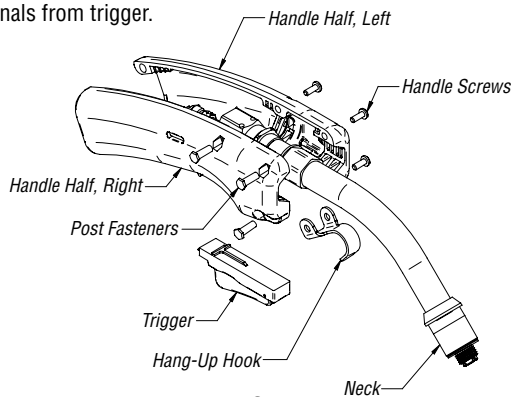


FIGURE 1

B. Service

Inspect for cracks, deformation of hex areas, debris, holes, loose or missing threaded inserts, excessive wear, exterior heat deformation, and warpage. If any of the above conditions exist, replace with new handle or clean all surfaces with mild detergent and reinstall. Test switch for continuity. Clean any debris from trigger, if necessary, replace with new trigger.

C. Installation

Begin assembly by placing the hexagon portion of the neck within the rear hexagon portion of the handle half. The hex bushing will be cradled within the forward hex locators. Install switch assembly by pressing control wire terminals fully onto terminals of switch assembly and slide assembly into switch cavity. Route hoses, cable, control wires, and switch as not to be pinched when reinstalling second handle half. Install hang-up hook, post fasteners, and handle screws. Tighten screws while being aware not to pinch cable jacket in joint between the handle halves.

II Legacy Straight Handle

A. Removal

Remove switch and screws from handle (See Figure 2). Remove

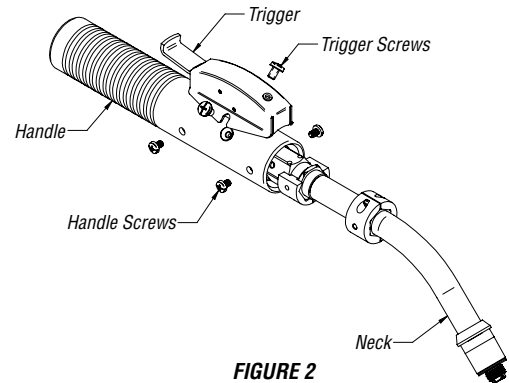


FIGURE 2

terminals from the switch assembly. Slide handle down the cable to gain access to neck connections. Neck must be removed to replace handle on all round handled guns except those with straight necks.

B. Service

Inspect for cracks, debris, holes, loose or missing threaded inserts, excessive wear, exterior heat deformation, and warpage. If any of the above conditions exist, replace with new handle or clean all surfaces with mild detergent and reinstall. Test switch for continuity. Clean any debris from trigger, if necessary, replace with new trigger.

C. Installation

Slide handle over power cable. Reinstall neck (See Figure 3). Place the hexagon bushing on the neck. Install aluminum spacers over the bushing and secure with screws. Install insulation spacers on hexagon water block and secure using pop rivet. Top mount switch assemblies require insulation spacers be mounted on the bottom of the hexagon water block. Bottom mount switch assemblies require insulation spacers be mounted on the top of the hexagon water block. Route control wires as not to be pinched when reinstalling handle. Align spacers and secure with screws. Install switch assembly into position by installing terminals onto the switch assembly and then secure with screws.

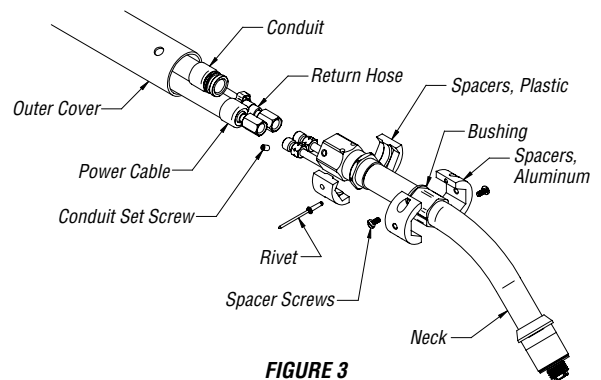


FIGURE 3

III HD Straight Handle

A. Removal

Remove switch and screws from handle (See Figure 4). Cut wires from the switch assembly to remove switch. Slide handle down the cable to gain access to neck connections. Neck must be removed to replace handle on all straight handled guns.

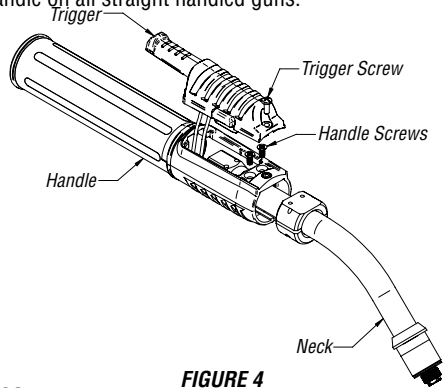


FIGURE 4

B. Service

Inspect for cracks, debris, holes, loose or missing threaded inserts, excessive wear, exterior heat deformation, and warpage. If any of the above conditions exist, replace with new handle or clean all surfaces with mild detergent and reinstall. Test switch for continuity. Clean any debris from trigger, if necessary, replace with new trigger.

C. Installation

Slide handle over power cable. Reinstall neck (See Figure 5). Locate aluminum spacer set as shown with machined flat facing switch assembly. Secure to neck with screws. Do not over tighten screws to prevent neck armor from being pierced. Route control wires as not to be pinched when reinstalling handle. Secure handle onto cable assembly using screws. Connect switch assembly by connecting control wires to switch with insulated butt connectors. Secure switch assembly to handle with screw.

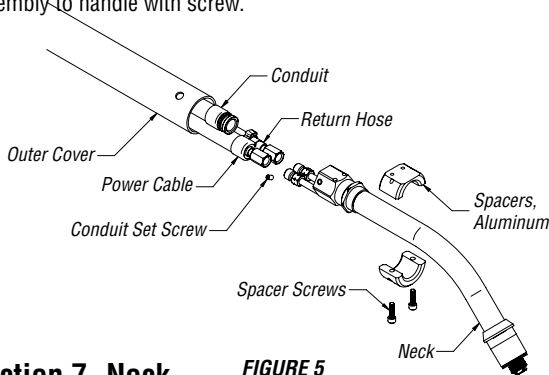


FIGURE 5

Section 7. Neck

A. Removal

Remove liner from cable assembly. The gas diffuser should remain installed to protect neck threads. Remove handle from gun assembly. Disconnect power cables and return hoses using a counterclockwise motion with one 5/16" and one 3/8" wrench. Do not allow the power cable and return hose fittings to twist. Using a 5/64" (2 mm) hex key, remove conduit set screw. Remove conduit from neck.

B. Service

Inspect neck for damaged threads, leaky water connections, excessive spatter build up on armor or armor that is damaged. If any of the above conditions exist, replace neck to ensure safe and reliable operation.

C. Installation

Install conduit into neck and secure with conduit set screw. See the

next section for specific conduit installation instructions. Install and tighten power cable and return hose fittings to 35 in-lbs to prevent leakage. Avoid twisting power cable and return hose fittings during installation. Install handle and liner.

Section 8. Cable

I Power Cable/Return Hose

A. Removal

Remove handle, switch assembly, and open rear strain relief. Remove outer cover ties from both ends. Disconnect power cables and return hoses using a counterclockwise motion with one 5/16" and one 3/8" wrench. Do not allow the power cable, return hose, or rear water block fittings to twist which could result in breakage.

B. Service

Inspect power cable and return hose for leaks or hose material that has been damaged. If any of the above conditions exist, replace power cable or return hose to ensure safe and reliable operation.

C. Installation

While old cable is in place, fasten new cable to end of old cable using the cable tool that ships with replacement cables or tape. The old cable may now be used to pull the new through the outer cover. Install and tighten cable to 35 in-lbs using appropriate wrenches in a clockwise rotation to prevent leakage. Before installing handle or strain relief, circulate coolant through unit checking for leaks; reinstall outer cover ties on both ends and reassemble all remaining components.

II Conduit

A. Removal

Remove handle, switch assembly, liner, and open rear strain relief. Remove outer cover ties from both ends of outer cable covering. Use a 5/64" (2 mm) hex key to remove conduit set screws and release conduit connections (both ends).

B. Service

Inspect conduit assembly for cracks or gas leakage. If any of the above conditions exist, replace conduit assembly to ensure reliable operation.

C. Installation

While old conduit is in place, tape or splice new conduit to end of old conduit. The old conduit may now be used to pull the new through the outer cover. Moisten o-rings with water or soap. Do not use silicone or petroleum based lubricants. Slide conduit into socket on the end of the neck. Care must be taken not to nick or cut o-ring during installation. Look through the set screw hole to verify that the fitting has slid completely into the neck. Secure conduit with conduit set screw. Conduit attachment is similar at the direct plug end. Reinstall outer cover ties (both ends) and reassemble handle, strain relief, and liner.

III Control Leads

A. Removal

Remove handle, switch assembly, and open rear strain relief. Remove outer cover ties from both ends of outer cable covering. Be sure to cut leads at direct plug end as close to butt connector as possible to make certain there is enough wire to make the new connection.

B. Service

Inspect control leads for nicks, cuts, or shorts. If any of the above conditions exist, replace control leads to ensure safe and reliable operation.

C. Installation

While old control leads are in place, tape or splice new control leads to end of old control lead. The old control lead may now be used to

pull the new through the outer cover. Strip wires and crimp terminals as necessary to make proper connections. Leads should be looped at both ends to provide any extra length necessary for cable stretch and expansion. Reinstall outer cover ties (both ends) and reassemble handle, strain relief, and liner. Be careful not to pinch leads during assembly as this could cause a short circuit of the control system.

IV Outer Cable Cover

A. Removal

Removal of the outer cable cover requires the removal of either the neck or the direct plug, as well as the removal of the handle or strain relief on the opposite end. Remove ties holding outer cable cover to internal components. Anchor either hex of neck or rear water block lightly in a vise to retain internal cable components. Slowly slide outer cable cover covering off of the cable cluster approximately 6" at a time. Tape internal components every 6" to retain hose alignment for new installation. Remove from vise.

B. Service

Inspect outer cable cover for major nicks or cuts which expose inner cables. If any of the above conditions exist, replace outer cable cover to ensure safe and reliable operation.

C. Installation

With all cable internal components taped together, use welding electrode or wire as a lead. Whatever is used must be as long as or longer than the outer cable cover being applied. Slide wire through outer cable cover first, then anchor one end of the wire in a vise. Connect other end to cable cluster's disconnected end using tape. Slide outer cable cover over the cable cluster and into position (remove tape as outer cable cover is fitted over components). When the outer cable cover is completely installed, fasten the cover into position using cable ties. Install either the neck or the direct plug, whichever was removed.

Section 9. Rigid Strain Relief

A. Removal

Rotate the rear strain relief spring assembly in a counterclockwise rotation to remove from rigid strain relief. Slide the spring further onto the cable assembly and remove screw securing strain relief to adapter block.

B. Service

Inspect all components for cracks, debris, excessive wear, and breakage. Replace with new components if safety or performance of product is compromised.

C. Installation

Align flats in rigid strain relief with flats on adapter block. Slide strain relief onto adapter block and secure with screw. Using the arrows on the cap to align with mating grooves, slide the strain relief spring assembly toward the rigid strain relief until seated and turn in a clockwise rotation until engaging snap is felt.

Section 10. Direct Plug

I Bernard Quick Disconnect

A. Removal

Remove liner from gun assembly. Viewing quick disconnect from feeder end, align wave spring and snap ring with opening access slot (See Figure 6). Compress large snap ring with internal snap ring pliers and remove locking sleeve. Remove medium external snap ring from power pin using external snap ring pliers. Open rigid strain relief and remove wire assemblies from assembly by compressing the locking tabs on the contact pins with needle nose pliers and pulling the wire assemblies from the back. Unthread power pin from rear water block

with appropriate wrenches in a counterclockwise rotation. Inlet and outlet hoses can be removed from rear water block by cutting Oetiker clamps with cutting pliers. The gas pin may be removed from the rigid strain relief by removing the small snap ring and pulling the pin from the rigid strain relief.

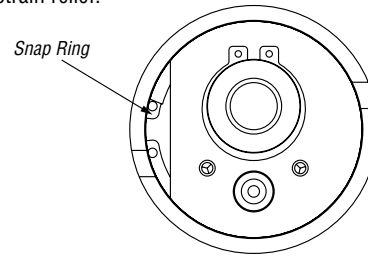


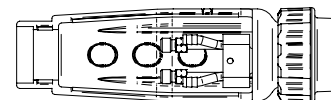
FIGURE 6

B. Service

Test contact pins for continuity when trigger is engaged. Lubricate o-rings with silicone lubricant. Inspect all components for cracks, debris, excessive wear, and breakage. Replace with new components if safety or performance of product is compromised.

C. Installation

Assemble gas pin into rigid strain relief and secure with small snap ring. Install inlet and outlet hoses by pushing hose onto barbed fitting on rear water block and secure with Oetiker clamp. Install power pin onto rear water block with appropriate wrenches in a clockwise rotation. Install wire assemblies into the two symmetrical holes on the back side of the rigid strain relief. Do not cross control wires from side to side. Make sure control pins are fully seated to ensure proper gun functionality. Slide the power pin back into the rigid strain relief. Rotate the power pin until the barbed fittings on rear water block are facing upward and away from the bottom of the rigid strain relief. (See Figure 7) Once the power pin is fully seated, secure it by installing the medium snap ring into the groove on the power pin. Close rigid strain relief and secure by installing the strain relief spring assembly. Position wave spring and large internal snap ring in opening access slot. With internal snap ring pliers inserted through locking sleeve, compress snap ring and slide sleeve into place. Snap ring must be fully seated in locking sleeve. Locking sleeve must be able to rotate freely around rigid strain relief. Install liner.



Barbed fittings located away from bottom of strain relief as shown (for inlet / outlet hoses)

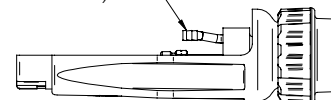


FIGURE 7

II Euro Direct Plug

A. Removal

Remove liner from gun assembly. Follow the steps required to remove the complete cable assembly from the rear water block. Inlet and outlet hoses can be removed from rear water block by cutting Oetiker clamps with cutting pliers. Disconnect the Euro block lead set from gun by cutting as close as possible on both sides of the butt connectors in order to preserve wire for later retermination. Remove screw that secures Euro block assembly to rigid strain relief. Slide adapter nut back in order to expose the machined flats on the Euro block assembly. Remove Euro block from rear water block and rigid strain relief by using the appropriate wrenches in a counterclockwise rotation.

B. Service

Test contact pins for continuity when trigger is engaged. Lubricate o-rings with silicone lubricant. Inspect all components for cracks, debris, excessive wear, and breakage. Replace with new components if safety or performance of product is compromised.

C. Installation

Place adapter nut onto rigid strain relief and secure by threading rear water block into Euro block assembly. Using the appropriate wrenches, tighten Euro block assembly onto the rear water block by rotating clockwise. Continue tightening connection until barbed fittings on rear water block are facing upward and away from the bottom of the rigid strain relief. (See Figure 7) Secure Euro block assembly to rigid strain relief using screw. Connect Euro block leads to control leads by connecting with insulated butt connectors. Install inlet and outlet hoses by pushing hose onto barbed fitting on rear water block and secure with Oetiker clamp. Follow the steps required to reassemble the complete cable assembly to the rear water block. Close rigid strain relief and secure by installing the strain relief spring assembly. Install liner.

III All Other Direct Plugs

A. Removal

Remove liner and rigid strain relief from gun assembly. Inlet and outlet hoses can be removed from rear water block by cutting Oetiker clamps with cutting pliers. Position control lead wires as necessary as not to damage them. Remove power pin from adapter block using appropriate wrenches in a counterclockwise rotation.

Note: For OXO direct plugs, rigid strain relief must be held gently in vise while using the appropriate wrench in a counterclockwise rotation to remove the power pin. Be careful not to crush or deform rigid strain relief while being held in vise.

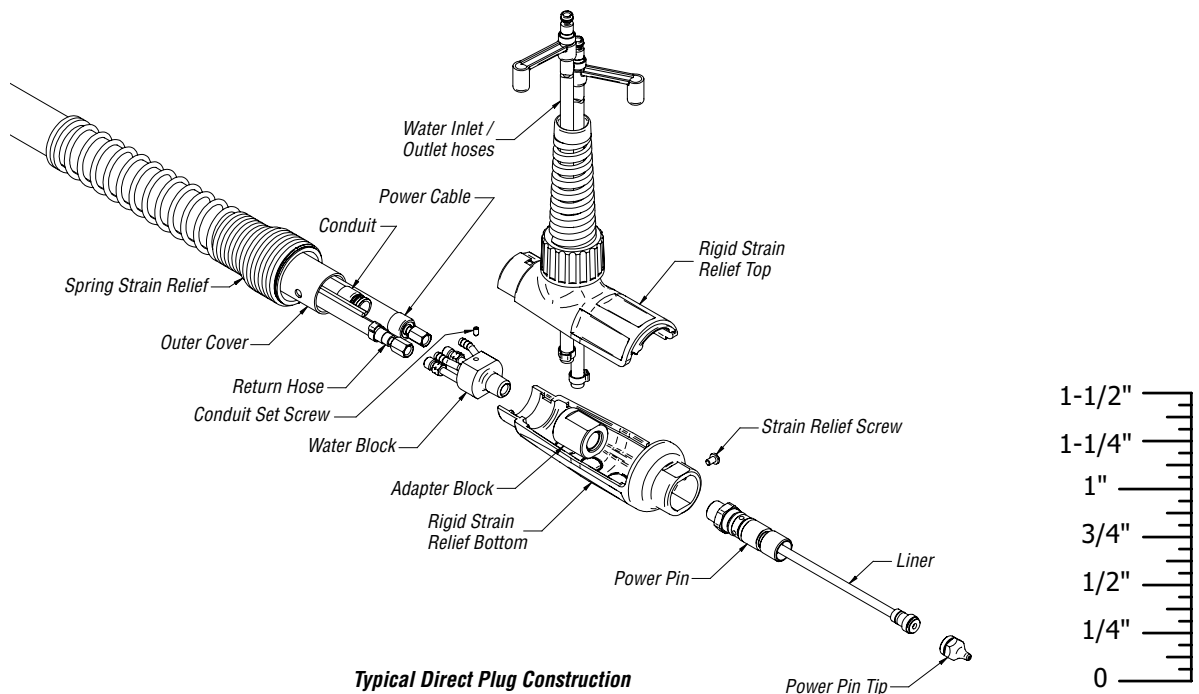
B. Service

Test contact pins for continuity when trigger is engaged. Lubricate o-rings with silicone lubricant. Inspect all components for cracks, debris, excessive wear, and breakage. Replace with new components if safety or performance of product is compromised.

C. Installation

Assemble power pin onto adapter block by using appropriate wrenches in a clockwise rotation. Make sure that the barbed fittings on rear water block are facing upward and away from the bottom of the rigid strain relief. (See Figure 7) Install inlet and outlet hoses by pushing hose onto barbed fitting on rear water block and secure with Oetiker clamp. Reinstall rigid strain relief and liner.

Note: For OXO direct plugs, rigid strain relief must be held gently in vise while using the appropriate wrench in a clockwise rotation to install the power pin. Be careful not to crush or deform rigid strain relief while being held in vise.



Typical Direct Plug Construction

Part V Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Electrode does not feed	<ol style="list-style-type: none"> 1. Feeder relay. 2. Broken control lead. 3. Poor adaptor connection. 4. Worn or broken switch. 5. Improper drive roll size. 6. Drive roll tension misadjusted. 7. Burn back to contact tip. 8. Wrong size liner. 9. Buildup inside of liner. 	<ol style="list-style-type: none"> 1. Consult feeder manufacturer. 2. a. Test & connect spare control lead. b. Install new cable. 3. Test & replace leads and/or contact pins. 4. Replace. 5. Replace with proper size. 6. Adjust tension at feeder. 7. See 'Contact Tip Burn Back'. 8. Replace with correct size. 9. Replace liner, check condition of electrode.
2. Contact tip burn back	<ol style="list-style-type: none"> 1. Improper voltage and/or wire feed speed. 2. Erratic wire feeding. 3. Improper tip stickout. 4. Improper electrode stickout. 5. Faulty ground. 	<ol style="list-style-type: none"> 1. Set parameters. 2. See 'Erratic Wire Feeding'. 3. Adjust nozzle/tip relationship. 4. Adjust gun to base metal relationship. 5. Repair all cables & connections.
3. Tip disengages from gas diffuser	<ol style="list-style-type: none"> 1. Worn gas diffuser. 2. Improper tip installation. 3. Extreme heat or duty cycle. 	<ol style="list-style-type: none"> 1. Replace tip and/or gas diffuser. 2. Install as per 'Maintenance & Repair' (Section 3). 3. Replace with heavy duty consumables. See appropriate spec sheet for details.
4. Short contact tip life	<ol style="list-style-type: none"> 1. Contact tip size. 2. Electrode eroding contact tip. 3. Exceeding duty cycle. 	<ol style="list-style-type: none"> 1. Replace with proper size. 2. Inspect and/or change drive rolls. 3. Replace with properly rated Bernard gun.
5. Erratic arc	<ol style="list-style-type: none"> 1. Worn contact tip. 2. Buildup inside of liner. 3. Wrong tip size. 4. Not enough bend in neck. 	<ol style="list-style-type: none"> 1. Replace. 2. Replace liner, check condition of electrode. 3. Replace with correct size tip. 4. Replace with 45° or 60° neck.
6. Erratic wire feeding	<ol style="list-style-type: none"> 1. Buildup inside of liner. 2. Wrong size liner. 3. Improper drive roll size. 4. Worn drive roll. 5. Improper guide tube relationship. 6. Improper wire guide diameter. 7. Gaps at liner junctions. 8. Feeder malfunction. 9. Contact tip. 	<ol style="list-style-type: none"> 1. Replace liner, check condition of electrode. 2. Replace with new liner of proper size. 3. Replace with proper size drive roll. 4. a. Replace with new drive roll. b. Stone edge of groove on drive roll. 5. a. Adjust/replace guide as close to drive rolls as possible. b. Eliminate all gaps in electrode path. 6. Replace with proper guide diameter. 7. a. Replace with new liner trimming as per 'Maintenance & Repair' (Section 5). b. Replace guide tube/liner, trim as close to mating component as possible. 8. Consult feeder manufacturer. 9. Inspect and replace.*

Part V Troubleshooting Guide (cont.)

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
7. Extreme spatter	<ol style="list-style-type: none"> 1. Improper machine parameters. 2. Improper tip installation. 3. Improper shielding. 4. Contaminated wire or work piece. 	<ol style="list-style-type: none"> 1. Adjust parameters. 2. Adjust nozzle/tip relationship. 3. <ol style="list-style-type: none"> a. Verify shielding gas coverage. b. Verify gas mixture. 4. Clean wire and work piece.
8. Porosity in weld	<ol style="list-style-type: none"> 1. Insulator worn. 2. Gas diffuser damaged. 3. Extreme heat or duty cycle. 4. Solenoid faulty. 5. No gas. 6. Flow improperly set. 7. Gas ports plugged. 8. Ruptured gas hose. 9. Control circuit loss. 10. Worn, cut or missing O-rings. 11. Loose fittings. 	<ol style="list-style-type: none"> 1. Replace nozzle/insulator. 2. Replace gas diffuser. 3. Replace with heavy duty consumables. 4. Replace solenoid. 5. <ol style="list-style-type: none"> a. Install full tanks. b. Check supply. c. Hose leaks. 6. Adjust. 7. <ol style="list-style-type: none"> a. Clean or replace gas diffuser. b. Clean nozzle. 8. Repair or replace cable or line. 9. See 'Electrode Does Not Feed'. 10. Replace O-rings 11. Tighten gun & cable connections to specified torque. See 'Maintenance & Repair' (Section 8).
9. Gun running hot	<ol style="list-style-type: none"> 1. Exceeding duty cycle. 2. Loose or poor power connection. 3. Improper water flow 4. Exceeds water cooler capacity 	<ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> a. Replace with properly rated Bernard gun. b. Decrease parameters to within gun rating. 2. <ol style="list-style-type: none"> a. Clean, tighten or replace cable grounding connection. b. Tighten gun & cable connections to specified torque. See 'Maintenance & Repair' (Section 8). 3. Verify proper water flow 4. Replace with properly rated water cooler
10. Liner is discolored full length	<ol style="list-style-type: none"> 1. Short circuit to electrode. 2. Broken copper stranding in power cable. 	<ol style="list-style-type: none"> 1. Isolate electrode reel from feeder and drive block. Consult feeder manufacturers manual. 2. Replace power cable assembly as per 'Maintenance & Repair' (Section 8).
11. Sporadic feeding of aluminum electrode	<ol style="list-style-type: none"> 1. Tip galling. 2. Synthetic liner melting. 3. Wire deformed by feed rolls. 	<ol style="list-style-type: none"> 1. *Inspect & replace. 2. <ol style="list-style-type: none"> a. Replace liner. b. Replace with composite liner. 3. Adjust drive rolls as per feeder manufacturer's manual.

*In some cases with aluminum and mild steels, it may be necessary to use a contact tip with either a larger or smaller bore size.

NOTES

ADDITIONAL SUPPORT MATERIALS

For additional support materials such as spec sheets, troubleshooting information, how-to guides and videos, animations, online configurators and much more, please visit Tregaskiss.com or scan the QR Code with your smart phone for immediate access to Tregaskiss.com/TechnicalSupport.



Bernard
449 W. Corning Rd.
Beecher, IL 60401
Tregaskiss.com

Phone: 1-855-MIGWELD (644-9353) (US & Canada)
+1-519-737-3000 (International)
Fax: 1-708-946-6726

