



OM-282976J

2025-03

Processes



MIG (GMAW) Welding
Pulsed MIG (GMAW-P) Welding



Flux Cored (FCAW) Welding

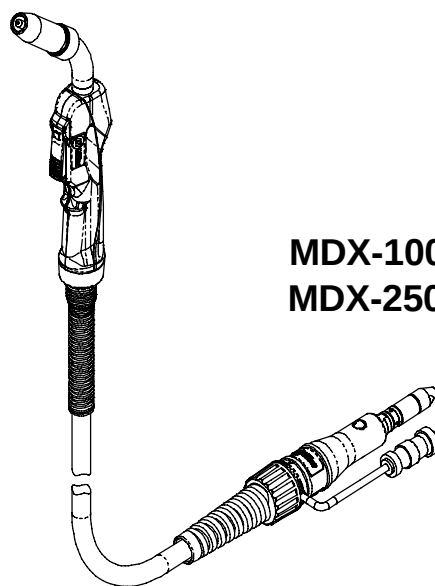
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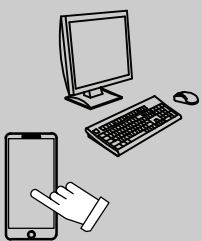
Semi-Automatic, Air-Cooled MIG
(GMAW) Welding Gun

MDX™ Series

CE



MDX-100
MDX-250



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

www.MillerWelds.com

OWNER'S MANUAL

From Miller to You

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

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

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

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

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

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



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



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



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DECLARATION OF CONFORMITY

for European Community (CE marked) products.

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

Product/Apparatus Identification:

Product	Stock Number
Miller MDX™ Series – 100A	1770027 thru 1770032
Miller MDX™ Series –250A	1770033 thru 1770045

Council Directives:

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

Standards:

- IEC 60974-7:2013 Arc welding equipment – Part 7: Torches

Signatory:

June 6, 2023

David A. Werba

MANAGER, PRODUCT DESIGN COMPLIANCE

Date of Declaration

SECTION 1 – SAFETY PRECAUTIONS – READ BEFORE USING

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

1-1. Symbol Usage

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

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

NOTICE – Indicates statements not related to personal injury.

 Indicates special instructions.



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

1-2. 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 the Principal Safety Standards, 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 the ability to solve or resolve problems relating to the subject matter, the work, or the project and has received safety training to recognize and avoid the hazards involved.

 During operation, keep everybody, especially children, away.



ELECTRIC SHOCK can kill.

- Always wear dry insulating gloves.
- Insulate yourself from work and ground.
- Do not touch live electrode or electrical parts.
- Do not store or use equipment in standing water.
- 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 (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.

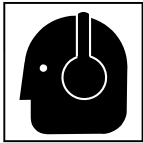
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- 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.

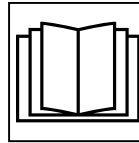
Noise from some processes or equipment can damage hearing.

- 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 Sections

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: safetyequipment.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 can interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, restrict access for passers-by or conduct individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

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

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

About Implanted Medical Devices:

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

SECTION 2 – CONSIGNES DE SÉCURITÉ - LIRE AVANT UTILISATION

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

2-1. Symboles utilisés

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

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

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

 Indique des instructions spécifiques.



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

2-2. Dangers relatifs au 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.



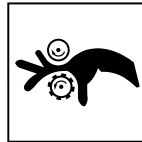
UN CHOC ÉLECTRIQUE peut tuer.

- 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.
- Ne stockez pas et n'utilisez pas l'équipement dans de l'eau stagnante.
- 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 auxquelles 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 (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 nettoyeurs, les consommables, les produits de refroidissement, les dégraissants, les flux et les métaux.



LES ACCUMULATIONS 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.



LES RAYONS DE L'ARC peuvent provoquer des brûlures dans les yeux et sur 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.

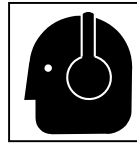
- Porter un casque de soudage approuvé muni de verres filtrants approprié pour protéger visage et yeux pendant le soudage (voir ANSI Z49.1 et Z87.1 énuméré dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.

- 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 ignifuges (FRC). La protection du corps comporte des vêtements sans huile, comme des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.



LES PIÈCES CHAUDES peuvent provoquer des brûlures.

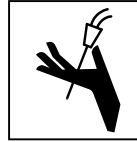
- Laisser refroidir le pistolet avant de le toucher.
- Ne pas toucher d'objets métalliques chauds.
- Abriter les objets métalliques contre tout contact par les personnes à proximité.



Le BRUIT peut endommager l'ouïe.

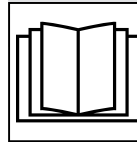
Le bruit des processus et des équipements peut affecter l'ouïe.

- 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 des pièces de remplacement provenant du fabricant.
- Effectuer l'installation, l'entretien et toute intervention selon les manuels d'utilisateurs, les normes nationales, provinciales et de l'industrie, ainsi que les codes municipaux.

2-3. 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: safetyequipment.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.csa-group.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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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 découpage plasma ou de chauffage par induction. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.

SECTION 3 – SPECIFICATIONS

3-1. Specifications

Model	Wire	Duty Cycle	Weight	Identifier
MDX-100	.023 To .035 in. (0.6 To 0.9 mm) Hard Or Flux Cored Wires	100%: 100 A With CO ₂ Shielding Gas; 60%: 100 A With Mixed Gases 50%: 150 A With Mixed Gases	With 10 ft (3.0 m) Power Cable: 2.9 lb (1.3 kg) With 15 ft (4.6 m) Power Cable: 7.6 lb (3.4 kg)	● On Power Cable
MDX-250	.023 To .045 in. (0.6 To 1.1 mm) Hard Or Flux Cored Wires	100%: 250 A With CO ₂ Shielding Gas; 60%: 250 A With Mixed Gases 40%: 280 A With Mixed Gases	With 10 ft (3.0 m) Power Cable: 5.3 lb (2.4 kg) With 15 ft (4.6 m) Power Cable: 7.6 lb (3.4 kg)	● ● ○ On Power Cable (Standard)

Air-Cooled Welding Gun For GMAW, (GMAW-P MDX-250 Only) And FCAW Welding

 Using gasless flux cored wire and pulsed MIG (GMAW-P) reduces gun duty cycle.

3-2. Software Licensing Agreement

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

3-3. Information About Default Weld Parameters And Settings

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

3-4. Duty Cycle And Overheating MDX-100




.023 To .035 in. (0.6 To 0.9 mm) Hard Or Flux Cored Wires

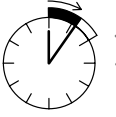
100% Duty Cycle At 100 Amperes Using CO₂




Continuous Welding

.023 To .035 in. (0.6 To 0.9 mm) Hard Or Flux Cored Wires

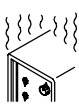
60% Duty Cycle At 100 Amperes Using Mixed Gases

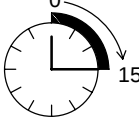


→



6 Minutes Welding 4 Minutes Resting


→

→

Minutes
→

→


A or V

OR

Reduce Duty Cycle

→


Duty Cycle is percentage of 10 minutes that gun can weld at rated load without overheating.

NOTICE – Exceeding duty cycle can damage unit or gun and void warranty.

3-5. Duty Cycle And Overheating MDX-250



.023 To .045 in. (0.6 To 1.1 mm) Hard Or Flux Cored Wires

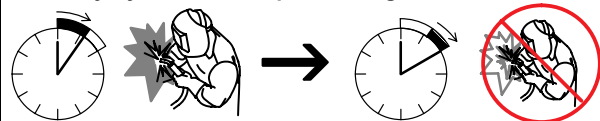
100% Duty Cycle At 250 Amperes Using CO2



Continuous Welding

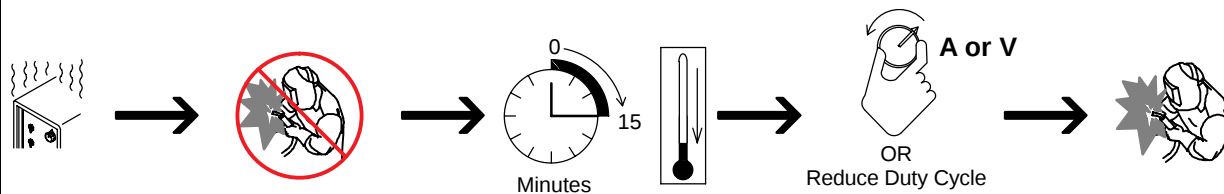
.023 To .045 in. (0.6 To 1.1 mm) Hard Or Flux Cored Wires

60% Duty Cycle At 250 Amperes Using Mixed Gases



6 Minutes Welding

4 Minutes Resting

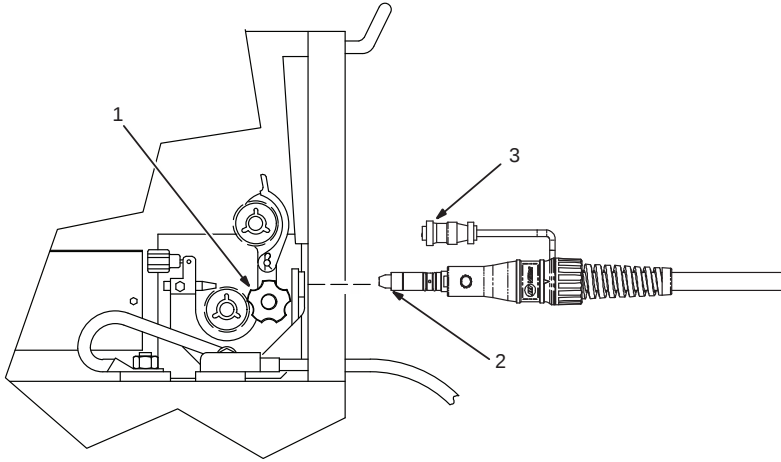


Duty Cycle is percentage of 10 minutes that gun can weld at rated load without overheating.

NOTICE – Exceeding duty cycle can damage unit or gun and void warranty.

SECTION 4 – INSTALLATION

4-1. Installing Gun



1 Gun Securing Knob

2 Gun End

Loosen knob. Insert gun end until it bottoms against drive assembly. Tighten knob.

3 Gun Trigger Plug

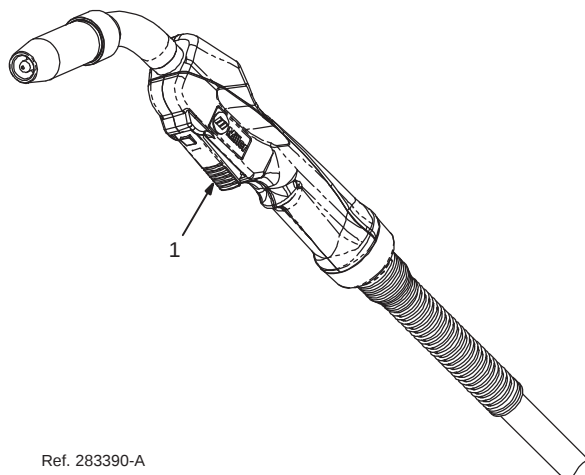
Insert into receptacle, and tighten threaded collar.

See wire feeder manual for wire threading procedure.

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SECTION 5 – OPERATION

5-1. Operating The MDX 100 And MDX 250 Guns



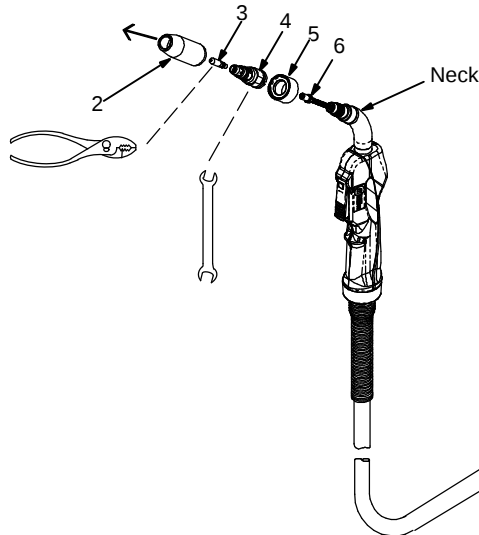
Ref. 283390-A

1 Trigger Switch

Press switch to feed energized wire and start flow of shielding gas.

SECTION 6 – MAINTENANCE AND TROUBLESHOOTING

6-1. Removing Nozzle, Contact Tip, Gas Diffuser, And Changing Liner For MDX-250 With Set Screw



⚠ Turn off welding power source/wire feeder and disconnect gun.

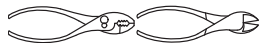
- 1 Power Pin Cap
- 2 Nozzle
- 3 Contact Tip
- 4 Gas Diffuser
- 5 Neck Insulator
- 6 Liner
- 7 Neck
- 8 Power Pin

Remove nozzle, contact tip, and gas diffuser from end of gun as shown. Loosen set screw and remove power pin cap from power pin. Lay gun out straight and remove liner.

Blow out gun casing with compressed air if necessary.

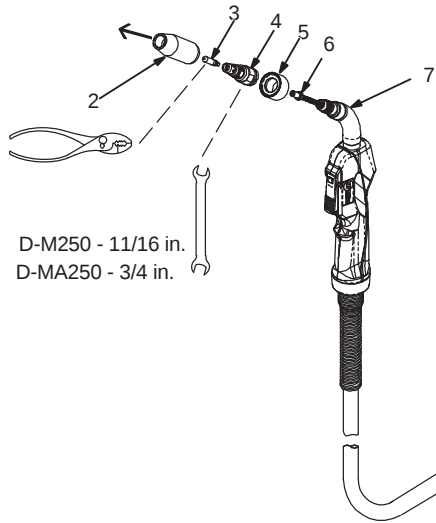
Install new liner through the neck until brass liner lock bottoms on neck. Install the gas diffuser and tighten gas diffuser. Install contact tip and nozzle. Place power pin cap over liner and thread onto power pin. Tighten the cap snug against the power pin shoulder with welding pliers or appropriate wrench. Tighten the set screw "finger tight" against the liner. Next, hold the hex wrench by the handle and tighten the set screw an additional one-half turn to fully secure the liner. Cut liner flush with power pin cap. Insert a piece of welding wire into the liner to check for burrs or obstructions. If needed, loosen screw slightly until the wire slides freely.

🔧 Thread wire according to welding power source/wire feeder manual.



1/2, 11/16, 3/4 in.

6-2. Removing Nozzle, Contact Tip, Gas Diffuser, And Changing Liner For MDX-250 Without Set Screw



D-M250 - 11/16 in.
D-MA250 - 3/4 in.

⚠ Turn off welding power source/wire feeder and disconnect gun.

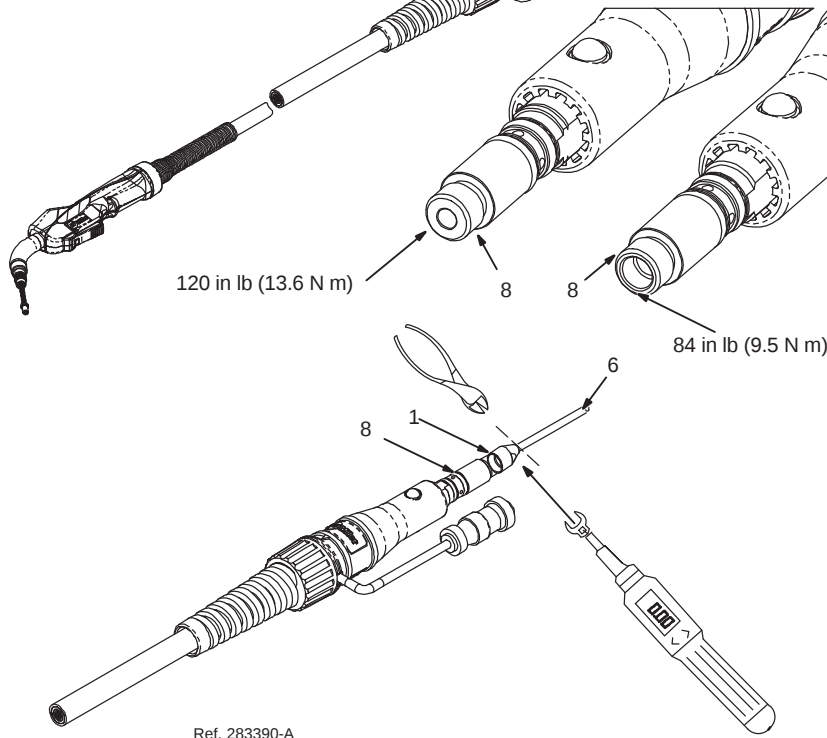
- 1 Power Pin Cap
- 2 Nozzle
- 3 Contact Tip
- 4 Gas Diffuser
- 5 Neck Insulator
- 6 Liner
- 7 Neck
- 8 Power Pin

Remove nozzle, contact tip, and gas diffuser from end of gun as shown. Remove power pin cap from power pin. Lay gun out straight and remove liner.

Blow out gun casing with compressed air if necessary.

Install new liner through the neck until the brass liner lock bottoms on neck. Install the gas diffuser and tighten gas diffuser. Install contact tip and nozzle. Thread power pin cap over liner and torque to specification determined by power pin design. Cut liner flush with power pin cap.

✎ Thread wire according to welding power source/wire feeder manual.

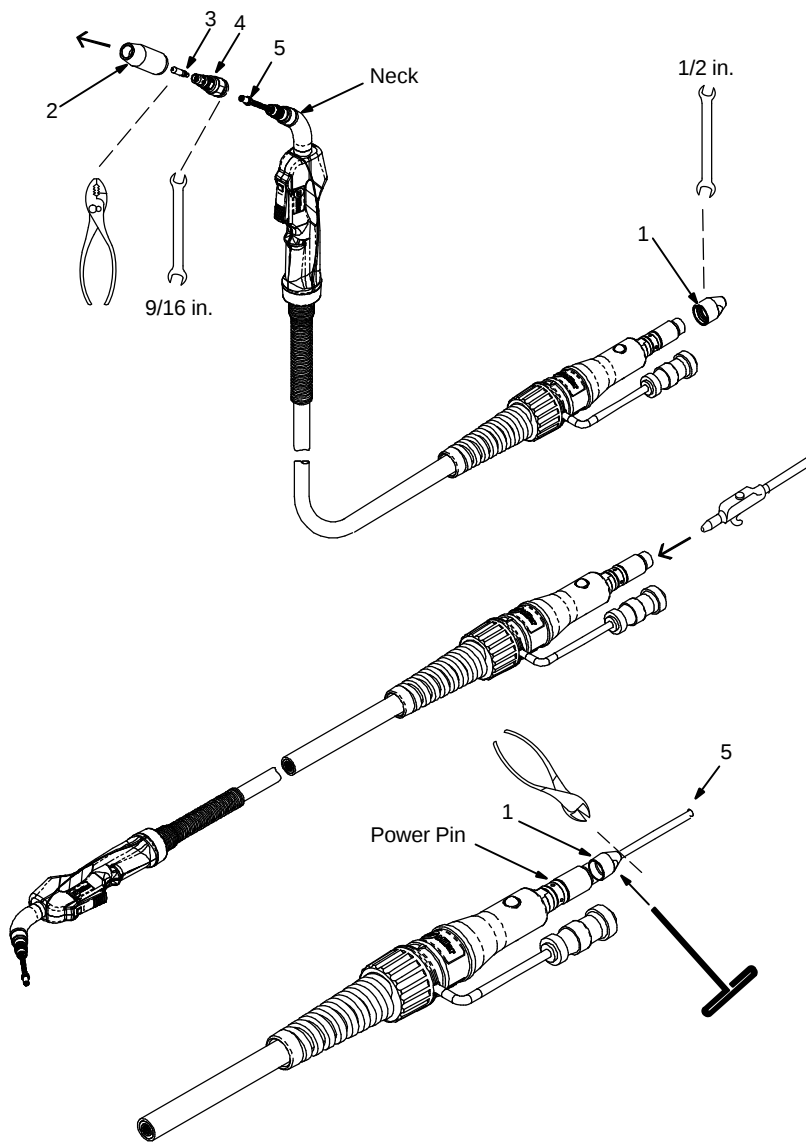


Ref. 283390-A



1/2, 11/16, 3/4 in.

6-3. Removing Nozzle, Contact Tip, Gas Diffuser, And Changing Liner For MDX-100 With Set Screw



⚠ Turn off welding power source/wire feeder and disconnect gun.

- 1 Power Pin Cap
- 2 Nozzle
- 3 Contact Tip
- 4 Gas Diffuser
- 5 Liner
- 6 Neck
- 7 Power Pin

Remove nozzle, contact tip, and gas diffuser from end of gun as shown. Loosen set screw and remove power pin cap from power pin. Lay gun out straight and remove liner.

Blow out gun casing with compressed air if necessary.

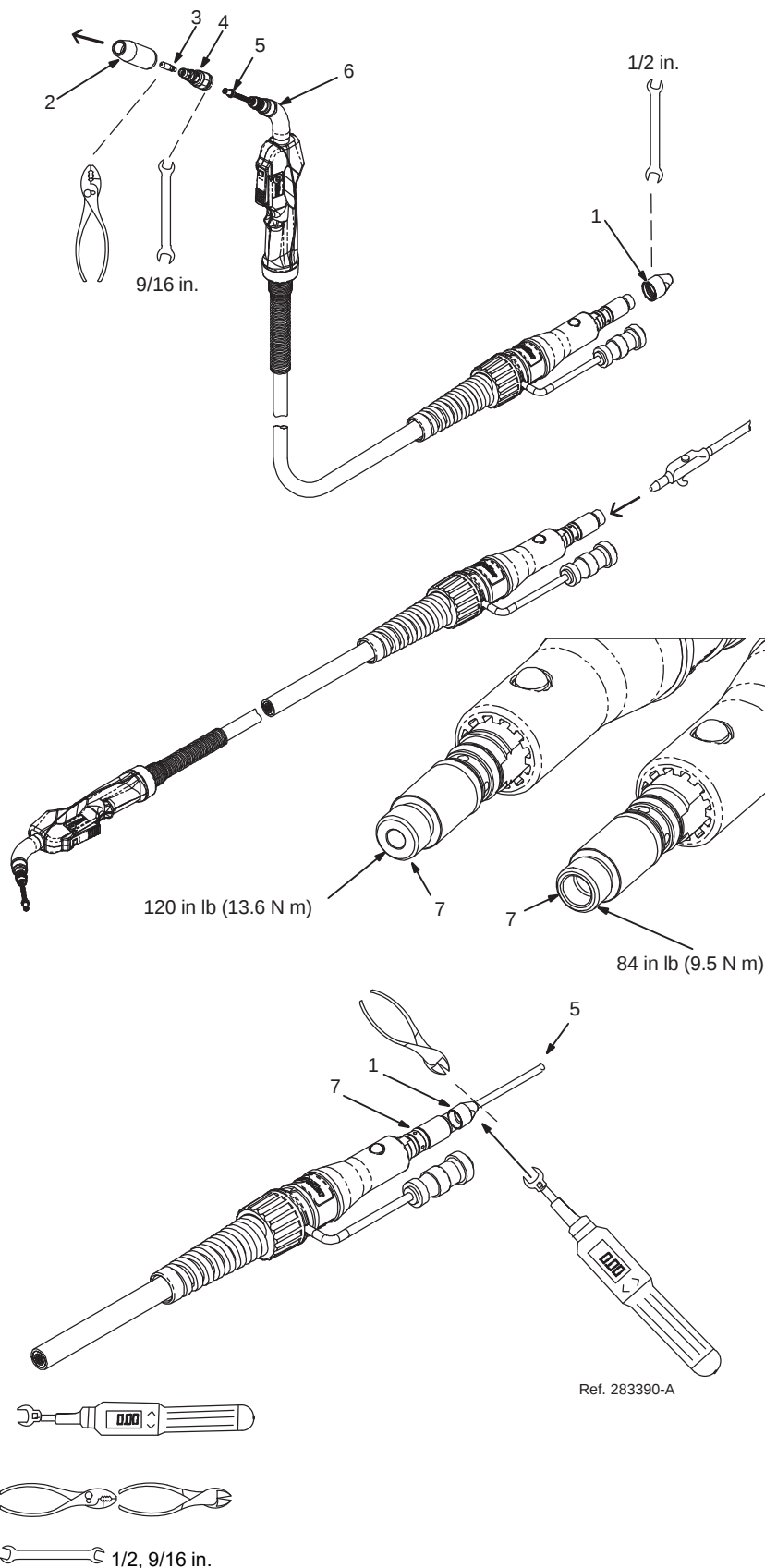
Install new liner through the neck until brass liner lock bottoms on neck. Install the gas diffuser and tighten gas diffuser. Install contact tip and nozzle. Place power pin cap over liner and thread onto power pin. Tighten the cap snug against the power pin shoulder with welding pliers or appropriate wrench. Tighten the set screw "finger tight" against the liner. Next, hold the hex wrench by the handle and tighten the set screw an additional one-half turn to fully secure the liner. Cut liner flush with power pin cap. Insert a piece of welding wire into the liner to check for burrs or obstructions. If needed, loosen screw slightly until the wire slides freely.

☞ Thread wire according to welding power source/wire feeder manual.



1/2, 9/16 in.

6-4. Removing Nozzle, Contact Tip, Gas Diffuser, And Changing Liner For MDX-100 Without Set Screw



⚠ Turn off welding power source/wire feeder and disconnect gun.

- 1 Power Pin Cap
- 2 Nozzle
- 3 Contact Tip
- 4 Gas Diffuser
- 5 Liner
- 6 Neck
- 7 Power Pin

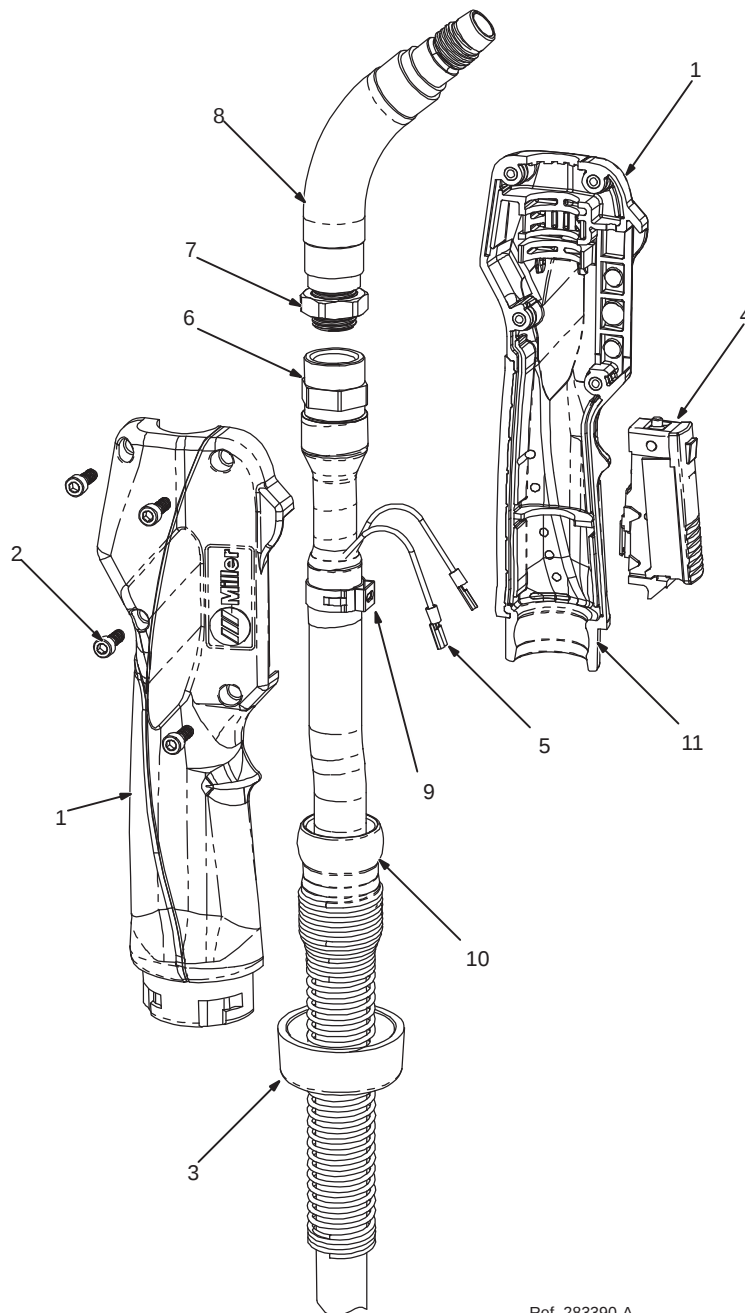
Remove nozzle, contact tip, and gas diffuser from end of gun as shown. Remove power pin cap from power pin. Lay gun out straight and remove liner.

Blow out gun casing with compressed air if necessary.

Install new liner through the neck until brass liner lock bottoms on neck. Install the gas diffuser and tighten gas diffuser. Install contact tip and nozzle. Identify power pin to determine appropriate power pin cap torque specification. Thread power pin cap over liner and torque to specification determined by power pin design. Cut liner flush with power pin cap.

🔧 Thread wire according to welding power source/wire feeder manual.

6-5. Replacing Switch And/Or Neck For MDX-100 Or MDX-250



Ref. 283390-A

⚠ Turn off welding power source/wire feeder and disconnect gun.

1 Handle

2 Screw

Remove four screws from handle and retain for future use.

3 Locking Cap

Rotate locking cap counter clockwise 1/4 turn to separate handle halves.

4 Trigger

5 Terminal

Remove terminals from trigger switch and remove housing. Install new trigger and connect leads (polarity is not important). Reassemble in reverse order if you are not replacing neck.

6 End Fitting

7 Lock Nut

Loosen lock nut on neck by using wrenches on end fitting and lock nut. Use 3/4 in. wrenches for MDX-250 gun and 9/16 in. wrenches for MDX-100 gun.

8 Neck

9 Head Of Clamp

10 Strain Relief

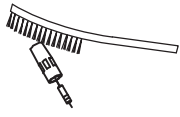
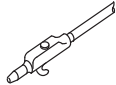
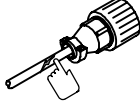
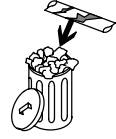
11 Socket For Strain Relief

After the lock nut is loose the neck can be unthreaded from the end fitting.

Reassemble components in reverse order. Make sure neck is in line with the head of the clamp as shown. Make sure the ball on the strain relief is positioned in socket in handle before closing handle halves.



6-6. Routine Maintenance

				
 Disconnect power before maintaining.  <i>Maintain more often during severe conditions.</i>				
	✓ = Check	◇ = Change	○ = Clean	☆ = Replace
Each Spool of Wire	 ✓ ○ Nozzle and contact tip	 ○ Blow out gun casing		
Every 3 Months	 ☆ Unreadable labels	 ☆ Damaged gas hose	 ✓ ☆ Cords	 ✓ ☆ Cracked parts

*To be done by factory authorized service agent.

6-7. Troubleshooting

				
Trouble	Remedy			
Wire does not feed; wire is not energized; wire feeds unevenly.	Check contact tip. Check for kinks in gun cable.			
	Check gun trigger plug connection at welding power source/wire feeder.			
	Check, and if necessary, replace gun trigger switch (see Section 6-5).			
	Check contact tip. Check for kinks in gun cable. Blow out liner and gun casing (see Section 6-1 or Section 6-3).			
Weld porosity.	Remove weld spatter buildup in nozzle.			
	Make sure power pin assembly is pushed into gun block correctly on wire feeder.			
	Check shielding gas flow/supply.			
	Make sure liner is flush with end of power pin cap and power pin cap is tightened to appropriate torque specification (see Section 6-1 or Section 6-3).			
Wire feeding stops or does not feed properly during welding.	Straighten gun cable and/or replace damaged parts (see Section 6-1 or Section 6-3).			
	Adjust drive roll pressure (see wire feeder manual).			
	Change to proper drive roll groove (see wire feeder manual).			
	Readjust hub tension (see wire feeder manual).			
	Clean or replace liner if dirty or plugged (see Section 6-1 or Section 6-3).			
Wire not feeding.	Replace drive roll or pressure bearing if worn or slipping (see wire feeder manual).			
	Back set screw on power pin cap off slightly until wire feeds properly. If the liner is kinked, replace liner.			

SECTION 7 – PARTS LIST

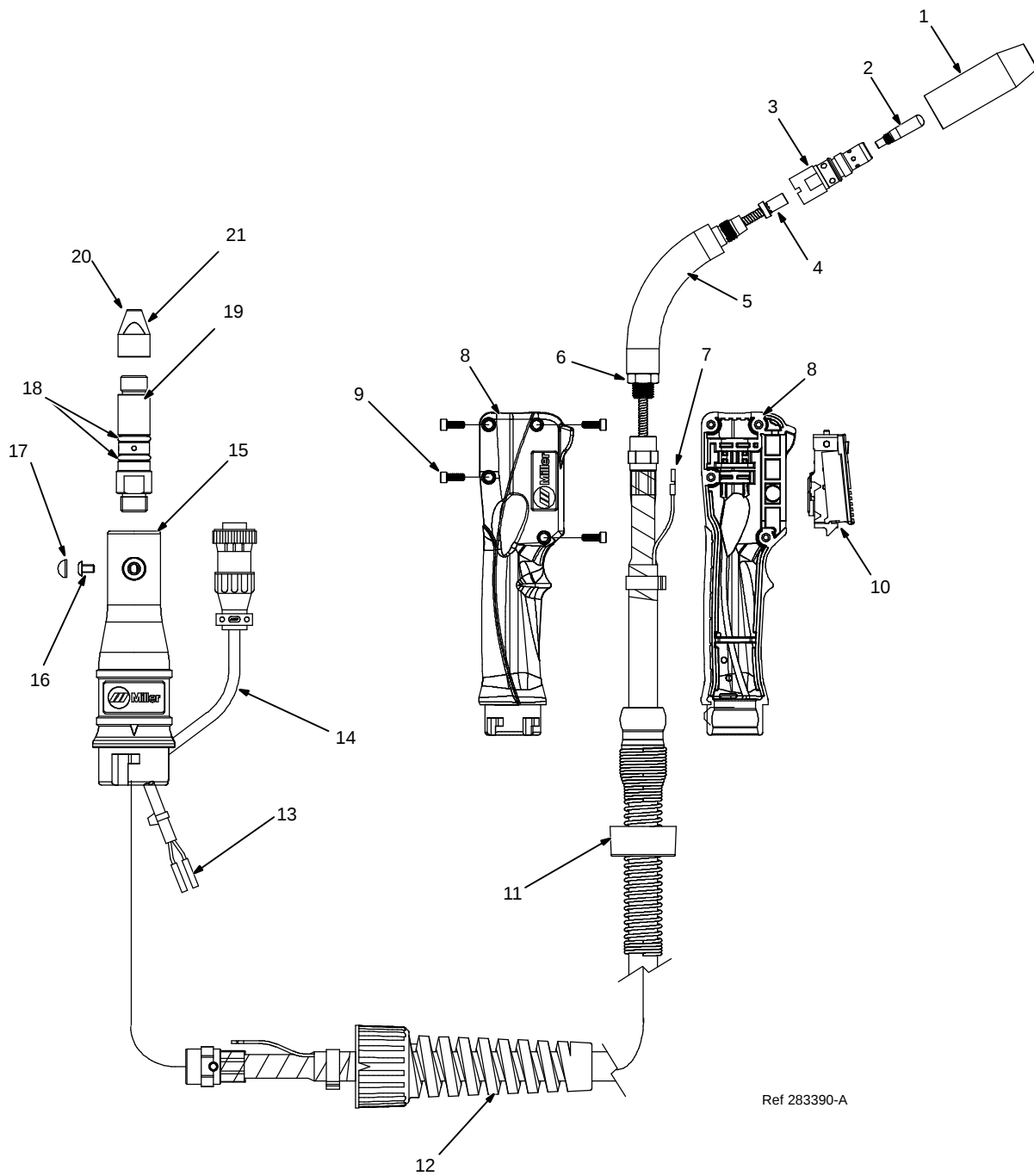


Figure 7-1. MDX-100 Gun

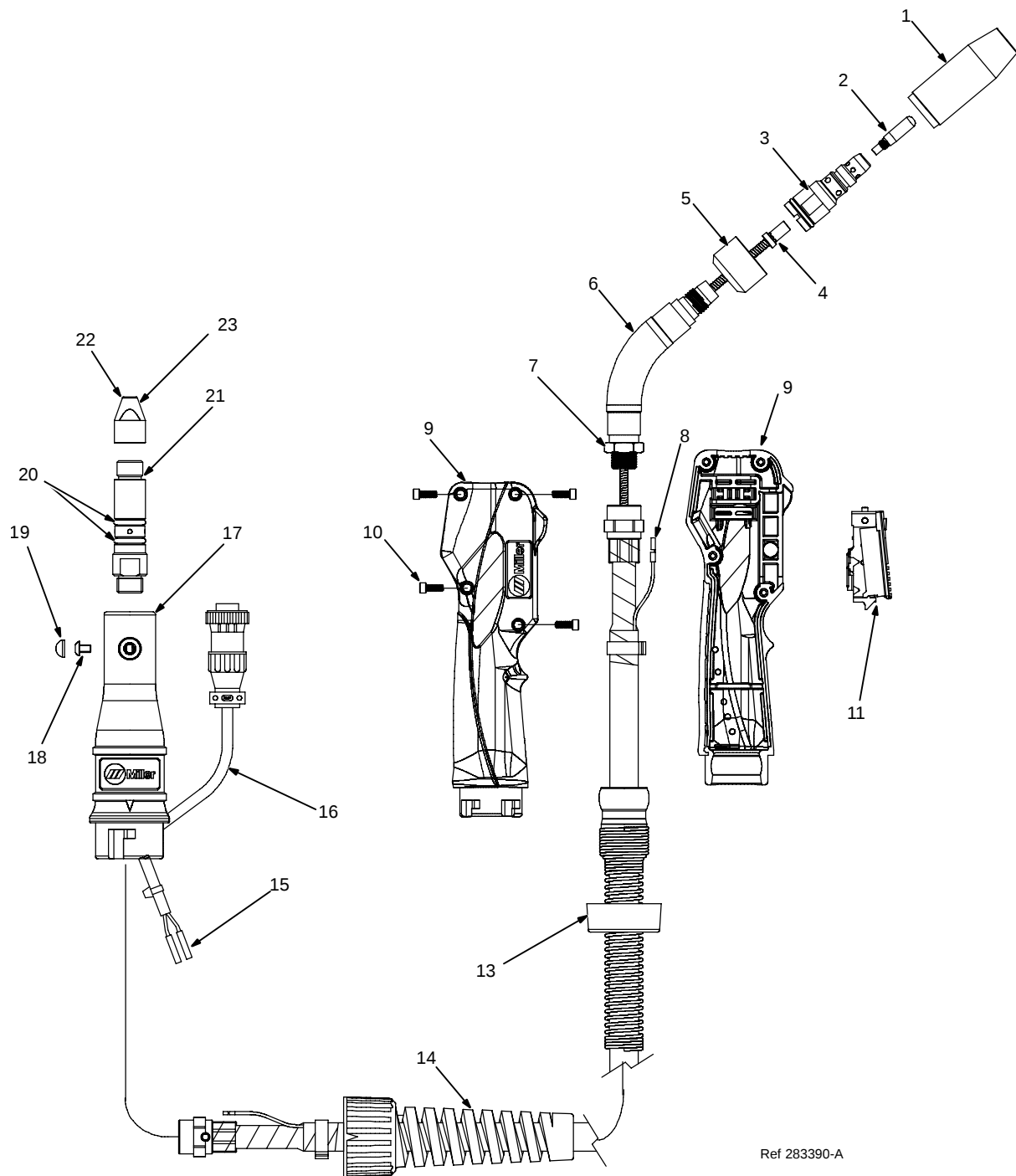
Figure 7-1. MDX-100 Gun

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
1		NS-M1200C	Nozzle, Copper ½ in. Bore, Flush	1
1		◆NS-M1200B	Nozzle, Brass ½ in. Bore, Flush	1
1		◆NS-MFLX	Nozzle, Gasless	1
2		◆T-M023	Contact Tip, Standard Duty .023 in. Wire x 1.125 in.	1
2		◆T-M030	Contact Tip, Standard Duty .030 in. Wire x 1.125 in.	1
2		◆T-M035	Contact Tip, Standard Duty .035 in. Wire x 1.125 in.	1
2		◆T-M045	Contact Tip, Standard Duty .045 in. Wire x 1.125 in.	1
2		◆T-M047	Contact Tip, Standard Duty 3/64 in. Wire x 1.125 in.	1
3		D-M100	Diffuser	1
4		◆LM1A-10	Liner, .023/.025 in. Wire x 10 ft	1
4		LMD2A-10	Liner, .030/.035 in. Wire x 10 ft	1
4		◆LMD3A-10	Liner, .035/.045 in. Wire x 10 ft	1
4		◆LM1A-15	Liner, .023/.025 in. Wire x 15 ft	1
4		LMD2A-15	Liner, .030/.035 in. Wire x 15 ft	1
4		◆LMD3A-15	Liner, .035/.045 in. Wire x 15 ft	1
5		1040087	Neck	1
6		1960012	Nut, Locking	1
7		7000005P*	Terminal, Switch	2
8		1880266	Handle Kit, (includes Item No.9 and Item No. 11)	1
9		2280065P*	—Screw, Handle	4
10		211-5-MDX	Trigger, Switch	1
11		1780094	—Cap, Locking Handle	1
12		2520033*	Strain Relief, Rear Spring	1
13		4932P*	Connector, Butt	2
14		GN2021*	Control Plug, Miller	1
15		2520100	Strain Relief, Rear	1
16		2280056P*	Screw, Strain Relief	1
17		1620003P*	Cover, Screw	1
18		4478P*	O-Ring, Power Pin	2
19		2200169	Assy, Power Pin	1
20		2200360	Power Pin Cap, .023/.030 in.	1
20		2200361	Power Pin Cap, .030/.035 in.	1
20		2200362	Power Pin Cap, .035/.045 in.	1
21		2300023P*	Set Screw, 1/4–20 x 3/16", Long Cup Point, Power Pin Cap	1

◆Optional

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

All part numbers noted with a (*) must be purchased through Bernard Customer Service at 800–946–2281.



Ref 283390-A

Figure 7-2. MDX-250 Gun

Figure 7-2. MDX-250 Gun

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
1		N-M1200C	Nozzle, Standard Duty Copper, ½ in. Bore, Flush	1
1		◆N-M1218C	Nozzle, Standard Duty Copper, ½ in. Bore, .125 in. Recess	1
1		◆N-M5800C	Nozzle, Standard Duty Copper, ⅝ in. Bore, Flush	1
1		N-M5818C	Nozzle, Standard Duty Copper, ⅝ in. Bore, .125 in. Recess	1
1		◆N-M58XTC	Nozzle, Standard Duty Copper, ⅝ in. Bore, .125 in. Stickout	1
1		◆N-A5800CM	Nozzle, Heavy Duty Copper, ⅝ in. Bore, Flush	1
1		◆N-A5814CM	Nozzle, Heavy Duty Copper, ⅝ in. Id ¼ in. Recess	1
1		N-A5818CM	Nozzle, Heavy Duty Copper, ⅝ in. Id ¼ in. Recess	1
2		◆T-M023	Contact Tip, Standard Duty .023 in. Wire x 1.125 in.	1
2		◆T-M030	Contact Tip, Standard Duty .030 in. Wire x 1.125 in.	1
2		◆T-M035	Contact Tip, Standard Duty .035 in. Wire x 1.125 in.	1
2		◆T-M045	Contact Tip, Standard Duty .045 in. Wire x 1.125 in.	1
2		◆T-M047	Contact Tip, Standard Duty 3/64 in. Wire x 1.125 in.	1
2		◆T-A023CHM	Contact Tip, Heavy Duty .023 in. Wire x 1.125 in.	1
2		◆T-A030CHM	Contact Tip, Heavy Duty .030 in. Wire x 1.125 in.	1
2		◆T-A035CHM	Contact Tip, Heavy Duty .035 in. Wire x 1.125 in.	1
2		◆T-A039CHM	Contact Tip, Heavy Duty .039 in. Wire x 1.125 in.	1
2		◆T-A045CHM	Contact Tip, Heavy Duty .045 in. Wire x 1.125 in.	1
3		D-M250	Diffuser, Standard Duty	1
3		D-MA250M	Diffuser, Heavy Duty	1
4		◆LM1A-10	Liner, .023/.025 in. Wire x 10 ft	1
4		◆LM1A-15	Liner, .023/.025 in. Wire x 15 ft	1
4		◆LMD2A-10	Liner, .030/.035 in. Wire x 10 ft	1
4		LMD2A-15	Liner, .030/.035 in. Wire x 15 ft	1
4		◆LMD3A-10	Liner, .035/.045 in. Wire x 10 ft	1
4		LMD3A-15	Liner, .035/.045 in. Wire x 15 ft	1
5		4623RM	Insulator, Neck	1
6		1040097	Medium Length Neck	1
6		◆1040096	Long Neck	1
7		1960011	Nut, Locking	1
8		7000005P*	Terminal, Switch	2
9		1880265	Handle Kit, Standard (includes No.10 and No.13)	1
10		2280065P*	—Screw, Handle	4
11		211-5-MDX	Trigger, Switch	1
13		1780099	—Cap, Locking Handle	1
14		2520033*	Strain Relief, Rear Spring	1
15		4932P*	Connector, Butt	2
16		GN2021*	Control Plug, Miller	1
17		2520100	Strain Relief, Rear	1
18		2280056P*	Screw, Strain Relief	1
19		1620003P*	Cover, Screw	1
20		4478P*	O-Ring, Power Pin	2
21		2200169	Assy, Power Pin	1
22		2200360	Power Pin Cap .023/.030 in.	1
22		2200361	Power Pin Cap .030/.035 in.	1
22		2200362	Power Pin Cap .035/.045 in.	1
23		2300023P*	Set Screw, 1/4–20 x 3/16", Long Cup Point, Power Pin Cap	1
All part numbers noted with a (*) must be purchased through Bernard Customer Service at 800–946–2281.				◆Optional

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



Effective January 1, 2025 (Equipment with a serial number preface of NF or newer)

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

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

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Notifications submitted as online warranty claims must provide detailed descriptions of the fault and troubleshooting steps taken to diagnose failed parts. Warranty claims that lack the required information as defined in the Miller Service Operation Guide (SOG) may be denied by Miller.

Miller shall honor warranty claims on warranted equipment listed below in the event of a defect within the warranty coverage time periods listed below. Warranty time periods start on the delivery date of the equipment to the end-user purchaser.

1 5 Years Parts — 3 Years Labor

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

2 4 Years Parts (No Labor)

- Auto-Darkening ClearLight 2.0 and 4x Helmet Lenses

3 3 Years — Parts and Labor Unless Specified

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

4 2 Years — Parts and Labor

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

5 1 Year — Parts and Labor Unless Specified

- ArcReach Heater
- AugmentedArc, LiveArc, and MobileArc Welding Systems
- Automatic Motion Devices
- Bernard BTB Air-Cooled MIG Guns (No Labor)
- CoolBelt, PAPR Blower, and PAPR Face Shield (No Labor)
- Desiccant Air Dryer System

- Field Options **(NOTE: Field options are covered for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)**

- RFCS Foot Controls (Except RFCS-RJ45)
- Fume Extractors - Filtair 130, MWX and SWX Series, Standard, Telescopic, and ZoneFlow Extraction Arms and Motor Control Box
- Handheld Laser Torches (No Labor)
- HF Units
- Induction Heating Power Sources, Coolers **(NOTE: Digital Recorders are Warranted Separately by the Manufacturer.)**
- Insight Sensors
- Laser Welding Helmets (No Labor)
- Load Banks
- MDX Series MIG Guns (No Labor)
- Motor-Driven Guns
- Positioners and Controllers
- Racks (For Housing Multiple Power Sources)
- Running Gear/Trailers
- Spoolmate Spoolguns (No Labor)
- Subarc Wire Drive Assemblies
- Supplied Air Respirator (SAR) Boxes and Panels
- TIG Torches (No Labor)
- Tregaskiss Guns (No Labor)
- Water Cooling Systems
- Wireless Remote Foot/Hand Controls and Receivers
- Work Stations/Weld Tables/Weld Booths (No Labor)
- XT Plasma Cutting Torches (No Labor)

6 6 Months — Parts

- 12 Volt Automotive-Style Batteries

7 90 Days — Parts

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

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

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

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

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

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

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

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

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

Warranty Questions?

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

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

Support

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

Owner's Record

Please complete and retain with your personal records.

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

For Service

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

Always provide Model Name and Serial/Style Number.

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