FABRICATOR 130
MIG Welding Machine

For the Following Spec:
• 100038A-1
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INTRODUCTION

How To Use This Manual

This Owner’s Manual usually applies to just the underlined specification or part numbers listed on the cover. If none are underlined, they are all covered by this manual.

To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings.

Throughout this manual, the word WARNING, CAUTION, and NOTE may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

- **WARNING** gives information regarding possible personal injury. Warnings will be enclosed in a box such as this.

- **CAUTION** refers to possible equipment damage. Cautions will be shown in bold type.

- **NOTE** offers helpful information concerning certain operating procedures. Notes will be shown in italics.

Equipment Identification

The unit’s identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the machine. Equipment which does not have a nameplate attached to the machine is identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

Receipt Of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to Thermal Arc, Order Department, 2200 Corporate Drive, Troy, Ohio 45373-1085. Include all equipment identification numbers as described above along with a full description of the parts in error.

Additional copies of this manual may be purchased by contacting Thermal Arc at the address given above. Include the Owner’s Manual number and equipment identification numbers.
ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

**WARNING**

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

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

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain of the practices apply to equipment connected to power lines; other practices apply to engine driven equipment.

Safe practices are outlined in the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions.

**HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.**

**ELECTRIC SHOCK** can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner’s Manual and national, state, and local codes.

6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.

**ARC RAYS** can burn eyes and skin; **NOISE** can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high.

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**Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A6.2-73.**

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WELDING can cause fire or explosion. Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
11. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

FLYING SPARKS AND HOT METAL can cause injury. Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.

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

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

ENGINES can be hazardous. ENGINE EXHAUST GASES can kill. Engines produce harmful exhaust gases.

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.
ENGINE FUEL can cause fire or explosion.

Engine fuel is highly flammable.
1. Stop engine before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.
3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job.
4. Do not overfill tank — allow room for fuel to expand.
5. Do not spill fuel. If fuel is spilled, clean up before starting engine.

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.
1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

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

Batteries contain acid and generate explosive gases.
1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and –) on batteries.

STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.
The coolant in the radiator can be very hot and under pressure.
1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape before completely removing cap.

WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Sec. 25249.5 et seq.)

NOTE: Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, Biological Effects of Power Frequency Electric & Magnetic Fields — Background Paper, OTA-BP-E-63 (Washington, DC: U.S. Government Printing Office, May 1989): "... there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks.”

To reduce magnetic fields in the workplace, use the following procedures:
1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away from body as practical.

About Pacemakers:
The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

PRINCIPAL SAFETY STANDARDS


National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Battery March Park, Quincy, MA 02269.


Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Battery March Park, Quincy, MA 02269.
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**PRECAUTIONS DE SECURITE EN SOUDAGE A L’ARC**

**MISE EN GARDE**

**LE SOUDAGE A L’ARC EST DANGEREUX**

PROTEGEZ-VOUS, AINSI QUE LES AUTRES, CONTRE LES BLESSURES GRAVES POSSIBLES OU LA MORT. NE LAISSEZ PAS LES ENFANTS S’APPROCHER, NI LES PORTEURS DE STIMULATEUR CARDIAQUE (A MOINS QU’ILS N’AIMENT CONSULTER UN MEDECIN). CONSERVEZ CES INSTRUCTIONS. LISEZ LE MANUEL D’OPERATION OU LES INSTRUCTIONS AVANT D’INSTALLER, UTILISER OU ENTREtenir CET EQUIPEMENT.

Les produits et procédés de soudage peuvent causer des blessures graves ou la mort, de même que des dommages au reste du matériel et à la propriété, si l’utilisateur n’adhère pas strictement à toutes les règles de sécurité et ne prend pas les précautions nécessaires.

En soudage et copiage, des pratiques sécuritaires se sont développées suite à l’expérience passée. Ces pratiques doivent être apprises par étude ou entraînement avant d’utiliser l’équipement. Toute personne n’ayant pas suivi un entraînement intensif en soudage et copiage ne devrait pas tenter de soudier. Certaines pratiques concernent les équipements raccordés aux lignes d’alimentation alors que d’autres s’adressent aux groupes électrogènes.

La norme Z49.1 de l’American National Standard, intitulée “SAFETY IN WELDING AND CUTTING” présente les pratiques sécuritaires à suivre. Ce document ainsi que d’autres guides que vous devriez connaître avant d’utiliser cet équipement sont présentés à la fin de ces instructions de sécurité.

**SEULES DES PERSONNES QUALIFIEES DOIVENT FAIRE DES TRAVAUX D’INSTALLATION, DE REPARATION, D’ENTRETIEN ET D’ESSAI.**

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**L’ELECTROCUTION PEUT ETRE MORTELLE.**

Une décharge électrique peut tuer ou brûler grave-ment. L’électrode et le circuit de soudage sont sous tension dès la mise en circuit. Le circuit d’alimentation et les circuits internes de l’équipement sont aussi sous tension dès la mise en marche. En soudage automatique ou semi-automatique avec fil, ce dernier, le rouleau ou la bobine de fil, le logement des galets d’entraînement et toutes les pièces métalliques en contact avec le fil de soudage sont sous tension. Un équipement inadéquatement installé ou inadéquatement mis à la terre est dangereux.

1. Ne touchez pas à des pièces sous tension.
2. Portez des gants et des vêtements isolants, secs et non troués.
3. Isolier le circuit à soudier et de la mise à la terre au moyen de tapis isolants ou autres.
5. Veillez à installer cet équipement et à le mettre à la terre selon le manuel d’utilisation et les codes nationaux, provinciaux et locaux applicables.

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**LE RAYONNEMENT DE L’ARC PEUT BRÜLER LES YEUX ET LA PEAU: LE BRUIT PEUT ENDOMMAGER L’OUÏE.**

L’arc de soudage produit une chaleur et des rayons ultraviolets intensifs, susceptibles de brûler les yeux et la peau. Le bruit causé par certains procédés peut endommager l’ouïe.

1. Portez une casque de soudier avec filtre oculaire de nuance appropriée (consultez la norme ANSI Z49 indiquée ci-après) pour vous protéger le visage et les yeux lorsque vous soudez ou que vous observez l’exécution d’une soudure.
3. Entourez l’aire de soudage de rideaux ou de cloisons pour protéger les autres des coups d’arc ou de l’éblouissement; avertissez les observateurs de ne pas regarder l’arc.
4. Portez des vêtements en matériaux ignifuges et durables (laine et cuir) et des chaussures de sécurité.
5. Portez un casque antibruit ou des bouchons d’oreille approuvés lorsque le niveau de bruit est élevé.
## Sélection des nuances de filtres oculaires pour la protection des yeux en coupage et soudage

( selon AWS A 8.2-73 )

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<tr>
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<td>toutes conditions</td>
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<tr>
<td>Oxycoupage</td>
<td>moins de 1 po. (25 mm)</td>
<td>2 ou 3</td>
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<td></td>
<td>de 1 à 6 po. (25 à 150 mm)</td>
<td>4 ou 5</td>
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<td></td>
<td>plus de 6 po. (150 mm)</td>
<td>5 ou 6</td>
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<tr>
<td>Soudage aux gaz</td>
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<td>4 ou 5</td>
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<tr>
<td></td>
<td>de 1/8 à 1/2 po. (3 à 12 mm)</td>
<td>5 ou 6</td>
</tr>
<tr>
<td></td>
<td>plus de 1/2 po. (12 mm)</td>
<td>6 ou 8</td>
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<td>Soudage à l'arc avec</td>
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<td>mince</td>
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**Precautions de sécurité en soudage à l'arc**

Instruction 830002

1. Eloignez la tête des fumées pour éviter de les respirer.
2. À l'intérieur, assurez-vous que l’aire de soudage est bien ventilée ou que les fumées et les vapeurs sont aspirées à l’arc.
3. Si la ventilation est inadéquate, portez un respirateur à adduction d'air approuvé.
4. Lisez les fiches signalétiques et les consignes du fabricant relatives aux métaux, aux produits consummables, aux revêtements et aux produits nettoyants.
5. Ne travaillez dans un espace confiné que s’il est bien ventilé; sinon, portez un respirateur à adduction d’air. Les gaz protecteurs de soudage peuvent déplacer l’oxygène de l’air et ainsi causer des maux ou la mort. Assurez-vous que l’aération est propice à la respiration.
6. Ne soudez pas à proximité d’opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l’arc peuvent réagir avec des vapeurs et former des gaz toxiques et irritants.
7. Ne soudez des tôles galvanisées ou plaquées au plomb ou au cadmium que si les zones à souder sont bien égales à fond, que si l’espace est bien ventilé; si nécessaire portez un respirateur à adduction d’air. Car ces revêtements et tout métal qui contient ces éléments peuvent dégager des fumées toxiques au moment du soudage.

Les vapeurs et les fumées sont dangereuses pour la santé.
LE SOUDAGE PEUT CAUSER UN INCENDIE OU UNE EXPLOSION
L’arc produit des étincelles et des projections. Les particules volantes, le métal chaud, les projections de soudure et l’équipement surchauffé peuvent causer un incendie et des brûlures. Le contact accidentel de l’électrode ou du fil-électrode avec un objet métallique peut provoquer des étincelles, un échauffement ou un incendie.
1. Protégez-vous, ainsi que les autres, contre les étincelles et du métal chaud.
2. Ne soudez pas dans un endroit où des particules volantes ou des projections peuvent atteindre des matériaux inflammables.
3. Enlevez toutes matières inflammables dans un rayon de 10, 7 mètres autour de l’arc, ou couvrez-les soigneusement avec des bâches approuvées.
4. Méfiez-vous des projections brulantes de soudage susceptibles de pénétrer dans des aires adjacentes par de petites ouvertures ou fissures.
5. Méfiez-vous des incendies et gardez un extincteur à portée de la main.
6. N’oubliez pas qu’une soudure réalisée sur un plafond, un plancher, une cloison ou une paroi peut enflammer l’autre côté.
7. Ne soudez pas un récipient fermé, tel un réservoir ou un baril.
8. Connectez le câble de soudage le plus près possible de la zone de soudage pour empêcher le courant de suivre un long parcours inconnu, et prévenir ainsi les risques d’électrocution et d’incendie.
9. Ne dégelez pas les tuyaux avec un source de courant.
10. Otez l’électrode du porte-électrode ou coupez le fil au tube-contact lorsqu’inutilisé après le soudage.
11. Portez des vêtements protecteurs non huileux, tels des gants en cuir, une chemise épaisse, un pantalon revers, des bottines de sécurité et un casque.

LES ETINCELLES ET LES PROJECTIONS BRULANTES PEUVENT CAUSER DES BLESSURES.
Le piquage et le meulage produisent des particules métalliques volantes. En refroidissant, la soudure peut projeter des éclats de laitier.
2. Portez des vêtements appropriés pour protéger la peau.

LES BOUTEILLES ENDOMMAGEES PEUVENT EXPLOSER
1. Protégez les bouteilles de gaz comprimé contre les sources de chaleur intense, les chocs et les arcs de soudage.
2. Enchaînez verticalement les bouteilles à un support ou à un cadre fixe pour les empêcher de tomber ou d’être renversées.
3. Eloignez les bouteilles de tout circuit électrique ou de tout soudage.
4. Empêchez tout contact entre une bouteille et une électrode de soudage.
5. N’utilisez que des bouteilles de gaz protecteur, des détendeurs, des boyaux et des raccords conçus pour chaque application spécifique; ces équipements et les pièces connexes doivent être maintenus en bon état.
6. Ne placez pas le visage face à l’ouverture du robinet de la bouteille lors de son ouverture.
7. Laissez en place le chapeau de bouteille sauf si en utilisation ou lorsque raccordé pour utilisation.
8. Lisez et respectez les consignes relatives aux bouteilles de gaz comprimé et aux équipements connexes, ainsi que la publication P-1 de la CGA, identifiée dans la liste de documents ci-dessous.

MISE EN GARDE
LES GAZ D’ÉCHAPPEMENT DES MOTEURS PEUVENT ETRE MORTELS.
Les moteurs produisent des gaz d’échappement nocifs.
1. Utilisez l’équipement à l’extérieur dans des aires ouvertes et bien ventilées.
2. Si vous utilisez ces équipements dans un endroit confiné, les fumées d’échappement doivent être envoyées à l’extérieur, loin des prises d’air du bâtiment.

LE CARBURANT PEUT CAUSER UN INCENDIE OU UNE EXPLOSION.
Le carburant est hautement inflammable.
1. Arrêtez le moteur avant de vérifier le niveau de carburant ou de faire le plein.
2. Ne faites pas le plein en fumant ou proche d’une source d’étincelles ou d’une flamme nue.
3. Si c’est possible, laissez le moteur refroidir avant de faire le plein de carburant ou d’en vérifier le niveau au début du soudage.
4. Ne faites pas le plein de carburant à ras bord; prévoyez de l’espace pour son expansion.
5. Faites attention de ne pas renverser de carburant. Nettoyez tout carburant renversé avant de faire démarrer le moteur.
**PRÉCAUTIONS DE SECURITE EN SOUDAGE A L’ARC**

**Instruction 830002**

<table>
<thead>
<tr>
<th>DES PIECES EN MOUVEMENT PEUVENT CAUSER DES BLESSURES.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Des pièces en mouvement, tels des ventilateurs, des rotors et des courroies peuvent couper doigts et mains, ou accrocher des vêtements amples.</td>
</tr>
<tr>
<td>1. Assurez-vous que les portes, les panneaux, les capots et les protecteurs soient bien fermés.</td>
</tr>
<tr>
<td>2. Avant d’installer ou de connecter un système, arrêtez le moteur.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DES ETINCELLES PEUVENT FAIRE EXPLOSER UN ACCUMULATEUR; L’ELECTROLYTE D’UN ACCUMULATEUR PEUT BRULER LA PEAU ET LES YEUX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Les accumulateurs contiennent de l’électrolyte acide et dégagent des vapeurs explosives.</td>
</tr>
<tr>
<td>1. Portez toujours un écran facial en travaillant sur un accumulateur.</td>
</tr>
<tr>
<td>2. Arrêtez le moteur avant de connecter ou de déconnecter des câbles d’accumulateur.</td>
</tr>
<tr>
<td>3. N’utilisez que des outils anti-étincelles pour travailler sur un accumulateur.</td>
</tr>
<tr>
<td>4. N’utilisez pas une source de courant de soudage pour charger un accumulateur ou survoler momentanément un véhicule.</td>
</tr>
<tr>
<td>5. Utilisez la polarité correcte (+ et –) de l’accumulateur.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LA VAPEUR ET LE LIQUIDE DE REFROIDISSEMENT BRULANT SOUS PRESSION PEUVENT BRULER LA PEAU ET LES YEUX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Le liquide de refroidissement d’un radiateur peut être brûlant et sous pression.</td>
</tr>
<tr>
<td>1. N’ôtez pas le bouchon de radiateur tant que le moteur n’est pas refroidi.</td>
</tr>
<tr>
<td>3. Laissez la pression s’échapper avant d’ôter complètement le bouchon.</td>
</tr>
</tbody>
</table>

**PRINCIPALES NORMES DE SECURITE**

- National Electrical Code, norme 70 NFPA, National Fire Protection Association, Battery March Park, Quincy, MA 02269.

- Code for Safety in Welding and Cutting, norme CSA W117.2 Association canadienne de normalisation, Standards Sales, 276 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.
- Cutting and Welding Processes, norme 51B NFPA, National Fire Protection Association, Battery March Park, Quincy, MA 02269.
DESCRIPTION OF EQUIPMENT

General

The Thermal Arc Fabricator 130 Machine is a 130-Amp single-phase input welding machine which comes equipped with the following:

1. Built-in Wire Feeder and Wire Spool Hub
2. Quick Connect Welding Gun and Cable (10 Foot Length)
3. Work Cable and Clamp
4. Input Cord
5. Spare Parts Kit (3 tips)

The welding system is designed for use with the following processes:

1. GMAW – Gas metal arc welding (MIG). Requires the use of a shielding gas and regulator.
2. FCAW – Flux-cored arc welding – Does not require the use of a shielding gas.

As delivered from the factory, the welding machine is set up for .024" diameter solid wire. The feed roll in the unit also contains a groove for .030/.035 wire. Optional kits are available to convert the gun and feed system to use the following wires. Refer to the OPTIONAL EQUIPMENT LIST included in this manual.

1. .030" Solid and Self-Shielding Wire (Mild Steel and Stainless Steel)
2. .035" Solid and Self-Shielding Wire (Mild Steel and Stainless Steel)
3. .035" Aluminum (5356)

Rated Conditions

1. Rated output amperage ........... 90 amps DC
   CSA output amperage ............. 62 amps DC
2. Rated output voltage ............. 18.5 volts DC
   CSA output voltage ............... 20 volts DC
3. Rated duty cycle ................... 20%
   CSA duty cycle ..................... 20%
4. Maximum open circuit voltage ...... 30.0 volts
5. Output Amperage Range ...... 30 – 130 amps
6. Input voltage rating .............. 115 volts AC
7. Input current at rated load .......... 20 amps
   CSA input current at CSA load ...... 15 amps

Weight – 60 Lbs. (27 Kg) (includes gun and cables)

Figure 3-1 Specification
8. Input Frequency-phases – ............................................. 60 Hz, single phase
9. Input kva at rated load................................. 2.3 kva
10. Welding gun length.................. 10 ft. (3.1 m)
11. Input cord length............... 6.0 ft. (1.83 m)
12. Shielding gas................................. CO2 or C25
13. Maximum wire spool size ......8 in. (203 mm)
14. Work cable length................... 10 ft. (3.05 m)

Miscellaneous Features
1. The power source contains output welding terminals to conveniently change the polarity of the welding output.
2. A thermal overload device will turn the machine off automatically if the duty cycle of the machine is exceeded or if the machine overheats for any reason. It automatically resets after the machine has cooled.
3. The unit will accept the following spool sizes:
   a. 1 or 2 lb. spool (4” in diameter)
   b. 10 lb. spool size (8” in diameter)
4. The unit can be lifted by the handle extending from front to rear.

Description Of Control/Outlets
(Power Source And Wire Feeder)
(See Figure 3-2)
1. Wire Feed Speed Control – Adjusts the wire feed speed which changes the welding amperage.
2. Weld Voltage Range Switch – Selects voltage setting. 4 steps (ranges) are provided; 1 through 4. A purge “0” setting is provided which turns off the welding output but allows the cooling fan to run.
3. Input Power Switch – Turns the input power on or off.
5. Feedhead Assembly – The wire threads through this assembly and is driven through the gun with the motor-driven feed roll.
6. Negative (-) Welding output terminal.

Figure 3-2

9. Gun Switch Connector – Gun switch leads connect at this point.

10. Quick Disconnect Gun Inlet Hole – Weld power gun connector inserts through this hole and into the gun connector and wire guide adaptor and into the feedhead assembly. Gun Switch Leads are routed through this hole.

11. Work cable and Clamp – Connects to item being welded.

12. Gas Valve – Controls the flow of shielding gas when using the GMAW process. It is not used with the FCAW process.

13. Identification Nameplate – Located on rear of machine.

**Volt-Ampere Curves**

(Figure 3-3)

The volt-ampere curves show the minimum and maximum voltage and amperage output capabilities of the unit.

![Figure 3-3 Volt-Ampere Curves](image-url)
Duty Cycle
(Figure 3-4)

Duty cycle is the percentage of each ten-minute period of time that the welding machine may be operated under rated load conditions. For example, a duty cycle of 30% means that the machine can be operated at rated load for an average of 3 minutes of each 10 minute period of operation. During the remaining 7 minutes, the machine must idle to permit proper cooling. Figure 3-4 enables the operator to determine the duty cycle at various welding amperages.

Figure 3-4 Duty Cycle Chart
Introduction

The TWECO MINI-MIG-GUN fitted to the Fabricator 130 offers robust construction, unparalleled reliability and easy replacement of consumable parts. The TWECO MINI-MIG-GUN has an operating capacity in excess of the capacity of the Fabricator and can be expected to give trouble free service. The gun is available in 10 Ft. (3048 m.m.) length and connects to the power source by a quick-disconnect (.472) fitting.

TWECO MIG guns may be fitted to many different types of MIG welding Power Supplies so that your whole shop can be converted to TWECO. Not only will this give greater reliability (and hence greater productivity), but it will reduce stockholding of consumable parts. See your THERMAL ARC distributor for details.

<table>
<thead>
<tr>
<th>Item</th>
<th>TWECO Part No.</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21-50-F</td>
<td>Nozzle</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>11-35</td>
<td>Contact tip</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>35-50</td>
<td>Gas diffuser</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>35-60-60</td>
<td>Conductor tube – 60° angle is standard</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>35-80A-1</td>
<td>Handle cap</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>35-90</td>
<td>Trigger</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>94D-1</td>
<td>screw</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>44C</td>
<td>Set screw</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>23-40-15</td>
<td>Conduit</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>44-25</td>
<td>5/64 Hex wrench</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3-1 Mig Gun Components
Installing A New Wire Conduit

a) Be sure the MINI-MIG-GUN cable is arranged in a straight line, free from twists, when installing or removing a wire conduit. Remove the old conduit by first removing the gun’s nozzle, contact tip and gas diffuser. Then loosen Allen screw in the connector plug and pull the old wire conduit out of the cable assembly from the connector plug end.

b) To install a new wire conduit, first inspect the o-ring gas seal on the conduit for cuts or damage. Start from the connector plug end of the assembly and begin pushing the conduit through the connector plug, cable assembly and into the gun. If the conduit should lodge along the way, gently whip or work the cable assembly to aid forward movement.

c) When the wire conduit stop meets the end of the connector plug and the new raw end extends through the end of the conductor tube, the Allen screw in the connector plug must be securely tightened onto the conduit to prevent its backward movement.

NOTE: When the conduit is fully inserted into the cable assembly and the conduit stop is firmly against the Connector Plug, the “raw end” of the conduit will protrude out of the open end of the gun conductor tube. Trim the conduit as shown in Figure 3-6. The trimmed end which seats in the Gas Diffuser must be filed and reamed smooth on the inside and outside radii so wire feed will not be obstructed.

d) Replace Gas Diffuser, Contact Tip, and Nozzle.

MIG Gun Maintenance

Remove dust and metallic particles from the gun conduit by forcing clean, dry compressed air into the conduit once a week. This will minimize wire feeding problems.

Figure 3-6 Conduit Trim Length
Figure 3-7 Functional Block Diagram
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INSTALLATION

Location
For best operating characteristics and longest unit life, take care in selecting an installation site. Avoid locations exposed to high humidity, dust, high ambient temperature, or corrosive fumes. Moisture can condense on electrical components, causing corrosion or shorting of circuits. Dirt on components helps retain this moisture and also increases wear on moving parts.

Adequate air circulation is needed at all times in order to assure proper operation. Provide a minimum of 12 inches (305 mm) of free air space at both front and rear of the unit. Make sure that the ventilator openings are not obstructed.

Safety
Refer to additional installation instructions under the SAFETY INSTRUCTIONS AND WARNINGS chapter included in this manual.

Grounding
The internal frame of this welding machine should be grounded for personnel safety. Where grounding is mandatory under state or local codes, it is the responsibility of the user to comply with all applicable rules and regulations. Where no state or local codes exist, it is recommended that the National Electrical Code be followed.

Electrical Input Requirements
Plug the input cord into a properly grounded and protected (fuse or circuit breaker) 115 V AC receptacle capacity for handling a minimum of 20 amperes.

CAUTION: Consult nameplate for proper input voltage and input amperage. The method of installation, conductor size, and overcurrent protection shall conform to the requirements of the local electrical code. All installation wiring and machine connection shall be done by a competent electrician.

The National Electrical Code (Article 630B., 1984 Edition) provides standards for amperage handling capability of supply conductors based on the duty cycle of the welding power source. This unit has a 20% duty cycle (3 minutes of every 10 minutes can be used for welding); therefore the cord supplied with this unit complies with these standards. Ensure that the building supply and receptacle comply with NEC standards and any additional state and local codes.

NOTE: The supply wiring for the welding power source must be capable of handling a minimum of 20 amps. The welding power source must be the only load connected to the supply circuit. Poor unit performance or frequently opening line fuses or circuit breakers can result from an inadequate or improper supply.

NOTE: Use Table 4-1 for selection of the minimum wire size for extension cords.

Table 4-1

<table>
<thead>
<tr>
<th>WIRE SIZE</th>
<th>LENGTH OF EXTENSION CORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>50 FEET OR LESS</td>
</tr>
<tr>
<td>12</td>
<td>50 FEET TO 200 FEET</td>
</tr>
</tbody>
</table>

CAUTION: Do not connect the FABRICATOR 130 to an input power supply with a rated voltage that is greater than 125 volts. Do not remove the power cord ground prong.

Requirements For Maximum Output
In order to obtain the maximum output capability of the FABRICATOR 130, a branch circuit capable of 25 amps at 115 to 125 volts, 60 Hertz is required. This generally applies when welding steel that is equal to or greater than 12 gauge, 0.105" (2.5mm) in thickness.
The rated output with this installation is 90 amps, 18 Volts, 20% duty cycle (2 minutes of every 10 minutes used for welding).

### Installation Of Shielding Gas (GMAW) Process

See Figure 4-1

**NOTE:** Shielding gas is not required if unit is used with the FCAW (flux cored arc welding) process. The shielding gas cylinder, regulator/flowmeter and gas hose are not included as part of the welding package. Contact your local Thermal Arc distributor.

**GAS CYLINDER** – Two types of gas are generally used with Gas Metal Arc Welding (GMAW) of thin gauge sheet steel. Carbon dioxide (CO₂) is the gas recommended for use with this welding power source/gun combination. A mixture of 75 percent argon and 25 percent carbon dioxide (C₂5) also can be used. Obtain a cylinder of selected shielding gas.

Chain the cylinder to a wall or other support to prevent the cylinder from falling over. If an optional portable mounting is used, follow the instructions provided with it.

**REGULATOR/FLOWMETER** – Regulator/flowmeters provide a constant shielding gas pressure and flow rate during the welding process. Because gases have different properties, each regulator/flowmeter is designed to be used with a specific gas or mixture of gases. Regulator/flowmeters cannot be changed from one gas to another unless the proper adapters are installed. Be sure to obtain the proper regulator/flowmeter for the type of gas used.
With the cylinder securely installed, remove the cylinder cap, stand to one side of cylinder valve, and open valve slightly. When gas is emitted from cylinder, close valve. This will blow out dust or dirt that may have accumulated around the valve seat.

The regulator/flowmeter must be properly equipped with a stem, nut connectors, and gasket for use with either CO₂ cylinders or inert gas type cylinder.

Install gas regulator/flowmeter onto gas cylinder valve; keep the face of the regulator/flowmeter gauge in vertical position and tighten stem nut securely to gas cylinder valve.

GAS HOSE – Obtain good quality 5/8 in. (16 mm) O.D. S.A.E. gas hose, and install 5/8-18 right-hand thread fittings on both ends of hose.

Install one end of gas hose to fitting on rear of welding power source. Install remaining end of gas hose to fitting on regulator/flowmeter. Be sure the gas hose is not kinked or twisted.

Attaching The Gun And Cable Assembly To Power Source

1. Open the door on the machine.

2. Connect the gun cable to the power source by routing the gun switch leads, and the gun cable through the round access hole in the front panel.

3. Connect the gun switch leads to the gun switch receptacle and connect the gas line to the barbed fitting on the end of the gun cable. See Figure 4-3.

4. Insert the gun cable end into the feed head assembly. Find the 6mm hex bolt in the spare parts kit. Thread the 6mm bolt thru the red weld lead and into the gun cable assembly and secure. Secure the 6mm screw in the feed head.

NOTE: The liner spring will be installed in the cable, and secured in place with a set screw. See the Gun Manual supplied with the gun. The procedure for replacing the liner spring will be found under the Spring Liner Replacement section in the Installation chapter of the Gun Manual.

5. When assembling gun and cable to the welding machine, take note of the following:

A. Lubricate the O-ring [see Parts List chapter of the Gun Manual] on the quick-connect fitting with grease (Dow Company #4 compound or equivalent, or Thermal Arc #903910).

B. When disconnecting gun switch leads from the machine, grab the connectors and pull; do not pull on the wires.

6. To remove the gun, simply reverse these directions.

Threading Wire Into The Feedhead And Welding Gun

WARNING: ELECTRIC SHOCK CAN KILL! Make certain the machine is unplugged from the power receptacle. Do not plug machine in until told to do so in these instructions.

INSTALLATION OF WELDING WIRE SPOOL 8" IN DIAMETER (See Figure 4-3)

1. Open the door on the machine.

2. Remove all packing from the spool of wire.

3. Remove the retaining pin from the hub.

4. Slide the wire spool onto the hub, loading it so that the wire will feed off of the spool as the spool rotates counterclockwise.

5. Make sure that the locating pin on the spool hub lines up with the hole in the spool.

6. When spool of wire is in place, replace the retaining pin.

NOTE: The hub tension has been preadjusted at the factory. However if adjustment is required, simply rotate wing nut counterclockwise to reduce tension and clockwise to increase tension.
INSTALLATION OF WELDING WIRE SPOOL 4" IN DIAMETER WITH 5/8" HOLE (See Figure 4-4)

1. Open the door on the machine.

2. Remove the wire spool retaining pin item (69). Remove the 8 inch spool hub from the metal hub shaft item (65). This is done by removing the wing nut, washers and spring (66), (68), (70), and (70). Remove the spool hub (64) and the spool hub friction washer (109).

3. Store the spool hub, friction washer, and spool hub retaining pin in the bottom of the machine toward the rear.

4. Reinstall the washers and spring in the following order:
   A. 5/8" Dia. steel washer (70)
   B. Spring (68)
   C. 5/8 dia. steel washer (70)

5. Slide the 4" spool of wire onto the metal shaft loading it so the wire will feed off the spool as the spool rotates counterclockwise.

6. Reinstall the nylon washer (66) next, then the wingnut (67).

7. Tighten the wingnut to get the desired spool tension.

THREADING WIRE (See Figure 4-3)

CAUTION: Use care in handling the spooled wire as it will tend to “unravel” when loosened from the spool. Grasp the end of the wire firmly, and don’t let go of it. Make sure end of wire is free of any burrs, and is straight.

1. Place end of wire into the Input Wire Guide, feeding it through the rear guide and over the drive roll groove. Make certain the proper groove is being used.

   NOTE: It is best if the Drive Roll Pressure Arm is in the “UP” position, when threading the wire into the feedhead.

The drive roll consists of two different sized grooves. As delivered from the factory, the drive roll is installed to feed .024/.030 inch diameter wire. As shown in Figure 4-2, the stamped marking on the end surface of the drive roll refers to the groove on the opposite side of the drive roll. The groove closest to the motor is the proper groove to thread.

This also applies to any optional drive roll for other wire sizes. To change the drive roll, simply remove the restraining screw, and reinstall drive roll with proper groove next to motor.

CAUTION: When changing feed rolls, make sure the Woodruff key is on the motor shaft and not in the old feed roll.

2. Pass the wire into the Wire Adapter Guide and into Gun Liner.

3. Close the Drive Roll Pressure Arm, and lock in position. Tighten plastic nut on pressure arm to a “snug” condition.

4. Plug the welding power source into 115-volt receptacle.

WARNING: ELECTRIC SHOCK CAN KILL! With the gun switch (located on the gun) activated, welding power is applied to the output terminals, feed roll, ground clamp, gun cable connection and welding wire. Do not touch these parts with the gun switch activated.

5. Turn the welding machine ON with the power switch on the front panel; set the Wire Feed Speed to “5”. Set the weld voltage range switch to 1, 2, 3, or 4. Straighten the gun cable out. Activate the gun switch until the wire feeds out past the gun nozzle. Cut off wire within 1/4-inch (6 mm) from the nozzle.
Figure 4-3 Threading Wire Into Feedhead and Gun

Figure 4-4 Installation of 4 Inch Spool
WARNING: If ground connection clamp is in place on the workpiece, the wire will arc with the workpiece. The electrode is electrically “hot” when gun switch is activated.

6. Turn the Welding Machine OFF and unplug input cord.

### Polarity Changeover

(See Figure 4-5)

As delivered from the factory, the output polarity is connected for DCEP (reverse polarity). See Table 4-2 and Figure 4-5 for proper connections of cables to output terminals. The output terminals are located inside the door on the interior panel of the power source.

<table>
<thead>
<tr>
<th>PROCESS</th>
<th>POLARITY</th>
<th>CABLE CONNECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GMAW – Solid Wire with shielding Gas</td>
<td>1. DCEP – Reverse Polarity</td>
<td>1. Connect to (+) pos. output terminal</td>
</tr>
<tr>
<td>2. FCAW – Self-shielding Wire – No Shielding Gas</td>
<td>2. DCEN – Straight Polarity</td>
<td>2. Connect to (–) neg. output terminal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CABLE TO GUN</th>
<th>CABLE TO WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Connect to (–) neg. output terminal</td>
<td>1. Connect to (+) pos. output terminal</td>
</tr>
</tbody>
</table>

Table 4-2 Polarity Changeover

![Figure 4-5 Polarity Changeover](image)
General

**WARNING: ELECTRIC SHOCK CAN KILL!** Do not operate the machine with the door open.

**CAUTION:** Do not pull the machine with the gun. Damage can occur to the gun, gun liner and machine. Avoid bending the gun cable with a sharp radius. Damage can occur to the gun liner.

**Gas Metal-Arc Welding (GMAW)**

See Welding Guidelines chapter included in this manual.

1. Make all necessary connections as instructed in the Installation chapter.

2. Place the Weld Voltage Range Switch (see Figure 3-2) at the desired setting.

   **CAUTION:** Do not turn weld voltage range switch clockwise past position 4. Damage can occur to the switch.

3. Rotate the WIRE SPEED Control to the desired position.

4. Plug the input cord into a 115-volt, 20-Amp receptacle.

5. Open the gas cylinder valve to supply shielding gas to the gun.

6. Connect the WORK clamp to the workpiece (material to be welded).

7. Place the welding machine Power ON/OFF switch on the ON position.

8. Extend wire from gun, and cut to proper stickout for that type wire (when welding, always maintain this distance). See Figure 8-7 in Welding Guidelines chapter of this manual.

9. Position gun to where it is at approximately right angles to the workpiece, with proper wire stickout, lower your welding helmet, and pull the gun switch (trigger).

**WARNING:** Be sure to put on proper protective clothing and eye safeguards (welding coat, apron, gloves, and welding helmet, with proper lenses installed). See Safety Instructions and Warnings chapter included in this manual. Neglect of these precautions may result in personal injury.

10. Travel at a speed to maintain a bead width from 1/8 to 1/4 inch, depending on the thickness of the material. For material that may require larger weldments, either change to a larger diameter filler wire, or use multi-pass beads. On some applications, it may be necessary to adjust the voltage range to stabilize the arc.

11. Upon completion of weld, release the gun switch trigger, raise your hood, and visually examine the weld.

**NOTE:** To help you overcome any problems that might arise, you will find useful information in the Welding Guidelines chapter, and in particular under the Welding Techniques section in that chapter.

**Flux-Cored Arc Welding (FCAW)**

Follow the same general procedure as with the GMAW process above. Shielding gas is not required for this process. For differences in the process, see Welding Guidelines chapter included in this manual. Also included is information to solve any problem related to the Flux-Cored Arc Welding process.

**Shutdown Procedures**

1. Close gas cylinder valve. (GMAW process only)

2. Press Gun Switch to vent gas line. (GMAW process only)

3. Place the welding machine Power ON/OFF Switch in the OFF position.
4. Unplug the machine.

**WARNING:** After releasing gun switch, the wire will remain electrically hot for several seconds.

Settings are approximate. Adjust as required.

### Welding Guide

Refer to Table 5-1 for the parameters for welding with the Fabricator 130 single-phase welding machine.

<table>
<thead>
<tr>
<th>MATERIAL TYPE</th>
<th>WELDING WIRE TYPE</th>
<th>WELDING WIRE SIZE</th>
<th>GAS (20 cfm)</th>
<th>POLARITY</th>
<th>CONTROL SETTINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILD STEEL</td>
<td>E70S-6</td>
<td>.023</td>
<td>CO2</td>
<td>DCEP</td>
<td>VOLTAGE 2 3 4 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75% ARGON 25% CO2 MIX</td>
<td></td>
<td>WIRE SPEED 6.5 7 8 8</td>
</tr>
<tr>
<td></td>
<td>E70S-6</td>
<td>.30</td>
<td>CO2 OR 75% ARGON 25% CO2 MIX</td>
<td>DCEP</td>
<td>VOLTAGE - 3 4 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WIRE SPEED - 6.5 7 7.5</td>
</tr>
<tr>
<td></td>
<td>E70S-6</td>
<td>.35</td>
<td>CO2 OR 75% ARGON 25% CO2 MIX</td>
<td>DCEP</td>
<td>VOLTAGE - - 4 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WIRE SPEED - 5.5 6 6.5</td>
</tr>
<tr>
<td></td>
<td>E71T-GE</td>
<td>.35</td>
<td>NONE</td>
<td>DCEN</td>
<td>VOLTAGE - 2 3 4 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WIRE SPEED - 5.5 6 7 7.5</td>
</tr>
<tr>
<td>STAINLESS STEEL</td>
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<td>.30</td>
<td>75% ARGON 25% CO2 MIX</td>
<td>DCEP</td>
<td>VOLTAGE - - 3 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WIRE SPEED - - 6.5 8.5</td>
</tr>
<tr>
<td>ALUMINUM</td>
<td>ER5356</td>
<td>.35</td>
<td>ARGON</td>
<td>DCEP</td>
<td>VOLTAGE - - 4 -</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WIRE SPEED - 8 10 -</td>
</tr>
</tbody>
</table>

CO2 = Carbon Dioxide  
C25 = 75% Argon 25% Carbon Dioxide

**Table 5-1**
MAINTENANCE OF POWER SOURCE

Cleaning Of The Unit
Periodically remove the right side panel and blow out the interior with clean, dry, compressed air of not more than 25 PSI air pressure. Do not strike any components with the air hose nozzle.

Cleaning Of The Drive Rolls
Clean the wire groove on the drive roll at frequent intervals. This cleaning operation can be done by using a small wire brush. To clean the wire groove, loosen the pressure nut and lift the drive roll pressure arm. Remove all wire from the feedhead. Wipe off the bearing roll (top roll).
Troubleshooting Guide

Fan motor runs slow; welding output low
Low primary voltage

Connect welding power source to proper input voltage.

Output normal; fan motor does not run
Fan motor defective

Contact authorized service center.

No output; fan motor does not run
Power switch not in “ON” position

Turn on power switch.

Line fuse open or circuit breaker tripped

Replace line fuse if necessary or reset circuit breaker.

No open-circuit voltage; fan motor runs - wire feed motor does not run
Gun trigger switch leads not connected

Connect leads.

Voltage selector switch set on purge or between numbered settings

Set switch on numbered range 1 through 4.

Overtemperature device has tripped

Allow machine to cool for several minutes and resume welding. Be sure fan is running and cooling inlets and outlets are not blocked for proper air flow.

Wire does not feed; fan motor runs and open-circuit voltage is normal
Wire feed motor circuit breaker tripped

Reset breaker and check for proper feedroll, wire, gun liner and contact tip installation and adjustment. (See gun maintenance instructions)

Wire speed control set too low

Increase wire feed speed setting.

Defective component

Contact authorized service.

Erratic weld output
Wrong Polarity connection

Connect for correct polarity. (See Figure 4-5 polarity changeover)
Loose connections on output terminals

Secure connections. (See Figure 4-5 polarity changeover)

Ground clamp loose at WORK connection

Check ground clamp for secure attachment.

Gun liner dirty

Check gun liner and replace if necessary. (See gun maintenance instructions)

Voltage and wire feed settings are not correct

Readjust as necessary. (Use Table 5-1 as a guide for settings)

Wire feed motor operates, but wire does not feed

Too little pressure on wire feed roll

Increase pressure adjustment.

Incorrect wire groove feedroll installed

Check wire size stamped on outside of feed roll. Match to wire size. See Figure 4-2.

Restriction in gun or cable assembly

Examine cable, gun, and current contact tip for damage and correct size. Make sure correct contact tip and liner is being used. Install new tip or liner if necessary.

Wire wraps around the drive roll

Too much feed roll pressure

Decrease the pressure adjustment on the drive roll pressure arm.

Incorrect liner or contact tip

Make sure that liner and/or contact tip is correct for the size of wire being fed.

Wire feeds but no gas flows

Gas hose not connected to rear of unit

Check all hose connections.

Gas cylinder valve not open or flow meter not adjusted

Open gas valve at cylinder and adjust flow meter.

Gas cylinder empty

Replace.

Restriction in gas line

Check gas hose between flow meter and machine, and gas hose in gun and cable assembly.

Gun nozzle plugged

Clean gun nozzle.

Gas solenoid valve defective

Contact authorized service center.
Welding current not stable

Wire slipping in rolls

Readjust pressure on the drive roll pressure arm.

Restriction in gun cable or gun

Check Welding Gun.

Wrong size liner or contact tip

Match liner and contact tip to electrode wire size.

Incorrect voltage adjustment for selected wire speed on the welding machine

Readjust. See Welding Guide in Operation chapter.

Loose connection on the welding leads or WORK table

Check and tighten all connections.

Incorrect polarity connection

Check polarity connection.

Jerky or erratic wire feeding

Liner dirty or damaged

Replace liner.

Worn or damaged contact tip

Replace contact tip.

Wrong groove used on drive roll

Use correct groove or correct drive roll.

Welding current stops during welding

Overtemperature device tripped

Allow machine to cool for several minutes and resume welding. Be sure cooling air flow openings are not blocked and fan is running.

Supply branch circuit breaker or fuses clear

Supply branch insufficient for weld settings. Reduce settings for lower welding current.
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WELDING GUIDELINES

General
Two different welding processes are covered in this section, with the intention of providing the very basic concepts in using the semiautomatic mode of welding, where a welding gun is hand-held, and the electrode (welding wire) is fed into a weld puddle, and the arc is shielded by a gas or gas mixture.

GAS METAL ARC WELDING (GMAW) – This process, also known as MIG welding, CO₂ welding, Micro Wire Welding, short arc welding, dip transfer welding, wire welding, etc., is an electric arc welding process which fuses together the parts to be welded by heating them with an arc between a solid continuous, consumable electrode and the work. Shielding is obtained from an externally supplied gas or gas mixture. The process is normally applied semiautomatically; however, the process may be operated automatically and can be machine operated. The process can be used to weld thin and fairly thick steels and some nonferrous metals in all positions.

FLUX-CORED ARC WELDING (FCAW) – This process, also known as Dual-Shielded, Innershield, FAB Shield, FabCO, etc., is an electric arc welding process which fuses together the parts to be welded by heating them with an arc between a continuous flux filled electrode wire and the work. Shielding is obtained through decomposition of the flux within the tubular wire. Additional shielding may or may not be obtained from an externally supplied gas or gas mixture. The process is normally applied semiautomatically, but can be applied automatically or by machine. It is commonly used to weld medium to thick steels using large diameter electrodes in the flat and horizontal position and small electrode diameters in all positions. The process is used to a lesser degree for welding stainless steel and for overlay work.

Weld Starting Procedure
Follow these instructions only after referring to the Safety Instructions and Warnings chapter of this manual, and instructions in the Installation chapter.

Check List Before Starting
POLARITY (DCEP – Direct Current Electrode Positive) or (DCEN – Direct Current Electrode Negative)
WIRE FEED SPEED (1 to 10)
VOLTAGE RANGE SETTING (1 thru 4)
GAS FLOW RATE (15 to 25 CFH)
NOTE: See Table on inside of the welding machine.
ELECTRODE WIRE STICKOUT – See Figure 8-7 or Welding Guide, Table 5-1.
Welding gun Positions

The welding gun should be held at an angle to the weld joint. See paragraph 3 in Secondary Adjustable Variables section following, and also Figures 8-3, 8-4, 8-5, 8-6, 8-7, 8-8, and 8-9.

Hold the gun so that the welding seam is viewed at all times. Always wear the welding helmet with proper filter lenses.

CAUTION: Do not pull the welding gun back when the welding arc is established. This will create excessive wire extension (stickout) and make a very poor weld.

The electrode wire is not energized until the gun switch trigger is depressed. The wire may therefore be placed on the seam or joint prior to lowering the helmet.

MIG Welding (GMAW) Variables

Most of the welding done by all processes is on carbon steel. The items below describe the welding variables in short-arc welding of 24 gauge to 1/4 inch mild sheet or plate. The applied techniques and end results in the GMAW process are controlled by these variables.

Preselected Variables

Preselected variables depend upon the type of material being welded, the thickness of the material, the welding position, the deposition rate and the mechanical properties. These variables are:

1. Type of electrode wire
2. Size of electrode wire
3. Type of gas (not applicable to self-shielding FCAW)
4. Gas flow rate (not applicable to self-shielding FCAW)

Tables 8-1, 8-2, and 8-3 are references for the new MIG welding process user.

Primary Adjustable Variables

These control the process after preselected variables have been found. They control the penetration, bead width, bead height, arc stability, deposition rate, and weld soundness. They are:

1. Arc voltage
2. Welding current (wire feed speed)
3. Travel speed

Secondary Adjustable Variables

These variables cause changes in primary adjustable variables which in turn cause the desired change in the bead formation.

They are:

1. Stickout (distance between the end of the contact tube [tip] and the end of the electrode wire). See Figure 8-7. Maintain about 3/8" (9.5 mm) stickout.
2. Wire Feed Speed. Increase in wire feed speed increases weld current. Decrease in wire feed speed decreases weld current.
3. Nozzle Angle. Refers to the position of the welding gun in relation to the joint, as shown in Figures 8-4 through 8-6, 8-8, and 8-9. The transverse angle is usually one-half the included angle between plates forming the joint. The longitudinal angle is the angle between the center line of the welding gun and a line perpendicular to the axis of the weld.

The longitudinal angle is generally called the nozzle angle, and is shown in Figure 8-9 as either trailing (pulling) or leading (pushing). Whether the operator is left-handed or right-handed has to be considered to realize the effects of each angle in relation to the direction of travel.

Establishing The Arc And Making Weld Beads

Before attempting to weld on a finished piece of work, it is recommended that practice welds be made on sample metal of the same material as that of the finished piece.

The easiest welding procedure for the beginner to experiment with in MIG welding is the flat position. The equipment is capable of flat, vertical, and overhead positions.

For practicing MIG welding, secure some pieces of 16 or 18-gauge mild steel plate 6 inches x 6 inches. Use .024 wire and CO₂ shielding gas.
Preweld Procedure

1. Check the Operation chapter of this manual for details on equipment.

2. Set the welding voltage range at position 1 or 2.

3. Set the Wire Feed Speed Control on about the number 4 setting. Readjust as necessary.

4. Adjust the gas flow rate to about 20 cubic feet per hour.

5. Recess the contact tip from the front edge of the nozzle from 0 to about 1/8 inch.


Welding Procedure

1. Maintain the tip-to-work distance (stickout) at 5/16 to 3/8 (8 to 9 mm) at all times. See Figure 8-7.

2. For transverse and longitudinal nozzle angles, see welding gun positions.

3. Hold the gun about 3/8 inch from the work, lower the helmet by shaking the head and squeeze the trigger to start the wire feeding, and establish the arc.

NOTE: It is the best practice to form the habit of shaking the helmet down, rather than using the hands, since one hand must hold the gun, and the other is often needed to hold pieces to be tacked or positioned.

4. Make a single downhand (pulling) stringer weld bead.

5. Practice welding beards. Start at one edge and weld across the plate to the opposite edge.

NOTE: When the equipment is properly adjusted, a rapidly cracking or hissing sound of the arc is a good indicator of correct arc length.

6. Practice stopping in the middle of the plate, re-starting into the existing crater and continuing the weld bead across the plate.

NOTE: When the gun trigger is released after welding, the electrode forms a ball on the end. To the new operator, this may present a problem in obtaining the penetration needed at the start. This can be corrected by cutting the ball off with wire cutting pliers.

Reference Tables

The following tables are provided for an aid to the user of the MIG or FLUX CORED Welding Mode. Also see Table 5-1 in the Operation chapter.

<table>
<thead>
<tr>
<th>WELDING WIRE SELECTION</th>
<th>THERMAL ARC DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTION AND APPLICATION</td>
<td>(.035)</td>
</tr>
<tr>
<td>A good general purpose flux cored wire suited to a broad line of general applications including galvanized and sheet metal. A good all position wire.</td>
<td>TRS6024-11 (.024)</td>
</tr>
<tr>
<td>A unique solid wire with powerful deoxidizers for CO₂ welding where poor fit up, rusty or oily material may be used. Recommended for general shop fabrication.</td>
<td>308I (.030)</td>
</tr>
</tbody>
</table>

Table 8-1

8-4 April 24, 2000
<table>
<thead>
<tr>
<th>Type of Gas</th>
<th>Typical Mixtures</th>
<th>Primary Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Dioxide</td>
<td></td>
<td>Mild and Low Alloy Steel</td>
</tr>
<tr>
<td>Argon–Carbon Dioxide</td>
<td>75% Ar–25% CO₂</td>
<td>Mild and Low Alloy Steels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stainless Steel</td>
</tr>
</tbody>
</table>

**Table 8-2**

<table>
<thead>
<tr>
<th>WELDING VARIABLE</th>
<th>CHANGE REQUIRED</th>
<th>Arc Voltage</th>
<th>Welding Current (See Footnote)</th>
<th>Travel Speed</th>
<th>Nozzle Angle</th>
<th>Stick-Out or Tip-To-Work Distance</th>
<th>Wire Size</th>
<th>Gas Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deeper Penetration</td>
<td>Increase</td>
<td>1</td>
<td>³Trailing Max. 25</td>
<td>2 Decrease</td>
<td>5 Smaller*</td>
<td>⁴CO₂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shallow Penetration</td>
<td>Decrease</td>
<td>1</td>
<td>³Leading</td>
<td>2 Increase</td>
<td>5 Larger</td>
<td>⁴AR+CO₂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larger Bead</td>
<td>Increase</td>
<td>1</td>
<td>2 Decrease</td>
<td></td>
<td>3 Increase*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smaller Bead</td>
<td>Decrease</td>
<td>2</td>
<td>2 Increase</td>
<td></td>
<td>3 Decrease*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher Narrower Bead</td>
<td>Decrease</td>
<td>1</td>
<td>2 Trailing</td>
<td></td>
<td>3 Increase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flatter Wider Bead</td>
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<td>1</td>
<td>2 90 or Leading</td>
<td></td>
<td>3 Decrease</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Faster Disposition Rate</td>
<td>Increase</td>
<td>1</td>
<td></td>
<td></td>
<td>2 Increase*</td>
<td>3 Smaller</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slower Disposition</td>
<td>Decrease</td>
<td>1</td>
<td></td>
<td></td>
<td>2 Decrease*</td>
<td>3 Larger</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 8-3**

**NOTE:** Same adjustment is required for wire feed speed.

*When these variables are changed, the wire feed speed must be adjusted so that the welding current remains constant. See deposition rate of welding variables section. This change is especially helpful on materials 20 gage and smaller in thickness.

April 24, 2000
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Equipment Identification
All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to include any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List
The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, quantity, or application of an item, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

An “Application Code” is used to distinguish parts that are applicable only to certain Specifications and/or Assemblies. This code is found in the rightmost column of the Parts List. If an item in the Parts List applies to all Specifications or Assemblies the word “ALL” will be in the Application Code column. Refer to the following list to determine the appropriate Application Codes for the Specifications or Assemblies covered by this manual. If only the assembly or specification number is listed, the use of an Application Code does not apply to this manual.
Figure 9-1 Fabricator 130
### Parts List for Figure 9-1

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty per Assy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100038A-1</td>
<td>Fabricator 130, Welder Assembly (For Details See Figure 9-2)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>830768</td>
<td>. Gun &amp; Cable Assembly</td>
<td>1</td>
</tr>
</tbody>
</table>

— Not Illustrated
Figure 9-2 Welder Assembly Group
### Parts List for Figure 9-2

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty per Assy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100038A-1</td>
<td>Welder - Assembly (Continued)</td>
<td>Ref.</td>
</tr>
<tr>
<td>1</td>
<td>830490</td>
<td>Switch - Rotary, Range</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>830481</td>
<td>Head - Feed</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>830480</td>
<td>Motor - Wire Feed</td>
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</tr>
<tr>
<td>8</td>
<td>405278-11</td>
<td>Capacitor - Electrolytic</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>830489</td>
<td>Handle - Lifting</td>
<td>1</td>
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<td>14</td>
<td>406240-1</td>
<td>Contactor - Input</td>
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<td>16</td>
<td>361052-10</td>
<td>Clamp - Capacitor</td>
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<td>404162-8</td>
<td>Valve - Solenoid</td>
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<td>22</td>
<td>830551</td>
<td>Latch - Door</td>
<td>1</td>
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<tr>
<td>24</td>
<td>403056-11</td>
<td>Relay - SPDT, 30 Amp</td>
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<td>28</td>
<td>830503-1</td>
<td>Motor - Fan and Control, 115V/24V</td>
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<td>30</td>
<td>830494</td>
<td>Bracket - Mtg. Fan Motor and Heat Sink</td>
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</tr>
<tr>
<td>32</td>
<td>830487</td>
<td>Heat Sink - Rectifier</td>
<td>1</td>
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<tr>
<td>33</td>
<td>375426-4</td>
<td>Insulator - Rectifier</td>
<td>1</td>
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<td>36</td>
<td>201234-3</td>
<td>Lead - Ground #6, Assembly</td>
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<tr>
<td>38</td>
<td>830519</td>
<td>Transformer - Power Assembly</td>
<td>1</td>
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<td>40</td>
<td>830513</td>
<td>Reactor - Assembly</td>
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<tr>
<td>43</td>
<td>W-10051-10</td>
<td>Clamp - Plastic Reactor</td>
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</tr>
<tr>
<td>46</td>
<td>406735-5</td>
<td>Screw - 6 mm</td>
<td>1</td>
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<tr>
<td>47</td>
<td>830539</td>
<td>Rheostat - 16 Ohms, 50 Watts</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>375432-9</td>
<td>Cable - Input, 14-3</td>
<td>1</td>
</tr>
<tr>
<td>50</td>
<td>830484-1</td>
<td>Switch - Input, 20 Amp</td>
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<tr>
<td>51</td>
<td>367703-6</td>
<td>Resistor - Assembly</td>
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</tr>
<tr>
<td>52</td>
<td>830483</td>
<td>Blade - Fan</td>
<td>1</td>
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<td>53</td>
<td>200548-1</td>
<td>Adapter - Gas Input</td>
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<td>54</td>
<td>203627-1</td>
<td>Circuit Breaker - 5 Amp</td>
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<td>55</td>
<td>203846-2</td>
<td>Fitting - Barbed</td>
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<td>56</td>
<td>405576-1</td>
<td>Bushing - Terminal, Gun Switch</td>
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<td>57</td>
<td>409870</td>
<td>Washer - Insulator, Output</td>
<td>2</td>
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<tr>
<td>58</td>
<td>409869</td>
<td>Bushing - Insulator, Output</td>
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<td>62</td>
<td>040534</td>
<td>Tube - Tygon, Gas Line</td>
<td>18&quot;</td>
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<td>63</td>
<td>406806-3</td>
<td>Knob - Control, Black</td>
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<td>64</td>
<td>830495</td>
<td>Hub - Spool</td>
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<td>65</td>
<td>830501</td>
<td>Shaft - Hub Spool</td>
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<td>66</td>
<td>830498</td>
<td>Washer - Nylon, Shaft, 1/4</td>
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<td>67</td>
<td>830506</td>
<td>Nut - Wing, 1/4, Nylok</td>
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<td>68</td>
<td>400562-50</td>
<td>Spring - Hub Brake</td>
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<td>69</td>
<td>830534</td>
<td>Clip - Retaining</td>
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<td>70</td>
<td>W-11242-27</td>
<td>Washer - Steel</td>
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## Parts List for Figure 9-2

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty per Assy</th>
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<tbody>
<tr>
<td>71</td>
<td>830764</td>
<td>. Gun - Connection Block</td>
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<tr>
<td>74</td>
<td>830444</td>
<td>. Panel - Base</td>
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<td>75</td>
<td>830445</td>
<td>. Panel - Top</td>
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<tr>
<td>76</td>
<td>830443</td>
<td>. Panel - Interior</td>
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<td>77</td>
<td>830446</td>
<td>. Panel - Door</td>
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<td>81</td>
<td>407948</td>
<td>. Rectifier - Isolated Base</td>
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<td>88</td>
<td>830116</td>
<td>. Label - Ground Screw</td>
<td>1</td>
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<td>92</td>
<td>402037-4</td>
<td>. Grommet - Rubber, 3/8</td>
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<td>93</td>
<td>830766</td>
<td>. Gas - Fitting</td>
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<tr>
<td>98</td>
<td>204036</td>
<td>. Label - Top, Warning</td>
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<td>99</td>
<td>406636</td>
<td>. Label - Moving Parts</td>
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<td>100</td>
<td>830695</td>
<td>. Label - Front Panel</td>
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<td>109</td>
<td>830496</td>
<td>. Washer - Friction</td>
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<td>114</td>
<td>870087-2</td>
<td>. Label - Side, Fabricator</td>
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<tr>
<td>115</td>
<td>10-6144</td>
<td>. Guide - Input</td>
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**OPTIONAL EQUIPMENT LIST FOR VARIOUS WIRE SIZES AND TYPES**

**HOW TO ORDER**

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>FABRICATOR 130</th>
<th>100038A-1</th>
</tr>
</thead>
</table>

## PARTS/ACCESSORIES

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PART NO. THERMAL ARC</th>
<th>PART NO. TWECO</th>
<th>PART NO. VICTOR</th>
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<tbody>
<tr>
<td>Gas Regulator &amp; Hose Kit</td>
<td>830507</td>
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<td>0781-1100</td>
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<tr>
<td>Contact Tip .023&quot;/.6mm</td>
<td>830528</td>
<td>11-23</td>
<td></td>
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<tr>
<td>Contact Tip .030&quot;/.8mm</td>
<td>830529</td>
<td>11-30</td>
<td></td>
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<tr>
<td>Contact Tip .035&quot;/.9mm</td>
<td>830530</td>
<td>11-35</td>
<td></td>
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<tr>
<td>Contact Tip .040&quot;/1.0mm</td>
<td>830531</td>
<td>11-40</td>
<td></td>
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<tr>
<td>Gas Diffuser</td>
<td>830523</td>
<td>35-50</td>
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<tr>
<td>Nozzle 3/8&quot;/9.5mm Flush</td>
<td>830521</td>
<td>21-37-F</td>
<td></td>
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<tr>
<td>Nozzle 1/2&quot;/12.7mm Flush</td>
<td>830522</td>
<td>21-50-F</td>
<td></td>
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<tr>
<td>Conduit .023&quot;/.6mm</td>
<td>830524</td>
<td>23-40-15</td>
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<td>Conduit .030&quot;-.035&quot;/.8-.9mm</td>
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<td>35-40-15</td>
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<td>Teflon Conduit .030&quot;-.035&quot;/.8-.9mm</td>
<td>830526</td>
<td>35TF-40-10</td>
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<tr>
<td>Feed Roll, Hard Wire</td>
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<tr>
<td>Feed Roll, Soft Wire (Alum.)</td>
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<tr>
<td>MIG Torch Assembly</td>
<td>830768</td>
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<td>Aluminum Kit</td>
<td>830527</td>
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<tr>
<td>Running Gear/Cylinder Rack</td>
<td>830544</td>
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</tr>
</tbody>
</table>

If individual parts are required, see Parts List chapter of this manual for part number to order.
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DIAGRAMS

- Note the model and specification number shown on the equipment nameplate.
- Locate these numbers in the model and specification number columns below.
- Use only those diagrams and instructions that are applicable.

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>SPECIFICATION NUMBER</th>
<th>CONNECTION DIAGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabricator 130</td>
<td>100038A-1</td>
<td>830540</td>
</tr>
</tbody>
</table>

April 24, 2000
STATEMENT OF WARRANTY

LIMITED WARRANTY: Thermal Arc®, Inc., a Thermadyne Company, warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the Thermal Arc products as stated below, Thermal Arc shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Thermal Arc's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at Thermal Arc's sole option, of any components or parts of the product determined by Thermal Arc to be defective.

THERMAL ARC MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: Thermal Arc shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchased or replacement goods, or claims of customers of distributor (hereinafter "Purchaser") for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of Thermal Arc with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Thermal Arc whether arising out of contract, negligence, strike tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of Thermal Arc is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN THERMAL ARC'S SOLE JUDGMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY THERMAL ARC PRODUCT.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS.

Except with regards to the products listed below, this warranty shall remain effective three (3) years from the date Thermal Arc's authorized distributor delivers the product to Purchaser, but in no event more than (4) years from the date Thermal Arc delivers the product to the authorized distributor.

Shorter warranty periods apply to the products listed below. On these products, the warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date Thermal Arc delivered the product to the authorized distributor.

<table>
<thead>
<tr>
<th>POWER SUPPLIES</th>
<th>ALL OTHER</th>
<th>P-WEE, PRO-LITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN POWER MAGNETICS (STATIC &amp; ROTATING)</td>
<td>3 YEARS</td>
<td>2 YEARS</td>
</tr>
<tr>
<td>ORIGINAL MAIN POWER RECTIFIER</td>
<td>3 YEARS</td>
<td>2 YEARS</td>
</tr>
<tr>
<td>CONTROL PC BOARD</td>
<td>3 YEARS</td>
<td>2 YEARS</td>
</tr>
<tr>
<td>ALL OTHER CIRCUITS AND COMPONENTS INCLUDING BUT NOT LIMITED TO, CONTACTORS, RELAYS, SOLENOID, PUMPS, POWER SWITCHING SEMI-CONDUCTORS</td>
<td>1 YEAR</td>
<td>1 YEAR</td>
</tr>
</tbody>
</table>

ENGINES: ENGINES ARE NOT WARRANTED BY THERMAL ARC, ALTHOUGH MOST ARE WARRANTED BY THE ENGINE MANUFACTURER. SEE THE ENGINE MANUFACTURES WARRANTY FOR DETAILS.

CONSOLES, CONTROL EQUIPMENT, HEAT | 1 YEAR | 1 YEAR | 1 YEAR |

EXCHANGES, AND ACCESSORY EQUIPMENT

TORCH AND LEADS | 180 DAYS | 180 DAYS | 180 DAYS |

REPAIR/REPLACEMENT PARTS | 90 DAYS | 90 DAYS | 90 DAYS |

Warranty repairs or replacement claims under this limited warranty must be submitted to Thermal Arc by an authorized Thermal Arc® repair facility within thirty (30) days of the repair. No transportation costs of any kind will be paid under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the customer. All returned goods shall be at the customer’s risk and expense. This warranty supersedes all previous Thermal Arc warranties.

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