



Warnings and Safety, Parts Breakdown, Hook-up Procedure, Specifications and Operation

G4000 Air-Carbon Arc Gouging Torch





Maximum 1000 Amps

G3000 Air-Carbon Arc Gouging Torch




Maximum 600 Amps

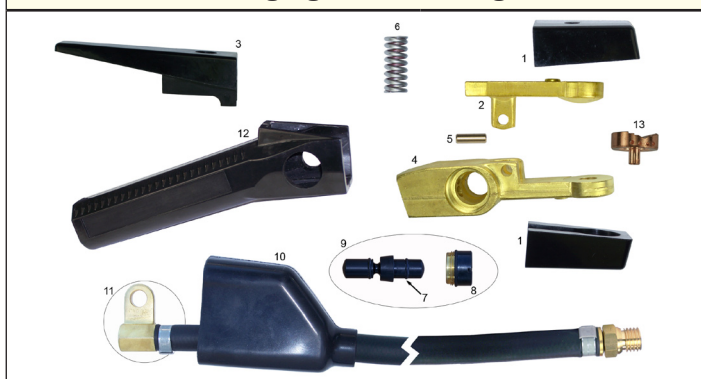
SAFETY AND OPERATING REFERENCES

- Code of Federal Regulations (OSHA) Section 29 part 1910.95, 132, 133, 134, 139, 251, 252, 253, 254, and 1000
U.S. Government Printing Office, Washington, DC 20402
- ANSI Z49.1 "Safety in Welding and Cutting"
- ANSI Z87.1 "Practice for Occupational and Educational Eye and Face Protection"
- ANSI Z88.2 "Standard Practices for Respiratory Protection" American National Standards Institute, 1430 Broadway, New York, NY 10018
- AWS C5.3 "Recommended Practices for Air Carbon-Arc Gouging and Cutting"
- AWS F4.1 Recommended Safe Practices for Welding and Cutting Containers" The American Welding Society, 550 NW LeJeune Rd, P.O. Box 351040, Miami, FL 33135
- NFPA 51B "Fire Prevention in Cutting and Welding Processes" National Fire Protection Association, Battery Park, Quincy, MA 02269
- CSA Standard W117.2 "Safety in Welding, Cutting and Allied Processes" Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario, Canada M9W 1R3

WARNING	
Read and follow the manufacturer's instructions, employer's safety practices and Material Safety Data Sheets (MSDS). Only qualified personnel should install, use or service this material and/or equipment.	
 <p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> • Always wear dry insulating gloves. • Do not touch live electrical parts. • Always disconnect power source before hooking up or changing electrodes, nozzles and other parts. 	<p>FUMES AND GASES can be hazardous to your health.</p> <ul style="list-style-type: none"> • Keep your head out of the fumes. • Use enough ventilation or exhaust at the arc to keep fumes and gases from your breathing zone and the general area. • Fumes from welding and cutting can deplete air quality, cause injury or death. Always wear an air supplied respirator in confined areas or if breathing air is not safe.
 <p>WELDING SPARKS can cause fire or explosion.</p> <ul style="list-style-type: none"> • Do not weld near flammable material. • Do not weld on closed containers. • Remove combustibles from the work area and / or provide a fire watch. • Avoid oily or greasy clothing as a spark may ignite them. 	 <p>ARC RAYS can injure eyes and burn skin.</p> <ul style="list-style-type: none"> • Always wear correct eye, ear and body protection. • Always wear a welding helmet with the proper grade filter lens. • Protect yourself and others from spatter arc flash rays by using protective screens, barriers and welding curtains. • Always wear protective gloves and clothing to cover exposed skin. This will aid in the prevention of arc and spatter burns.
 <p>LOUD NOISE can damage hearing.</p> <ul style="list-style-type: none"> • Always wear protective hearing devices to ensure protection when noise levels exceed OSHA standards. 	<p>Read American National Standard Z49.1, "Safety in Welding, Cutting, and Allied Processes," available from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33129; OSHA Safety and Health Standards, available from U.S. Government Printing Office, Washington, DC 20402.</p>

AVERTISSEMENT	
Lire et suivre les instructions du fabricant, les pratiques de votre employeur et les fiches signalétiques. Seulement le personnel qualifié devrait installer, utiliser ou entretenir ce matériel et/ou cet équipement.	
 <p>UN CHOC ELECTRIQUE peut tuer.</p> <ul style="list-style-type: none"> • Porter toujours des gants secs et isolants. • Ne jamais toucher une electrode ou des pieces electriques sous tension. • Mettre la soudeuse hors tension avant de remplacer l'electrode et les pieces de torche. 	<p>LES FUMÉES ET LES VAPEURS DE GAZ peuvent être dangereuses pour la santé</p> <ul style="list-style-type: none"> • Éviter la tête des endroits renfermés des vapeurs • Assurez une ventilation suffisante ou aspirer les fumées et les vapeurs de gaz à la source pour les maintenir hors de votre aire de travail et sous les limites permises. • La fumée causée par la soudure et le coupege peut réduire la qualité de l'air et causer des blessures ou la mort. Toujours utiliser un appareil respiratoire à alimentation d'air dans les zones confinées ou si l'air n'est pas sécuritaire
 <p>LES ÉTINCELLES DE SOUDAGE peuvent causer un incendie ou une explosion.</p> <ul style="list-style-type: none"> • Ne pas souder à proximité de matériaux inflammables • Ne pas souder sur des récipients fermés. • Évitez les matériaux combustibles du lieu de travail • Évitez des vêtements enduits de graisse ou d'huile car une étincelle peut l'enflammer 	<p>LE RAYONNEMENT DE L'ARC peut blesser les yeux et brûler la peau.</p> <ul style="list-style-type: none"> • Toujours porter l'équipement de protection pour des yeux, des oreilles et du corps. • Toujours porter un casque de soudage muni d'un filtre de protection oculaire approprié. • Protégez-vous ainsi que les autres contre les éclaboussures des rayons d'arc en utilisant des écrans, des barrières et des couvertures de soudure. • Toujours porter des gants de protection ainsi que les vêtements de protection pour couvrir la peau exposée. Cela aidera dans la prévention des brûlures causées par le rayonnement de l'arc et les éclaboussures.
 <p>LE BRUIT peut endommager l'ouïe</p> <ul style="list-style-type: none"> • Toujours porter un appareil de protection auditive si le bruit excédent les limites spécifiées par l'OSHA. 	<p>Lire American National Standard Z49.1, "Safety in Welding, Cutting, and Allied Processes," Disponible au American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126; OSHA Safety and Health Standards, Disponible au U.S. Government Printing Office, Washington, DC 20402</p>

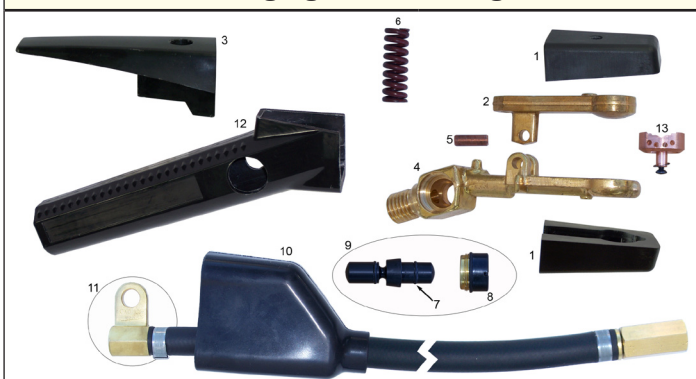
CUIDADO	
Lea y siga las instrucciones del fabricante, las prácticas seguras de su compañía y los datos de las Hojas de Seguridad del Producto. Solo personal calificado debe instalar, usar o dar servicio a este material y/o equipo.	
 <p>CHOQUES ELECTRICOS pueden matar</p> <ul style="list-style-type: none"> • Siempre use guantes secos aislantes. • No toque partes eléctricamente cargadas • Siempre desconecte la fuente de poder antes de instalar o cambiar electrodos, boquillas y otras partes. 	<p>HUMOS Y GASES pueden ser dañinos para su salud.</p> <ul style="list-style-type: none"> • Mantenga su cabeza fuera de los humos. • Use suficiente ventilación o extracción desde el arco para evitar que los humos y gases lleguen a su zona de respiración y área en general. • Los humos de la soldadura y corte pueden terminar con la calidad del aire, causar lesiones o la muerte. Siempre use un respirador en áreas confinadas o si el aire que se respira no es seguro
 <p>CHISPAS DE SOLDADURA pueden causar fuego o explosión.</p> <ul style="list-style-type: none"> • No suelde cerca de material inflamable. • No suelde en lugares cerrados. • Retire combustibles del área de trabajo y/o coloque un detector de incendio. • Evite ropa con aceite o grasa pues una chispa puede encenderlos. 	<p>LOS RAYOS DEL ARCO pueden dañar sus ojos y quemar su piel.</p> <ul style="list-style-type: none"> • Siempre use la protección correcta de vista, oído y cuerpo • Siempre use una careta de soldadura con la sombra apropiada. • Protéjase a usted y a otros de los rayos del arco y de la escoria usando pantallas protectoras, barreras y cortinas para soldadura. • Siempre use guantes protectores y ropa para cubrir la piel expuesta. Esto ayudará en la prevención de quemaduras por arco y escoria.
 <p>RUIDO ALTO puede dañar el oído.</p> <ul style="list-style-type: none"> • Siempre use aparatos protectores de oído para asegurar protección cuando los niveles de ruido excedan los estándares OSHA 	<p>Lire el Estándar Nacional Americano Z49.1, "Safety in Welding, Cutting, and Allied Processes," disponible en la Sociedad Americana de Soldadura, 550 N.W. LeJeune Rd., Miami, FL 33126; los Estándares de Seguridad y Salud OSHA, disponibles en la Oficina de Impresión del Gobierno de E.U., Washington, DC 20402</p>

Binzel G3000 Gouging Torch Packages

Description	G3000 Part No.
Gouging Torch Only	G01-065-001
Gouging Torch w/7' Cable (2.1m)	G61-065-006
Gouging Torch w/10' Cable (3m)	G61-065-007
7' Cable (2.1m)	G70-088-107
10' Cable (3m)	G70-088-110

Binzel G3000 Replacement Parts

No.	Description	G3000 Part No.
1	Insulator Assembly (w/Screws)	G94-433-193
2	Upper Arm	G94-048-120
3	Lever Assembly (w/Screw)	G94-476-080
4	Torch Body	G94-103-232
5	Hinge Pin	G94-632-101
6	Spring	G94-800-191
7	O-Rings Only	G94-710-036
8	Bonnet	G94-104-012
9	Spool with Bonnet	G94-104-016
	Spool Assy w/O-Rings	G94-801-011
10	Insulating Boot	G94-105-014
11	Air / Power Connector	G94-170-150
12	Handle	G94-370-179
13	Head	G94-378-366

Binzel G4000 Gouging Torch Packages

Description	G4000 Part No.
Gouging Torch Only	G01-082-002
Gouging Torch w/7' Cable (2.1m)	G61-082-008
Gouging Torch w/10' Cable (3m)	G61-082-009
7' Cable (2.1m)	G70-084-207
10' Cable (3m)	G70-084-210

Binzel G4000 Replacement Parts

No.	Description	G4000 Part No.
1	Insulator Assembly (w/Screws)	G94-433-183
2	Upper Arm	G94-048-088
3	Lever Assembly (w/Screw)	G94-476-066
4	Torch Body	G94-103-206
5	Hinge Pin	G94-632-094
6	Spring	G94-800-077
7	O-Rings Only	G94-710-036
8	Bonnet	G94-104-012
9	Spool with Bonnet	G94-104-016
	Spool Assy w/O-Rings	G94-801-011
10	Insulating Boot	G94-105-014
11	Air / Power Connector	G94-170-150
12	Handle	G94-370-163
13	Head	G94-378-368

COPPER COATED POINTED ELECTRODES - A standard all purpose gouging electrode. Controlled copper coating improves electrical conductivity providing more efficient, cooler operation and helps maintain electrode diameter at the point of the arc.

Part No.	Size	Qty / Box	Amperage	Air Pressure	Air Flow
G22-023-003	1/8" x 12" (3.2mm x 305mm)	100	60 - 90	80psi	21cfm - 30cfm
G22-983-003	5/32" x 12" (4.0mm x 305mm)	50	90 - 150	80psi	21cfm - 30cfm
G22-033-003	3/16" x 12" (5.0mm x 305mm)	50	200 - 250	80psi	21cfm - 30cfm
G22-043-003	1/4" x 12" (6.5mm x 305mm)	50	300 - 400	80psi	21cfm - 30cfm
G22-053-003	5/16" x 12" (8.0mm x 305mm)	50	350 - 450	80psi	21cfm - 30cfm
G22-063-003	3/8" x 12" (9.5mm x 305mm)	50	450 - 600	80psi	21cfm - 30cfm
G22-082-003	1/2" x 14" (13.0mm x 355mm)	50	800 - 1000	80psi	21cfm - 30cfm

COPPER COATED JOINTED ELECTRODES - Eliminates stub loss and provides continuous electrode feed for automatic automated torches. Jointed carbons are machined at each end to provide male and female fittings.

Part No.	Size	Qty / Box	Amperage	Air Pressure	Air Flow
G24-064-003	3/8" x 17" (9.5mm x 430mm)	100	450 - 600	80psi	21cfm - 30cfm
G24-084-003	1/2" x 17" (13.0mm x 430mm)	100	800 - 1000	80psi	21cfm - 30cfm
G24-104-003	5/8" x 17" (16.0mm x 430mm)	100	1000 - 1250	80psi	21cfm - 30cfm
G24-124-003	3/4" x 17" (19.0mm x 430mm)	100	1250 - 1600	80psi	21cfm - 30cfm

Selecting the proper carbons: Depth = 1.5 x diameter of carbon width = 1/8" (3.2mm) + carbon diameter. Wider & deeper grooves can be accomplished using multiple passes.

SPECIFICATIONS

G3000		G4000	
Amperage:	Maximum 600 Amps	Amperage:	Maximum 1000 Amps
Compressed Air:	Pressure - 80 PSI (5.6 kg/cm ²) Flow Rate - 21 - 28 cfm	Compressed Air:	Pressure - 80 PSI (5.6 kg/cm ²) Flow Rate - 28 cfm
Torch & Cube Weight:	4.0 lbs (1.8 kg)	Torch & Cube Weight:	5.4 lbs (2.4 kg)
Accepts Carbons:	Pointed - 1/8" (3mm) to 3/8" (10mm) Flat - 3/8" (10mm) to 5/8" (16mm)	Accepts Carbons:	Pointed - 5/32" (4mm) to 1/2" (13mm) Flat - 3/8" (10mm) to 5/8" (16mm)

READ AND UNDERSTAND



WARNING

"PROTECT YOURSELF AND OTHERS"

Electric shock can cause injury or death. Breathing air carbon arc gouging fumes can harm your health and can lead to disability.
Arc rays and hot sparks can injure eyes, and skin. Noise can damage hearing

BEFORE OPERATING THIS EQUIPMENT

- Inspect equipment to make sure all safety features are in good working order.
 - Wear approved eye, ear, and body protection.
 - Use enough ventilation and/or exhaust to keep fumes from the breathing zone. Keep your head out of the fumes.
 - Use only compressed air—**NEVER USE OXYGEN.**
 - Be sure all other persons are clear of work area.
 - Do not operate equipment with protective covers removed.
- Do not service or repair equipment with power on.
 - Do not touch exposed or frayed wires with power on.
 - Do not service or repair equipment unless you are trained and qualified to do so.
- "OBSERVE ALL SAFETY RULES."**
- Be sure equipment is turned off when not in use.
 - See ANSI 749.1 "Safety in Welding and Cutting" published by The American Welding Society, 550 Lejeune Road, Miami Florida 33135 or contact your employer, welding distributor, or manufacturer of this product.

HOOK-UP & INSTALLATION

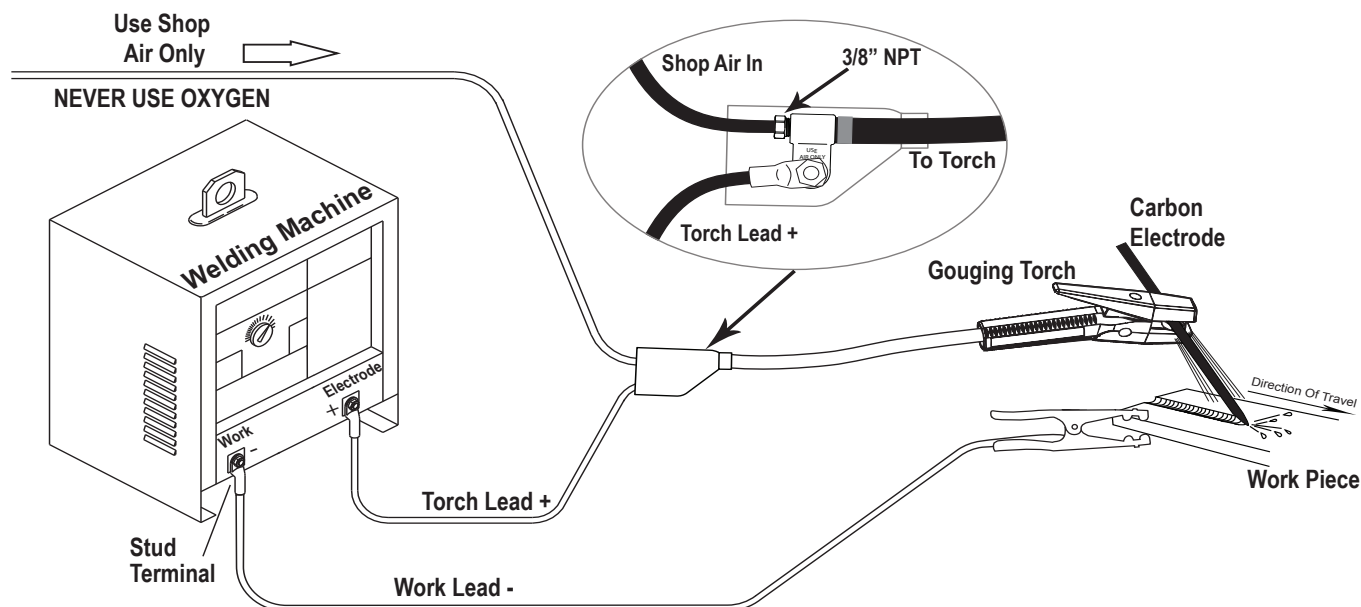


Figure 1: Torch Hook-up

The hook-up and installation of your new Arc Gouging Torch is very similar to connecting a manual electrode holder, with the exception of the shop air connection. The Arc Gouging Torch is easily installed by the following four descriptive steps:

STEP 1 - Shop Air Connection:

Shop Air Connection (Never Use Oxygen) is completed by using an air supply hose with 3/8" NPT connection (shown in expanded view). The shop air hose is connected to the air/power fitting on the Arc Gouging Torch. The air valve on the torch will allow the operator to control the air as required (refer to the air pressure and flow settings chart on page 2.)

STEP 2 - Torch Connection (Positive (+) Lead):

The work lead is now attached to the Arc Gouging torch, air/power connector, using a 1/2" (12mm) bolt and nut. This work lead is attached to the positive terminal of the power source.

STEP 3 - Welding DC Machine Connection (Positive (+) Lead):

The work lead can now be attached to the positive (+) terminal of your DC welding machine. This is the most common connection which is also referred to as Direct Current Electrode Positive (DCEP).

STEP 4 - Connection (Negative (-) Cable):

The negative (-) work lead is connected to the work piece by the most common clamp method shown in figure 1. The cable must be connected to the negative (-) terminal of the welding machine.

Please review all the warnings and safety information on page 1 of this document.

After completion of hook-up, you are now ready to review the operation procedures (page 4) and begin using your arc gouging torch.

BASICS OF OPERATION

ARC GOUGING BASICS: Read all warning and safety information prior to operation. The torch must be installed as indicated in (Figure 1) hook-up & installation procedure. Install the desired carbon electrode (max stick-out 6" (152.4mm) - min stick-out 3" (76.2mm)) in the jaws of the arc gouging torch, with the head air-jet holes facing in the direction of the arc.

Secure the torch comfortable in your hand with the carbon rod angled 15° - 70° from the base material (see figure 2). The compressed air supply must be on prior to gouging. When gouging on flat base material, strike an arc by placing the electrode in contact with the base material. Once the arc is established, maintain a short arc while moving in the direction of travel (shown in figure 2) and don't pull away from the base material. Continue to steadily move forward (pushing the puddle - not pulling), while maintaining a smooth electrical arc. The depth of the gouge is controlled by the travel speed. If your application requires a deep groove, use a slow travel speed. To obtain a shallow groove, a faster travel speed can be used. Molten metal is removed with the compressed air leaving a clean groove. Smooth and steady speed and feed will result in a more uniform groove. Always be aware of the direction of the molten metal to prevent potential contact with the operator and or the surrounding areas.

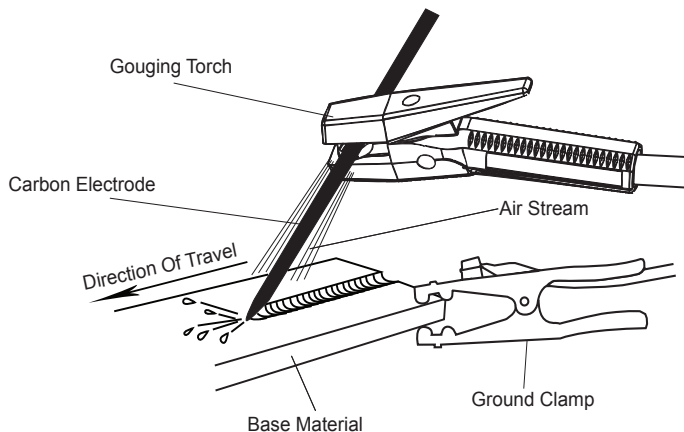


Figure 2: Gouging Basic Operation

HORIZONTAL, VERTICAL & OVERHEAD GOUGING POSITIONS: Horizontal, vertical and overhead positions all use the same procedures listed in the basic operations. Position the torch in an angle to prevent molten metal to contact the operator and be aware of your surrounding environment. Take special care to the direction of the molten metal removed in all positions.

TROUBLE SHOOTING

PROBLEM	CAUSE / SOLUTION
Arc is unsteady... forcing the use of a slower travel speed on shallow grooves.	Amperage too low for the electrode diameter being used. In most cases the lowest recommended amperage is enough, however, this requires greater operator skill. Choose mid-range amperage to improve arc stability. Use the next smaller diameter electrode if the desired amperage cannot be obtained from the power source.
Electrode heating up rapidly, arc jumping from side to side... erratic groove.	The polarity of the torch hook-up is incorrect... most applications use DCEP (electrode positive). Check your hook-up and installation for proper connections. There are very few metals that require a DCEN (electrode negative).
Intermittent arc with noticeably irregular groove surface.	Manual gouging travel speed is too slow. The operator should position the torch to produce a smooth forward motion without resistance of the gloved hand to base material.
Carbon deposits at various spots in groove or surface.	Shorted out carbon electrode on base metal. The travel speed may have been too fast compared to the amperage. Increase amperage or use a slower travel speed. Sometimes the pushing angle may be too small. Increase or decrease the electrode-to-base material angle which adjusts arc area. Using a steady arc gap will reduce the potential of short-outs.
Groove is too shallow... too deep... and/or irregular.	The torch was not steadily operated. Torch must be operated with a steady and smooth feed to produce a consistent groove.
Excessive slag adhesion to groove edge.	Inadequate slag ejection. Maintain proper air pressure and flow. Air pressure should be set between 80 to 100psi in order to properly remove slag. It is important there is a sufficient volume of air (21cfm – 30cfm). Sometimes it may be necessary to select an air supply hose with an increased inside diameter to provide adequate air volume. When gouging, keep the air stream parallel to the base material.

⚠ WARNING

**Wear proper eye, ear, and body protection.
Shut off all power before repairing or disconnecting torch.**

ELECTRIC SHOCK CAN KILL!!

Arc gouging can burn eyes and skin, avoid smoke inhalation.
It is dangerous to your health. Noise can be harmful to your hearing.
USE WITH COMPRESSED AIR ONLY, NEVER USE OXYGEN.

⚠ 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 25249.5 et. seq.)