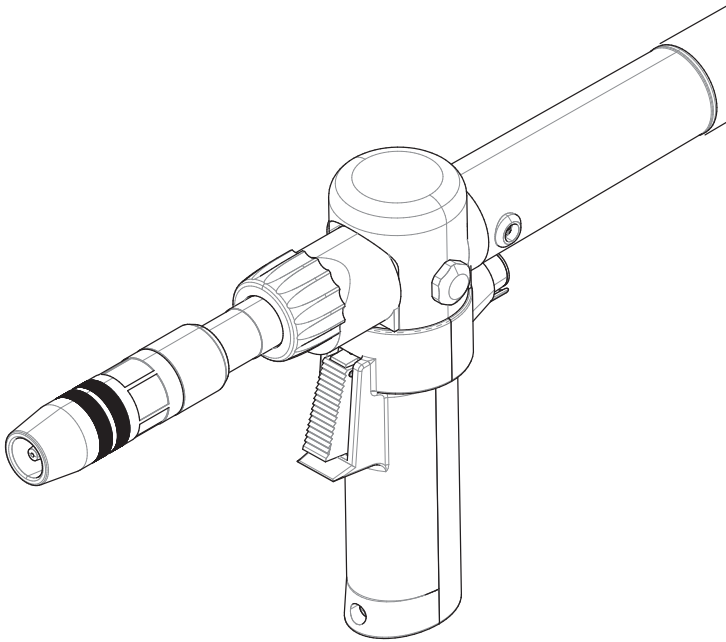


Operator's Manual

Magnum PRO[®] AL PA / AL PW



For use with Product Numbers:

K3478-1 (Air Cooled, 15ft.)

K3478-2 (Air Cooled, 25ft.)

K3478-3 (Air Cooled, 35ft.)

K3478-4 (Air Cooled, 50ft.)

K3479-1 (Water Cooled, 15ft.)

K3479-2 (Water Cooled, 25ft.)



Register your machine:

www.lincolnelectric.com/register

Authorized Service and Distributor Locator:

www.lincolnelectric.com/locator

Save for future reference

Date Purchased

Code: (ex: 10859)

Serial: (ex: U1060512345)

Need Help? Call 1.888.935.3877

to talk to a Service Representative

Hours of Operation:

8:00 AM to 6:00 PM (ET) Mon. thru Fri.

After hours?

Use "Ask the Experts" at lincolnelectric.com
A Lincoln Service Representative will contact you
no later than the following business day.

For Service outside the USA:

Email: globalservice@lincolnelectric.com

THANK YOU FOR SELECTING A QUALITY PRODUCT BY LINCOLN ELECTRIC.

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

SAFETY DEPENDS ON YOU

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.

WARNING

This statement appears where the information must be followed exactly to avoid serious personal injury or loss of life.

CAUTION

This statement appears where the information must be followed to avoid minor personal injury or damage to this equipment.



KEEP YOUR HEAD OUT OF THE FUMES.

DON'T get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance away from the arc.

READ and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

USE ENOUGH VENTILATION or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area.

IN A LARGE ROOM OR OUTDOORS, natural ventilation may be adequate if you keep your head out of the fumes (See below).

USE NATURAL DRAFTS or fans to keep the fumes away from your face.

If you develop unusual symptoms, see your supervisor. Perhaps the welding atmosphere and ventilation system should be checked.



WEAR CORRECT EYE, EAR & BODY PROTECTION

PROTECT your eyes and face with welding helmet properly fitted and with proper grade of filter plate (See ANSI Z49.1).

PROTECT your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.

PROTECT others from splatter, flash, and glare with protective screens or barriers.

IN SOME AREAS, protection from noise may be appropriate.

BE SURE protective equipment is in good condition.

Also, wear safety glasses in work area **AT ALL TIMES.**



SPECIAL SITUATIONS

DO NOT WELD OR CUT containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned. This is extremely dangerous.

DO NOT WELD OR CUT painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.

Additional precautionary measures

PROTECT compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.

BE SURE cylinders are never grounded or part of an electrical circuit.

REMOVE all potential fire hazards from welding area.

ALWAYS HAVE FIRE FIGHTING EQUIPMENT READY FOR IMMEDIATE USE AND KNOW HOW TO USE IT.



SECTION A: WARNINGS



CALIFORNIA PROPOSITION 65 WARNINGS



WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects, or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an exposed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel

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.*)



WARNING: Cancer and Reproductive Harm
www.P65warnings.ca.gov

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.



FOR ENGINE POWERED EQUIPMENT.

- Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.
- Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact



with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

- Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.
- In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.
- To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.
- To avoid scalding, do not remove the radiator pressure cap when the engine is hot.
- Using a generator indoors CAN KILL YOU IN MINUTES.
- Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.
- NEVER use inside a home or garage, EVEN IF doors and windows are open.
- Only use OUTSIDE and far away from windows, doors and vents.
- Avoid other generator hazards. READ MANUAL BEFORE USE.



ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



- Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- Exposure to EMF fields in welding may have other health effects which are now not known.
- All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
 - Route the electrode and work cables together - Secure them with tape when possible.
 - Never coil the electrode lead around your body.
 - Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
 - Connect the work cable to the workpiece as close as possible to the area being welded.
 - Do not work next to welding power source.



ELECTRIC SHOCK CAN KILL.



- 3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- Semiautomatic DC Constant Voltage (Wire) Welder.
 - DC Manual (Stick) Welder.
 - AC Welder with Reduced Voltage Control.
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
 - 3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
 - 3.e. Ground the work or metal to be welded to a good electrical (earth) ground.
 - 3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
 - 3.g. Never dip the electrode in water for cooling.
 - 3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
 - 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
 - 3.j. Also see Items 6.c. and 8.



ARC RAYS CAN BURN.



- 4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



FUMES AND GASES CAN BE DANGEROUS.



- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding hardfacing (see instructions on container or SDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation unless exposure assessments indicate otherwise. In confined spaces or in some circumstances, outdoors, a respirator may also be required. Additional precautions are also required when welding on galvanized steel.**
5. b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.
- 5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- 5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- 5.e. Read and understand the manufacturer’s instructions for this equipment and the consumables to be used, including the Safety Data Sheet (SDS) and follow your employer’s safety practices. SDS forms are available from your welding distributor or from the manufacturer.
- 5.f. Also see item 1.b.



WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.



- 6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- 6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- 6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- 6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).
- 6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- 6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- 6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- 6.h. Also see item 1.c.
- 6.i. Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, MA 022690-9101.
- 6.j. Do not use a welding power source for pipe thawing.



CYLINDER MAY EXPLODE IF DAMAGED.



- 7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- 7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- 7.c. Cylinders should be located:
 - Away from areas where they may be struck or subjected to physical damage.
 - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- 7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- 7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- 7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- 7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.



FOR ELECTRICALLY POWERED EQUIPMENT.



- 8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- 8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- 8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

Refer to
<http://www.lincolnelectric.com/safety>
for additional safety information.

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PARTS LIST	PARTS.LINCOLNELECTRIC.COM

CONTENT/DETAILS MAY BE CHANGED OR UPDATED WITHOUT NOTICE. FOR MOST CURRENT INSTRUCTION MANUALS, GO TO PARTS.LINCOLNELECTRIC.COM.

INSTALLATION

TECHNICAL SPECIFICATIONS -

K3478-1 (Air Cooled, 15ft.)
 K3478-2 (Air Cooled, 25ft.)
 K3478-3 (Air Cooled, 35ft.)
 K3478-4 (Air Cooled, 50ft.)
 K3479-1 (Water Cooled, 15ft.)
 K3479-2 (Water Cooled, 25ft.)

STOCK CONFIGURATIONS

Product Number	Pin Style	Wire Speed, IPM	Gun Cable Length	Contact Tip	Gas Diffuser	Gas Nozzle	Insulator	Cable Liner	Gun Tube	Drive Roll
K3478-1	12	800 max.	15' / 4.5M	KP2745-364AT	KP2747-1A	KP2743-1-62RA	KP2773-1	KP3543-35116-15	K3541-180	KP3546-364
K3478-2			25' / 7.6M					KP3543-35116-25		
K3478-3			35' / 9.1M					KP3543-364116-35		
K3478-4			50' / 15.2M					KP3543-364116-50		
K3479-1			15' / 4.5M					KP3543-35116-15	K3542-180	
K3479-2			25' / 7.6M					KP3543-35116-25		

MAGNUM PRO AL PA

Welding Process	GMAW
Wire Alloys	ALUMINUM AND STEEL
Wire Sizes (Diameters)	.035"-.062" (ALUMINUM) .035"-.045"(STEEL)
Rated Welding Current and Duty Cycle	220 AMPS @ 60% ARGON GAS, 30 Volts Max. with Argon Gas
Overall Weight	15 FT. (4.5M) - 13.0 LBS. (5.9KG.) 25 FT. (7.6M) - 18.8 LBS. (8.5KG.) 35 FT. (9.1M) - 23.2 LBS. (10.5KG.) 50 FT. (15.2M) - 29.8 LBS. (13.5KG)
Product Specific Torch Data	EN IEC 60974-7

MAGNUM PRO AL PW

Welding Process	GMAW
Wire Alloys	ALUMINUM AND STEEL
Wire Sizes (Diameters)	.035"-.062" (ALUMINUM) .035"-.045"(STEEL)
Rated Welding Current and Duty Cycle	320 AMPS @ 100% ARGON GAS 30 Volts Max. with Argon Gas
Overall Weight	15 FT. (4.5M) - 11.3 LBS. (5.1KG.) 25 FT. (7.6M) - 15.3 LBS. (6.9KG.)
Minimum Flow Rate: 0.26 gal/min (1 l/min)	
Minimum Inlet Pressure: 29.0 psi (2.0 bar/0.20 MPa)	
Maximum Inlet Pressure: 50.7 psi (3.5 bar/0.35 MPa)	
Minimum Cooling Power: 0.80 kW	
Product Specific Torch Data	EN IEC 60974-7

PUSH PULL PRODUCT DESCRIPTION

The Magnum PRO AL PA and PW Push-Pull welding guns are designed to enable feeding of normally difficult to feed welding wires over long distances with a smooth and consistent feed rate.

The ideal application for these welding guns is in welding with "soft" aluminum wires. It can also be used for steel as well as stainless steel wires. These welding guns can be used for wire sizes from .035" - .062" when fitted with the correct liners, tip, and drive roll.

PRODUCT LIMITATIONS

24 VDC Input voltage
 30 VDC Welding voltage using Argon shielding gas

WHAT'S INCLUDED

KP3543-35364-*	.035-3/64 LINER, ALUMINUM	(INSTALLED)
KP3546-035	.035" DRIVE ROLL	(INCLUDED)
KP3546-364	3/64" DRIVE ROLL	(INSTALLED)
KP2745-035AT	.035" CONTACT TIP (10)	(INCLUDED)
KP2745-3/64AT	3/64" CONTACT TIP (10)	(INCLUDED)
KP2747-1A	GAS DIFFUSER	(INSTALLED)
KP2743-1-62RA	GAS NOZZLE	(INSTALLED)
KP2773-1	INSULATOR	(INSTALLED)
9SS32441-49	Air Cooled Check Gauge	(INC. w/PA)
9SS32441-50	Water Cooled Check Gauge	(INC. w/PW)
INSTRUCTION MANUAL		
WARRANTY SHEET IMWS1		

RECOMMENDED PROCESSES AND EQUIPMENT

This push-pull gun can be used to weld aluminum and aluminum alloys (.035" – 1/16") using Gas Metal Arc Welding or GMAW (also known as MIG) process, which requires a supply of shielding gas. Argon is normally used due to its smooth, stable arc, good metal transfer, and low cost. Positive polarity gives good penetration and affords a base metal cathode cleaning effect.

This push-pull gun can also be used to weld steel and stainless steel alloys (.035" – .045"). Knurled drive rolls are available.

PUSH PULL GUN FAMILIARIZATION

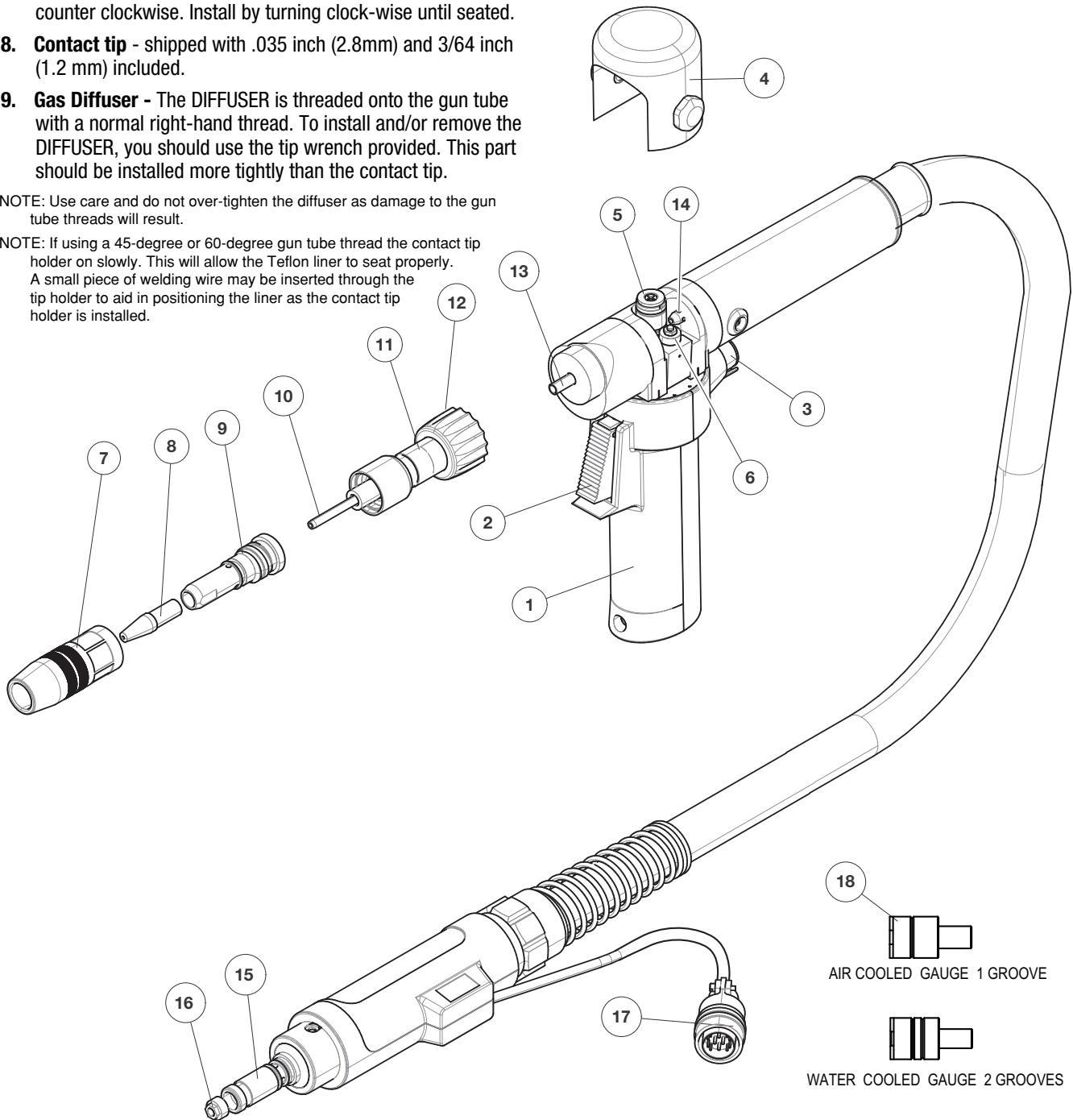
1. **Handle** - gun can be used in either right or left hand.
2. **Trigger** - operates welding power, gas flow, and wire feed.
3. **Remote wire speed control** - located behind the handle, controls the speed of the drive motor.
4. **Drive Pressure Cap** - pull up for access to drive rolls
5. **Drive Roll** - Removing Drive Pressure Cap moves idler arm away from drive roll to stop wire feed. Drive roll with two wire grooves. 3/64 inch installed. Reverse roller for double the life.
6. **Idler arm bearing**- Down position of Drive Pressure Cap moves idler arm bearing to wire.
7. **Gas nozzle** The nozzle is a thread on type. Remove by turning counter clockwise. Install by turning clock-wise until seated.
8. **Contact tip** - shipped with .035 inch (2.8mm) and 3/64 inch (1.2 mm) included.
9. **Gas Diffuser** - The DIFFUSER is threaded onto the gun tube with a normal right-hand thread. To install and/or remove the DIFFUSER, you should use the tip wrench provided. This part should be installed more tightly than the contact tip.

NOTE: Use care and do not over-tighten the diffuser as damage to the gun tube threads will result.

NOTE: If using a 45-degree or 60-degree gun tube thread the contact tip holder on slowly. This will allow the Teflon liner to seat properly. A small piece of welding wire may be inserted through the tip holder to aid in positioning the liner as the contact tip holder is installed.

10. **Neck Wire Guide** - be sure to install guide with tapered end toward contact tip.
11. **Gun Tube**
12. **Barrel Nut**
13. **Gun Tube Inlet Guide**
14. **Inlet Guide**
15. **Power Pin**
16. **Liner nut**
17. **12 Pin Trigger Control Amphenol** - see Diagrams section
18. **Guide Tube Adjustment Gauge**

FIGURE A.1

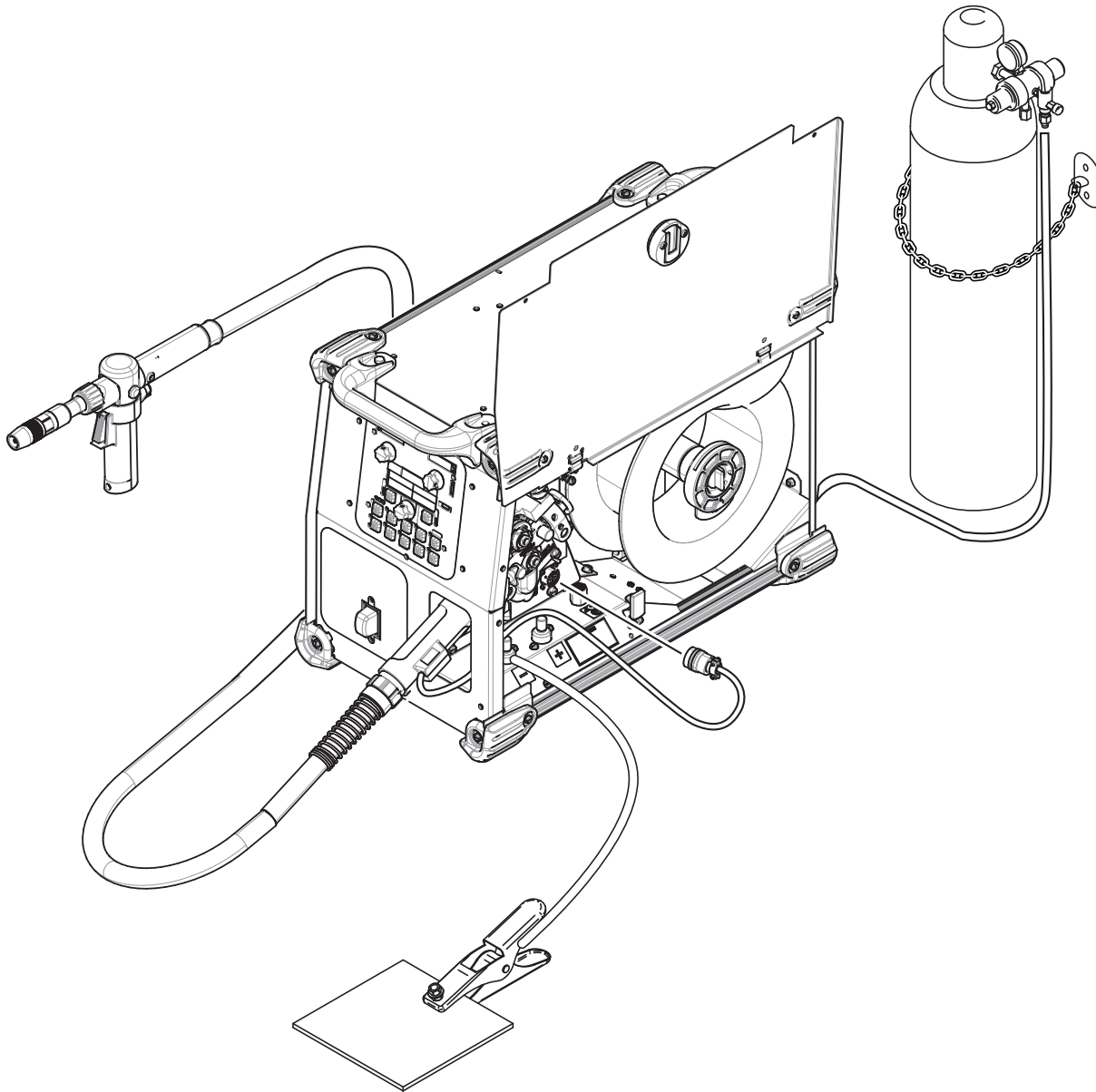


CONNECTING TO POWER SOURCE:

1. Power source must be "off" and power cord disconnected.
2. Connect Push-Pull Gun to wire feeder by inserting power plug to the machine
3. Connect 12-Pin control cable plug to power source receptacle.
4. Reconnect power and turn on machine.

⚠ WARNING**ELECTRIC SHOCK can kill.**

- Do not touch electrically live parts such as output terminals or internal wiring.
- Insulate yourself from the work and ground.
- Always wear dry insulating gloves.

**FIGURE A.2 - SHOWN WITH POWER WAVE C300**

LINER INSTALLATION INSTRUCTIONS

Below are instructions for the installation of liners in the Magnum PRO PA and PW guns.

STEEL MONOCOIL LINERS

- A. Lay the gun in a straight line. Remove the Liner nut (the hex nut on the rear of the gun). Remove the old liner by pulling outward on the brass liner stop.
- B. Insert the bare end of the new liner into the liner "power pin" on the rear of the gun. Inch the liner through the cable assembly until you feel it stop against the torch body. You will notice that some of the liner is still exposed at the back end of the gun. Accurately measure the amount of liner sticking out (from the end of the power pin to the bottom edge of the liner stop). Now remove the liner and cut off this measured section from the bare end of the liner. Reinstall the liner and Liner nut. Tighten the Liner nut to secure the liner.
- C. Be sure that the correct wire guide tube is inserted into the adaptor kit. Thread the gun onto the adaptor.

NOTE: When inching wire through the gun, remove the Drive Pressure Cap and set the wire speed feed very slow. Watch the inlet guide at the gun's drive roll and when the wire appears, carefully guide it into the outlet guide. If the wire speed is too fast the wire will hit on the front of the torch body and bird nest at the feeder.

TEFLON LINER INSTALLATION

- A. Lay the gun in a straight line. Remove the Liner nut (the hex nut on the rear of the gun). Remove the old liner by pulling outward on the brass collet; remove both collet and old liner.
- B. Unpack the Teflon liner you have selected. You will notice that the brass collet is close to one end of the liner but not in a fixed position, and is backed by a small o-ring. Find the end of the liner **without the collet**, and using a liner sharpener, pencil sharpener or knife, shave this end of the liner to a smooth taper.

NOTE: This taper is to ensure that the liner seats properly into the torch body. Failure to follow this procedure could result in erratic wire feeding, and bird nesting.

- C. Insert the tapered end of the liner into the power pin on the rear of the gun. Feed the liner through the cable assembly until you feel it stop against the torch body.

NOTE: Use care not to kink the liner while feeding it into the gun. A kinked liner will result in improper or poor wire feeding, and must be replaced.

- D. While holding forward pressure on the liner, slide the collet and o-ring up to the power pin. The collet will not go the entire way in the stud due to the collets taper. Install the Liner nut over the liner and tighten slightly (do not over-tighten).

NOTE: If installed correctly the liner will have a slight compression on it inside the cable. This compression will eliminate any slack, which might have a negative effect on feeding. Over tightening of the Liner nut will result in wire feed problems, due to pinching of the wire.

- E. If using a liner with an outside diameter of 4.4mm or larger a guide tube support is not necessary. If using a liner 4.3mm or smaller in diameter, slide the guide tube support over the liner. *In general if the guide tube fits over the liner, use it.
- F. Insert the excess liner and guide tube through the adaptor kit, and up to the drive-rolls. Push power pin into feeder. Secure with set screw (whatever is provided on feeder) Connect 12 trigger lead connector.
- G. Mark and trim the excess liner at the drive-rolls to leave a 1/32" gap between the rolls and the liner.
- H. The brass guide tube support should be about 1/8" from the drive rolls. If the guide tube is too long, and interferes with the drive rolls, it will need to be trimmed.

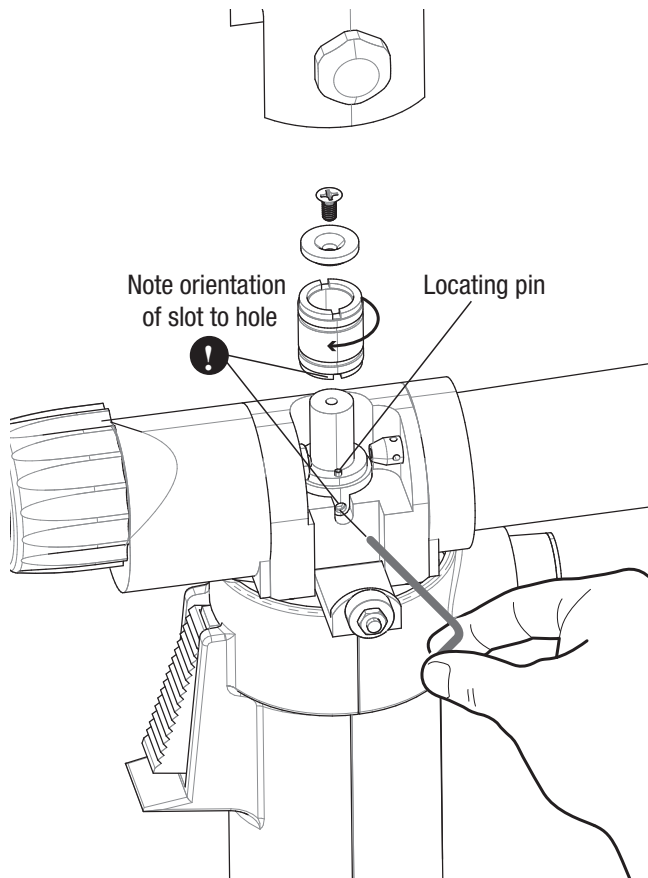
NOTE: When inching wire through the gun, remove the Drive Pressure Cap and set the wire speed feed very slow. Watch the inlet guide at the guns drive roll and when the wire appears, carefully guide it into the outlet guide. If the wire speed is too fast the wire will hit on the front of the torch body and bird nest at the feeder.

DRIVE ROLL, REMOVAL AND REPLACEMENT

The drive rolls are designed for the specific wire size you are using. **Be sure to install the correct size!** When looking at the drive rolls you will notice that there is a groove on each end. These grooves are for the same wire size and allow the drive roll to be flipped over for double the life.

To replace the drive roll you will need a straight screwdriver and a small nail, or Allen wrench. Located at the base of the drive roll on the aluminum housing you will see a U-groove slot. Turn the drive roll clockwise until the hole lines up with the slot. Insert the Allen wrench or nail into the hole. You will now be able to break loose the screw on top of the drive roll. Remove the old drive roll and install the new one. Rotate the new drive roll clockwise until it drops onto the two locating pins of the seat. Re-install the washer and screw on top of the drive roll and remove the Allen wrench or nail.

FIGURE A.3



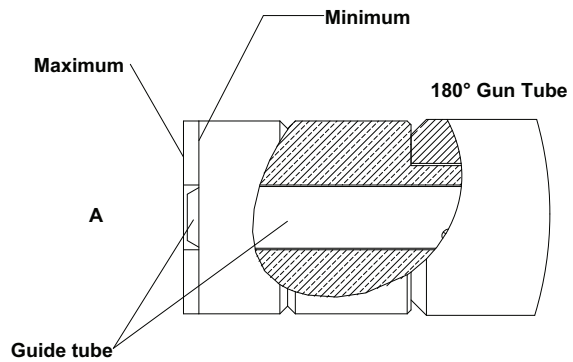
DRIVE PRESSURE CAP ADJUSTMENT

The Drive Pressure Cap tension knobs provide adjustment for various wire types and sizes. The best results can be obtained by starting with the pressure knobs turned outward (counter clockwise), and slowly turning inward (clock-wise) until just enough pressure is applied to feed the wire. The knobs are under slight spring pressure, and if turned outward too far will disconnect, and the spring and ball bearing will fall out.

NOTE: Too much pressure can deform aluminum wires

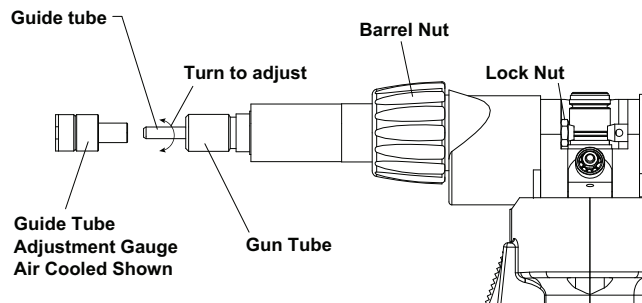
GUN TUBE WIRE GUIDE ADJUSTMENTS

FIGURE A.4



Correct position is between Maximum & Minimum space

FIGURE A.5



Two different gun tube wire guides are available. For the 180-degree neck, a single copper wire guide (approximately 6") is used. The 45-degree and 60-degree gun tube uses a two piece copper and Teflon wire guide.

- A. Remove the drive pressure cap.
- B. Remove the gun tube from the torch body by un-screwing the Barrel Nut.
- C. Thread the selected copper wire guide into the torch body through the gun tube seat.
- D. When the copper wire guide protrudes into the drive roll chamber, thread the wire guide lock nut onto the wire guide.
- E. Thread the copper wire guide in until it touches the drive roll, then thread it back 1/2 turn. This should leave approximately a .010"-.020" gap between the wire guide and drive roll. For 180° copper wire guide: check proper installation with guide tube adjustment gauge.
- F. While holding the copper wire guide firmly tighten the lock nut against the torch body with a 8mm wrench. See Drive Roll Removal step.

NOTE: It may be necessary to remove the drive roll to fit a 8mm wrench in to tighten this nut.

- G. If the 180-degree copper wire guide was chosen, re-install the 180-degree gun tube by sliding it over the wire guide and tightening the barrel nut.
- H. If the 45-degree or 60-degree copper wire guide was chosen, insert the tapered end of the neck wire guide into the front of the copper wire guide. Slide the gun tube over the neck wire guide and copper wire guide, taking care not to dislodge the liner, and tighten the Barrel Nut.

OPERATION

Read and understand this entire section before operating the machine.

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch electrically live parts such as output terminals or internal wiring.
- Insulate yourself from the work and ground.
- Always wear dry insulating gloves.



WELDING SPARKS can cause fire or explosion.

- Keep flammable material away.
- Do not weld upon containers which have held combustibles.



ARC RAYS can burn.

- Wear eye, ear and body protection.



FUMES AND GASES can be dangerous.

Although the removal of the particulate matter from welding smoke may reduce the ventilation requirement, concentrations of the clear exhausted fumes and gases may still be hazardous to health. Avoid breathing concentrations of these fumes and gases. Use adequate ventilation when welding. See ANSI Z49.1, "Safety in Welding and Cutting", published by the American Welding Society.



⚠ WARNING

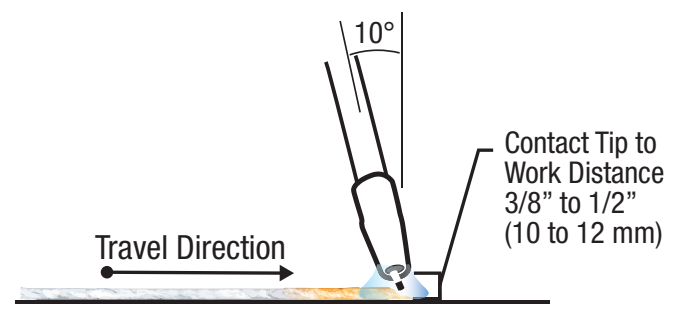
When inching, (the electrode and drive mechanism are always electrically energized and remain energized several seconds after the gun trigger is released.

After choosing the proper welding wire for your application, load the aluminum wire, connect the gun and cable to the welding machine. (See Installation Section).

WELDING PROCEDURES

1. Read and understand Arc Welding Safety Precautions located throughout this manual and the Welding Machine's Instruction Manual.
2. Obtain and use the proper personal protective equipment for welding. Connect the WORK (welding ground) cable(-) to piece(s) being welded. Make sure gas hose from cylinder's regulator is connected to welder's gas INLET. Open cylinder's gas valve.
3. Connect input power to the machine.
4. Turn the machine's power switch to "on". Set wire speed and voltage tap settings to tables which are provided in the beginning of this section.
5. Flip toggle selector switch inside of machine to "SPOOL GUN" position. Press and hold trigger for about 5 seconds to purge hose. Be sure the Gas flow rate is set to 35 to 60 SCFH thru the spool gun.
6. Cut off the aluminum wire so that it extends about 1/4 inches from the contact tip.
7. CTWD (Contact Tip to Work Distance): Position the gun so that the contact tip is nominally 3/8 inches from the joint and tilted with a push angle toward it. The aluminum wire should not contact the workpiece. (See figure B.1)

FIGURE B.1



8. Protect the eyes and pull the trigger to begin welding.
9. Adjust the hand travel speed of the gun to achieve a proper weld. The emerging wire should stay within the molten puddle and not overrun it. This speed also should not be so slow that either the workpiece excessively melts, or the weld bead becomes excessively large.
10. Release the trigger to stop welding.

⚠ CAUTION

These units, though designed to withstand normal industrial use, are precision tools. Do NOT knock spatter out of the nozzle by banging the gun! Do NOT throw the unit! Avoid dropping the unit! Damage to the motor or welding head may result.

P.50 AUTO CALIBRATION PROCEDURE

The auto calibration procedure is used to provide an automatic means of configuring the pull gun to operate with the optimal setting of Gun Offset (P.7 in the user preference menu).

Before running the auto calibration procedure, make sure that the system is set up and ready for welding. P.24 must also be set for the correct pull gun type prior to running auto calibration.

To begin the auto calibration procedure, select P.50 from the user preferences menu. Press the “Begin” button to start the calibration. Pull the gun trigger and hold it closed throughout the procedure. Wire will feed out of the gun while the calibration is being performed. The welding output is NOT energized during the auto calibration procedure. The prompts on the display will indicate when the calibration is complete. If the calibration is interrupted or fails, the procedure should be repeated.

Auto calibration should be performed whenever the wire or gun is changed.

Press both soft keys simultaneously to get into the user settings



Figure 6

(Figure 6).



Figure 7

Scroll to setting P7 using the dial (Figure 7).



Figure 8

Press the adj soft key to adjust the setting (Figure 8).

PROCEDURE SETTINGS

The following procedure settings for 4043 aluminum wire and argon gas can be used as starting points for developing specific welding procedures:

Wire Size in. (mm)	Metal Thickness		Arc Volts	Wire Speed ipm (mpm)	Amps DC (+)
	ga.	in. (mm)			
.030 (0.8)	22	.030 (0.8)	13-14 ⁽¹⁾	200 (5.1)	40
	20	.036 (1.0)	13-14 ⁽¹⁾	240 (6.1)	40
	18	.048 (1.2)	14-15 ⁽¹⁾	290 (7.4)	50
	16	.060 (1.6)	15-16 ⁽¹⁾	340 (8.6)	60
	14	.075 (2.0)	16-17 ⁽¹⁾	370 (9.4)	70
	12	.105 (2.5)	16-18 ⁽¹⁾	430 (10.9)	90
	10	.135 (3.5)	24-26	460 (11.7)	110
	3/16	(5.0)	24-26	500 (12.7)	150
	1/4	(6.0)	28-29	560 (14.2)	180
	3/8	(10.0)	28-30	600 (15.2)	200
	.035 (0.9)	22	.030 (0.8)	13-14 ⁽¹⁾	150 (3.8)
20		.036 (1.0)	13-14 ⁽¹⁾	175 (4.4)	40
18		.048 (1.2)	13-14 ⁽¹⁾	215 (5.5)	50
16		.060 (1.6)	14-16 ⁽¹⁾	250 (6.4)	60
14		.075 (2.0)	14-16 ⁽¹⁾	270 (6.9)	70
12		.105 (2.5)	16-18 ⁽¹⁾	320 (8.1)	90
10		.135 (3.5)	24-26	410 (10.4)	110
3/16		(5.0)	24-26	450 (11.4)	150
1/4		(6.0)	26-28	530 (13.5)	180
3/8		(10.0)	26-29	560 (14.2)	200
1/2		(12.0)	26-30	600 (15.2)	220
3/64(1.2)	10	.135 (3.5)	20-21 ⁽¹⁾	180 (4.6)	110
	3/16	(5.0)	20-21 ⁽¹⁾	220 (5.6)	150
	1/4	(6.0)	27-28	250 (6.4)	180
	3/8	(10.0)	25-30	260 (6.6)	200
	1/2	(12.0)	25-31	270 (6.9)	220
	3/4	(20.0)	25-31	290 (7.4)	250

⁽¹⁾Short arc transfer.

SETTING GAS FLOW RATE

Gas handling systems having adjustable flow valves should be set for the following argon flow rates, depending on base metal thickness and welding position.

ARGON SHIELDING GAS FLOW RATES

Material Thickness In Inches and (mm)	Welding Position	Flow Rates In cf/hr (l/min)
1/16 (1.6 mm)	Flat	30 (11.8)
3/32 to 3/16 (2.4 to 4.8 mm)	Flat, Vertical, Horizontal, Overhead	35 (14)
1/4 to 3/8 (6.3 to 9.5 mm)	Flat, Vertical, Flat Vertical, Horizontal, Overhead	35 (14) 35 (16.5) 40 (18.9)
3/4 (19 mm)	Flat, Vertical Horizontal, Overhead	35 (16.5) 40 (18.9)

MAINTENANCE

WARNING

ELECTRIC SHOCK can kill.

- Turn the input power OFF at the welding power source before installation or changing drive rolls and/or guides.
- Do not touch electrically live parts.
- When inching with the gun trigger, electrode and drive mechanism are "hot" to work and ground and could remain energized several seconds after the gun trigger is released.
- Do not operate with covers, panels or guards removed or open.
- Only qualified personnel should perform maintenance work.



GENERAL INSPECTION AND CLEANING

A regular inspection and upkeep schedule will substantially increase the life of the equipment. Periodically clean dirt and accumulated particles from around the drive rolls and wire guides, by blowing out with compressed air. Check all gas, electrical connections, and hardware for damage or looseness. Inspect cables, wires, and hoses for cracked, frayed, or otherwise damaged outer jackets. Remember that one damaged component can cause harm to others. If necessary send your gun in for expert repairs.

WARNING

When performing inspection or maintenance on the welding gun, be aware of possible shock hazards. Disconnect the welding gun from the machine. Only qualified personnel should perform installation and maintenance.

CAUTION

Do not use any equipment that is not operating properly! Correct the problem before using the equipment. Use only Genuine Magnum Pro parts.

NOTE: The time periods for procedures are based on an eight-hour workday. If your use exceeds these criteria, decrease the time between maintenance and checks.

ADAPTOR KIT MAINTENANCE

In the Magnum Pro Central Adaptor System one part requires periodic replacement. The steel or brass guide tubes should be inspected any time they are removed for changing wire size or spools.

PUSH PULL GUN MAINTENANCE

Other than general inspection and consumable replacement certain tasks should be performed on a periodic basis.

PERFORM DAILY

- Check the rear adaptor nut at the machine connection and the Barrel Nut. Tighten by hand if loose.
- Remove the drive roll cap, and with compressed air, clean the area around the drive roll of metallic particles.

CAUTION

Use proper eye protection when using compressed air!

NOTE: Use of solvents for cleaning is not recommended, and could damage the motor and cable hoses.

- Check the gun tube wire guide and lock nut for tightness and adjust as necessary.
- Check the drive roll for wear and tightness of the retaining washer and nut.
- Re-install the drive roll cap.
- Inspect the nozzle for wear and spatter build up. A worn out nozzle will be loose on the nozzle seat.

CAUTION

Do not knock spatter out of the nozzle by banging the gun! Use a pair of nozzle cleaning pliers or the equivalent to prevent damage to the gun. Remember this is a precision hand tool!

- Check the contact tip, contact tip holder, and gas diffusor for wear and tightness. Replace and/or tighten as necessary.

PERFORM WHEN CHANGING WIRE SIZES OR SPOOLS

- Disconnect the gun from the machine.
- Remove the drive roll cap.
- Using compressed air (maximum 30 psi), blow into the liner from the rear to remove wire particles.

CAUTION

Use proper eye protection when using compressed air.

- Re-install the Drive Pressure Cap and re-connect the gun to the machine.

Observe all Safety Guidelines detailed throughout this manual

TROUBLESHOOTING

HOW TO USE TROUBLESHOOTING GUIDE

WARNING

Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).

Look under the column labeled "PROBLEM (SYMPTOMS)." This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. POSSIBLE CAUSE.

The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION

This column provides a course of action for the Possible Cause, generally it states to contact your local Lincoln Authorized Field Service Facility.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Lincoln Authorized Field Service Facility.

WARNING

ELECTRIC SHOCK can kill.

- Turn off machine at the disconnect switch on the rear of the machine and remove main power supply connections before doing any troubleshooting.

Observe all Safety Guidelines detailed throughout this manual

PROBLEM (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
No wire feed occurs when trigger is pulled	1. Machine is switched off or unplugged.	1. Switch on or plug in machine.
	2. Spool gun is out of wire.	2. Install full spool of specified wire.
	3. Contact tip burnback.	3. Replace contact tip.
	4. Fully or partially blocked gun tube liner.	4. Remove and clean or replace gun tube liner. Check for proper wire alignment and wire's mechanical resistance. (See maintenance section for safety guidelines while performing repairs)
	5. Bird nest.	5. Cut out bird nest, reload wire, and check for proper wire alignment and wire's mechanical resistance.
	6. Machine's toggle selector switch is not set to spool gun mode.	6. Flip switch to proper operating position
	7. Defective trigger. (contacts open)	7. Replace trigger. (See maintenance section for safety guidelines while performing repairs)
	8. Defective trigger circuit in gun.	8. Disconnect gun from machine and check trigger circuit for continuity.
	9. Damaged spool gun motor.	9. Contact Lincoln Authorized Service Facility (LASF) for possible motor replacement.
	10. No motor voltage or current from machine.	10. See Troubleshooting section in welding machine's instruction manual.
	11. Contact tip size too small for wire diameter used.	11. Replace contact tip with one that is the correct size.
Sluggish wire feed when trigger is pulled	1. Drive roll is worn or galled with aluminum.	1. Clean drive roll of all aluminum or replace drive roll.
	2. Machine's wire feed speed setting is too low.	2. Increase wire feed speed.
	3. Wire is obstructed somewhere along the wire feed path in the gun.	3. Check for obstructions: remove any wire shavings; remove kinked wire; remove and clean or replace gun tube liner (See maintenance section for safety guidelines while performing repairs)
	4. Low motor voltage.	4. See Troubleshooting section in welding machine's instruction manual.
Drive roll turns in reverse direction.	1. Motor leads are connected in reverse.	1. Connect properly. (See maintenance section for safety guidelines while performing repairs)



If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.

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Observe all Safety Guidelines detailed throughout this manual

PROBLEM (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
Intermittent wire feed when trigger is pulled.	1. Wire is mechanically binding along its feed path inside gun.	1. Check that wire is properly aligned inside gun.
	2. Drive roll has become loose on hub and output shaft.	2. Check that drive roll is securely fastened in place by SHCS (socket head cap screw); replace hub and twist-lock if worn.
	3. Drive roll has become galled with aluminum.	3. Remove and then clean or replace drive roll. (See Maintenance Section)
	4. Wire has become kinked along its feed path.	4. Manually pull wire slowly thru gun until unkinked wire emerges.
	5. Idle roll assembly is installed backwards.	5. Install properly. (See Maintenance Section)
	6. Liner assembly is shaving wire.	6. Check that wire is properly aligned at liner inlet; realign gun tube with wire drive. (See Correcting Wire Shaving Issues Maintenance Section)
Frequent occurrence of contact tip burnback.	1. Improper welding parameters or technique. (Example: CTWD (Contact Tip to Work Distance) is incorrect.	1. See Operation Section for proper Welding information.
	2. Wire may be feeding intermittently.	2. See symptoms on intermittent or sluggish wire feed.
Poor weld bead appearance (porosity or dull gray oxidized surface).	1. No gas flow.	1. See symptom "Low or no gas flow"
	2. Low gas flow.	2. See symptom "Low or no gas flow"
	3. Improper or contaminated shielding gas.	3. Check that the gas supply's labeling reads 100% argon. Temporarily use alternate, known gas supply and check for appearance improvement.
	4. Welding in a windy environment..	4. Erect a wind shield or move to a non-windy location before welding.
	5. Improper electrode polarity.	5. Reconnect machine's welding output to electrode positive polarity.
	6. Improper welding parameters or technique.	6. See Operation Section for information.



If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.

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Observe all Safety Guidelines detailed throughout this manual

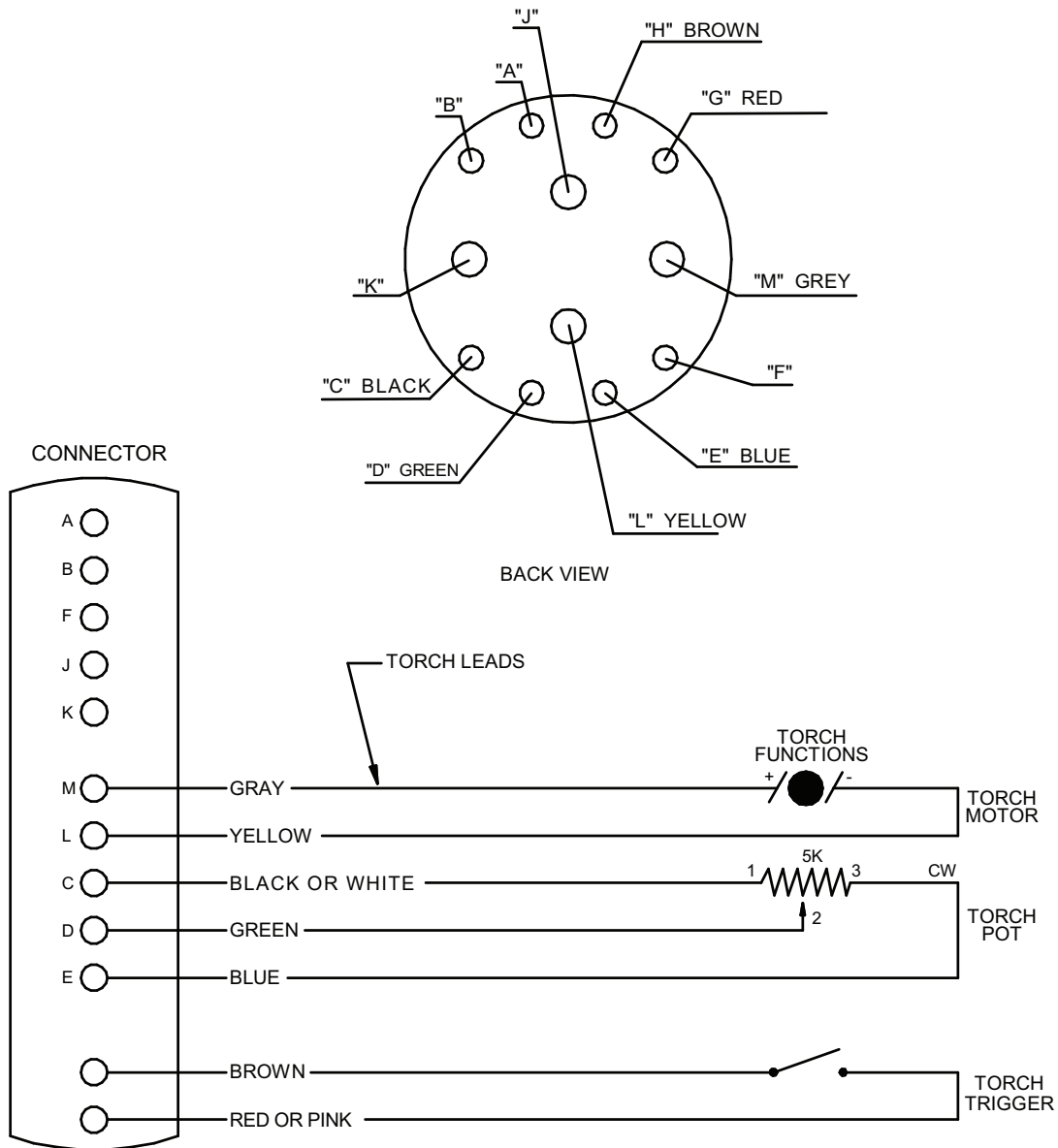
PROBLEM (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
Low or no shielding gas flow.	1. Out of gas.	1. Check that an adequate gas supply is available.
	2. Gas supply is turned off or disconnected.	2. Check that all gas supply valves are open.
	3. Gas supply flow regulator is improperly set.	3. Check that gas flow is set between 35 to 60 SCFH.
	4. Machine's gas solenoid valve has malfunctioned.	4. See machine's instruction manual.
	5. Blockage in gun along gas path.	5. Gently blow out debris from core tube.
	6. Gun cable kinked or flattened.	6. Attempt to straighten out cable, or replace cable. (See Maintenance Section)
	7. Blockage due to excessive spatter accumulation on gas cone or gas diffuser.	7. Clean or replace gas cone or gas diffuser.
	8. Excessive gas leakage from supply.	8. Find and repair all leaks.
	9. Gas leakage in gun between liner assembly and cable connector.	9. Replace liner assembly. (See Liner Installation Instructions)
	10. Gas leakage at gun-to-feeder connection.	10. Damaged o-rings: replace both seals. Gun connector not fully inserted into machine (See Installation Section).
Wire feeder runs or begins feeding wire without pulling the gun trigger.	1. Defective trigger. (contacts closed)	1. Replace trigger. (See Maintenance Section)
	2. Defective (closed) trigger circuit in the welding machine.	2. See machine's instruction manual
	3. Trigger lead(s) inside gun cable are shorted together or commonly shorted to either welding or motor circuits.	3. Damaged control leads between machine's connector and cable; repair if possible. Otherwise, replace gun cable. (See Maintenance Section) for both.



If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.

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CONTROL CABLE WIRING DIAGRAM



			
WARNING	<ul style="list-style-type: none"> ● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground. 	<ul style="list-style-type: none"> ● Keep flammable materials away. 	<ul style="list-style-type: none"> ● Wear eye, ear and body protection.
Spanish AVISO DE PRECAUCION	<ul style="list-style-type: none"> ● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aíslese del trabajo y de la tierra. 	<ul style="list-style-type: none"> ● Mantenga el material combustible fuera del área de trabajo. 	<ul style="list-style-type: none"> ● Protéjase los ojos, los oídos y el cuerpo.
French ATTENTION	<ul style="list-style-type: none"> ● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. ● Isolez-vous du travail et de la terre. 	<ul style="list-style-type: none"> ● Gardez à l'écart de tout matériel inflammable. 	<ul style="list-style-type: none"> ● Protégez vos yeux, vos oreilles et votre corps.
German WARNUNG	<ul style="list-style-type: none"> ● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden! 	<ul style="list-style-type: none"> ● Entfernen Sie brennbares Material! 	<ul style="list-style-type: none"> ● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese ATENÇÃO	<ul style="list-style-type: none"> ● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra. 	<ul style="list-style-type: none"> ● Mantenha inflamáveis bem guardados. 	<ul style="list-style-type: none"> ● Use proteção para a vista, ouvido e corpo.
Japanese 注意事項	<ul style="list-style-type: none"> ● 通電中の電気部品、又は溶材にヒブやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。 	<ul style="list-style-type: none"> ● 燃えやすいものの側での溶接作業は絶対にしてはなりません。 	<ul style="list-style-type: none"> ● 目、耳及び身体に保護具をして下さい。
Chinese 警告	<ul style="list-style-type: none"> ● 皮肤或湿衣物切勿接触带电部件及焊条。 ● 使你自已与地面和工作件绝缘。 	<ul style="list-style-type: none"> ● 把一切易燃物品移离工作场所。 	<ul style="list-style-type: none"> ● 佩戴眼、耳及身体劳动保护用具。
Korean 위험	<ul style="list-style-type: none"> ● 전도체나 용접봉을 젖은 헝겍 또는 피부로 절대 접촉치 마십시오. ● 모재와 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> ● 인화성 물질을 접근시키지 마십시오. 	<ul style="list-style-type: none"> ● 눈, 귀와 몸에 보호장구를 착용하십시오.
Arabic تحذير	<ul style="list-style-type: none"> ● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجسدك أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل. 	<ul style="list-style-type: none"> ● ضع المواد القابلة للاشتعال في مكان بعيد. 	<ul style="list-style-type: none"> ● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
<ul style="list-style-type: none"> ● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone. 	<ul style="list-style-type: none"> ● Turn power off before servicing. 	<ul style="list-style-type: none"> ● Do not operate with panel open or guards off. 	WARNING
<ul style="list-style-type: none"> ● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases. 	<ul style="list-style-type: none"> ● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio. 	<ul style="list-style-type: none"> ● No operar con panel abierto o guardas quitadas. 	Spanish AVISO DE PRECAUCION
<ul style="list-style-type: none"> ● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail. 	<ul style="list-style-type: none"> ● Débranchez le courant avant l'entretien. 	<ul style="list-style-type: none"> ● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés. 	French ATTENTION
<ul style="list-style-type: none"> ● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes! 	<ul style="list-style-type: none"> ● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!) 	<ul style="list-style-type: none"> ● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen! 	German WARNUNG
<ul style="list-style-type: none"> ● Mantenha seu rosto da fumaça. ● Use ventilação e exaustão para remover fumo da zona respiratória. 	<ul style="list-style-type: none"> ● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas. 	<ul style="list-style-type: none"> ● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas. 	Portuguese ATENÇÃO
<ul style="list-style-type: none"> ● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。 	<ul style="list-style-type: none"> ● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切して下さい。 	<ul style="list-style-type: none"> ● パネルやカバーを取り外したまま機械操作をしないで下さい。 	Japanese 注意事項
<ul style="list-style-type: none"> ● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。 	<ul style="list-style-type: none"> ● 維修前切斷電源。 	<ul style="list-style-type: none"> ● 儀表板打開或沒有安全罩時不準作業。 	Chinese 警告
<ul style="list-style-type: none"> ● 얼굴로부터 용접가스를 멀리하십시오. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오. 	<ul style="list-style-type: none"> ● 보수전에 전원을 차단하십시오. 	<ul style="list-style-type: none"> ● 판넬이 열린 상태로 작동치 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها. 	<ul style="list-style-type: none"> ● اقطع التيار الكهربائي قبل القيام بأية صيانة. 	<ul style="list-style-type: none"> ● لا تشغيل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه. 	Arabic تحذير

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀焊材料，並請遵守貴方的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

CUSTOMER ASSISTANCE POLICY

The business of Lincoln Electric is manufacturing and selling high quality welding equipment, automated welding systems, consumables, and cutting equipment. Our challenge is to meet the needs of our customers, who are experts in their fields, and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or technical information about their use of our products. Our employees respond to inquiries to the best of their ability based on information and specifications provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment, or to provide engineering advice in relation to a specific situation or application. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or communications. Moreover, the provision of such information or technical information does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or technical information, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose or any other equivalent or similar warranty is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the definition of specifications, and the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

WELD FUME CONTROL EQUIPMENT

The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.



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