



OM-227 398D

2007-12

Processes



MIG (GMAW) Welding

Description

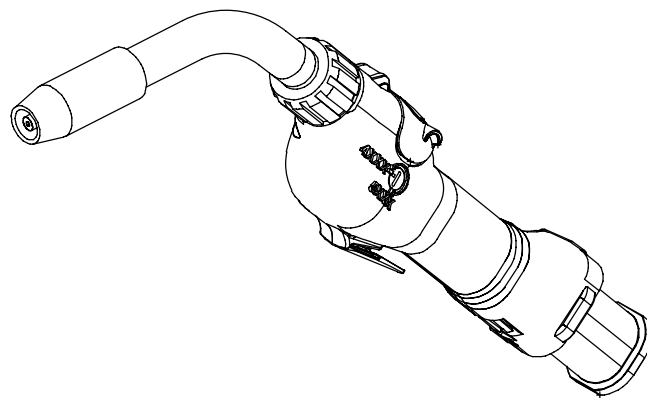


Semi-Automatic, Air/Water-Cooled, MIG (GMAW) Welding Gun



XRTM - Aluma-Pro

(Air And Water-Cooled Guns)



300 Ampere (Air) Push-Pull Welding Gun
400 Ampere (Water) Push-Pull Welding Gun

OWNER'S MANUAL



Visit our website at
www.MillerWelds.com

File: MIG (GMAW)



From Miller to You

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

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

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

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite.

We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.



Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001:2000 Quality System Standard.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual specification sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.**



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



TABLE OF CONTENTS

SECTION 1 – SAFETY PRECAUTIONS FOR GMAW WELDING GUNS – READ BEFORE USING	1
1-1. Symbol Usage	1
1-2. Arc Welding Hazards	1
1-3. EMF Information	2
SECTION 2 – DEFINITIONS	3
2-1. Warning Label Definitions	3
2-2. Manufacturer’s Rating Label For CE Products Only	4
2-3. WEEE Label (For Products Sold Within The EU)	4
2-4. Symbols And Definitions	4
SECTION 3 – INTRODUCTION	5
3-1. Specifications	5
3-2. Duty Cycle And Overheating	5
SECTION 4 – INSTALLATION	6
4-1. Connections With A Constant Current (CC), Constant Voltage (CV) Or Constant Current/Constant Voltage (CC/CV) Welding Power Source Having A 14-Socket Receptacle	6
4-2. XR-Water-Cooled Gun Connections	7
4-3. Millermatic 350P Water Cooled Gun Connections	8
4-4. Threading Welding Wire For Aluma-Pro Gun And Millermatic 350P	9
4-5. Threading Welding Wire Through XR-Control Feeder	10
4-6. Adjusting Tension At Feeder	10
4-7. 10-Pin Plug Information	11
4-8. Opening Top Cover Of XR-Aluma-Pro Gun	11
4-9. Threading Welding Wire Through Gun	12
SECTION 5 – OPERATION	13
5-1. Gun Controls	13
5-2. Gun Pressure Roll Tension Setting	13
5-3. Shielding Gas	14
5-4. Coolant Supply For Water-Cooled Models Only	14
5-5. Gun Drive Assembly Maintenance For An XR-Aluma-Pro Gun	15
5-6. Replacing Head Tube Liner In XR-Aluma-Pro Guns	16
5-7. Changing Gun Contact Tip	16
5-8. Replacing The Gun Liner On XR-Aluma-Pro Guns	17
SECTION 6 – MAINTENANCE & TROUBLESHOOTING	18
6-1. Routine Maintenance For Aluminum Push/Pull Guns	18
6-2. Cleaning The Gun Liner On XR-Aluma-Pro Guns	19
6-3. Troubleshooting Table	20
SECTION 7 – ELECTRICAL DIAGRAMS	21
SECTION 8 – PARTS LIST	22
SECTION 9 – PARTS LIST INCLUDING CONSUMABLES	27
OPTIONS AND ACCESSORIES	
WARRANTY	

Declaration of Conformity for European Community (CE) Products

NOTE

This information is provided for units with CE certification (see rating label on unit).

Manufacturer:

Miller Electric Mfg. Co.
1635 W. Spencer St.
Appleton, WI 54914 USA
Phone: (920) 734-9821

European Contact:

Mr. Danilo Fedolfi,
Managing Director
ITW Welding Products Italy S.r.l.
Via Privata Iseo 6/E
20098 San Giuliano
Milanese, Italy
Phone: 39(02)98290-1
Fax: 39(02)98290203

European Contact Signature: _____

Declares that the product:

XR - Aluma-Pro

conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 73/23/EEC

Electromagnetic Compatibility (EMC) Directive: 89/336/EEC

Standards

Arc Welding Equipment – Part 5: Wire Feeders. IEC 60974-5 Ed. 1

Arc Welding Equipment – Part 10: Electromagnetic Compatibility (EMC) Requirements. IEC 60974-10 August 2002

Arc Welding Equipment – Part 1: Welding Power Sources. IEC 60974-1 Ed. 2.1

Degrees Of Protection Provided By Enclosure (IP Code) IEC 60529 Ed. 2.1

Insulation Coordination For Equipment Within Low-Voltage Systems –
Part 1: Principles, Requirements and Tests: IEC 60664-1 Ed. 1.1

Arc Welding Equipment – Part 7: Torches. IEC 60974-7 Ed.1


The product technical file is maintained by the responsible Business Unit(s) located at the manufacturing facility.


SECTION 1 –SAFETY PRECAUTIONS FOR GMAW WELDING GUNS – READ BEFORE USING

SR7_2007-04

 Protect yourself and others from injury — read and follow these precautions.

1-1. Symbol Usage

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

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


NOTICE – Indicates statements not related to personal injury.

 Indicates special instructions.



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

1-2. Arc Welding Hazards

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

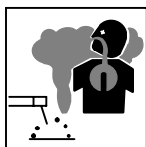
 Only qualified persons should install, operate, maintain, and repair this unit.

 During operation, keep everybody, especially children, away.



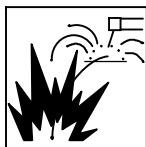
ELECTRIC SHOCK can kill.

- Always wear dry insulating gloves.
- Insulate yourself from work and ground.
- Do not touch live electrode or electrical parts.
- Repair or replace worn, damaged, or cracked gun or cable insulation.
- Turn off welding power source before changing contact tip or gun parts.
- Keep all covers and handle securely in place.



FUMES AND GASES can be hazardous.

- Keep your head out of the fumes.
- Ventilate area, or use breathing device.
- Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for material used.



WELDING can cause fire or explosion.

- Do not weld near flammable material.
- Do not weld on closed containers.
- Watch for fire; keep extinguisher nearby.



BUILDUP OF GAS can injure or kill.

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



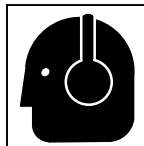
ARC RAYS can burn eyes and skin.

- Wear welding helmet with correct shade of filter.
- Wear correct eye and body protection.
- Cover exposed skin with spatter-resistant clothing.



HOT PARTS can cause severe burns.

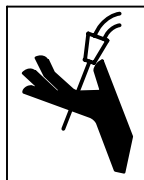
- Allow gun to cool before touching.
- Do not touch hot metal.
- Protect hot metal from contact by others.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

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



WELDING WIRE can cause injury.

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

1-3. EMF Information

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

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: "The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard." However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Implanted Medical Devices:

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

SECTION 2 – DEFINITIONS


2-1. Warning Label Definitions




- A. Warning! Watch Out! There are possible hazards as shown by the symbols.
- B. Drive rolls can injure fingers.
- C. Welding wire and drive parts are at welding voltage during operation – keep hands and metal objects clear.
- 1 Electric shock can kill.
 - 1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.
 - 1.2 Protect yourself from electric shock by insulating yourself from work and ground.
 - 1.3 Disconnect input plug or power before working on machine.
 - 2 Breathing welding fumes can be hazardous to your health.
 - 2.1 Keep your head out of the fumes.
 - 2.2 Use forced ventilation or local exhaust to remove the fumes.
 - 2.3 Use ventilating fan to remove fumes.
 - 3 Welding sparks can cause explosion or fire.
 - 3.1 Keep flammables away from welding. Don't weld near flammables.
 - 3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watch person ready to use it.
 - 3.3 Do not weld on drums or any closed containers.
 - 4 Arc rays can burn eyes and injure skin.
 - 4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.
 - 5 Become trained and read the instructions before working on the machine or welding.
 - 6 Do not remove or paint over (cover) the label.

2-2. Manufacturer's Rating Label For CE Products Only

LR5071



C US



SERIAL NO. -SERIAL-

CONTROL CIRCUIT RATING:
30 VOLTS DC 1 AMP DC

WELD CIRCUIT RATING:
100 Volts 300 100%
MAX AMPERES DUTY CYCLE

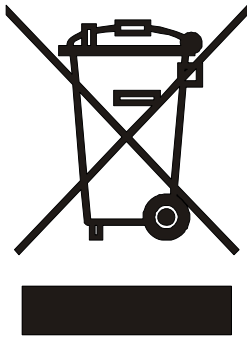
U₁=30V I₁=1A IP 23

U₂=100V I₂=300A X 100%

EVIDENCE OF LABEL TAMPERING VOIDS WARRANTY

229 109-A

2-3. WEEE Label (For Products Sold Within The EU)
























Do not discard product (where applicable) with general waste.

Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility.

Contact your local recycling office or your local distributor for further information.

2-4. Symbols And Definitions

 Some symbols are found only on CE products.

A	Amperes	V	Volts		Alternating Current	X	Duty Cycle
IP	Degree Of Protection	Hz	Hertz		Circuit Breaker		Wire Feed
	Jog		Output		Trigger		Gun
	Press To Set		Increase		Trigger Hold On		Trigger Hold Off
	Purge	... t	Spot Weld Time	%	Percent		Run-In
	Burnback Time	U₁	Primary Voltage	U₂	Load Voltage		Read Instructions
I₁	Primary Current	I₂	Rated Current		Line Connection		Water (Coolant) Input
	Water (Coolant) Output		Fuse		Continuous Spot Welding		



SECTION 3 – INTRODUCTION

3-1. Specifications

Model	Welding Output Range	Electrode Wire Diameter Capacity	Wire Feed Speed Range	Net Weight (Torch Only)
XR-Aluma-Pro Gun (Air Cooled)	300 A at 100% Duty Cycle with 15, 25 or 35 ft (4.6 or 7.6 m) gun	.030 To 1/16 in (0.8 To 1.6 mm) aluminum wire	70 To 900 ipm (1.8 To 23 mpm)	2.5 lb (1.1 kg) (less cables)
XR-Aluma-Pro Gun (Water Cooled)	400 A at 100% Duty Cycle with 15, 25 or 35 ft (4.6 or 7.6 m) gun	.030 To 1/16 in (0.8 To 1.6 mm) aluminum wire	70 To 900 ipm (1.8 To 23 mpm)	2.9 lb (1.3 kg) (less cables)

☞ When changing 1/16 in (1.6 mm) wire, kit 230708 must be installed.

3-2. Duty Cycle And Overheating






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

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

Air-Cooled Models



100% Duty Cycle At 300 Peak Amperage Using 100% Argon Gas w/15, 25 Or 35 Foot Guns

Continuous Welding

Water-Cooled Models

100% Duty Cycle At 400 Peak Amperage Using 100% Argon Gas w/15, 25 Or 35 Foot Guns

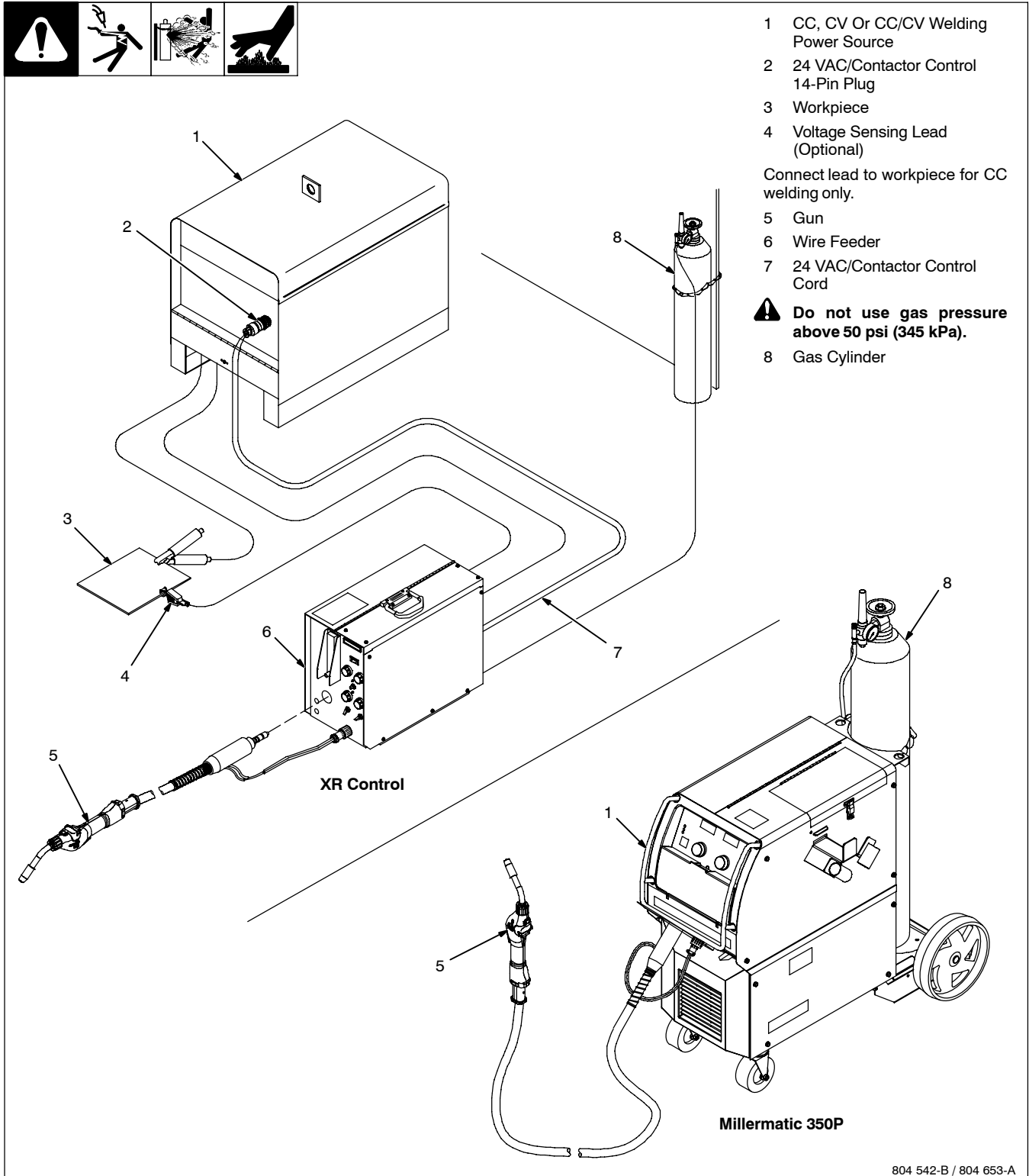
Continuous Welding

sduty1 5/95

SECTION 4 – INSTALLATION

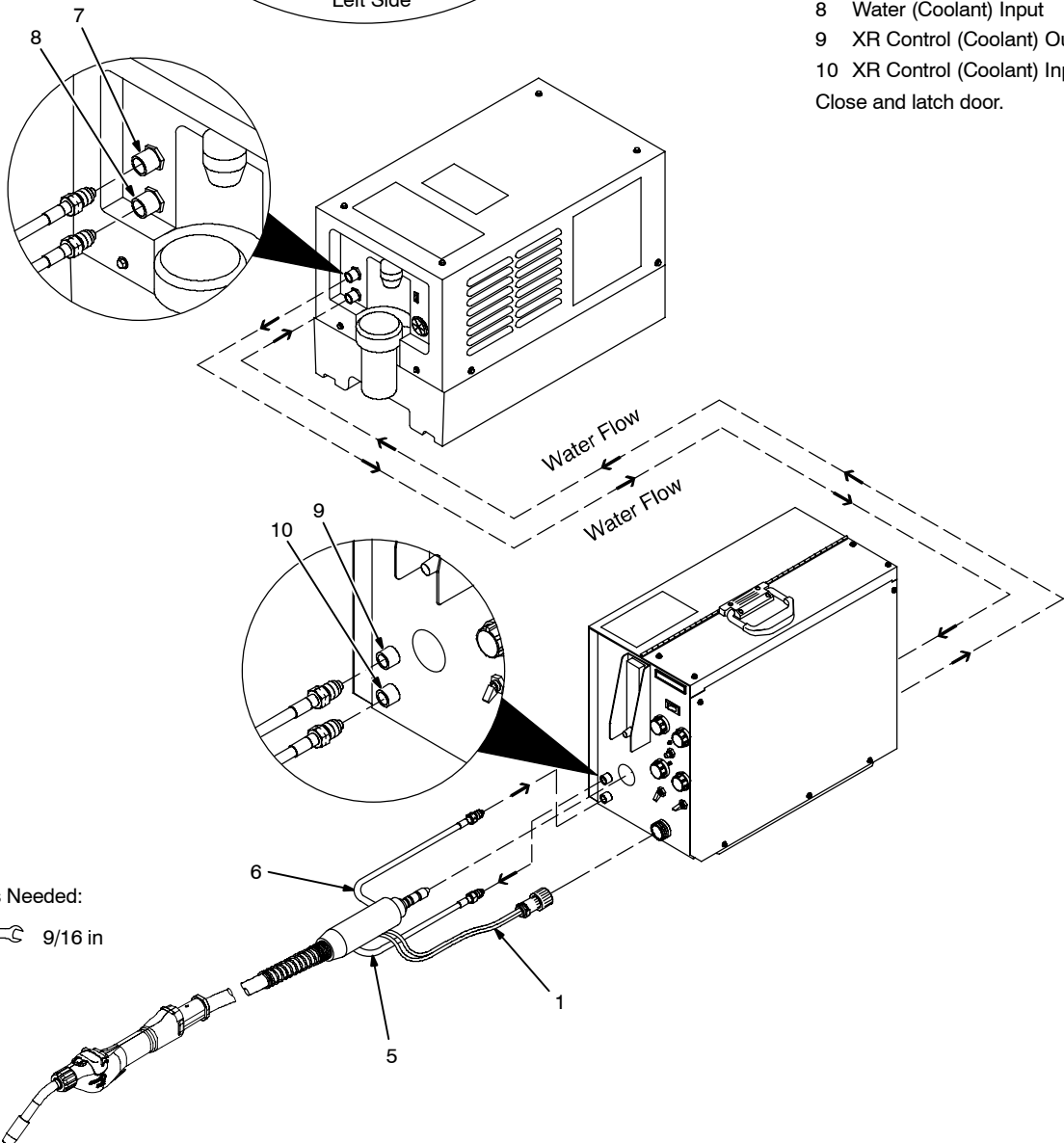
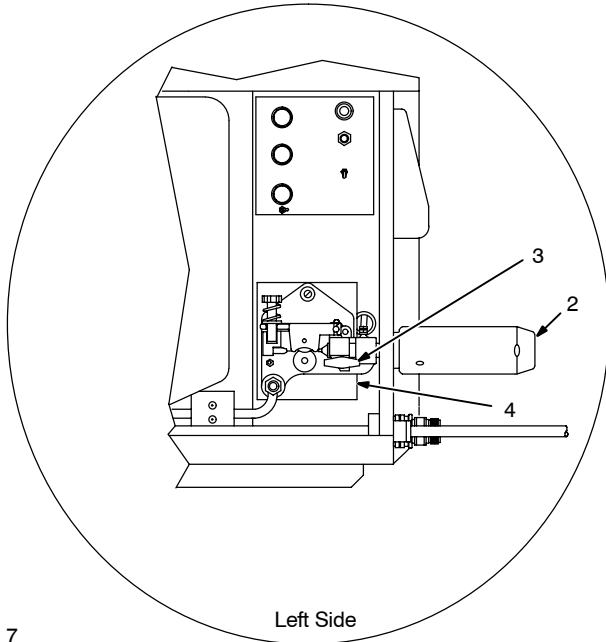
ⓘ Be sure that contact tip, liner, and drive rolls are correct for wire size and type. See Parts List to change parts as needed.

4-1. Connections With A Constant Current (CC), Constant Voltage (CV) Or Constant Current/Constant Voltage (CC/CV) Welding Power Source Having A 14-Socket Receptacle

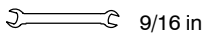


804 542-B / 804 653-A

4-2. XR-Water-Cooled Gun Connections



Tools Needed:



☞ Turn on coolant supply before welding or gun will be damaged.

1 Gun Control Cable

Insert plug into Gun Control receptacle, and tighten threaded collar.

2 Gun Connector

3 Gun Securing Knob

4 Gun Connector Block

Loosen gun securing knob, and insert gun connector through Wire opening until it bottoms against block. Tighten knob. Close and latch door.

5 Gun (Coolant) "In" Hose

Connect to Water "In" fitting on feeder (left-hand threads).

6 Gun (Coolant) "Out" Hose

Connect to Water "Out" fitting on feeder (left-hand threads)

7 Water (Coolant) Output

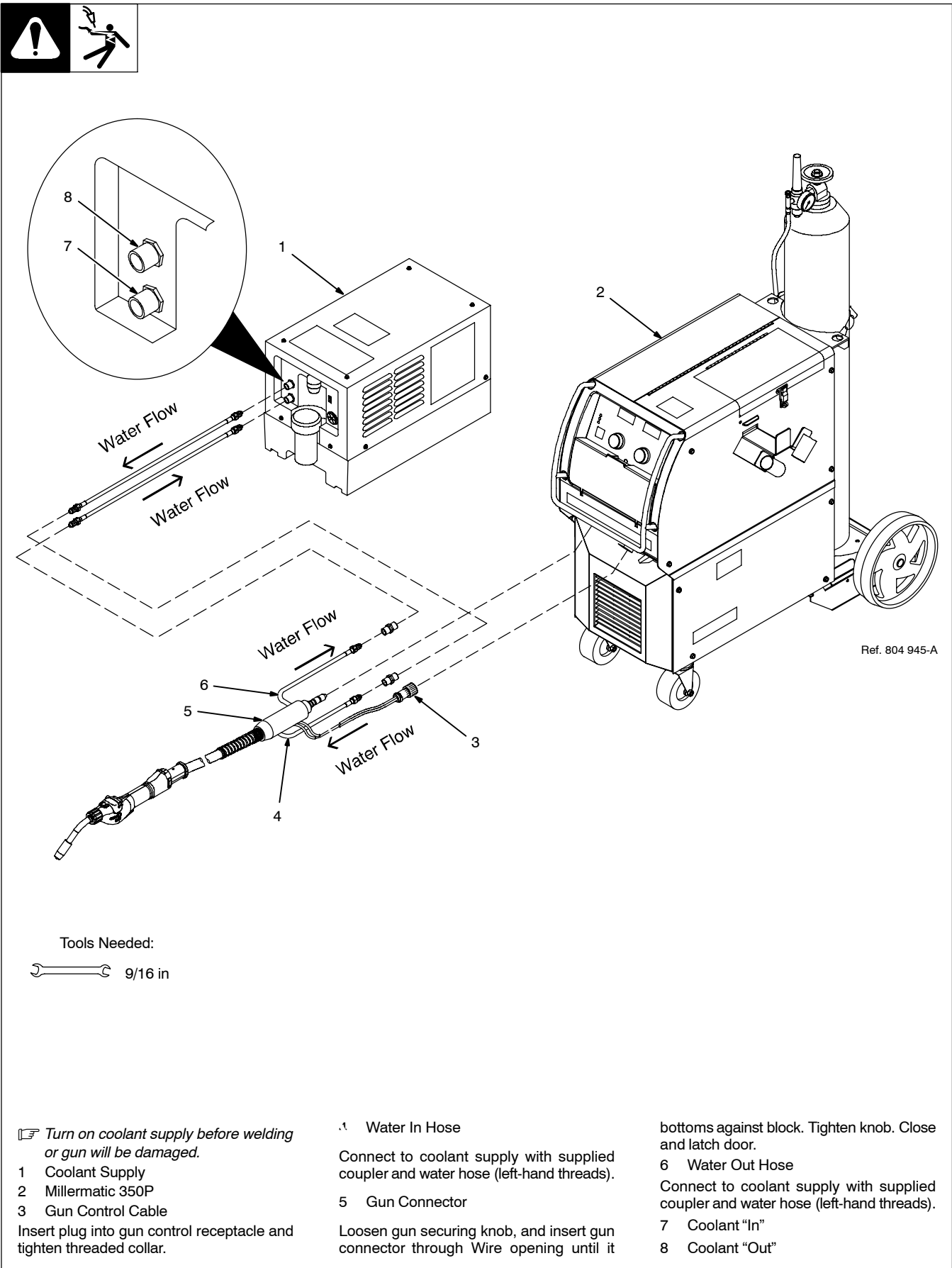
8 Water (Coolant) Input

9 XR Control (Coolant) Output

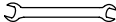
10 XR Control (Coolant) Input


Close and latch door.

4-3. Millermatic 350P Water Cooled Gun Connections



Tools Needed:

 9/16 in

 Turn on coolant supply before welding or gun will be damaged.

- 1 Coolant Supply
- 2 Millermatic 350P
- 3 Gun Control Cable

Insert plug into gun control receptacle and tighten threaded collar.

4 Water In Hose

Connect to coolant supply with supplied coupler and water hose (left-hand threads).

5 Gun Connector

Loosen gun securing knob, and insert gun connector through Wire opening until it

bottoms against block. Tighten knob. Close and latch door.

6 Water Out Hose

Connect to coolant supply with supplied coupler and water hose (left-hand threads).

7 Coolant "In"

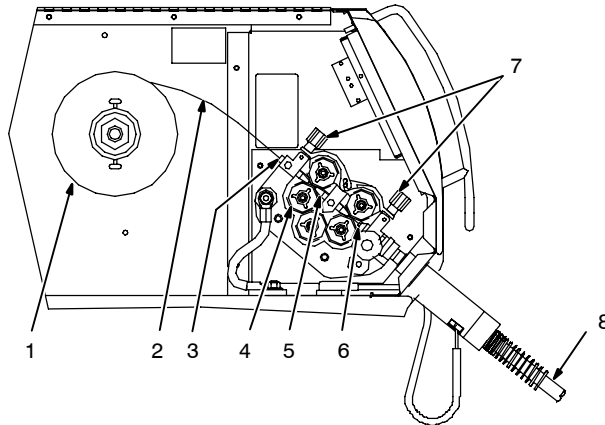
8 Coolant "Out"

Ref. 804 945-A

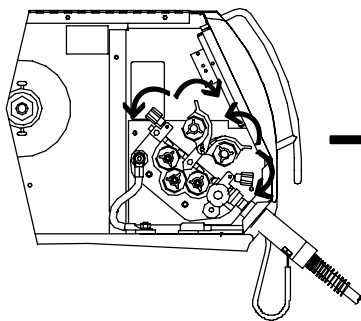
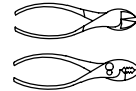
4-4. Threading Welding Wire For Aluma-Pro Gun And Millermatic 350P



- 1 Wire Spool
 - 2 Welding Wire
 - 3 Inlet Wire Guide
 - 4 Drive Roll
 - 5 Intermediate Wire Guide
 - 6 Outlet Wire Guide
 - 7 Pressure Adjustment Knob
 - 8 Gun Conduit Cable
- Lay gun cable out straight.



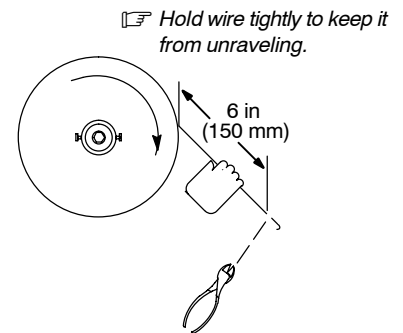
Tools Needed:



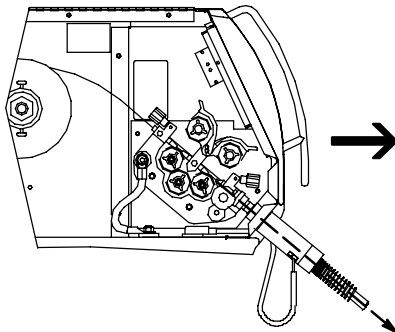
Open pressure assembly.



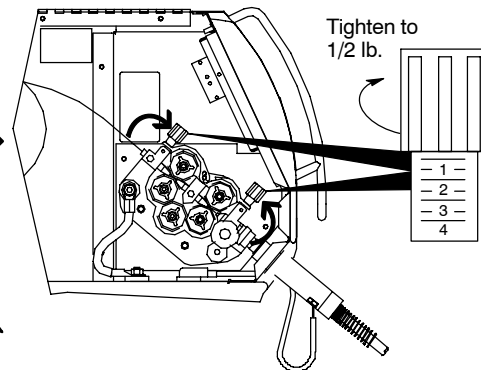
3/4 in



Pull and hold wire; cut off end.



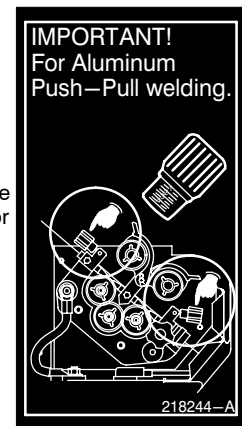
Push wire thru guides into gun; continue to hold wire.



Close and tighten pressure assembly, and let go of wire.

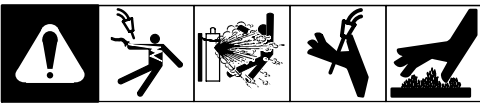
Set pressure indicator scale to 1/2 lb.

Pressure Indicator Scale

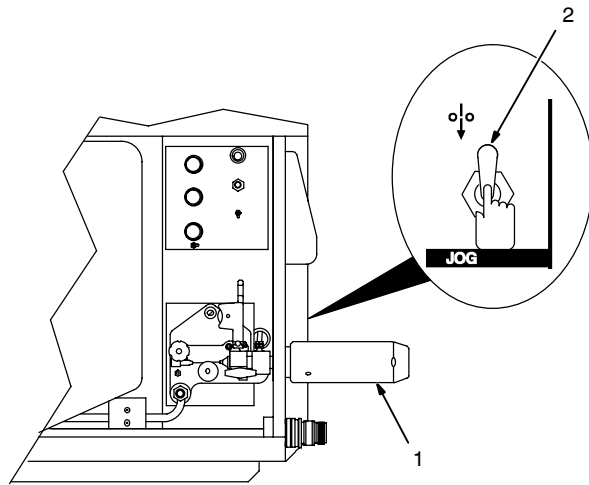


See Section 4-9 for threading welding wire through Aluma-Pro guns.

4-5. Threading Welding Wire Through XR-Control Feeder



Tools Needed:



1 Cable Assembly

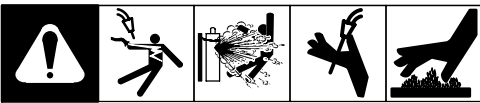
Lay cable assembly out straight.

2 Jog Switch

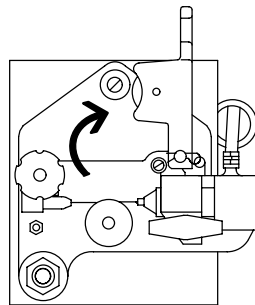
Push Jog switch up to feed wire through cable assembly.

Ref. 802 193-A

4-6. Adjusting Tension At Feeder

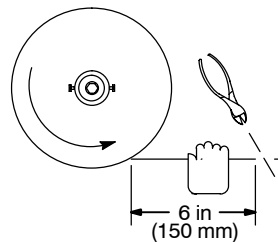


Tools Needed:

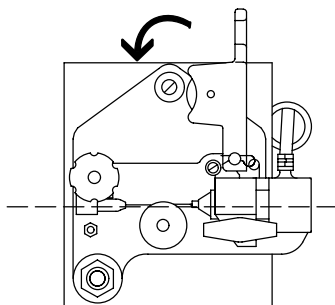


Open tension arm.

☞ Hold wire tightly to keep it from unraveling.



Pull and hold wire; cut off end.


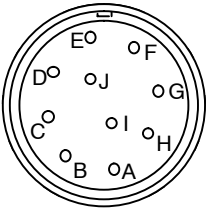


➔ Proceed to Section 4-9.


Thread wire thru inlet guide, along drive roll groove, and into wire conduit. Close tension arm. **Adjust tension as follows:** grasp spool with one hand, press Jog switch, and turn thumb nut clockwise until motor stalls when Jog switch is pressed. Back thumb nut off slightly.

Ref. 802 193-A

4-7. 10-Pin Plug Information

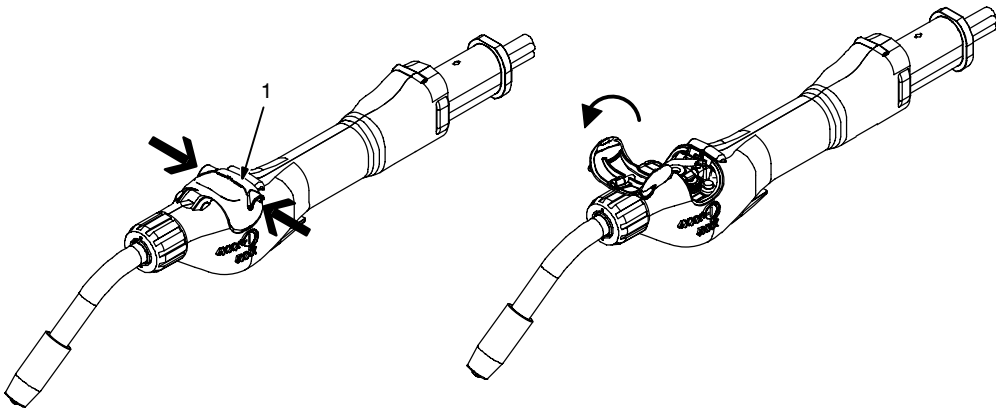
 REMOTE 10	Pin*	Pin Information
	A	Electrode sense lead
	B	Motor Common
	G	Trigger
	C	Motor 0 to +24 volts dc with respect to pin B
	D	Trigger
	E	Wire speed Ref. +9 volts dc
	H	Wire speed com
	F	Wire speed 0 to +9 volts dc with respect to pin H
	J	Gun sensing resistor with respect to pin H
	I	Not used

4-8. Opening Top Cover Of XR-Aluma-Pro Gun



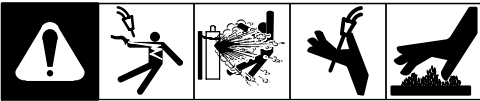
1 Top Cover
Squeeze sides of cover and lift up as shown.

To close cover, pivot cover closed on gun, and push cover down until cover locks tight.



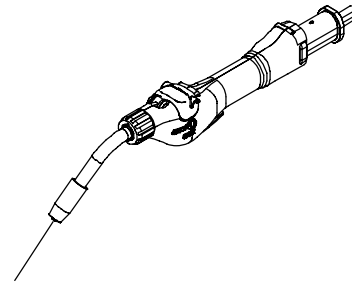
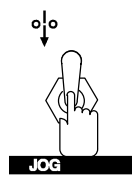
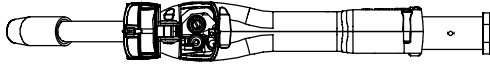
Ref. 804 544-B

4-9. Threading Welding Wire Through Gun



☞ Refer to Section 4-4 for instructions on feeding wire through feeder.

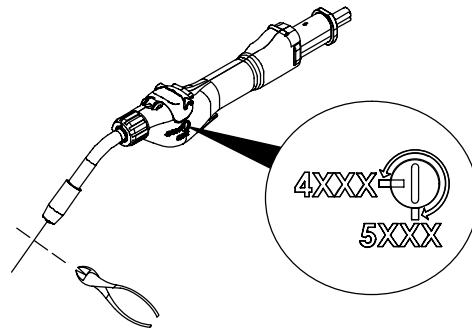
For XR-Aluma-Pro Gun:



⚠ Welding wire is electrically live when gun trigger is used to jog wire.

☞ Turn OFF coolant supply before threading wire through gun..

Lay gun cable out straight. Press Jog switch until about 6 in (152 mm) of wire is sticking out end of contact tip.



☞ Verify pressure adjustment on handle matches the wire type. See Section 5-2.

Cut off wire. Close and latch wire feeder door.

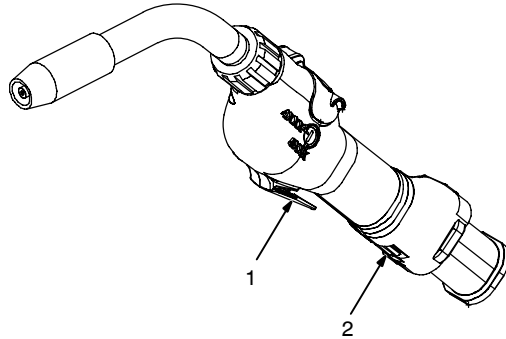
Tools Needed:



Ref. 804 544-B / 804 545-B

SECTION 5 – OPERATION

5-1. Gun Controls



1 Trigger

Press trigger to energize welding power source contactor (if applicable), start shielding gas flow, and begin wire feed.

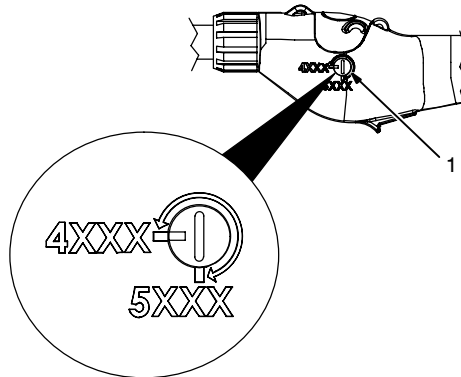
Switches inside the wire feeder can be set to provide timed shielding gas preflow and postflow when trigger is pressed and released. When this feature is turned Off, no preflow or postflow is provided for the welding operation.

2 Gun Wire Speed Control

Use control to fine adjust wire feed speed set on XR-Control. Gun Wire Speed Control has 3-3/4 turns of adjustment from minimum to maximum.

Ref. 804 545-B

5-2. Gun Pressure Roll Tension Setting



☞ *Aluminum series specific - Pressure roll tension setting ensures smooth wire feeding action.*

☞ *Gun Pressure Roll Tension is factory set to 4XXX.*

1 Pressure Roll Adjustment Screw

Wire tension should be set to 4XXX for 4000 series aluminum wire.

Rotate Pressure Roll Adjustment Screw fully counterclockwise until indicator line on adjustment knob lines up with indicator line on handle in the 4XXX position.

Wire tension should be set to 5XXX for 5000 series aluminum and stainless wire.

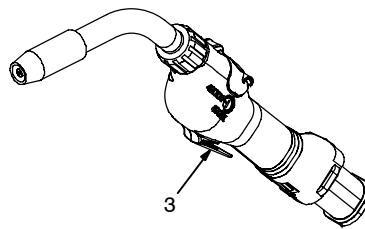
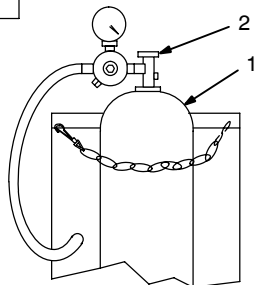
Rotate Pressure Roll Adjustment Screw fully clockwise until indicator line on adjustment knob lines up with indicator line on handle in the 5XXX position.

Tools Needed:



Ref. 804 545-B

5-3. Shielding Gas



- 1 Shielding Gas Cylinder
- 2 Valve
- 3 Gun Trigger

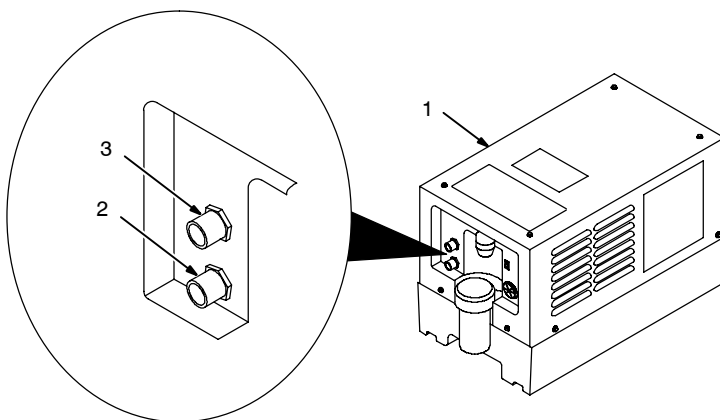
Open valve on cylinder just before welding.

Gun trigger turns weld output and gas flow on and off (see Section 5-1).

Close valve on cylinder when finished welding.

Ref. 151 666-F / 804 545-B

5-4. Coolant Supply For Water-Cooled Models Only



- 1 Coolant Supply
- 2 Coolant "In"
- 3 Coolant "Out"

See table below for coolant guidelines.

Turn On coolant supply before welding.

Turn Off coolant supply when finished welding.

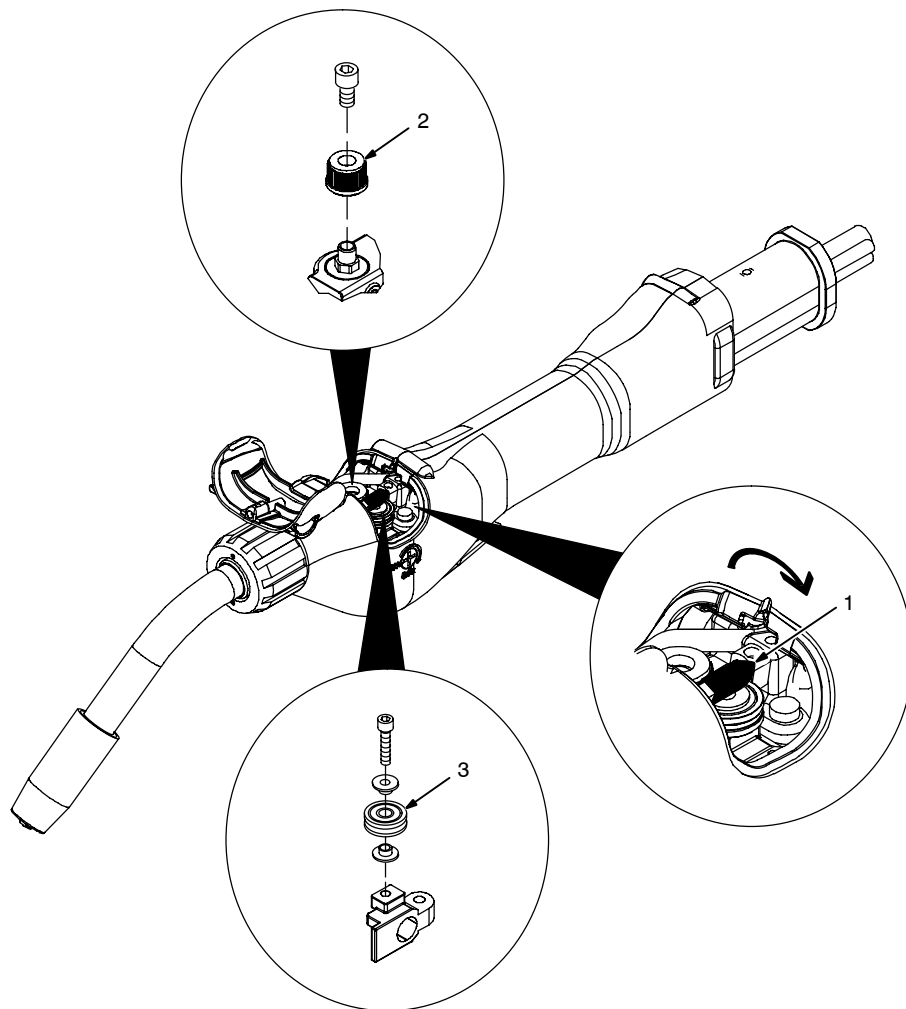
Application	GTAW Or Where HF* Is Used	GMAW Or Where Coolant Contacts Aluminum Parts Or Where HF* Not Used
 Coolant	MILLER Low Conductivity Coolant No. 043 810**	MILLER Aluminum Protecting Coolant No. 043 809**; Distilled Or Deionized Water OK Above 32° F (0° C)

*HF: High Frequency Current

**MILLER coolants protect to -37° F (-38°C) and resist algae growth.

Ref. 150 755-A

5-5. Gun Drive Assembly Maintenance For An XR-Aluma-Pro Gun



1 Lever Arm

Using lever arm open pressure roll with bearing as shown.


Retract wire onto spool.

2 Drive Roll

Use wire brush to clean drive roll. Install drive roll with hex opening down toward shaft hex, and secure with screw.

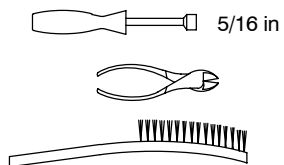
3 Pressure Roll

Thread welding wire through gun. Close pressure roll assembly and idler roll (located in XR control box). Press jog switch until wire is sticking out end of contact tip.

 *When changing wire size and using an XR control box you should change the control box drive roll and idler. See XR owners manual for details.*

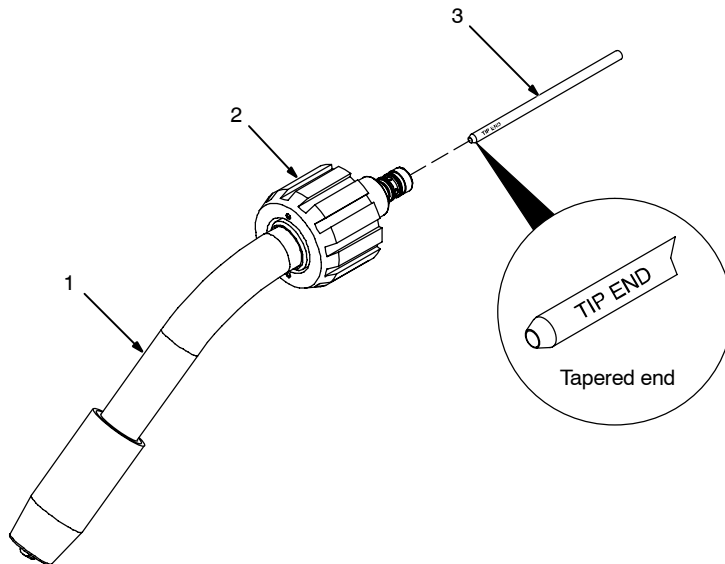
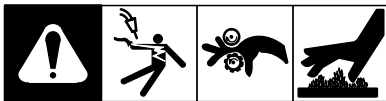
Close top cover.

Tools Needed:



Ref. 804 544-B

5-6. Replacing Head Tube Liner In XR-Aluma-Pro Guns



☞ Turn OFF coolant supply before removing head tube on water-cooled gun.

The standard head tube liner will accommodate wire diameters from .030-.035 wire size.

When changing wire size, change control box drive roll, idler and head tube liner with appropriate sized liner.

- 1 Head Tube
- 2 Head Tube Nut

Loosen head tube nut and remove head tube from gun.

- 3 Head Tube Liner

Pull liner out of head tube.

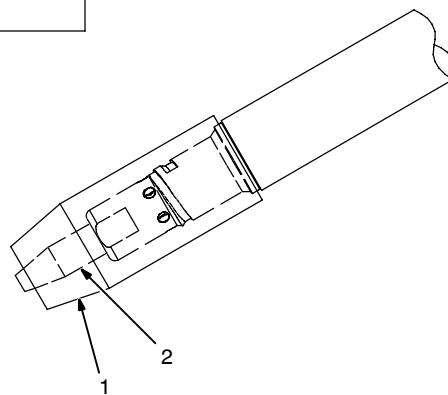
Insert new liner into head tube (install tapered end first) and reinstall head tube onto gun.

☞ A twisting motion may be needed to feed liner thru head tube.

☞ Be sure head tube is seated and head tube nut is securely tightened before operating gun. If head tube nut is not adequately tightened, unwanted arcing may occur between head tube and gun housing.

Ref. 804 544-B

5-7. Changing Gun Contact Tip



Remove nozzle

- 1 Nozzle
- 2 FasTip

Unscrew FasTip.

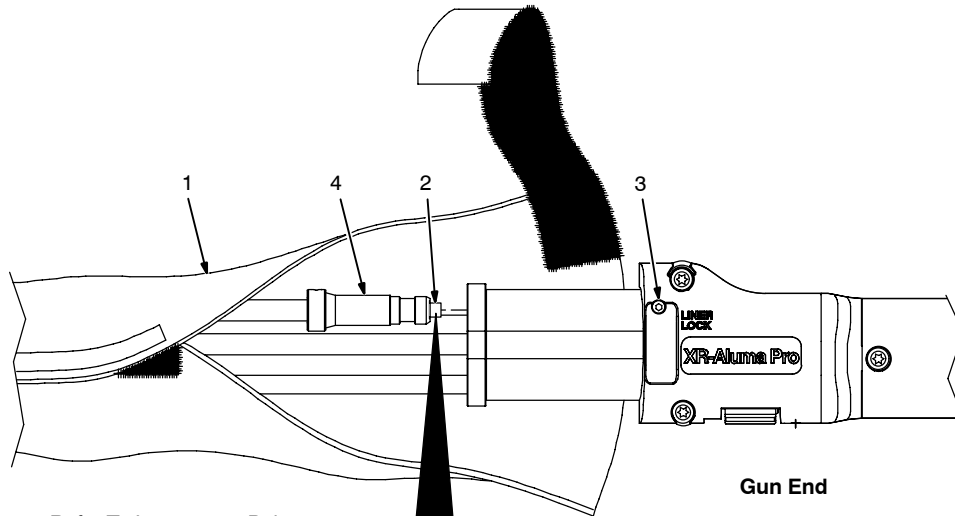
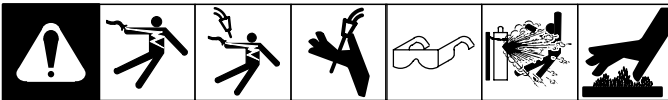
Install new FasTip.

☞ Make sure correct size contact tip is being used. Incorrect size may cause arcing inside tip, poor feedability and poor arc starting characteristics (see Section 9).

Reinstall nozzle.

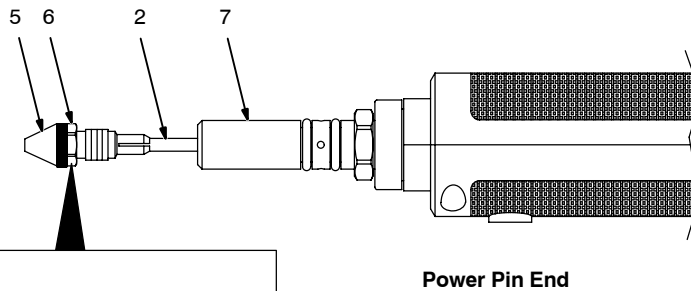
Ref. 804 709-A

5-8. Replacing The Gun Liner On XR-Aluma-Pro Guns

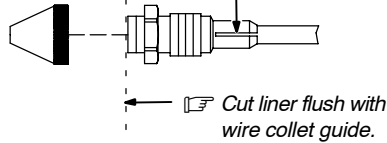


☞ Refer To Instructions Below.

Remove Old Liner (Item 2) From Gun End →
Install New Liner (Item 2) Into Gun End ←



☞ Gently pry open slots to remove wire collet guide.



Ref. 804 546-A

⚠ Turn Off welding power source and wire feeder.

- 1 Leather Cover
- 2 Liner
- 3 Liner Lock Allen Screw
- 4 Liner Guide Reducer
- 5 Wire Guide Cone
- 6 Wire Collet Guide
- 7 Power Pin

Lay gun cable out straight.

Remove short leather cover to access liner assembly.

Loosen liner lock allen screw (located near back of handle) to remove liner guide reducer from gun.

Remove wire guide cone and wire collet guide from power pin.

Remove old liner from gun end (see illustration above).

Insert new liner into gun end and continue feeding liner through cable assembly until

liner is through power pin assembly and is visible.

Install liner assembly into gun and tighten liner lock allen screw.

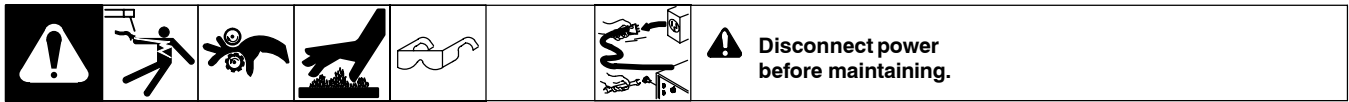
Reinstall wire collet guide at power pin and tighten onto liner.

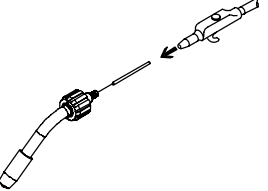

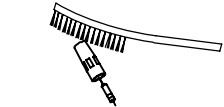
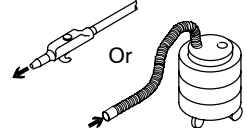
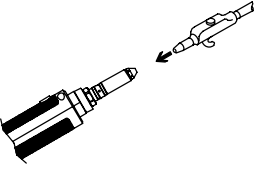
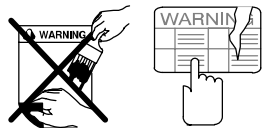
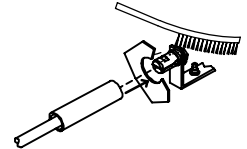
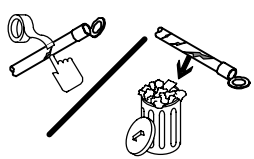
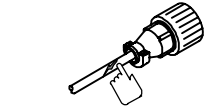

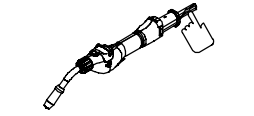
Cut liner off flush with wire collet guide. Reinstall wire guide cone.

Refer to Owner's Manual for instructions on rethreading wire.

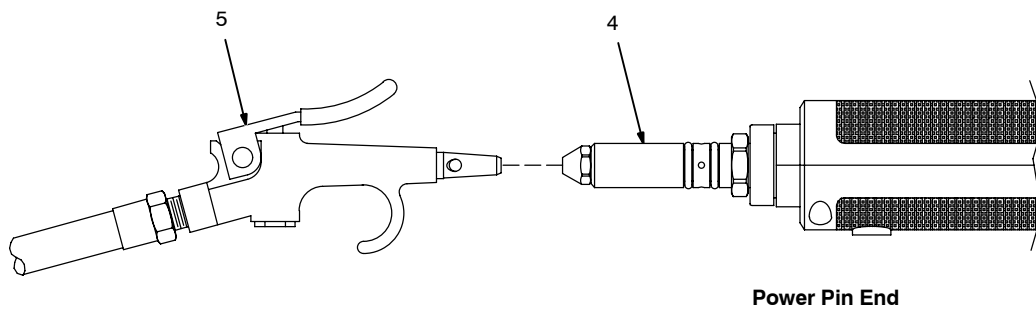
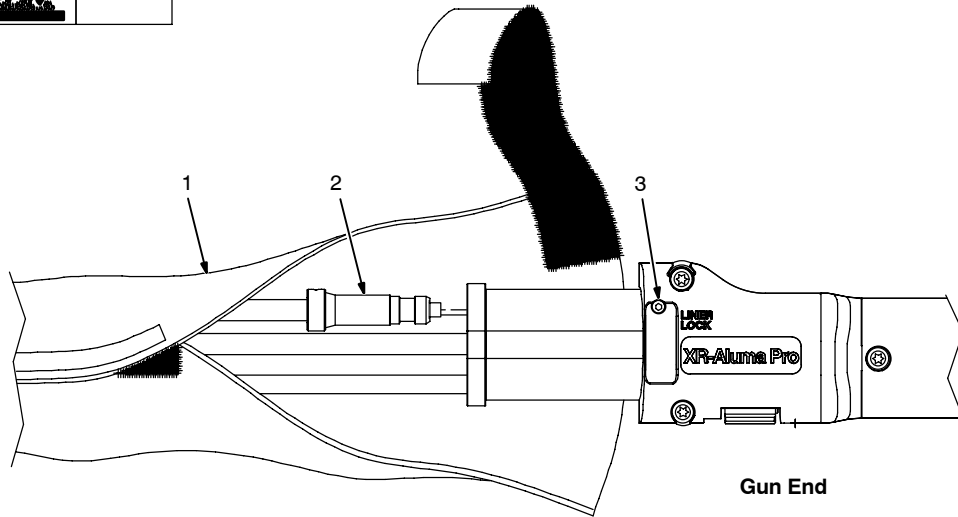
SECTION 6 – MAINTENANCE & TROUBLESHOOTING

6-1. Routine Maintenance For Aluminum Push/Pull Guns



🕒	✔ = Check	● = Clean	★ = Replace		
Daily	 ✔ ● Head Tube Liner and Drive Casting (see Section 5-6)				
Weekly	 ✔ ● Drive Roll				
Every Spool of Wire	 ✔ ● Nozzle / Contact Tip	 ● Gun Casing	 ✔ ● Gun Liner (see Section 6-2)		
Every 3 Months	 ★ Unreadable Labels	 ● Weld Terminals	 ✔ ★ Weld Cable		
	 ✔ 14-Pin Cord	 ✔ Gas Hose and Fittings	 ✔ Gun Cable		

6-2. Cleaning The Gun Liner On XR-Aluma-Pro Guns



Ref. 804 546-A

⚠ Turn Off welding power source and wire feeder.

Lay gun cable out straight.

1 Leather Cover

Remove leather cover to access liner as-

sembly.

2 Liner Guide Reducer

3 Liner Lock Allen Head Screw

4 Power Pin

5 Air Nozzle

Loosen liner lock allen head screw (located near back of handle) to remove liner guide reducer from gun.

Blow air from power pin end through liner until clean of debris.


Reinstall liner assembly into gun and tighten liner lock allen head screw when finished cleaning.

6-3. Troubleshooting Table



Trouble	Remedy
No wire feed at gun, feeder not operating. Check motor or brake solenoid.	Reset circuit breaker in feeder/control box. See feeder/control owner's manual.
	Replace trigger-switch and test operation.
	Check trigger-switch wires for continuity.
No wire feed at gun, feeder operating properly.	Reset circuit breaker in feeder/control box and check for short in motor leads. See feeder/control owner's manual.
	Check potentiometer with meter and replace if necessary.
	Check motor and potentiometer wires for continuity.
	See feeder/control owner's manual.
Wire feeds, but welding wire is not energized.	Clean and tighten all power connections.
	See feeder/control owner's manual.
	Check operation of welding power source.
Wire feeds erratically.	Check conduit for wear and obstruction and replace if necessary.
	Check contact tip for correct size and replace if necessary.
	Check pressure roll tension setting (see Section 5-2).
	Check for proper head tube liner (see Table 9-7).
Wire feeds one speed only.	Check potentiometer with meter and replace if necessary.
	Check continuity of welding gun wire feed speed potentiometer and replace if necessary.
	See feeder/control owner's manual.
Pressing gun trigger does not energize feeder. Welding wire is not energized. Shielding gas does not flow.	Secure plug from gun control cable into gun control receptacle on feeder.
	Have nearest Factory Authorized Service Agent check optional water flow switch, if applicable.
Wire feeds, shielding gas flows, but welding wire is not energized.	See Troubleshooting section in welding power source manual.
Arc varies and welding wire is kinked when feeding out gun.	Place Motor Torque switch in low torque position if welding with .030 (0.8 mm) aluminum welding wire on an XR control box.

SECTION 8 – PARTS LIST

 Hardware is common and not available unless listed.

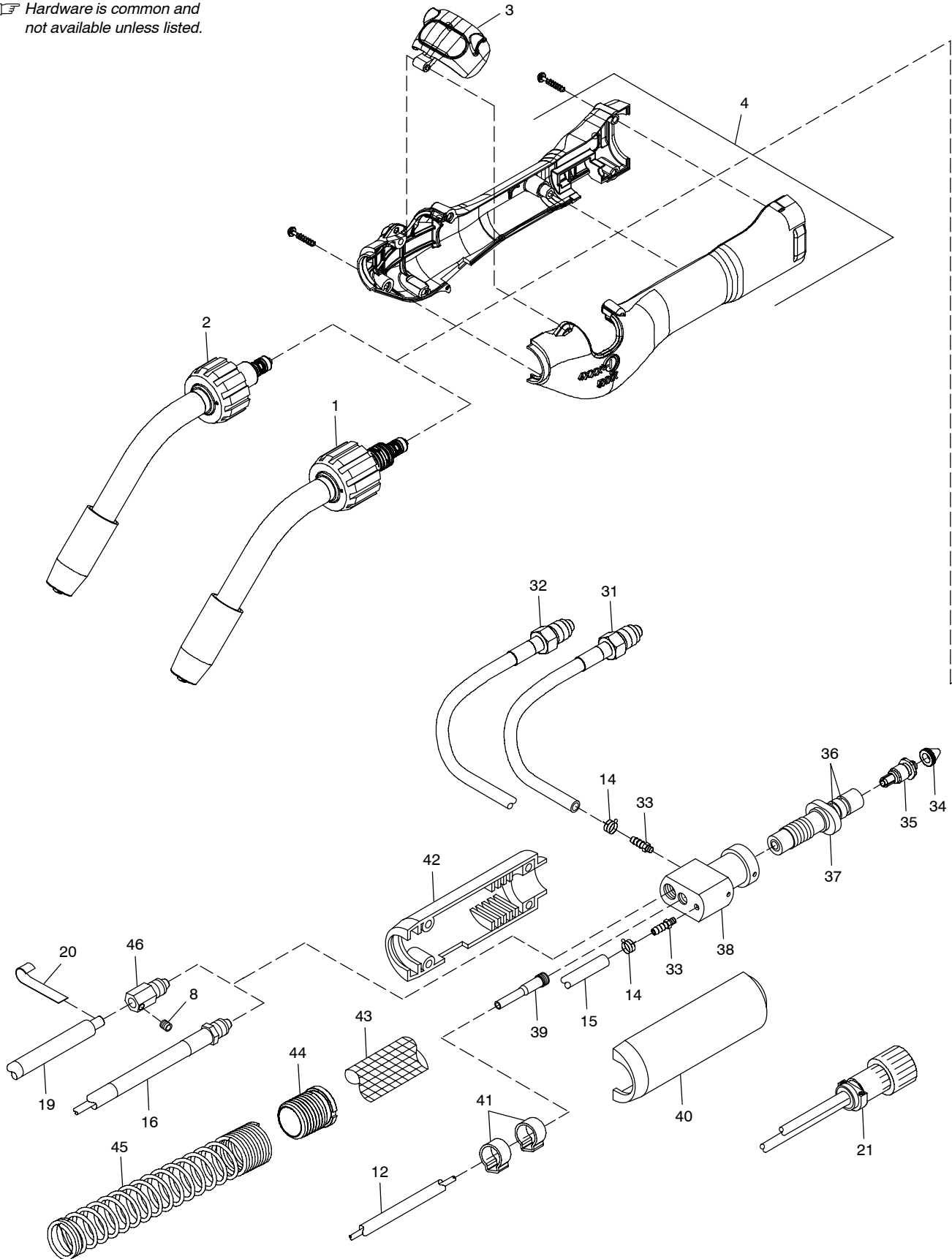
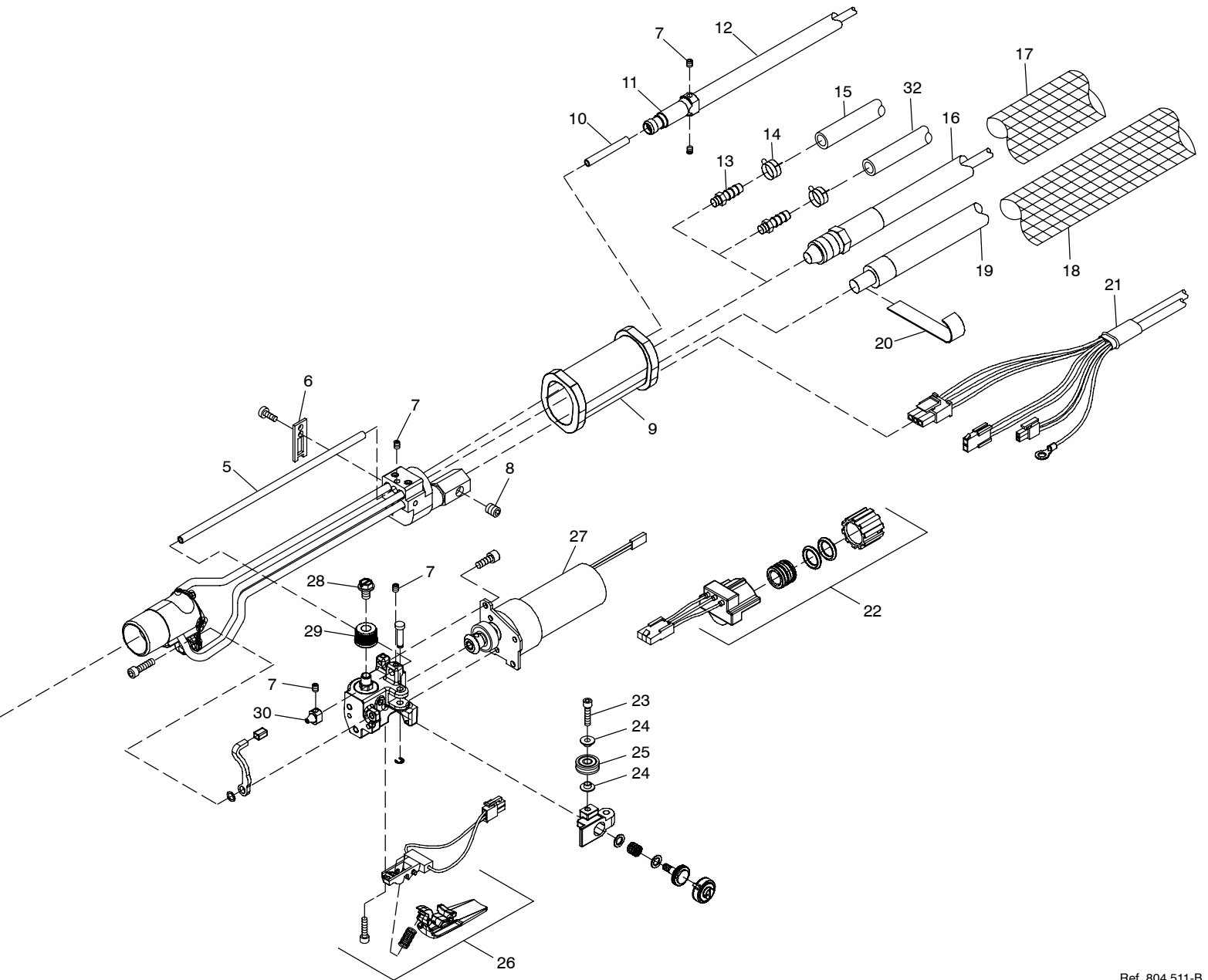


Figure 8-1. Exploded View Of XR-A Aluma-Pro Gun



Ref. 804 511-B

Item No.	Part No.	Description	Quantity
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Figure 8-1. Exploded View Of XR-A Aluma-Pro Gun

1	231 517	Kit, Head Tube Assy (Water) Long	1
2	231 519	Kit, Head Tube Assy (Air) Short	1
2	231 518	Kit, Head Tube Assy (Air) Long	1
3	227 403	Cover, W/Spring Plunger (Includes)	1
	187 316	Label, Pinch Wordless	1
4	227 404	Handle Assembly, Left/Right	1
5	227 407	Tube, Liner Stainless	1
6	227 406	Strain Relief, Cable Control	1
7	232 485	Screw, Set # 6-32x .12 Knrpt Sch Stl Pln	6
8	141 694	Screw, Set 312-18x .37 Conept Sch Stl Pln	2
9	189 081	Strain Relief	1

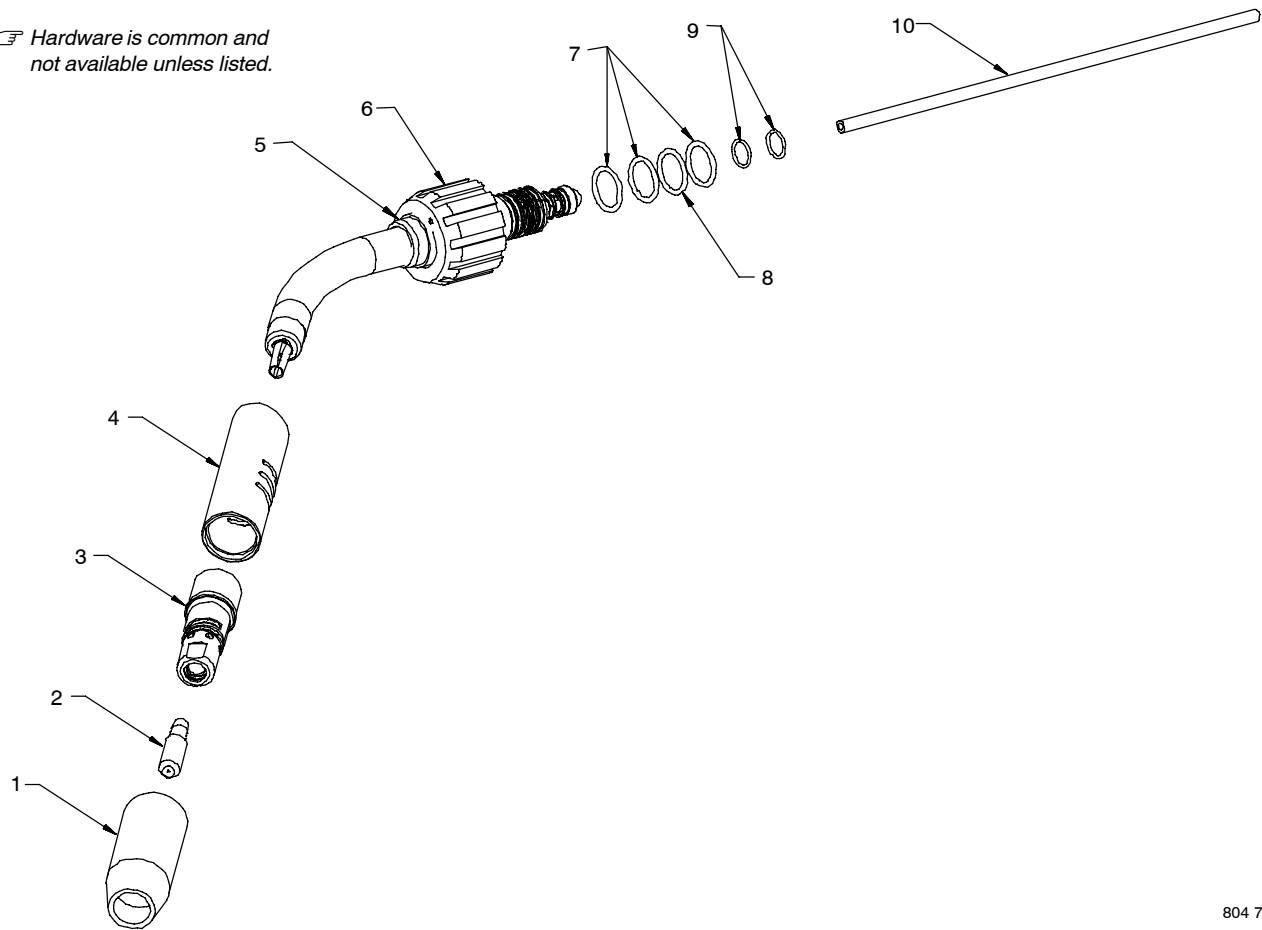
Item No.	Part No.	Description	Quantity
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Figure 8-1. Exploded View Of XR-A Aluma-Pro Gun (Continued)

10	229 887	Liner, Replacement 15 Ft	1
10	229 891	Liner, Replacement 25 Ft	1
10	232 321	Liner, Replacement 35 Ft	1
11	227 608	Reducer, Guide Liner	1
12	227 758	Conduit, Monocoil Double Wound 15 Ft	1
12	227 447	Conduit, Monocoil Double Wound 25 Ft	1
12	231 889	Conduit, Monocoil Double Wound 35 Ft	1
13	144 172	Ftg, Hose Brs Barbed M 3/16 Tbg X .250-20	2
14	149 332	Clamp, Hose .405 - .485 Clp Dia Sifftng Olive Dra	4
15	134 834	Hose, Sae .187 Id X .410 Od Xcoil	Order by Feet
16	191 052	Cable, Power/Water Out 15 Ft	1
16	228 696	Cable, Power/Water Out 25 Ft	1
16	232 055	Cable, Power/Water Out 35 Ft	1
17	234 416	Cable Cover Assy, Leather W/Velcro 17 In	1
18	234 109	Kit, Cable Cover Leather W/Velcro 15 Ft	1
18	234 110	Kit, Cable Cover Leather W/Velcro 25 Ft	1
18	234 111	Kit, Cable Cover Leather W/Velcro 35 Ft	1
19	227 756	Cable, Power 15 Ft (Air)	1
19	227 445	Cable, Power 25 Ft (Air)	1
19	231 887	Cable, Power 35 Ft (Air)	1
20	235 225	Strip, Cop .010 X 1.500 X .750	2
21	227 757	Cable, Control 15 Ft (Water)	1
21	227 446	Cable, Control 25 Ft (Water)	1
21	231 888	Cable, Control 35 Ft (Water)	1
21	236 836	Cable, Control 15 Ft (Air)	1
21	236 837	Cable, Control 25 Ft (Air)	1
21	236 838	Cable, Control 35 Ft (Air)	1
22	227 452	Potentiometer Assy	1
23	231 443	Screw, 006-32x .44 Soc Hd-Hex Gr8 Pld	1
24	134 624	Washer, Shldr.140id 0.187odx.094t .375odx.031t Nyl	2
25	227 439	Drive Roll Assy, Idler .645 Od	1
26	227 466	Trigger Assy	1
27	234 782	Drive Motor Assy, Replacement	1
	232 483	Drive Assy, Replacement Water	1
	232 484	Drive Assy, Replacement Air	1
28	226 588	Screw, 010-32x .37 Btn Hd-Soc Sst Lkg Patch	1
29	227 434	Drive Roll, Knurled	1
30	227 408	Guide, Inlet	1
31	196 177	Hose, Water Out 10 In	1
32	191 072	Hose, Water In 15 Ft	1
32	229 892	Hose, Water In 25 Ft	1
32	232 056	Hose, Water In 35 Ft	1
33	202 513	Ftg, Hose Brs Barbed M 3/16 Tbg X .250-20	2
34	229 853	Guide, Cone Outlet Nylon	1
35	229 852	Guide, Collet Outlet .030-1/16	1
36	079 974	O-Ring, .500 Id X .103 Cs Rbr	2
37	193 896	Pin, Power Assembly	1
38	187 029	Connector, Power/Gas	1
39	203 539	Fitting, Liner Double Wound Adapter	1
40	189 811	Housing, Power Pin Lh	1
41	149 332	Clamp, Hose .405 - .485 Clp Dia Sifftng Olive Dra	2
42	189 812	Housing, Power Pin Rh	1
43	227 449	Jacket, Cable 3 Ft 4 In (Power Pin)	1
44	203 560	Strain Relief, Spring Retainer	1
45	203 562	Spring, Strain Relief	1
46	137 495	Ftg, Connection Power Weld	1

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

Hardware is common and not available unless listed.



804 706-A

Figure 8-2. (Water) Head Tube Assembly Of Aluma-Pro Gun

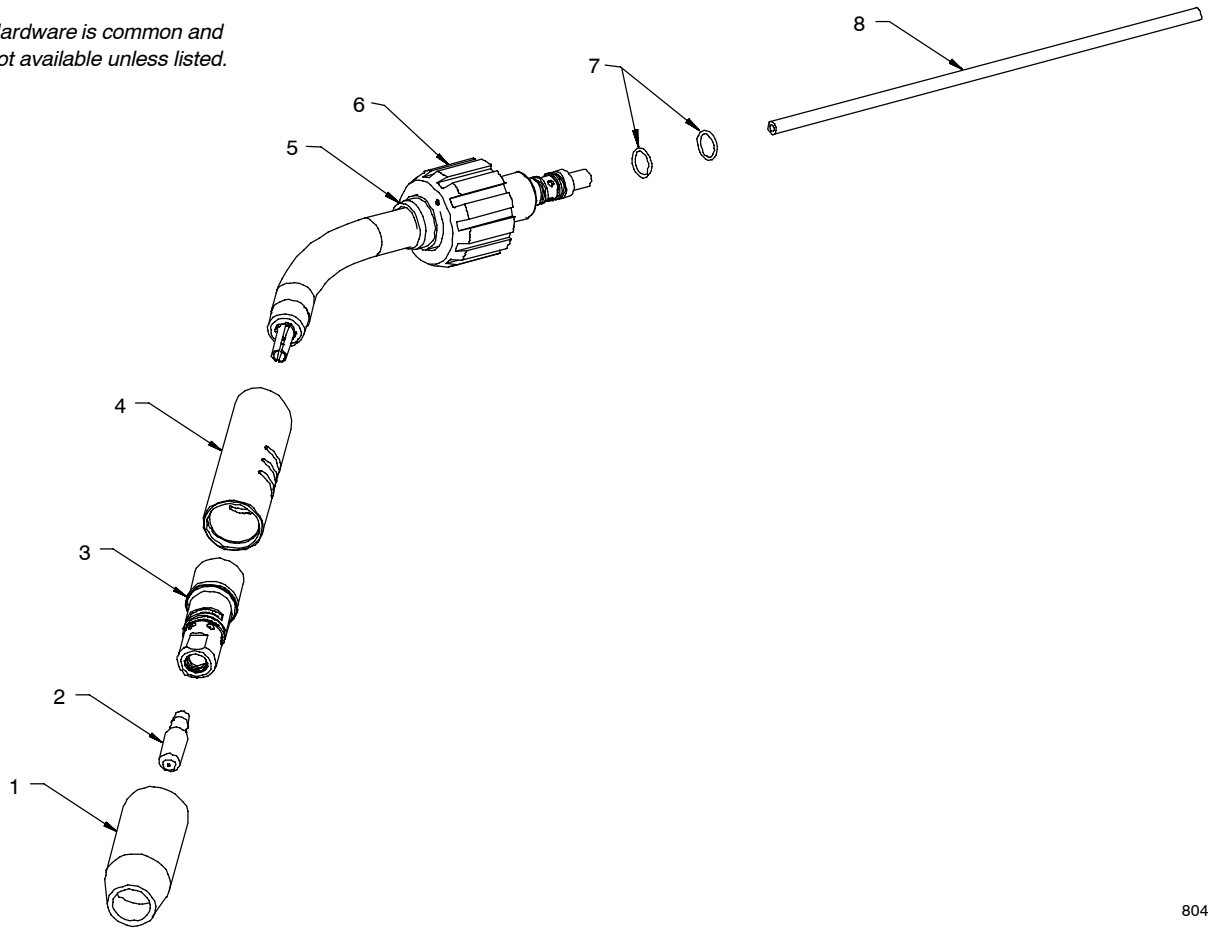
Item No.	Part No.	Description	Quantity
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Figure 8-2. (Water) Head Tube Assembly Of Aluma-Pro Gun (Figure 8-1 Item 1

.....	231 517	.. Kit, Head Tube Assy Water Aluma-Pro (Long) (Includes)	1
... 1	199 618	.... Nozzle, Copper 5/8 In Orifice Tapered Heavy Duty	1
... 2	206 189	.... Tip, Fastip .312 Od .052 And 3/64al Wires	1
... 3	229 670	.... Diffuser, .281/.312 Od Fastip 1/8 Tip Rec Aluma Pro	1
... 4	230 420	.... Insulator, Outer Water Long Fastip	1
... 5	227 416	.... Insulator, Ring Inner Rear	1
... 6	229 889	.... Nut, Headtube Rotation Water	1
.....	230 970	.... Kit, Replacement O-Rings Head Tube Water (Includes)	1
... 7	194 261	.... O-Ring, .551 Id X .070 Cs 70 Duro Buna-n	3
... 8	210 771	.... O-Ring, 14.99mm Id X 1.27mm Cs 70 Duro Buna-n	1
... 9	191 191	.... O-Ring, .312 Id X .070 Cs 70 Duro Buna-n	2
... 10	229 431	.... Liner, Teflon .047-.062 Wire X 8.250 (Fastip)	1

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

☞ Hardware is common and not available unless listed.



804 705-A

Figure 8-3. (Air) Head Tube Assembly Of Aluma-Pro Gun

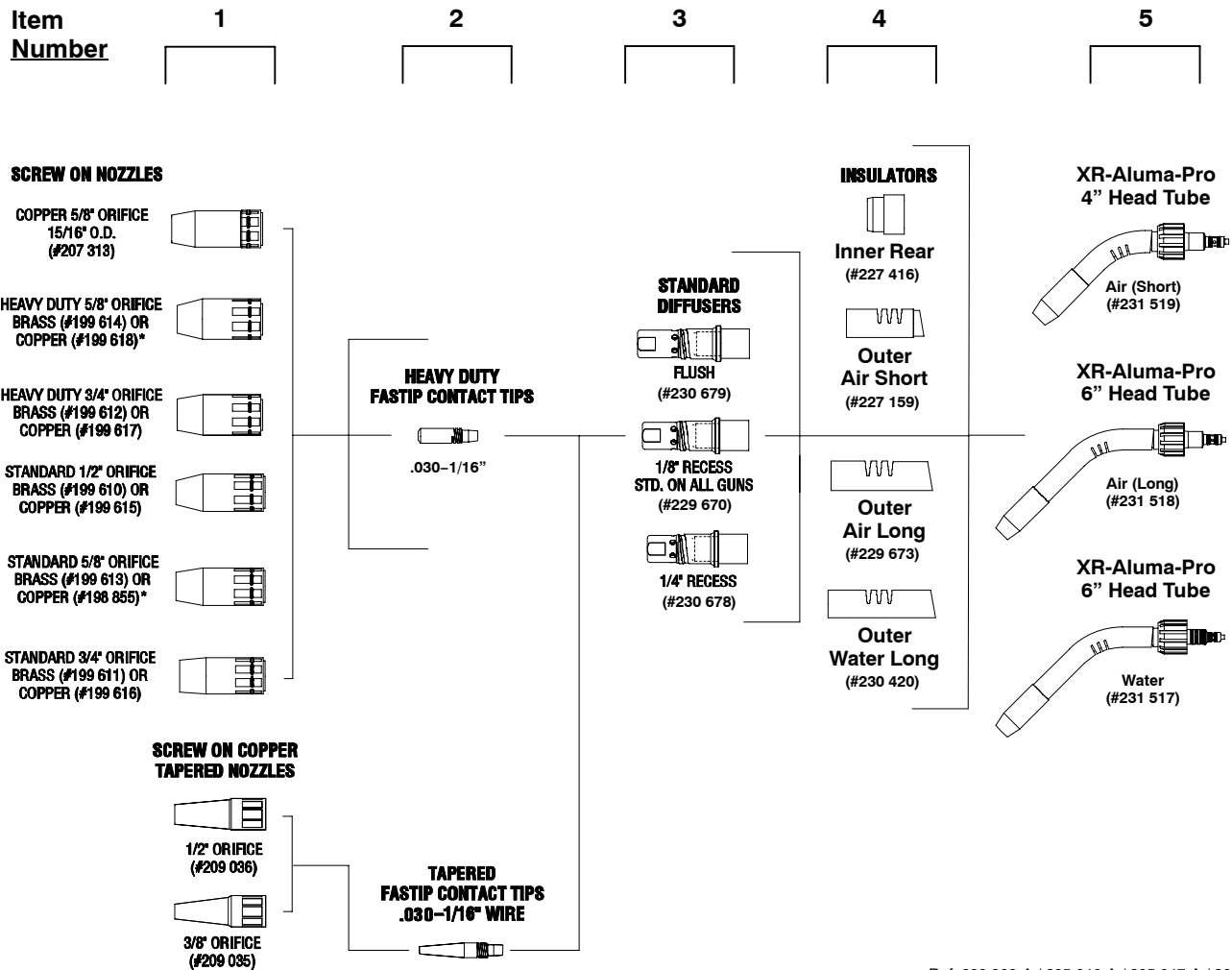
Item No.	Part No.	Description	Quantity
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Figure 8-3. (Air) Head Tube Assembly Of Aluma-Pro Gun (Figure 8-1 Item 2)

.....	231 518	.. Kit, Head Tube Assy Air (Long) (Includes)	1
.....	231 519	.. Kit, Head Tube Assy Air (Short) (Includes)	1
... 1	198 855	... Nozzle, Copper 5/8 In Orifice Tapered	1
... 2	206 189	... Tip, Fastip .312 Od .052 And 3/64al Wires	1
... 3	229 670	... Diffuser, .281/.312 Od Fastip 1/8 Tip Rec Aluma Pro	1
... 4	229 673	... Insulator, Outer Air (Long)	1
... 4	227 159	... Insulator, Outer Air (Short)	1
... 5	227 416	... Insulator, Ring Inner Rear	1
... 6	227 168	... Nut, Headtube Rotation	1
.....	230 969	... Kit, Replacement O-Rings Head Tube Air (Includes)	1
... 7	191 191	... O-Ring, .312 Id X .070 Cs 70 Duro Buna-n	2
... 8	229 431	... Liner, Teflon .047-.062 Wire X Long (Fastip)	1
... 8	230 239	... Liner, Teflon .047-.062 Wire X Short (Fastip)	1

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

SECTION 9 – PARTS LIST INCLUDING CONSUMABLES



Ref. 803 909-A / 805 046-A / 805 047-A / 805 048-A

Figure 9-1. Consumables Flowchart

Item No.	Part No.	Description	Quantity
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9-1. Consumables Flowchart

Table 9-1. Nozzles

...	1	◆199 610	.. Nozzle, Screw On Brass 1/2 in Orifice	1
...	1	◆199 611	.. Nozzle, Screw On Brass 3/4 in Orifice Straight	1
...	1	◆199 612	.. Nozzle, Screw On Brass 3/4 in Orifice Straight Heavy Duty	1
...	1	◆199 613	.. Nozzle, Screw On Brass 5/8 in Orifice	1
...	1	◆199 614	.. Nozzle, Screw On Brass 5/8 in Orifice Heavy Duty	1
...	1	◆199 615	.. Nozzle, Screw On Copper 1/2 in Orifice	1
...	1	◆199 616	.. Nozzle, Screw On Copper 3/4 in Orifice	1
...	1	◆199 617	.. Nozzle, Screw On Copper 3/4 in Orifice Heavy Duty	1
...	1	198 855	.. Nozzle, Screw On Copper 5/8 in Orifice	1
...	1	199 618	.. Nozzle, Screw On Copper 5/8 in Orifice Heavy Duty	1
...	1	◆207 313	.. Nozzle, Screw On Copper 5/8 in Orifice 15/16 OD	1
...	1	◆209 035	.. Nozzle, Screw On Copper 3/8 in Orifice Tapered (Requires Diffuser 229 670, 230 678, 230 679 Used With Any Tapered FasTip™ Contact Tip)	1
...	1	◆209 036	.. Nozzle, Screw On Copper 1/2 in Orifice Tapered (Requires Diffuser 229 670, 230 678, 230 679 Used With Any Tapered FasTip™ Contact Tip)	1

Table 9-2. Heavy Duty FasTip™ Contact Tips*

... 2	◆206 185	.. .030 in (0.8 mm)	..... 1
... 2	◆206 186	.. .035 in (0.9 mm)	..... 1
... 2	206 187	.. .040 in (1.0 mm) or .035 in (0.9 mm) Aluminum Wire	..... 1
... 2	◆206 188	.. .045 in (1.2 mm)	..... 1
... 2	206 189	.. .052 in (1.3 mm) or 3/64 in (1.2 mm) Aluminum Wire	..... 1
... 2	◆206 190	.. 1/16 in (1.6 mm)	..... 1
... 2	◆206 191	.. .068 in (1.7 mm) or 1/16 in (1.6 mm) Aluminum Wire	..... 1

Table 9-3. Tapered FasTip™ Contact Tips*

... 2	◆209025	.. .030 in (0.8 mm)	..... 1
... 2	◆209026	.. .035 in (0.9 mm)	..... 1
... 2	◆209027	.. .045 in (1.2 mm)	..... 1
... 2	◆209028	.. 3/64 in (1.2 mm)	..... 1
... 2	◆209029	.. .052 in (1.3 mm)	..... 1
... 2	◆209030	.. 1/16 in (1.6 mm)	..... 1

Table 9-4. Gas Diffusers

... 3	229 670	.. 1/8 in Tip Recess – For Heavy Duty FasTip Contact Tips (Standard On All Guns)	..... 1
... 3	◆230 678	.. 1/4 in Tip Recess – For Heavy Duty FasTip Contact Tips	..... 1
... 3	◆230 679	.. Flush Tip – For Heavy Duty FasTip Contact Tips	..... 1

Table 9-5. Insulators

... 4	227 416	.. Insulator, Ring Inner Rear	..... 1
... 4	227 159	.. Insulator, Outer Air Short (4 in)	..... 1
... 4	229 673	.. Insulator, Outer Air Long (6 in)	..... 1
... 4	230 420	.. Insulator, Outer Water Long FasTip (6 in)	..... 1

Table 9-6. Head Tube Assemblies

... 5	231 517	.. Kit, Head Tube Assy Water (Long)	..... 1
... 5	231 518	.. Kit, Head Tube Assy Air (Long)	..... 1
... 5	231 519	.. Kit, Head Tube Assy Air (Short)	..... 1

Table 9-7. FasTip Head Tube Liners (Not Shown)

.....	229 674	.. Liner, Teflon .030–.035 Wire X Long (Fastip)	..... 1
.....	227 161	.. Liner, Teflon .030–.035 Wire X Short (Fastip)	..... 1
.....	229 431	.. Liner, Teflon .047–.062 Wire X Long (Fastip)	..... 1
.....	230 239	.. Liner, Teflon .047–.062 Wire X Short (Fastip)	..... 1

Table 9-8. Wire Kit (Not Shown)

.....	◆230 708	.. Kit, Idler Roll 1/16 (.062)	..... 1
.....	◆198 377	.. Hardwire Liner Kit, 30W For Steel&Stainless	..... 1

◆OPTIONAL

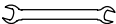
*All contact tips are packaged in bags of 25.

BE SURE TO PROVIDE MODEL WHEN ORDERING REPLACEMENT PARTS.

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

Notes

**SOCKET/WRENCH SELECTION TABLE
(U.S. STANDARD)**



**SOCKET/WRENCH SELECTION TABLE
(METRIC)**

Specifications		Socket or Wrench Size		Specifications		Socket or Wrench Size	
Bolt Diameter	Decimal Equivalent	Bolt	Nut	Bolt Diameter	U.S. Decimal Equivalent	Bolt	Nut
1/4 in	.250 in	3/8 in	7/16 in	6 mm	.2362 in	10 mm	10 mm
5/16 in	.3125 in	1/2 in	9/16 in	8 mm	.3150 in	14 mm	14 mm
3/8 in	.375 in	9/16 in	5/8 in	10 mm	.3937 in	17 mm	17 mm
7/16 in	.4375 in	5/8 in	3/4 in	12 mm	.4724 in	19 mm	19 mm
1/2 in	.500 in	3/4 in	13/16 in	14 mm	.5512 in	22 mm	22 mm
9/16 in	.5625 in	7/8 in	7/8 in	16 mm	.6299 in	24 mm	24 mm
5/8 in	.625 in	15/16 in	1 in	18 mm	.7087 in	27 mm	27 mm
3/4 in	.750 in	1-1/8 in	1-1/8 in	22 mm	.8661 in	32 mm	32 mm
7/8 in	.875 in	1-5/16 in	1-5/16 in	24 mm	.9449 in	36 mm	36 mm
1 in	1.000 in	1-1/2 in	1-1/2 in				

TRUE BLUE[®]

WARRANTY

Effective January 1, 2007

(Equipment with a serial number preface of "LH" or newer)

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

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tough welding questions?
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step of the way.

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

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the delivery date of the equipment to the original end-user purchaser, and not to exceed one year after the equipment is shipped to a North American distributor or eighteen months after the equipment is shipped to an International distributor.

- 5 Years Parts — 3 Years Labor
 - * Original main power rectifiers
- 3 Years — Parts and Labor
 - * Transformer/Rectifier Power Sources
 - * Plasma Arc Cutting Power Sources
 - * Process Controllers
 - * Semi-Automatic and Automatic Wire Feeders
 - * Inverter Power Sources (Unless Otherwise Stated)
 - * Water Coolant Systems (Integrated)
 - * Intellitig
 - * Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer.)
- 1 Year — Parts and Labor Unless Specified
 - * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
 - * Positioners and Controllers
 - * Automatic Motion Devices
 - * RFCS Foot Controls
 - * Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
 - * Water Coolant Systems (Non-Integrated)
 - * Flowgauge and Flowmeter Regulators (No Labor)
 - * HF Units
 - * Grids
 - * Spot Welders
 - * Load Banks
 - * Arc Stud Power Sources & Arc Stud Guns
 - * Racks
 - * Running Gear/Trailers
 - * Plasma Cutting Torches (except APT & SAF Models)
 - * Field Options
(NOTE: Field options are covered under True Blue[®] for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
 - * Bernard-Branded Mig Guns (No Labor)
 - * Weldcraft-Branded TIG Torches (No Labor)
 - * Subarc Wire Drive Assemblies
- 6 Months — Batteries
- 90 Days — Parts
 - * MIG Guns/TIG Torches and Subarc (SAW) Guns

- * Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
- * APT & SAF Model Plasma Cutting Torches
- * Remote Controls
- * Accessory (Kits)
- * Replacement Parts (No labor)
- * Spoolmate Spoolguns
- * Canvas Covers

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

- Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear. (Exception: brushes, slip rings, and relays are covered on Bobcat, Trailblazer, and Legend models.)**
- Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
- Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

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

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

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miller_warr 2007-01





Owner's Record

Please complete and retain with your personal records.

Model Name

Serial/Style Number

Purchase Date

(Date which equipment was delivered to original customer.)

Distributor

Address

City

State

Zip



For Service

Contact a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:

Welding Supplies and Consumables

Options and Accessories

Personal Safety Equipment

Service and Repair

Replacement Parts

Training (Schools, Videos, Books)

Technical Manuals (Servicing Information and Parts)

Circuit Diagrams

Welding Process Handbooks

To locate a Distributor or Service Agency visit www.millerwelds.com or call 1-800-4-A-Miller

Contact the Delivering Carrier to:

File a claim for loss or damage during shipment.

For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

Miller Electric Mfg. Co.

An Illinois Tool Works Company
1635 West Spencer Street
Appleton, WI 54914 USA

International Headquarters—USA

USA Phone: 920-735-4505 Auto-Attended
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