*OM-225 427E/multi*
*2012–08*

ENGLISH
FRANÇAIS
ESPAÑOL

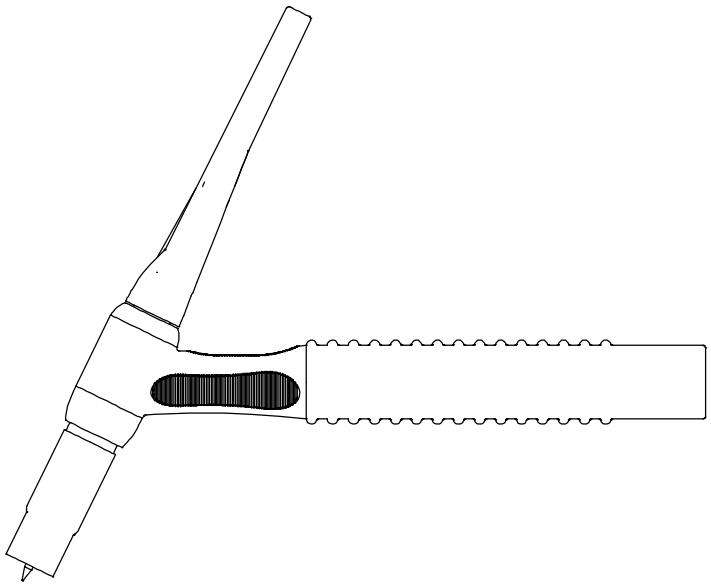
WELDCRAFT®
*The TIG Welder's Choice*

# *WP-17*
# *WP-17V*
# *WP-17FV*
# *WP-17F*
# *WP-17V-PSH*
# *WP-17-PSH*

*Hand-Held Air-Cooled TIG (GTAW) Torches*

*Torches manuelles TIG refroidies par air*

*Antorchas manuales enfriadas por aire para TIG (GTAW)*



# *Owner's Manual*
# *Manuel de L'utilisateur*
# *Manual del Operador*

*Weldcraft.com*
**File: TIG (GTAW)**

# TABLE OF CONTENTS

# SECTION 1 –SAFETY PRECAUTIONS FOR GTAW TORCHES – READ BEFORE USING

WC000038 – 2011-10

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

## 1-1. Symbol Usage

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

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

***NOTICE*** *– Indicates statements not related to personal injury.*

☞ *Indicates special instructions.*

This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid 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.
- Before welding, verify torch head is firmly attached to the torch body.
- Do not wrap torch hoses and power cable together with tape or plastic wire ties. Wrapping restricts water flow which may cause power cable to overheat and torch hose to burst.
- Repair or replace worn, damaged, or cracked torch or cable insulation.
- Turn off welding power source before changing tungsten electrode or torch parts.
- Keep all covers and handle securely in place.

### ARC RAYS can burn eyes and skin.

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

- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes from arc rays and sparks when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and foot protection.

### 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.

### BUILDUP OF GAS can injure or kill.

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

### WELDING can cause fire or explosion.

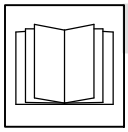
- Do not weld near flammable material.
- Do not weld on containers that have held combustibles, or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A6.0 (see Safety Standards).
- Watch for fire; keep extinguisher nearby.

### HOT PARTS can burn.

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

### NOISE 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.



### READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform maintenance and service according to the Owner's Manuals, industry standards, and national, state, and local codes.

## 1-3. Proposition 65 Warnings

**Welding or cutting equipment 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 Section 25249.5 et seq.)**

**This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. *Wash hands after use.***

**This product contains or produces a chemical known to the State of California to cause cancer or birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)**

## 1-4. Principal Safety Standards

*Safety in Welding, Cutting, and Allied Processes,* ANSI Standard Z49.1, is available as a free download from the American Welding Society at http://www.aws.org or purchased from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

*Safe Practice For Occupational And Educational Eye And Face Protection,* ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (phone: 212-642-4900, website: www.ansi.org).

*Safe Practices for the Preparation of Containers and Piping for Welding and Cutting,* American Welding Society Standard AWS F4.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

*Safe Practices for Welding and Cutting Containers that have Held Combustibles,* American Welding Society Standard AWS A6.0, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

*National Electrical Code,* NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org and www. sparky.org).

*Safe Handling of Compressed Gases in Cylinders,* CGA Pamphlet P-1, from Compressed Gas Association, 14501 George Carter Way, Suite 103, Chantilly, VA 20151 (phone: 703-788-2700, website: www.cganet.com).

*Safety in Welding, Cutting, and Allied Processes,* CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

*Safe Practice For Occupational And Educational Eye And Face Protection,* ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (phone: 212-642-4900, website: www.ansi.org).

*Standard for Fire Prevention During Welding, Cutting, and Other Hot Work,* NFPA Standard 51B, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org.

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (phone: 1-866-512-1800) (there are 10 OSHA Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov).

## 1-5. EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). Welding current creates an EMF field around the welding circuit and welding equipment. EMF fields may interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, restrict access for passers–by or conduct individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source or wire feeder.

**About Implanted Medical Devices:**

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

# SECTION 2 – SPECIFICATIONS

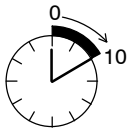
## 2-1. Specifications

| | Model | |
|---|---|---|
| | **WP-17** | **WP-17V** |
| **Ampere Rating** | 150 Amps W/Argon Gas @ 60% Duty Cycle DCEN; 115 Amps W/Argon Gas @ 60% Duty Cycle ACHF | |
| **Cooling Method** | Air | |
| **Tungsten Size** | .020 Thru 1/8 in. (0.5 Thru 3.2 mm) | |
| **Cable Options** | 12.5 ft (3.8 m) Or 25 ft (7.6 m) One-Piece Rubber<br>12.5 ft (3.8 m) Or 25 ft (7.6 m) Two-Piece Rubber | |
| **Dimensions** | Length: 7.5 in. (191 mm)<br>Handle Diameter: 7/8 in. (22 mm)<br>Weight: 6.1 oz (173 g) | Length: 7.5 in. (191 mm)<br>Handle Diameter: 7/8 in. (22 mm)<br>Weight: 6.85 oz (194 g) |

| | Model | |
|---|---|---|
| | **WP-17FV** | **WP-17F** |
| **Ampere Rating** | 150 Amps W/Argon Gas @ 60% Duty Cycle DCEN; 115 Amps W/Argon Gas @ 60% Duty Cycle ACHF | |
| **Cooling Method** | Air | |
| **Tungsten Size** | .020 Thru 1/8 in. (0.5 Thru 3.2 mm) | |
| **Cable Options** | 12.5 ft (3.8 m) Or 25 ft (7.6 m) One-Piece Rubber<br>12.5 ft (3.8 m) Or 25 ft (7.6 m) Two-Piece Rubber | |
| **Dimensions** | Length: 9.75 in. (248 mm)<br>Handle Diameter: 7/8 in. (22 mm)<br>Weight: 9 oz (255 g) | Length: 8 in. (203 mm)<br>Handle Diameter: 7/8 in. (22 mm)<br>Weight: 7.8 oz (221 g) |

| | Model | |
|---|---|---|
| | **WP-17V-PSH** | **WP-17-PSH** |
| **Ampere Rating** | 150 Amps W/Argon Gas @ 60% Duty Cycle DCEN; 115 Amps W/Argon Gas @ 60% Duty Cycle ACHF | |
| **Cooling Method** | Air | |
| **Tungsten Size** | .020 Thru 1/8 in. (0.5 Thru 3.2 mm) | |
| **Cable Options** | 12.5 ft (3.8 m) Or 25 ft (7.6 m) One-Piece Rubber<br>12.5 ft (3.8 m) Or 25 ft (7.6 m) Two-Piece Rubber | |
| **Dimensions** | Length: 7.5 in. (191 mm)<br>Handle Diameter: 7/8 in. (22 mm)<br>Weight: 7.05 oz (200 g) | Length: 7.5 in. (191 mm)<br>Handle Diameter: 7/8 in. (22 mm)<br>Weight: 6.15 oz (174 g) |

## 2-2. Duty Cycle

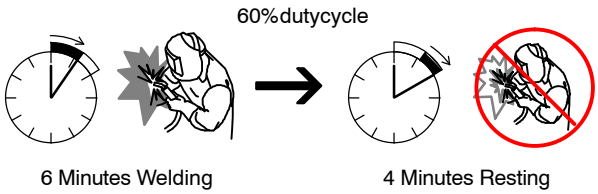


Minutes

**Definition**

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

**60% Duty Cycle AT 150 Amperes DCEN Using Argon Gas**



6 Minutes Welding

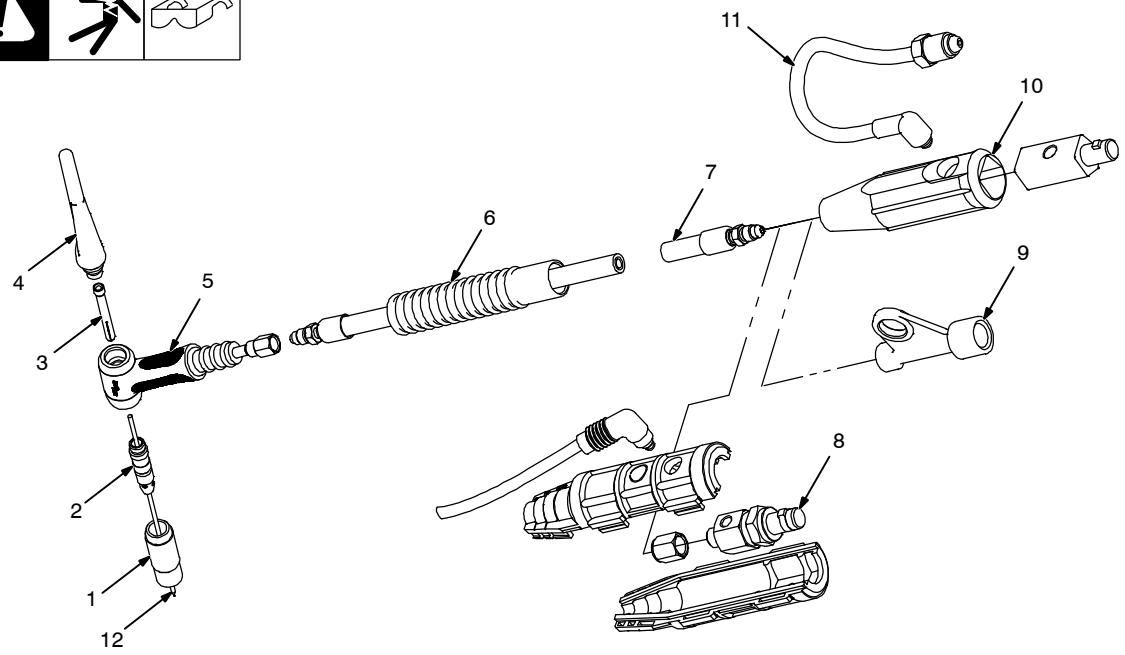
4 Minutes Resting

sb1.5* 8/93

***NOTICE*** *– Do not exceed rated amperage or duty cycle (see Section 2-1). Exceeding rated amperage or duty cycle can damage torch and void warranty.*

# SECTION 3 – INSTALLATION

## 3-1. Required Torch Parts And Torch Assembly



WC0205-A

1 Cup
2 Collet Body
3 Collet
4 Backcap (Includes O-Ring)
5 Torch Body
6 Handle
7 One-Piece Power Cable
8 Weldcraft QCS (Optional)

**Before welding, insure that the torch head is firmly attached to the torch body.**

9 Power Cable Adapter

10 International Style Adapter

11 Gas Hose For International Style Adapter

**Assembling Torch Body**

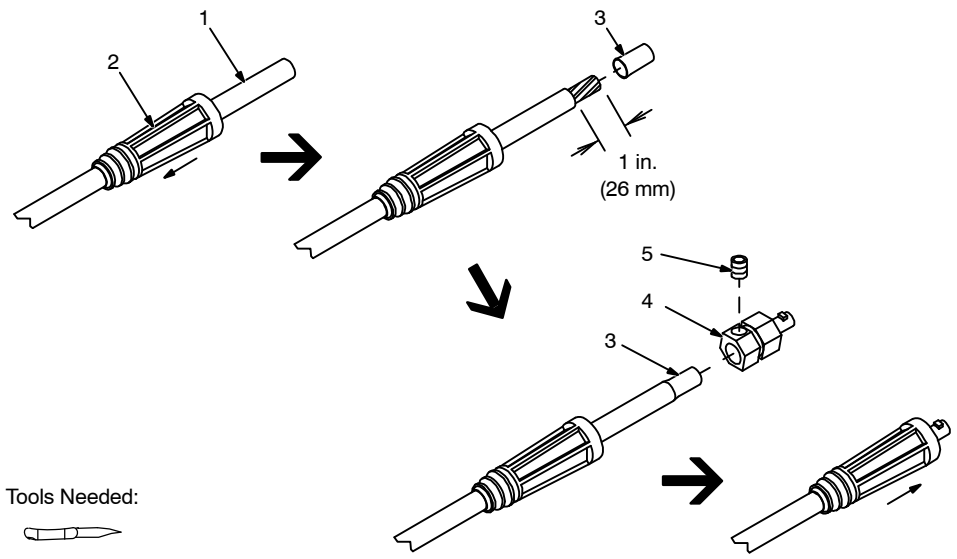
Keep connections tight. Replace cup, heat shield, and backcap as needed.

12 Tungsten Electrode (See Section 5)

**Installing Tungsten**

To adjust tungsten position, loosen backcap.

## 3-2. International Style Connector Assembly




Tools Needed:



1 Weld Output Cable

2 Insulating Boot

3 Sleeve

Slide insulating boot onto cable; strip cable and install sleeve.

4 Connector Body

5 Setscrew

Insert cable with sleeve fully into connector body, tighten setscrew, and slide insulating boot over connector.

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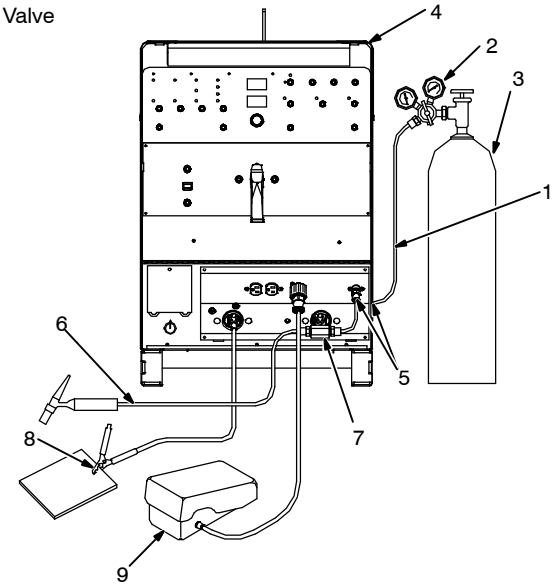
## 3-3. Connecting Torch

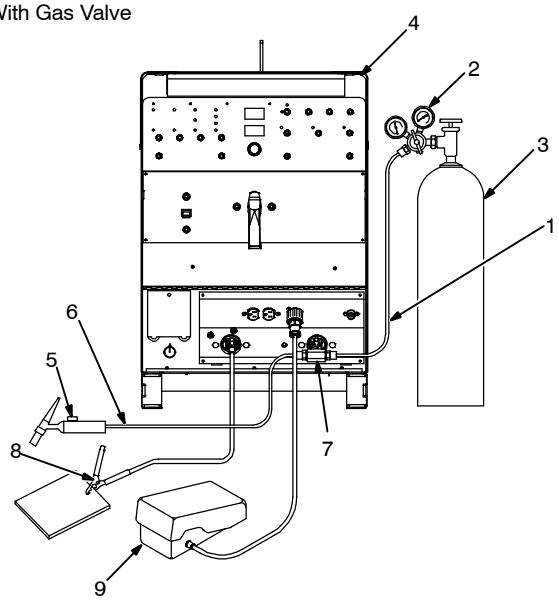
### A. Connecting Torch With One-Piece Cable

☞ *If applicable, install high-frequency unit.*

Torch Without Gas Valve




Torch With Gas Valve




**Turn Off welding power source power before installing torch.**

**Obtain the following hose:**

1 Gas Hose With 5/8-18 Right-Hand Fittings

**Connections:**

2 Regulator/Flowmeter

3 Gas Cylinder

4 Welding Power Source

5 Gas Valve

**Operating Torch Gas Valve:**

Valve controls gas preflow and postflow. Open valve on torch just before welding.

Preflow is used to purge the immediate weld area of atmosphere.

Postflow is required to cool tungsten and weld, and to prevent contamination of tungsten and weld. After welding, leave valve open about 1 second for every 10 amperes of weld current. Close valve on torch when postflow is finished.

6 One-Piece Torch Cable

7 Power Cable Adapter

Connect gas hose and power cable to adapter before connecting adapter to weld output terminal.

8 Work Clamp

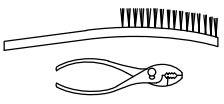
Connect work clamp to clean, paint-free location on workpiece, close to weld.

Use wire brush to clean weld joint area.

9 Foot Control

803 313

Tools Needed:

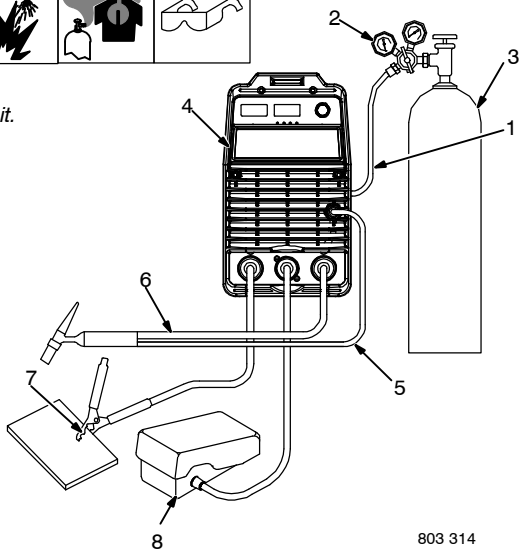


5/8, 7/8 in.

## B. Connecting Torch With Two-Piece Cable

☞ *If applicable, install high-frequency unit.*

Torch Without Gas Valve

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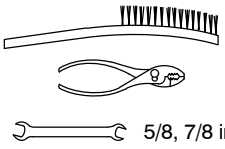
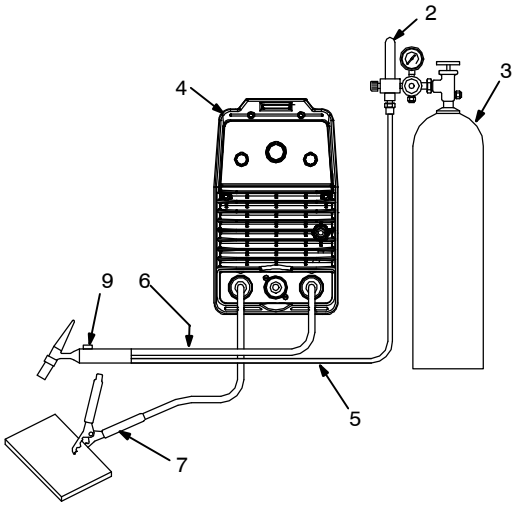
Torch With Gas Valve

Tools Needed:



5/8, 7/8 in.

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**⚠ Turn Off welding power source power before installing torch.**

**Obtain the following hose:**

1 Gas Hose With 5/8-18 Right-Hand Fittings

**Connections:**

2 Regulator/Flowmeter

3 Gas Cylinder

4 Welding Power Source

5 Torch Gas-In Hose

6 Torch Power Cable

7 Work Clamp

Connect work clamp to a clean, paint-free location on workpiece, close to weld area.

Use wire brush to clean weld joint area.

8 Foot Control

9 Gas Valve

Valve controls gas preflow and post-flow. Open valve on torch just before welding.

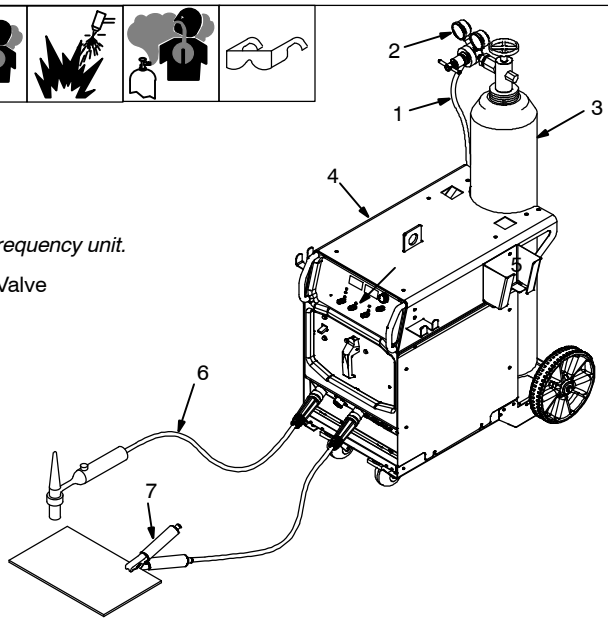
Preflow is used to purge the immediate weld area of atmosphere.

Postflow is required to cool tungsten and weld, and to prevent contamination of tungsten and weld. After welding, leave valve open about 1 second for every 10 amperes of weld current. Close valve on torch when postflow is finished.

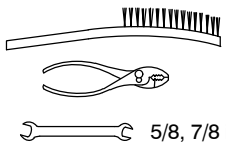
## C. Connecting Torch With Flow-Through Type Connection

☞ *If applicable, install high-frequency unit.*

Torch Without Gas Valve




Tools Needed:



5/8, 7/8 in.

804 330-A

**⚠ Turn Off welding power source power before installing torch.**

**Obtain the following hose:**

1 Gas Hose With 5/8-18 Right-Hand Fittings

**Connections:**

2 Regulator/Flowmeter

3 Gas Cylinder

4 Welding Power Source

5 Gas Valve

Located on back of machine.

6 One-Piece Torch Cable

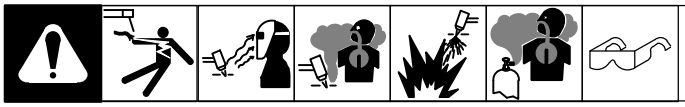
7 Work Clamp

Connect work clamp to clean, paint-free location on workpiece, close to weld area.

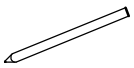
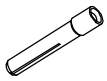
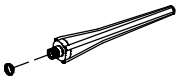
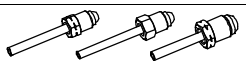
Use wire brush to clean metal at weld joint area.

# SECTION 4 – MAINTENANCE & TROUBLESHOOTING

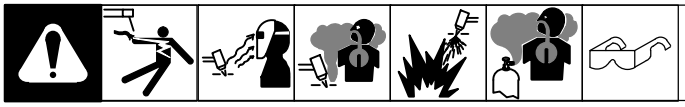
## 4-1. Routine Maintenance



**Disconnect torch before maintaining.**

| | | | | |
|---|---|---|---|---|
| | ✓ = Check ◇ = Change ◒ = Clean ☆ = Replace<br>* To be done by Factory Authorized Service Agent | | | |
| Daily |  <br>✓ Nozzle For Cracks – ☆ If Necessary | |  <br>✓ Check Tungsten Preparation (See Section 5) | |
| Weekly |  <br>✓ Collet For Wear – ☆ If Necessary |  <br>✓ Collet Body Threads – ☆ If Necessary |  <br>✓ Gas Lens Screen – ☆ If Necessary |  <br>✓ Gas Valve, If Applicable – ☆ If Necessary |
| Monthly |  <br>✓ Power Cable For Cracks, Wear – ☆ If Necessary |  <br>✓ Gas Hose For Cracks, Leaks, Wear – ☆ If Necessary |  <br>* ✓ Water Hose, If Applicable, For Cracks, Leaks, Wear – ☆ If Necessary |  <br>✓ Back Cap O-Ring – ☆ If Necessary |
| |  | ✓ Power, Gas, And Water Cable Connections To Ensure They Are Tight | ✓ Cable Cover For Tears, Holes, Or Wear – ☆ If Necessary | |
| | * When using a water-cooled torch, maintain cooling equipment according to the manufactures recommendations. | | | |

## 4-2. Troubleshooting



☞ *Before using troubleshooting table, check selection and preparation of tungsten electrode according to Section 5.*

| Trouble | Remedy |
|---|---|
| Arc will not start. High frequency present and visible at the torch. | Check cable and work connections. Be sure weld circuit is complete (see Section 3-3). |
| | Check and be sure shielding gas is present. |
| Lack of high frequency; difficulty in establishing arc. | Select proper size and type of tungsten. Properly prepare tungsten according to Section 5. |
| | Check cables and torch for cracks or bad connections. Be sure that torch cables are not close to any grounded metal. Repair or replace necessary parts. |
| | Check torch consumables. Be sure collet and collet body are correctly installed and tightened (see Section 3-1). |
| | Check welding power source High Frequency control, and if necessary, check and adjust spark gaps. |
| Torch gas valve not working properly (if applicable). | Have Factory Authorized Service Station/Service Distributor check valve. |
| No shielding gas flow from torch. | Be sure valves on gas supply are open. |
| | Check cable for kinks or blockage. |
| | Check and tighten all gas supply fittings. |
| | Check cables and torch for cracked insulation or bad connections. Repair or replace (see Section 4-1). |
| | Make sure collet is installed correctly (see Section 3-1). |

| Trouble | Remedy |
|---|---|
| Tungsten electrode oxidizing and not remaining bright after conclusion of weld. | Shield weld zone from drafts. |
| | Increase postflow time. |
| | Increase gas flow rate. Check manufacture's recommendations. |
| | Check and tighten all gas fittings. |
| | Check gas valve and flow meter/regulator. |
| | Select proper size and type of tungsten. Properly prepare tungsten (see Section 5). |
| Excessive tungsten electrode consumption. | Select proper size and type of tungsten. Properly prepare tungsten according to Section 5. |
| | Check polarity setting on welding power source (see welding power source Owner's manual). |
| | Check for proper gas flow rate. Check manufacture's recommendations. |
| | If torch is water cooled, check torch and cables for water leaks. Repair or replace if necessary (see Section 4-1). |
| Wandering arc | Shield weld zone from drafts. |
| | Reduce gas flow rate. |
| | Select proper size and type of tungsten. Properly prepare tungsten according to Section 5. |
| | When using AC, check welding power source High Frequency control setting, and increase setting if necessary. |
| Yellow powder or smoke on cup. | Use proper type shielding gas. |
| | Check for proper gas flow rate. Check manufacture's recommendations. |
| | Increase postflow time. |
| | Check torch cup size. Match cup size to joint being welded. |
| Erratic arc | Make sure base material is clean and free of contaminates. |
| | When using DC, check polarity, and/or polarity of welding cables. |
| | Select proper size and type of tungsten. Properly prepare tungsten according to Section 5. |
| | Use proper arc length. Arc length may be too long or too short. |
| | When using AC, check welding power source High Frequency control setting, and be sure it is operating continuously. |
| | When using AC, slow travel speed can cause erratic arc. Adjust travel speed. |
| Porosity in weld. | Check for proper type gas and correct flow rate. Check manufacture's recommendations. |
| | Check and tighten gas fittings. |
| | Make sure base material and filler material is clean and free of contaminates. |
| | Check for impurities and moisture in gas lines. Purge if necessary. |
| | If torch is water cooled, check torch and cables for water leaks. Repair or replace if necessary (see Section 4-1). |

# SECTION 5 – SELECTING AND PREPARING A TUNGSTEN FOR DC OR AC WELDING

gtaw_Phase_2011-06

**Whenever possible and practical, use DC weld output instead of AC weld output.**

## 5-1. Selecting Tungsten Electrode (Wear Clean Gloves To Prevent Contamination Of Tungsten)

☞ *Not all tungsten electrode manufacturers use the same colors to identify tungsten type. Contact the tungsten electrode manufacturer or reference the product packaging to identify the tungsten you are using.*

| Electrode Diameter | Amperage Range - Gas Type♦ - Polarity | |
|---|---|---|
| | (DCEN) – Argon<br>Direct Current Electrode Negative<br>(For Use With Mild Or Stainless Steel) | AC – Argon<br>Balance Control @ 65% Electrode Negative<br>(For Use With Aluminum) |
| **2% Ceria, 1.5% Lanthanum, Or 2% Thorium Alloy Tungstens** | | |
| .040" (1 mm) | 25-85 | 20-80 |
| 1/16" (1.6 mm) | 50-160 | 50-150 |
| 3/32" (2.4 mm) | 130-250 | 135-235 |
| 1/8" (3.2 mm) | 250-400 | 225-360 |
| **Pure Tungsten** | | |
| .040" (1 mm) | Pure Tungsten Not Recommended For DCEN – Argon | 10-60 |
| 1/16" (1.6 mm) | | 50-100 |
| 3/32" (2.4 mm) | | 100-160 |
| 1/8" (3.2 mm) | | 150-210 |

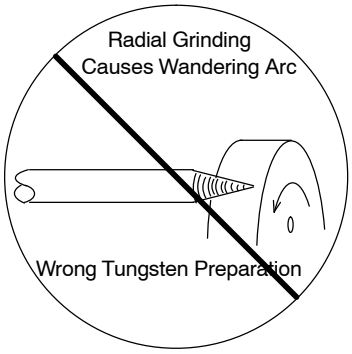
♦Typical argon shielding gas flow rates are 11 to 35 cfh (cubic feet per hour).

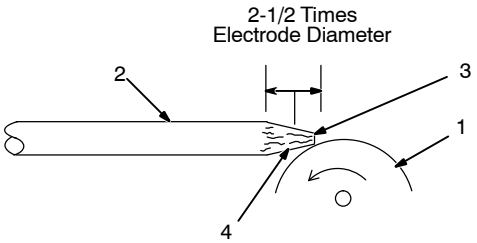
Figures listed are a guide and are a composite of recommendations from American Welding Society (AWS) and electrode manufacturers.

## 5-2. Preparing Tungsten Electrode For Welding With Phase Control Machines

**Grinding the tungsten electrode produces dust and flying sparks which can cause injury and start fires. Use local exhaust (forced ventilation) at the grinder or wear an approved respirator. Read MSDS for safety information. Consider using tungsten containing ceria, lanthana, or yttria instead of thoria. Grinding dust from thoriated electrodes contains low-level radioactive material. Properly dispose of grinder dust in an environmentally safe way. Wear proper face, hand, and body protection. Keep flammables away.**

### A. Preparing Tungsten For DC Electrode Negative (DCEN) Welding




Ideal Tungsten Preparation – Stable Arc

1 Grinding Wheel

Grind end of tungsten on fine grit, hard abrasive wheel before welding. Do not use wheel for other jobs or tungsten can become contaminated causing lower weld quality.

2 Tungsten Electrode

A 2% ceriated tungsten is recommended.

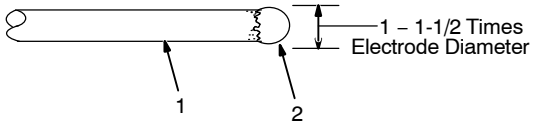
3 Flat

Diameter of this flat determines amperage capacity.

4 Straight Ground

Grind lengthwise, **not radial**.

### B. Preparing Tungsten For AC Welding




1 Tungsten Electrode

A pure tungsten is recommended..

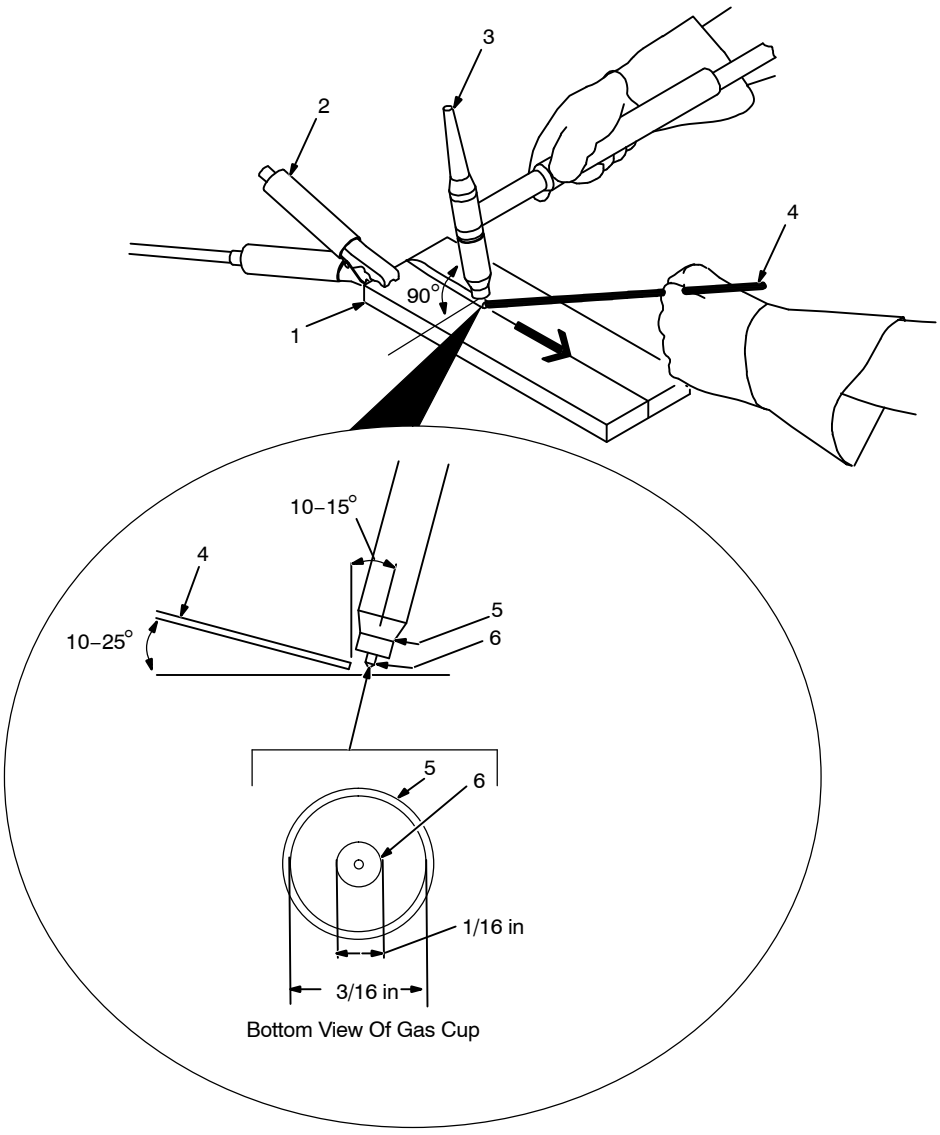
2 Balled End

Ball end of tungsten by applying AC amperage recommended for a given electrode diameter (see Section 5-1). Let ball on end of the tungsten take its own shape.

# SECTION 6 – GUIDELINES FOR TIG WELDING (GTAW)



## 6-1. Positioning The Torch




Bottom View Of Gas Cup

**Grinding the tungsten electrode produces dust and flying sparks which can cause injury and start fires. Use local exhaust (forced ventilation) at the grinder or wear an approved respirator. Read MSDS for safety information. Consider using cerium or lanthanum based tungsten instead of thoriated. Thorium dust contains low-level radioactive material. Properly dispose of grinder dust in an environmentally safe way. Wear proper face, hand, and body protection. Keep flammables away.**

1 Workpiece

Make sure workpiece is clean before welding.

2 Work Clamp

Place as close to the weld as possible.

3 Torch

4 Filler Rod (If Applicable)

5 Gas Cup

6 Tungsten Electrode

Select and prepare tungsten according to Section 5.

**Guidelines:**

The inside diameter of the gas cup should be at least three times the tungsten diameter to provide adequate shielding gas coverage. (For example, if tungsten is 1/16 in diameter, gas cup should be a minimum of 3/16 in diameter.

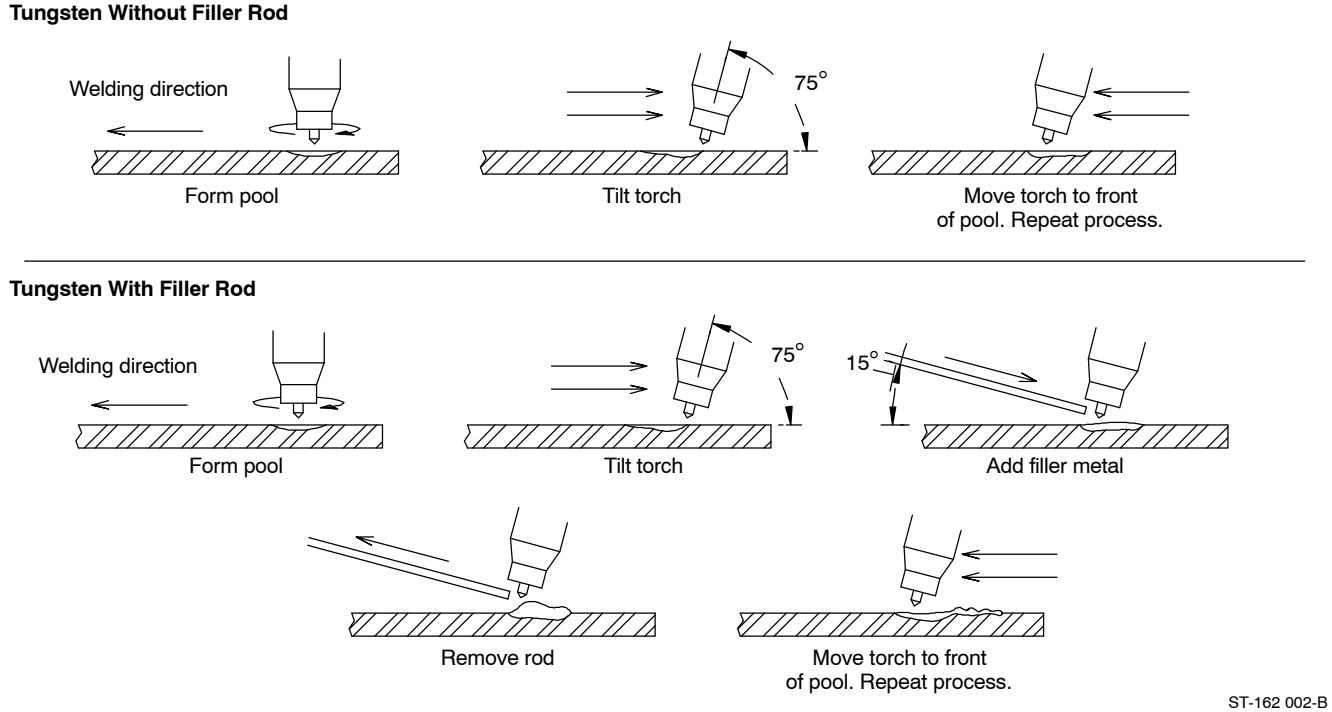
Tungsten extension is the distance the tungsten extends out gas cup of torch.

The tungsten extension should be no greater than the inside diameter of the gas cup.

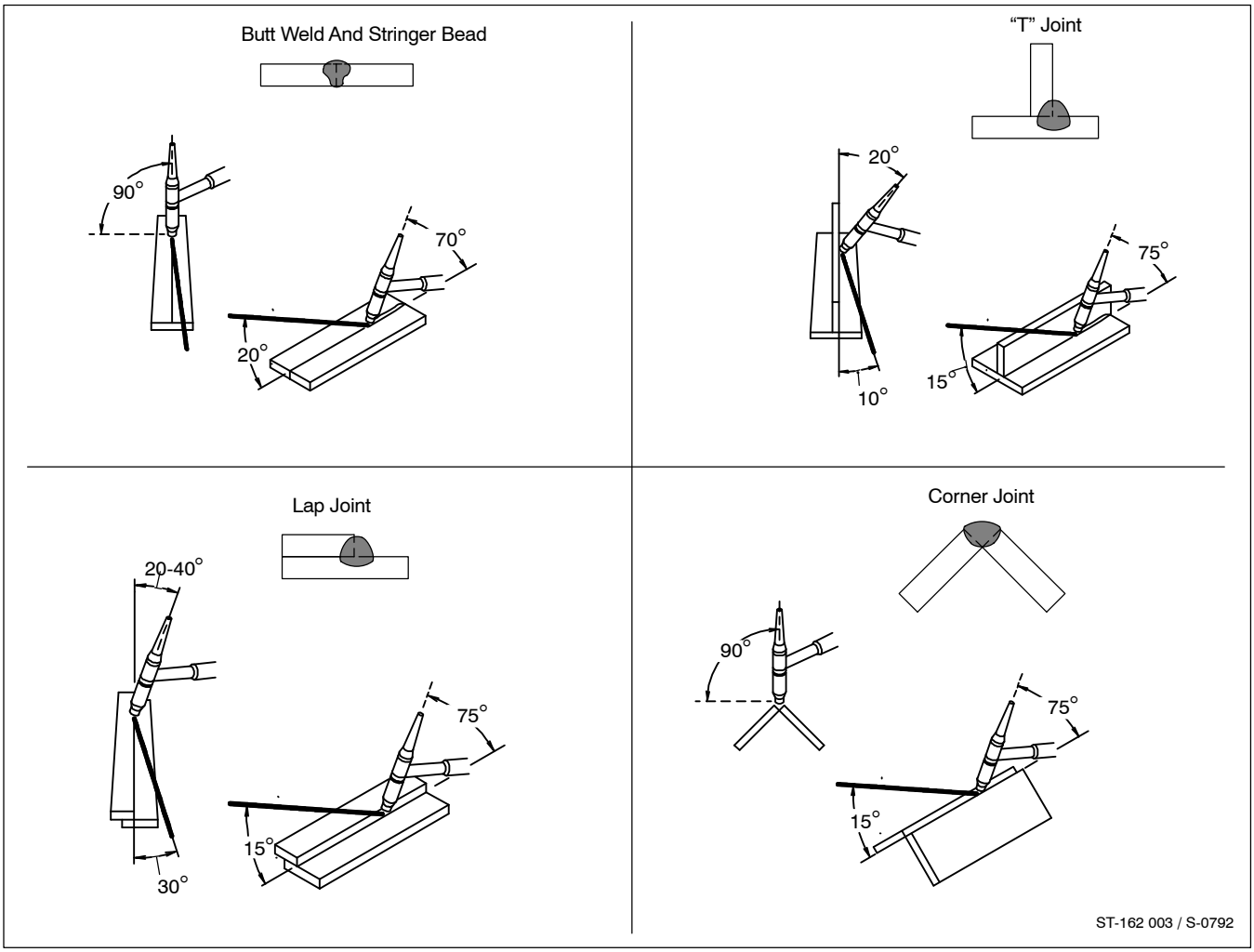
Arc length is the distance from the tungsten to the workpiece.

Ref. ST-161 892

## 6-2. Torch Movement During Welding




## 6-3. Positioning Torch Tungsten For Various Weld Joints



# Notes

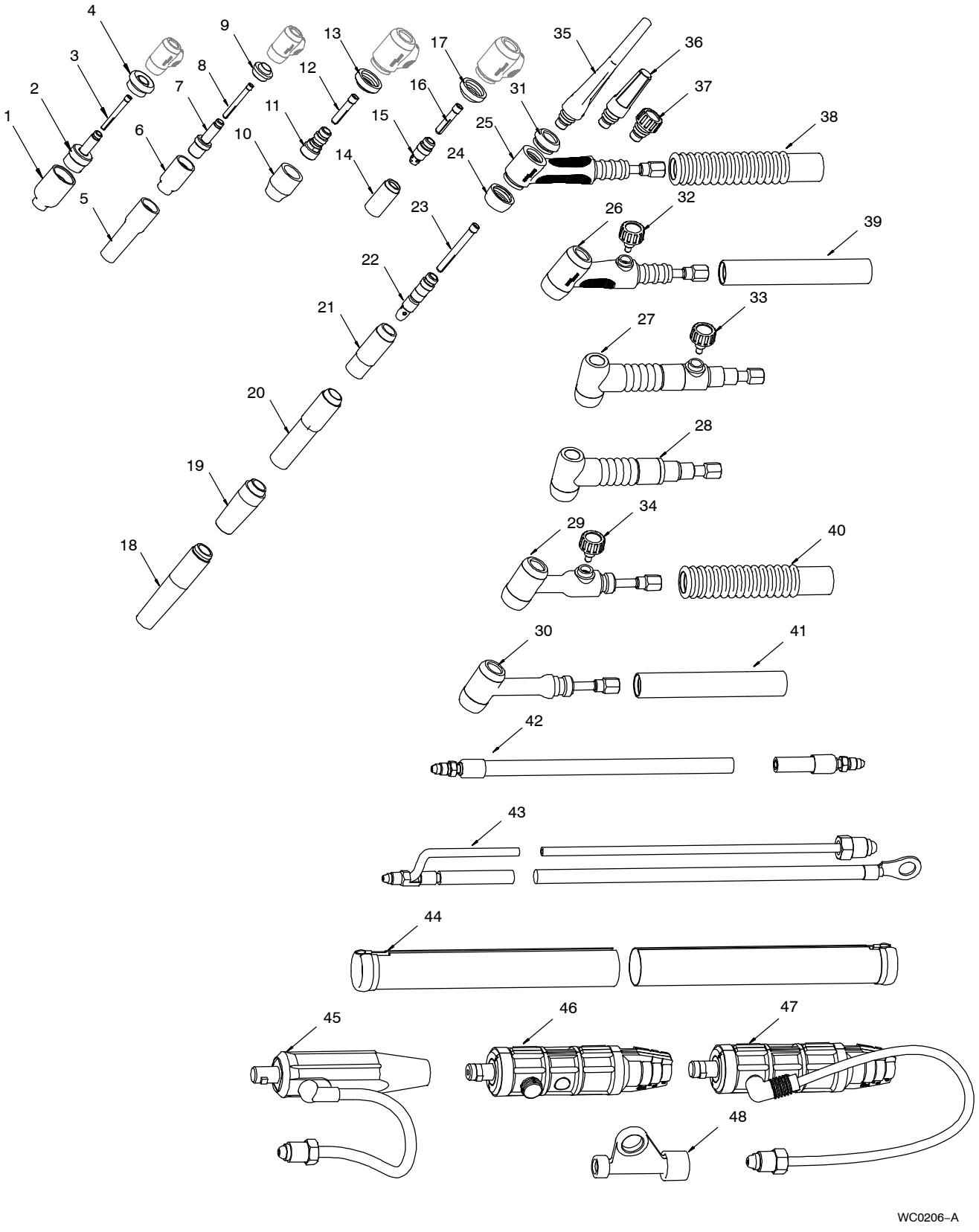



**Figure 7-1. Complete Torch Assembly**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity WP-17 Series 17 | 17V | 17FV | 17F | 17V-PSH | 17-PSH |
|---|---|---|---|---|---|---|---|---|---|

**Figure 7-1. Complete Torch Assembly**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | ♦57N75 | Nozzle, Alumina GL LG #6 (3/8 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | | ♦57N74 | Nozzle, Alumina GL LG #8 (1/2 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | | ♦53N88 | Nozzle, Alumina GL LG #10 (5/8 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | | ♦53N87 | Nozzle, Alumina GL LG #12 (3/4 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | | ♦53N89 | Nozzle, Alumina GL LG Short #15 (15/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | | ♦45V0204 | Gas Lens, Large 0.020–0.040 in. (0.5–1.0 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | | ♦45V116 | Gas Lens, Large 1/16 in. (1.6 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | | ♦45V64 | Gas Lens, Large 3/32 in. (204 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 3 | | ♦10N21 | Collet, 0.020 in (0.5 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 3 | | ♦10N22 | Collet, 0.040 in (1.0 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 3 | | ♦10N23 | Collet, 1/16 in (1.6 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 3 | | ♦10N24 | Collet, 3/32 in (2.4 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 4 | | ♦54N63 | Insulator, Gas Lens Lg | 1 | 1 | 1 | 1 | 1 | 1 |
| 5 | | ♦54N17L | Nozzle, Alumina GL Long #5 (5/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 5 | | ♦54N16L | Nozzle, Alumina GL Long #6 (3/8 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 5 | | ♦54N15L | Nozzle, Alumina GL Long #7 (7/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | | ♦54N18 | Nozzle, Alumina GL #4 (1/4 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | | ♦54N17 | Nozzle, Alumina GL #5 (5/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | | ♦54N16 | Nozzle, Alumina GL #6 (3/8 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | | ♦54N15 | Nozzle, Alumina GL #7 (7/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | | ♦54N14 | Nozzle, Alumina GL #8 (1/2 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | | ♦54N19 | Nozzle, Alumina GL Short #11 (11/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | | ♦45V29 | Gas Lens, 0.020 in. (0.5 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | | ♦45V24 | Gas Lens, 0.040 in. (1.0 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | | ♦45V25 | Gas Lens, 1/16 in. (1.6 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | | ♦45V26 | Gas Lens, 3/32 in. (2.4 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 8 | | ♦10N21 | Collet, 0.020 in. (0.5 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 8 | | ♦10N22 | Collet, 0.040 in. (1.0 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 8 | | ♦10N23 | Collet, 1/16 in. (1.6 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 8 | | ♦10N24 | Collet, 3/32 in. (2.4 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 9 | | ♦54N01 | Insulator, Gas Lens | 1 | 1 | 1 | 1 | 1 | 1 |
| 10 | | ♦53N58 | Nozzle, Alumina GL #4 (1/4 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 10 | | ♦53N59 | Nozzle, Alumina GL #5 (5/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 10 | | ♦53N60 | Nozzle, Alumina GL #6 (3/8 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 10 | | ♦53N61 | Nozzle, Alumina GL #7 (7/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 10 | | ♦53N61S | Nozzle, Alumina GL #8 (1/2 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 11 | | ♦17GL040 | Gas lens, Stubby 0.040 in. (1.0 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 11 | | ♦17GL116 | Gas lens, Stubby 1/16 in. (1.6 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 11 | | ♦17GL332 | Gas lens, Stubby 3/32 in. (2.4 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 11 | | ♦17GL18 | Gas lens, Stubby 1/8 in. (3.2 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 12 | | ♦10N22S | Collet, Stubby 0.040 in. (1.0 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 12 | | ♦10N23S | Collet, Stubby 1/16 in. (1.6 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 12 | | ♦10N24S | Collet, Stubby 3/32 in. (2.4 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 12 | | ♦10N25S | Collet, Stubby 1/8 in. (3.2 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 13 | | ♦17GLG20 | Insulator, Gas Lens Stubby | 1 | 1 | 1 | 1 | 1 | 1 |
| 14 | | ♦13N08 | Nozzle, Alumina #4 (1/4 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 14 | | ♦13N09 | Nozzle, Alumina #5 (5/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 14 | | ♦13N10 | Nozzle, Alumina #6 (3/8 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 14 | | ♦13N11 | Nozzle, Alumina #7 (7/16 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 14 | | ♦13N12 | Nozzle, Alumina #8 (1/2 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 14 | | ♦13N13 | Nozzle, Alumina #10 (5/8 in.) | 1 | 1 | 1 | 1 | 1 | 1 |
| 15 | | ♦17CB20 | Collet Body, Stubby 0.040–1/8 in. (1.0–3.2 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 16 | | ♦10N22S | Collet, Stubby 0.040 in. (1.0 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 16 | | ♦10N23S | Collet, Stubby 1/16 in. (1.6 mm) | 1 | 1 | 1 | 1 | 1 | 1 |
| 16 | | ♦10N24S | Collet, Stubby 3/32 in. (2.4 mm) | 1 | 1 | 1 | 1 | 1 | 1 |

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity WP-17 Series 17 | 17V | 17FV | 17F17V-PSH | 17-PSH |
|---|---|---|---|---|---|---|---|---|

**Figure 7-1. Complete Torch Assembly**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 17 | | ♦18CG20 | Insulator, Nozzle Stubby | 1 | 1 | 1 | 1 | 1 |
| 18 | | ♦12N03 | Nozzle, Lava Long #4L (1/4 in.) | 1 | 1 | 1 | 1 | 1 |
| 18 | | ♦105Z60 | Nozzle, Lava Long #5L (5/16 in.) | 1 | 1 | 1 | 1 | 1 |
| 18 | | ♦12N02 | Nozzle, Lava Long #6L (3/8 in.) | 1 | 1 | 1 | 1 | 1 |
| 18 | | ♦105Z61 | Nozzle, Lava Long #7L (7/16 in.) | 1 | 1 | 1 | 1 | 1 |
| 19 | | ♦105Z43 | Nozzle, Lava #4 (1/4 in.) | 1 | 1 | 1 | 1 | 1 |
| 19 | | ♦105Z42 | Nozzle, Lava #5 (5/16 in.) | 1 | 1 | 1 | 1 | 1 |
| 19 | | ♦105Z44 | Nozzle, Lava #6 (3/8 in.) | 1 | 1 | 1 | 1 | 1 |
| 19 | | ♦105Z45 | Nozzle, Lava #7 (7/16 in.) | 1 | 1 | 1 | 1 | 1 |
| 19 | | ♦08N78 | Nozzle, Lava #8 (1/2 in.) | 1 | 1 | 1 | 1 | 1 |
| 19 | | ♦08N79 | Nozzle, Lava #10 (5/8 in.) | 1 | 1 | 1 | 1 | 1 |
| 19 | | ♦08N80 | Nozzle, Lava #12 (3/4 in.) | 1 | 1 | 1 | 1 | 1 |
| 20 | | ♦10N49L | Nozzle, Alumina Long #5L (5/16 in.) | 1 | 1 | 1 | 1 | 1 |
| 20 | | ♦10N48L | Nozzle, Alumina Long #6L (3/8 in.) | 1 | 1 | 1 | 1 | 1 |
| 20 | | ♦10N47L | Nozzle, Alumina Long #7L (7/16 in.) | 1 | 1 | 1 | 1 | 1 |
| 21 | | ♦10N50 | Nozzle, Alumina #4 (1/4 in.) | 1 | 1 | 1 | 1 | 1 |
| 21 | | ♦10N49 | Nozzle, Alumina #5 (5/16 in.) | 1 | 1 | 1 | 1 | 1 |
| 21 | | ♦10N48 | Nozzle, Alumina #6 (3/8 in.) | 1 | 1 | 1 | 1 | 1 |
| 21 | | ♦10N47 | Nozzle, Alumina #7 (7/16 in.) | 1 | 1 | 1 | 1 | 1 |
| 21 | | ♦10N46 | Nozzle, Alumina #8 (1/2 in.) | 1 | 1 | 1 | 1 | 1 |
| 21 | | ♦10N45 | Nozzle, Alumina #10 (5/8 in.) | 1 | 1 | 1 | 1 | 1 |
| 21 | | ♦10N44 | Nozzle, Alumina #12 (3/4 in.) | 1 | 1 | 1 | 1 | 1 |
| 22 | | ♦10N29 | Collet Body, 0.020 in. (0.5 mm) | 1 | 1 | 1 | 1 | 1 |
| 22 | | ♦10N30 | Collet Body, 0.040 in. (1.0 mm) | 1 | 1 | 1 | 1 | 1 |
| 22 | | ♦10N31 | Collet Body, 1/16 in. (1.6 mm) | 1 | 1 | 1 | 1 | 1 |
| 22 | | ♦10N32 | Collet Body, 3/32 in. (2.4 mm) | 1 | 1 | 1 | 1 | 1 |
| 23 | | ♦10N21 | Collet, 0.020 in. (0.5 mm) | 1 | 1 | 1 | 1 | 1 |
| 23 | | ♦10N22 | Collet, 0.040 in. (1.0 mm) | 1 | 1 | 1 | 1 | 1 |
| 23 | | ♦10N23 | Collet, 1/16 in. (1.6 mm) | 1 | 1 | 1 | 1 | 1 |
| 23 | | ♦10N24 | Collet, 3/32 in. (2.4 mm) | 1 | 1 | 1 | 1 | 1 |
| 24 | | ♦ 18CG | Insulator, Nozzle | 1 | 1 | 1 | 1 | 1 |
| 25 | | ♦WP-17 | Torch Body, 150 A A/C | 1 | | | | |
| 26 | | ♦WP-17V | Torch Body, 150 A A/C VLV | | 1 | | | |
| 27 | | ♦WP-17FV | Torch Body, 150 A A/C FX VLV (Includes) | | | 1 | | |
| | | ♦150VTB | Torch Body, 150 VTB | | | 1 | | |
| 28 | | ♦WP-17F | Torch Body, 150 A A/C FX (Includes) | | | | 1 | |
| | | ♦150TB | Torch Body, 150 TB | | | | 1 | |
| 29 | | ♦WP-17V-PSH | Torch Body, 150 A A/C VLV Thrd | | | | | 1 |
| 30 | | ♦WP-17-PSH | Torch Body, 150 A A/C Thrd | | | | | 1 |
| 31 | | ♦18-7 | Insulator, Backcap | 1 | 1 | | 1 | 1 |
| 32 | | ♦VS-2 | Knob, Valve | | 1 | 1 | | 1 |
| 33 | | ♦VS-2 | Knob, Valve | | 1 | 1 | | 1 |
| 34 | | ♦VS-2 | Knob, Valve | | 1 | 1 | | 1 |
| 35 | | ♦57Y02 | Backcap, Long | 1 | 1 | 1 | 1 | 1 |
| 36 | | ♦300M | Backcap, Medium | | 1 | 1 | 1 | 1 |
| 37 | | ♦57Y04 | Backcap, Short | 1 | 1 | 1 | 1 | 1 |
| 38 | | ♦H-100R | Handle, Ribbed (WP-17, WP-17V) | 1 | 1 | | | |
| 39 | | ♦H-100 | Handle, Knurled (WP-17, WP-17V) | 1 | 1 | | | |
| 40 | | ♦105Z55R | Handle, Ribbed (WP-17FV, WP-17F, WP-17V-PSH, WP-17-PSH)) | 1 | 1 | 1 | 1 | 1 |
| 41 | | ♦105Z55 | Handle, Knurled (WP-17FV, WP-17F, WP-17V-PSH, WP-17-PSH)) | 1 | 1 | 1 | 1 | 1 |
| 42 | | ♦57Y01 | Cable, Power 12.5 Ft (3.8 m) Vinyl | 1 | 1 | 1 | 1 | 1 |
| 42 | | ♦57Y01R | Cable, Power 12.5 Ft (3.8 m) Rubber | 1 | 1 | 1 | 1 | 1 |
| 42 | | ♦57Y03 | Cable, Power 25 Ft (7.6 m) Vinyl | 1 | 1 | 1 | 1 | 1 |

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity WP-17 Series 17 | 17V | 17FV | 17F | 17V-PSH | 17-PSH |
|---|---|---|---|---|---|---|---|---|---|

**Figure 7-1. Complete Torch Assembly**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 42 | | ♦57Y03R | Cable, Power 25 Ft (7.6 m) Rubber | 1 | 1 | 1 | 1 | 1 | 1 |
| 43 | | ♦57Y01-2 | Cable, Power 2pc 12.5 Ft (3.8 m) Rubber (Includes) | 1 | 1 | 1 | 1 | 1 | 1 |
| | | ♦45V09R | Hose, Gas 12.5 Ft (3.8 m) | 1 | 1 | 1 | 1 | 1 | 1 |
| 43 | | ♦57Y03-2 | Cable, Power 2pc 25 Ft (7.6 m) Rubber (Includes) | 1 | 1 | 1 | 1 | 1 | 1 |
| | | ♦45V10R | Hose, Gas 25 Ft (7.6 m) Braided | 1 | 1 | 1 | 1 | 1 | 1 |
| 44 | | ♦WC-3-10 | Cover, Cable 10 Ft (3 m) | 1 | 1 | 1 | 1 | 1 | 1 |
| 44 | | ♦WC-3-2 | Cover, Cable 22 Ft (6.7 m) | 1 | 1 | 1 | 1 | 1 | 1 |
| 45 | | ♦195378 | Adapter, Gas Torch-Intnl | 1 | 1 | 1 | 1 | 1 | 1 |
| 46 | | ♦Q5GT-150 | Conn, Quick 150 A 50 mm Flow Thru | 1 | 1 | 1 | 1 | 1 | 1 |
| 47 | | ♦Q5G-150 | Conn, Quick 150 A 50 mm w/Hose (Includes) | 1 | 1 | 1 | 1 | 1 | 1 |
| | | ♦PCA-5-16 | Hose, Gas 18 in. (0.2 m) RH | 1 | 1 | 1 | 1 | 1 | 1 |
| 48 | | ♦105Z57 | Adapter, Power Cable | 1 | 1 | 1 | 1 | 1 | 1 |
| | | ♦AK-2 | Kit, Accessory Thoriated | 1 | 1 | 1 | 1 | 1 | 1 |
| | | ♦AK-2C | Kit, Accessory . Ceriated | 1 | 1 | 1 | 1 | 1 | 1 |
| | | ♦Mak-2S | Kit, Starter | 1 | 1 | 1 | 1 | 1 | 1 |

♦Optional

BE SURE TO PROVIDE MODEL AND STYLE NUMBER WHEN ORDERING REPLACEMENT PARTS.

# Notes

# Notes

# 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 Number.

| | |
|---|---|
| Contact your Distributor for: | Welding Supplies and Consumables |
| | Options and Accessories |
| | Personal Safety Equipment |
| | Service and Repair |
| | Replacement Parts |
| | Welding Process Handbooks |

To locate a Distributor or Service Agency call 1-800-752-7620 or 920-882-6800

| | |
|---|---|
| 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. |

**Weldcraft**
An Illinois Tool Works Company
2741 N. Roemer Rd
Appleton, WI 54911 USA

1-800-752-7620 Toll Free
1-920-882-6800 Phone
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