

**CHICAGO  
ELECTRIC®** **welding  
systems**

**INDUSTRIAL**

# **ARC WELDER WITH THERMAL OVERLOAD**

**Model 44568**

**ASSEMBLY AND OPERATING INSTRUCTIONS**



Distributed Exclusively by <sup>®</sup>  
**HARBOR FREIGHT  
TOOLS**

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**For technical questions and replacement parts, please call 1-800-444-3353**

Revised Cover Page 02/03

## Specifications

ITEM	DESCRIPTION
Open Voltage	AC operation: 48A/22V to 130A/25.2V Adjustable DC operation: 25A/21V to 99A/24V Adjustable
Power Requirement	230 VAC, single phase, 60 Hz
Absorbed Power	5.4 Kilowatts
Duty Cycle	10%@ 130 AMPS(AC), 15%@ 100 AMPS(DC)
Thermal Overload Protection	DC setting: 20 minutes shutdown; 4 minute back on AC setting: 10 minutes shutdown; 3 minute back on
Dimensions	26 (L) x 13-1/2 (W) x 19 (H) inches
Ground Cable	4 AWG, single insulation, 6 foot
Torch Cable	4 AWG, single insulation, 6 foot
Power Cord	3-core, double insulated, 14 AWG, 6 foot, U.L. Approved
Features	Power switch with green light indicator Thermal overload protection with amber light indicator Current adjustment knob
Accessories	Face Shield Wire / Slag Brush Pull and Cable Handle
Weight	58.35 lbs

Note: Arc Welding Accessory Kit (SKU #35491) is available from Harbor Freight Tools. This kit includes: 3M Cable with Electrode Holder, 2M Cable with Ground Clamp, Welding Mask and Combination Brush/Welding Hammer.

## Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

## Safety Warnings and Precautions

**WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.**

**Read all instructions before using this tool!**

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lighted. Do not use electrically powered tools in the presence of flammable gases or liquids.
3. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.
4. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.

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5. **Do not force tool.** It will do the job better and more safely at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool capacity.
6. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
7. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically nonconductive clothes and nonskid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
8. **Use eye and ear protection.** Always wear ANSI approved, arc shaded, impact safety face shield. Always use the full face shield (provided) when arc welding. Wear an ANSI approved dust mask or respirator when working around metal, chemical dusts, fumes and mists.
9. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
10. **Maintain tools with care.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and, if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.
11. **Disconnect power.** Unplug tool when not in use.
12. **Remove adjusting keys and wrenches.** Check that keys and adjusting wrenches are removed from the tool or machine work surface before plugging it in.
13. **Avoid unintentional starting.** Be sure the switch is in the Off position when not in use and before plugging in. Do not carry any tool with your finger on the trigger, whether it is plugged in or not.
14. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
15. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn On and Off properly.
16. **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
17. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
18. **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.
19. **Maintenance.** For your safety, service and maintenance should be performed regularly by a qualified technician.

20. **Use proper size and type extension cord.** If an extension cord is required, it must be of the proper size and type to supply the correct current to the tool without heating up. Otherwise, the extension cord could melt and catch fire, or cause electrical damage to the tool. This tool requires use of an extension cord of **20 amps** minimum capability (up to 30 feet), with wire size rated at **10 AWG**. Longer extension cords require larger size wire. If you are using the tool outdoors, use an extension cord rated for outdoor use (signified by “WA” on the jacket).

**Note:** Performance of this tool may vary depending on variations in local line voltage. Extension cord usage may also affect tool performance.

**Warning:** The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

## Arc Welding Safety Warnings and Precautions

**Warning:** This product, when used for welding and similar applications, produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). California Health & Safety Code 25249.5, et seq.

1. **Avoid electrical shock.** Do not permit electrically live parts, cables, or electrodes to contact skin, clothing, or gloves. Protective clothing should be hole-free, dry, and ANSI approved.

This unit draws enough current to cause serious injury or death. Before turning the welder on, check the electrode holder to be sure that there are no protruding screw heads, and that all insulation is secure. Do not weld unless you are insulated from ground and the work piece.

2. **Avoid breathing fumes or gases.** They can cause serious health problems. Use an active ventilation system directly above the welding area. Keep your head out of the fumes.

### Inhalation Hazard

**Welding Produces TOXIC FUMES and GASSES.**



Exposure to welding gasses can increase the risk of developing certain cancers, such as cancer of the larynx and lung cancer. Also, some diseases that may be linked to exposure to welding gasses or fumes are:

- Early onset of Parkinson's Disease
- Damage to the reproductive organs
- Inflammation of the small intestine or stomach
- Respiratory diseases such as emphysema, bronchitis or pneumonia
- Heart Disease
- Ulcers
- Kidney damage

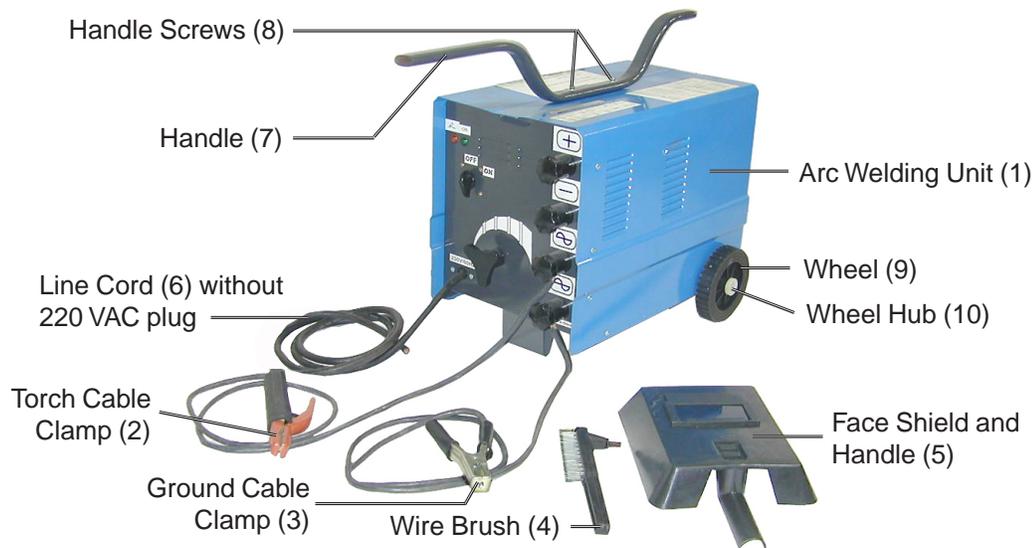


Safety precautions, such as using natural or forced air ventilation and wearing an ANSI approved respirator, are **ESSENTIAL** to reduce the risk of developing the above illnesses.

3. **Avoid eye and body damage.** Arc rays and infrared radiation can injure eyes and burn skin. Wear ANSI approved eye and body protection. Do not allow viewing by visitors without proper eye and body protection. Use the provided Face Shield with arc shaded filter plate.
4. **Know proper arc welding practices.** Read and understand the manufacturer's instructions, as well as your employer's safety practices for arc welding.
5. **Connect only to a code approved power source.** Connect only to a grounding power source conforming to the National Electrical Code and Local Codes.
6. **Avoid fire and explosion.** Remove flammable and explosive material from at least 35 feet from the welding arc to prevent welding sparks or molten metal from starting a fire. Keep a type ABC fire extinguisher within easy reach. Thoroughly clean the object being welded of any paint, grease, or other foreign material.
7. **Avoid being burned.** Always wear ANSI approved welding gear: leather gloves, leather apron, and shoes.

## Unpacking

When unpacking, check to make sure the following parts are included.



If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

## Assembly

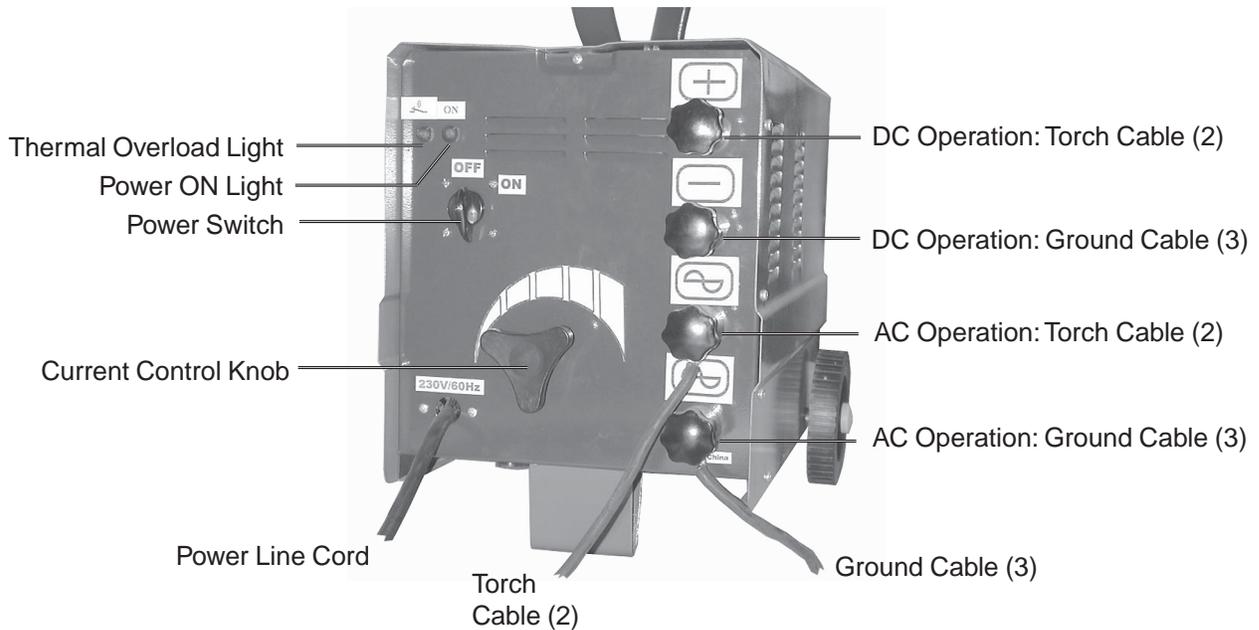
1. Attach the Handle (7) to the top of the Arc Welding Unit (1) using Handle Screws (8). The long portion of the Handle should be facing forward.
2. Connect an appropriate 220 VAC electrical plug to the Line Cord (6). This should only be done by a licensed electrician.
3. Place each Wheel (9) over the axle and insert the Wheel Hub (10).
4. Attach the Front Foot to the bottom of the Arc Welder using the supplied hardware.
5. Snap in the Handle into the Face Shield (5).

## Operation

**Caution: Before arc welding, read and understand all safety precautions and warnings listed on pages 2 through 5.**

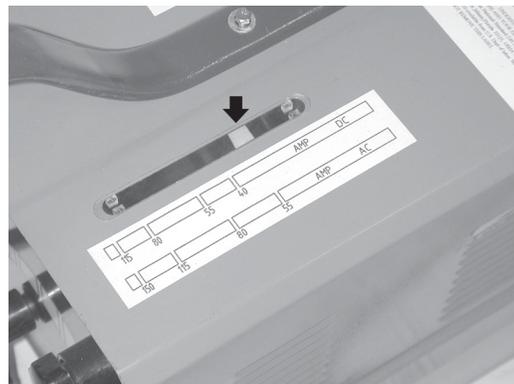
1. Determine whether AC or DC welding is to be used.
2. Connect the Ground Cable (3) and Torch Cable (2) to the Arc Welder, as shown in the photo on the next page, for either AC or DC operation.

Remove the connector knob and place the cable over each terminal and tighten the connector knob completely.



3. Securely clamp the Ground Cable Clamp (3) as close as possible to the metal object to be welded, or to the metal work bench where the object is mounted and electrically connected.
4. Place the desired welding electrode rod securely into the jaws of the Torch Cable Clamp (2).
5. While viewing the Current Setting Gauge (below-right), turn the Current Control Knob to the correct current setting for the electrode rod being used.

Electrode Diameter	Welding Current in Amps
0.0624" (1.6 mm)	25 ~ 50
0.078" (2 mm)	40 ~ 80
0.0975" (2.5 mm)	60 ~ 100
0.12285" (3.15 mm)	100 ~ 121
0.156" (4 mm)	110 ~ 121



6. Verify that the Power Switch is in the OFF position, then plug the Arc Welder 220 VAC plug into a dedicated, 40 amp line with delayed action type circuit breaker or fuses.

If an extension cord is used, it must have the following wire size: up to 30 feet, use 10 AWG size wire; 30 to 50 feet, use 8 AWG wire; Over 50 feet, use 6 AWG wire.

7. While holding the Torch Cable Clamp with electrode clearly out of the way of any grounded objects, turn the Power Switch to the ON position.
8. Orient yourself on the area to be welded, then place the Face Shield over your eyes.

**Warning: Never look at the ignited arc without ANSI approved, arc shaded, eye protection in a full face shield. Permanent eye damage or blindness can occur. Skin burns can occur. Never breath arc fumes.**

9. Stroke the area to be welded with the electrode to ignite the arc.

Never tap the electrode into the welding surface to ignite the arc. This damages its external coating on the electrode which prevents oxygen in the air from coming into contact with the molten metal, causing it to oxidize.

10. Once the arc is ignited, tilt the electrode forward at an angle of approximately 30° and hold it at a distance from the welding object equal to the diameter of the electrode.

**Note:** If too much current is drawn from the Arc Welder, the Thermal Overload protector will activate, the amber indicator will light, and the Arc Welder will turn off until it cools down. If this happens, turn the Power Switch to the OFF position and wait about 20 minutes.

11. When the weld is complete, lift the electrode clearly away from any grounded object, set the Face Shield down and turn toward the Arc Welder and turn the Power Switch to the OFF position.
12. Remove the electrode from the Torch Cable Clamp.
13. Unplug the Power Cord from the electrical outlet.

## Troubleshooting

Symptom	Probable Cause	Suggested Remedy
Welder does not operate, or continually blows fuses	<ol style="list-style-type: none"> <li>1. Improper fuse or circuit breaker</li> <li>2. Fuse blown or circuit breaker tripped</li> <li>3. Thermal overload protection activated</li> <li>4. Using incorrect welding techniques</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuse, reset breaker, or use delayed action breaker</li> <li>2. Replace fuse or reset breaker</li> <li>3. Wait until the unit cools down and try again.</li> <li>4. Review recommended welding techniques</li> </ol>
Welding current low or weak	<ol style="list-style-type: none"> <li>1. Low line voltage</li> <li>2. Welding current setting too low</li> <li>3. Poor cable connections</li> </ol>	<ol style="list-style-type: none"> <li>1. Check power source for at least 220 VAC at 40 amps.</li> <li>2. Turn the Current Control Knob to a higher setting</li> <li>3. Check and tighten all cable connections</li> </ol>
Will not hold an arc	<ol style="list-style-type: none"> <li>1. Using a DC welding rod</li> <li>2. Using a low hydrogen rod</li> </ol>	<ol style="list-style-type: none"> <li>1. Use a proper welding electrode</li> <li>2. Use a rod of 0.078" (2 mm) max. diameter or smaller on 30 ~ 60 amp range.</li> </ol>

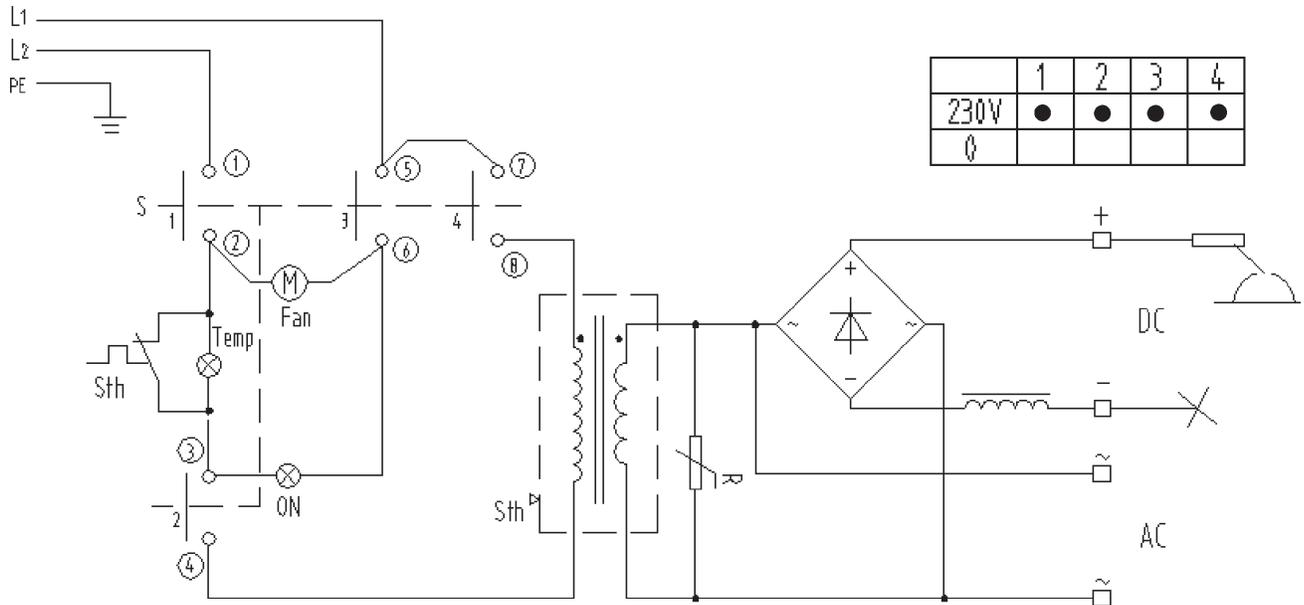
### PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

## Maintenance

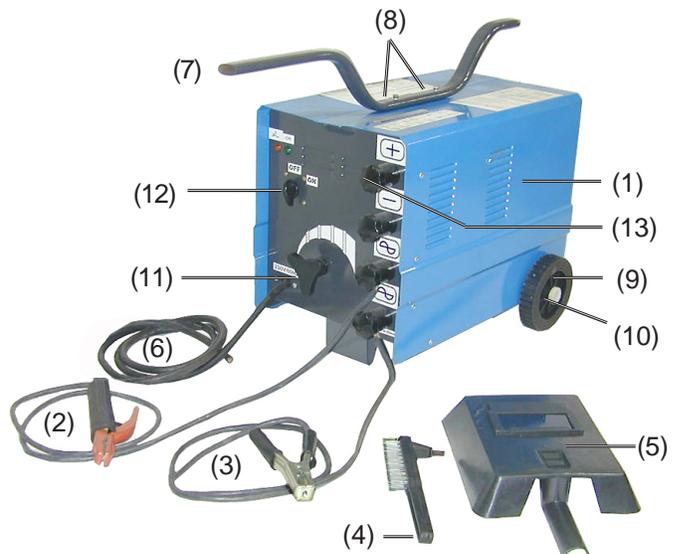
1. Periodically tighten all cable connection screws on the cable clamps.
2. Periodically clean both cable clamps of all grease, dirt, welding slag, and carbon deposits.
3. Store the Arc Welder and cable clamps in a clean and dry location.

## Electrical Schematic



## Parts List and Component Diagram

Item #	Description	Qty
1	Arc Welding Unit	1
2	Torch Cable Clamp	1
3	Ground Cable Clamp	1
4	Wire Brush	1
5	Face Shield and Handle	1
6	Line Cord (no 220 VAC plug)	1
7	Handle	1
8	Screws, Handle	2
9	Wheel	2
10	Hub, Wheel	2
11	Current Control Knob	1
12	Power Switch Knob	1
13	Cable Connection Knobs	4



**NOTE:** Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

REV 04/05