

# **Voltmaster Welder/Generators**

**Models W180H and W240**

**Owner's Manual**

**June 2011**

***Voltmaster***   
BY WANCO®



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# 1 Introduction

## 1.1 Read before using



### **WARNING**

**Improper use of equipment could cause serious injury or death.**

Prior to using this equipment, carefully read, understand, and observe all instructions in this manual and the engine manual.

This is an industrial-type electric welder/generator. This equipment is potentially hazardous and could cause physical injury or even death if improperly used. Before attempting to operate this equipment:

- Check to ensure no damage has occurred in transit
- Read this manual thoroughly
- Follow all instructions carefully
- Read engine manufacturer's instructions

By following these instructions, you will enjoy safe and trouble-free operation of your welder/generator.

## 1.2 Principles of operation

The welder/generator may be used as an AC welder or an AC-power generator. For reference, power specifications are listed in Section 1.3.

Although the generator can be used for AC-power during welding, it is strongly recommended not to weld while using the AC generator.

## 1.3 Specifications

<b>Application</b>	<b>W180H</b>	<b>W240</b>
<b>As a welding machine—shielded meal arc (stick)</b>		
Strike voltage	65–75	75–85
Rated amperes	180	240
Rated voltage	30	30
Current range, amperes	100–120	150–240
Duty cycle	35%	35%
RPM	3600	3600
<b>As a power generator (from receptacle)</b>		
Max. wattage	4000	6000
Max. amperes	33/16	41/20.8
Rated AC voltage	120/240	120/240
Frequency, hertz	60	60
Phase	1	1
RPM	3600	3600
<b>Engine</b>		
Operating RPM (weld and power)	3600	3600
Brake HP	11	16

## 1.4 Where to obtain service

Before calling for service, please have the generator model and serial number ready. This information is displayed on the serial number tag, which is adhered to the generator.

Contact our service department using the following information:

**Wanco Inc.**

5870 Tennyson Street  
Arvada, Colorado 80003

800-730-3927  
fax 303-427-5725

www.voltmaster.com  
sales@voltmaster.com

# 2 Safety Information

## 2.1 Operating safety



### **DANGER**

#### **Explosion hazard.**

- NEVER operate welder/generator in an explosive atmosphere or near combustible materials.
- Keep welder/generator, engine, fuel, and other combustibles away from sparks, open flame, and burning objects.
- Do not smoke near engine.
- Never use generator to charge any batteries or jumpstart a vehicle.
- Before filling or draining fuel, stop engine and allow it to cool.
- Use correct fuel.
- Replace fuel tank cap after refueling.
- For electric-start models:
  - Lead acid batteries emit a colorless explosive hydrogen gas while being charged. Keep batteries away from sparks, open flame, and burning objects.
  - Do not smoke near batteries.
  - Do not disconnect battery cables from the battery or engine while the unit is cranking or operating.

 **DANGER**



**Asphyxiation hazard.**

**Engine exhaust contains carbon monoxide, a poison gas you cannot see or smell.**

- NEVER operate engine indoors, EVEN IF doors and windows are open.
- Operate the engine OUTSIDE, far away from doors, windows, and vents.
- Refill and drain fuel tank only in a well ventilated area.
- Perform maintenance in a well ventilated area.

 **WARNING**



**Shock hazard.**

The electrode and work circuit are electrically live whenever the output is on. The power circuit and internal circuits are live when power is on.

- Avoid contact with live terminals and receptacles.
- Use extreme caution when working on or with electrical components.
- Ensure the welder/generator is properly grounded according to all applicable electrical codes.
- Insulate yourself with hole-free gloves and body protection, and dry insulating mats and covers.
- Use fully insulated electrode holders. Never dip holders in water to cool, or lay them on the ground or work surface. Do not touch holders to other holders or to people.
- Ensure cables are undamaged before using. Do not wrap cables around yourself during use.
- Do not operate welder/generator in rain, snow, or wet conditions.





**WARNING**

**Fire hazard.**

**A hot muffler can ignite flammable materials.**

Keep area around muffler free of debris such as leaves, paper, and cartons.



**CAUTION**

**Risk of severe burn.**

- Do not touch the engine, exhaust pipes, or any engine component until cool.

- Do not remove radiator cap when engine is hot. Contents are hot and under pressure.



**CAUTION**

**Moving parts can cause injury.**

- Keep hands, hair, loose clothing, and tools away from moving parts.

- Keep all panels, covers, and guards closed and securely fastened during operation.

- Prior to servicing, disconnect negative (-) cable from battery.



- Before using this equipment, carefully read, understand, and observe all instructions in this manual and the engine manual.
- Before using this equipment for the first time, visually inspect the unit for loose or missing parts and damage that may have occurred in shipment.
- This equipment should not be operated by persons under 18 years of age.
- ALWAYS wear appropriate protective clothing, shoes, and other protective devices, as required by the job.
- ALWAYS wear appropriate eye, respiratory, and hearing protection.
- NEVER operate this equipment when not feeling well due to fatigue, illness, or medication.

- NEVER operate this equipment under the influence of drugs or alcohol.
- When fueling electric-start engines, do not touch battery cables or posts to a gasoline supply can.
- Before operating, know the location of the nearest fire extinguisher, first aid kit, and emergency telephone.
- Keep a fire extinguisher nearby and know its proper use. Extinguishers rated ABC by the NFPA are appropriate for all applications. For more information, consult your local fire department.
- Store fuel only in approved containers and in a well ventilated area. Exhaust fumes are poisonous in inhaled.
- Be sure the welder/generator is well ventilated on all four sides.
- Do not operate this equipment in an enclosed area, such as a recreational vehicle, marine vehicle, under the hood of a car or truck, or inside a truck or van with only the rear door open. All warranties are voided if the unit is operated in such an area.
- Keep welder/generator and surrounding areas clean. Remove oily rags and other material that could create a fire hazard.
- NEVER use the welder/generator with a cover over the unit. The welder/generator must operate in an open-air environment.
- NEVER service welder/generator or its components while welder/generator is running. Do not perform service or maintenance while welder/generator is hot.
- Only a qualified technician should perform repairs on this equipment, including the installation or replacement of parts and accessories.
- Use ONLY accessories or attachments that are recommended by the manufacturer. Unauthorized equipment modifications will void all warranties.

## 2.2 Engine safety

### 2.2.1 Operator safety

Refer to engine manufacturer's documentation for additional engine safety and operating information.

### 2.2.2 California Proposition 65



#### **WARNING**



#### **Health hazard.**

Engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

### 2.2.3 Spark arresters

#### **IMPORTANT!**

State and local safety codes specify that, in certain locations, internal combustion engines that use hydrocarbon fuels must be used with spark arresters.

A spark arrester is a device constructed of nonflammable materials specifically for the purpose of removing and retaining carbon and other flammable particles from the exhaust flow of an internal combustion engine.

Spark arresters are qualified and rated by the United States Forest Service. To comply with all applicable laws regarding spark arresters, consult your local Health and Safety Administrator.

## 2.3 Welding Safety

### 2.3.1 Operator safety



#### **DANGER**

**Explosion hazard.**

**Sparks, spatter, temperature, and open flame can cause an explosion.**

- Ensure the work area is free from combustible and explosive materials, fumes, and gases.
- Ensure gas cylinders do not leak, are well maintained, and are held safely in place.



#### **DANGER**

**Asphyxiation hazard.**

**Welding produces toxic fumes and gases you cannot see or smell.**

- Keep face away from fumes. Do not breathe fumes.
- If ventilation is poor, use an approved air-supplied respirator.
- Read and understand all applicable Material Safety Data Sheets (MSDSs) and manufacturers' documentation for metals, consumables, coatings, and cleaning solutions.
- Work in a well ventilated area or use appropriate ventilation. Ensure welding gases are vented from enclosed spaces.
- Do not weld in locations near degreasing, cleaning, or spraying operations.
- Do not work on coated metals, such as galvanized or plated steel, unless the coating is removed from the weld area and the area is well ventilated. Use an approved air-supplied respirator while working on these materials.

 **WARNING**

**Fire and burn hazard.**

**Welding equipment and the welding process can cause fire and burns.**



- Protect yourself, other people, and surrounding area from flying sparks and hot metal.
- Do not weld where flying sparks can strike flammable materials.
- Watch for fire, and keep a fire extinguisher nearby.

 **WARNING**

**Welding arc hazard.**

**Arc rays from the welding process can produce intense heat and strong ultraviolet rays that can burn eyes and skin.**



- Protect eyes and face by wearing a welding helmet with proper shade. Wear approved safety glasses with side shields.
- Wear protective clothing.
- Use protective screens or barriers to protect others from flash and glare. Warn others not to watch the welding arc.
- Use ear protection if noise level is high.

 **WARNING**

**Health hazard.**



This product, when used for welding or cutting, produces fumes or gases which contain chemicals know to the State of California to cause birth defects and, in some cases, cancer.

*California Health & Safety code Sec. 25249.5 et seq.*

- ALWAYS wear appropriate protective clothing, shoes, and other protective devices, as required by the job.
- ALWAYS wear appropriate eye, respiratory, and hearing protection.
- ALWAYS be aware of the welding environment, paying particular attention to combustibles, fumes, and gases.
- Keep a fire extinguisher nearby and know its proper use. Extinguishers rated ABC by the NFPA are appropriate for all applications. For more information, consult your local fire department.
- To prevent welding current from traveling long, possibly unknown paths, connect work cable as close as possible to the welding area.
- For proper welding shade (for helmet or goggles), see Appendix A.
- Sparks and spatter can fly farther than expected, and can easily go through small cracks and openings to adjacent areas.
- Welding on a ceiling, floor, bulkhead, or partition can cause fire on the opposite side.
- NEVER use welder to thaw frozen pipes.
- DO NOT weld on closed containers, such as tanks or drums.
- DO NOT store fuel near welding area.
- When not in use, remove stick electrode from holder.
- Cooling welds can throw off slag. Use caution around recent welds.

## 2.3.2 About magnetic fields

The information below is provided in consideration of welding and the effects of low-frequency electric and magnetic fields.

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, "Biological Effects of Power Frequency Electric & Magnetic Fields—Background Paper," OTA-BP-E-63 (Washington, DC, U.S. Government Printing Office, May 1989):

"...[T]here is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating,

it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks.”

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

- Keep cables close together by twisting or taping them.
- Arrange cables to one side and away from the operator.
- Do not coil or drape cable around the body.
- Keep welding power source and cables as far away from body as practical.
- Connect work clamp to workpiece as close to the weld as possible.

### 2.3.3 About pacemakers

The procedures listed above are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

### 2.3.4 Safety standards

The following documents comprise the principle welding standards that apply when welding with your Voltmaster welder/generator:

- “Safety in Welding and Cutting,” ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.
- “Safety and Health Standards,” OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
- “Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances,” American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.
- National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.
- “Safe Handling of Compressed Gases in Cylinders,” CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.
- “Code for Safety in Welding and Cutting,” CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

- "Safe Practices for Occupation and Educational Eye and Face Protection," ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.
- "Cutting and Welding Processes," NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

## 2.4 Storage and maintenance safety



### **DANGER**

**Corrosive material.**

**Battery acid will cause severe burns and blindness.**

- Use extreme care when handling or servicing batteries.
  - Never service batteries while generator is operating.
  - Wear appropriate eye and hand protection.
  - Upon contact with skin or eyes, flush with water and seek medical help immediately.
- 
- When not in use, store equipment in a clean, dry location out of the reach of children.
  - Before storing, drain fuel.
  - ALWAYS keep the welder/generator in proper running condition.
  - Before servicing, ensure power cannot be inadvertently started during service.
  - ALWAYS fix damage to the welder/generator immediately. Repair or replace broken or worn parts. Only use parts from the original manufacturer.
  - Replace operation and safety decals when they become difficult to read.



# 3 Operation

## 3.1 Before starting

### 3.1.1 Safety

Before operating the Voltmaster welder/generator:

- Read and be familiar with this instruction manual.
- Read and follow all safety instructions (see Section 2, page 3).
- Read and follow instructions in the engine manufacturer's documentation.

### 3.1.2 Location

#### CAUTION

**Engine exhaust is hot and can damage materials and other equipment.**

Ensure that the engine exhaust is not blowing on anything combustible, or that heat will damage.

Avoid placing the welder/generator in locations where it will be exposed to high humidity, dust, high ambient temperature, or corrosive fumes. Moisture can condense on electrical components, causing corrosion and short circuits. Accumulation of dirt on components will retain moisture, accelerating wear on moving parts.

Provide at least 2 feet (61 cm) of space on all sides of welder/generator, for ventilation and servicing. Ensure that the ventilator openings are not obstructed.

Place the welder/generator on a flat, level surface and ensure that it will not shift or slide during use. Do not use the welder/generator at an angle of more than 15 degrees from horizontal.

### 3.1.3 Preparation for use

1. Ensure the welder/generator is in proper working order:
  - Check the generator for damage and wear.
  - Secure all fuel and wiring connections.
  - Tighten loose screws, nuts, and bolts.
2. Read tags and labels, and follow all directions. Remove hanging and loose tags and labels; keep with generator for future reference.
3. Ensure oilpan drain plug is closed. Fill engine with the correct oil type as specified in the engine manual.
4. Ensure that all air passages and cooling fins are free from foreign matter. Use clean, dry compressed air at a maximum pressure of 25 psi (172kPa) to blow dirt and dust out of cooling passages and control cabinet.

## 3.2 Operating the generator

### 3.2.1 Operation as a welder

1. Before operating the welder, follow all instructions in Section 3.1.
2. Refer to engine manufacturer's instructions and start the engine.
3. Ensure the welding leads are plugged into the proper jacks in the front panel—the positive lead in the positive jack; the ground lead in the negative jack.
4. Place the proper electrode for the work at hand in the electrode holder at the desired angle.
5. Strike an arc, then move the electrode along the piece to be welded. As a puddle of molten metal forms on the work, move the electrode in the direction to be welded. Feed the electrode into the puddle.
6. To stop welding, lift the electrode.
  - If the arc will not hold, or if it difficult to start, increase the amperage by changing the rheostat.
  - If the electrode "sticks," twist it back and forth, and pull upward, until it breaks loose from the work.
  - If the electrode will not break free quickly, remove the holder from the end of the electrode, then break the electrode free.

### **3.2.2 Operation as a generator**

1. Before operating the generator, follow all instructions in Section 3.1.
2. Place the welding rheostat in the maximum amperage position.
3. Disconnect the welding cable.
4. Start the engine, referring to engine manufacturer's instructions if necessary.

Although the generator can be used for AC-power during welding, it is strongly recommended not to weld while using the AC generator.

## **3.3 General maintenance**

The welder/generator should be run at least once a month for a few minutes to keep all components in proper operating condition.

All ball bearings are sealed and require no servicing. There is no maintenance required on any other components of the welder/generator.

Store the welder/generator in a warm, dry location.



## Appendix A

# Eye Filter Shades

**Table A.1 Eye protection filter shade selection for welding or cutting (goggles or helmet), from AWS A6.2-73**

Welding or Cutting Operation	Electrode Size, Metal Thickness, or Welding Current	Filter Shade No.
Torch soldering	—	2
Torch brazing	—	3 or 4
Oxygen cutting		
Light	Under 1 in. (25mm)	3 or 4
Medium	1 to 6 in. (25–150mm)	4 or 5
Heavy	Over 6 in. (150mm)	5 or 6
Gas welding		
Light	Under 1/8 in. (3mm)	4 or 5
Medium	1/8 to 1/2 in. (3–12mm)	5 or 6
Heavy	Over 1/2 in. (12mm)	6 or 8
Shielded metal-arc welding (stick) electrodes	Under 5/32 in. (4mm)	10
	5/32 to 1/4 in. (4–6.4mm)	12
	Over 1/4 in. (6.4mm)	14
Gas metal-arc welding (MIG)		
Non-ferrous base metal	All	11
Ferrous base metal	All	12
Gas tungsten arc welding (TIG)	All	12
Atomic hydrogen welding	All	12
Carbon arc welding	All	12
Plasma arc welding	All	12
Carbon arc air gouging		
Light	—	12
Heavy	—	14

**Table A.1 Eye protection filter shade selection for welding or cutting (goggles or helmet), from AWS A6.2-73 (continued)**

Welding or Cutting Operation	Electrode Size, Metal Thickness, or Welding Current	Filter Shade No.
Plasma arc cutting		
Light	Under 300 amp.	9
Medium	300–400 amp.	12
Heavy	Over 400 amp.	14





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