



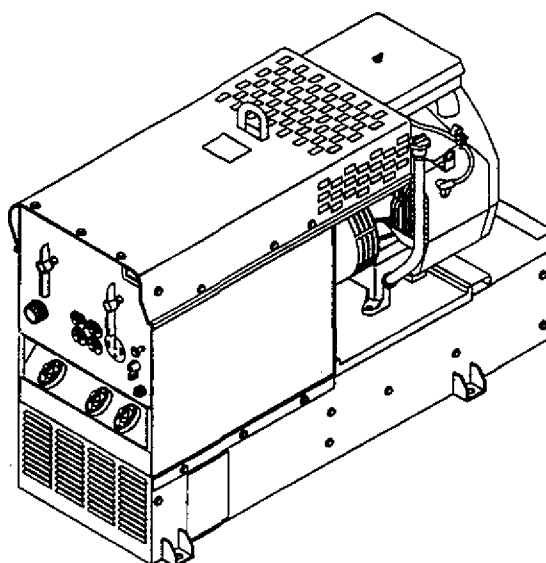
Miller®

May 1994

Form: OM-431G

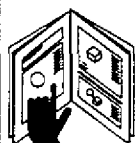
Effective With Serial No. KE552693

OWNER'S MANUAL



Bobcat™ 225G

- CC/CV AC/DC Welding Generator
- For SMAW, FCAW, GMAW, And GTAW Welding
- 225 Amperes, 25 Volts AC/CC (See Specifications)
- Onan Performer P216XSL Air Cooled, Gasoline Engine
- 8 kVA/kW AC Auxiliary Power
- Automatic Shutdown For Engine Low Oil Pressure
- See Rear Cover For Options And Accessories



- Read and follow these instructions and all safety blocks carefully.
- Have only trained and qualified persons install, operate, or service this unit.
- Call your distributor if you do not understand the directions.



- Give this manual to the operator.



- For help, call your distributor
- or: MILLER Electric Mfg. Co., P.O. Box 1079,
Appleton, WI 54912 414-734-9821

MILLER'S TRUE BLUE™ LIMITED WARRANTY

Effective January 1, 1992
(Equipment with a serial number preface of "KC" or newer)

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

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 date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to the distributor.

1. 5 Years Parts — 3 Years Labor
 - Original main power rectifiers
2. 3 Years — Parts and Labor
 - Transformer/Rectifier Power Sources
 - Plasma Arc Cutting Power Sources
 - Semi-Automatic and Automatic Wire Feeders
 - Robots
3. 2 Years — Parts and Labor
 - Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer for a period of two years.)
 - Air Compressors
4. 1 Year — Parts and Labor
 - Motor Driven Guns
 - Process Controllers
 - Water Coolant Systems
 - HF Units
 - Grids
 - Spot Welders
 - Load Banks
 - SDX Transformers
 - Running Gear/Trailers
 - 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.)
5. 6 Months — Batteries
6. 90 Days — Parts and Labor
 - MIG Guns/TIG Torches
 - Plasma Cutting Torches

- Remote Controls
- Accessory Kits
- Replacement Parts

MILLER'S True Blue™ Limited Warranty shall not apply to:

1. 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.
2. Consumable components; such as contact tips, cutting nozzles, contactors and relays or parts that fail due to normal wear.
3. 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.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

RECEIVING-HANDLING

Before unpacking equipment, check carton for any damage that may have occurred during shipment. File any claims for loss or damage **with the delivering carrier**. Assistance for filing or settling claims may be obtained from distributor and/or equipment manufacturer's Transportation Department.

When requesting information about this equipment, always provide Model Designation and Serial or Style Number.

Use the following spaces to record Model Designation and Serial or Style Number of your unit. The information is located on the rating label or nameplate.

Model _____

Serial or Style No. _____

Date of Purchase _____

ARC WELDING SAFETY PRECAUTIONS

WARNING

ARC WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR.

In welding, as in most jobs, exposure to certain hazards occurs. Welding is safe when precautions are taken. The safety information given below is only a summary of the more complete safety information that will be found in the Safety Standards listed on the next page. Read and follow all Safety Standards.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground

terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.

7. When making input connections, attach proper grounding conductor first – double-check connections.
8. Frequently inspect input power cord for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.
9. Turn off all equipment when not in use.
10. Do not use worn, damaged, undersized, or poorly spliced cables.
11. Do not drape cables over your body.
12. If earth grounding of the workpiece is required, ground it directly with a separate cable – do not use work clamp or work cable.
13. Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
14. Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
15. Wear a safety harness if working above floor level.
16. Keep all panels and covers securely in place.
17. Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.



ARC RAYS can burn eyes and skin; NOISE can damage hearing; FLYING SLAG OR SPARKS can injure eyes.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Noise from some processes can damage hearing. Chipping, grinding, and welds cooling throw off pieces of metal or slag.

NOISE

1. Use approved ear plugs or ear muffs if noise level is high.

ARC RAYS

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



FUMES AND GASES can be hazardous to your health.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, cleaners, and degreasers.

5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, slag, open flames, sparks, and arcs.
2. Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.

4. Never drape a welding torch over a gas cylinder.
5. Never allow a welding electrode to touch any cylinder.
6. Never weld on a pressurized cylinder – explosion will result.
7. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
8. Turn face away from valve outlet when opening cylinder valve.
9. Keep protective cap in place over valve except when cylinder is in use or connected for use.
10. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

**WELDING can cause fire or explosion.**

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
11. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
12. Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.

**WARNING****ENGINES can be hazardous.****ENGINE EXHAUST GASES can kill.**

Engines produce harmful exhaust gases.

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

**ENGINE FUEL can cause fire or explosion.**

Engine fuel is highly flammable.

3. Do not overfill tank – allow room for fuel to expand.
4. Do not spill fuel. If fuel is spilled, clean up before starting engine.

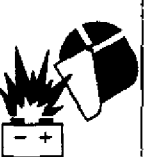
1. Stop engine and let it cool off before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.

**MOVING PARTS can cause injury.**

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.

**SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.**

Batteries contain acid and generate explosive gases.

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and -) on batteries.

**STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.**

It is best to check coolant level when engine is cold to avoid scalding.

1. If the engine is warm and checking is needed, follow steps 2 and 3.
2. Wear safety glasses and gloves and put a rag over cap.
3. Turn cap slightly and let pressure escape slowly before completely removing cap.

PRINCIPAL SAFETY STANDARDS

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.

EMF INFORMATION

NOTE

Considerations About 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-53 (Washington, DC: U.S. Government Printing Office, May 1989): "... there 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 can 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:

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

About Pacemakers:

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

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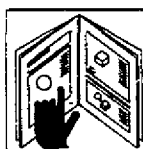
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SECTION 1 – SAFETY INFORMATION

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- Read all safety messages throughout this manual.
- Obey all safety messages to avoid injury.
- Learn the meaning of WARNING and CAUTION.

1: Safety Alert Symbol
2: Signal Word
3: Statement Of Hazard And Result
4: Safety Instructions To Avoid Hazard
5: Hazard Symbol (If Available)

2: Signal Word

WARNING means possible death or serious injury can happen.
CAUTION means possible minor injury or equipment damage can happen.

6: Safety Banner

7: NOTE

Read safety blocks for each symbol shown.

Special instructions for best operation – not related to safety.

Figure 1-1. Safety Information

SECTION 2 – SPECIFICATIONS

Table 2-1. Welding Generator

Specification	Description		
Type Of Output	Constant Current/Constant Voltage (CC/CV), Alternating Current/Direct Current (AC/DC)		
Welding Processes	Shielded Metal Arc (SMAW); With Accessory Equipment: Flux Cored Arc (FCAW), Gas Metal Arc (GMAW), Gas Tungsten Arc Welding (GTAW)		
Auxiliary Power Rating	Single-Phase, 8.0 kVA/kW, 120/240 Volts AC, 70/35 Amperes, 60 Hz		
Engine	Onan Performer P216XSL Air-Cooled, Twin-Cylinder, Gasoline Engine		
Engine Speed (No Load)	Weld/Power Speed: 3700 rpm; Idle Speed: 2200 rpm		
Fuel Tank Capacity	7.5 gal (28.4 L)		
Overall Dimensions	See Figure 3-2		
Weight	Net: 575 lb (261 kg); Ship: 599 lb (272 kg)		
	DC/CV Mode	DC/CC Mode	AC/CC Mode
Rated Weld Output	200 Amperes, 20 Volts At 100% Duty Cycle (see Section 2-2)	210 Amperes, 25 Volts At 100% Duty Cycle (see Section 2-2)	225 Amperes, 25 Volts At 100% Duty Cycle (see Section 2-2)
Weld Output Range	17-28 V	45-210 A	40-225 A
Max. Open-Circuit Voltage	33 V	72 V	80 V

2-1. Volt-Ampere Curves

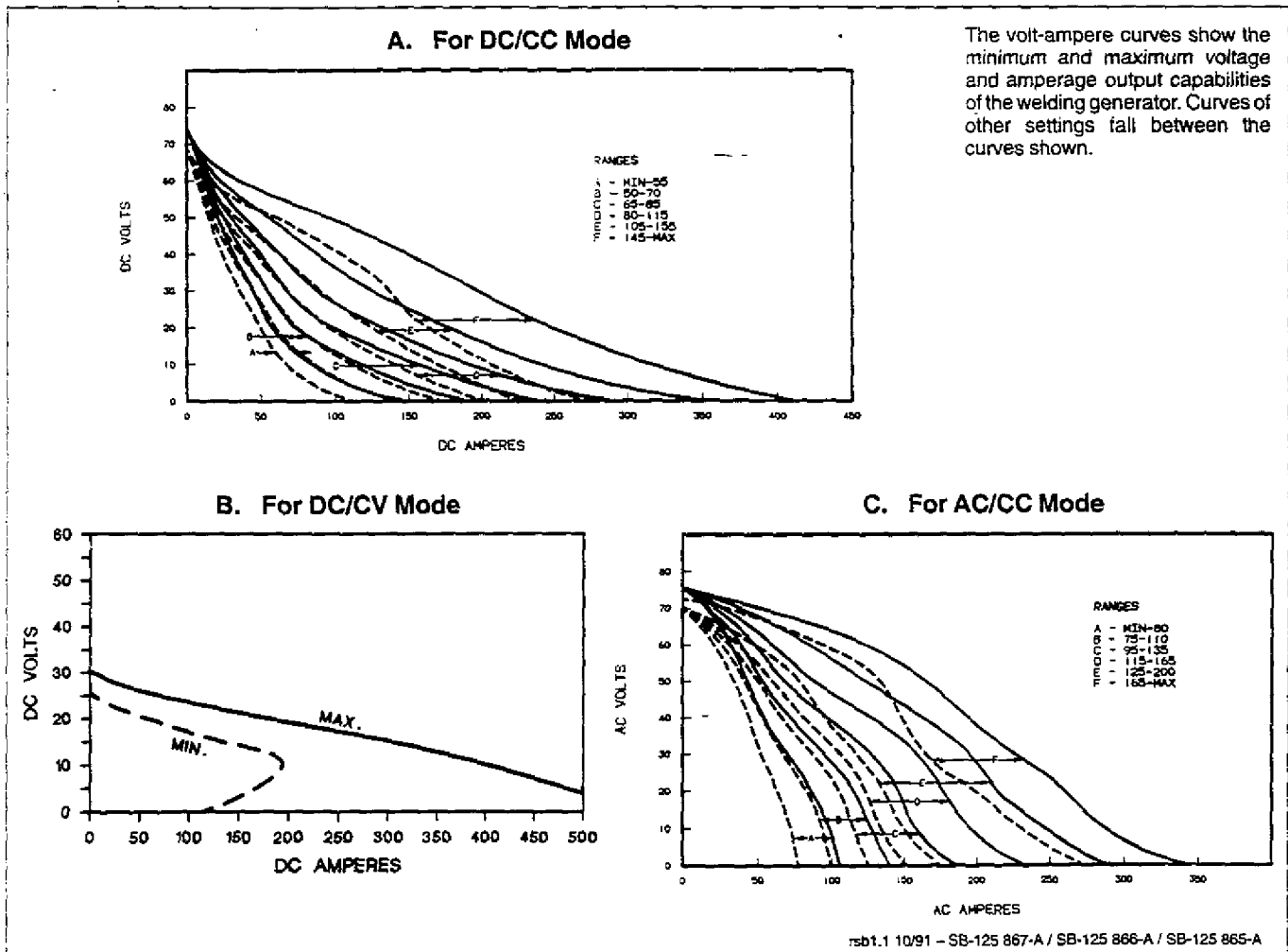


Figure 2-1. Volt-Ampere Curves

2-2. Duty Cycle

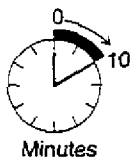


CAUTION

WELDING LONGER THAN RATED DUTY CYCLE can damage unit and void warranty.

- Do not weld at rated load longer than shown below.

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Definition

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

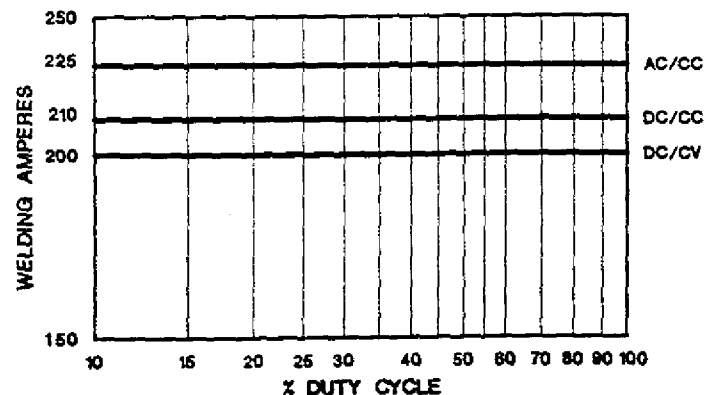
100% Duty Cycle At 225 Amperes



Continuous Welding



Chart



2-3. Fuel Consumption

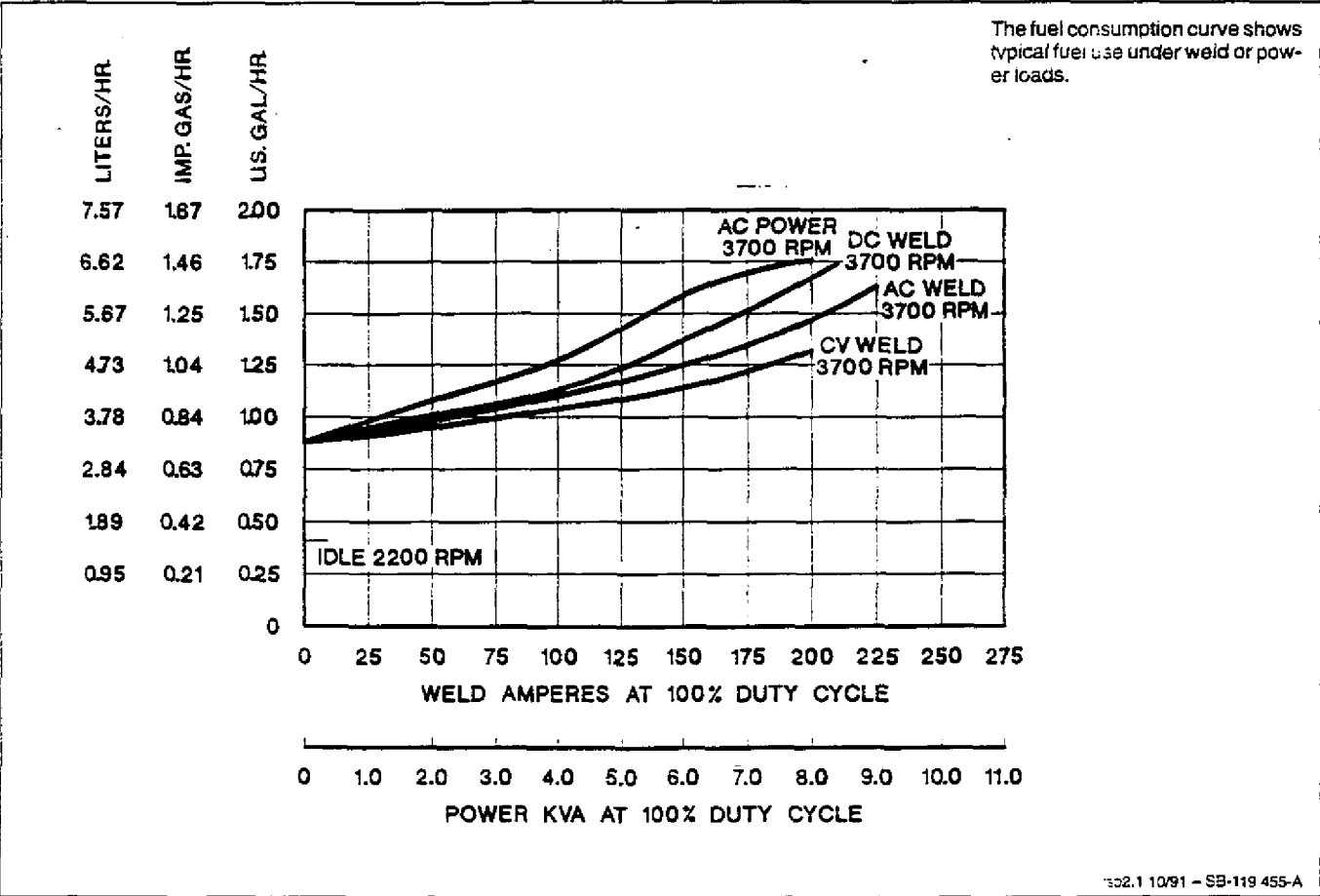


Figure 2-3. Fuel Consumption Curve

2-4. AC Auxiliary Power

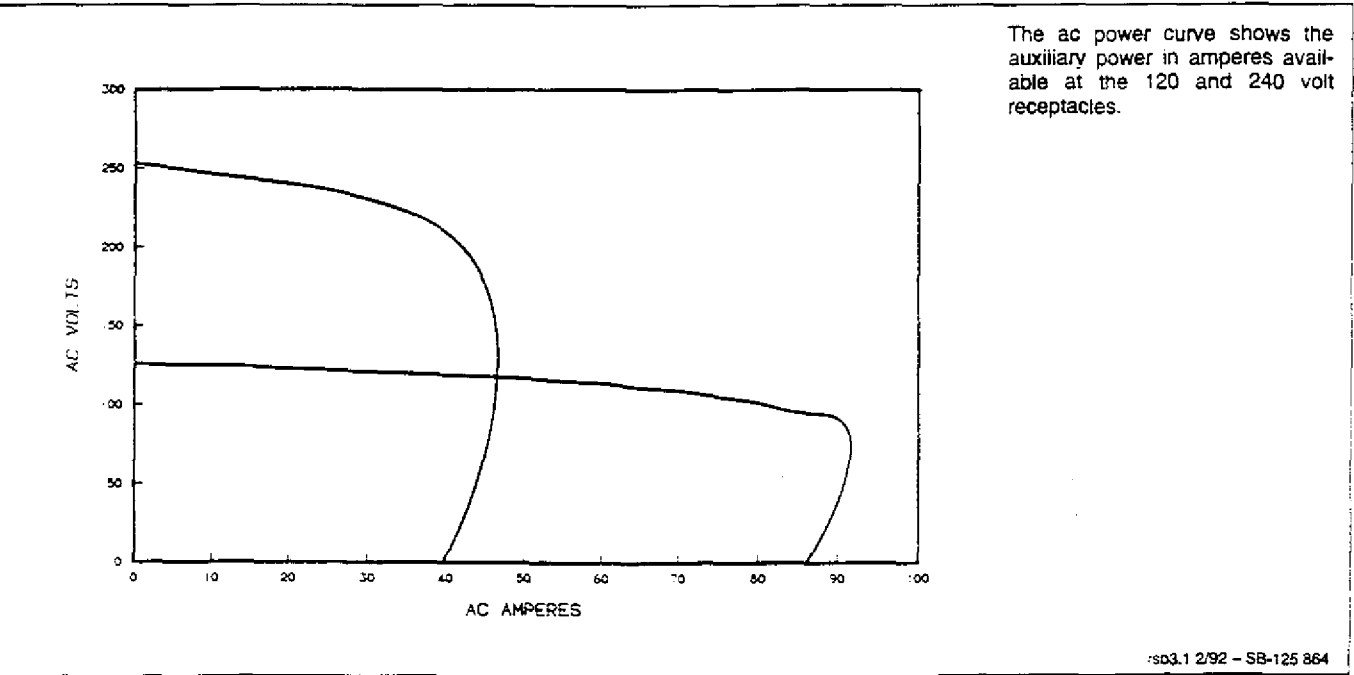


Figure 2-4. AC Power Curve For 120 And 240-Volt Receptacles

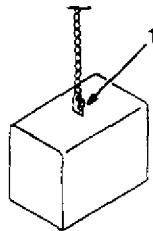
SECTION 3 – INSTALLATION

3-1. Selecting A Location And Moving Welding Generator

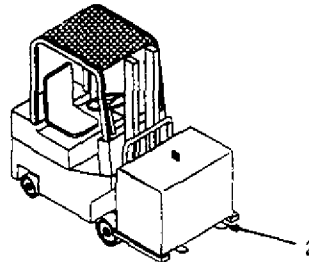
 WARNING			
	ENGINE EXHAUST GASES can kill. - Do not breathe exhaust fumes. - Use in open, well-ventilated areas, or vent exhaust outside and away from building air intakes.		HOT ENGINE EXHAUST AND EXHAUST PIPE can cause fires. Keep exhaust and pipe away from flammables.
			FALLING EQUIPMENT can cause serious personal injury and equipment damage. - Use lifting eye to lift unit only, NOT running gear, gas cylinders, trailer, or any other heavy options, accessories, or devices. - Use equipment of adequate capacity to lift the unit.
			TILTING OF TRAILER can result in personal injury or equipment damage. Install unit properly on trailer (if applicable) according to trailer manual.

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Movement



OR



1 Lifting Eye

2 Lifting Forks

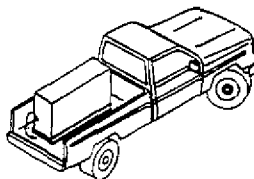
Use lifting eye or lifting forks to move unit.

If using lifting forks, extend forks beyond opposite side of unit.

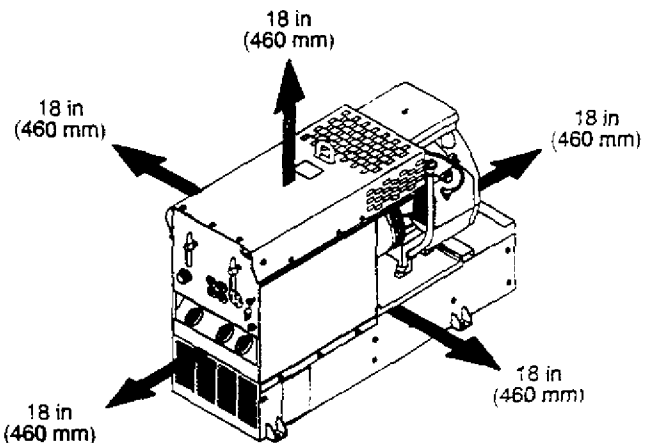
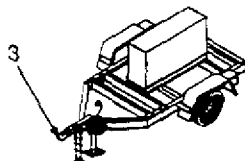
3 Trailer

Install unit on trailer according to trailer manual.

Location And Airflow



OR



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Figure 3-1 Location And Movement Of Welding Generator



WARNING



WELDING ON BASE can cause fuel tank fire or explosion.

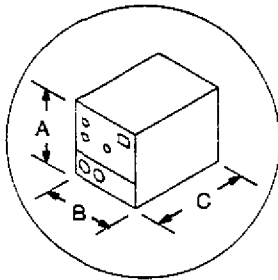
- Do not weld on base.
- Use mounting feet to fasten unit to truck bed, trailer, or other location.

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NOTE



Overall dimensions (A, B, and C) include lifting eye, handles, hardware, etc.



	Inches	Millimeters
A	31	787
B	18	457
C	45	1143
D	16-1/2	419
E	32-3/4	832
F	13/32 Dia. 4 Holes	10 Dia. 4 Holes

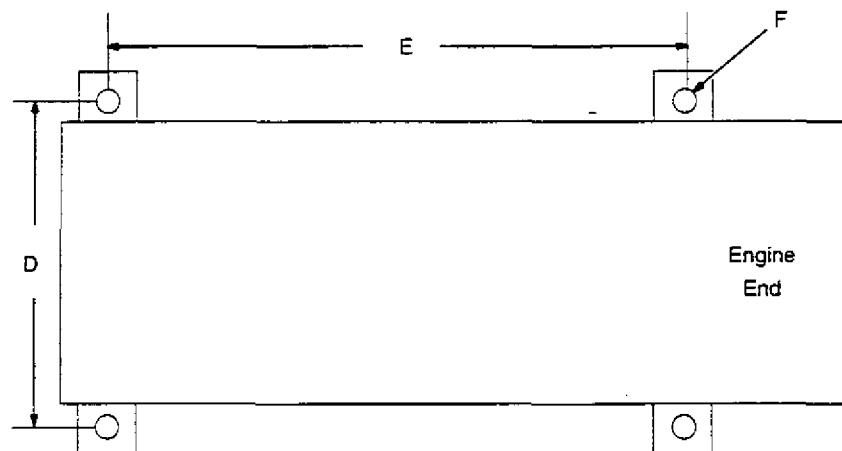
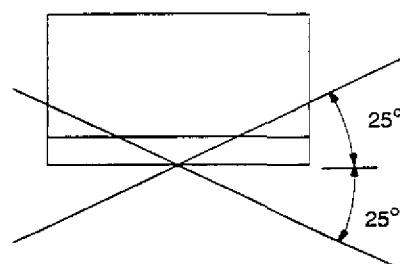
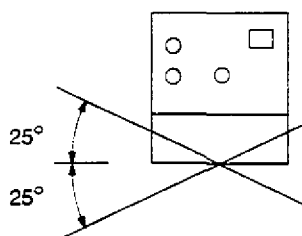


Figure 3-2. Overall Dimensions And Base Mounting Hole Layout



Do not exceed operating angles while running or engine damage will occur.



Ref. S-0024-B

Figure 3-3. Maximum Welding Generator Operating Angles

3-2. Connecting The Battery

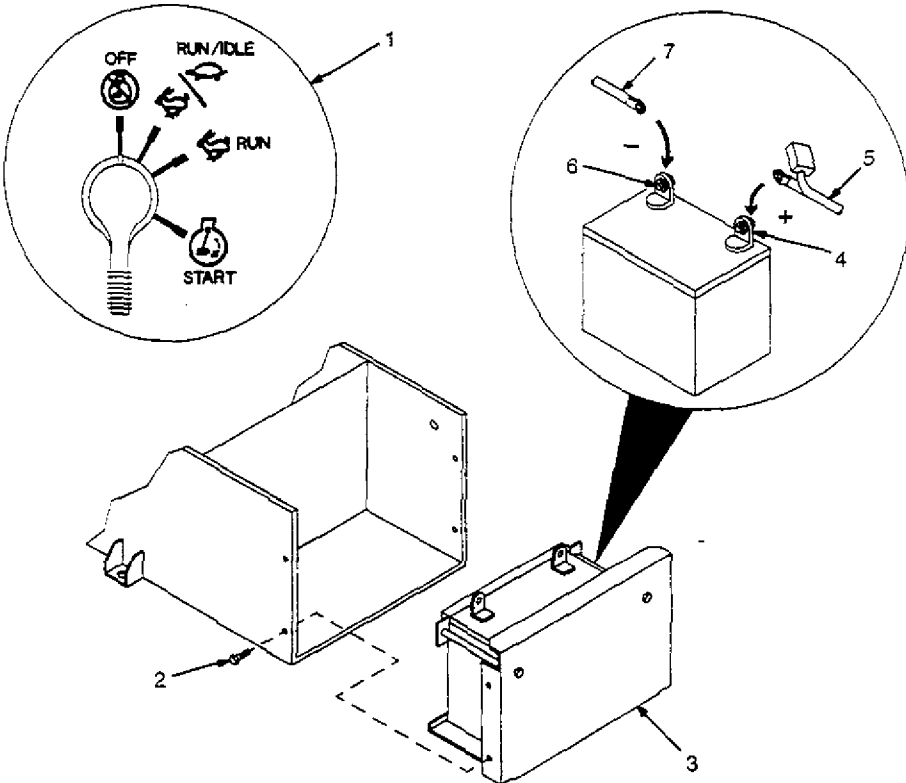

WARNING



SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.

- Stop engine before disconnecting or connecting battery cables.
- Always wear a face shield and proper protective clothing when working on a battery.
- Do not allow tools to cause sparks when working on a battery.

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- 1 Engine Control Switch
Place switch in the Off position.
- 2 Bolt
- 3 Battery Tray
Remove bolts, and pull out battery tray.
- 4 Positive (+) Battery Terminal
- 5 Positive (+) Battery Cable
Connect positive cable first.
- 6 Negative (-) Battery Terminal
- 7 Negative (-) Battery Cable
Connect negative cable last.

Reinstall battery tray.

If engine does not crank, check battery voltage according to Section 6-4.

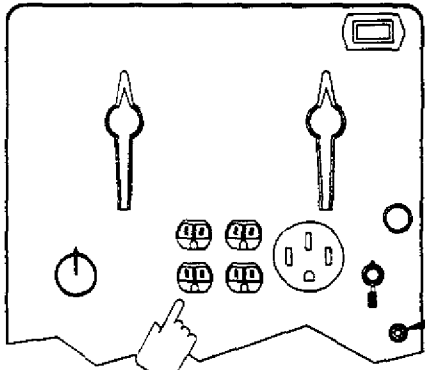
Tools Needed:

 3/8, 1/2 in

ST-152 809 / Ref. ST-144 839-D / Ref. S-0756-D

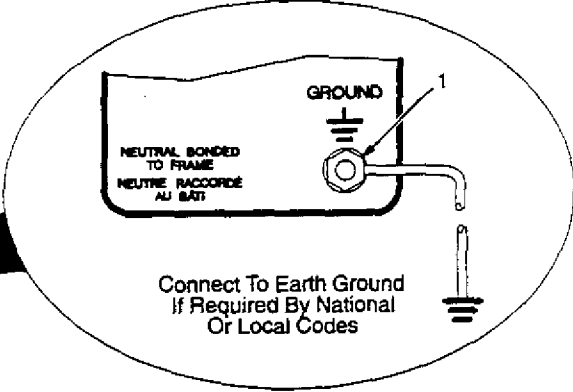
Figure 3-4. Connecting The Battery

3-3. Grounding The Generator Auxiliary Power System



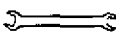
The generator auxiliary power neutral is connected to the machine frame.

- 1 Equipment Grounding Terminal



Connect To Earth Ground
If Required By National
Or Local Codes

Tools Needed:

 1/2 in

rs05.1 8/93 - Ref. ST-125 875-B / Ref. ST-152 806

Figure 3-5. Equipment Grounding Connection

3-4. Engine Prestart Checks


WARNING



ENGINE FUEL can cause fire or explosion.

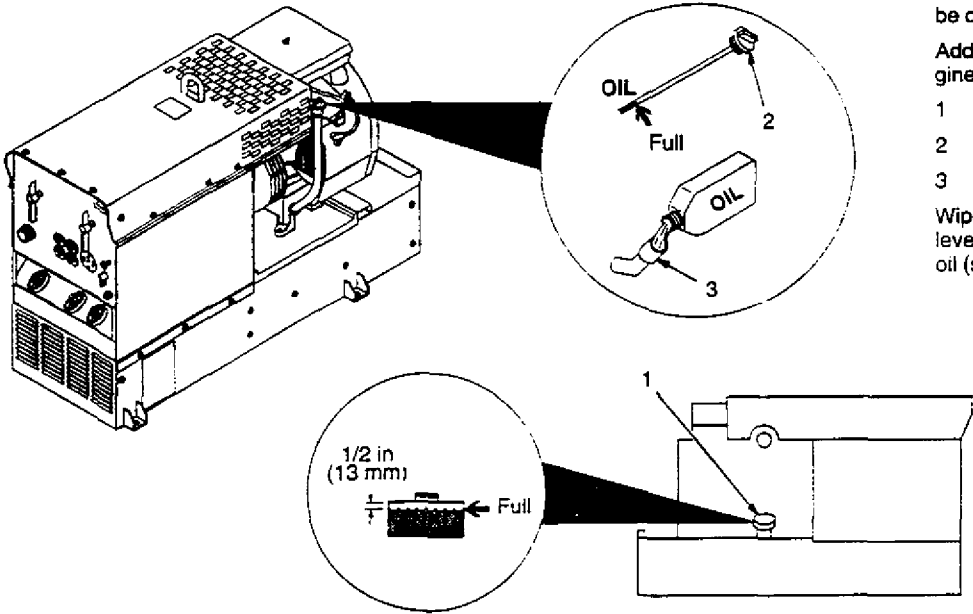
- Stop engine before fueling.
- Do not fuel while smoking or near sparks or flames.
- Do not overfill tank; clean up any spilled fuel.



REMOVE FUEL CAP SLOWLY; FUEL SPRAY may cause injury; FUEL may be under pressure.

- Rotate fuel cap slowly and wait until hissing stops before removing cap.

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Check all fluids daily. Engine must be cold and on a level surface.

Add fresh fuel before starting engine the first time (see Figure 6-2).

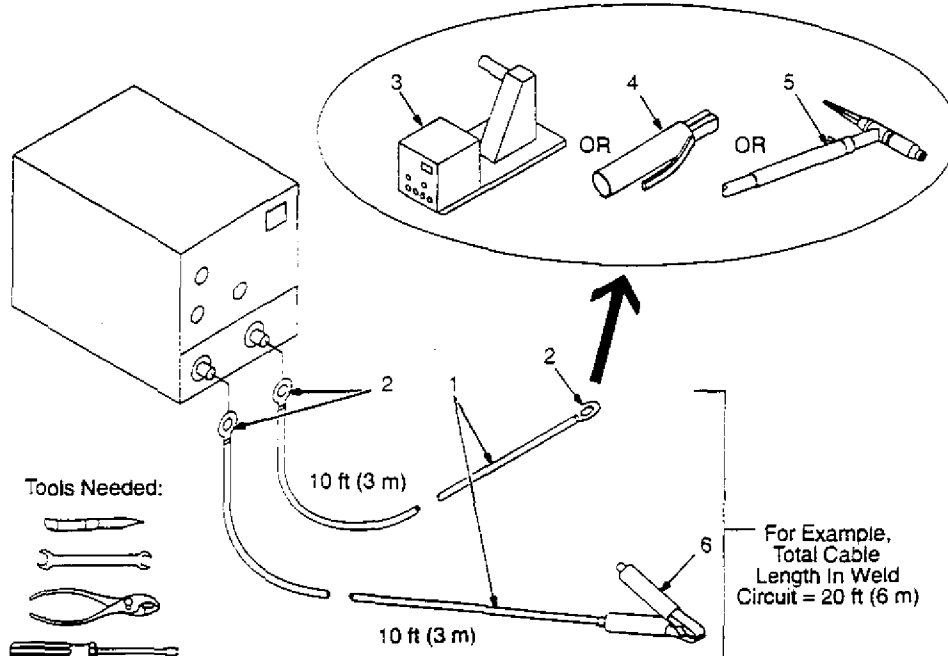
- 1 Fuel Cap
- 2 Oil Dipstick
- 3 Oil Fill Tube

Wipe dipstick clean and check oil level. If oil is not up to full mark, add oil (see Figure 6-2).

rsb4.1 11/92 - ST-125 876-B / Ref. ST-151 983

Figure 3-6. Checking Fluid Levels

3-5. Selecting And Preparing Weld Output Cables



Tools Needed:

- Wire cutters
- Pliers
- Screwdriver

For Example,
Total Cable
Length in Weld
Circuit = 20 ft (6 m)

- 1 Weld Output Cable

Determine total cable length in weld circuit and maximum welding amperes. Use Table 3-1 to select proper cable size.

Use shortest cables possible.

Do not use damaged cables.
- 2 Terminal Lug

Use lugs of proper amperage capacity and hole size for connecting to work clamp, wire feeder or electrode holder, and weld output terminals.
- 3 Wire Feeder
- 4 Insulated Electrode Holder
- 5 GTAW Torch

Install according to manufacturer's instructions.
- 6 Work Clamp

Install onto work cable.

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Figure 3-7. Selecting And Preparing Weld Output Cables

Table 3-1. Weld Cable Size*

Welding Amperes	Total Cable (Copper) Length In Weld Circuit Not Exceeding						
	100 ft (30 m) Or Less	150 ft (45 m)	200 ft (60 m)	250 ft (70 m)	300 ft (90 m)	350 ft (105 m)	400 ft (120 m)
	10 To 60% Duty Cycle	60 Thru 100% Duty Cycle	10 Thru 100% Duty Cycle				
100	4	4	4	3	2	1	1/0
150	3	3	2	1	1/0	2/0	3/0
200	3	2	1	1/0	2/0	3/0	4/0
250	2	1	1/0	2/0	3/0	4/0	2-2/0
300	1	1/0	2/0	3/0	4/0	2-2/0	2-3/0
350	1/0	2/0	3/0	4/0	2-2/0	2-3/0	2-4/0

*Weld cable size (AWG) is based on either a 4 volts or less drop or a current density of at least 300 circular mills per ampere.

S-0007-D

3-6. Connecting To Weld Output Terminals

WARNING

ELECTRIC SHOCK can kill.

- Disconnect weld cables from output terminal not in use.
- Always wear dry insulating gloves.
- Do not touch live electrical parts.
- Stop engine before making any weld output connections.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Read Safety Precautions at beginning of this manual.

HIGH FREQUENCY can damage welding generator.

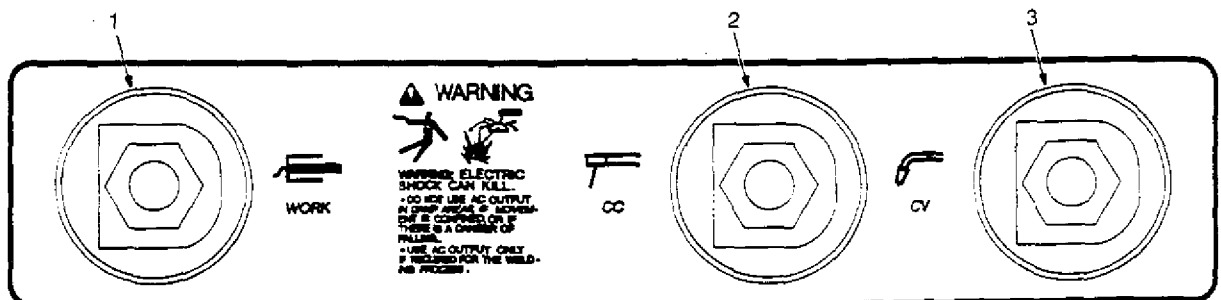
- Do not use unit for GTAW welding with a high frequency arc starter unless high frequency protection kit 043 000 is installed in the welding generator.

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- 1 Work Weld Output Terminal
- 2 CC Weld Output Terminal
- 3 CV Weld Output Terminal

For CV welding, connect work cable to Work terminal and wire feeder cable to CV terminal.

For CC welding, connect work cable to Work terminal and electrode holder cable to CC terminal.



Use ONLY two terminals at a time.

Tools Needed:

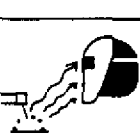
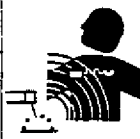


3/4 in

Ref. ST-152 806

Figure 3-8. Weld Output Connections

SECTION 4 – OPERATING THE WELDING GENERATOR

 WARNING	
	ELECTRIC SHOCK can kill. - Do not touch live electrical parts. - Always wear dry insulating gloves. - Insulate yourself from work and ground. - Stop engine before installing or servicing. - Keep all panels and covers securely in place.
	WELDING can cause fire or explosion. - Do not weld near flammable material. - Watch for fire; keep extinguisher nearby. - Do not locate unit over combustible surfaces. - Do not weld on closed containers. - Allow work and equipment to cool before handling.
	ARC RAYS can burn eyes and skin; NOISE can damage hearing. - Wear welding helmet with correct shade of filter. - Wear correct eye, ear, and body 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.
	ENGINE EXHAUST GASES can kill. - Do not breathe exhaust fumes. - Use in open, well-ventilated areas, or vent exhaust outside and away from any building air intakes.
	ENGINE FUEL can cause fire or explosion. - Stop engine before fueling. - Do not fuel while smoking or near sparks or flames. - Do not overfill tank; clean up any spilled fuel.
	MOVING PARTS can cause injury. - Keep away from moving parts such as fans, belts, and rotors. - Keep all doors, panels, covers, and guards closed and securely in place.
	MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation. - Pacemaker wearers keep away. - Wearers should consult their doctor before going near any welding operations.
See Safety Precautions at beginning of manual for basic welding safety information. rwam5.1 10/91	

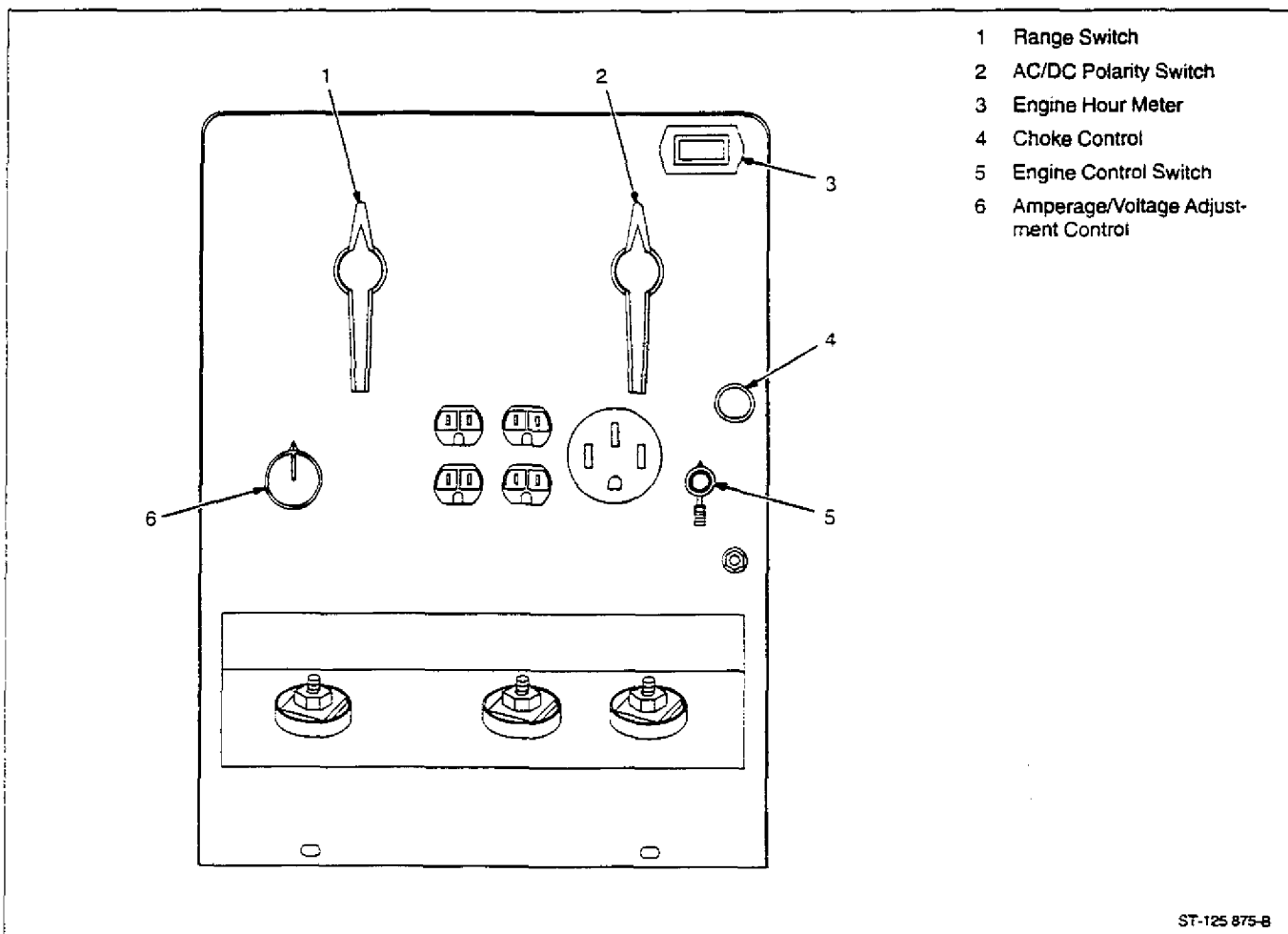


Figure 4-1. Controls

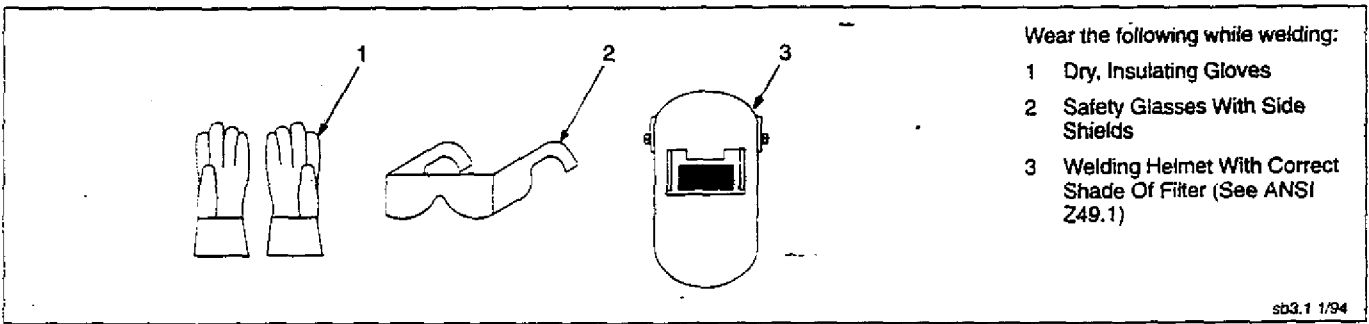


Figure 4-2. Safety Equipment

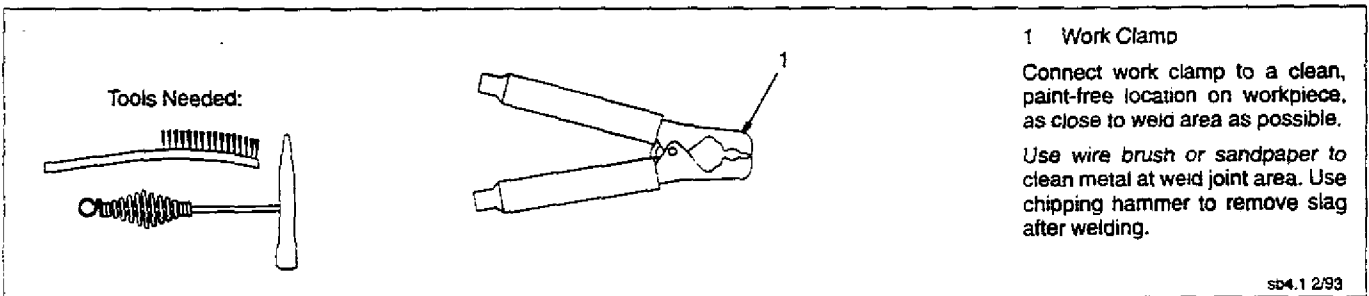


Figure 4-3. Work Clamp

⚠ WARNING	
ELECTRIC SHOCK can kill. - Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling. - Use AC output ONLY if required for the welding process. - Read Safety Precautions at beginning of this manual.	ARCING can damage switch. Do not change AC/DC Polarity switch position while welding. Arcing inside switch can damage contacts, causing switch to fail.

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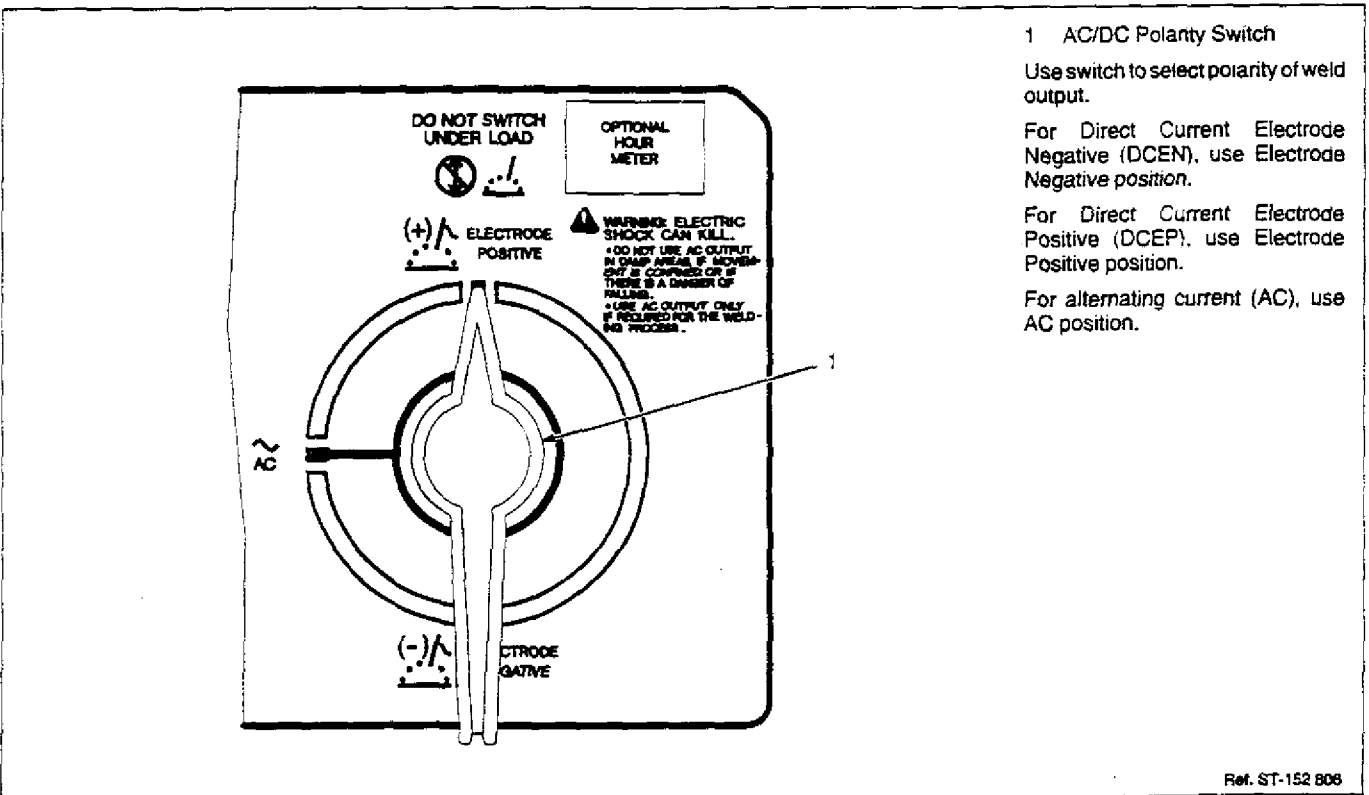


Figure 4-4. AC/DC Polarity Switch

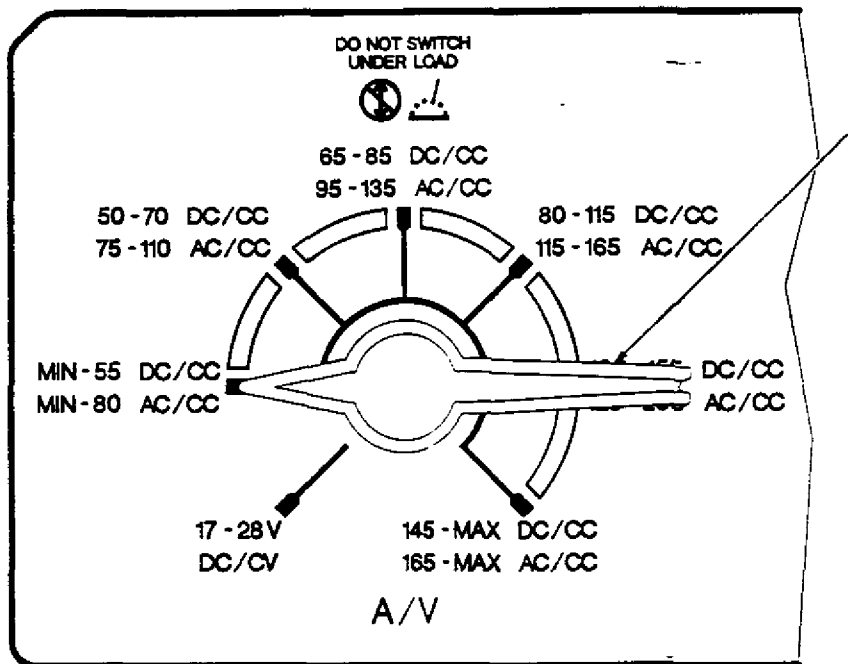
⚠ CAUTION

ARCING can damage switch.

- Do not change Range switch position while welding.

Arcing inside switch can damage contacts, causing switch to fail.

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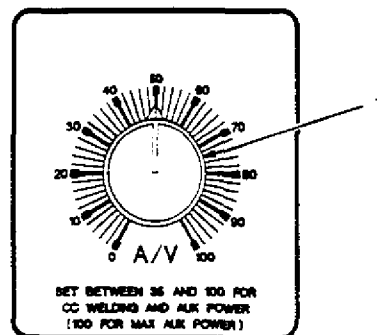
1- Range Switch

Use switch to select range of weld output.

If AC/DC Polarity switch is in Electrode Negative or Electrode Positive position, set switch according to DC scale.

If AC/DC Polarity switch is in the AC position, set switch according to AC scale.

Figure 4-5. Range Switch

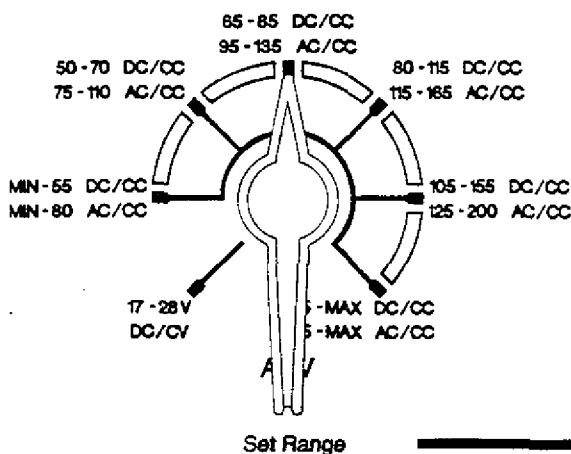


1 Amperage/Voltage Adjustment Control

Use control to adjust amperage or voltage within range selected by Range switch (see Figure 4-5). The numbers are a percentage of the range selected and not an actual value.

Control may be adjusted while welding.

Example Of Front Panel DC Amperage Control



Use same method to set control for other processes.

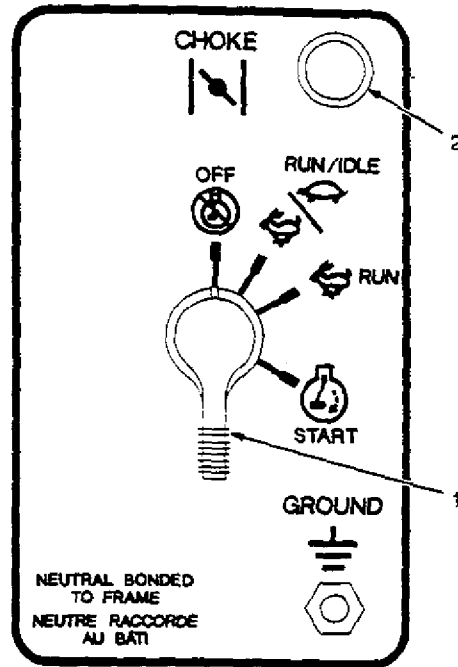
In Example:
Range = 65 to 85 A DC
Percentage Of Range = 50%
Weld Output = 75 A DC
(50% of 65 to 85)



Figure 4-6 Amperage/Voltage Adjustment Control

NOTE

Place Engine Control switch in Run position to operate GMAW equipment. Some GMAW equipment may work with switch in Run/Idle position.



1 Engine Control Switch

Use switch to start engine, select engine speed, and stop engine.

To start, turn switch to Start position and release as soon as engine starts. Do not crank engine while engine is turning.

In Run/Idle position, engine runs at idle speed with no weld or power load applied, and weld/power speed with a load applied.

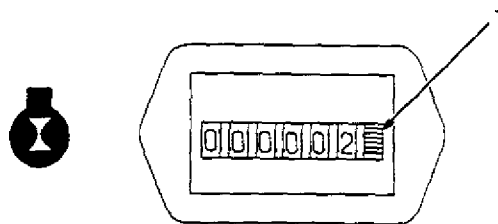
In Run position, engine runs at weld/power speed all the time.

To stop engine, turn switch to Off position.

2 Choke Control

Use control to change fuel-air mixture to engine. Pull fully out before starting engine. As engine warms up, slowly push in.

Figure 4-7. Engine Controls

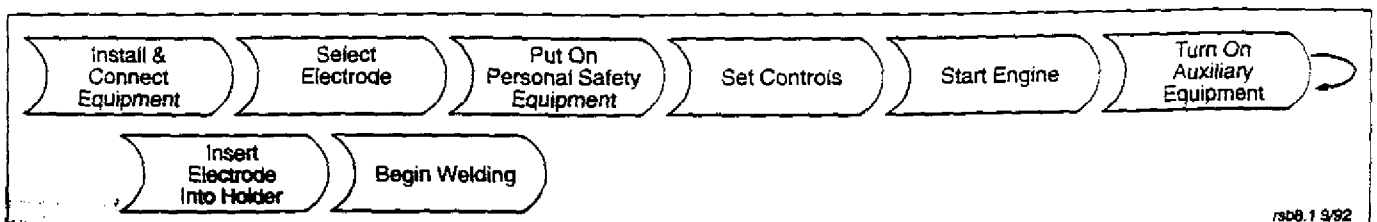


1 Engine Hour Meter

Use meter to check total operating hours (see Section 6-1). This meter operates only when engine is running.

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Figure 4-8. Engine Hour Meter



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Figure 4-9. Sequence Of Shielded Metal Arc Welding (SMAW)

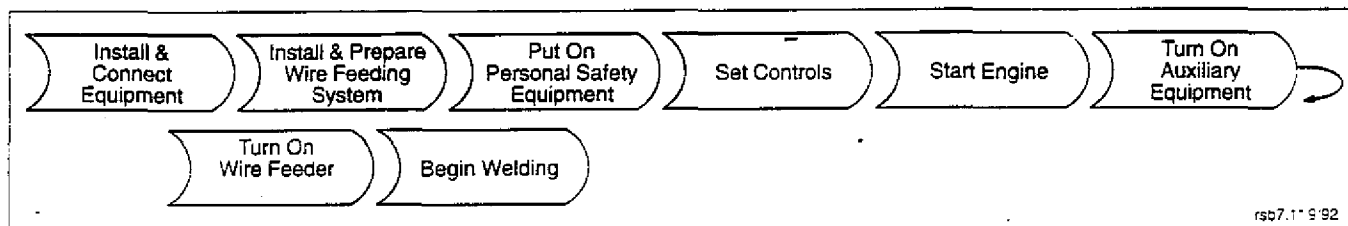


Figure 4-10. Sequence Of Flux Cored Arc Welding (FCAW)

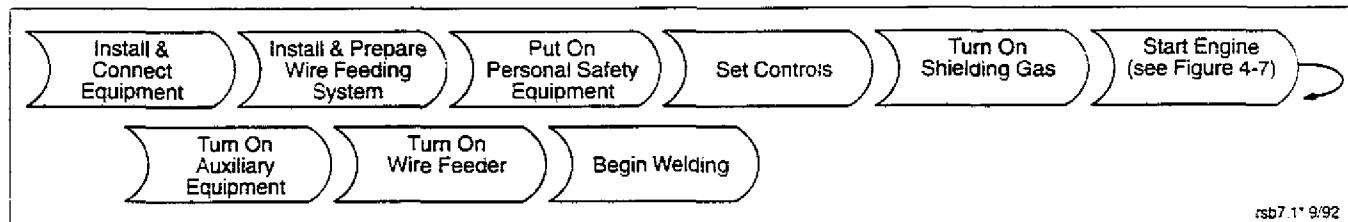


Figure 4-11. Sequence Of Gas Metal Arc Welding (GMAW)

CAUTION

HIGH FREQUENCY can damage welding generator.

- Do not use unit for GTAW welding with a high frequency arc starter unless high frequency protection kit 043 000 is installed in the welding generator.

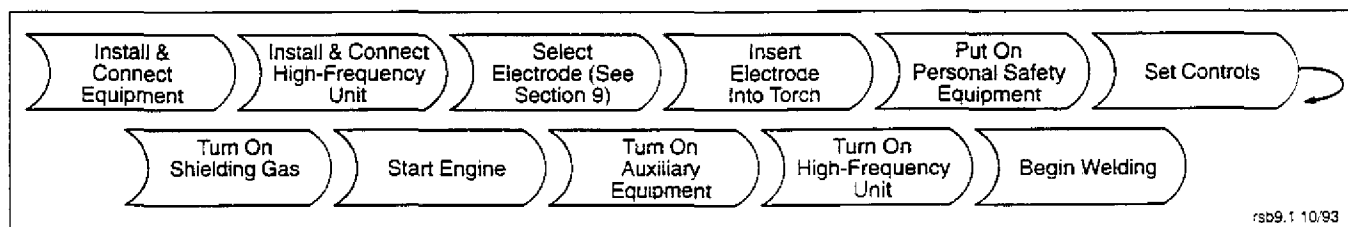


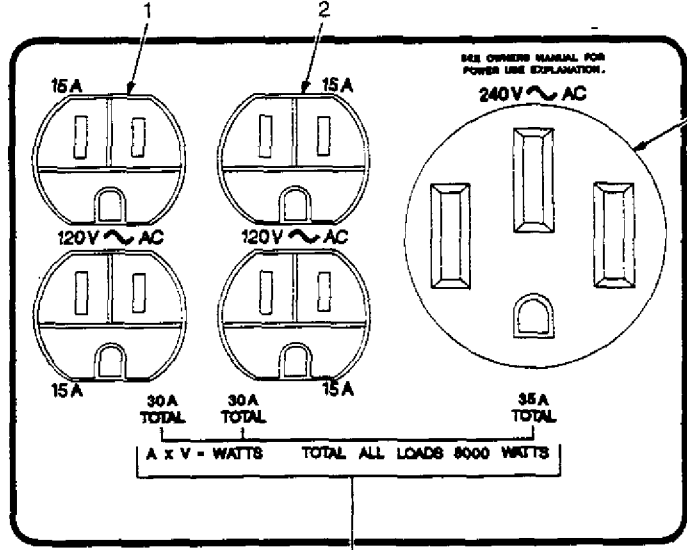
Figure 4-12. Sequence Of Gas Tungsten Arc Welding (GTAW)

SECTION 5 – OPERATING AUXILIARY EQUIPMENT

 WARNING	
	ELECTRIC SHOCK can kill. - Do not touch live electrical parts. - Stop engine before making internal inspection or reconnection. - Ground generator according to all applicable national, state, and local codes. - Connect equipment grounding terminal to a proper earth ground. - Do not connect to any electrical distribution system normally supplied by utility power unless a proper transfer switch and grounding procedure are employed (see Section 8).
	MOVING PARTS can cause serious injury. - Keep away from moving parts such as fans, belts, and rotors. - Keep all doors, panels, covers, and guards closed and securely in place.
	ELECTRIC SPARKS can cause fire. - If using auxiliary power only and not welding, disconnect both welding cables to prevent live electrode from causing electric shock and fire hazards. - Watch for fire. - Keep a fire extinguisher nearby, and know how to use it. <i>The weld output terminals are electrically energized when the engine is running and the contactor, if applicable, is energized.</i>
	LOW VOLTAGE AND FREQUENCY can damage electrical equipment. Turn off or unplug all electrical equipment connected to auxiliary power receptacles before starting or stopping the engine. <i>When starting or stopping, the engine has low speed which causes low voltage and frequency.</i>

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5-1. 120/240 Volt Receptacles



4

1 120 V 15 A AC Duplex Receptacle RC1

2 120 V 15 A AC Duplex Receptacle RC2

These receptacles supply 60 Hz single-phase power at weld/power speed. Maximum output from each duplex receptacle is 3.6 kVA/kW.

3 240 V 35 A AC Receptacle RC3

This receptacle supplies 60 Hz single-phase power at weld/power speed. Maximum output from this receptacle is 8 kVA/kW.

Auxiliary power available at all receptacles decreases as weld current increases.

Set Amperage/Voltage Adjustment control at 100 for maximum auxiliary power output (see Figure 4-6).

4 Total Auxiliary Power Output

Combined output of all receptacles limited to 8 kVA/kW output of the generator.

EXAMPLE: If 20 A is drawn from each 120 V receptacle, only 13 A is available at 240 V receptacle:

$$2(120 \text{ V} \times 20 \text{ A}) + (240 \text{ V} \times 13 \text{ A}) = 7.9 \text{ kVA/kW}$$

5 Auxiliary Power While Welding Label

Label shows approximate ac auxiliary power available under various welding loads.

SIMULTANEOUS WELDING AND POWER WITH A/V SET AT 100%

Weld Current CV/CC	Watts	Current in Amperes	
		120V	240V
175 to MAX	0	0	0
150	1050	10	5
125	1800	17.2	8.6
90	3500	33.4	16.7
70	4500	42.8	21.4
50	5500	52.4	26.2
0	8000	70	35

See Owner's Manual for additional information. S-126 644-B

Figure 5-1. Auxiliary Power Receptacles

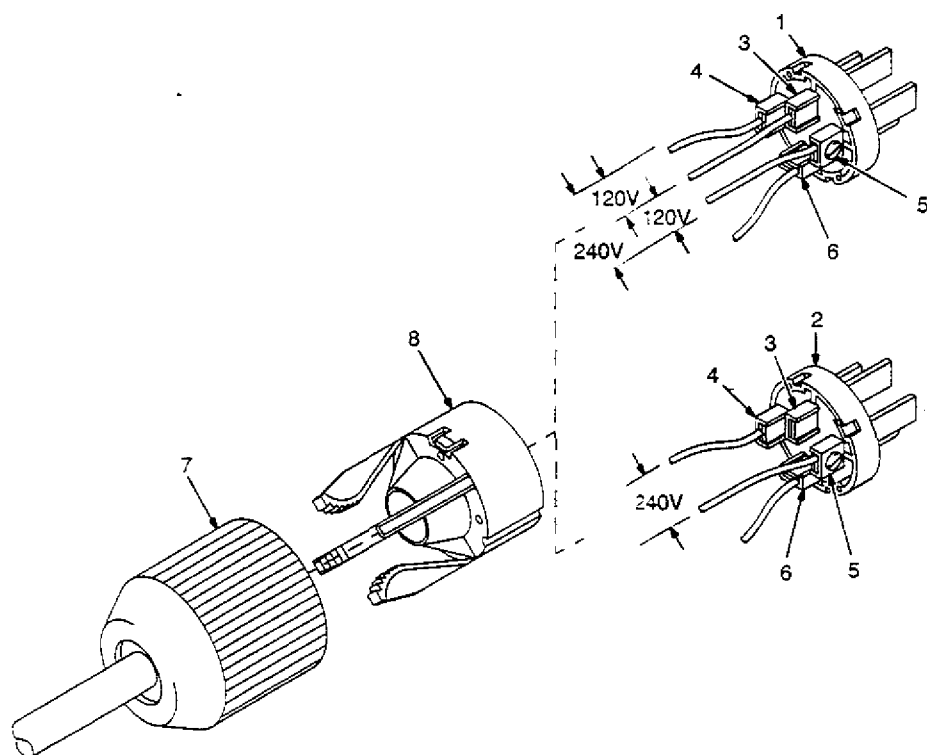
5-2. Wiring Instructions For Optional 240 Volt 35 A Plug

WARNING



ELECTRIC SHOCK can kill; INCORRECT CONNECTIONS can cause fatal electric shock.

- Do not touch live electrical parts.
- Wire the 120/240 volts plug according to Figure 5-2.
- Have only qualified persons make wiring connections.

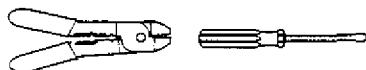


The plug for the 240 V receptacle can be wired to supply a 240 V, 2-wire load or a 120/240 V, 3-wire load. See circuit diagram when wiring plug. Receptacle can deliver 35 amperes to a 240 V load or to each of two 120V loads.

- 1 Plug Wired For 120/240 V, 3-Wire Load
- 2 Plug Wired For 240 V, 2-Wire Load
- 3 Neutral (Silver) Terminal
- 4 Load 1 (Brass) Terminal
- 5 Load 2 (Brass) Terminal
- 6 Ground (Green) Terminal
- 7 Outer Shell
- 8 Cord Grip

Strip cord jacket back enough to separate conductors. Strip conductors enough to make good contact with plug terminals. Make plug connections and reinstall outer shell and cord grip. Tighten assembly screws onto shell. Do not over-tighten.

Tools Needed:



ST-120 813-D

Figure 5-2. 120/240 Volt AC Plug Connections

See Section 8
Auxiliary Power
Guidelines

Install &
Connect
Equipment

Start Engine

Place Engine
Control Switch in
Run/Idle Position

Turn On
Auxiliary
Equipment

Begin Operation

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Figure 5-3. Sequence Of Auxiliary Equipment Operation

SECTION 6 – MAINTENANCE & TROUBLESHOOTING

 WARNING			
	ELECTRIC SHOCK can kill. - Do not touch live electrical parts. - Always wear dry insulating gloves. - Insulate yourself from work and ground. - Stop engine before installing or servicing. - Keep all panels and covers securely in place.		HOT PARTS can cause severe burns. - Allow cooling period before servicing. - Wear protective gloves and clothing when working on a hot engine.
	ENGINE EXHAUST GASES can kill. - Do not breathe exhaust fumes. - Use in open, well-ventilated areas, or vent exhaust outside and away from any building air intakes.		ENGINE EXHAUST SPARKS can cause fire. - Use only U.S. Forestry Department approved spark arrester and comply with all local, state, and federal laws. - A spark arrester is mandatory in all National Forests and in grass, brush, or forest covered lands in California, Oregon, and Washington. Check with state and local authorities in other areas. - Properly maintain the spark arrester. - Stop engine and allow exhaust system to cool down before servicing spark arrester. - Service spark arrester away from flammables.
	ENGINE FUEL can cause fire or explosion. - Stop engine before fueling. - Do not fuel while smoking or near sparks or flames. - Do not overfill tank; clean up any spilled fuel.		
	MOVING PARTS can cause injury. - Keep away from moving parts such as fans, belts, and rotors. - Keep all doors, panels, covers, and guards closed and securely in place.		Maintenance to be performed only by qualified persons.

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6-1. Routine Maintenance

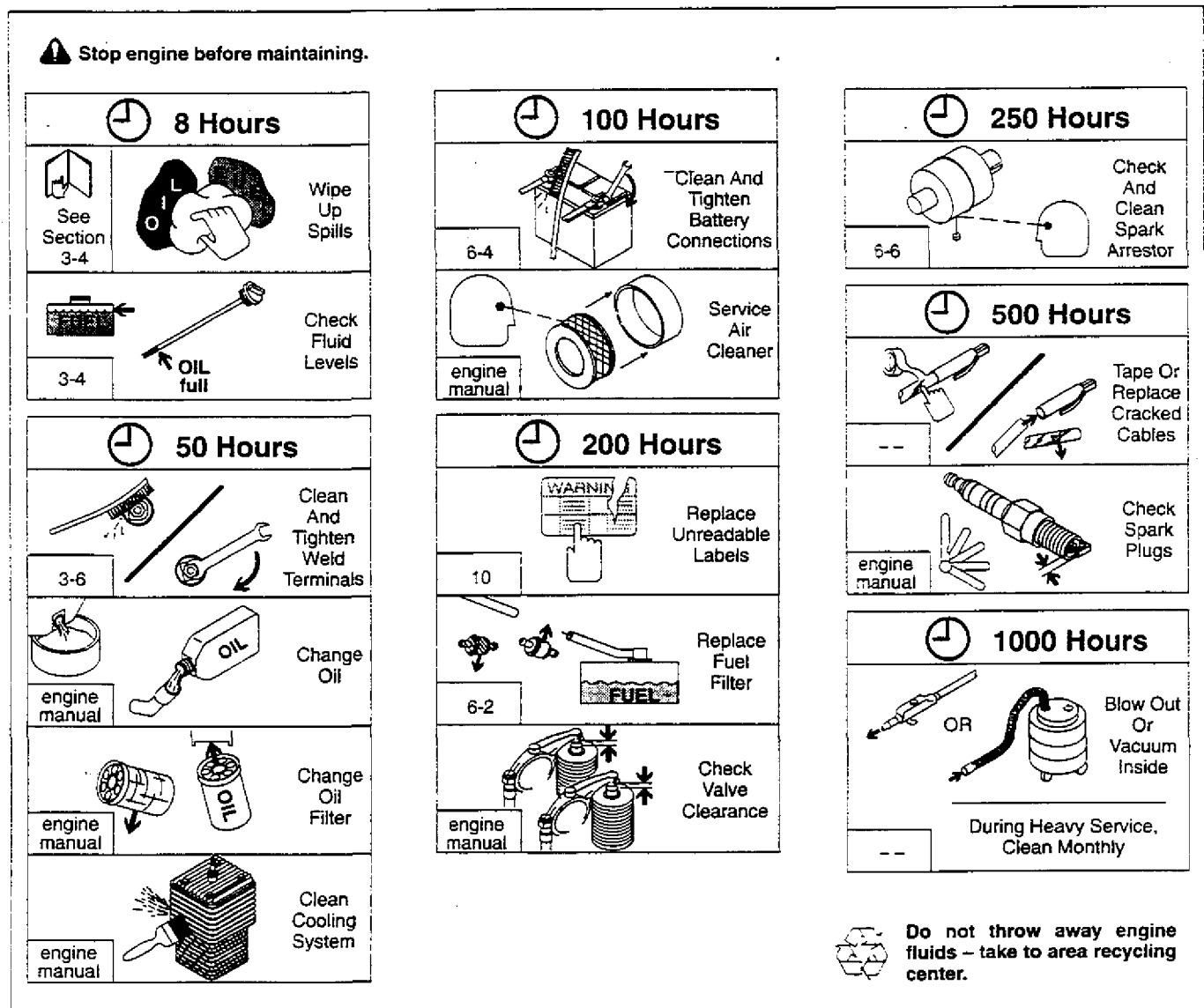


Figure 6-1. Maintenance Schedule

ONAN P216 GAS ENGINE	
	See Engine Manual for complete engine care. Give engine Specification and Serial Number when ordering parts.
	Check daily.
Recommended Oil . . . API Service Classification SF, SF/CC, SF/CD	
Oil Change & Filter . . . 25 hours or less dirty conditions . . . 50 hours normal conditions	
Oil Filter . . . MILLER 065 251, Onan 122-0645	
Oil Capacity . . . 1.5 qt (1.4 L) or 1.75 qt (1.6 L) with filter change	
	Fuel Capacity . . . 7.5 gal (28.4 L)
	Fuel Grade . . . Regular or Unleaded, 87 Octane min.
	Fuel Filter . . . MILLER 066 113, Onan 149-2206-01, Fram G10E1
Gasoline	
	Air Filter Service . . . 100 hours or less - see Owner's Manual
	Air Filter Element . . . MILLER 064 617, Onan 140-2628-01
	Air Filter Wrapper . . . MILLER 065 653, Onan 140-1496
	12 Volt Battery . . . BCI Group U1
	Cranking Performance at 0°F (-18°C) . . . 260 Amps min.
	Engine RPM - No Load
	Weld/Power . . . 3700 (60 Hz)
	Idle . . . 2200
	Valve Clearance - Cold
	In. . . 0.005 in (0.13 mm)
	Ex. . . 0.013 in (0.33 mm)
	Spark Plug Gap . . . 0.025 in. (0.6 mm)
	Spark Plug . . . Champion RS17YX Preferred or RS14YC
	Ignition Timing . . . 20° BTDC with engine stopped
	Ignition Capacitor . . . MILLER 065 673, Onan 312-0256
	Use only resistor spark plugs and wires.
	Spark Arrestor Inspection And Service . . 250 operating hours - see Owner's Manual
Optional	

Figure 6-2. Maintenance Label

6-2. Replacing Fuel Filter

WARNING		READ SAFETY BLOCKS at start of Section 6 before proceeding.	
		Stop engine, and allow to cool. 1 Fuel Filter See engine manual for replacement. 2 Hose Clamp Remove clamps and filter. 3 Fuel Line Inspect and replace line if cracked or worn. Reinstall hose clamps with new filter. Wipe up any spilled fuel. Start engine, and check for fuel leaks. Stop engine, tighten connections as necessary, and wipe up fuel.	
Tools Needed:			

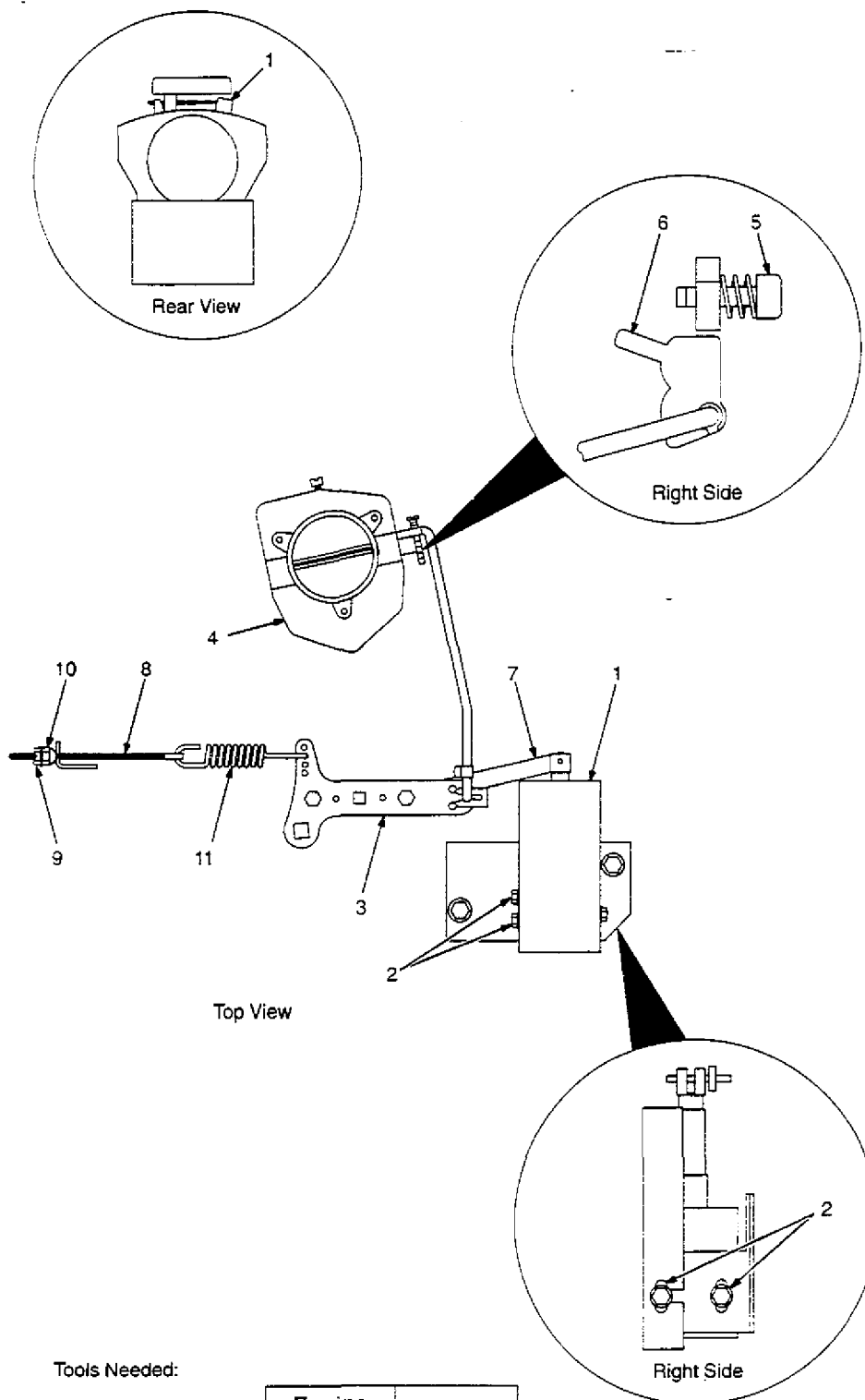
Figure 6-3. Fuel Filter Components

6-3. Adjusting Engine Speed

WARNING



READ SAFETY BLOCKS at start of Section 6 before proceeding.



Engine speeds have been factory set and should not require adjustment. After tuning engine, check engine speeds with a tachometer. See table for proper no load speeds. If necessary, adjust speeds as follows:

Start engine, and rotate Fine Amperage control to 100.

- 1 Throttle Solenoid
- 2 Solenoid Screw
- Loosen four screws.
- 3 Governor Arm
- 4 Carburetor
- 5 Idle Speed Screw

Pull governor arm away from carburetor and hold while making the following adjustments:

Turn idle speed screw until engine runs at idle speed.

Release governor arm. Place Engine Control switch in Run/Idle position.

- 6 Carburetor Stop

Slide solenoid until idle speed screw just touches carburetor stop. Tighten solenoid screws.

- 7 Solenoid Linkage

Check for binding of linkage, and readjust solenoid position if necessary.

Place Engine Control switch in Run position.

- 8 Weld/Power Speed Rod

- 9 Locking Nut

Loosen nut.

- 10 Adjustment Nut

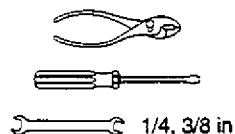
Turn nut until engine runs at weld/power speed. Tighten locking nut.

Stop engine.

- 11 Sensitivity Spring

See engine manual for governor sensitivity adjustment.

Tools Needed:

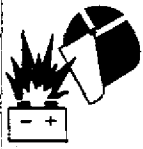


Engine Speed	RPM
Idle	2200 $\pm$ 50
Weld/Power	3700

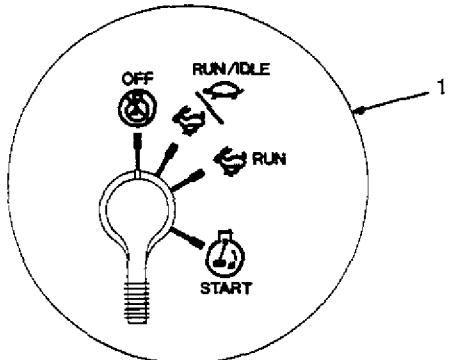
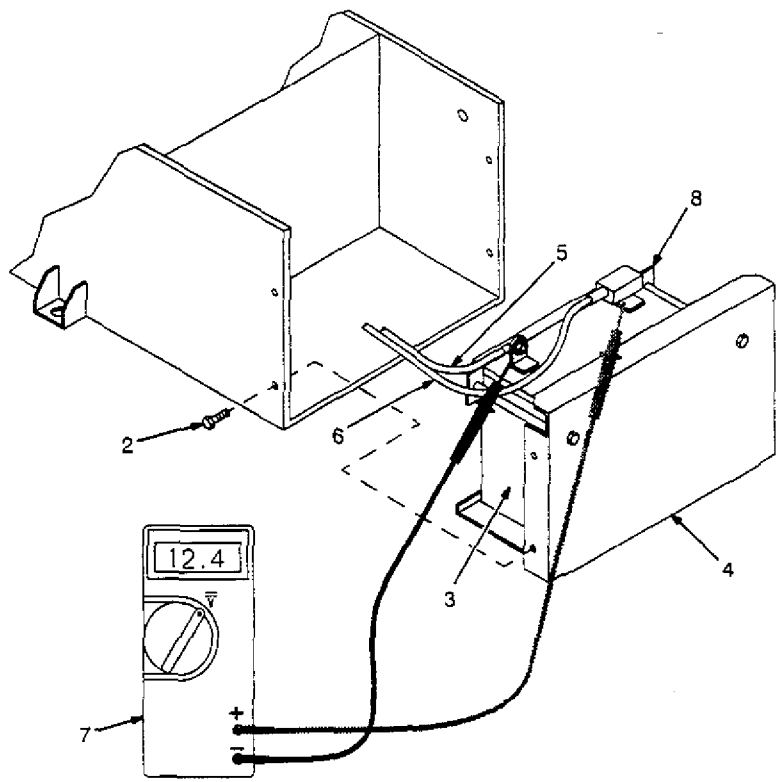
ST-121 112-D / ST-151 732

Figure 6-4. Engine Speed Adjustments

6-4. Replacing Battery Or Checking Battery Voltage

	WARNING SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin. • Stop engine before disconnecting or connecting battery cables. • Always wear a face shield and proper protective clothing when working on a battery.		• Do not allow tools to cause sparks when working on a battery. • Do not use welder to charge batteries or jump start vehicles. • Observe correct polarity (+ and -) on batteries.
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If engine does not crank, check battery voltage as follows:

- 1 Engine Control Switch

Place Engine Control switch in the *Off* position.

- 2 Bolt
- 3 Battery
- 4 Battery Tray

Remove bolts, and pull out battery tray.

- 5 Negative (-) Battery Cable
- 6 Positive (+) Battery Cable
- 7 Voltmeter

Remove terminal covers from battery.

If battery voltage is less than 12.4 volts, charge battery following battery charger's instructions.

If battery tests okay but unit does not crank, contact Factory Authorized Service Station/Service Distributor.

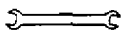
To replace battery, proceed as follows:

Disconnect battery cables, negative cable first.

- 8 Hold Down

Remove hold down and battery. When reconnecting battery, connect negative (-) cable last. Reinstall terminal covers and battery tray.

Tools Needed:

 3/8, 1/2 in

Ref. ST-144 839-D / Ref. ST-152 806

Figure 6-5. Checking And Replacing Battery

6-5. Overload Protection

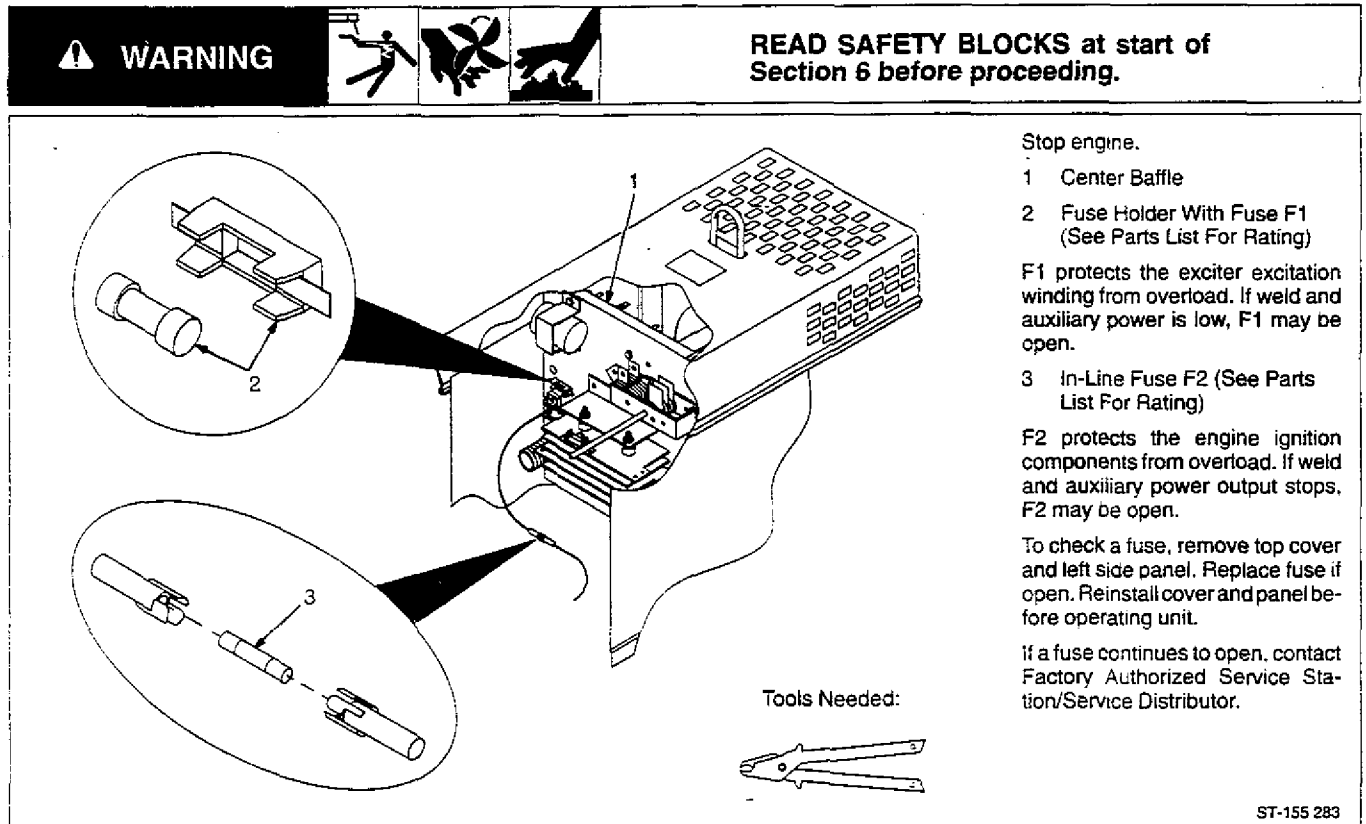


Figure 6-6. Fuse F1 And F2

6-6. Optional Spark Arrestor Inspection And Cleaning

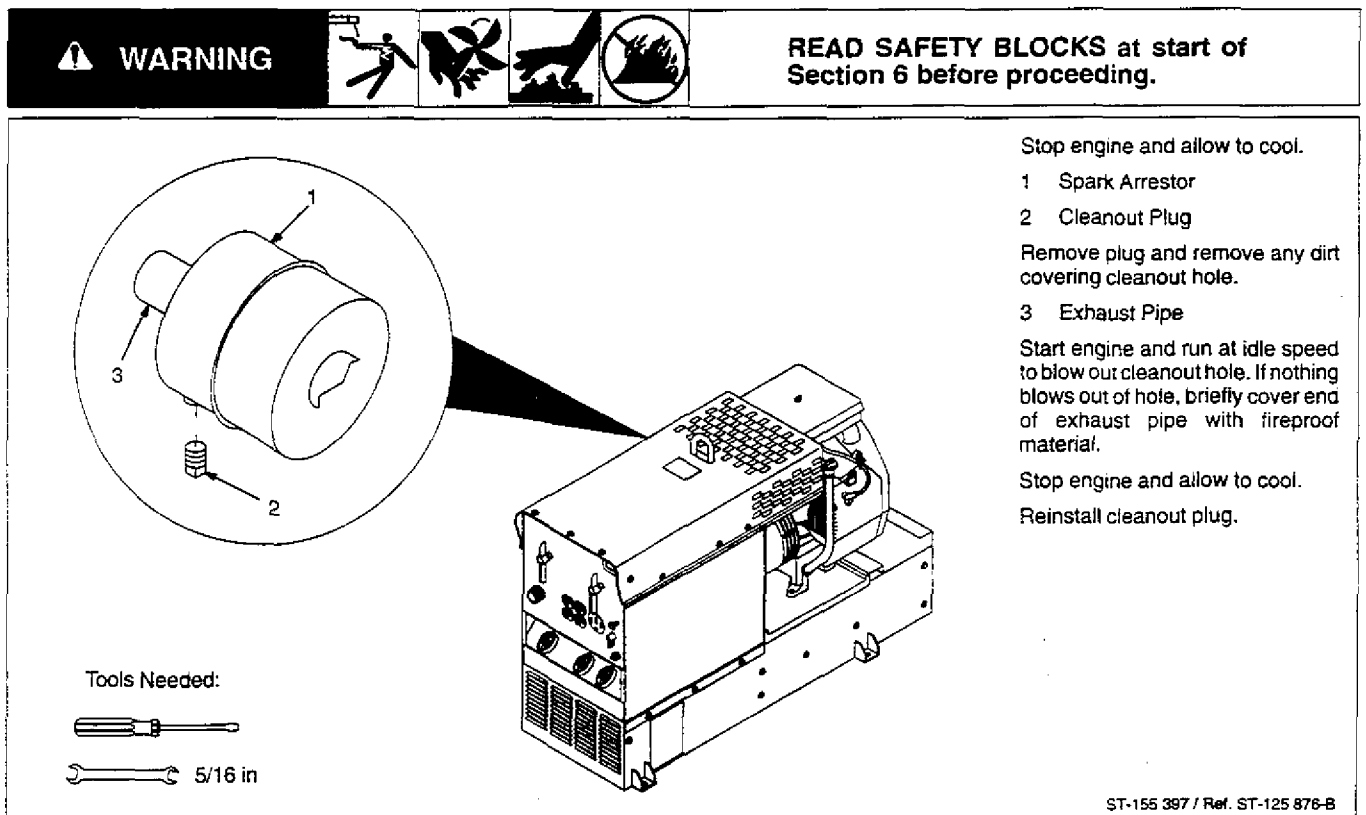


Figure 6-7. Spark Arrestor Inspection And Cleaning

6-7. Troubleshooting

 WARNING			
	ELECTRIC SHOCK can kill. - Do not touch live electrical parts. - Always wear dry insulating gloves. - Insulate yourself from work and ground. - Stop engine before installing or servicing. - Keep all panels and covers securely in place.		ENGINE FUEL can cause fire or explosion. - Stop engine before fueling. - Do not fuel while smoking or near sparks or flames. - Do not overfill tank; clean up any spilled fuel.
			MOVING PARTS can cause injury. - Keep away from moving parts such as fans, belts, and rotors. - Keep all doors, panels, covers, and guards closed and securely in place.
	HOT PARTS can cause severe burns. - Allow cooling period before servicing. - Wear protective gloves and clothing when working on a hot engine.		Troubleshooting to be performed only by qualified persons.

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Table 6-1. Welding Trouble

Trouble	Remedy	Section
No weld output.	Check control settings.	4
	Check weld connections.	3-6
	Check fuse F2 and replace if open.	6-5
	Have Factory Authorized Service Station/Service Distributor check brushes and slip rings.	--
Low weld output.	Check control settings.	4
	Increase Amperage/Voltage Adjustment control setting.	Figure 4-6
	Check fuse F1 and replace if open.	6-5
	Check and adjust engine speed.	6-3
High weld output.	Check control settings.	4
	Check and adjust engine speed.	6-3
	Decrease Amperage/Voltage Adjustment control setting.	Figure 4-6
Erratic weld output.	Check control settings.	4
	Tighten and clean connections to electrode and workpiece.	--
	Use dry, properly-stored electrodes for SMAW and GTAW.	--
	Tighten and clean connections both inside and outside welding generator.	--
	Tighten any loose lead connections to Range switch and AC/DC Polarity switch.	--
	Check and adjust engine speed.	6-3
	Have Factory Authorized Service Station/Service Distributor check brushes and slip rings.	--

Table 6-2. Auxiliary Power Trouble

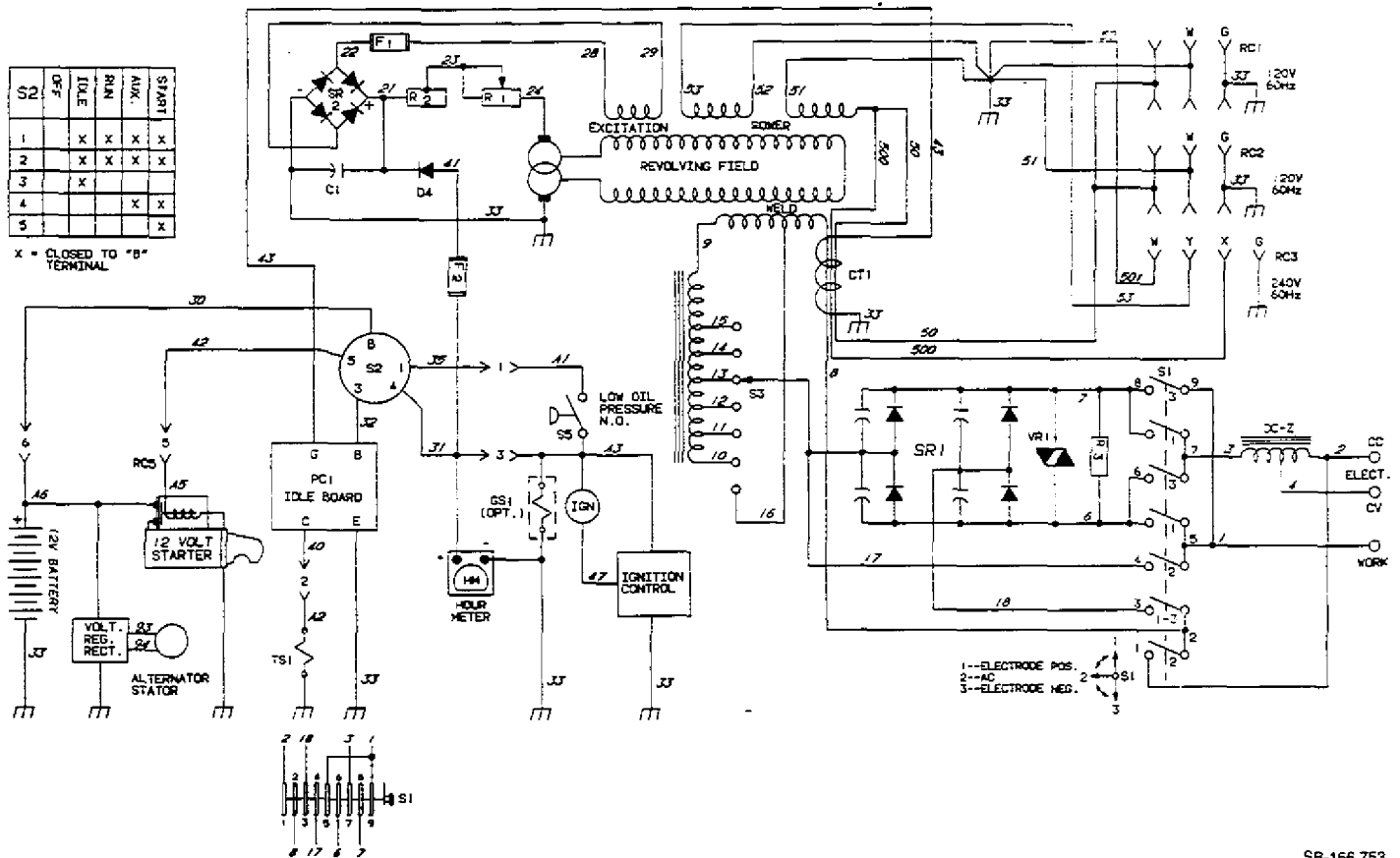
Trouble	Remedy	Section
No output at receptacles.	Check fuse F2 and replace if open.	6-5
	Have Factory Authorized Service Station/Service Distributor check brushes and slip rings.	--
Low power output.	Increase Amperage/Voltage Adjustment control setting.	Figure 4-6
	Check fuse F1 and replace if open.	6-5
	Check and adjust engine speed.	6-3
High power output.	Check and adjust engine speed.	6-3
Erratic power output.	Check fuel level.	3-4
	Check receptacle wiring and connections.	--
	Check and adjust engine speed.	6-3
	Have Factory Authorized Service Station/Service Distributor check brushes, slip rings, and governor.	--

Table 6-3. Engine Trouble

Trouble	Remedy	Section
Engine will not start.	Check fuel level.	3-4
	Check battery voltage.	6-4
Engine starts but stops as soon as Engine Control switch returns to Run position.	Check oil level. Check low oil pressure shutdown switch (see engine parts manual for location).	3-4
	Check and refill crankcase with proper viscosity oil for operating temperature, if necessary.	3-4
Engine stopped during normal operation.	Check fuel level.	3-4
	Check oil level. Check low oil pressure shutdown switch (see engine parts manual for location).	3-4
Battery discharges between uses.	Clean battery, terminals and posts with baking soda and water solution; rinse with clear water.	--
	Periodically recharge battery (approximately every 3 months).	6-4
	Replace battery.	6-4
	Check voltage regulator according to engine manual.	--
Engine idles but does not come up to weld speed.	Have Factory Authorized Service Station/Service Distributor check engine control switch, idle module, and current transformer.	--

Trouble	Remedy	Section
Unstable or sluggish engine speeds.	Readjust throttle linkage if necessary.	6-3
	Tune-up engine according to engine manual.	--
Engine does not return to idle speed.	Remove weld and auxiliary power loads.	--
	Check throttle linkage for smooth, non-binding operation.	--
	Have Factory Authorized Service Station/Service Distributor check engine control switch, idle module, and throttle solenoid.	--

SECTION 7 – ELECTRICAL DIAGRAMS



SB-166 753

Figure 7-1. Circuit Diagram For Welding Generator

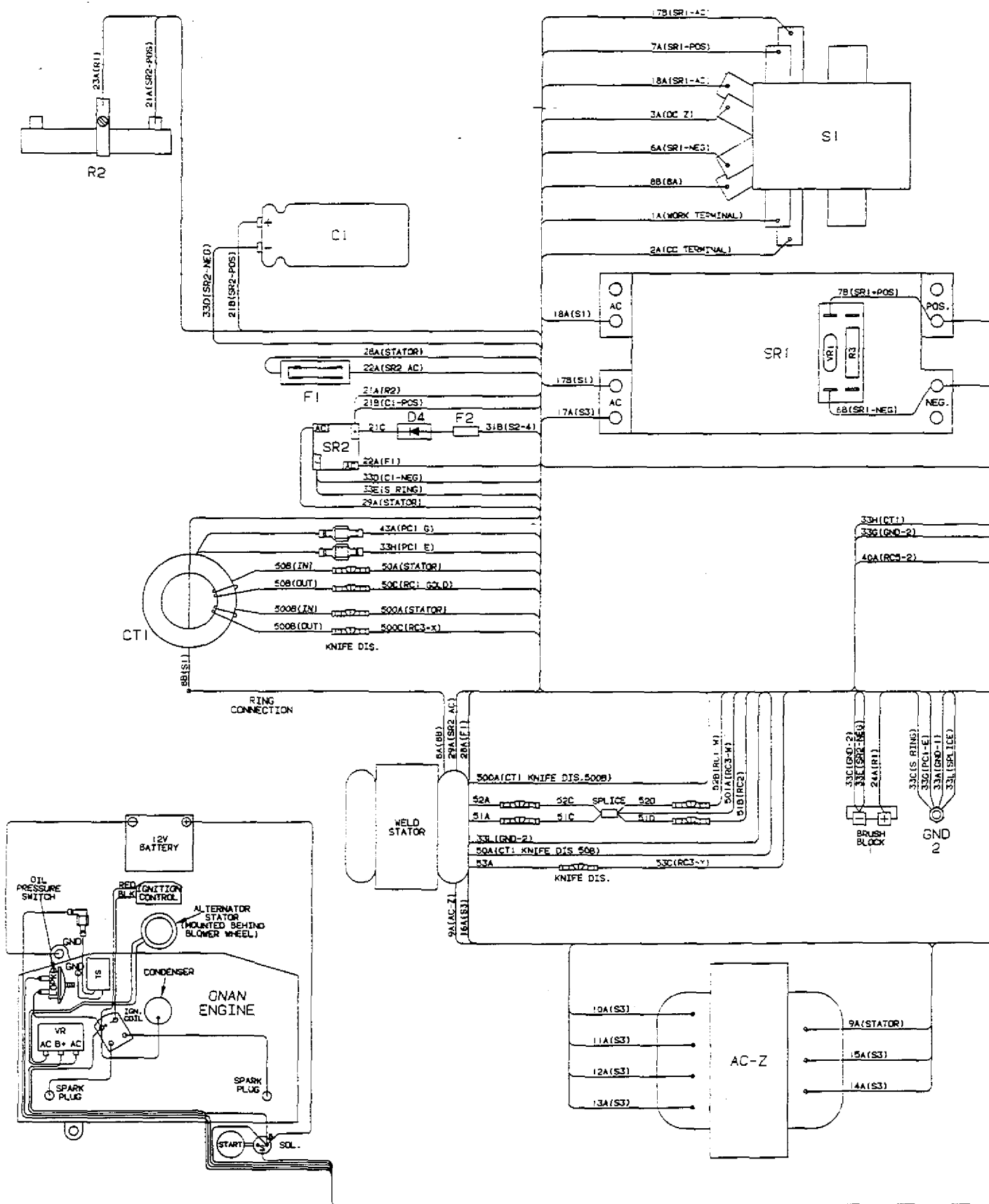
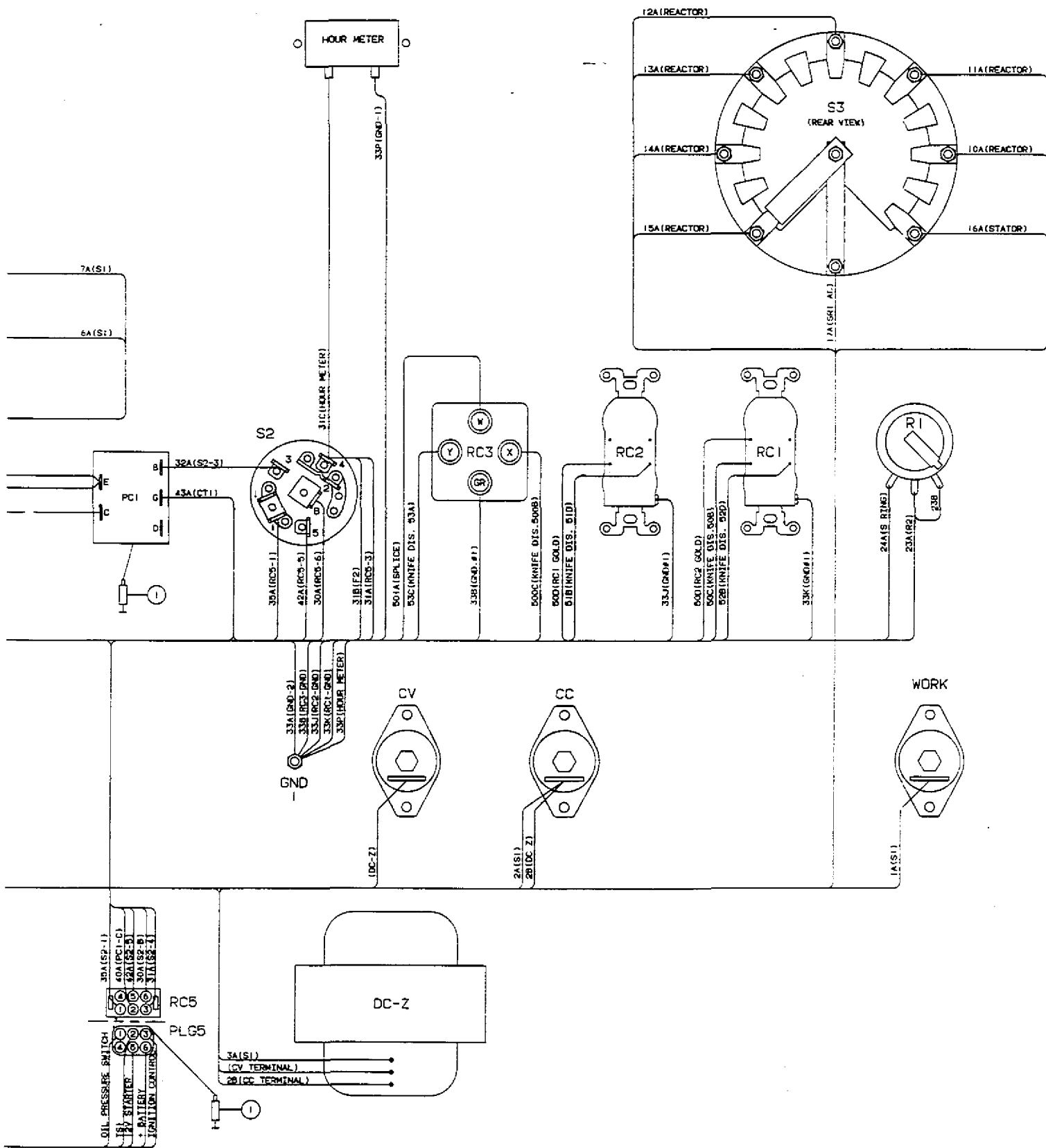


Figure 7-2. Wiring Diagram For Welding Generator



SECTION 8 – AUXILIARY POWER GUIDELINES

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WARNING



ELECTRIC SHOCK can kill.

- Install and ground generator according to all applicable codes, such as OSHA and National Electrical Code.
- Disconnect both welding cables when using auxiliary power.
- Use all code-required methods for shock and overcurrent protection.
- Have only qualified persons make electrical connections.

8-1. How Much Power Does Equipment Require?

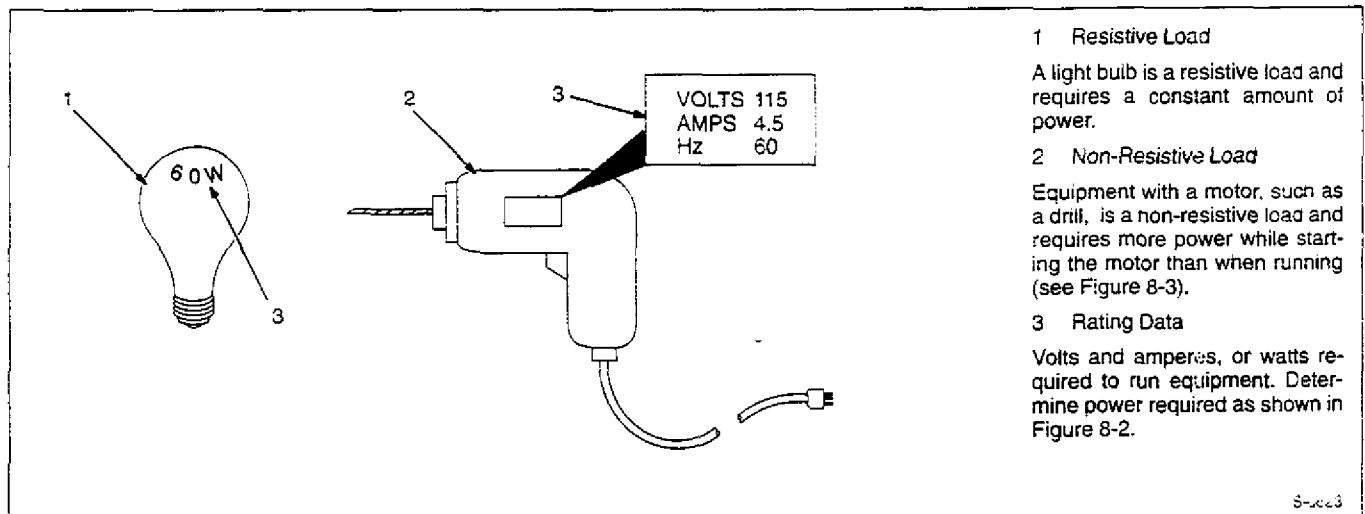


Figure 8-1. Power Required By Different Types Of Equipment (Loads)

$$\text{VOLTS} \times \text{AMPERES} = \text{WATTS}$$

This equation provides an actual power requirement for resistive loads, or an approximate running requirement for non-resistive loads.

EXAMPLE 1: If a drill requires 4.5 amperes at 115 volts, calculate its running power requirement in watts.

$$115 \text{ V} \times 4.5 \text{ A} = 520 \text{ W}$$

Therefore, the individual load applied by the drill is 520 watts.

EXAMPLE 2: If a flood lamp is rated at 200 watts, the individual load applied by the lamp is 200 watts. If three 200 watt flood lamps are used with the drill from Example 1, add the individual loads to calculate total load.

$$(200 \text{ W} + 200 \text{ W} + 200 \text{ W}) + 520 \text{ W} = 1120 \text{ W}$$

Therefore, the total load applied by the three flood lamps and drill is 1120 watts.

Figure 8-2. Calculating Power Required To Run Equipment

Table 8-1. Approximate Power Requirements For Typical Equipment*

Industrial Motors	Rating	Starting Watts	Running Watts	Farm Equipment	Rating	Starting Watts	Running Watts
Split Phase	1/8 HP	800	300	Stock Tank De-Icer		1000	1000
	1/6 HP	1225	500	Grain Cleaner	1/4 HP	1850	650
	1/4 HP	1600	600	Portable Conveyor	1/2 HP	3400	1000
	1/3 HP	2100	700	Grain Elevator	3/4 HP	4400	1400
	1/2 HP	3175	875	Milk Cooler		2900	1100
Capacitor Start- Induction Run				Milker (Vacuum Pump)	2 HP	10500	2800
	1/3 HP	2020	720	FARM DUTY MOTORS	1/3 HP	1720	720
	1/2 HP	3075	975	Std. (e.g. Conveyors,	1/2 HP	2575	975
	3/4 HP	4500	1400	Feed Augers, Air	3/4 HP	4500	1400
	1 HP	6100	1600	Compressors)	1 HP	6100	1600
	1-1/2 HP	8200	2200		1-1/2 HP	8200	2200
	2 HP	10550	2850		2 HP	10550	2850
	3 HP	15900	3900		3 HP	15900	3900
Capacitor Start- Capacitor Run	5 HP	23300	6800		5 HP	23300	6800
	1-1/2 HP	8100	2000	High Torque (e.g. Barn	1-1/2 HP	8100	2000
	5 HP	23300	6000	Cleaners, Silo Unloaders,	5 HP	23300	6000
	7-1/2 HP	35000	8000	Silo Hoists, Sunk Feeders)	7-1/2 HP	35000	8000
Fan Duty	10 HP	46700	10700		10 HP	46700	10700
	1/8 HP	1000	400	3-1/2 Cu. Ft. Mixer	1/2 HP	3300	1000
	1/6 HP	1400	550	High Pressure 1.8 Gal/Min	500 PSI	3150	950
	1/4 HP	1850	650	Washer 2 Gal/Min	550 PSI	4500	1400
	1/3 HP	2400	800	2 Gal/Min	700 PSI	6100	1600
	1/2 HP	3500	1100				
Contractor	Rating	Starting Watts	Running Watts	Residential	Rating	Starting Watts	Running Watts
Hand Drill	1/4"	350	350	Coffee Maker		1750	1750 Typ.
	3/8"	400	400	Elec. Range	6" Element	1500	1500
	1/2"	600	600		8" Element	2100	2100
Circular Saw	6-1/2"	500	500		Oven	6000	6000
	7-1/4"	900	900	Microwave	625W	2800	2000
	8-1/4"	1400	1400	Television (Solid-State)	B & W	100	100
Table Saw	9"	4500	1500		Color	300	300
	10"	6300	1800	Radio		50-200	50-200
Band Saw	14"	2500	1100	Refng. Or Freezer		3100	800
Bench Grinder	6"	1720	720	Shallow Well Pump	1/3 HP	2150	750
	8"	3900	1400		1/2 HP	3100	1000
	10"	5200	1600	Sump Pump	1/3 HP	2100	800
Air Compressor					1/2 HP	3200	1050
	1/2 HP	3000	1000	Dishwasher	(Cool Dry)	2100	700
	1 HP	6000	1500		(Hot Dry)	2850	1450
	1-1/2 HP	8200	2200	Clothes Dryer	Gas	2500	700
Electric Chain Saw	2 HP	10500	2800		Electric	7550	5750
	1-1/2 HP, 12"	1100	1100	Automatic Washer		3450	1150
	2 HP, 14"	1100	1100	Gas Or Fuel Oil	1/8 HP	800	300
Electric Trimmer	Standard 9"	350	350	Furnace Blower	1/6 HP	1250	500
	Heavy Duty 12"	500	500		1/4 HP	1600	600
Electric Cultivator	1/3 HP	2100	700		1/3 HP	2100	700
Elec. Hedge Trimmer	18"	400	400		1/2 HP	3225	875
Flood Lights	HID	125	100	Central Air Conditioner	10,000 BTU	3700	1500
	Metal Halide	313	250		20,000 BTU	5800	2500
	Mercury	1000			24,000 BTU	8750	3800
	Sodium	1400			32,000 BTU	11500	5000
Submersible Pump	Vapor	1250	1000		40,000 BTU	13800	6000
	400 GPH	600	200	Garage Door Opener	1/4 HP	1650	550
Centrifugal Pump	900 GPH	900	500		1/3 HP	2125	725
Floor Polisher	3/4 HP, 16"	4500	1400	Electric Blanket	Portable	400	400
High Pressure Washer	1 HP, 20"	6100	1600	Dehumidifier		1450	550
	1/2 HP	3150	950	Vacuum Cleaner	Standard	800	800
	3/4 HP	4500	1400		Deluxe	1100	1100
	1 HP	6100	1600	Lights	As Indicated On Bulb		
55 Gal. Drum Mixer	1/4 HP	1900	700	Toaster	2 Slice	1050	1050
Wet & Dry Vac	1.7 HP	900	900		4 Slice	1650	1650
	2-1/2 HP	1300	1300	Hair Dryer		300-1200	300-1200
				Iron		1200	1200

*Motors require up to two or three times their starting wattage when starting under load.

Table 8-2. Single-Phase Induction Motor Starting Requirements

Motor Start Code	G	H	J	K	L	M	N	P
KVA/HP	6.3	7.1	8.0	9.0	10.0	11.2	12.5	14.0

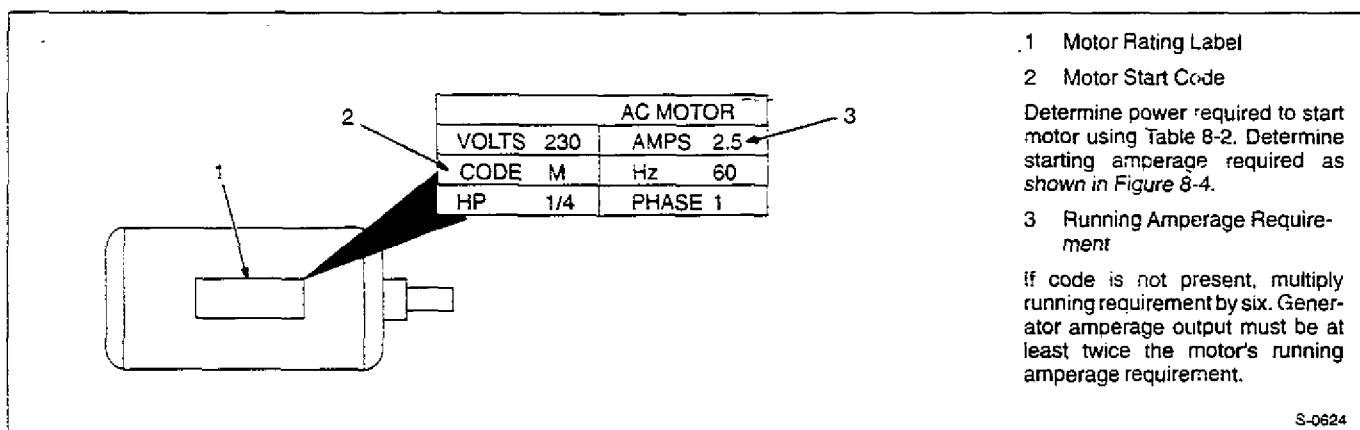


Figure 8-3. Power Required To Start Motor

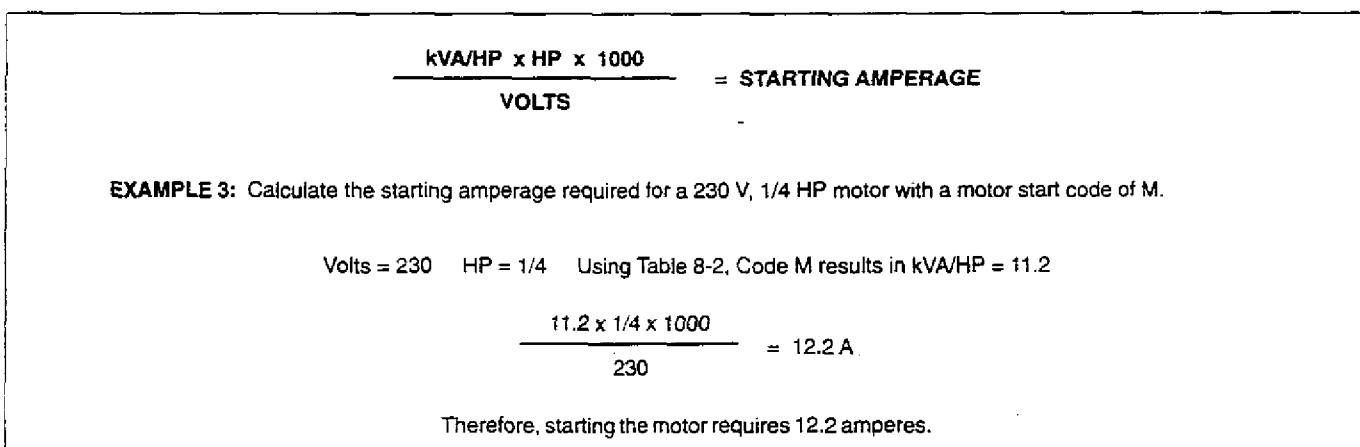


Figure 8-4. Calculating Amperage Required To Start A Motor

8-2. How Much Power Can Generator Supply?

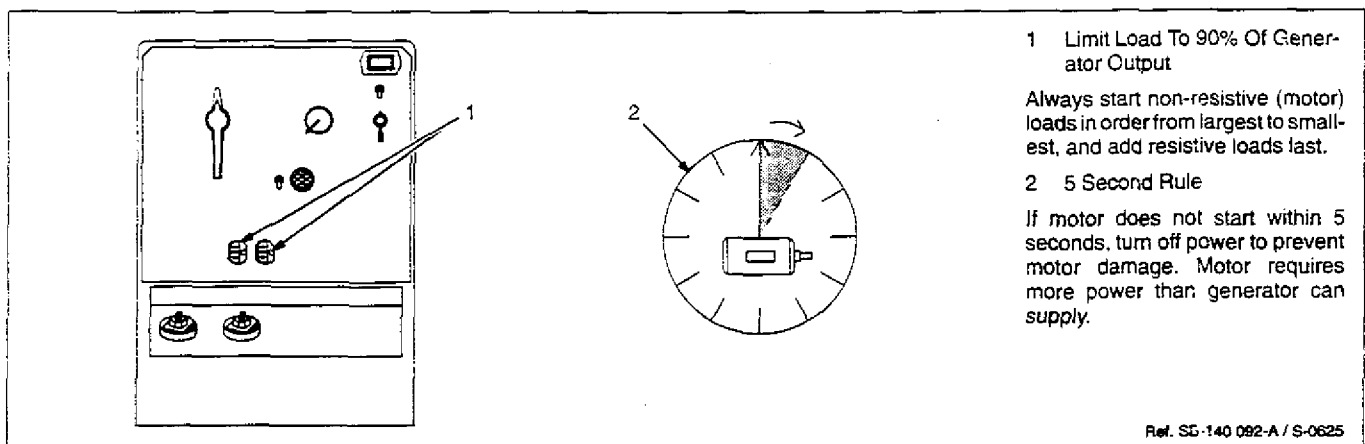


Figure 8-5. Limits Of Generator

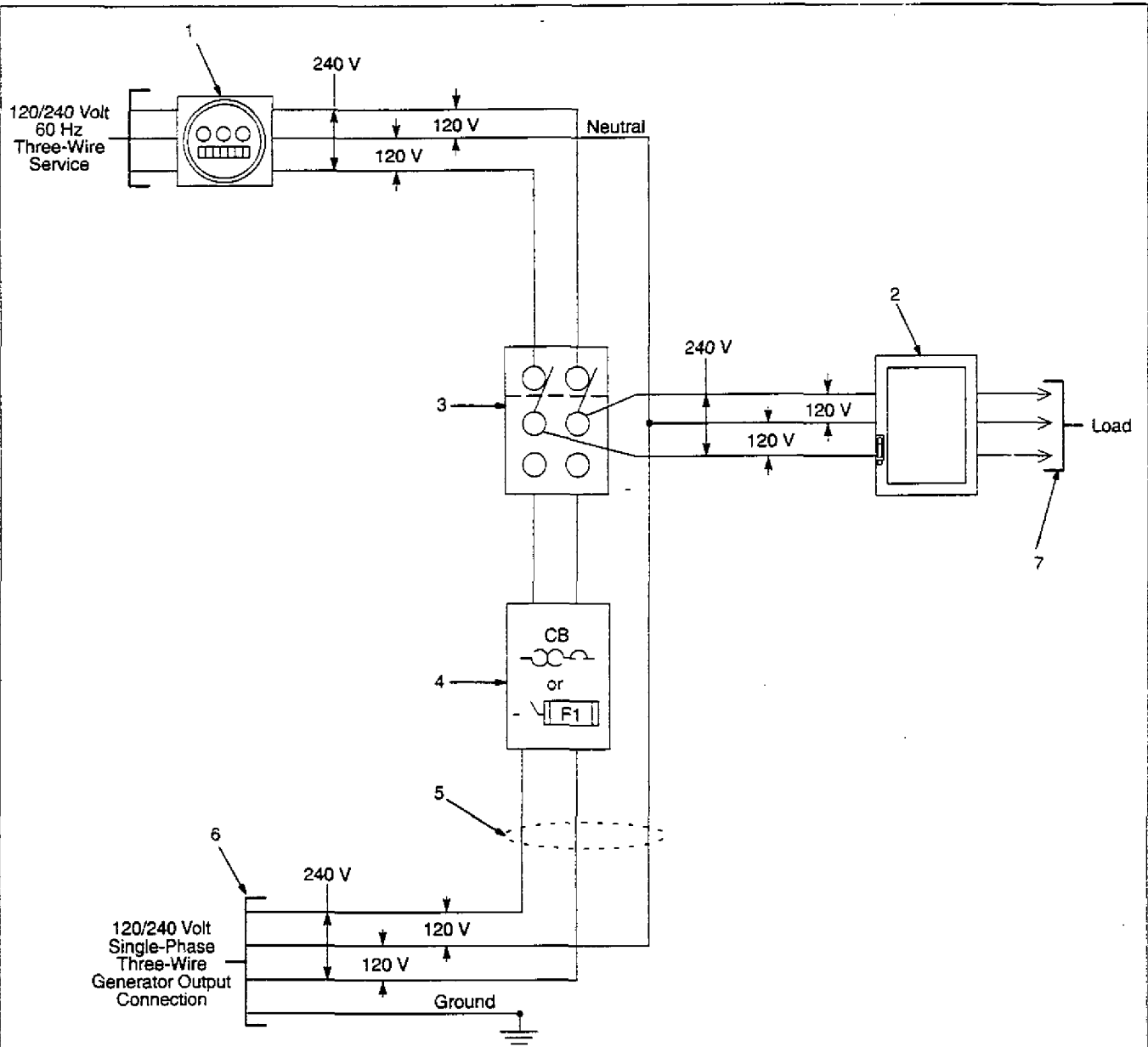
8-3. Typical Connections To Supply Standby Power

⚠ WARNING



READ SAFETY BLOCKS at start of Section 8 before proceeding.

Customer-supplied equipment is required if generator is to supply standby power during emergencies or power outages. Locate the power company service meter (Figure 8-6, Item 1), and main and branch overcurrent protection (2), and install equipment as shown in Figure 8-6.



1 Power Company Service Meter

2 Main And Branch Overcurrent Protection

3 Double-Pole, Double-Throw Transfer Switch

Obtain and install correct switch.

Switch rating must be same as or greater than the branch overcurrent protection.

4 Circuit Breakers Or Fused Disconnect Switch

Obtain and install correct switch.

5 Extension Cord

Select as shown in Section 8-4.

6 Connections To Generator

Connect terminals or plug of adequate amperage capacity onto cord. Follow all applicable codes and safety practices.

Turn off or unplug all equipment connected to generator before starting or stopping engine. When starting or stopping, the engine has low speed which causes low voltage and frequency.

7 Connections To Load

S-0405-A

Figure 8-6. Standby Power Equipment And Connections

8-4. Selecting Extension Cord

Use Table 8-3 and Table 8-4 to select extension cords. Use shortest cords possible because long cords may reduce output or cause unit overload.

Table 8-3. Cord Lengths For 120 Volt Loads

Current In Amperes	Load In Watts	Maximum Allowable Cord Length in Feet (Meters) For Conductor Size (AWG)*					
		4	6	8	10	12	14
5	600			350 (106)	225 (68)	137 (42)	100 (30)
7	840		400 (122)	250 (76)	150 (46)	100 (30)	62 (19)
10	1200	400 (122)	275 (84)	175 (53)	112 (34)	62 (19)	50 (15)
15	1800	300 (91)	175 (53)	112 (34)	75 (23)	37 (11)	30 (9)
20	2400	225 (68)	137 (42)	87 (26)	50 (15)	30 (9)	
25	3000	175 (53)	112 (34)	62 (19)	37 (11)		
30	3600	150 (46)	87 (26)	50 (15)	37 (11)		
35	4200	125 (38)	75 (23)	50 (15)			
40	4800	112 (34)	62 (19)	37 (11)			
45	5400	100 (30)	62 (19)				
50	6000	87 (26)	50 (15)				

*Conductor size is based on maximum 2% voltage drop

Table 8-4. Cord Lengths For 240 Volt Loads

Current In Amperes	Load In Watts	Maximum Allowable Cord Length in Feet (Meters) For Conductor Size (AWG)*					
		4	6	8	10	12	14
5	1200			700 (213)	450 (137)	225 (68)	200 (61)
7	1680		800 (244)	500 (152)	300 (91)	200 (61)	125 (38)
10	2400	800 (244)	550 (168)	350 (107)	225 (69)	125 (38)	100 (31)
15	3600	600 (183)	350 (107)	225 (69)	150 (46)	75 (23)	60 (18)
20	4800	450 (137)	275 (84)	175 (53)	100 (31)	60 (18)	
25	6000	350 (107)	225 (69)	125 (38)	75 (23)		
30	7000	300 (91)	175 (53)	100 (31)	75 (23)		
35	8400	250 (76)	150 (46)	100 (31)			
40	9600	225 (69)	125 (38)	75 (23)			
45	10,800	200 (61)	125 (38)				
50	12,000	175 (53)	100 (31)				

*Conductor size is based on maximum 2% voltage drop

SECTION 9 – TUNGSTEN ELECTRODE

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NOTE



For additional information, see your distributor for a handbook on the Gas Tungsten Arc Welding (GTAW) process.

Wear clean gloves to prevent contamination of tungsten electrode.

9-1. Selecting Tungsten Electrode

Table 9-1. Tungsten Size

Electrode Diameter	Amperage Range - Gas Type ♦ - Polarity			
	DC – Argon – Electrode Negative/Straight Polarity	DC – Argon – Electrode Positive/Reverse Polarity	AC – Argon – Using High Frequency	AC – Argon – Balanced Wave Using High Freq.
Pure Tungsten (Green Band)				
.010"	Up to 15	*	Up to 15	Up to 10
.020"	5-20	*	5-20	10-20
.040"	15-80	*	10-60	20-30
1/16"	70-150	10-20	50-100	30-80
3/32"	125-225	15-30	100-160	60-130
1/8"	225-360	25-40	150-210	100-180
5/32"	360-450	40-55	200-275	160-240
3/16"	450-720	55-80	250-350	190-300
1/4"	720-950	80-125	325-450	250-400
2% Thorium Alloyed Tungsten (Red Band)				
.010"	Up to 25	*	Up to 20	Up to 15
.020"	15-40	*	15-35	5-20
.040"	25-85	*	20-80	20-60
1/16"	50-160	10-20	50-150	60-120
3/32"	135-235	15-30	130-250	100-180
1/8"	250-400	25-40	225-360	160-250
5/32"	400-500	40-55	300-450	200-320
3/16"	500-750	55-80	400-500	290-390
1/4"	750-1000	80-125	600-800	340-525
Zirconium Alloyed Tungsten (Brown Band)				
.010"	*	*	Up to 20	Up to 15
.020"	*	*	15-35	5-20
.040"	*	*	20-80	20-60
1/16"	*	*	50-150	60-120
3/32"	*	*	130-250	100-180
1/8"	*	*	225-360	160-250
5/32"	*	*	300-450	200-320
3/16"	*	*	400-550	290-390
1/4"	*	*	600-800	340-525

♦ Typical argon shielding gas flow rates are 15 to 35 cfh (cubic feet per hour).

*Not Recommended.

The figures listed are intended as a guide and are a composite of recommendations from American Welding Society (AWS) and electrode manufacturers.

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9-2. Preparing Tungsten

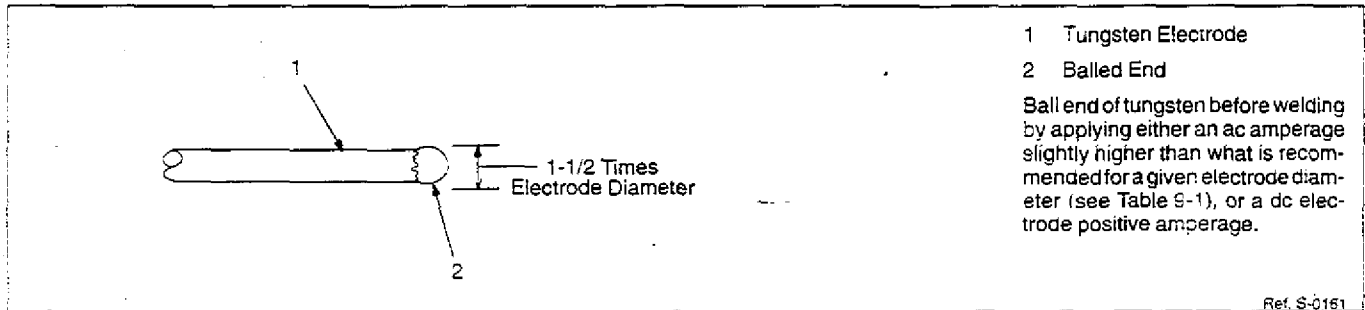


Figure 9-1. Preparing Tungsten For AC Or DC Electrode Positive (DCEP) Welding

CAUTION

FLYING SPARKS AND HOT METAL can cause injury and start fires.

- Shape tungsten electrode only on grinder with proper guards in a safe location wearing proper face, hand, and body protection.
- Keep flammables away.

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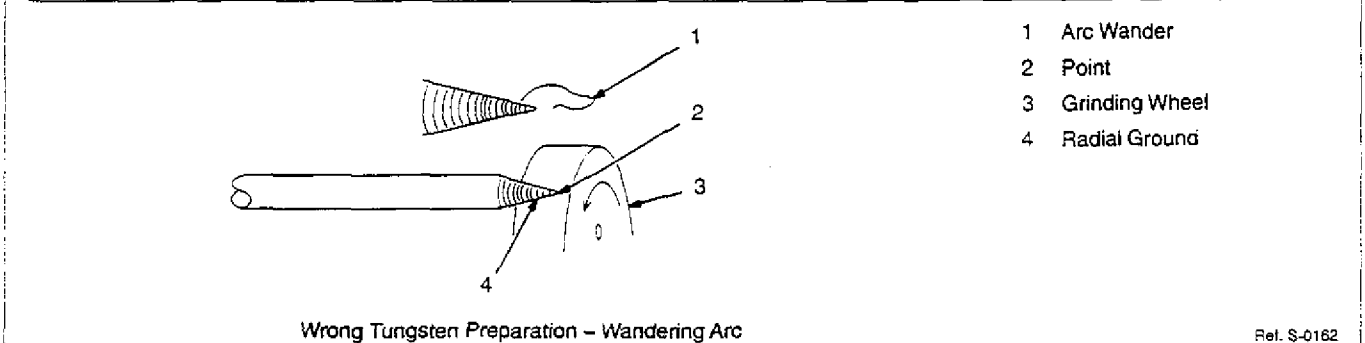
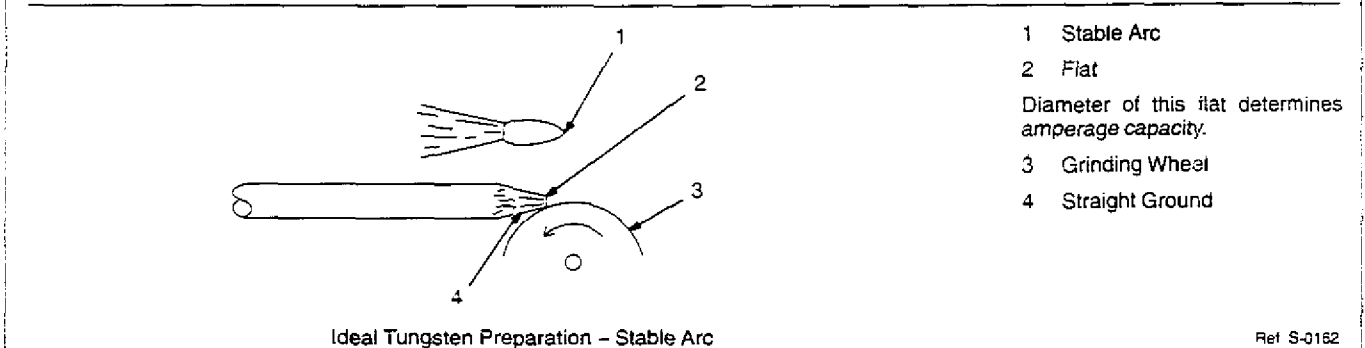
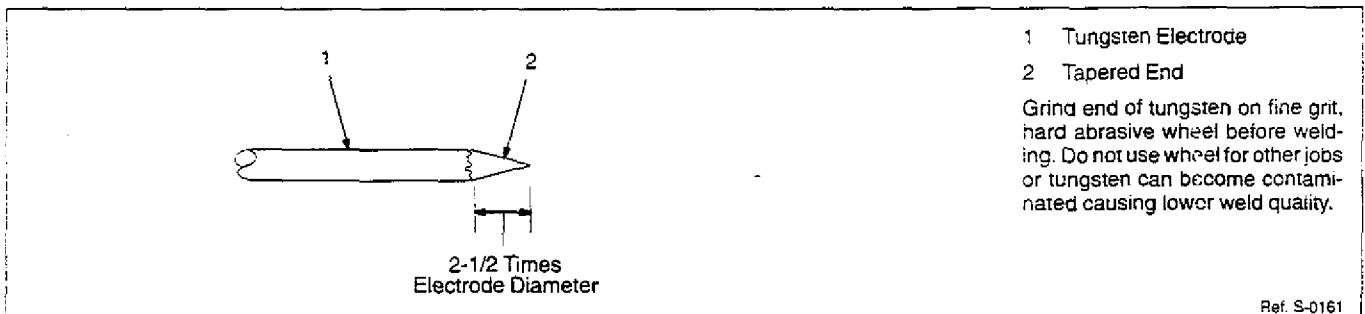


Figure 9-2. Preparing Tungsten For DC Electrode Negative (DCEN) Welding

SECTION 10 – PARTS LIST

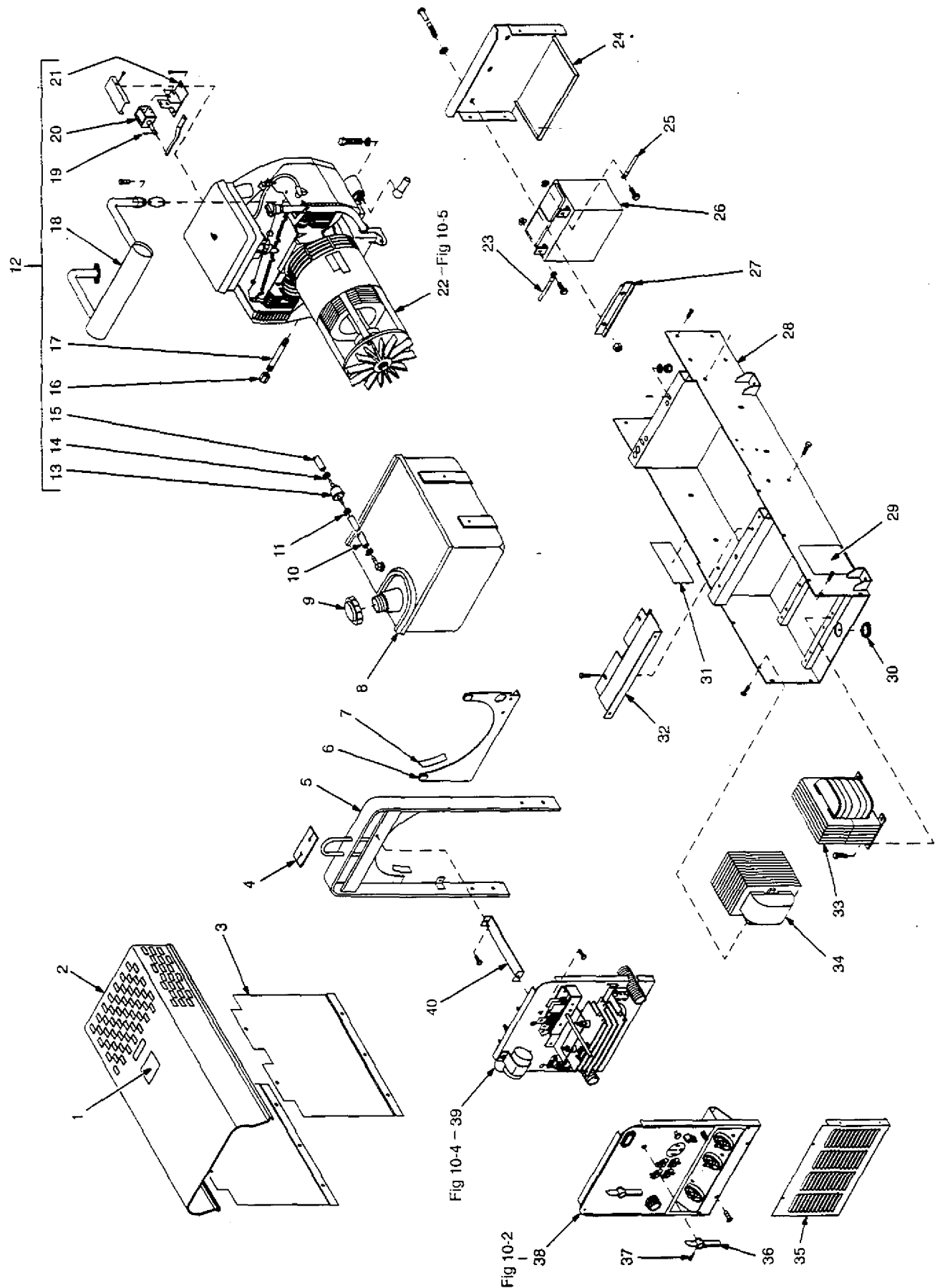


Figure 10-1. Main Assembly

NOTES

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 10-1. Main Assembly				
1		108 487	LABEL, warning falling equipment can cause serious injury	1
2		+123 801	COVER, top	1
3		113 303	PANEL, side	2
4		107 342	SEAL, weather lift eye	1
5		136 057	UPRIGHT, base	1
6		136 059	PANEL, rear lower	1
7		095 970	STRIP, nprn wsl eng firewall	2
		♦042 589	GAUGE, fuel (consisting of)	1
		140 843	GAUGE, fuel float type	1
		147 601	CAP, tank screw on	1
8		130 123	TANK, fuel 7.5gal	1
9		147 601	CAP, tank screw on	1
10		107 816	HOSE, SAE .250 ID x .500 OD (order by ft)	1ft
11		084 173	CLAMP, hose .460-.545clp dia slftrng	2
12		135 630	ENGINE, gas electric (consisting of)	1
13		066 113	FILTER, fuel line	1
14		084 173	CLAMP, hose .460-.545clp dia slftrng	2
15		107 816	HOSE, SAE .250 ID x .500 OD (order by ft)	1ft
16		113 251	FITTING, brs cap .375NPT	1
17		113 250	FITTING, pipe galv nipple L .375NPT	1
18		107 297	MUFFLER, exhaust engine	1
19		059 926	PIN, spring CS .093 x 1.000	1
20		151 485	SOLENOID, 14VDC .53A	1
21		113 561	BRACKET, mtg solenoid	1
		035 501	CLAMP, stl cush .250dia x .281mtg hole	1
		113 560	COVER, solenoid	1
	PLG5	116 045	HOUSING PLUG & PINS, (consisting of)	1
		113 633	TERMINAL, male 1 pin .084dia 20-14 wire	6
22		Fig 10-5	GENERATOR	1
23		135 569	CABLE, bat pos	1
		052 553	COVER, cable bat post red	1
24		107 270	DOOR, access bat	1
25		130 666	CABLE, bat neg	1
26		003 426	BATTERY, 12V 230crk	1
27		124 287	HOLD DOWN, battery	1
28		+146 710	BASE	1
		125 675	EDGE TRIM, (order by ft)	3ft
29		134 792	LABEL, warning general precautionary	2
30		057 360	BLANK, snap-in 1.375mtg hole	1
31		109 994	LABEL, warning engine fuel can cause fire	1
32		114 632	BRACKET, mtg center baffle	1
33	DC-Z	113 455	STABILIZER	1
34	AC-Z	139 712	REACTOR	1
35		114 544	PANEL, front lower	1
36		006 927	HANDLE, switch	1
37		010 647	PIN, spring CS .156 x 1.250	1
38		Fig 10-2	PANEL, front w/components	1
39		Fig 10-4	BAFFLE, center w/components	1
40		121 105	BRACKET, support center baffle	1
		020 279	CLAMP, stl cush .750dia	2
		135 476	KIT, label	1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

♦OPTIONAL

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

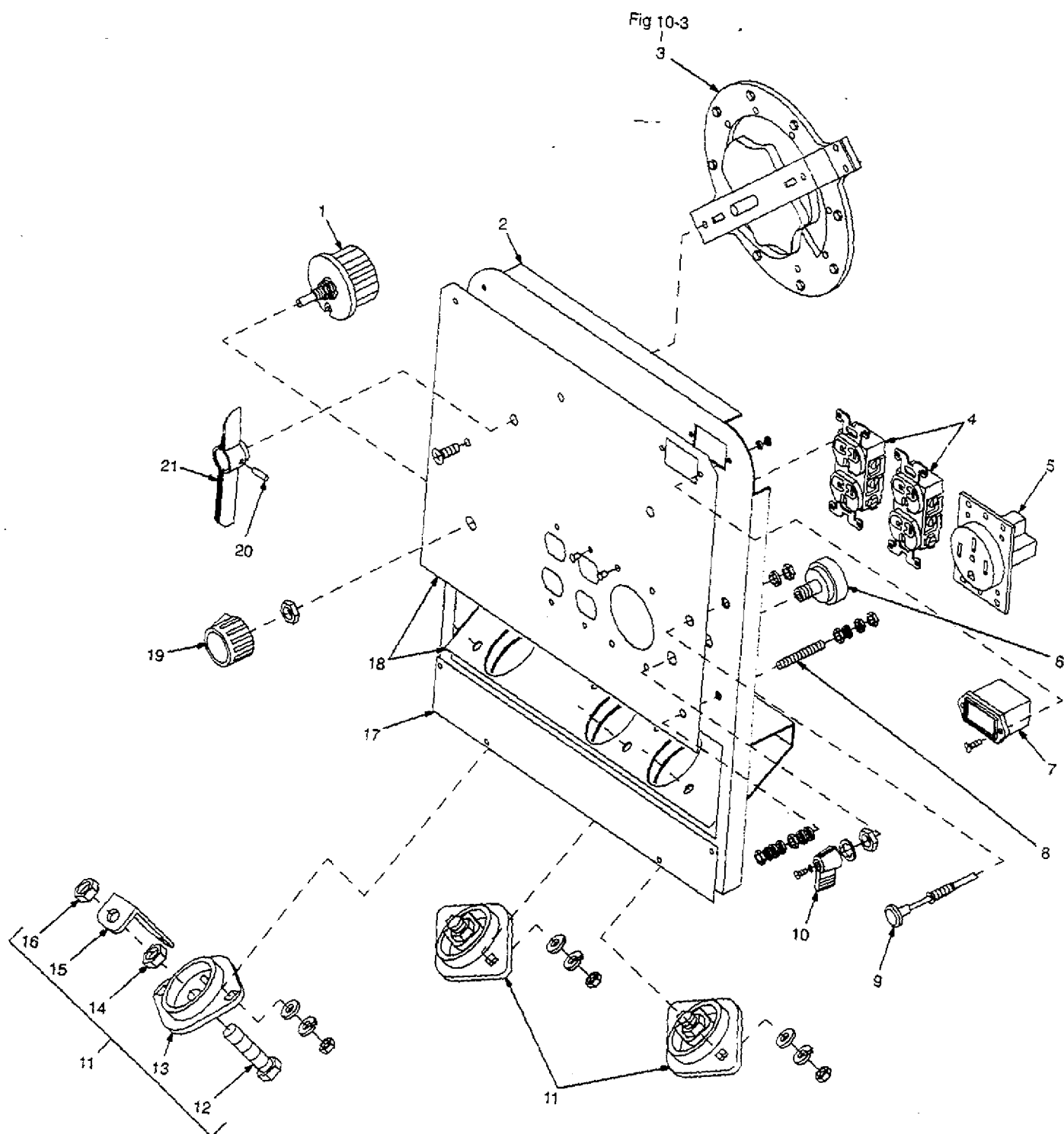


Figure 10-2. Panel, Front w/Components

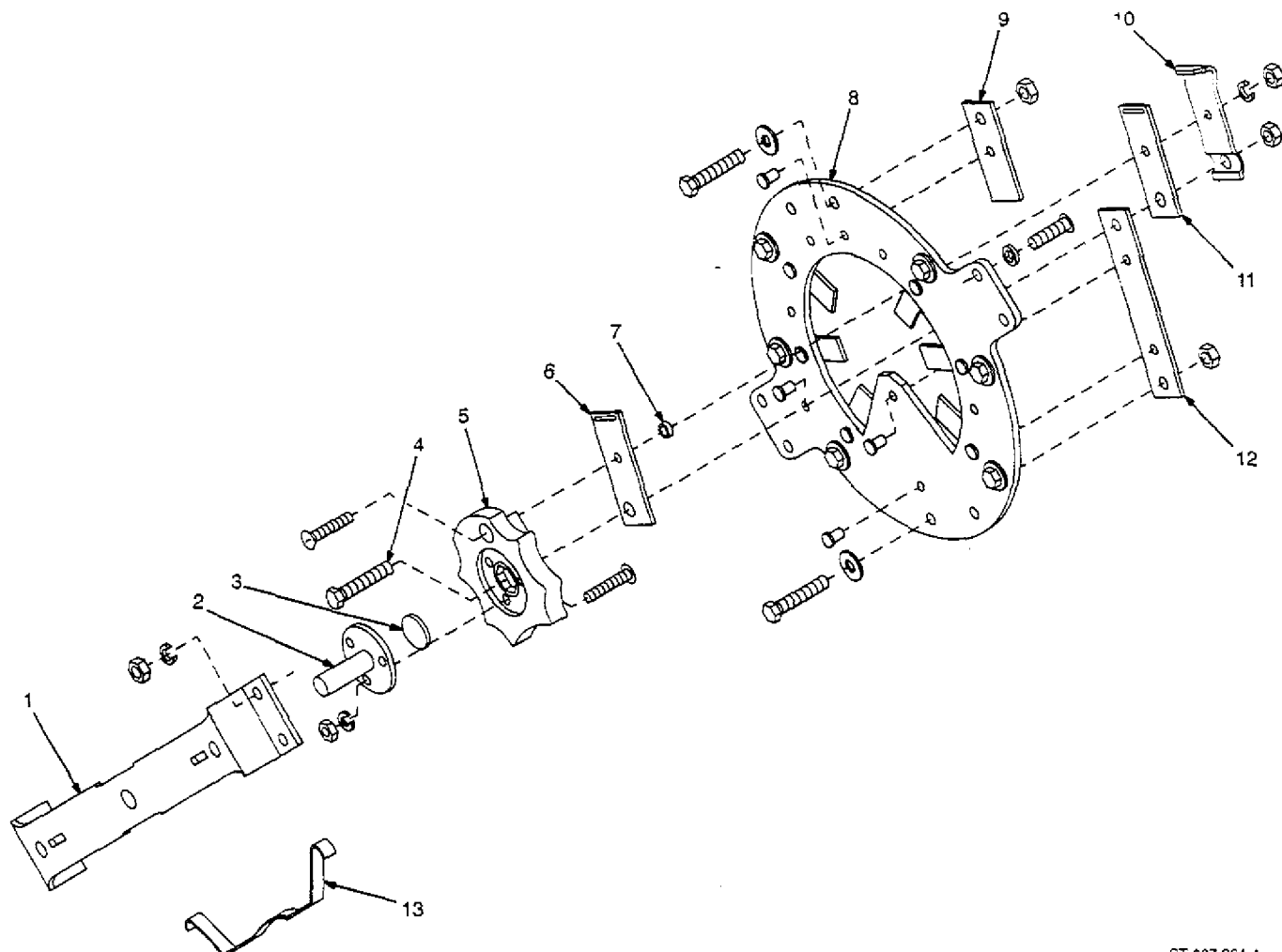
ST-12S 877-A

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 10-2. Panel, Front w/Components (Fig 10-1 Item 38)				
1	R1	117 243	RHEOSTAT, WW 100W 10 ohm	1
2		143 393	PANEL, front	1
3	S3	005 563	SWITCH, selector (Fig 10-3)	1
4	RC1,2	604 176	RECEPTACLE, str dx grd 2P3W 15A 125V	2
5	RC3	132 539	RECEPTACLE, str 3P4W 50A 125/250V	1
6	S2	144 641	SWITCH, ignition	1
7	HM	145 247	METER, hour 12-24VDC	1
8		083 030	STUD, brs .250-20 x 1.750	1
9		116 813	CONTROL, push/pull	1
10		125 707	LEVER, switch	1
11		099 255	TERMINAL, power output neutral (consisting of)	3
12		601 976	SCREW, cap stl hexhd .500-13 x 1.500	1
13		039 040	TERMINAL BOARD, neutral	1
14		601 880	NUT, stl hex jam .500-13	1
15		039 044	BUS BAR, term bd	1
16		601 879	NUT, stl hex full fnsh .500-13	1
17			NAMEPLATE (order by model and serial number)	1
18			PLATE, ident control rating (order by model and serial number)	1
19		097 924	KNOB, pointer	1
20		010 647	PIN, spring CS .156 x 1.250	1
21		006 927	HANDLE, switch	1

♦OPTIONAL

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

Item No.	Part No.	Description	Quantity
005 563 Figure 10-3. Switch Selector (Fig 10-2 Item 3)			
1	005 562	BRACKET, mtg switch	1
2	005 561	SHAFT, rotor	1
3	005 564	INSULATOR, screw switch	1
4	605 276	SCREW, cap stl hexhd .250-20 x 1.250	1
5	005 559	CONTACT BOARD, movable switch	1
6	005 560	CONTACT, switch movable	1
7	008 485	SPACER, contact switch	1
8	005 566	CONTACT BOARD, stationary switch	1
9	011 644	CONTACT, stationary switch	7
10	052 405	SPRING, pressure contact switch	1
11	052 404	CONTACT, movable switch	1
12	005 557	BUS BAR, switch range	1
13	005 558	SPRING, selector switch	1

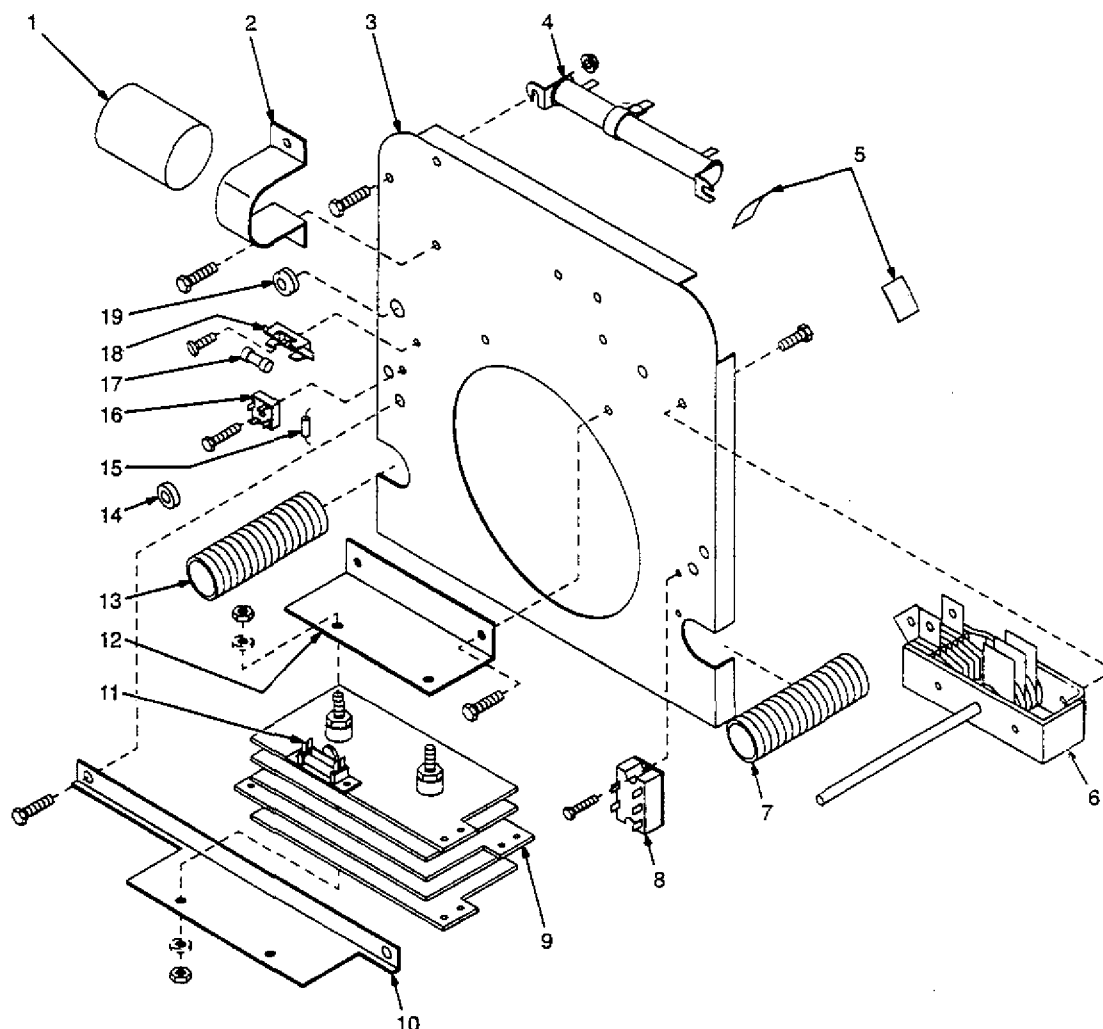


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Figure 10-3. Switch, Selector

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

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 10-4. Baffle, Center w/Components (Fig 10-1 Item 39)				
1	C1	123 849	CAPACITOR, elctlt 1000uf 75VDC	1
2		150 377	CLAMP, capacitor 2.500dia clip	1
3		+143 379	BAFFLE, center	1
4	R2	117 468	RESISTOR, WW adj 100W 2 ohm	1
5		013 367	LABEL, warning moving parts	2
6	S1	113 544	SWITCH, changeover	1
7		118 796	TUBING, corrugated plastic slit 1.250dia (order by ft)	1ft
8	PC1	142 724	MODULE, pull to idle 5 pin	1
9	SR1	142 503	RECTIFIER, si 1ph 300A	1
10		114 630	BRACKET, mtg rectifier bottom	1
11	R3,VR1	046 819	SUPPRESSOR	1
12		114 631	BRACKET, mtg rectifier top	1
13		118 795	TUBING, corrugated plastic slit 1.000dia (order by ft)	1ft
14	CT1	124 281	TRANSFORMER, current	1
15	D4	117 566	DIODE, rect 6A 600V	1
16	SR2	035 704	RECTIFIER, integ 40A 800V	1
17	F1,2	*134 493	FUSE, mintr gl 25A 32V	2
18		012 571	HOLDER, fuse mintr .250 x 1.250 clip	1
19		073 344	GROMMET, rbr .500 ID x .625mtg hole	1
		053 297	HOLDER, fuse crtg in line .250 x 1.250	1



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Figure 10-4. Baffle, Center w/Components

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

*Recommended Spare Parts.

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

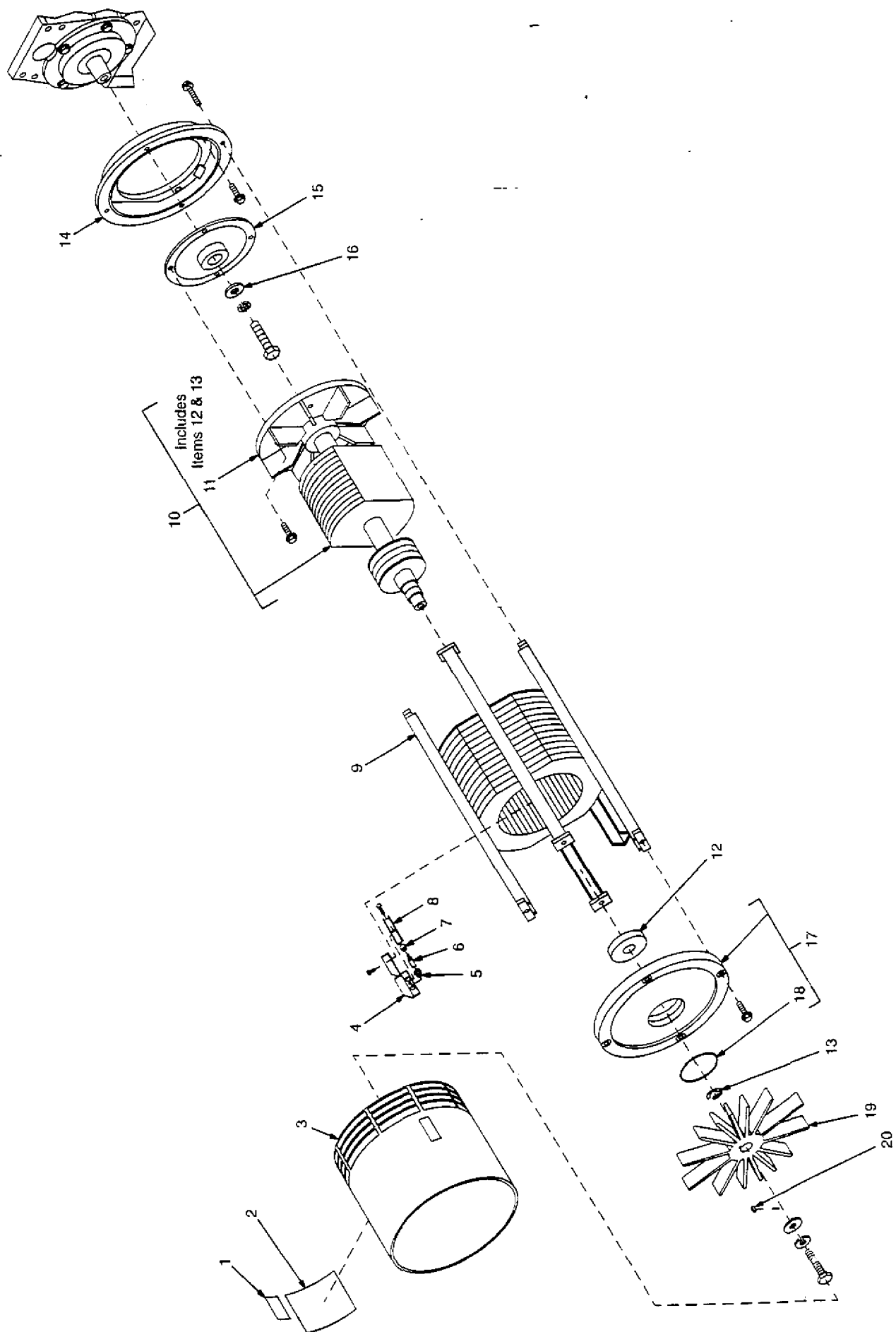


Figure 10-5. Generator

Item No.	Part No.	Description	Quantity
Figure 10-5. Generator (Fig 10-1 Item 22)			
.. 1	013 367	.. LABEL, warning moving parts can etc	2
.. 2	124 619	.. LABEL, engine maintenance Onan	1
.. 3	+113 410	.. GUARD, fan generator	1
.. 4	004 994	.. BRACKET, mtg brushholder	1
.. 5	005 614	.. HOLDER, brush	2
.. 6	126 984	.. BRUSH w/SPRING	2
.. 7	161 306	.. CAP, brushholder	2
.. 8	047 879	.. BAR, retaining brushholder	1
.. 9	124 330	.. STATOR	1
.. 10	107 416	.. ROTOR, (consisting of)	1
.. 11	107 417	.. FAN, rotor	1
.. 12	053 390	.. BEARING, ball	1
.. 13	024 617	.. RING, retaining external 1.272sft x .050thk	1
.....	602 348	.. KEY, stl .250 x .250 x .750	1
.. 14	124 087	.. ADAPTER, engine	1
.. 15	134 981	.. ADAPTER, fan rotor	1
.. 16	008 917	.. WASHER, flat stl .343 ID x 2.250 OD x .187thk (part of engine)	1
.. 17	153 300	.. ENDBELL, gen (consisting of)	1
.. 18	143 220	.. O-RING, 2.859 ID x .139CS	1
.. 19	114 598	.. FAN, rotor gen	1
.. 20	118 527	.. KEY, stl .250 x .250 x .500	1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

OPTIONS AND ACCESSORIES

FULL KVA RECEPTACLE KIT

(#042 393 Factory)

(#042 303 Field)

(#042 556 Factory only; includes circuit breakers)

50 Amp receptacle (NEMA 14-15 R) enabling full auxiliary power from one receptacle. Full KVA plug kit (#119 172) should also be ordered.

FULL KVA PLUG KIT

(#119 172)

240 VAC, 50 Amp plug (NEMA 14-15 P) to fit Full KVA Receptacle Kit (#042 303).

NO. 2WA WELDING ACCESSORY PACKAGE

(#040 039)

Consists of 35 ft. (10.7 m) No. 2 electrode cable with insulated electrode holder and lug, 30 ft. (9.1 m) No. 2 work cable with work clamp and lug, welding helmet, and wire scratch brush.

RUNNING HOUR METER

(#042 130 Factory)

(#042 131 Field)

Furnishes an accurate record of engine running time. Recommended for efficient service.

LP GAS CONVERSION KIT

(#042 775 Factory)

(#042 584 Field)

Consists of calibrated LP gas carburetor and LP gas converter. Field Kit includes mounting hardware and complete instructions. Does not include tank, bracket, or hose from tank to converter. *Operation on LP gas reduces rated output 15%.*

FA-7.5 FLAME ARRESTOR

FUEL CAP (Gasoline Red)

(#042 632 Field only)

Lockable for added protection.

CC-1 SERIES CANVAS COVERS

CC-1A (#040 252) Blue

CC-1C (#042 360) Gray

Attractive, waterproof canvas covers resists stains and mildew, and protect the finish of your welder. Blue cover has Miller logo and name across side.

SPARK ARRESTOR

(#041 747 Field only)

Mandatory when operating on California grasslands, brush or forest covered land, and all National Forests. For other areas, check your state and local laws.

FUEL GAUGE

(#042 590 Field only)

Handy and convenient accessory designed for the 7.5 gal. fuel tank.

GTAW (TIG) WELDING

HF-251 SERIES

High Frequency Arc Starter and Stabilizer

HF-251D-1 115 Volt (#042 388)

HF-251-2 230 Volt (#042 387)

A portable 250 Amp unit for 50, 60, and 100 Hz input.

GAS TUNGSTEN ARC (TIG) TORCHES

Lit. Index No. TG/1.0

Rely on the Miller line of GTAW (TIG) torches for your most critical welding jobs. Miller Electric offers a complete line of TIG torches with a wide variety of features and accessories.

GMAW/FCAW WELDING

S-32P SERIES COMPACT, PORTABLE WIRE FEEDER

Lit Index No. M/6.26

For .023–5/64 in. (0.6–2.0 mm) hard and flux cored wire.

SPOOLMATIC® 30A

(1 Lb. Spool Gun)

(#130 831)

Extend the weld process range of your gas drive by adding a handy portable small wire GMAW system. Rated 200 Amps at 100% duty cycle and has 30 ft. (9.1 m) cable assembly. WC-115 and WC-115A also required. See literature Index No. M/1.2 for complete information.

WC-115A WELD CONTROL

(#137 546)

Provides control circuitry to operate spool gun from Miller and competitive engine-driven products.

WC-115 CONTACTOR KIT

(#137 547) Factory

(#137 548) Field

Required when using the Spoolmatic 30A and WC-115A with power sources not equipped with an output contactor.

HIGH ALTITUDE MODIFICATION

Not available from Miller Electric. Please contact your local Onan Dealer or Distributor.

OPTIONS AND ACCESSORIES

EDT 1000-2 TWO WHEEL TRAILER

(#041 777)

A 1000 lbs. (453 kg) capacity trailer with welded structural steel frame, heavy-duty axle with roller bearing hubs and leaf spring suspension. Mounting holes for all small Miller engine-driven generators are pre-punched. Hardware for mounting is provided. Also included is a jack stand for raising and lowering the tongue, safety chains, and universal tongue mounting for optional hitches. Optional fender and light kit (#041 778) is required when trailer is used on the highway.

Note: Hitch must be ordered separately.

Specifications:

GVWR: 1200 lbs. (544 kg)

Trailer weight: 186 lbs. (84 kg)

Trailer capacity: 1000 lbs. (454 kg)

Total width (without optional fender kit): 55 in. (1.4 m)

Total length (without optional hitch): 72 in. (1.8 m)

Width of bed: 36 in. (914 mm)

Track width: 49-1/2 in. (1257 mm)

Height of bed: 18 in. (457 mm)

Tire size: 4.80-12

Shipping weight: 186 lbs. (84 kg)

When equipped with fender and light kit and 2 in. (50 mm) ball hitch, this trailer conforms to all applicable U.S. Federal motor vehicle safety standards in effect on date of manufacture.

When ordering trailers without the fender and light kit and ball hitch, the purchase order must include the statement, "For off-the-road use only."

FENDER AND LIGHT KIT

(#041 778)

Includes fenders, lights, wiring harness, and mounting hardware. Shipping weight 37 lbs. (17 kg).

HITCHES

2 in. (50 mm) BALL

(#042 705)

Shipping weight 5 lbs. (2 kg).

CLEVIS

(Not for highway use)

(#042 707)

Shipping weight 11 lbs. (5 kg).

2-1/2 in. (64 mm)

LUNETTE EYE

(#042 706)

Shipping weight 9 lbs. (4 kg).

NO. 4B RUNNING GEAR

(#041 930)

Two rear wheels with 480/400 x 8 pneumatic tires. Two 8 in. (203 mm) solid rubber tired front wheels and 30 in. (762 mm) towing handle.

CR-4B CYLINDER RACK

(#041 968)

For use with No. 4B running gear.

Do not use with No. 25 running gear.

NO. 25 HAND RUNNING GEAR

(#042 503)

Constructed of lightweight, tubular steel and large, 480/400x8 pneumatic tires, this running gear is designed for maneuverability and convenience. The weld cables can be wrapped around the handles of the running gear. Protective cover can be used with this running gear. Do not use with CR-4B Rack.

GROUND FAULT CIRCUIT INTERRUPTORS

Handy, convenient add-on devices reduce shock hazard.

OUTDOOR MOISTURE PROOF GFCI PLUG

(#042 602)

User attachable GFCI plug rated 15A at 120 Volts AC. Permanently attaches to power tool cords. Can connect cords from 18 AWG to 12 AWG.

OUTDOOR RAINPROOF ADAPTER

(#042 600)

8 in. (203 mm) Outdoor GFCI rated 15A at 120 Volts. Handy plug and receptacle adapter is rugged, compact, and low cost. For 14/3 SJTW electrical cords.