

Sears

*owners
manual*

**MODEL NO.
113.201170**

Serial
Number _____

Model and serial
number may be found
on the back
of the cabinet.

You should record both
model and serial number
in a safe place for
future use.

CAUTION:

**Read GENERAL
and ADDITIONAL
SAFETY
INSTRUCTIONS
carefully**



Sears

CRAFTSMAN.

**300 AMP
HIGH FREQUENCY
ARC STABILIZER
ATTACHMENT**

- *assembly*
- *operating*
- *repair parts*

Sold by SEARS, ROEBUCK AND CO., Chicago, IL. 60684 U.S.A.

SAFETY INSTRUCTIONS TO OPERATOR FOR ALL ARC WELDING OPERATIONS

Protect yourself and others. Failure to follow these instructions may result in serious personal injury
FUMES AND GASES MAY BE DANGEROUS TO YOUR HEALTH

ARC RAYS CAN INJURE EYES AND BURN SKIN

ELECTRIC SHOCK CAN KILL

WELDING SPARKS CAN CAUSE EXPLOSION OR FIRE

Read and observe all instructions included in this manual as well as the following specific safety precautions.

1. PROTECTION FROM ELECTRICAL SHOCK

- a. Never permit the electrode or live metal parts of the electrode holder to touch bare skin or any damp or wet covering of the body. The electrode coating should be considered as an electrical conductor. Do not insert electrode in electrode holder with your bare hand — wear proper gloves on both hands.

ELECTRODE AND ELECTRODE HOLDER



WORK CLAMP WORK PIECE METAL TABLE

Up to 80 Volts A.C. or 100 Volts D.C. exist
between these parts when welder is on!

Wear dry hole-free clothing, gloves and shoes to protect and insulate the body

- b. Take special care to insulate yourself from ground using dry insulation (such as dry wood) of adequate size when welding on metal floors or gratings, and in positions (such as sitting or lying) where parts or large areas of your body can be in contact with possible grounds
- c. Turn switch "OFF" and remove plug from power source before picking up or moving the welder.
- d. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition by practicing periodic inspection and preventative maintenance.
- e. This welder is not suitable for use under electrically hazardous conditions due to water or perspiration. Under these conditions automatic control equipment is required in accordance with ANSI Z-49.1 "SAFETY IN WELDING AND CUTTING"
- f. Connect the welder only to a source of electrical power meeting the requirements, including grounding, of the National Electrical Code (ANSI C1) and local codes.

Improperly wired extension cords can cause a potentially fatal shock hazard by electrically energizing the welder cabinet. Use only a properly wired and adequately sized extension cord which has a grounded conductor.

If you receive a shock from the welder cabinet, immediately disconnect the welder from the

power supply and obtain help from a qualified electrician

- g. Do not drop or insert objects through the cooling louvers in the welding cabinet. If these objects contact the internal parts of the welder they could damage the welder or result in an electrically hazardous condition.

2. EYE AND BODY PROTECTION

- a. Use helmet, filter, and cover plate complying with ANSI Z87.1 to protect your eyes and face from sparks and the rays of the arc when welding or observing open arc welding.
- b. Always wear safety goggles with side shields complying with ANSI Z87.1 when in a welding area or when near a slag chipping operation.
- c. Wear oil-free flame resistant protective garments, such as leather gloves, heavy long sleeved shirt, cuffless trousers and high shoes. See picture of appropriate dress in "Arc Weld it Yourself" section of Welder Owner's Manual.
- d. Protect other nearby personnel with suitable non-flammable screening.
- e. Welding can produce fumes and gases which are dangerous to health. Keep your head out of the fumes. Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area. Take even greater care when welding on galvanized or cadmium plated steel and other metals which produce toxic fumes. Air-Supplied helmets may be necessary.
- f. Protect yourself against a fall should you receive an electric shock, particularly when working above floor level. Keep floor around your operating position free of clutter. Never wrap the electrode cable around any part of your body.
- g. Do not weld in locations close to chlorinated hydrocarbon vapors coming from degreasing, cleaning, or spraying operations. The heat of the rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- h. Unprotected spectators must keep clear of the welding area due to the harmful nature of ultra-violet and infra-red arc rays, welding sparks, and welding fumes and gases.

3. FIRE AND EXPLOSION

- a. Remove flammable and explosive material at least 35 feet from the welding arc to prevent welding sparks or molten metal from starting a fire. Keep a type ABC fire extinguisher within easy reach.
- b. Welding on or near containers which hold or have held combustibles can cause an explosion even when they have been cleaned. Do not weld on such containers until you have read "Recommended Safe Practices for Welding and Cutting Containers and Piping That Have Held Hazardous Substances" F4.1 available from the American Welding Society, 550 LeJeune Road, Miami, FL 33135.

FULL ONE YEAR WARRANTY ON CRAFTSMAN ARC STABILIZER

If the Craftsman Arc Stabilizer fails to perform properly, due to a defect in material or workmanship, within one year from the date of purchase, Sears will repair it free of charge. This warranty applies only while this product is in use in the United States.

WARRANTY SERVICE IS AVAILABLE BY SIMPLY RETURNING THE ARC STABILIZER TO THE NEAREST SEARS STORE OR SERVICE CENTER THROUGHOUT THE UNITED STATES.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

SEARS, ROEBUCK AND CO., Dept. 698/731A, Sears Tower, Chicago, IL 60684

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SPECIFICATIONS

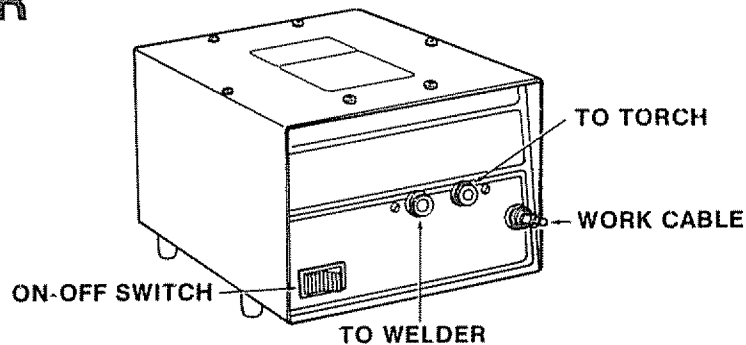
Input

Volts AC (Single Phase)	115
Hertz (cycles)	60
Rated Input Amps	1

Maximum Welding Current

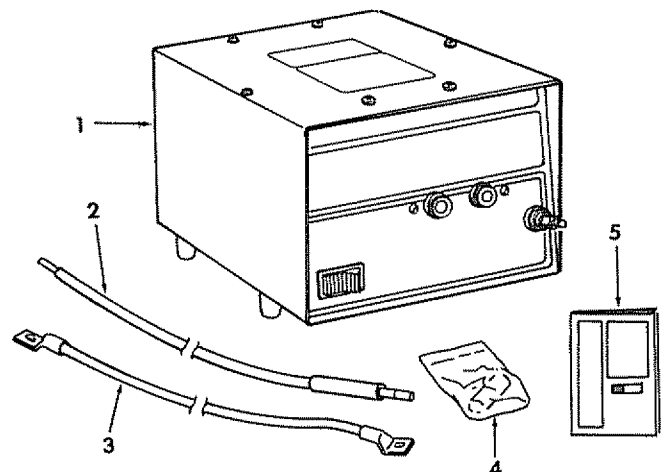
Amps	300
Duty Cycle (Maximum)	30%

GETTING TO KNOW YOUR HIGH FREQUENCY ARC STABILIZER



UNPACKING AND CHECKING CONTENTS

Key No.	Part Name	Qty.
1.	Arc Stabilizer	1
2.	Electrode Cable Assembly	1
3.	Work Cable Assembly	1
4.	Loose Parts Bag — containing the following items:	
	Nut, Hex 1/4-20	1
	Spring Washer	1
	Terminal Lug	1
	Plug Assembly	1
5.	Owners Manual	1



INSTALLATION

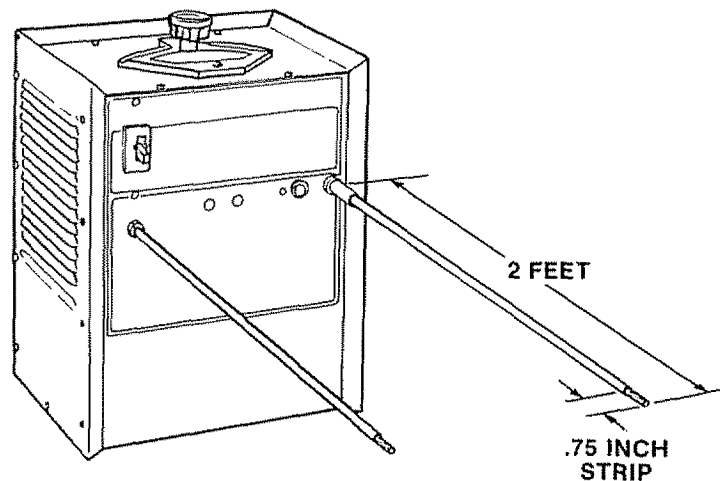
Installations using a High Frequency Arc Stabilizer Attachment will produce some radio frequency radiation and will impose some high voltages on the welder. The following installation instructions **must** be followed carefully to minimize these effects.

WARNING: The voltages imposed on the welder by a High Frequency Arc Stabilizer can damage the welder. In addition, welding with the Gas-Tungsten

Arc (GTAW) process and AC welding current can cause welder overheating. Install High Frequency Arc Stabilizers only with welders recommended by their manufacturer for use with High Frequency Arc Stabilizers. Consult with the welder manufacturer regarding possible derating or duty cycle reductions if the welder is to be used for AC Gas-Tungsten Arc (GTAW) Welding.

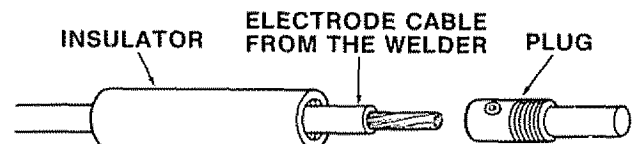
ASSEMBLY

Remove the electrode holder and work clamp from your welder cables and cut welder electrode and work cables to two feet long. Strip .75 inches of insulation from the end of each cable.

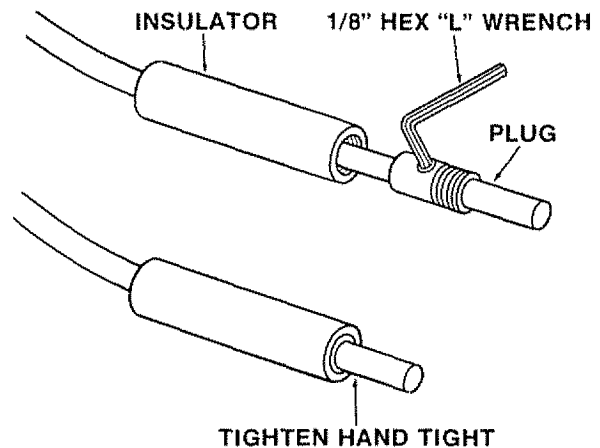


Install the Plug Assembly provided in the loose parts bag on the **electrode** cable from the welder as follows:

1. Unscrew the Insulator from the plug and place over the electrode cable from the welder.

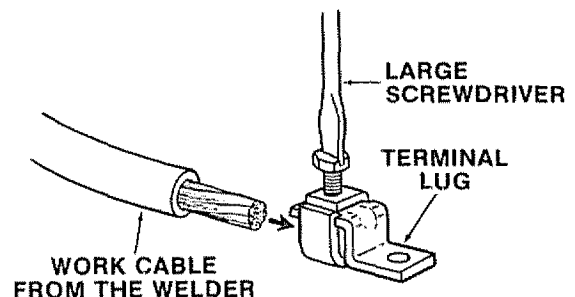


2. Using a 1/8 inch hex "L" wrench, back out the set screw in the plug until the electrode cable end can be inserted easily.
3. Make sure the wire strands on stripped end of electrode cable have not been "frayed". Twist together with fingers if necessary.
4. Insert end of electrode cable into plug and tighten the set screw very firmly.
5. Thread the Insulator over the plug and tighten hand tight.

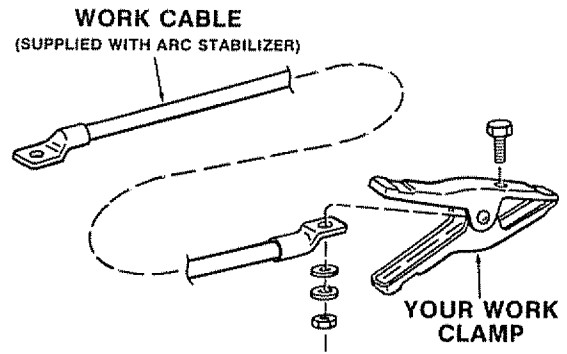


Install the terminal lug provided in the loose parts bag on the **work** cable from the welder as follows:

1. Using a large screwdriver, loosen the screw in the terminal lug until the work cable end can be inserted easily.
2. Make sure the wire strands on stripped end of work cable have not been "frayed". Twist together with fingers if necessary.
3. Insert end of work cable into terminal lug and tighten the screw very firmly.

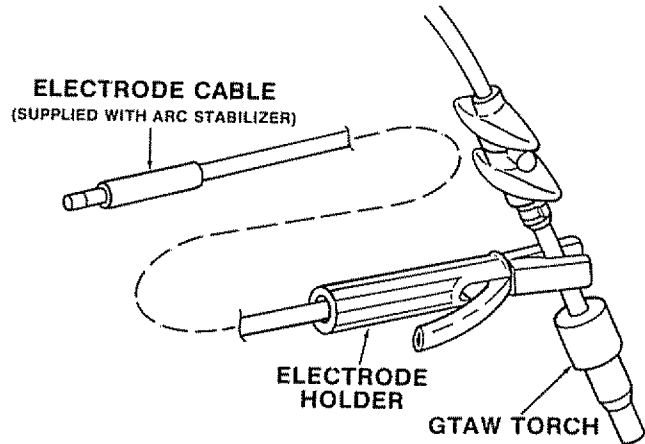


Install the work clamp previously removed from your welder work cable on the new **work** cable supplied with your Arc Stabilizer according to instructions provided with your welder or work clamp. The work cable supplied has terminals for bolted connections on both ends.

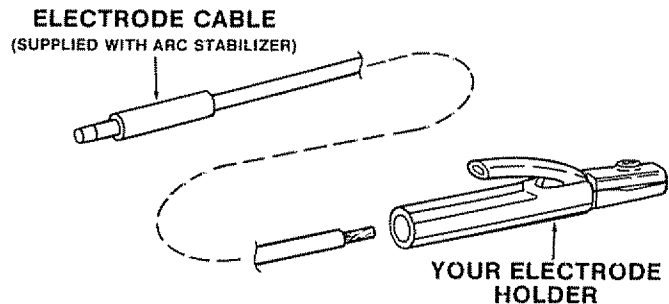


If the Arc Stabilizer is to be used for Gas-Tungsten Arc (GTAW) Welding, install the GTAW torch on the bare end of the **electrode** cable supplied with your Arc Stabilizer according to instructions provided with the GTAW torch. The electrode cable supplied has a plug on one end and is stripped bare on the other end.

CAUTION: The GTAW torch also has provisions for connecting to a source of shielding gas. This must be done in accordance with instructions supplied with the GTAW torch, hoses, regulators, and gas cylinders and is not covered in this owner's manual.



If the Arc Stabilizer is to be used for conventional covered electrode welding, install the electrode holder removed from your welder electrode cable on the **electrode** cable supplied with your Arc Stabilizer according to instructions provided with your welder or electrode holder.



CONNECTIONS

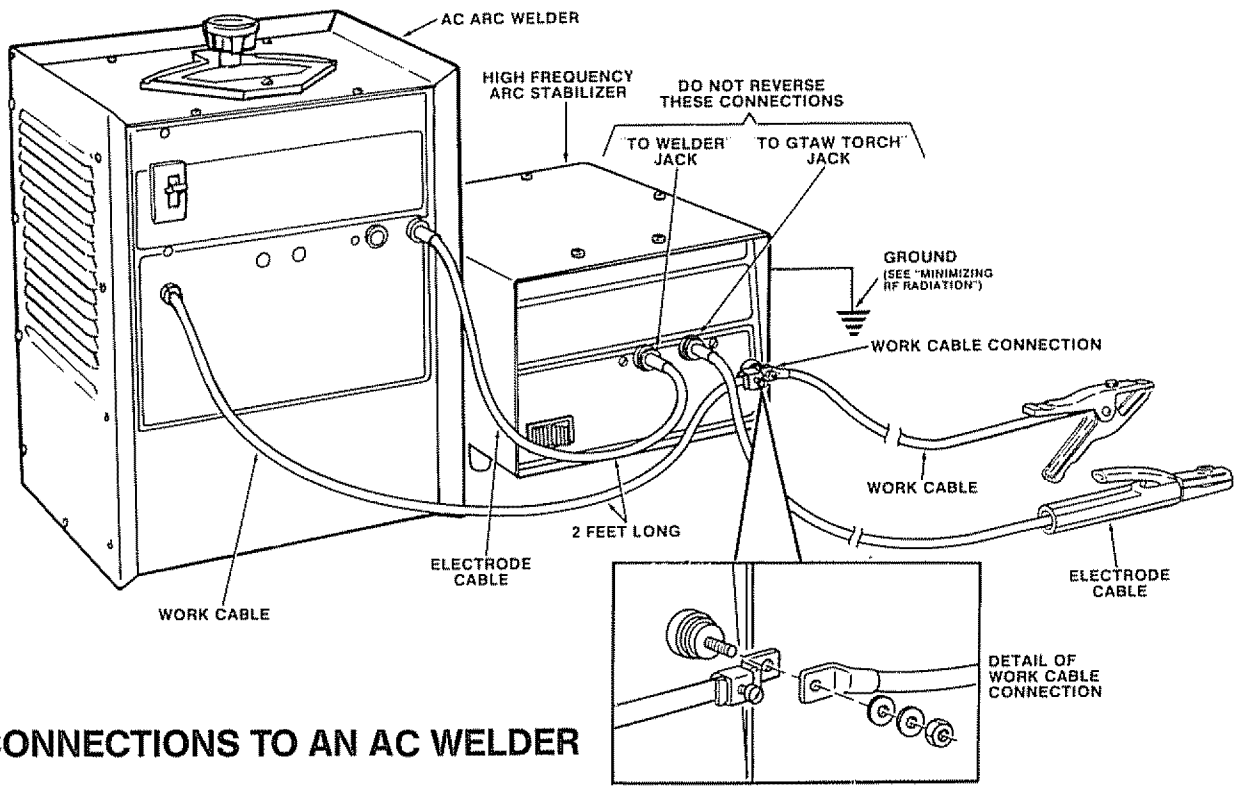
The High Frequency Arc Stabilizer must be connected to the welder and welding cables as follows:

1. Plug the electrode cable from the welder into the "To Welder" jack of the Arc Stabilizer.
2. Plug the electrode cable supplied into the "To GTAW Torch" jack of the Arc Stabilizer.
3. Place the terminal lug on the end of the work cable from the welder onto the "Work Cable Connection" stud of the Arc Stabilizer.
4. Place the terminal on the free end of the work cable supplied onto the "Work Cable Connection" stud of the Arc Stabilizer.

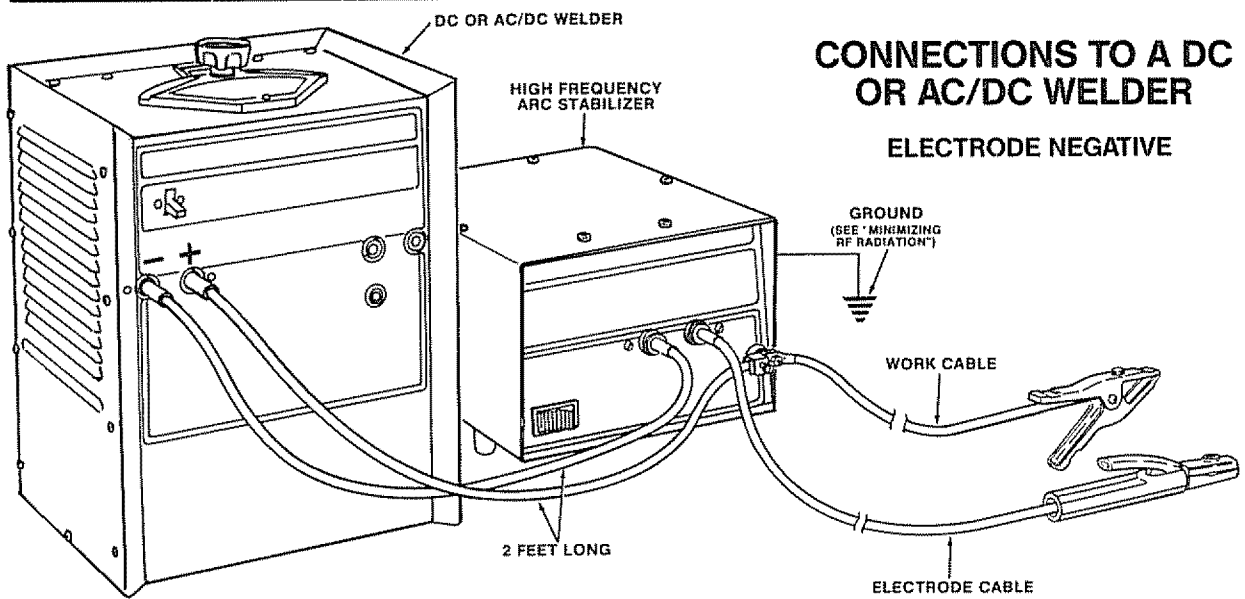
5. Do not overtighten, but secure the two work cables to the "Work Cable Connection" stud using the nut and lockwasher supplied and a 7/16 wrench.

CAUTION: Excessive torque on the "Work Cable Connection" stud can break the insulator. Use two 7/16 wrenches, one to tighten the connection and one to restrain the existing nut on the stud, so excessive force is not transmitted to the insulator.

6. Connections to a DC or AC/DC welder are the same as to an AC welder except that DC or AC/DC welders are provided with jacks so that the electrode cable can be plugged into either the positive or negative jack to make the electrode positive (reverse polarity) or electrode negative (straight polarity).

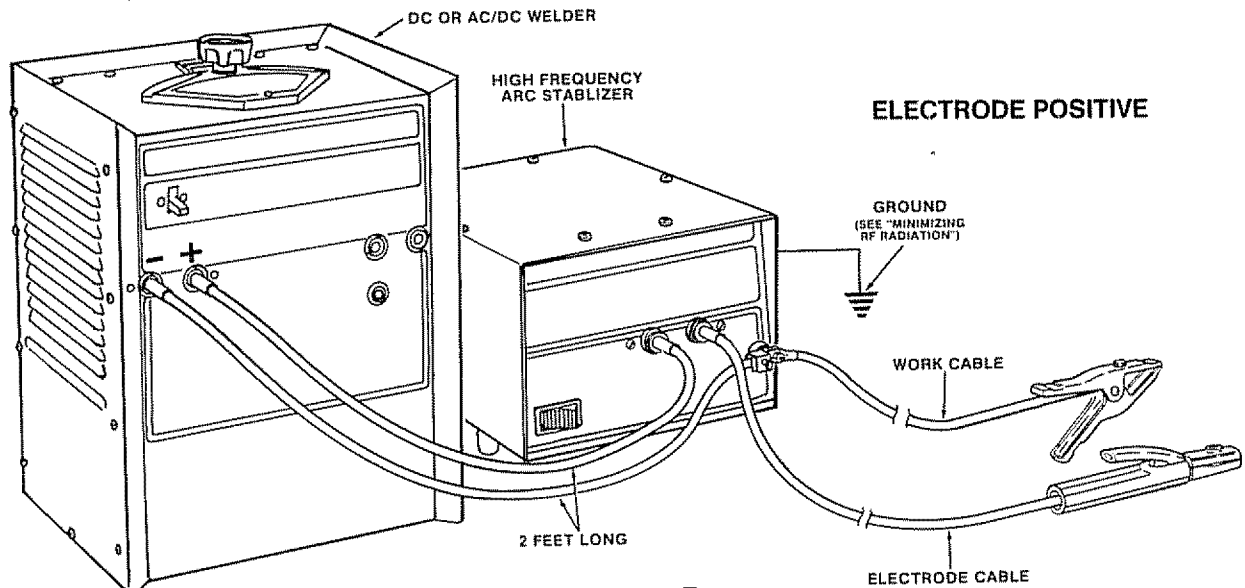


CONNECTIONS TO AN AC WELDER



CONNECTIONS TO A DC OR AC/DC WELDER

ELECTRODE NEGATIVE



ELECTRODE POSITIVE

POWER SUPPLY

Connect the Arc Stabilizer to a 115 volt, 60 hz, single phase, 15 or 20 ampere grounding receptacle. All wiring must comply with the National Electric Code (ANSI C1) and local codes. Refer to the "Minimizing RF Radiation" section of this manual for proper power supply shielding practices.

NOTE: When the Arc Stabilizer is used with single phase welders, the Arc Stabilizer and welder must be supplied from the same phase of the power supply. Unsatisfactory performance may result if the Arc Stabilizer and welder are supplied from different phases.

MINIMIZING RF RADIATION

These instructions must be followed exactly for installation to comply with FCC Regulations.

General

High Frequency Arc Stabilizer installations will produce some radio frequency electromagnetic radiation. Such RF Radiation, if the signal strength is sufficient at the receiving device, can cause inconvenience or disruption in communications or cause malfunction in sensitive electronic controls and systems or heart pacemakers. RF Radiation can come from several sources.

Direct Radiation from the High Frequency Arc Stabilizer or Welder

Direct radiation is that radiation emanating directly from the High Frequency Arc Stabilizer or Welder. Radiation from power line and welding circuit attachments is not considered to be direct radiation from the High Frequency Arc Stabilizer or Welder.

Direct Radiation from the Welding Circuit

Any attachment to the output terminals of the high frequency source is capable of acting as an antenna and transmitting radiation. Attachments include leads, torches, worktables, etc., either necessary or unnecessary. Since direct radiation from the welding circuit is the major source of radiation, it is important to keep attachments to a minimum.

Conduction and Radiation from the Power Line

Most power lines are capable of conducting high frequency energy which may cause interference directly or by radiation from these power lines. Most conducted power line radiation comes from direct radiation picked up by the power lines and reradiated. Normally such interference is small when compared to that caused by radiation from the welding leads.

Re-radiation

Radiation from the welding circuit can be picked up by ungrounded metal objects or unshielded wiring in the immediate vicinity, conducted some distance, and reradiated. This can be a troublesome source of interference.

Power Supply Shielding

Power supply conductors for both the Arc Stabilizer and the welder must be completely enclosed in solid metallic conduit for a distance of at least 50 feet away from the Arc Stabilizer, welder, and welding arc. Joints in the conduit must be firmly electrically bonded.

Flexible helically wrapped conduit is not suitable for this purpose. The conduit must be well grounded at the farthest point away from the Arc Stabilizer and welder.

The conduit enclosing the Arc Stabilizer power supply conductors must extend to the receptacle into which the High Frequency Arc Stabilizer is plugged.

When the welder has a flexible power cord, the conduit enclosing the welder power supply conductors must extend to the receptacle into which the welder is plugged.

When the welder is not provided with a flexible power cord, the conduit must extend to the welder enclosure and be firmly electrically bonded to it.

Enclosure Covers and Access Doors

When the Arc Stabilizer is in operation, all enclosure covers and access doors must be in place and properly fastened.

Miscellaneous Wiring

Unshielded miscellaneous wiring such as lighting, power, telephone communication, and other wiring should be re-routed at least 50 feet away from the Arc Stabilizer, welder, and welding arc. Where this is not feasible, such wiring must be enclosed in solid metallic conduit and grounded as described under "Power Supply Shielding".

Miscellaneous Conducting Materials

Miscellaneous conducting materials should not be located within 50 feet of the Arc Stabilizer, welder, and welding arc. Such materials that can not be excluded must be grounded.

Welding Leads

The welding leads should be kept as short as possible and must not exceed 25 feet in length. Eight foot leads are provided with the Arc Stabilizer. The welding leads should be kept as close together as possible and should be kept as close to the ground or floor as possible. Unnecessary attachments to the welding leads, such as spare torches or electrode holders, should not be used.

The magnitude of RF energy transmitted as well as the frequency spectrum of such transmission may be altered substantially by changing the length or position of the welding leads.

Grounding the Welding Circuit

The enclosure of the Arc Stabilizer must be well grounded. The preferred ground connection is to a ground rod at least 8 feet long, driven into moist soil. In locations with low soil conductivity the soil around the ground rod should be moistened or treated with a salt solution.

A cold water pipe may be used in place of the ground rod provided it enters the soil within 10 feet of the Arc Stabilizer.

The grounding connection to the Arc Stabilizer may be made to one of the enclosure screws. The enclosure must be scraped free of paint under the screw. All electrical connections must be made with clean bright metal surfaces.

The lead connecting the enclosure of the Arc Stabilizer to the ground rod or water pipe must be as short as possible. In no case shall the length of conductor between the enclosure of the Arc Stabilizer and the point where the ground rod or water pipe enters the soil exceed ten feet.

Metal Buildings

Installing the High Frequency Arc Stabilizer within an electrically bonded and grounded metal building can be an effective means of reducing RF Radiation.

CERTIFICATION

FCC Regulations

High Frequency Stabilized Arc Welding installations are required to meet radio frequency radiation limits given in the Federal Communications Commission (FCC) Rules and Regulations, Part 18. Further, the FCC requires all High Frequency Stabilized Arc Welding installations to have certification. Certification may be based upon manufacturers tests, or upon actual on site measurements.

If certification is based upon manufacturers tests, the manufacturer conducts tests to verify compliance with FCC requirements and provides instructions for proper installation and operation of the High Frequency Arc Stabilizer. When the High Frequency Stabilized Arc Welder installation has been completed as specified by the manufacturer and the equipment is being operated in accordance with the manufacturer's instructions, the user so stipulates by signing a certification form provided by the manufacturer.

If certification is based upon actual on site measurements, the user is responsible for conducting radio frequency radiation measurements on the finished installation following procedures outlined in the FCC Rules and Regulations, Part 18. A certificate must then be executed by an individual qualified to make and

interpret radio frequency radiation measurements.

The FCC requires that the signed certificate be placed in a location where it is conveniently available for inspection by authorized representatives of the FCC. The certificate may be attached directly to the equipment or may be at another location provided a notice is attached to the equipment stating where the certificate is located.

Certification of your Installation

This Arc Stabilizer has complied with the tests necessary to permit certification based upon manufacturer's tests. When the installation is completed, the person responsible for the installation and operation of the High Frequency Stabilized Arc Welder Installation is required to sign the certificate included in this owners manual, attesting that the installation has been made in accordance with the instructions given in this owners manual.

Responsibility

Conformance with FCC requirements is the responsibility of the user and the user is required to take steps promptly to remedy any instances of harmful interference with any authorized radio service.

CERTIFICATION OF HIGH FREQUENCY ARC WELDER INSTALLATION

I HEREBY CERTIFY THAT:

I am familiar with the requirements of Part 18 of the FCC Rules pertaining to the operation and certification of High Frequency Stabilized Arc Welders; and

If harmful interference arises, I will take prompt steps to eliminate the harmful interference; and

I have installed the equipment in exact accordance with the instructions provided in the Owners Manual.

By (signature): _____

Date: _____

MAINTENANCE

Cables, Plugs, and Electrode Holder or GTAW Torch

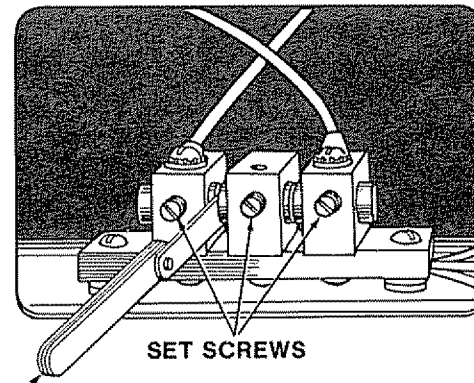
The high frequency voltage generated by a High Frequency Arc Stabilizer tends to arc through cracks, holes, and damp or weakened insulation in welding cables, jacks, plugs, electrode holders or GTAW torches. This can increase the risk of shock from the up to 80 volts AC or 100 volts DC welding voltage. Periodically inspect for cracks, missing parts, excess wear, or deterioration, and replace items found to be defective promptly.

Spark Gap Setting and Adjustment

1. The spark gaps inside the Arc Stabilizer have been pre-set at the factory. During operation this setting will gradually increase due to erosion of the spark gap contacts, and should be checked and re-adjusted after every 200 hours of running time. The cover must be removed from the Arc Stabilizer to provide access to the spark gaps.

DANGER: This adjustment must be made only by personnel qualified to perform electrical maintenance. High voltage exists inside the Arc Stabilizer unless external power is disconnected. Before removing the cover, always remove the plug and cord of the Arc Stabilizer and welder from the power line.

2. Each spark gap should be set between .006 and .010 inch. The adjustment procedure is as follows:
 - a. Remove the cover. (Refer to the exploded parts drawing for parts locations.)



FEELER GAGE

- b. Loosen the set screw that holds the two end contacts.
- c. Select a feeler gage (.008 thick) and insert it in the gaps between the two contacts as shown.
- d. Push the end contacts (one at a time) toward the center fixed contact until the gaps between the contacts is the exact distance determined by the feeler gage.
- e. Tighten set screws, and install the cover.

CAUTION: High-frequency intensity and radio and TV interference will increase as the gap setting increases. Therefore, the recommended gap setting must not be exceeded.

Enclosure Covers

Enclosure covers on both the Arc Stabilizer and welder must be installed and secured with all the fasteners originally provided before connecting the Arc Stabilizer or welder to the power line.

OPERATION

The high frequency voltage produced by a High Frequency Arc Stabilizer is sufficient to spark across a small gap between the electrode and the work, creating an initial path of ionization that the main arc current can follow.

High Frequency Arc Stabilizers are most frequently used in conjunction with Gas-Tungsten Arc (GTAW) Welding where they offer the advantages of arc initiation without physically touching the tungsten electrode to the workpiece and stabilizing AC arcs to prevent erratic arcing or pop out.

High Frequency Arc Stabilizers are also used with conventional covered electrode welding where they offer improved arc stability, particularly when welding with hard to use electrodes such as low hydrogen and stainless steel.

GAS-TUNGSTEN ARC WELDING (GTAW)

Description of GTAW Process

GTAW uses the heat generated by an arc between a tungsten electrode and the workpiece to melt the workpiece and create a weld. Filler metal, if required, is supplied by a filler wire dipped into the molten weld puddle to melt off sufficient metal. An inert gas, usually argon, shields the molten weld metal and tungsten electrode from the surrounding atmosphere.

GTAW is most useful with AC welding current to weld aluminum and stainless steel and can also be

used for mild steel and other metals. GTAW can be used with DC electrode negative (straight polarity) in which case the High Frequency Arc Stabilizer aids arc starting, but may be turned off if desired once the arc is started. DC electrode positive (reverse polarity) concentrates the arc heat on the tungsten electrode and is seldom used for GTAW.

Type of Gas Required

Argon is recommended for general purpose welding. Argon is available in K-cylinders having a capacity of 238 cubic-feet at a pressure of approximately 2200 p.s.i., or in T-cylinders having a capacity of 330 cubic-feet at a pressure of approximately 2640 p.s.i. Argon is commercially available with a purity of 99.95% to 99.99%. The higher purity is recommended for best results.

Pressure Regulator and Flowmeter

An Argon pressure regulator and flowmeter, or a unit combining these two items is required. The flowmeter should read in cubic-feet per hour.

Electrodes Used With GTAW Torch

For most general uses a 2% thoriated tungsten electrode should be used. Tungsten electrode diameters to be used with this High Frequency Arc Stabilizer are .040, 1/16, 3/32, 1/8, 5/32 and 3/16-inch.

GTAW Torch

Either a water-cooled or an air-cooled torch may be used.

CAUTION Do not exceed the current rating of the torch or damage to the torch will result.

Cleaning the Metal

Before welding is begun, it is important that surfaces to be welded are clean. Oil, grease, paint, rust, dirt or other contaminants should be removed in order to prevent gases produced from these materials from contaminating the inert-gas and interfering with a normally clean, smooth flow of weld metal. These gases can cause porosity, incomplete fusion, inadequate penetration, and under-cutting, in addition to rough welds of poor appearance.

Cleaning may be accomplished with liquid cleaners and vapor, or mechanical methods. Liquid cleaners, such as naphtha, mineral spirits, alcohol, acetone, or methylethyl-ketone may be used. Liquid cleaners or solvents should not be used after a joint is assembled. All surfaces should be wiped dry with a clean cloth. Imbedded dirt may be removed with a file, chisel, wire brush, etc., provided these tools are clean and free of oil. Grinding is not recommended.

Recommended Settings

BRASS ALLOYS

METAL THICKNESS	TYPE OF WELD JOINT	TUNGSTEN ELECTRODE DIAMETER	AC-HF WELDING CURRENT (AMPS)	DC-SP WELDING CURRENT (AMPS)	SHIELDING GAS-ARGON CU.FT./HR.	FILLER ROD DIAMETER
1/16" (.062")	Square Groove	1/16" (.062")	105-155	85-125	15	1/16" (.062")
1/16" (.062")	Fillet	1/16" (.062")	105-155	85-125	15	1/16" (.062")
1/8" (.125")	Square Groove	1/16" (.062")	145-190	115-150	15	3/32" (.093")
1/8" (.125")	Fillet	1/16" (.062")	145-190	115-150	15	3/32" (.093")
3/16" (.187")	Square Groove	3/32" (.093")	180-200	145-195	20	3/32" (.093")
3/16" (.187")	Fillet	3/32" (.093")	180-200	145-195	20	3/32" (.093")
1/4" (.250")	Square Groove	3/32" (.093")	—	160-200	25	1/8" (.125")
1/4" (.250")	Fillet	3/32" (.093")	—	160-200	25	1/8" (.125")

MILD STEEL

METAL THICKNESS	TYPE OF WELD JOINT	TUNGSTEN ELECTRODE DIAMETER	AC-HF WELDING CURRENT (AMPS)	DC-SP WELDING CURRENT (AMPS)	SHIELDING GAS-ARGON CU. FT./HR.	FILLER ROD DIAMETER
1/32" (.031")	Square Groove	1/16" (.062")	95-125	75-100	10	1/16" (.062")
1/32" (.031")	Fillet	1/16" (.062")	95-125	75-100	10	1/16" (.062")
3/64" (.046")	Square Groove	1/16" (.062")	115-150	90-120	10	1/16" (.062")
3/64" (.046")	Fillet	1/16" (.062")	115-150	90-120	10	1/16" (.062")
1/16" (.062")	Square Groove	1/16" (.062")	120-170	95-135	10	1/16" (.062")
1/16" (.062")	Fillet	1/16" (.062")	120-170	95-135	10	1/16" (.062")
3/32" (.093")	Square Groove	3/32" (.093")	170-200	135-175	10	3/32" (.093")
3/32" (.093")	Fillet	3/32" (.093")	170-200	135-175	10	3/32" (.093")
1/8" (.125")	Square Groove	3/32" (.093")	180-200	145-200	12	1/8" (.125")
1/8" (.125")	Fillet	3/32" (.093")	180-200	145-200	12	1/8" (.125")

ALUMINUM ALLOYS

METAL THICKNESS	TYPE OF WELD JOINT	TUNGSTEN ELECTRODE DIAMETER	AC-HF WELDING CURRENT (AMPS)	DC-SP WELDING CURRENT (AMPS)	SHIELDING GAS-ARGON CU. FT./HR.	FILLER ROD DIAMETER
3/64" (.046")	Square Groove	1/16" (.062")	40-60	—	20	1/16" (.062")
1/16" (.062")	Square Groove	3/32" (.093")	70-90	—	20	3/32" (.093")
1/16" (.062")	Fillet	3/32" (.093")	70-90	—	15	3/32" (.093")
3/32" (.093")	Square Groove	3/32" (.093")	90-115	—	20	3/32" (.093")
3/32" (.093")	Fillet	3/32" (.093")	90-115	—	15	3/32" (.093")
1/8" (.125")	Square Groove	3/32" (.093")	115-140	—	20	1/8" (.125")
1/8" (.125")	Fillet	3/32" (.093")	115-140	—	20	1/8" (.125")
3/16" (.187")	Vee Groove	1/8" (.125")	190-200	—	20	1/8" (.125")

STAINLESS STEEL

METAL THICKNESS	TYPE OF WELD JOINT	TUNGSTEN ELECTRODE DIAMETER	AC-HF WELDING CURRENT (AMPS)	DC-SP WELDING CURRENT (AMPS)	SHIELDING GAS-ARGON CU. FT./HR.	FILLER ROD DIAMETER
3/64" (.046")	Square Groove	1/16" (.062")	65-100	50-80	10	1/16" (.062")
3/64" (.046")	Fillet	1/16" (.062")	65-100	50-80	10	1/16" (.062")
1/16" (.062")	Square Groove	1/16" (.062")	80-130	65-105	12	1/16" (.062")
1/16" (.062")	Fillet	1/16" (.062")	95-155	75-125	12	1/16" (.062")
3/32" (.093")	Square Groove	1/16" (.062")	105-155	85-125	12	3/32" (.093")
3/32" (.093")	Fillet	1/16" (.062")	120-170	95-135	12	3/32" (.093")
1/8" (.125")	Square Groove	1/16" (.062")	125-170	100-135	12	3/32" (.093")
1/8" (.125")	Fillet	1/16" (.062")	145-180	115-145	12	3/32" (.093")
3/16" (.187")	Square Groove	3/32" (.093")	190-200	150-200	15	1/8" (.125")

MAGNESIUM ALLOYS

METAL THICKNESS	TYPE OF WELD JOINT	TUNGSTEN ELECTRODE DIAMETER	AC-HF WELDING CURRENT (AMPS)	DC-SP WELDING CURRENT (AMPS)	SHIELDING GAS-ARGON CU. FT./HR.	FILLER ROD DIAMETER
1/32" (.031")	Square Groove	1/16" (.062")	25-40	—	15	3/32" (.093")
1/32" (.031")	Fillet	1/16" (.062")	30-45	—	15	3/32" (.093")
1/16" (.062")	Square Groove	1/16" (.062")	45-60	—	15	3/32" (.093")
1/16" (.062")	Fillet	1/16" (.062")	45-60	—	15	3/32" (.093")
3/32" (.094")	Square Groove	1/16" (.062")	70-90	—	15	3/32" (.093")
3/32" (.094")	Fillet	1/16" (.062")	70-90	—	15	3/32" (.093")
1/8" (.125")	Square Groove	3/32" (.093")	95-115	—	25	1/8" (.125")
1/8" (.125")	Fillet	3/32" (.093")	95-115	—	25	1/8" (.125")
3/16" (.187")	Vee Groove	1/8" (.125")	95-115	—	25	1/8" (.125")
3/16" (.187")	Fillet	1/8" (.125")	95-115	—	25	1/8" (.125")
1/5" (.250")	Vee Groove	1/8" (.125")	110-130	—	25	3/16" (.187")
1/4" (.250")	Fillet	1/8" (.125")	110-130	—	25	3/16" (.187")
3/8" (.375")	Vee Groove	1/8" (.125")	135-165	—	30	3/16" (.187")
3/8" (.375")	Fillet	1/8" (.125")	135-165	—	30	3/16" (.187")

AC-HF (ALTERNATING CURRENT-HIGH FREQUENCY STABILIZATION)

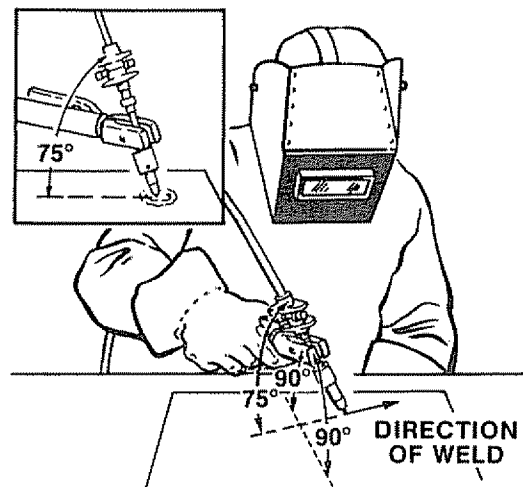
DC-SP (DIRECT CURRENT-STRAIGHT POLARITY)

Using the High Frequency Arc Stabilizer

1. Set the welder to the current recommended for the work being done, then turn "On" the welder and Arc Stabilizer switches.
2. Turn on the gas and set the flowmeter to the recommended gas flow.
3. Lower the torch toward the work slowly until the arc is established.

CAUTION: Do not touch the work with the tungsten electrode.

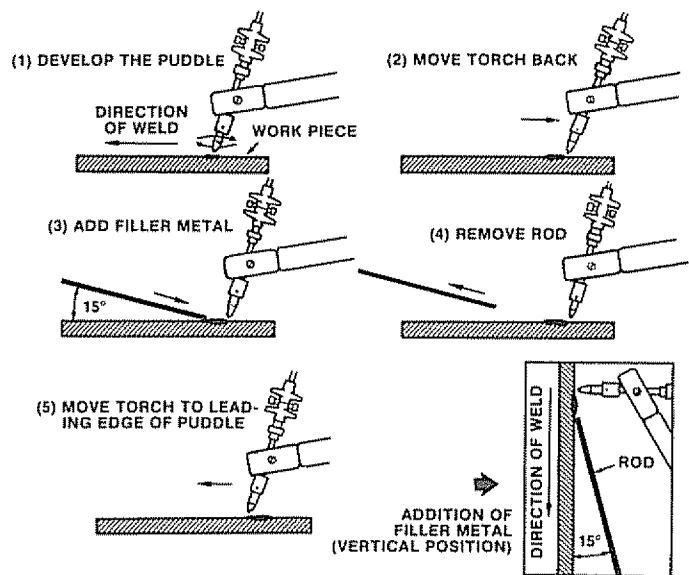
4. When the arc is established the torch should be held so the tungsten tip is positioned at an angle of approximately 75 degrees to the surface of the work.



5. To start the actual welding process, move the torch in small circles above the work until a pool of molten metal is obtained. If no filler metal is required, the weld is made by gradually moving the torch along parts to be welded to melt adjoining edges progressively. Oscillation of the torch is not required.
6. Material thickness, joint design and desired weld characteristics will determine whether or not filler metal must be added to the weld. Filler metal is added to the weld puddle, or pool of molten metal manually in essentially the same manner as that used for oxy-acetylene welding. The filler rod should be held at angle of approximately 15-degrees to the work and slowly fed into the weld puddle a little at a time. When adding filler metal to the weld puddle, the torch may be moved to the rear of the puddle and the filler metal added. As the filler rod is withdrawn, the torch should again be moved forward to the leading edge of the puddle. This alternating movement of filler metal and torch should continue along the direction of the weld until the job is complete.
7. Allow the gas to flow for 5 or 10 seconds after welding in order to shield the hot tungsten electrode and prevent it from becoming oxidized (contaminated). When the color of the tungsten electrode goes "black" the gas may be turned off.

Precautions To Prevent Overheating of AC Welders

When GTAW welding with an Arc Stabilizer attachment and AC welding current, rectification occurs in the arc and causes the transformer core to saturate. As a result, the input current to the welder at any given tap or setting increases above the current drawn by the welder when using conventional stick electrodes. This increase in current may cause fuses to blow or circuit-breakers to open, but more importantly it causes the transformer winding to overheat unless the duty cycle is reduced. Consequently, the welding "on" time (welding time) must be reduced below that which is used when welding with conventional stick electrodes. Therefore, unless the welder is an industrial machine with a 50% or 60% duty cycle or higher, the duty cycle of the welder used must be



reduced in accordance with the welder manufacturer's instructions when using the Arc Stabilizer. In any case, the duty cycle of the Arc Stabilizer must not be exceeded.

WELDING WITH CONVENTIONAL ELECTRODES

Some of the harder to weld electrodes such as low hydrogen and stainless steel can be handled with comparative ease by welding with the High Frequency Arc Stabilizer. A conventional electrode holder is used instead of the GTAW torch as shown in the "Installation" section of this manual.

When the welder and Arc Stabilizer are turned "on", a light scratch of the electrode against the work will establish the arc. The high frequency current will stabilize the arc against "pop-outs". The Arc Stabilizer may be left in the welding circuit when welding with conventional electrodes without turning the Arc Stabilizer "ON". However, the rated current and duty cycle of the Arc Stabilizer must not be exceeded.

TROUBLE SHOOTING

WARNING: Removal of the Arc Stabilizer or welder cabinet tops for any reason must be done by a qualified service technician.

Be sure the branch circuit main disconnect switch or circuit fuses are removed (or High Frequency Arc Stabilizer and welder plug and cord removed from their

receptacles) before removing the cabinet. Placing the "ON-OFF" switch on the attachment in the "OFF" position does not remove voltage from the power leads inside the High Frequency Arc Stabilizer—**BE SAFE AND BE ALIVE, OPEN THE BRANCH CIRCUIT, OR UNPLUG BOTH THE WELDER AND THE ARC STABILIZER.**

TROUBLE	PROBABLE CAUSE	REMEDY
Spark gaps or Arc Stabilizer inoperative	"On-Off" switch "Off"	Turn switch "On"
	Spark gaps eroded (gap too wide).	Readjust spark gaps. See "Maintenance" section for DANGER note and procedure.
Complaints of radio/TV or other interference.	Improper installation.	Discontinue operation immediately. Review installation and grounding carefully. Refer to "Installation" section of this manual.
Arcing, odor, smoke, noise or other signs of welder damage.	Overheating from failure to operate welder at reduced output or duty cycle when using AC GTAW process.	Discontinue operation immediately. Have welder inspected or repaired by a qualified service person. Reduce welding current or duty cycle.
	Damage to welder by high frequency voltage from improper installation.	Discontinue operation immediately. Have welder inspected or repaired by a qualified service person. Correct installation.
Poor welding performance with AC welder.	Arc Stabilizer and welder connected to different phases of a three phase system.	Connect Arc Stabilizer and welder to the same phase of the power system.

PARTS LIST FOR CRAFTSMAN 300 AMP HIGH FREQUENCY ARC STABILIZER ATTACHMENT MODEL 113.201170

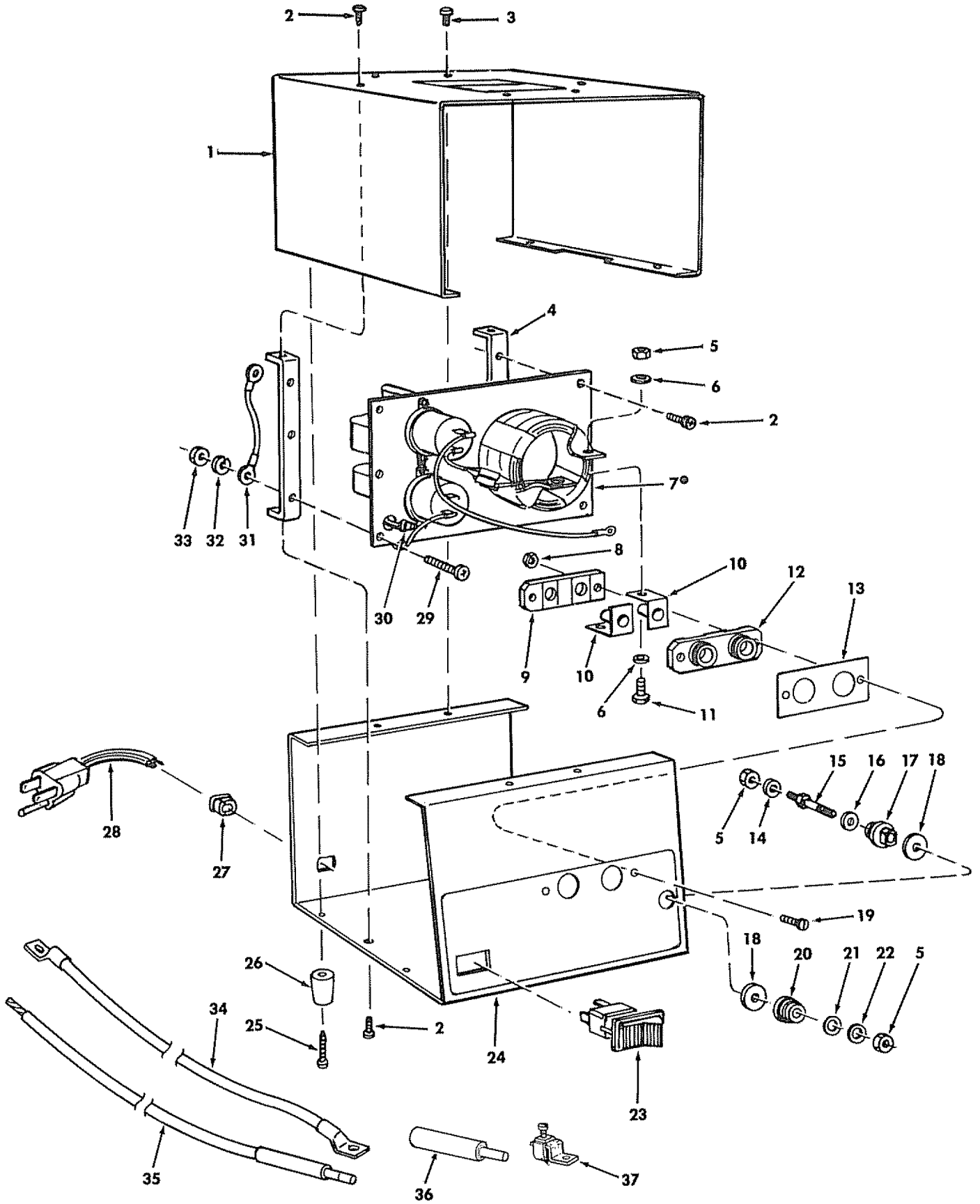
Key No.	Part No.	Description
1	61443	Cabinet, Top
2	STD601105	*Screw, Pan Rec. Type "T" 10-32 x 1/2
3	STD611005	*Screw, Pan Rec. Type "AB" N10 x 1/2
4	61451	Support, Bracket
5	STD541025	*Nut, Hex 1/4-20
6	STD551025	*Washer, 17/64 x 47/64 x 1/16
7	—	•Board, Asm.
8	STD541006	*Nut, 6-32
9	61115	Block #5 Contact Mounting
10	61116	Contact, Selector Plug
11	STD522505	*Screw, Hex 1/4-20 x 1/2
12	61117	Block #6, Contact Mounting
13	61446	Insulator
14	60444	Washer, Spring
15	61449	Stud
16	61459	Washer, Fibre .266 x .44 x 1/32
17	61447	Insulator, Male
18	61458	Washer, Fibre .656 x 1 x 1/32
19	STD510607	*Screw, Pan Hd. 6-32 x 3/4

Key No.	Part No.	Description
20	61448	Insulator, Female
21	61460	Washer, Fibre .266 x .56 x 1/32
22	STD551037	*Washer, 34 x .56 x .03
23	61452	Switch
24	61442	Cabinet, Bottom
25	60359	Screw, Type "AB" No. 10 x 1-1/4
26	61386	Bumper, Recess
27	60361	Relief, Strain
28	61444	Cord with Plug
29	STD511110	*Screw, Pan Rec. Type "T" 10-32 x 1
30	803709	Connector, Wire
31	61450	Lead Assembly
32	STD551110	*Lockwasher No. 10
33	STD541110	*Nut, Hex 10-32
34	61454	Cable Assembly, Work
35	61455	Cable Assembly, Electrode
36	61456	Plug Assembly
37	61453	Terminal Lug
—	61445	Owners Manual (Not Illustrated)

*Standard Hardware Item—May be Purchased Locally

• Any attempt to repair this board assembly may create a **HAZARD** unless repair is done by a qualified service technician. Repair service is available at your nearest Sears store

**PARTS LIST FOR CRAFTSMAN 300 AMP HIGH FREQUENCY
ARC STABILIZER ATTACHMENT MODEL 113.201170**





*owners
manual*

SERVICE

**MODEL NO.
113.201170**

**HOW TO ORDER
REPAIR PARTS**

**300 AMP
HIGH FREQUENCY
ARC STABILIZER
ATTACHMENT**

Now that you have purchased your High Frequency Arc Stabilizer Attachment, should a need ever exist for repair parts or services, simply contact any Sears Service Center and most Sears, Roebuck and Co. stores. Be sure to provide all pertinent facts when you call or visit.

The model number of your High Frequency Arc Stabilizer Attachment will be found on a plate attached to the rear of the cabinet.

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION:

PART NUMBER	PART DESCRIPTION
MODEL NUMBER 113.201170	NAME OF ITEM HIGH FREQUENCY ARC STABILIZER ATTACHMENT

All parts listed may be ordered from any Sears Service Center and most Sears stores. If the parts you need are not stocked locally, your order will be electronically transmitted to a Sears Repair Parts Distribution Center for handling.

Sold by SEARS, ROEBUCK AND CO., Chicago, IL. 60684 U.S.A.