

CONTROL BOX

MODEL AG-2000

For the Following Specs:

- 170145-1
- 170145A-1



OWNER'S MANUAL Number **430429-057**
Revised December 1, 1997

IMPORTANT: Read these instructions before installing, operating, or servicing this system.

THERMAL ARC INC., TROY, OHIO 45373-1085, U.S.A.

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INTRODUCTION

How To Use This Manual

This Owner's Manual usually applies to just the underlined specification or part numbers listed on the cover. If none are underlined, they are all covered by this manual.

To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings.

Throughout this manual, the words **WARNING**, **CAUTION**, and **NOTE** may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

WARNING gives information regarding possible personal injury. Warnings will be enclosed in a box such as this.

CAUTION refers to possible equipment damage. Cautions will be shown in bold type.

NOTE offers helpful information concerning certain operating procedures. Notes will be shown in italics.

Equipment Identification

The unit's identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the machine. Equipment which does not have a nameplate attached to the machine is identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

Receipt Of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to Thermal Arc, Order Department, 2200 Corporate Drive, Troy, Ohio 45373-1085. Include all equipment identification numbers as described above along with a full description of the parts in error.

Additional copies of this manual may be purchased by contacting Thermal Arc at the address given above. Include the Owner's Manual number and equipment identification numbers.

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ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

 WARNING	ARC WELDING can be hazardous.
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PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.


Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain of the practices apply to equipment connected to power lines; other practices apply to engine driven equipment.

Safe practices are outlined in the American National Standard Z49.1 entitled: **SAFETY IN WELDING AND CUTTING**. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions.

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

	<p>ELECTRIC SHOCK can kill.</p> <p>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.</p>	<ol style="list-style-type: none"> 6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service. 7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode. 8. Do not use worn, damaged, undersized, or poorly spliced cables. 9. Do not wrap cables around your body. 10. Ground the workpiece to a good electrical (earth) ground. 11. Do not touch electrode while in contact with the work (ground) circuit. 12. Use only well-maintained equipment. Repair or replace damaged parts at once. 13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output. 14. Wear a safety harness to prevent falling if working above floor level. 15. Keep all panels and covers securely in place.
<ol style="list-style-type: none"> 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. 4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally. 5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes. 		

	<p>ARC RAYS can burn eyes and skin; NOISE can damage hearing.</p> <p>Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.</p>	<ol style="list-style-type: none"> 1. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching. 2. Wear approved safety glasses. Side shields recommended. 3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc. 4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection. 5. Use approved ear plugs or ear muffs if noise level is high.
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Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A6.2-73.

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.	Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.
Torch soldering	—	2	Gas metal-arc welding (MIG)		
Torch brazing	—	3 or 4	Non-ferrous base metal	All	11
Oxygen cutting			Ferrous base metal	All	12
Light	Under 1 in., 25 mm	3 or 4	Gas tungsten arc welding (TIG)	All	12
Medium	1 to 6 in., 25-150 mm	4 or 5	Atomic hydrogen welding	All	12
Heavy	Over 6 in., 150 mm	5 or 6	Carbon arc welding	All	12
Gas welding			Plasma arc welding	All	12
Light	Under 1/8 in., 3 mm	4 or 5	Carbon arc air gouging		
Medium	1/8 to 1/2 in., 3-12 mm	5 or 6	Light		12
Heavy	Over 1/2 in., 12 mm	6 or 8	Heavy		14
Shielded metal-arc welding (stick) electrodes	Under 5/32 in., 4 mm	10	Plasma arc cutting		
	5/32 to 1/4 in., 4 to 6.4 mm	12	Light	Under 300 Amp	9
	Over 1/4 in., 6.4 mm	14	Medium	300 to 400 Amp	12
			Heavy	Over 400 Amp	14

ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

Instruction 830001



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, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air 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.

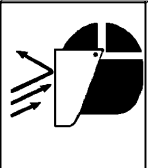


WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

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.

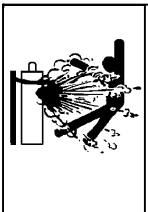
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent 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.



FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.



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, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.

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



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.

ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS
Instruction 830001

	<p>ENGINE FUEL can cause fire or explosion.</p> <p>Engine fuel is highly flammable.</p> <p>1. Stop engine before checking or adding fuel.</p>	<p>2. Do not add fuel while smoking or if unit is near any sparks or open flames.</p> <p>3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job.</p> <p>4. Do not overfill tank — allow room for fuel to expand.</p> <p>5. Do not spill fuel. If fuel is spilled, clean up before starting engine.</p>
	<p>MOVING PARTS can cause injury.</p> <p>Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.</p> <p>1. Keep all doors, panels, covers, and guards closed and securely in place.</p> <p>2. Stop engine before installing or connecting unit.</p>	<p>3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.</p> <p>4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.</p> <p>5. Keep hands, hair, loose clothing, and tools away from moving parts.</p> <p>6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.</p>
	<p>SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.</p> <p>Batteries contain acid and generate explosive gases.</p>	<p>1. Always wear a face shield when working on a battery.</p> <p>2. Stop engine before disconnecting or connecting battery cables.</p> <p>3. Do not allow tools to cause sparks when working on a battery.</p> <p>4. Do not use welder to charge batteries or jump start vehicles.</p> <p>5. Observe correct polarity (+ and -) on batteries.</p>
	<p>STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.</p> <p>The coolant in the radiator can be very hot and under pressure.</p>	<p>1. Do not remove radiator cap when engine is hot. Allow engine to cool.</p> <p>2. Wear gloves and put a rag over cap area when removing cap.</p> <p>3. Allow pressure to escape before completely removing cap.</p>

WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Sec. 25249.5 et seq.)

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-63 (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. | 3. Do not coil or drape cables around the body. |
| 2. Arrange cables to one side and away from the operator. | 4. Keep welding power source and cables as far away from body as practical. |

About Pacemakers:

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

PRINCIPAL SAFETY STANDARDS

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

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.

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.

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.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

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DESCRIPTION OF EQUIPMENT

General

The control box assembly (170145-1 & 170145A-1) has been designed to be used with the AG-2000 Assist Gun and a Wire Feeder. The wire feeder controls the wire feed speed, gas flow and contactor control. The control box contains the Control/P.C. Board for the Assist Gun and a connection point to supply the wire feeder with a gun switch signal. Exiting from the rear panel is the power input cable. Cable connects to a 115 V AC supply to power the control.

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INSTALLATION

General

The AG-2000 control box mounts on the side of a wire feeder. The control box receives a start signal from the gun switch of the AG-2000 Assist Gun. This signal activates the motor in the AG-2000 Assist Gun and signals the wire feeder to operate.

Control box requires 115 volts AC to operate. This 115 volts AC is generally supplied by an outlet on the front panel of the power source (welding machine). If 115 volts AC is not available from the power source, any standard grounded 115 volt outlet may be used (Figure 4-1, rear view).

1. The control box is supplied with a 7 foot, 3 wire grounded plug and cable assembly. The green wire in the cable assembly is properly grounded to the control box (Figure 4-1, rear view).

2. The quick connect receptacle of the AG-2000 Assist Gun connects to the gun connection on the wire feeder. The control cable connects to the 4-pin amphenol receptacle labeled "gun" on the front panel of the AG-2000 control box (Figure 4-1, front view).

3. Gun switch cable P/N 376349-3 (supplied with control box) connects the control box receptacle labeled "feeder" to the wire feeder gun switch input receptacle (Figure 4-1, front view).

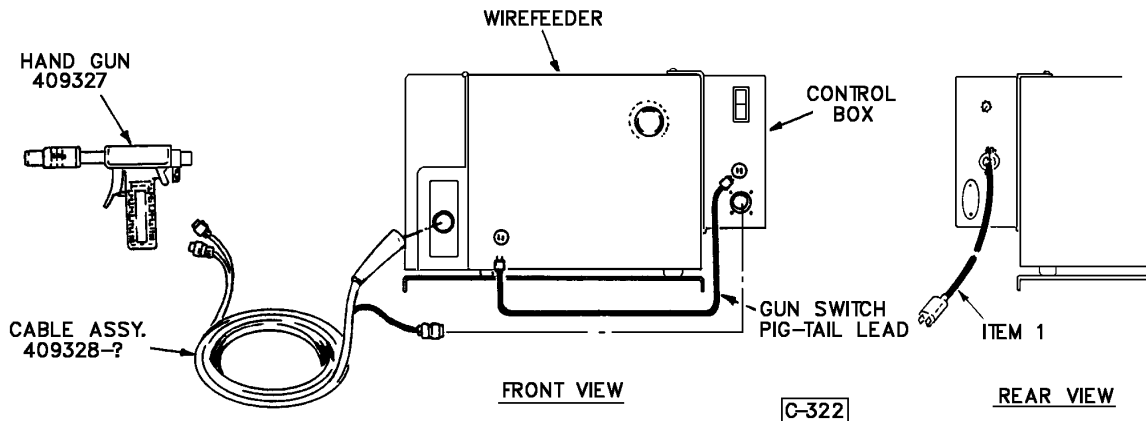


Figure 4-1 Systems Components

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OPERATION

The control box is the “heart” of the AG-2000 Assist Gun Weld Package. The operator closes the gun switch on the AG-2000 Assist Gun activating the AG-2000 control box. The control box D.C. circuitry supplies power to the motor of the AG-2000 Assist Gun. The Assist Gun applies a constant torque (pull) on the welding electrode. The control box also signals the wire feeder by closing the wire feeder gun switch circuit.

Wire feeder controls the wire feed speed, gas valve and contactor circuits. Wire feeder will feed welding electrode through the Assist Gun and to the arc at a speed determined by the setting of the wire feeder wire feed speed control. When the operator releases the gun switch, the Assist Gun torque goes to zero and the wire feeder gun switch circuit opens. Control options connected to the wire feeder will function as usual.

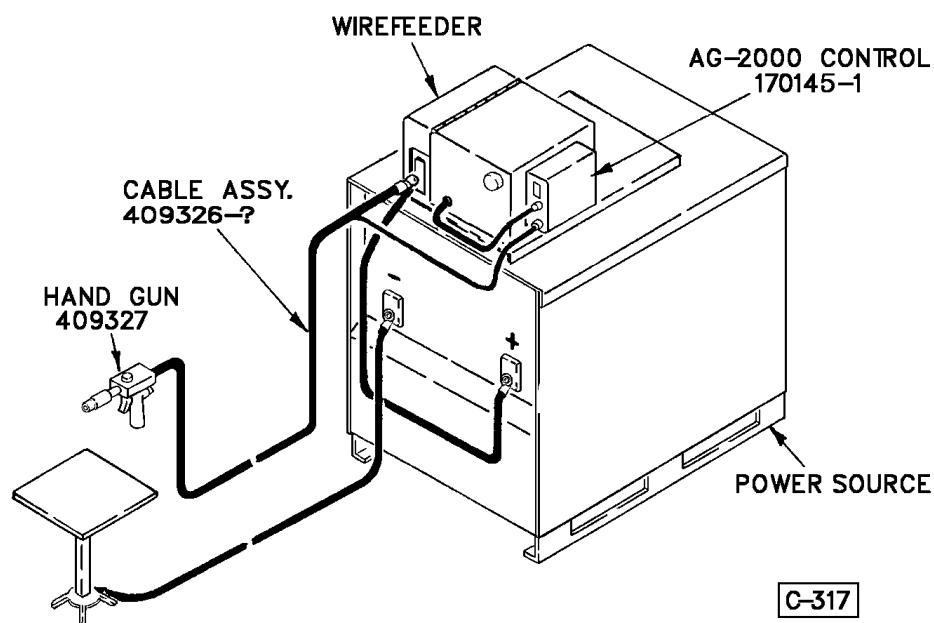


Figure 5-1 AG-2000 Gun/Control Box
Connected to a Wire Feeder

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PARTS LIST

Equipment Identification

All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to include any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded

to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, quantity, or application of an item, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

An "Application Code" is used to distinguish parts that are applicable only to certain Specifications and/or Assemblies. This code is found in the right-most column of the Parts List. If an item in the Parts List applies to all Specifications or Assemblies, the word "ALL" will be in the Application Code column. Refer to the following list to determine the appropriate Application Codes for the Specifications or Assemblies covered by this manual. If only the assembly or specification number is listed, the use of an Application Code does not apply to this manual.

ASSEMBLY NUMBER

170145-1
170145A-1

APPLICATION NUMBER

A
B

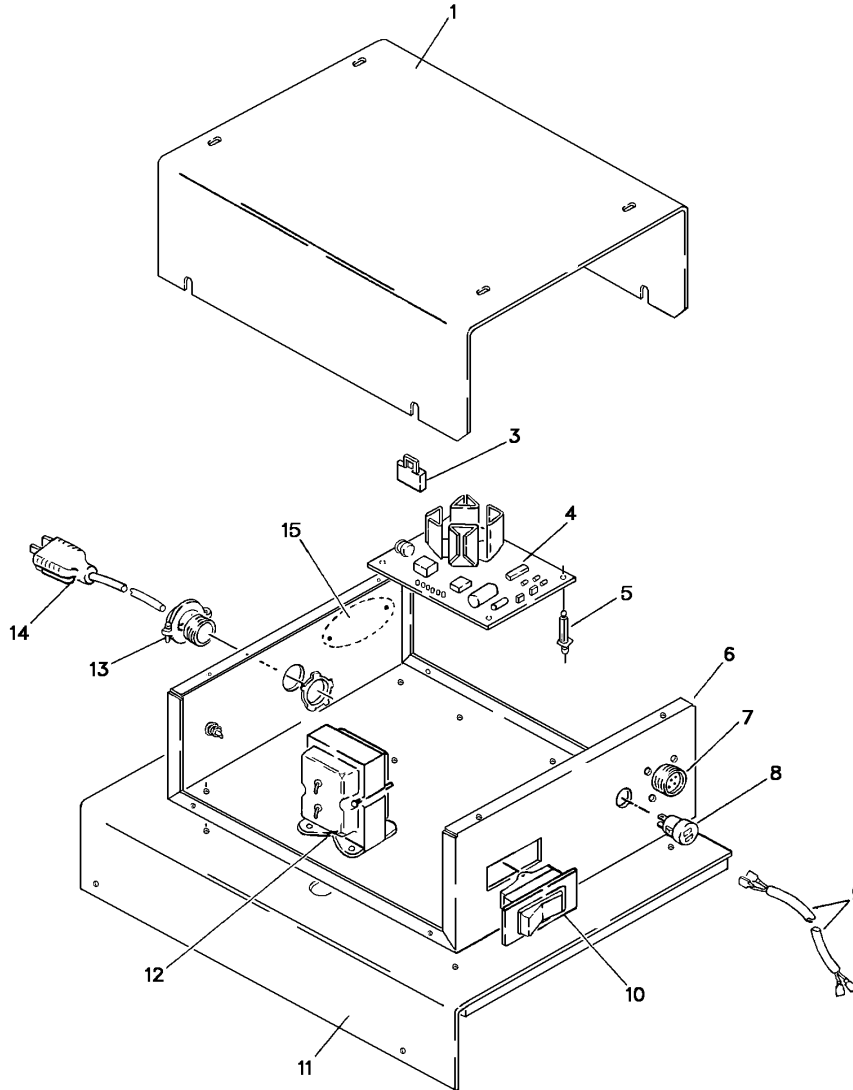


Figure 6-1 AG-2000 Control Box Assembly

Parts List For Figure 6-1

Item No	Part Number	Description	Qty per Assy	Application Code
	170145-1	Box - Control, AG-2000, Assembly	1	A
	170145A-1	Box - Control, AG-2000, Assembly	1	B
1	170144	. Cover	1	A
	170144-1	. Cover	1	B
2		. Deleted		
3	406008-14	. Housing - Receptacle	1	All
4	170142	. Board - P.C. Assembly	1	All
5	405535-4	. Support - P.C. Board	4	All
6	170143	. Wrapper	1	A
	170143-1	. Wrapper	1	B
7	405651	. Connector - 4 Pin	1	All
8	405576-1	. Bushing - Terminal	1	All
9	376349-3	. Cable - Gun Switch Assembly	1	All
10	405585-4	. Switch - Rocker CB	1	All
11	170177	. Plate - Mounting Assembly	1	A
	170177-1	Plate - Mounting Assembly	1	B
12	16DA-3134	. Transformer	1	All
13	W-10080-1	. Connector - Straight	1	All
14	375432-8	. Cord - 3 Conductor, Assembly	1	All
15	Ref.	. Nameplate - I. D.	Ref.	All

— Not Illustrated

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STATEMENT OF WARRANTY

LIMITED WARRANTY: Thermal Arc[®], Inc., A Thermadyne Company, warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the Thermal Arc products as stated below, Thermal Arc shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Thermal Arc's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at Thermal Arc's sole option, of any components or parts of the product determined by Thermal Arc to be defective.

THERMAL ARC MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: Thermal Arc shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchased or replacement goods, or claims of customers of distributor (hereinafter "Purchaser") for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of Thermal Arc with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Thermal Arc whether arising out of contract, negligence, strike tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of Thermal Arc is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN THERMAL ARC'S SOLE JUDGMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY THERMAL ARC PRODUCT.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS.

Except with regards to the products listed below, this warranty shall remain effective three (3) years from the date Thermal Arc's authorized distributor delivers the product to Purchaser, but in no event more than (4) years from the date Thermal Arc delivers the product to the authorized distributor.

Shorter warranty periods apply to the products listed below. On these products, the warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date Thermal Arc delivered the product to the authorized distributor.

	<u>ALL OTHER</u>	<u>P-WEE, PRO-LITE</u>	
<u>POWER SUPPLIES</u>	<u>POWER SUPPLIES</u>	<u>PRO-PLUS, PRO-WAVE</u>	<u>LABOR</u>
MAIN POWER MAGNETICS (STATIC & ROTATING)	3 YEARS	2 YEARS	1 YEAR
ORIGINAL MAIN POWER RECTIFIER	3 YEARS	2 YEARS	1 YEAR
CONTROL PC BOARD	3 YEARS	2 YEARS	1 YEAR
ALL OTHER CIRCUITS AND COMPONENTS INCLUDING	1 YEAR	1 YEAR	1 YEAR
BUT NOT LIMITED TO, CONTACTORS, RELAYS, SOLENOID, PUMPS, POWER SWITCHING SEMI-CONDUCTORS			

ENGINES: ENGINES ARE NOT WARRANTED BY THERMAL ARC, ALTHOUGH MOST ARE WARRANTED BY THE ENGINE MANUFACTURER. SEE THE ENGINE MANUFACTURERS WARRANTY FOR DETAILS.

<u>CONSOLES, CONTROL EQUIPMENT, HEAT</u>	1 YEAR	1 YEAR	1 YEAR
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EXCHANGES, AND ACCESSORY EQUIPMENT

<u>TORCH AND LEADS</u>	180 DAYS	180 DAYS	180 DAYS
<u>REPAIR/REPLACEMENT PARTS</u>	90 DAYS	90 DAYS	90 DAYS

Warranty repairs or replacement claims under this limited warranty must be submitted to Thermal Arc by an authorized Thermal Arc[®] repair facility within thirty (30) days of the repair. No transportation costs of any kind will be paid under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the customer. All returned goods shall be at the customer's risk and expense. This warranty supersedes all previous Thermal Arc warranties.

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