

Forney SINCE 1932

Operating Manual

Cat. 00301 10/1/09

ARC WELDER

95FI-A



Infinite Power Settings
Thermal Overload Protection

Welds all types of:

- Mild (Carbon) Steel
- Stainless Steel
- Cast Iron

Complete & Ready to Weld

Comes with: Operating Manual, Electrode Holder, Ground Clamp, Chipping Hammer & Brush Combo, Welding Face Shield, & Starter Pack of Electrodes

5/3/1
WARRANTY

Ideal For:
Do-It-Yourself, Agriculture, Maintenance & Repair, Automotive, Contractor, Metal Fabrication, Hobbyist and More...

Manual Part No.:
Cat # 10025

Effective Date:
October 1, 2009

Forney 5/3/1 Limited Warranty

Effective August 1st, 2009

- 1) **Limited Warranty** - Subject to the terms and conditions below, Forney Industries, Inc., Fort Collins, Colorado, warrants to its original retail purchaser that the new Forney 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 Forney. This is in lieu of all other warranties, express or implied.
- 2) **Notification:** Please call 1-800-521-6038 with your warranty questions. You can also visit forneywelding.forneyind.com for additional information about your new welder.
- 3) **Length of Warranty:** Within the warranty periods listed below, Forney will repair or replace any warranted parts or components that fail due to defects in material or workmanship. Warranty is effective from the date of original retail purchase. Warranty duration is as follows.
 - A) **5 years:** Original main power rectifiers only to include SCRs, diodes and discrete rectifier modules, transformers, stabilizers and reactors.
 - B) **3 years:** Drive Systems, PC Boards, Motors, and Switches and Controls
 - C) **1 year:** MiG guns, relays, contactors and regulators, plasma cutting torches, and accessories.
 - D) **90 days:** Replacement parts. Does not include labor.
- 4) Forney's limited warranty shall not apply to consumables such as contact tips, cutting nozzles, felt wire cleaner, drive rollers, gas diffusers, plasma torch tips and electrodes, weld cables, tips and parts that fail due to normal wear. In addition, this warranty does not extend to any damage caused by the untimely replacement or maintenance of any of the previously listed consumable parts.
- 5) **Warrantor:**
Forney Industries
1830 LaPorte Avenue
Fort Collins, CO 80521
1-800-521-6038
forneywelding.forneyind.com
- 6) **Purchaser / Warranty:** The original purchaser of the Forney Industries product. The warranty is not transferable. Forney Industries products are intended for purchase and use by persons trained and experienced in the use and maintenance of welding equipment.
- 7) **What is not covered under the warranty:**
 - A) Implied warranties, including those of merchantability and fitness for a particular purpose are limited in duration to this express warranty. After this period, all risks of loss, from whatever reason, shall be on the purchaser.
 - B) Any incidental, indirect, or consequential loss, damage, or expense that may result from any defect, failure or malfunction of the Forney product.
 - C) Any failure that results from accident, purchaser's abuse, neglect or failure to operate products in accordance with instructions provided in the owner's manual(s) supplied with the product.
 - D) Pre-delivery service, i.e. assembly and adjustment.
- 8) **Claim:** In the event of a warranty claim under this warranty, the exclusive remedies shall be, at Forney Industries sole option:
 - A) Repair; or
 - B) Replacement; or
 - C) Where authorized in writing by Forney Industries, the cost of repair or replacement at an authorized Forney Industries service station; or
 - D) Payment of or credit for the purchase price less reasonable depreciation based on actual use upon the return of the goods at the customer's risk and expense.
- 9) **Purchaser will:**
 - A) Contact Forney's customer service at 1-800-521-6038 within 30 days of the defect or failure.
 - B) Provide dated proof of purchase (typically a purchase receipt)
 - C) Provide the serial number. Registering your welder at forneywelding.forneyind.com will speed up this process.
 - D) Deliver or ship welder to a Forney authorized service center. Freight &/or packaging costs, if any, must be borne by the purchaser.

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SAFETY SUMMARY

Every welder respects the tools with which they work. They know that the tools represent years of constantly improved designs and developments. The true craftsman also knows that tools are dangerous if misused or abused.

Reading this operator's manual before using the welder will enable you to do a better, safer job. Learn the welder's applications and limitations as well as the specific potential hazards peculiar to welding.

IMPORTANT SAFETY INFORMATION

The following safety information is provided as guidelines to help you operate your new welder under the safest possible conditions. Any equipment that uses electrical power can be potentially dangerous to use when safety or safe handling instructions are not known or not followed. The following safety information is provided to give the user the information necessary for safe use and operation.

A procedure step preceded by a **WARNING** is an indication that the next step contains a procedure that might be injurious to a person if proper safety precautions are not heeded.

A procedure preceded by a **CAUTION** is an indication that the next step contains a procedure that might damage the equipment being used.

A **NOTE** may be used before or after a procedure step to highlight or explain something in that step.

READ ALL SAFETY INSTRUCTIONS CAREFULLY before attempting to install, operate, or service this welder. Failure to comply with these instructions could result in personal injury and/or property damage.

RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE.

Note:

- The following safety alert symbols identify important safety messages in this manual.

- When you see one of the symbols shown here, be alert to the possibility of personal injury and carefully read the message that follows.



This symbol indicates that the possibility of electric shock hazard exists during the operation of the step(s) that follow.



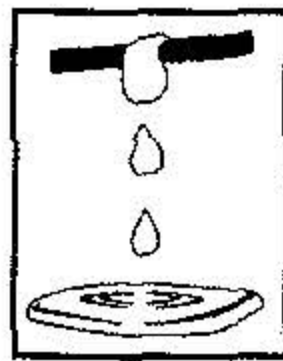
This symbol indicates that the possibility of fire hazard exists during the operation of the step(s) that follow.



This symbol indicates that the helmet must be worn during the step(s) that follow to protect against eye damage and burns due to flash hazard.



This symbol indicates that the possibility of toxic gas hazard exists during operation of the step(s) that follow.



This symbol indicates that the possibility of being burned by hot slag exists during operation of the step(s) that follow.



This symbol indicates that the eye protection should be worn to protect against flying debris in the following step(s).

- Published standards on safety are available. They are listed in **ADDITIONAL SAFETY INFORMATION** at the end of this **SAFETY SUMMARY**.

The National Electrical Code, Occupation Safety and Health Act regulations, local industrial codes and local inspection requirements also provide a basis for equipment installation, use, and service.

SHOCK HAZARD



WARNING

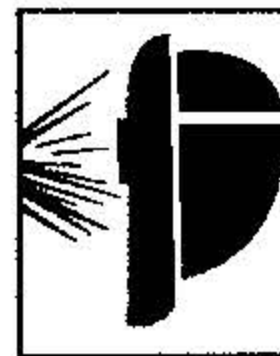
ELECTRIC SHOCK CAN KILL! To reduce the risk of death or serious injury from shock, read, understand, and follow the following safety instructions. In addition, make certain that anyone else who uses this welding equipment, or who is a bystander in the welding area understands and follows these safety instructions as well.

- **IMPORTANT! TO REDUCE THE RISK OF DEATH, INJURY, OR PROPERTY DAMAGE, DO NOT ATTEMPT OPERATION** of this welding equipment until you have read and understand the following safety summary.
- Do not, in any manner, come into physical contact with any part of the welding current circuit. The welding current circuit includes:
 - a. the work piece or any conductive material in contact with it,
 - b. the ground clamp,
 - c. the electrode or welding wire,
 - d. any metal parts on the electrode holder, or wire feed gun.
- Do not weld in a damp area or come in contact with a moist or wet surface.
- Do not attempt to weld if any part of clothing or body is wet.
- Do not allow the welding equipment to come in contact with water or moisture.
- Do not drag welding cables, wire feed gun, or welder power cord through or allow them to come into contact with water or moisture.
- Do not touch welder, attempt to turn welder on or off if any part of the body or clothing is moist or if you are in physical contact with water or moisture.
- Do not attempt to plug the welder into the power source if any part of body or clothing is moist, or if you are in physical contact with water or moisture.
- Do not connect welder work piece clamp to or weld on electrical conduit.
- Do not alter power cord or power cord plug in any way.
- Do not attempt to plug the welder

into the power source if the ground prong on power cord plug is bent over, broken off, or missing.

- Do not allow the welder to be connected to the power source or attempt to weld if the welder, welding cables, welding site, or welder power cord are exposed to any form of atmospheric precipitation, or salt water spray.
- Do not carry coiled welding cables around shoulders, or any other part of the body, when they are plugged into the welder.
- Do not modify any wiring, ground connections, switches, or fuses in this welding equipment.
- Wear welding gloves to help insulate hands from welding circuit.
- Keep all liquid containers far enough away from the welder and work area so that if spilled, the liquid can not possibly come in contact with any part of the welder or electrical welding circuit.
- Replace any cracked or damaged parts that are insulated or act as insulators such as welding cables, power cord, or electrode holder **IMMEDIATELY**.

FLASH HAZARDS



WARNING

ARC RAYS CAN INJURE EYES AND BURN SKIN!

To reduce the risk of injury from arc rays, read, understand, and follow the following safety instructions. In addition, make certain that anyone else that uses this welding equipment, or is a bystander in the welding area understands and follows these safety instructions as well. Headshields and filter should conform to ANSI Z87.1 standards.

- Do not look at an electric arc without proper protection. A welding arc is extremely bright and intense and, with inadequate or no eye protection, the retina can be burned, leaving a permanent dark spot in the field of vision. A shield or helmet with a number 10 shade filter lens (minimum) must be used.
- Do not strike a welding arc until all bystanders and you (the welder) have welding shields and/or helmets in place.
- Do not wear a cracked or broken

helmet and replace any cracked or broken filter lenses IMMEDIATELY.

- Do not allow the uninsulated portion of the wire feed gun to touch the ground clamp or grounded work to prevent an arc flash from being created on contact.
- Provide bystanders with shields or helmets fitted with a #10 shade filter lens.
- Wear protective clothing. The intense light of the welding arc can burn the skin in much the same way as the sun, even through light-weight clothing. Wear dark clothing of heavy material. The shirt worn should be long sleeved and the collar kept buttoned to protect chest and neck.
- Protect against REFLECTED ARC RAYS. Arc rays can be reflected off shiny surfaces such as a glossy painted surface, aluminum, stainless steel, and glass. It is possible for your eyes to be injured by reflected arc rays even when wearing a protective helmet or shield. If welding with a reflective surface behind you, arc rays can bounce off the surface, then off the filter lens on the inside of your helmet or shield, then into your eyes. If a reflective background exists in your welding area, either remove it or cover it with something non-flammable and non-reflective. Reflective arc rays can also cause skin burn in addition to eye injury.

FIRE HAZARDS



WARNING

FIRE OR EXPLOSION CAN CAUSE DEATH, INJURY, AND PROPERTY DAMAGE! To reduce the risk of death, injury, or property damage from fire or explosion, read, understand, and follow the following safety instructions. In addition, make certain that anyone else that uses this welding equipment, or is a bystander in the welding area, understands and follows these safety instructions as well. **REMEMBER!** Arc welding by nature produces sparks, hot spatter, molten metal drops, hot slag, and hot metal parts that can start fires, burn skin, and damage eyes.

- Do not wear gloves or other clothing that contains oil, grease, or other flammable substances.

- Do not wear flammable hair preparations.
- Do not touch the hot weld bead or weld puddle until fully cooled.
- Do not weld in an area until it is checked and cleared of combustible and/or flammable materials. **BE AWARE** that sparks and slag can fly 35 feet and can pass through small cracks and openings. If work and combustibles cannot be separated by a minimum of 35 feet, protect against ignition with suitable, snug-fitting, fire resistant, covers or shields.
- Do not weld on walls until checking for and removing combustibles touching the other side of the walls.
- Do not weld, cut, or perform other such work on used barrels, drums, tanks, or other containers that had contained a flammable or toxic substance. The techniques for removing flammable substance and vapors, to make a used container safe for welding or cutting, are quite complex and require special education and training.
- Do not strike an arc on a compressed gas or air cylinder or other pressure vessel. Doing so will create a brittle area that can result in a violent rupture immediately or at a later time as a result of rough handling.
- Do not weld or cut in an area where the air may contain flammable dust (such as grain dust), gas, or liquid vapors (such as gasoline).
- Do not handle hot metal, such as the work piece or electrode stubs, with bare hands.
- Wear leather gloves, heavy long sleeve shirt, cuffless trousers, high-topped shoes, helmet, and cap. As necessary, use additional protective clothing such as leather jacket or sleeves, fire resistant leggings, or apron. Hot sparks or metal can lodge in rolled up sleeves, trouser cuffs, or pockets. Sleeves and collars should be kept buttoned and pockets eliminated from the shirt front.
- Have fire extinguisher equipment handy for immediate use! A portable chemical fire extinguisher, type ABC, is recommended.
- Wear ear plugs when welding overhead to prevent spatter or slag from falling into ear.
- Make sure welding area has a good,

solid, safe floor, preferably concrete or masonry, not tiled, carpeted, or made of any other flammable material.

- Protect flammable walls, ceilings, and floors with heat resistant covers or shields.
- Check welding area to make sure it is free of sparks, glowing metal or slag, and flames before leaving the welding area.

FUME HAZARDS



WARNING

FUMES, GASSES, AND VAPORS CAN CAUSE DISCOMFORT, ILLNESS, AND DEATH!

To reduce the risk of discomfort, illness, or death, read, understand, and follow the following safety instructions. In addition, make certain that anyone else that uses this welding equipment or is a bystander in the welding area, understands and follows these safety instructions as well.

- Do not weld in an area until it is checked for adequate ventilation as described in ANSI standard #Z49.1. If ventilation is not adequate to exchange all fumes and gasses generated during the welding process with fresh air, do not weld unless you (the welder) and all bystanders are wearing air-supplied respirators.
- Do not heat metals coated with, or that contain, materials that produce toxic fumes (such as galvanized steel), unless the coating is removed. Make certain the area is well ventilated, and the operator and all bystanders are wearing air-supplied respirators.
- Do not weld, cut, or heat lead, zinc, cadmium, mercury, beryllium, or similar metals without seeking professional advice and inspection of the ventilation of the welding area. These metals produce **EXTREMELY TOXIC** fumes which can cause discomfort, illness, and death.
- Do not weld or cut in areas that are near chlorinated solvents. Vapors from chlorinated hydrocarbons, such as trichloroethylene and perchloroethylene, can be decomposed by the heat of an electric

arc or its ultraviolet radiation. These actions can cause PHOSGENE, a **HIGHLY TOXIC** gas to form, along with other lung and eye-irritating gasses. Do not weld or cut where these solvent vapors can be drawn into the work area or where the ultraviolet radiation can penetrate to areas containing even very small amounts of these vapors.

- Do not weld in a confined area unless it is being ventilated or the operator (and anyone else in the area) is wearing an air-supplied respirator.
- Stop welding if you develop momentary eye, nose, or throat irritation as this indicates inadequate ventilation. Stop work and take necessary steps to improve ventilation in the welding area. Do not resume welding if physical discomfort persists.

WARNING

This product contains chemicals, including lead, or otherwise produces chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. **Wash hands after Handling.** (California Health & Safety Code Sec. 25249.5 et seq.)

ADDITIONAL SAFETY INFORMATION

For additional information concerning welding safety, refer to the following standards and comply with them as applicable.

- ANSI Standard Z49.1 – SAFETY IN WELDING AND CUTTING – obtainable from the American Welding Society, 550 NW Le Jeune Road, Miami, FL 33126 Telephone (800) 443-9353, Fax (305) 443-7559 – www.amweld.org or www.aws.org
- ANSI Standard Z87.1 – SAFE PRACTICE FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION – obtainable from the American National Standards Institute, 11 West 42nd St., New York, NY 10036 Telephone (212) 642-4900, Fax (212) 398-0023 – www.ansi.org
- NFPA Standard 51B – CUTTING AND WELDING PROCESS – obtainable from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101 Telephone (617) 770-3000 Fax (617) 770-0700 – www.nfpa.org
- OSHA Standard 29 CFR, Part 1910, Subpart Q., WELDING, CUTTING AND BRAZING – obtainable from your state OSHA office or U.S. Dept. of Labor OSHA, Office of Public Affairs, Room N3647, 200 Constitution Ave., Washington, DC 20210 – www.osha.gov
- CSA Standard W117.2 – Code for SAFETY IN WELDING AND CUTTING. – obtainable from Canadian Standards Association, 178 Rexdale Blvd., Etobicoke, Ontario M9W 1R3 – www.csa.ca
- American Welding Society Standard A6.0. WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES. – obtainable from the American Welding Society, 550 NW Le Jeune Road, Miami, FL 33126 Telephone (800) 443-9353, Fax (305) 443-7559 – www.amweld.org or www.aws.org

WELDER SPECIFICATIONS

Your new stick (SMAW) welder is designed for maintenance and sheet metal fabrication.

Table 1. Welder Specifications

Primary (input) volts	120 VAC
Welding Range	30-90Amps
Phase	Single
Frequency	60Hz
Electrodes	1/16 - 5/64
Open Circuit Volts (Max.)	37 VDC
Max Input Power Amps	13

STICK WELDING- HOW IT WORKS

Stick welding is a process by which two pieces of metal are joined together using the heat developed by an electric arc between the workpiece and an electrode (welding material)

The electrode is connected to the output side of the transformer. When the electrode comes into contact with the workpiece an arc is struck. The high temperature of the arc melts the electrode into the joint of the workpiece and fusion occurs.

THERMAL OVERLOAD PROTECTION

CAUTION

If the duty cycle of the welder is exceeded, a thermostat will automatically cut the power to prevent the machine from overheating. If this should happen you will have to wait approximately 30 minutes until the transformer cools down. Then the thermostat will automatically reset itself and you can continue welding: The thermostat is a protective safety device and no harm will normally be done to the transformer unless it is frequently over loaded, in which case damage will eventually result. For this model the intervention of the thermostat is indicated by the lighting of the ON/OFF switch.

WELDER INSTALLATION

POWER SOURCE CONNECTION

POWER REQUIREMENTS

This welder is designed to operate on a properly grounded 120 volt, 60Hz, single-phase alternating current (AC) power source fused with a 20 amp time delayed fuse or circuit breaker. It is recommended that a qualified electrician verify the **ACTUAL VOLTAGE** at the receptacle into which the welder will be plugged and confirm that the receptacle is properly fused and grounded. The use of the proper circuit size can eliminate nuisance circuit breaker tripping when welding.

DO NOT OPERATE THIS WELDER if the **ACTUAL** power source voltage is less than 105 volts AC or greater than 132 volts AC. Contact a qualified electrician if this problem exists. Improper performance and/or damage to the welder will result if operated on inadequate or excessive power.

POWER SOURCE CONNECTION



WARNING

High voltage danger from power source!

Consult a qualified electrician for proper installation of receptacle at the power source.

- This welder must be grounded while in use to protect the operator from electrical shock. If you are not sure if your outlet is properly grounded, have it checked by a qualified electrician. Do not cut off the grounding prong or alter the plug in any way and do not use any adapters between the welder's power cord and the power source receptacle.

Make sure the POWER switch is OFF then connect your welder's power cord to a properly grounded 120 Vac, 60 Hz, single phase, 20 amp power source.

EXTENSION CORDS

For optimum welder performance, an extension cord should not be used unless absolutely necessary. If necessary, care must be taken in selecting an extension cord appropriate for use with your specific welder.

Select a properly grounded extension cord that will mate directly with the power source receptacle and the welder power cord without the use of adapters. Make certain that the extension is properly wired and in good electrical condition. Extension cords must be a #12 gauge cord at the smallest. Do not use an extension cord over 25 ft. in length.

ASSEMBLE THE FACE SHIELD

1. Insert the upper tongue of the handle into the upper slot on the face shield.
2. Align the second tab on the handle with the second slot in the face shield by pushing the bottom of the handle in towards the face mask, while at the same time pushing upwards. (Alignment of the second tab is made easier by applying pressure to the point shown below.)
3. Once the handle tabs are properly seated in the face shield slots, install the handle cover by firmly pushing it into the recessed area on the face shield.
4. Install the dark glass by sliding it into place behind the glass retaining tabs.

Note: if your face shield was supplied with a 3" x 3.8" dark glass you may choose to remove the extra material from the face shield to allow a larger field of vision when welding. To remove the extra material, remove the glass from the face shield and carefully cut the material out of the face shield with a utility knife.

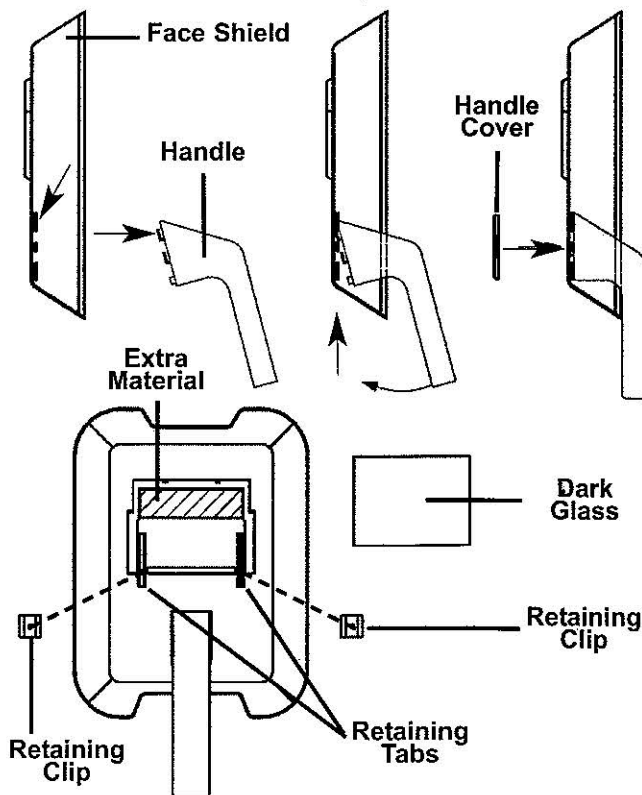


Figure 2. Face Shield Assembly

- Once protective dark glass has been installed into face shield, secure it in place with the retaining clips. Align the holes on each of the retaining clips with the pins on the retaining tabs and firmly press into place.

SITE SELECTION

Select a clean, dry location with adequate working space around all components. Provide at least two feet of space in front of and behind the unit to allow for free flow of air.

PREPARATION FOR WELDING

- With the On/Off switch (item B) in the Off position, connect the welding leads as follows:
 - Secure the ground clamp (item B) to the workpiece (item L). Note: For good contact the ground clamp must be attached to the clean bare metal, not painted.
 - Secure an appropriate welding electrode (item I) by its bare end into the jaws of the

electrode holder (item H).
 Note: All connections should be a good metal contact. Clean with a wire brush where necessary.

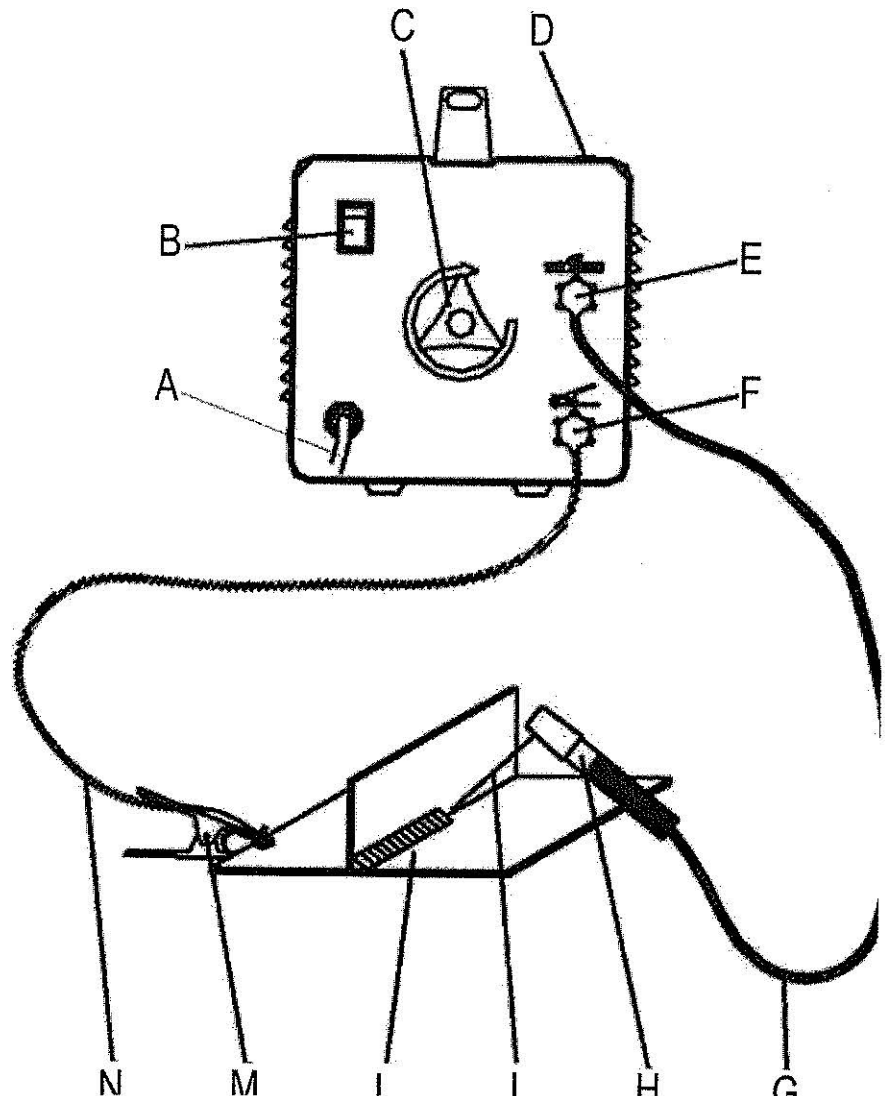
- The size (diameter) of welding electrode should be approximately the same as the thickness of metal to be welded. An appropriate current must be selected by turning the large handwheel (item C) until the sliding indicator (item D) in the top of the machine shows the required amperage setting. With practice you will gain a feel for the correct amperage setting for different welding rod thicknesses.

For beginners the following table give some useful guidelines:

SIZE OF WELDING ROD/ THICKNESS OF METAL	AMPERAGE SETTING
1/16" - 16 GAUGE	40 - 55
5/64" - 14 GAUGE	50 - 70
3/32" - 12 GAUGE	75 - 95

DIAGRAM 1

- A Power Cable
- B ON/OFF Switch
- C Handwheel
- D Amperage Indicator
- E Electrode Terminal
- F Ground Terminal
- G Welding Lead
- H Electrode Holder
- I Electrode
- L Workpiece
- M Ground Clamp
- N Ground Cable



GROUND CLAMP SYMBOL - IDENTIFIES GROUND TERMINAL (BLACK KNOB)



ELECTRODE HOLDER SYMBOL - IDENTIFIES ELECTRODE TERMINAL (BLACK KNOB)

WELDING TECHNIQUE

1. Plug your welder into the correct socket and switch on using the ON/OFF switch (Item B).
NOTE: If the machine stops at any time and the ON/OFF switch lights, the thermostat has intervened. Wait for a few minutes while the transformer cools down and when the ON/OFF switch light goes out again welding can begin.
2. Particularly for beginners, the most difficult aspect of the arc welding process is that of striking an arc. We strongly recommend that you practice on pieces of scrap metal to get the feel of the operation, before you start on an actual welding job.
3. Hold the electrode about 3/8" from the workpiece and at an angle of about 70 degrees to 80 degrees to the work surface; take care not to accidentally touch the workpiece until you are ready to begin.
4. Holding the welding mask close to your face, give a short stroke with the electrode on the workpiece. As soon as the arc is struck, lightly withdraw the electrode from the workpiece to leave a tiny gap of around 1/16". The current will flow across the gap with a crackling noise and brilliant arc. Continue to weld in one direction, maintaining the small gap as you go. At the end of the run, just withdraw the electrode fully from the workpiece.

NOTE: When you strike an arc be sure to withdraw the electrode fairly swiftly to leave the 1/16" gap, otherwise the electrode will weld itself to the workpiece. Should this happen give the electrode a short, sharp jerk to free it and, if necessary, strike the arc again.

5. Inspect the job carefully. With a correct combination of rod size and amperage setting, the area of the weld should be a complete fusion of the electrode and metal being joined. Slag forming on the surface should be chipped away with a hammer.

If the weld looks irregular or messy, or shows signs of porosity or slag contami-

nation, you have almost certainly failed to achieve the correct combination. Do not worry as practice will soon cure this. The following tips on welding pitfalls should help to improve your technique quite quickly.



WARNING

Never look at welding arc, it can seriously damage your eyes. Always use the face shield provided or any proper welding mask.



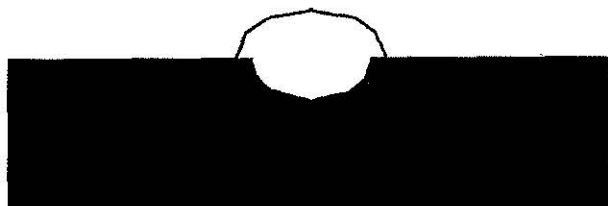
HEALTH WARNING

When welding always make sure there is adequate ventilation in the working area as the welding process gives off toxic fumes.

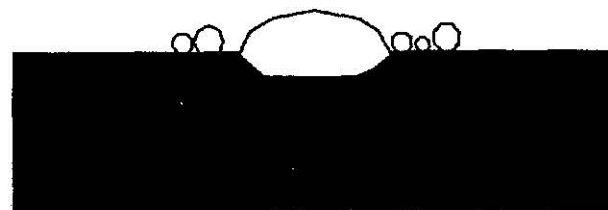
WELDING PITFALLS

The arc welding technique is an acquired skill and will almost certainly require considerable practice before perfect results are obtained. The diagrams below should help to explain pitfalls in your technique and how to overcome them.

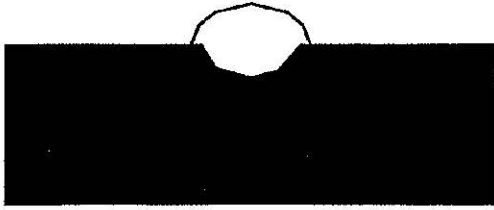
1. Arc distance too short - this causes irregular masses of weld to be deposited with slag contamination on the uneven surface.



2. Arc distance too long - this causes poor penetration resulting in a weak weld with excessive spatter and porosity. Surface of weld is rough and the arc makes a hissing sound.



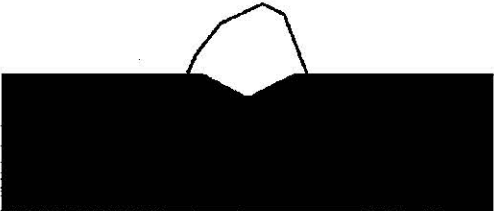
3. Electrode moved over workpiece too slowly - this causes a very wide and heavy deposit which overlaps at the sides. It is wasteful in terms of both time and electrodes used.



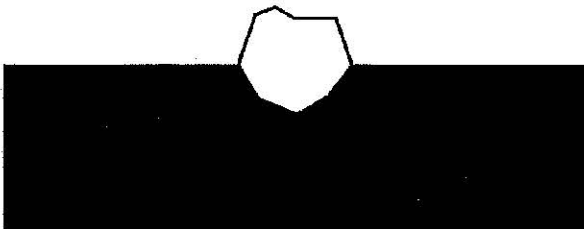
4. Electrode moved over the workpiece too quickly - this causes poor penetration with a "stringy" and incomplete weld deposit. Slag is very difficult to remove.



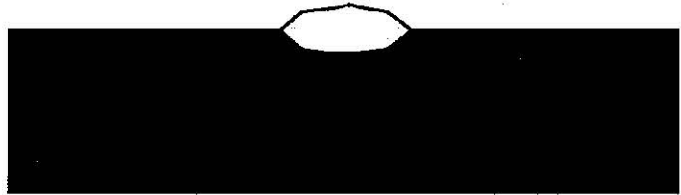
5. Amperage too low - this causes poor penetration and causes the electrode to stick to the workpiece easily. Also results in a very irregular and high weld deposit with difficult slag removal.



6. Amperage too high - this causes excessive penetration with spatter and a deep and pointed crater. It may even cause holes to be burnt in the workpiece. Burns electrodes very quickly.



7. The perfect weld - with the correct combination of arc length, amperage regulation and inclination of the electrode you will, with practice, produce the perfect weld. This should be regular with uniform ripples and no slag contamination. The arc will make a steady crackling sound.



MAINTENANCE AND SERVICING

Your arc welder is a simple and robust unit, requiring virtually no maintenance other than the guidelines shown below:

- Keep the ventilation holes in welder clean to avoid the build up of dirt and oxides inside the machine, this can reduce machine output.
- Check all cables periodically; they must be in good condition and not cracked.
- Always try to avoid getting particles of metal inside the machine since they could cause short circuits.
- Periodically clean the inside of the welder with compressed air.

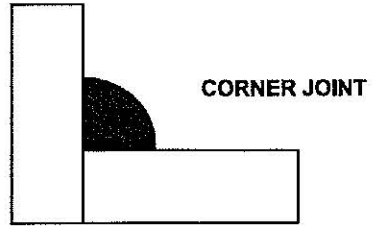
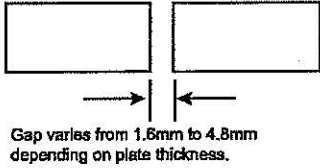
IMPORTANT: unplug the welder before cleaning.

TROUBLESHOOTING

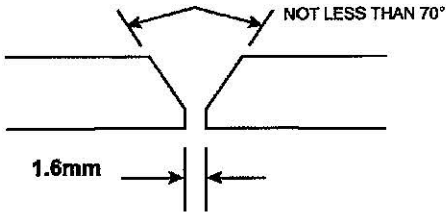
PROBLEM	PROBABLE CAUSE	POSSIBLE SOLUTION
Power source stops.	Thermal Overload Protection activated due to overload.	The Thermal Overload Protection automatically resets when the transformer has cooled (approx. 15 minutes)
Power switch on but no weld current.	Bad connection between ground clamp and workpiece.	Clean or wire brush the work surface.
Unstable arc.	Impurities on base metal.	Clean with wire brush.
Porous weld.	Dirty base metal.	Clean with wire brush.

TYPES OF JOINTS

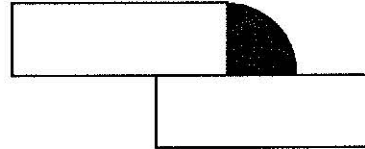
OPEN SQUARE BUTT JOINT



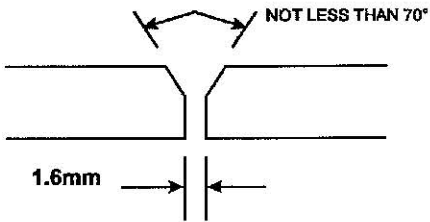
SINGLE VEE BUTT JOINT



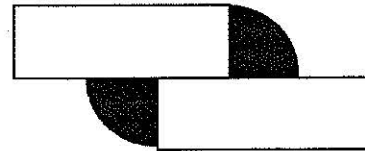
SINGLE FILLET LAP JOINT



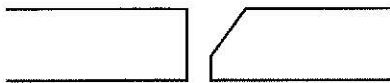
DOUBLE VEE BUTT JOINT



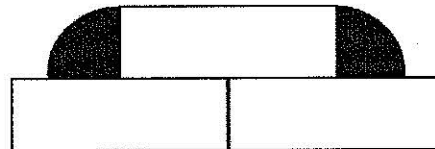
DOUBLE FILLET LAP JOINT



SINGLE BEVEL JOINT



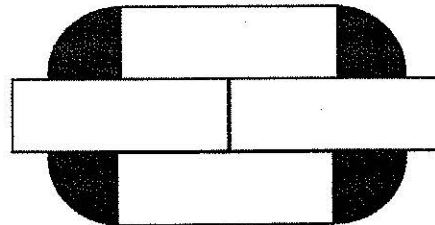
SINGLE STRAP JOINT



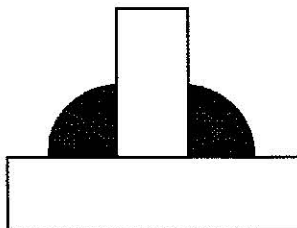
DOUBLE BEVEL JOINT



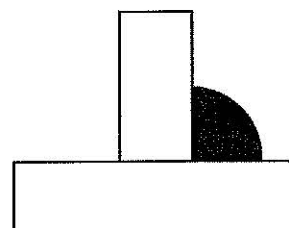
DOUBLE STRAP JOINT



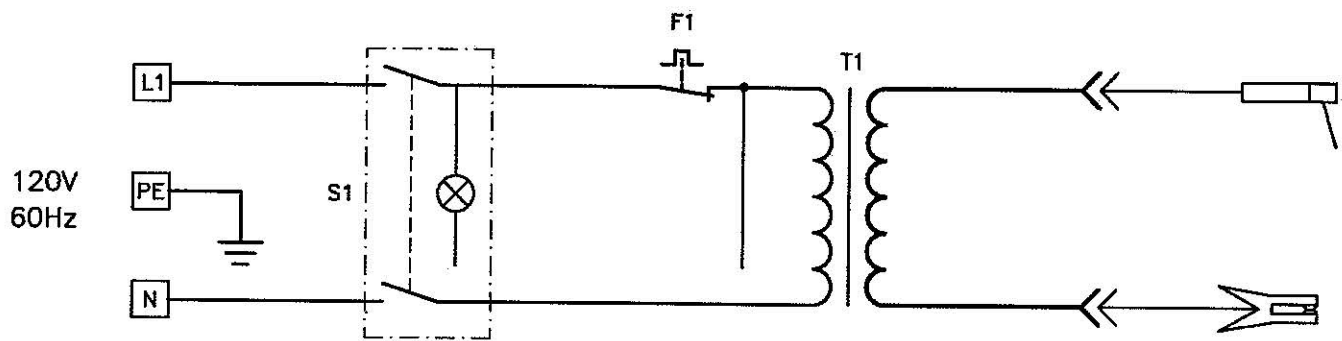
DOUBLE FILLET TEE JOINT



SINGLE FILLET TEE JOINT



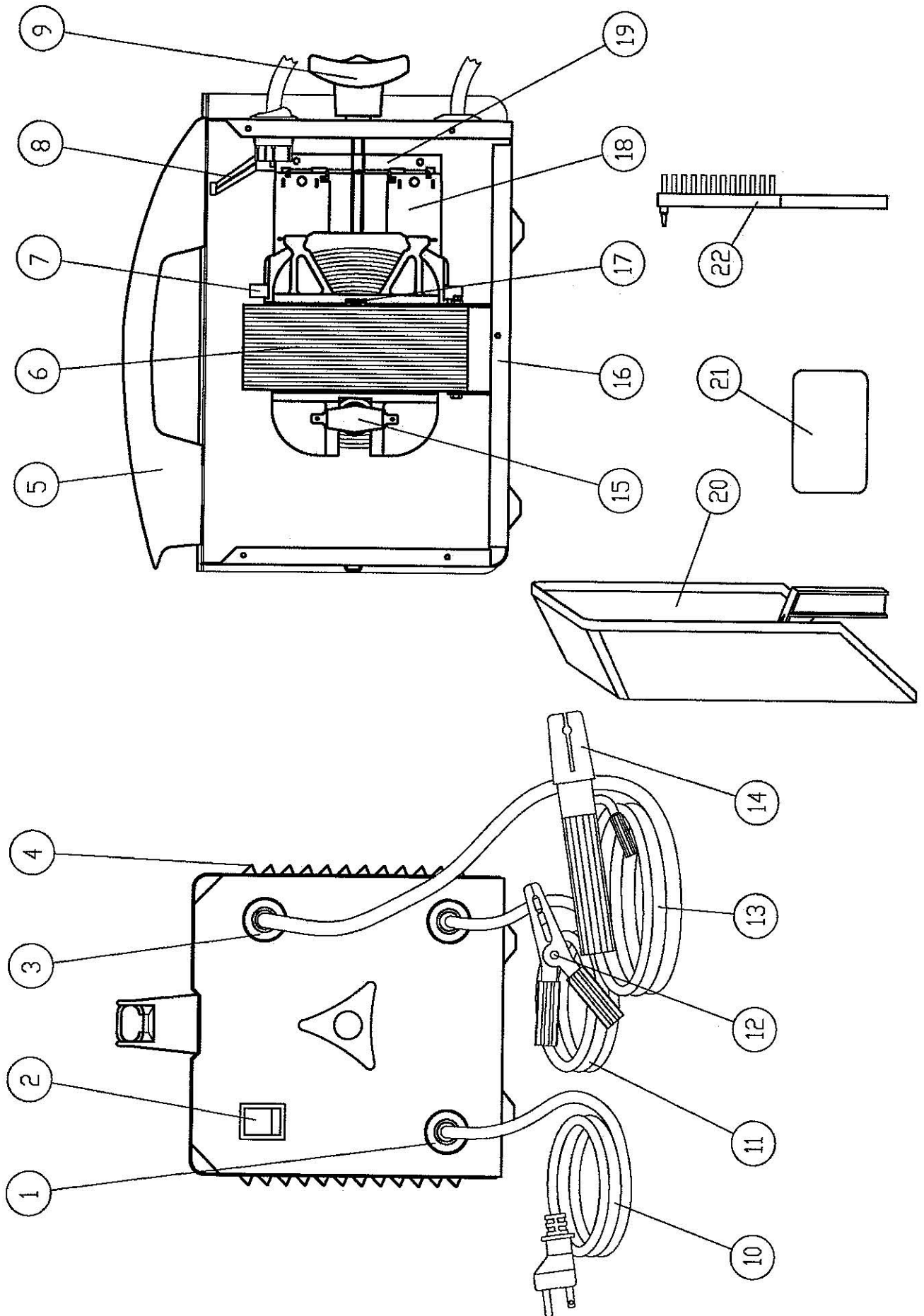
WIRING DIAGRAM



PARTS LIST

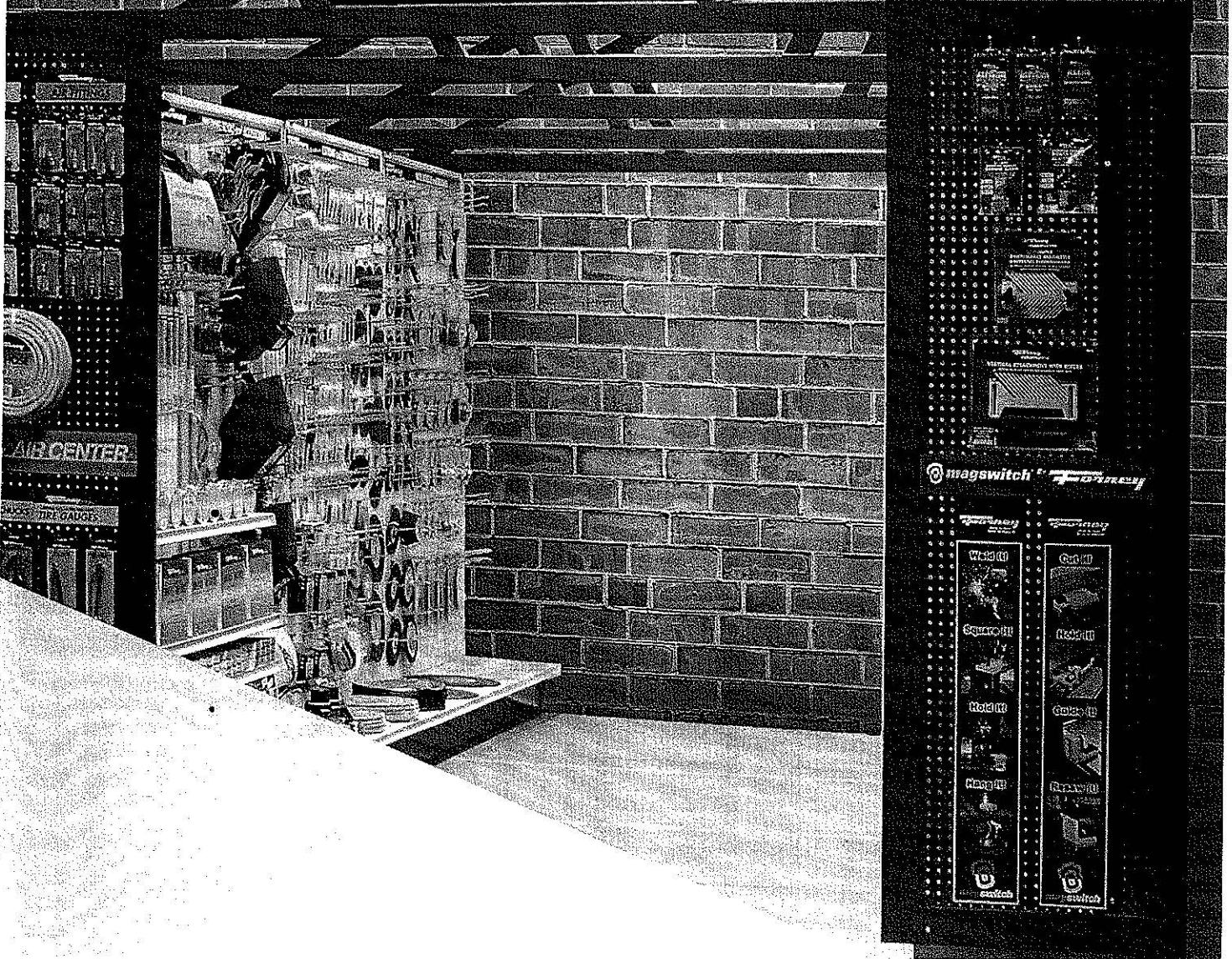
FIGURE #	OEM #	FORNEY #	DESCRIPTION	QTY USED
01	04600234	85209	CABLE CLAMP + SCREW	1
02	22200022	85248	YELLOW PILOT-LIGHT SWITCH16A250V	1
03	04600233	85208	CABLE CLAMP FOR CABLE \varnothing 6+ SCREW	2
04	05000185	85214	UPPER PANEL W/SCREEN PRINTING	1
05	21600035	85228	HANDLE	1
06	44110274	85277	TRANSFORMER 60HZ 110V 40X60 AL	1
07	33800029	85266	"C" TYPE SPRING FOR SHUNT	2
08	21690328	85238	INDICATOR FOR SHUNT	1
09	21800056	85240	3 LOBES \varnothing 80 HAND-WHEEL	1
10	20220018	85225	POWER CABLE 3XAWG14 2,25M W/5/15PLUG	1
11	43210021	85275	EARTH CABLE10MM ² M1,6 W/CLAMP	1
12	22110005	85245	120AMP EARTH CLAMP	1
13	43205069	85274	WELDING CABLE 10MM ² 2,4M	1
14	22110029	85247	ELECRTODE HOLDER	1
15	22210016	85254	THERMOSTAT 127 ² 16A	1
16	05000164	85213	LOWER PANELW/SCREEN PRITING + LABEL	1
17	33800028	85265	SPRING FOR REGOLATION SCREW	1
18	41415018	85273	SHUNT 39X 93 H=9,2	2
19	33815010	85272	SHUNT YOKE	1
20	21905041	85243	FACE SHIELD 50X105	1
21	21905007	85241	DARK GLASS 75X98 DIN 11	1
22	21905039	85242	HAMMER-BRUSH	1

PARTS DIAGRAM



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