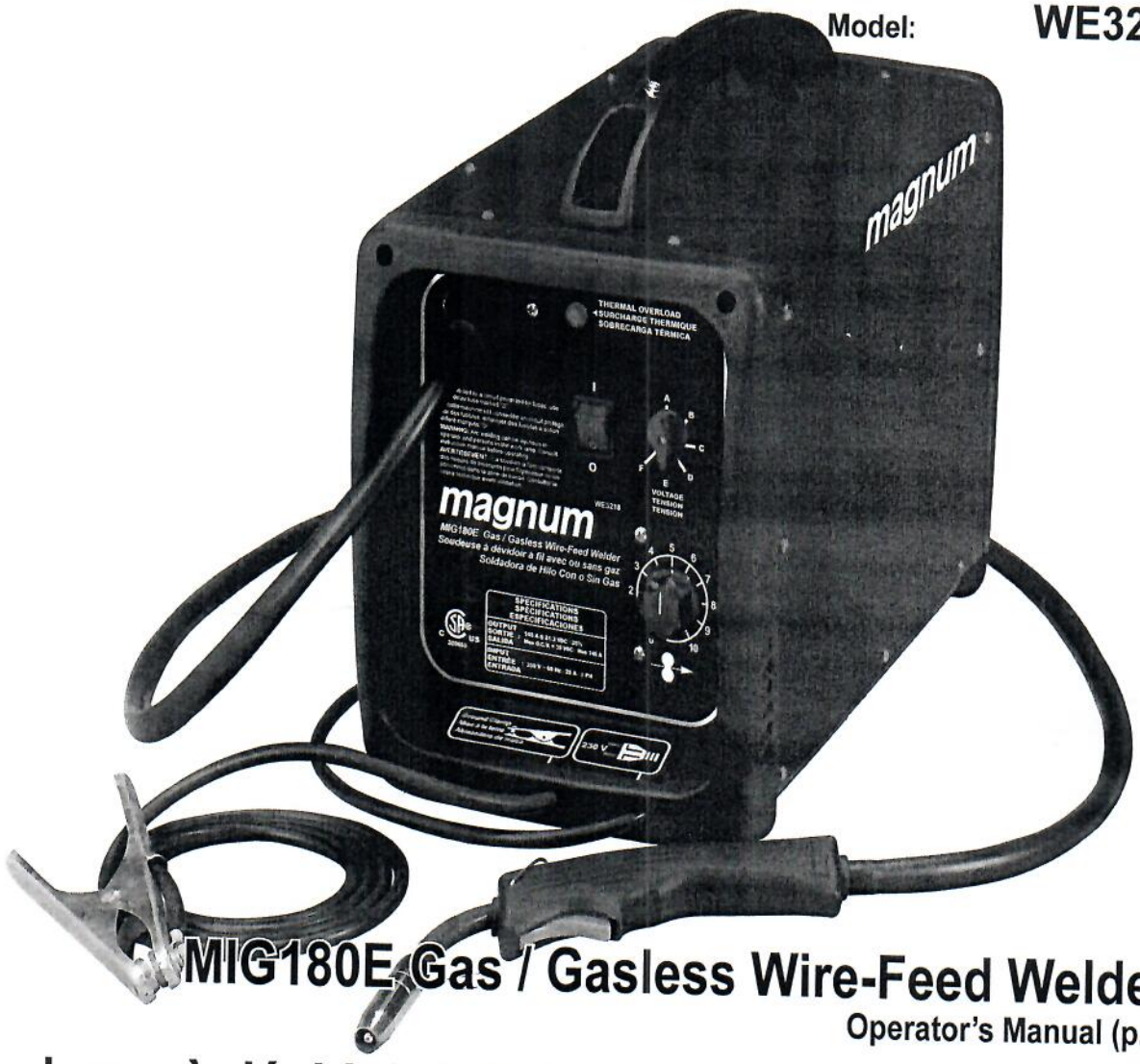
magnum

Model: **WE3218**



MIG180E Gas / Gasless Wire-Feed Welder

Operator's Manual (p.2)

Soudeuse à dévidoir à fil avec ou sans gaz MIG180E

Guide d'utilisation (p.35)

QUESTIONS? 1-800-567-8979

Our Customer Service staff are ready to provide assistance. If a part is damaged or missing, replacement parts can be shipped from our facility.

For help with assembly, or for additional product information, call our North American toll-free number: 1-800-567-8979

Notre personnel de service à la clientèle sera prêt à fournir assistance. Si une pièce est endommagée ou manquante, des remplacements seront expédiés de notre usine.

Pour de l'aide avec l'assemblage, ou pour des informations additionnelles sur le produit, appeller notre numéro sans frais nord-américain : 1-800-567-8979

SAVE THIS MANUAL

You will need this manual for safety instructions, operating procedures, and warranty. Put it and the original sales invoice in a safe, dry place for future reference.

CONSERVEZ CE GUIDE

Vous aurez besoin de ce guide pour les instructions de sécurité, les procédures d'utilisation et la garantie. Conservez-le dans un endroit sûr et sec pour référence future.

ENGLISH

TABLE OF CONTENTS

INTRODUCTION

Your new MIG (Metal Inert Gas) welder is designed for maintenance and sheet metal fabrication. It includes a single-phase power transformer, stabilizer, rectifier and controller / feeder allowing you to weld sheet metal from 18 gauge up to 1/4 inch (1.2 to 6.3 mm). Using beveling and multiple passes, you can weld thicker steel as well.

FEATURES OF THE MIG180E

- With the included flux-core wire, this welder can weld mild steel without gas.
- It can also weld mild or low-carbon steel with solid-core steel wire, the included gas conversion kit, and gas (gas not included).
- With gas and the appropriate wire, it can also weld stainless steel and aluminum or braze using silicone-bronze wire
- Automatic thermal overload protection built-in
- Robust built-in wire feeder

N.B. *No notification will be given if the contents or function of the welder in this book change. We reserve the right to update the manual without notification*

Safety, performance and reliability have been given top priority in the design of this tool, making it easy to maintain and operate.

N.B. *Please read the user manual thoroughly and ensure that you understand it before using your welder. Pay close attention to the safety instructions, warnings and cautions. This manual must be stored in a place familiar to all users for the entire operational life-span of the machine. To enjoy years of safe, reliable service, use the welder correctly and only for the purpose for which it is designed.*

WARNING! *Look for this symbol which indicates important safety precautions. It is used to attract your attention. Your safety is at stake.*

PRODUCT SPECIFICATIONS

- Designed for gasless use with flux-core wire or use with gas and solid wire
- Welds 18 ga. up to 1/4 inch (1.2 to 6.3 mm) thick sheet metal in one pass
- Electronically variable wire feed speed control
- Fan cooled
- Advanced automatic thermal overload protection for transformer
- Four-position voltage selector dial for variable welding heat settings
- Operates from a 220 - 240 V AC, 60 Hz, single phase 50 amp power source with time-delayed fuse or circuit breaker
- Convenient top-hinged side access door with latch
- Premium Tweco®-style MIG torch with "cold" tip- welding gun remains cold until the trigger is pulled for added safety
- Ground cable with ground clamp
- Includes:
  - Welding machine with MIG torch and earth cable and clamp
  - Gas conversion kit
  - Regulator: Dual gauge, 0 – 4000 PSI, 10.6 - 63.6 cfh (5 – 30 L/min)
  - Hose: 2 ft. (61 cm) long, 1/4 in. (6 mm) O.D. reinforced gas hose
  - 2 pc. 1/4 in. (6 mm) hose clamps
  - 1 pkg. M5 0.6 mm (0.023 in.) aperture contact tips to fit Unison Tweco®-compatible MIG torch
  - 1 spool of 2 lb. (0.9 kg) mild steel MIG wire 0.6 mm (0.023 in. diam)

Save These Instructions

PRODUCT SPECIFICATIONS

- Welder carrying handle and screws
- 3 contact tips; 1 each of 0.035, 0.030, and 0.023 inches
- Nozzle
- 0.2 kg (0.44 lb.) spool of 0.030 flux core wire
- Chipping hammer / brush
- Hand-held welding mask
- CSA certification

WELDER	
Primary input power:	230 V ~ 60 Hz, 25 Amps
Secondary (output) voltage:	21.3 V
Secondary (CSA output):	145 Amps
Max. open circuit voltage:	35 V DC
Output current range:	30 - 145 A
Peak amperage output rating:	80 A
Peak amperage when welding:	180 A
Duty cycle:	15% @ 145 A
Welding wire sizes with gas (DC reverse polarity):	0.023 in. (0.6 mm), 0.030 in. (0.8 mm), and 0.035 in. (0.9 mm) solid welding wire
Welding wire sizes without gas (DC straight polarity):	0.030 in. (0.8 mm) self-shielding flux core wire
Net weight:	70.5 lb. (32 kg)
GAS CONVERSION KIT DUAL GAUGE REGULATOR	
Pressure range:	0 - 4000 PSI (0 - 275.8 bar)
Flow rate range:	10.6 - 63.6 cfh (5 - 30 L/min)

IMPORTANT SAFETY INSTRUCTIONS

The following safety symbols are used to draw your attention to possible risks. Pay careful attention to these safety symbols and accompanying paragraphs and make sure you, as well as all future technical and maintenance operators, understand them. The warnings, cautions and instructions discussed in this instruction manual cannot cover all possible conditions or situations that could occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator. Reading this instruction manual before using your welder will help you to do a better job in a safer manner. The safety warnings do not in themselves eliminate any danger and are not substitutes for proper accident prevention measures. Learn this welder's applications and limitations as well as those specific potential dangers peculiar to welding.

SYMBOL	MEANING
	**DANGER!** *Failure to obey a safety warning will result in serious injury to yourself or to others. Always follow the safety instructions rigorously to reduce the risk of fire, electric shock and personal injury.*
	**WARNING!** *Failure to obey a safety warning can result in serious injury to yourself or to others. Always follow the safety instructions rigorously to reduce the risk of fire, electric shock and personal injury.*

IMPORTANT SAFETY INSTRUCTIONS

	CAUTION: *Failure to obey a safety warning may result in damage to property or injury to yourself or to others. Always follow the safety instructions rigorously to reduce the risk of fire, electric shock and personal injury.*
	N.B.*nota bene Gives you essential information or instructions about the operation or maintenance of the equipment.*

The following safety information is intended to be guidelines which can help you operate your new welder as safely as possible. Any piece of equipment that uses electrical power can be potentially dangerous in use when safety or safe handling instructions are not known or ignored. Welding processes in particular can be dangerous not only to the operator, but to anyone located near the equipment, if safety and operating rules are not observed in the strictest sense. To use this equipment properly, you must observe the safety regulations, the assembly instructions and the operating instructions to be found in this manual. All persons who use and service the machine must be acquainted with this manual and must be informed about its potential hazards. Children should not be in the area in which the tool is being used at all because they cannot be safely supervised by the operator. It is also imperative that you observe the accident prevention regulations in force in your area. The same applies for general rules of occupational health and safety.

WARNING! *When using electric tools, machines or equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury.*

READ ALL INSTRUCTIONS BEFORE USING THIS TOOL

1. **OBSERVE THE SAFETY REGULATIONS,** the assembly instructions and the operating instructions in this manual.
2. **ALL PERSONS WHO USE AND SERVICE** the machine must be acquainted with this manual and be informed about the tool's potential hazards.
3. **READ INSTRUCTIONS CAREFULLY.** Be familiar with the controls and the proper use of the equipment.
4. **SAVE THIS MANUAL** for future reference and refer to it frequently to ensure you fully understand and heed the advice given in the additional important safety rules for this equipment.
5. **USE THE MACHINE ONLY** according to the instructions given in this manual. This machine is designed for certain applications only. We strongly recommend that it not be modified and/or given any use other than that for which it was designed. If you have questions relating to a particular questionable application, DO NOT use the machine before you contact us to determine if it can be performed with this machine.

WORK AREA

1. **KEEP WORK AREA CLEAN** and well-lit. Cluttered benches and dark areas invite accidents.
2. **REMOVE ALL COMBUSTIBLE MATERIALS FROM THE WELDING AREA** before commencing work. Keep the environment in which you plan to be welding free from flammable materials. Do not work in explosive atmospheres such as in the presence of flammable liquids, gases, or dust. Always keep a properly-rated fire extinguisher at hand.
3. **BE SURE THE AREA IS CLEAN, DRY AND WELL-VENTILATED.** Do not operate the welder in humid, wet or poorly ventilated areas.
4. **WELDING SHOULD BE DONE IN A CLOSED AREA** that does not open into other working areas.
5. **KEEP THE HARMFUL ARC RAYS THE WELDER PRODUCES SHIELDED** from the view of others.

Save These Instructions

IMPORTANT SAFETY INSTRUCTIONS

6. **KEEP CHILDREN AND BYSTANDERS AWAY.** Endeavour to always be aware of your work environment and keep other people, particularly children, away from you while welding.
7. **MAKE YOUR WORKSHOP CHILDPROOF** by using padlocks, master switches or removing starter keys.
8. **STORE THE WELDER OUT OF THE REACH** of children and infirm people when not in use.
9. **ALWAYS DISCONNECT** the tool from the power supply when leaving it unattended. Never leave the tool running unattended. Switch it off and do not walk away until the tool comes to a complete stop.

WARNING! *Always be sure the welding area is secured and free of potential hazards (sparks, flames, glowing metal or slag) prior to leaving. The welder and all other equipment must be turned off and excess electrode wire cut off, ready for the next use. Coil the cables loosely and out of the way of possible tripping hazard and insulation damage. Be sure all metal and slag have cooled.*

ELECTRICAL SAFETY

1. **FOLLOW ALL WIRING CODES** and recommended electrical connections to prevent shock or electrocution.
2. **DO NOT EXPOSE ELECTRICAL POWER TOOLS TO MOISTURE.** Rain or wet conditions can cause water to enter the tool and lead to electric shock.
3. **DO NOT ABUSE THE CORD.** Never carry or pull your tool by the cord or pull on the cord to unplug it. Protect the cord from potential sources of damage: heat, oil and solvents, sharp edges or moving parts. Replace damaged cords immediately. Do not use the tool if the cord is damaged or worn.
4. **WHEN WORKING OUTDOORS, USE AN OUTDOOR-RATED EXTENSION CORD.** An extension cord rated for outdoor use must be grounded and marked "W-A" or "W".

DANGER! *Electric shock can be fatal. If a person is found unconscious and electric shock is suspected, do not touch the person if they are in contact with any electrical wires. Disconnect power from the machine and then use First Aid. Dry wood, and any other insulating material can be used to move electrical cables away from the person if necessary.*

PERSONAL SAFETY

N.B. *If you are new to the welding process, or not an experienced welding professional, you may want to take advantage of any welding course of instruction that may be available through your local technical institute or from your welding equipment supplier. In addition, there are a number of useful video demonstrations available on YouTube that can improve both your knowledge and your safe handling of welding equipment, such as the YouTube demonstration from the University of California at Irvine's Basic MIG Welding, http://www.youtube.com/watch?v=IzBGZaS1apw.*

1. **DISCONNECT THE PLUG FROM THE POWER SUPPLY WHEN MOUNTING ACCESSORIES.** Use only recommended accessories as required, otherwise personal injury may result.
2. **DRESS PROPERLY.** Operators should protect their body by wearing dry, closed, non-flammable protective clothing, without pockets or pants without turned-up cuffs. Protective, non-electrically conductive, robust, non-skid footwear is recommended when working. Wear protective hair covering to contain long hair and keep it from harm.
3. **WEAR EYE PROTECTION.** The operator should never look at the welding arc without the correct protection for the eyes. Always wear goggles or safety glasses with rigid side shields that comply with ANSI safety standard Z87.1 to protect from flying particles. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.

IMPORTANT SAFETY INSTRUCTIONS

4. **WEAR A NON-FLAMMABLE FULL-COVERAGE HELMET WITH LENS OF AN APPROPRIATE SHADE** (see ANSI Z87.1 safety standard) designed so as to shield the face and neck as far as the backs of your ears. It is necessary to always keep the protective lens clean and to replace it when broken or cracked. It is advisable to put a transparent glass between the lens and the welding area, plus ANSI-approved safety glasses with side shields while welding.
5. **WEAR BREATHING PROTECTION.** If ventilation is found not adequate to exchange all fumes and gases generated during welding with clean, fresh air, do not weld unless you, the operator, and all bystanders wear air-supplied respirators.
6. **WEAR HEARING PROTECTION,** protecting especially from extended periods and repeated exposure.
7. **DISCONNECT THE PLUG FROM POWER BEFORE LEAVING THE TOOL IDLE OR MAKING ANY ADJUSTMENTS.** Changing attachments or accessories can be dangerous if the tool should accidentally start.
8. **DON'T OVERREACH.** Keep proper footing and balance at all times. Proper footing and balance enable better control of the tool in unexpected situations. Do not reach over or across machines that are running.
9. **NEVER STAND ON TOOL.** Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.
10. **STAY ALERT.** Watch what you are doing & use common sense. Do not operate any tool when you are tired, sick, or under the influence of alcohol or other drugs.
11. **OBSERVE THE ACCIDENT PREVENTION REGULATIONS** in force in your area.
12. **OBSERVE THE GENERAL RULES** of occupational health and safety in force in your area.

TOOL USE AND SAFETY

1. **THE TOOL MUST BE FULLY ASSEMBLED** before connecting it to a power supply.
2. **MOUNT THE WELDER ON A STABLE BENCH OR CART** that will keep it secure and prevent it from tipping over or falling while you work.
3. **KNOW YOUR EQUIPMENT.** Read and understand the owner's manual and the labels attached to the tool. Learn its application and limitations as well as the specific potential hazards peculiar to this tool.

WARNING SYMBOLS *throughout this manual are to remind you of the safety precautions you should take when operating this tool.*

4. **HAVE A QUALIFIED PERSON** who can install and earth the welder according to all the applicable regulations set up this equipment.
5. **HAVE YOUR WELDER MAINTAINED** in accordance with local, provincial, state, and national codes by a qualified technician.
6. **DISCONNECT THE TOOL FROM THE POWER SUPPLY SOURCE** before carrying out maintenance or cleaning work.
7. **DO NOT OPERATE THE WELDER** if the output cable, electrode, MIG gun, wire or wire feed system is wet. Do not immerse them in water. These components and the welder must be completely clean and dry before attempting to use them.
8. **KEEP THE WELDER SWITCH IN THE OFF POSITION WHEN NOT IN USE** and always switch it off and disconnect the power cord from the power source before moving the machine to another location.
9. **DO NOT USE THE WELDER IF IT CANNOT BE SWITCHED ON OR OFF.** Have your tool repaired before using it.

Save These Instructions

SPECIFIC AREAS OF DANGER

DANGER! *To reduce your risk of death, injury, or property damage, do not operate this welding equipment until you have read and understood the following safety summary.*

1. **INSULATE YOURSELF FROM BOTH THE GROUND AND FROM THE WORK PIECE.** Avoid contacting either. Do not allow yourself to come into physical contact with any part of the welding current circuit in any manner. This welding current circuit includes the work piece and any conductive material in contact with it, the ground clamp, the electrode, which is the welding wire, and any metal parts on the electrode holder, the wire feed torch
2. **DO NOT TOUCH THE WELDING WIRE AND THE GROUND** or grounded work piece at the same time.
3. **WEAR DRY PROTECTIVE CLOTHING:** coat, shirt, gloves and insulated footwear. Do not touch live electrical parts or electrodes with bare skin, gloves or wet clothing. Do not weld if any part of your clothing or body is wet.
4. **DO NOT WELD IN A DAMP ENVIRONMENT** or come into contact with a moist or wet surface.
5. **DO NOT ALLOW THE WELDING EQUIPMENT TO COME INTO CONTACT WITH ANY WATER OR MOISTURE.**
6. **DO NOT DRAG THE WELDING CABLES, THE WIRE-FEED TORCH, OR THE WELDER'S POWER CORD THROUGH NOR LET THEM COME INTO CONTACT WITH ANY WATER OR MOISTURE.**
7. **DO NOT TOUCH THE WELDER NOR ATTEMPT TO TURN WELDER ON OR OFF, IF ANY PART OF YOUR BODY OR CLOTHING IS MOIST** or if you are in actual physical contact with water or moisture.
8. **DO NOT CONNECT THE WELDER WORK PIECE GROUND CLAMP** to or weld on electrical conduit.
9. **NEVER USE THE WELDER TO THAW FROZEN PIPES.**
10. **DO NOT MAKE ANY CHANGES TO THE POWER CORD** or the power cord plug in any manner.
11. **DO NOT TRY TO PLUG** the welder into any power source if the ground prong on power cord plug is bent, broken off, or missing.
12. **DO NOT ALLOW THE WELDER TO BE CONNECTED TO ANY 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 to salt water spray.
13. **LAY OUT COILED OR TANGLED WELDING CABLE BEFORE USE** in order to avoid overheating and consequent damage to insulation.
14. **DO NOT CARRY OR HOLD COILED WELDING CABLES AROUND YOUR SHOULDERS**, or any other part of your body, when the cables are plugged into the welder.
15. **DO NOT MAKE ANY MODIFICATIONS** to any wiring, ground connections, switches, or fuses in this welding equipment.
16. **WEAR DRY WELDING GLOVES** to help insulate hands from welding circuit.
17. **KEEP ALL CONTAINERS OF LIQUIDS FAR** enough away from the welder and work area so that if spilled, those liquids cannot possibly come into contact with any part of the welder or any part of the electrical welding circuit.
18. **INSPECT ALL CABLES AND CORDS FOR ANY EXPOSED WIRE.** and If found, replace any cracked, abraded, or damaged parts such as welding cables, power cord, or electrode holder that are insulated or act as insulators IMMEDIATELY, using only recommended replacement cables and cords.
19. **NEVER ATTEMPT ANY REPAIRS OR MAINTENANCE** on the welder while it is connected to power.
20. **ALWAYS ATTACH GROUND CLAMP TO THE WORK PIECE OR WORK TABLE AS CLOSE TO THE WELD AS POSSIBLE** to prevent any unknown,

unintended paths of electrical current from causing electrical shock and fire hazards.

FUMES AND GASES

WARNING! *Fumes, gases, and vapours may be very hazardous to your health. They can cause discomfort, illness and death! In addition, fumes emitted from the welding process displace clean air and so can produce injury or death.*

CALIFORNIA PROPOSITION 65

DANGER! *This product, when used for welding, produces fumes or gases which contain chemicals known to the State of California to cause birth defects (or other reproductive harm) and, in some cases, cancer (California Health and Safety Code Section 25249.5 et seq.).*

1. **TO REDUCE THE RISK OF DISCOMFORT, ILLNESS, OR DEATH**, read, understand, and follow the following safety instructions. Do not inhale the fumes emitted by the welding process. Make sure your breathing air is clean and safe. Make certain as well, that anyone else that uses this welding equipment or is a bystander in the welding area understands and follows these safety instructions.
2. **WELD ONLY IN A WELL-VENTILATED AREA** or use a ventilation device to remove welding fumes from the environment where you will be working. Do not weld in any area until it has been checked for sufficient ventilation in accordance with ANSI standard# Z49.1. If ventilation is found not adequate to exchange all fumes and gases generated during welding with clean, fresh air, do not weld unless you, the operator, and all bystanders wear air-supplied respirators.
3. **DO NOT WELD, CUT, OR EVEN HEAT LEAD, ZINC, CADMIUM, MERCURY, BERYLLIUM**, or similar metals without seeking professional advice and inspection of the welding area. These metals will produce extremely toxic fumes which can cause symptoms ranging from discomfort and illness up to and including death.
4. **DO NOT HEAT METALS THAT MAY BE COATED WITH OR CONTAIN, MATERIALS THAT PRODUCE TOXIC FUMES** (such as galvanized steel, paint, galvanized, cadmium-plating or containing zinc, mercury, chromium, graphite, lead, cadmium, beryllium, or barium); unless coated and that coating is removed. They will emit fumes that are very dangerous to breathe. Make certain the operator and all bystanders are wearing air-supplied respirators. Refer to the MSDS (material safety data sheet) for the manufacturer's instructions.
5. **VAPOURS FROM MANY CLEANERS, SPRAYS, AND DEGREASERS CAN BE HIGHLY TOXIC WHEN HEATED.** Parts degreased with a solvent must be thoroughly dry before welding.
6. **DO NOT PERFORM WELDING OR CUTTING OPERATIONS ANYWHERE NEAR CHLORINATED SOLVENTS.** Vapours from chlorinated hydrocarbons, such as trichloroethylene and perchloroethylene can be broken down by the heat of an electric arc or by its ultraviolet radiation. This can cause phosgene, a highly toxic gas used in World War I as the chemical weapon, mustard gas, to be produced, as well as other lung and eye-irritating gases. Working with the welder anywhere these solvent vapours can be drawn into the work area or where the ultraviolet radiation can reach into areas containing even small amounts of these vapours. must be avoided. Refer to the MSDS (material safety data sheet) for the manufacturer's instructions.
7. **DO NOT WELD IN ANY CONFINED AREA UNLESS IT IS ACTIVELY AND ADEQUATELY VENTILATED** or if the operator, and everyone else present is wearing an air-supplied respirator.

SPECIFIC AREAS OF DANGER

8. **STOP WELDING IMMEDIATELY IF YOU NOTICE EVEN MOMENTARY EYE, NOSE, OR THROAT IRRITATION** because this points to inadequate ventilation. Stop work and improve the fresh air supply in the welding area. Do not resume welding if your physical discomfort persists.

FLASH HAZARDS; UV AND IR ARC RAYS

WARNING! *The welding arc operations produce ultraviolet (UV) and infrared (IR) rays. These arc rays can injure your eyes and burn your skin. To reduce the risk of injury from arc rays, read, understand, and follow the following safety instructions. In addition, make certain that everyone else that uses this welding equipment, or is a bystander in the welding area also understands and follows these safety instructions. Headshields or helmets and filter lens should conform to ANSI Z87.1 standards.*

1. **DO NOT LOOK AT AN ELECTRIC ARC WITHOUT PROPER EYE PROTECTION.** Welding arcs produce extremely bright, intense energy and, with inadequate or no eye protection, the eye's retina can be quickly burned, leaving a permanent dark spot in the field of vision. Operators and lookers-on must use a shield or helmet with a number 10 shade filter lens (minimum) installed.
2. **PROVIDE BYSTANDERS WITH SHIELDS OR HELMETS FITTED WITH A #10 SHADE FILTER LENS** and do not strike a welding arc until all bystanders and you (the operator) have welding shields and/or helmets in place. Use a lens that meets ANSI standards and safety glasses with side shields. For welders such as this one, under 160 Amps output, use a shade 10 lens; for above 160 Amps, use a shade 12. Refer to the ANSI standard Z87.1 for more information.
3. **DO NOT USE A CRACKED OR BROKEN HELMET.** Replace it and replace any cracked or broken filter lenses IMMEDIATELY.
4. **COVER ALL BARE SKIN AREAS EXPOSED TO THE ARC WITH PROTECTIVE CLOTHING AND SHOES.** Wear protective dark clothing of heavy material. The intense light of the welding arc can burn the skin in much the same way as the sun, even through light-weight clothing. Flame-retardant cloth or leather long-sleeved shirts, coats, pants or coveralls should be used for protection, the collar kept buttoned to protect chest and neck.
5. **USE A HELMET THAT COVERS YOUR FULL FACE** from the neck to top of head and to the backs of the ears.
6. **TAKE CARE NOT TO ALLOW THE UNINSULATED PORTION OF THE WIRE-FEED TORCH TO TOUCH THE GROUND CLAMP** or grounded work to prevent an arc flash from being created on contact before you are protected.
7. **TO PREVENT STRIKING ANY UNINTENDED ARCS**, cut the wire back to 1/4 in. (6 mm) stick-out after welding.
8. **CONSIDER YOU SHOULD ALSO PROTECT YOURSELF AGAINST REFLECTED ARC RAYS.** Arc rays can be reflected off shiny surfaces such as a glossy painted surface, polished 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 that surface, off the inside surface of the filter lens on the inside of your helmet or shield, and then into your eyes. These reflected arc rays can also cause skin burn in addition to eye injury. If you find a reflective surface in your welding area, either remove it or cover it with something non-flammable and non-reflective.
9. **USE SCREENS OR OTHER BARRIERS** to protect other people from the arc rays emitted by your welding.
10. **WARN PEOPLE NEAR YOUR WELDING AREA** when you are going to strike an arc so they can take measures to protect themselves.

SPECIFIC AREAS OF DANGER

COMPRESSED GAS HAZARDS

DANGER! *Poor handling and maintenance of compressed gas cylinders and gas regulators can result in serious personal injury or death.*

1. **TO REDUCE THE RISK OF INJURY OR DEATH FROM COMPRESSED GASES AND EQUIPMENT HAZARDS;** read, understand, and follow the safety instructions below. Make certain, as well, that any other person who uses this welding equipment or is a bystander in the welding area also understands and follows these safety instructions.
2. **NEVER USE FLAMMABLE GASES WITH MIG WELDERS.** Only certain inert or non-flammable gases like carbon dioxide, argon, helium, etc., or mixtures of them, are suitable for MIG welding.
3. **DO NOT ATTEMPT MIXING GASES** or filling a gas cylinder yourself.
4. **DO NOT EXPOSE GAS CYLINDERS TO HEAT, SPARKS, SLAG, AND FLAME, ETC.** Water spray cooling is required for gas cylinders exposed to temperatures above 130°F (54.5°C).
5. **DO NOT ALLOW GAS CYLINDERS TO CONTACT ELECTRICITY** of any kind.
6. **DO NOT USE A GAS CYLINDER** or its contents as a support, roller, or anything other than its intended use.
7. **DO NOT LOCATE GAS CYLINDERS IN PASSAGEWAYS OR WORK AREAS** where they may be struck or damaged.
8. **DO NOT USE A WRENCH OR HAMMER TO OPEN A GAS CYLINDER VALVE** that cannot be opened by hand. Notify your supplier.
9. **DO NOT MODIFY OR EXCHANGE GAS CYLINDER FITTINGS.**
10. **DO NOT DEFACE OR ALTER THE NAME, NUMBER, OR OTHER MARKINGS ON A GAS CYLINDER.** Do not rely on gas cylinder colour to identify the contents.
11. **NEVER CONNECT A REGULATOR TO A GAS CYLINDER CONTAINING ANY GAS OTHER** than that for which the regulator was designed.
12. **DO NOT ATTEMPT TO MAKE REGULATOR REPAIRS.** Allow only the manufacturer's designated repair centre to make repairs to faulty regulators.
13. **DO NOT ATTEMPT TO LUBRICATE A REGULATOR.**
14. **ALWAYS TAKE CARE WHEN CHANGING GAS CYLINDERS** to prevent leaks and damage to cylinder walls, valves, or safety devices.
15. **ALWAYS SECURE GAS CYLINDERS WITH A STEEL CHAIN** to prevent their being knocked over.
16. **ALWAYS PROTECT ALL GAS CYLINDERS,** especially the valves, from bumps, falls, falling objects, and weather. Remember that gases in these cylinders are under pressure and that damage to a regulator can cause it or portion of the regulator to be explosively ejected from the gas cylinder.
17. **MAKE CERTAIN THE GAS CYLINDER CAP IS ALWAYS SECURELY IN PLACE** on the cylinder whenever it is moved.
18. **ALWAYS CLOSE THE GAS CYLINDER VALVE AND REMOVE ANY FAULTY REGULATOR FROM SERVICE IMMEDIATELY** for repair if any of the following conditions appear: external gas leaks, delivery pressure continuing to rise with downstream valve closed, the gauge pointer does not move off the stop pin when pressurized or fails to return to the stop pin after pressure is released.

SPECIFIC AREAS OF DANGER

ENGLISH

FIRE HAZARDS

DANGER! *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.

WARNING! *Arc welding, by nature, produces sparks, hot spatter, molten metal drops, hot slag, and hot metal parts that can start fires, burn the skin, and damage the eyes.*

1. **DO NOT HAVE ON YOUR PERSON ANY COMBUSTIBLE ITEMS**, such as lighters or matches.
2. **DO NOT WEAR FLAMMABLE HAIR PREPARATIONS.**
3. **DO NOT WELD IN ANY AREA UNTIL YOU HAVE CHECKED AND CLEARED IT OF COMBUSTIBLE AND/OR FLAMMABLE MATERIALS.** Remember that sparks and slag can fly 35 feet (10.7 m) and that these can be small enough to fly through very small openings. If work and combustibles cannot be moved or separated by a minimum of 35 feet (10.7 m), protect combustibles against ignition with suitable, snug-fitting, fire resistant covers or shields.
4. **DO NOT WELD ON WALLS WITHOUT HAVING CHECKED FOR AND REMOVING COMBUSTIBLES** against the other side of those walls.
5. **DO NOT WELD, CUT, OR PERFORM OTHER SUCH WORK ON USED BARRELS, DRUMS, TANKS, PIPES, OR OTHER CONTAINERS** that may have at one time contained a flammable or toxic substance. Removing flammable substances and vapours to make a used container safe for welding or cutting, is quite complex and requires a professional with special education and training.
6. **NEVER 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 to someone else as a result of an accidental knock.
7. **DO NOT WELD OR CUT IN AREAS** where flammable or explosive dust (such as grain dust), flammable or explosive gases, or flammable or explosive liquid vapours (such as gasoline) may be present.
8. **DO NOT HANDLE HOT METAL**, such as a work piece, slag, or electrode pieces, with bare hands.
9. **WEAR LEATHER GLOVES, HEAVY LONG SLEEVE SHIRT, CUFFLESS TROUSERS, HIGH-TOPPED SHOES, HELMET, AND CAP.** If necessary, additional protective clothing such as leather jacket or sleeves, fire-resistant leggings, or apron can be brought into play. Hot sparks or metal can lodge in rolled up sleeves, trouser cuffs, or pockets. Sleeves and collars should be kept buttoned closed and no pockets should be on the shirt front.
10. **DO NOT WEAR GLOVES OR OTHER CLOTHING THAT CONTAIN OIL**, grease, or other flammable substances.
11. **HAVE FIRE EXTINGUISHING EQUIPMENT READY** to hand for immediate use! DO NOT USE WATER. A portable type ABC chemical fire extinguisher is recommended.
12. **WHEN WELDING ABOVE YOUR HEAD, WEAR EAR PLUGS** to prevent spatter or slag from falling into your ears.
13. **MAKE SURE THE WELDING AREA HAS A GOOD, SOLID, SAFE FLOOR**, preferably concrete or masonry, not tiled, carpeted, or made of any other flammable material.
14. **PROTECT ANY FLAMMABLE WALLS, CEILINGS, AND FLOORS** with heat-resistant covers or shields.

Save These Instructions

OTHER SOURCES OF INFORMATION

15. **AFTER WELDING, CHECK THE AREA** to make sure it is free of sparks, glowing metal or slag, and flames before leaving.
16. **KEEP THE WORK GROUND LEAD CONNECTED AS CLOSE TO THE WELD AREA AS POSSIBLE** to prevent any unknown, unintended paths of electrical current from causing electrical shock and fire hazards.
17. **TO REDUCE EVENTS OF UNINTENDED ARCS, CUT WIRE BACK** to 1/4 in. (6 mm) stick-out every time after welding.

HOT MATERIALS

WARNING! *Welded materials are hot and can cause severe burns if handled improperly. Do not touch welded materials with bare hands and skin until they have completely cooled.*

1. **DO NOT TOUCH MIG GUN NOZZLE AFTER WELDING** until it has had time to cool down.
2. **SPARKS/FLYING DEBRIS.** Welding creates hot sparks that can cause injury to the operator and bystanders.
3. **SLAG CAN BE OCCASIONALLY BE SPONTANEOUSLY THROWN OFF** welds as the materials cool.
4. **CHIPPING SLAG OFF WELDS CREATES FLYING DEBRIS.**
5. **WEAR PROTECTIVE APPAREL AT ALL TIMES**, including when chipping or grinding welds: ANSI-approved safety glasses or shield, plus a welder's helmet and ear plugs to keep sparks out of ears and hair.

ELECTROMAGNETIC FIELDS

1. **THE MAGNETIC FIELDS CREATED BY HIGH CURRENTS MAY AFFECT THE OPERATION OF CARDIAC PACEMAKERS.** Wearers of vital electronic equipment such as pacemakers should consult their physician before beginning any electric arc welding, cutting, gouging or spot welding operations. Keep people with pacemakers away from your welding area when welding.
2. **DO NOT WRAP CABLE AROUND YOUR BODY WHILE WELDING.**
3. **KEEP THE MIG GUN CABLE AND GROUND CABLE TOGETHER ON THE SAME SIDE OF YOUR BODY** whenever possible, taping them together if practical.

OTHER SOURCES OF INFORMATION

OTHER SOURCES OF SAFETY AND STANDARDS INFORMATION

This manual is meant to inform operators about safety and general use for this welder only. Other sources can provide further and vital information about welding safety. Please refer to the following standards and comply with them if they are applicable.

ANSI STANDARD Z49.1 — SAFETY IN WELDING AND CUTTING
obtainable from:
American Welding Society
550 NW Le Jeune Road, Miami, FL 33126
Tel. (800) 443-9353
Fax (305) 443-7559
www.amweld.org or www.aws.org

OTHER SOURCES OF INFORMATION

ENGLISH

ANSI STANDARD Z87.1 — SAFE PRACTICE FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION
available from:
American National Standards Institute (ANSI)
11 West 42nd St.
New York, NY 10036
Tel. (212) 642-4900
Fax (212) 398-0023
www.ansi.org

NFPA STANDARD 51B — CUTTING AND WELDING PROCESS
available from:
National Fire Protection Association,
1 Batterymarch Park, P.O. Box 9101
Quincy, MA 02269-9101
Tel. (617) 770-3000
Fax (617) 770-0700
www.nfpa.org

OSHA STANDARD 29 CFR, PART 1910, SUBPART Q. —WELDING, CUTTING AND BRAZING
available from your state OSHA office or from:
U. S. Dept. of Labor
OSHA, Office of Public Affairs Room
N3647, 200 Constitution Ave. NW
Washington, DC 20210
www.osha.gov

CSA STANDARD W117.2 — CODE FOR SAFETY IN WELDING AND CUTTING
available 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
available from:
American Welding Society,
550 NW Le Jeune Road
Miami, FL 33126
Tel. (800) 443-9353
Fax (305) 443-7559
www.amweld.org or www.aws.org

For beginners, informative videos on MIG welding are available for viewing on YouTube. We found the University of California at Irvine's Basic MIG Welding, http://www.youtube.com/watch?v=lzBGZaS1apw particularly useful as an introduction.

Save These Instructions

FUNCTIONAL DESCRIPTION

In MIG (Metal Inert Gas) welding, a continuously-fed metal electrode is melted into a welding pool at a constant and controlled speed. The electrode (welding wire) is connected to a constant voltage pole while the workpiece is connected to to the other pole. When the wire is fed and touches the workpiece, an electric arc is produced. The arc melts the wire that is deposited on the workpiece.

In this gas / gasless MIG180E, shielding gas to protect the weld during the process is provided either by the flux in the core of the welding wire, or by gas supplied in a bottle or cylinder and released through a diffuser in the torch nozzle.

A	Grounding cable
B	Grounding clamp
C	Welding cable
D	Thermal overload indicator lamp
E	Access door
F	Carry handle
G	Power switch
H	Voltage selector
I	Ventilation holes
J	Wire feed speed dial
K	Power cord
L	Welding torch assembly
M	Welding torch trigger
N	Welding torch hanging bail
O	Welding torch nozzle
P	Welding torch contact tip
Q	Overcurrent reset
R	Wire spool axle
S	Spool retainer and tension knob
T	Wire feed drive assembly
U	Wire feed tension knob
V	Inlet guide tube
W	Drive roller cap
X	Drive clamp arm
Y	Positive terminal post
Z	Negative terminal post
AA	Internal gas line
BB	Torch cable sheath

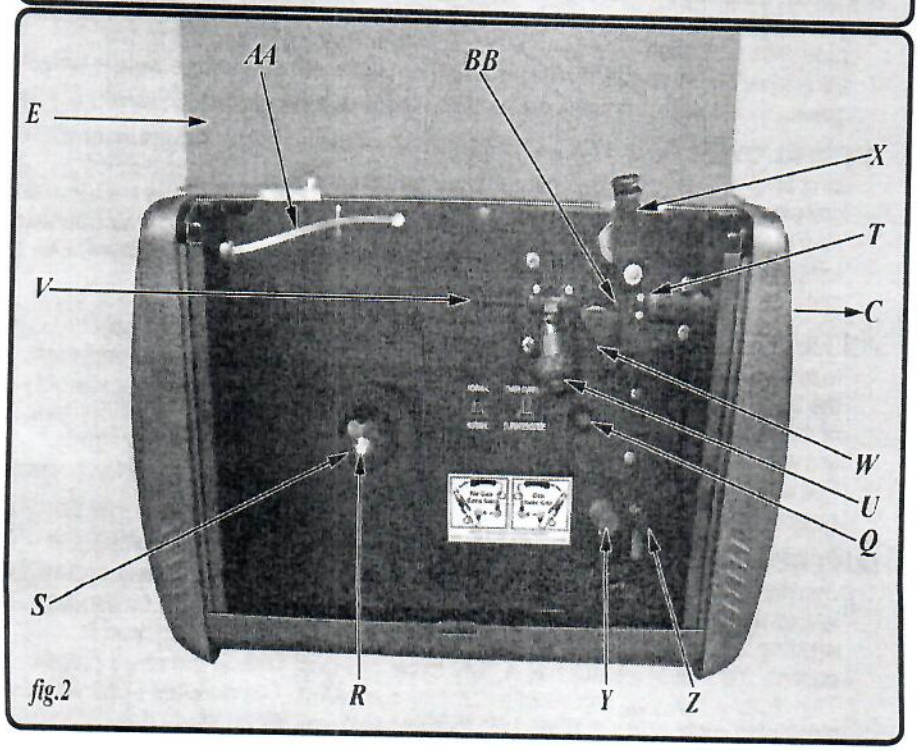


fig.2

FUNCTIONAL DESCRIPTION

The MIG180E portable MIG welder follows a basic box structure:

FRONT PANEL: contains the power switch, speed and voltage selector knobs, overheating indicator, as well as openings for the MIG torch, ground, and power cables.

ACCESS DOOR: If you open the case, you can see the wire feed drive system in the upper front part of machine. Below that is an overcurrent reset button, and pair of terminals for connecting the welding torch cable and the ground cable. The main transformer and control circuit board, etc. are installed behind the inner wall of the case.

CARRY HANDLE designed to carry your welder to the job location

WELDING CABLE contains channels for gas and wire

WELDING TORCH is installed at the end of the cable. It is used to perform the welding and contains trigger, nozzle, and contact tip.

WIRE SPEED ADJUSTMENT KNOB Adjust this knob to set the speed at which the wire feeds out of the torch. The setting of 1 is slowest and 10 is fastest. When the wire feed speed is properly adjusted, the welding wire will melt into the material you are welding as fast as it comes out of the torch. You will need to "tune in" your wire speed for different welding conditions, such as the thickness of the metals, metal type, wire size, etc.

GROUNDING CABLE connects the grounding clamp to the welder.

GROUNDING CLAMP used to connect grounding cable with the work piece and complete the welding current circuit. If the grounding clamp is not connected to the metal work piece you intend to weld, there will be no completed circuit and you will be unable to weld. It is imperative to have a good connection at the grounding clamp so power and heat aren't wasted. Grind or scrape away dirt, rust, scale, oil, or paint before attaching the grounding clamp.

POWER CORD connected to the 230 volt power supply via a grounded power plug.

POWER SWITCH When the switch is in the "O" (off) position, means the power to the transformer and control circuit, including the torch, has been disconnected from the power supply socket. When the switch is in "I" (on) position, power is supplied to the main transformer and control circuit

VOLTAGE SELECTOR Voltage selection is by the dial selector on the front panel of machine. You can choose six different voltage levels. The "A setting produces less, and "F" the most heat, selected according to the metal thickness. Use the chart in this manual or inside the door of the welder as a guide.

THERMAL OVERLOAD INDICATOR LAMP If welding with high current for a long time and you exceed the duty cycle, the automatic thermal overload protection circuit engages, the orange lamp will come on, and the machine will stop working until it returns to the set optimal temperature. When the overload lamp lights up, stop welding and wait about 15 minutes, after which you can continue.

POLARITY Using the interchangeable positive and negative terminal posts located inside the case on the polarity block, below the wire feed drive, for the grounding and welding torch cables, this welder allows you the capability of changing the welding current's electrical polarity. For welding without gas, using flux-core wire, the cables are connected to produce straight polarity. For welding with gas and solid-core wire,the cables are connected to produce reverse polarity.

DUTY CYCLE The duty cycle rating of a welder defines how long the operator can weld and how long the welder must be rested and cooled. Duty cycle is expressed as a percentage of 10 minutes and represents the maximum welding time allowed. The balance of the 10-minute cycle is required for cooling. Your new welder has a duty cycle rating of 15% at the rated output. This means that you can weld for one and a half (1-1/2) minutes of 10 with the remaining eight and a half (8-1/2) minutes required for cooling.

FUNCTIONAL DESCRIPTION

CAUTION: *Do not constantly exceed the duty cycle or damage to the welder can result.*

INTERNAL THERMAL PROTECTION If you exceed the duty cycle of the welder, an automatic internal thermal protector will open, shutting off all welder functions except the cooling fan. If this happens, DO NOT SHUT OFF THE WELDER with the power switch. Leave the welder turned on with the fan running. After cooling, the thermal protector will automatically reset and the welder will function normally again. However you should wait at least ten minutes after the thermal protector opens before resuming welding. You must do this even if the thermal protector resets itself before the ten minutes is up or you may experience less than specified duty cycle performance. If you find that the welder will not weld for one-and-a-half minutes without stopping, reduce the wire speed slightly and tune in the welder at the lowest wire speed setting that still produces a smooth arc. Welding with the wire speed set too high causes excessive current draw and shortens the duty cycle.

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 the use with your specific welder. Select a correctly-wired, properly grounded extension cord of at least 10 gauge that will mate directly with the power source receptacle and the welder power cord without the use of adaptors.

CAUTION: *Do not use an extension cord over 25 ft. (7.6 m) in length.*

UNPACKING

Remove any cartons or bags containing parts and accessories. Most parts are shipped inside the welder door.
Inspect carefully for any damage that may have occurred in transit.
Lay out and check that all parts are included.
You should have:

- MIG180E welder
- Product certificate
- Operator's manual
- Carry handle and attaching screws
- Hand-held mask
- Combination chipping hammer / wire brush
- Contact tip 0.9 mm
- Gas Conversion Kit
  - Regulator
  - Hose: 2 ft. (61 cm) long, 1/4 in. (6 mm) O.D. reinforced gas hose
  - 2 pc. 1/4 in. (6 mm) hose clamps
  - 1 pkg. M5 0.6 mm (0.023 in.) aperture contact tips to fit Unison Tweco®-compatible MIG torch
  - 1 spool of 2 lb. (0.9 kg) mild steel MIG wire 0.6 mm (0.023 in. diam)
  - Welder carrying handle and screws
  - 3 contact tips; 1 each of 0.035, 0.030, and 0.023 inches

Report any damage or missing parts to the number on the cover of this manual.
Do not throw away packaging until the entire unit is fully assembled and running.

ASSEMBLY

INSTALLING THE CARRY HANDLE

1. **LINE UP THE HOLES** in the carry handle with the holes in the top of the welder case.
2. **ATTACH THE HANDLE** to the top of the unit using the supplied self-tapping screws inserted through the holes in the handle and screwed into the top of the metal case (*fig.3*).

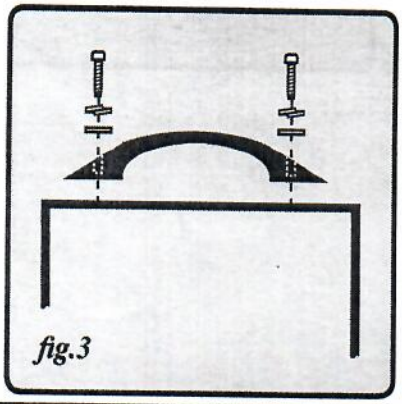


fig.3

SET-UP

ELECTRICAL

This welder is designed for a properly grounded 220 volt, 60 Hz, single-phase AC power source with a 50 amp time-delay fuse or circuit breaker. We recommend you ask a qualified electrician to verify the actual voltage at the receptacle that you are planning to use to power this welder, and to confirm it is grounded and fused correctly.

CAUTION: *Do not operate the welder on a circuit if the actual voltage is less than 198 or greater than 240 volts. Substandard performance and/or damage to the welder will result from its operation on either inadequate or excessive power.*

SHIELDING GAS CHOICES

Shielding gas is an extremely important part the MIG welding process. The molten weld puddle must be shielded from the atmosphere. The shielding gas protects a pocket around the weld puddle, keeping impurities in the air from contaminating the weld. Inadequate shielding will result in porous, brittle welds.

GAS SELECTION

There are many gases and gas mixtures available for MIG welding. The following recommendations are based on the electrical output characteristics and metal thickness capabilities of this MIG180E welder.

METAL TO BE WELDED	WIRE	SHIELDING GAS	COMMENTS
Mild steel	Steel	75% argon / 25% carbon dioxide	Good penetration on thicker metals, little burn-through and distortion on thin material. More than 75% argon will result in extremely poor weld penetration, porosity, and brittleness.
Low carbon steel	Steel	75% argon / 25% carbon dioxide	Good penetration on thicker metals, little burn-through and distortion on thin material. More than 75% argon will result in extremely poor weld penetration, porosity, and brittleness.
High strength structural steel	Steel	75% argon / 25% carbon dioxide	Good penetration on thicker metals, little burn-through and distortion on thin material. More than 75% argon will result in extremely poor weld penetration, porosity, and brittleness.
Stainless steel	Stainless steel	90% helium / 7.5% argon / 2.5% carbon dioxide	100% argon can be used, but a widened area of heating may result in more distortion around the weld

SET-UP

METAL TO BE WELDED	WIRE	SHIELDING GAS	COMMENTS
Steel	Silicon bronze	100% argon	
Aluminum	Aluminum	100% argon	

INSTALL THE SHIELDING GAS

DANGER! *Poor handling and maintenance of compressed gas cylinders and gas regulators can result in serious personal injury or death.*

- *Secure gas cylinders to the welding cart, a wall, or other fixed support at all times to prevent the cylinder from falling over, rupturing, or breaking off valve assemblies.*
- *To reduce the risk of injury or death from compressed gases and equipment hazards; read, understand, and follow the safety instructions at the front of this manual.*

1. **REMOVE** the protective cap from the top of the gas cylinder and inspect the regulator connection threads for dust, dirt, oil, and grease.
2. **REMOVE** impurities with a clean cloth. Do Not Attach your regulator to a dirty connection fitting.
3. **CRACK OPEN** the gas cylinder valve for just an instant to blow out any foreign matter that might be inside the valve port. Do not aim the opened valve cylinder port at yourself or bystanders.
4. **SCREW THE REGULATOR** into the gas cylinder valve and tighten it with a wrench.
5. **PLACE HOSE CLAMPS** loosely over the end of the gas hose.
6. **PUSH THE GAS HOSE** firmly over the barbed fittings on the back of the welder and regulator.
7. **SECURE** both ends of hose onto the barbed fittings with the hose clamps.

TO CHECK IF GAS FLOWS

DANGER! *Poor handling and maintenance of compressed gas cylinders and gas regulators can result in serious personal injury or death!*

WARNING! *To reduce risk of injury or death, always stand off to the side of the gas cylinder opposite the regulator when opening the gas cylinder valve, keeping the gas cylinder valve between you and the regulator as protection. Do not aim the opened valve cylinder port at yourself or bystanders. Failure to heed this warning could result in serious personal injury.*

N.B. *The gas cylinder you have may be equipped with male regulator connecting threads, instead of female. If this is the case, obtain a special compressed gas cylinder adapter from your gas supplier to be installed between your gas cylinder and the regulator.*

1. **THE GAS CONTROL FUNCTION** on your welder does not require the welder to be turned on or plugged in.
2. **TO AVOID DAMAGE TO YOUR REGULATOR,** be sure to have the regulator valve closed before opening the gas cylinder valve (turn the regulator adjustment knob counter-clockwise until the knob feels loose).
3. **SLOWLY CRACK OPEN THE GAS CYLINDER VALVE,** then open it all the way.
4. **PULL THE TORCH TRIGGER** to allow the gas to flow. Keep the trigger pulled.
5. **LISTEN AND FEEL FOR GAS FLOWING** from the end of the welding torch. Your regulator should have an adjustment knob to control the gas flow rate.

SET-UP

Turning the adjustment knob clockwise to increases the gas flow; counter-clockwise reduces it. For most welding, the gas flow should be set at 20 – 30 cfh. If no gas is heard or felt, verify all the steps involved in connecting the gas.

6. **RELEASE THE TRIGGER.**

N.B. *If welding outside in windy conditions, it may become necessary to set up a windbreak to keep the shielding gas from being blown off the weld area.*

7. **WHEN YOU ARE FINISHED WELDING,** be sure to turn off the gas cylinder valve to prevent gas wastage.

INSTALLING WELDING WIRE

DANGER! *Electric shock can kill! Always turn the POWER switch OFF and unplug the power cord from the AC power source before installing wire.*

N.B. *Before you install new welding wire, make sure to remove any of the old wire that may remain in the welding torch assembly. This may reduce the chance of welding wire jamming inside the torch liner.*

- This welder can accomodate both four inch (100 mm) and eight inch (200 mm) diameter rolls of welding wire.

1. **PRESS** on the access door spring lock, and then open the access door. You will see the wire-feed system.
2. **LOOSEN** the spool retainer and tension knob (*S, fig.4*) and remove them.
3. **INSTALL** the wire reel (*d, fig.4*) on the shaft (*R, fig.4*).
4. **INSTALL** the spool retainer (*Sa, fig.5*) and tension knob (*Sb, fig.5*) to fasten the wire spool. Note how the retainer engages an eight inch spool (*c, fig.5*) and a four inch spool (*d, fig.5*) of wire. Be sure the wire does not unroll from the reel, hooking it through the hole in the edge of the reel to hold it. The spool retainer and tension knob should be just tight enough to prevent the wire unrolling freely, but not to prevent the wire feed drive roller moving the wire.
5. **CHECK** before putting the wire (*f, fig.4*) through the wire feed drive assembly (*T, fig.4*)to be sure the drive roller is set to accomodate the thickness of wire you are using. Refer to fig. 6 for details.
6. **LOOSEN** the drive tension by unscrewing the wire feed drive tension knob (*U, fig.6*) and swinging it down out of the way.
7. **LIFT** up the drive clamp arm (*X, fig.6*).
8. **REMOVE** the drive roller cap (*W, fig.6*) by turning it counter-clockwise to expose the drive roller.
9. **REMOVE** and examine the drive roller. It has two grooves in it to accomodate different wire diameters. If the wire you are using is 0.030 or 0.035 in. in diameter, be sure the number stamped in the roller's side facing you indicates 0.9 mm. Smaller wire diameters would require you to flip the drive roller over on the drive shaft so that the 0.06 mm stamped on the other side faces outward.
10. **REPLACE** the drive roller cap, and lock it in place by turning it clockwise.
11. **BEFORE** installing new wire, be sure there are no pieces of old wire in the MIG welding gun which will cause any new wire to jam.

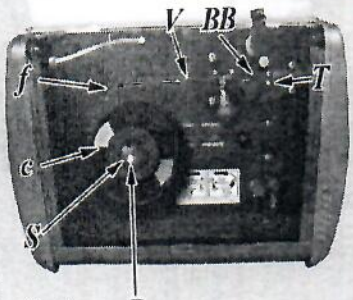


fig.4

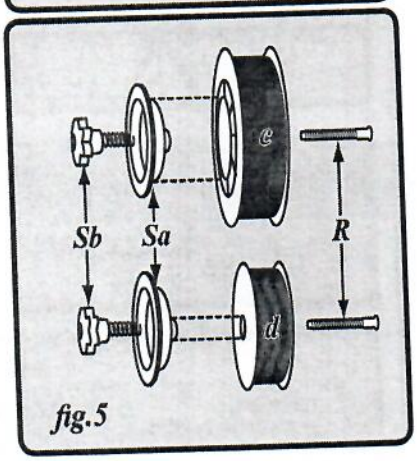


fig.5

CAUTION: *If the end of the wire is crimped or bent, cut it off and remove any burrs, as it may snag inside the torch cable sheath, causing a jam.*

SET-UP

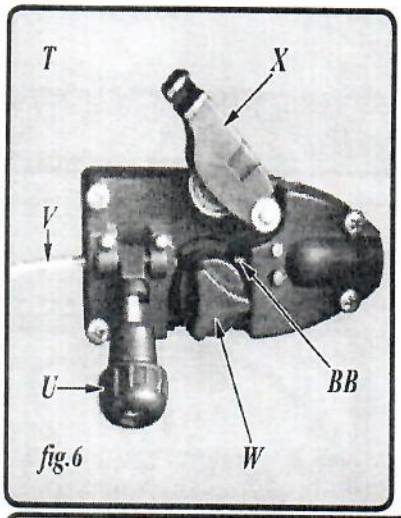


fig.6

12. **INSERT** the wire into the inlet guide tube (*V,fig.4 & 6*). Guide it over the correct channel on the drive roller and at least 12 inches (30 cm) of wire (*f,fig.4*) into the torch cable sheath (*BB, fig 4 & 6*).
13. **CLOSE** the drive clamp arm, swing up and reset the tension on the wire feed adjustment spring by turning the wire feed drive tension knob clockwise just until it no longer slides .
14. **TURN** the torch nozzle counter-clockwise and pull to remove it.

WARNING! *Use extreme caution in removing the torch contact tip and nozzle. The contact tip on this welder is electrically live whenever the torch trigger is (even accidentally) depressed.* ***Make certain the power switch is turned off.***

15. **TURN** the torch contact tip counter clockwise and remove it.
16. **LAY** the torch cable out in a straight line so that the wire can move through it easily.

N.B. *The following steps require applying power to the welder. Do not touch anything with the torch handle or an arc may be struck.*

17. **PLUG** the power cord into its 230 volt electrical outlet, move the current switch to "F", and move the power switch to "I" to turn the welder on.
18. **LIFT** the welding torch handle and depress the trigger. Continue pressing until the wire feeds through 2 in. (5 cm).
19. **CHECK** the wire feed drive, if the wire does not feed, and see if the wire is being pushed. If it is not, let go of the trigger, move the power switch to "O" to turn the welder off. Add more tension to the wire feed adjustment spring,
20. **SWITCH** the welder on again and depress the trigger
21. **TURN** the welder off once the wire is exposed at the torch tip.

WARNING! *Use extreme caution in replacing the torch contact tip and nozzle. The contact tip on this welder is electrically live whenever the torch trigger is (even accidentally) depressed.* ***Make certain the power switch is turned off.***

22. **SLIDE** the contact tip over the wire and screw it clockwise into torch handle.

N.B. *The contact tip has its inside diameter stamped on it. This must correspond with the wire diameter. Occasionally, with flux-cored wire, variations in the wire diameter may force you to use a contact tip one size larger to prevent the wire jamming.*

23. **REPLACE** the nozzle and cut off any excess wire (over 2 in. / 50 mm) at about 1/4 inch (6.5 mm) from the contact tip.
24. **CLOSE** and secure the access door.

WELDING POLARITY

This welder allows you the capability of changing the welding current's electrical polarity. You must select either DC straight polarity (DC - flux cored) or DC reverse polarity (DC + MIG).

- For welding steel with solid wire, stainless steel, silicon bronze welding of steel and flux-cored hardfacing of steel, select DC reverse polarity (DC + MIG).
- When using self-shielding, flux core steel wire, use DC straight polarity (DC – flux cored).

SET-UP

ENGLISH

CHANGE THE POLARITY OF YOUR WELDER BY THE FOLLOWING PROCEDURE STEPS

DANGER! *Electric shock can kill. Always turn the power off and unplug the power cord from the AC power source before attempting to change polarity.*

CAUTION: *DO NOT use a ratchet, crescent, or other lever-type wrench to tighten the knobs on the polarity terminals. They must be hand tightened only. Too much torque applied to one of the knobs could cause the knob to break off.*

1. **REMOVE THE RETAINING KNOBS** from the Positive (+) and Negative (–) mounting posts on the gas / no gas board, located just below the drive motor on the inside of your welder.
   - **A.**FOR GASLESS WELDING, mount the ground clamp ring-terminal to the + mounting post and the torch ring-terminal to the – mounting post.
   - **B.**FOR GAS MIG WELDING, mount the ground clamp ring-terminal to the – mounting post and the torch ring-terminal to the + mounting post.
2. **SEE CONFIGURATION SHOWN AT THE SIDE** (*fig.7*).Note the torch cable is marked with red at the ring terminal.
3. **ATTACH THE GROUND CLAMP TO THE WORK PIECE,** making sure that it is clear of dirt, oil, rust, scale, oxidation, and paint at the point of connection.

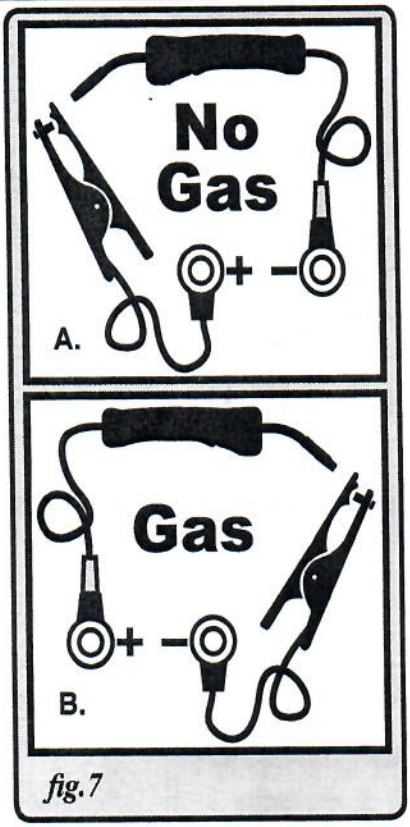


fig.7

SAFETY MEASURES WITH REGARD TO INSTALLATION

1. **PRECAUTIONS MUST BE TAKEN TO PROTECT THE OPERATOR AND THE MACHINE** from the foreign materials falling from up above.
2. **BE SURE NO FLAMMABLE OR EXPLOSIVE MATERIALS** can reach the work site.
3. **MAINTAIN 20 IN. (50 CM) OPEN SPACE AROUND THE WELDER** to maintain good ventilation.
4. **MAKE SURE THAT NO METAL OR OTHERWISE CONDUCTIVE FOREIGN BODIES** enter the welding machine housing.
5. **INSTALL THE WELDER WHERE IT WILL NOT BE EXPOSED TO SUN AND RAIN** and where the ambient temperature ranges from 14° to 104°F (-10° to +40°C) and the relative humidity is 50% @ 104°F (40°C), 90% @ 68°F (20°C).
6. **SECURE GAS CYLINDERS** to the welding cart, a wall, or other fixed support at all times to prevent the cylinder from falling over, rupturing, or breaking off valve assemblies.
7. **THE WORK AREA** should be a maximum of 3280 ft. (1000 m) above sea level
8. **AVOID VIOLENT VIBRATION IN THE WELDER'S SURROUNDING AREA.** it will hamper its performance or harm the mechanism.
9. **CHECK AND MAKE SURE THAT THERE IS NO ELECTROMAGNETIC INTERFERENCE** with and from surrounding facilities at the installation site.
10. **BE SURE THAT VENTILATION IS ADEQUATE.**
11. **REMOVE ALL COMBUSTIBLE MATERIALS** from within 35 ft. (15 m) of the work site.
12. **HAVE A CORRECTLY RATED FIRE EXTINGUISHER** on hand. DO NOT USE WATER. An ABC chemical extinguisher is recommended.
13. **POWER SUPPLY:** You require a dedicated, properly-grounded 220 volt (± 10% variation) single phase, 50 amp circuit to run this welder. If in doubt, contact a qualified electrician to verify the circuit's capacity. While in use, the welder should be the only load on the power supply circuit. Substandard performance and/or damage to the welder will result from its operation on either inadequate or excessive power. If connected to a circuit protected by fuses, use time delay fuse.

SET-UP

14. **WE DO NOT RECOMMEND THE USE OF AN EXTENSION CORD WITH THIS WELDER.**
15. **STORAGE FOR THE WELDER MUST BE IN A DRY, WELL-VENTILATED PLACE** where the temperature range does not exceed -13° — 131°F (-25° — +55°C).
16. **STORE SPOOLS OF WIRE FOR THE WELDER IN A DRY PLACE.** Even a small amount of corrosion can hamper the wire's ability to feed smoothly, as can kinks and tangles from improper handling. If a spool has developed heavy oxidation, the only solution may be to discard the spool of wire. Sometimes, though, the oxidation only affects outer layers. Unspool a few turns and check the inner wire quality before discarding. Rusted or corroded wire can cause the wire feed spool to slip and/or the hose liner to be damaged, therefore rusted or corroded wire should not be used.

OPERATION

PRE-OPERATION SAFETY CHECK

EACH ITEM LISTED BELOW MUST BE CAREFULLY CHECKED BEFORE OPERATION:

WARNING! *Cut off the power supply before opening the case to check.*

WARNING! *The welder must be well grounded before using. Make sure that the welding machine has reliable ground connection from the AC power supply socket. When several welders or some other electrical appliances are using a common grounding device, they must be connected in parallel. Series connection must not be used.*

1. **MAKE SURE THAT THE OUTPUT AND INPUT WIRE CONNECTIONS ARE SOUND.** There must be no instances of bare wire.
2. **THE WELDER'S GROUND CABLE GAUGE (DIAMETER) SHOULD NOT BE LESS THAN THAT OF INPUT POWER CABLE.**
3. **HAVE A REGULAR CHECK CONDUCTED BY QUALIFIED PERSONNEL** after the welder has been installed for a period of not longer than six months, which involves routine dust cleaning done inside the case while checking to make sure that there are no abnormal loose parts inside the welding machine.
4. **BE SURE THE FRONT PANEL DISPLAY SHOWS** that the welder works properly.
5. **CHECK THE WELDING CABLE** for damage, wear, cracks, and abrasions.
6. **REPLACE THE WELDER'S INPUT (MAIN POWER) CABLE** as soon as it is found to be broken or damaged.
7. **CHECK THAT THE POWER SUPPLY** remains sufficient for proper function of the welder and the input power is properly supplied with fuse or circuit breaker. If connected to a circuit protected by fuses, use time delay fuse marked "D".
8. **PLEASE DO NOT HESITATE TO CONTACT US FOR TECHNICAL ASSISTANCE** whenever you come across the problems you can not work out or you may deem difficult to fix.

N.B. *If you are new to the welding process, or not an experienced welding professional, you may want to take advantage of any welding course of instruction that may be available through your local technical institute or from your welding equipment supplier. In addition, there are a number of useful video demonstrations available on YouTube that can improve both your knowledge and your safe handling of welding equipment, such as the YouTube demonstration from the University of California at Irvine's Basic MIG Welding, http://www.youtube.com/watch?v=IzBGZaS1apw.*

OPERATION

ENGLISH

OPERATION

WARNING! *Turn off and unplug from power when finished welding or leave the job site temporarily.*

N.B. *Over time, both the contact tip and the nozzle can become fouled by slag and spatter from the weld. This must be cleaned out frequently or the performance of the arc can be adversely affected, mostly by obstruction of gas flow and by possible shorting between the nozzle and contact tip. Coat clean nozzles and tips with anti-spatter product to reduce this.*

1. **COVER ALL BARE SKIN AREAS** exposed to the arc with protective clothing and shoes. Wear protective dark clothing of heavy material.
2. **USE AN ARC-SHIELDED SCREEN** to prevent the arc light from interfering with others' safety.
3. **INFLAMMABLE OR EXPLOSIVE MATERIALS ARE PROHIBITED** on the job site.
4. **CHECK EACH CONNECTION** for correctness, tightness, and security.
5. **KEEP THE POWER LEADS DRY, GREASE-FREE, AND PROTECTED FROM DAMAGE** by flaming metal and sparks.
6. **CLEAN THE WELDING WIRE, GROOVE** and the 3/8 – 13/16 in. (10-20 mm) area surrounding the weld site, with no remaining rust, greasy dirt, water, or paint etc.
7. **CONNECT THE GROUNDING CABLE** to the work piece using the grounding clamp.
8. **ADJUST THE POSITION OF VOLTAGE SELECTOR** according to the thickness of the metal and the chart inside the access door (*fig.8*).

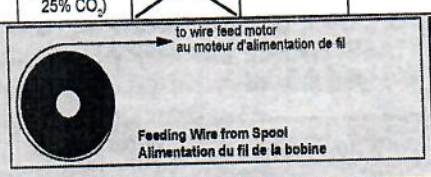
⚠ **WARNING AVERTISSEMENT** ⚠

Read carefully all instructions and warnings supplied with this welder before attempting to use or service it. Also read all warnings and caution labels on the machine.
Lisez attentivement toutes les instructions et avertissements présentées avec cette soudeuse avant de la mettre en service ou de faire d'entretien. Lisez aussi toutes les étiquettes d'avertissements et cautions sur l'appareil.

Suggested settings for welding. These are recommendations only - variations in input power, welding positions, and wire will affect the weld characteristics. Use the voltage setting and wire speed indicated as a starting point, then adjust for variables such as stick-out, travel speed, weld angle, cleanliness of metal, etc.

Réglages suggérés pour la soudure. Ce sont des recommandations seulement - les variations de puissance d'entrée, les positions de soudage, et le fil auront une incidence sur les caractéristiques de soudure. Utilisez le réglage de la tension et de la vitesse du fil indiqué comme point de départ , puis régler des variables come l'extension de la baguette, la vitesse et l'angle de soudure, la propreté du métal, etc.

PROCEDURE / MODE OPÉRATOIRE	WELDING WIRE / FIL DE SOUDAGE	GAS / GAZ	STEEL THICKNESS / ÉPAISSEUR DE L'ACIER					
			24 ga. / cal.24 0.024 in. / po. 0.61 mm	22 ga. / cal.22 0.030 in. / po. 0.76 mm	18 ga. / cal.18 0.048 in. / po. 1.2 mm	16 ga. / cal.16 0.060 in. / po. 1.5 mm	12 ga. / cal.12 0.105 in. / po. 2.6 mm	1/4 in. / po. 6.3 mm
			VOLTAGE SETTING - WIRE SPEED / NIVEAU DE TENSION - VITESSE DE FIL					
Gasless DC (-) Sans gaz CC (-)	0.030 in. (0.8 mm) flux-core wire 0,030 po. (0,8 mm) fil de soudage avec flux	none aucun		B - 2	D - 5	C - 4	E - 5	F - 8
MIG DC (+) MIG CC (+)	0.024 in. (0.6 mm) steel wire 0,024 po. (0,6 mm) fil d'acier	C25 (75% argon/ 25% CO_2)	A - 2	B - 2	D - 5	C - 5	E - 5	F - 8
	0.030 in. (0.8 mm) steel wire 0,030 po. (0,8 mm) fil d'acier	C25 (75% argon/ 25% CO_2)		B - 3	C - 5	D - 5	E - 5	F - 8



⚠ **WARNING AVERTISSEMENT** ⚠

After installing a wire spool, make sure the welding wire is inserted into the torch hose liner and the wire tension knob is correctly adjusted before depressing the torch trigger.
Après avoir installé une bobine de fil, assurez-vous que le fil de soudure est inserré dans la doublure de la torche et que le régulateur de tension de fil est correctement réglé avant de depresser la gachete de la torche.

fig.8

OPERATION

9. **CHECK THE POSITION OF POWER SWITCH.** The position must be "O" (off), then insert the power cord plug into the socket.
10. **REMOVE THE NOZZLE AND CONTACT TIP** at the head of welding torch and lay out the welding cable as straight as possible.
11. **TURN ON THE POWER SWITCH.** Move it to "I".
12. **PRESS AND HOLD THE TORCH TRIGGER** until the wire protrudes from the welding torch by 1-3/16 in. (30 mm). Release the torch trigger.
13. **SHUT OFF THE POWER**, thread the contact tip and nozzle over the wire and replace them onto the welding torch. The wire must extend through the contact tip and nozzle.
14. **SWITCH ON THE POWER.** press the torch trigger a few times, adjusting the speed by turning the wire feed speed adjustment knob
15. **RELEASE THE TRIGGER AND TRIM THE WIRE BACK** to 1/4 in. (6 mm) stick-out.
16. **ORIENT YOURSELF** to the area to be welded, and then place the face shield over your eyes.
17. **PRESS AND HOLD THE WELDING TORCH TRIGGER** and stroke the area to be welded with the electrode wire to ignite the arc.
18. **ONCE THE ARC IS IGNITED, TILT THE ELECTRODE WIRE FORWARD** to an angle of approximately 35°.
19. **WHEN THE WELD IS COMPLETE, LIFT THE ELECTRODE WIRE CLEARLY AWAY FROM ANY GROUNDED OBJECT**, set the face shield down and turn off the power switch

WARNING! *To prevent serious injury or death, do not remove the grounding cable before you finish welding.*

DUTY CYCLE

N.B. *If welding with high current for a long time and you exceed the duty cycle, the overload orange lamp will come on, and the machine will stop working until it returns to the set optimal temperature.*

1. **WHEN THE OVERLOAD LAMP LIGHTS UP, STOP WELDING** and wait about 15 minutes, after which you can continue.
2. **DUTY CYCLE RATINGS** with regard to welders define how long one can weld and how long the welder must be rested for cooling. Duty cycle is shown as a percentage of a 10-minute block of time and it represents the maximum actual welding time the machine is capable of in that period. The machine requires the balance of the 10-minute cycle to cool off.
3. **YOUR MIG180E WELDER COMES WITH A DUTY CYCLE RATING OF 15%** at its 145 amp maximum-rated output. This means that you can weld with it for 1-1/2 minutes out of 10, sitting idle the remaining 8-1/2 minutes required for cooling.

CAUTION: *Continually exceeding the duty cycle can damage the welder.*

INTERNAL THERMAL PROTECTION

1. **IF YOU DO SURPASS THE DUTY CYCLE OF THE WELDER, AN INTERNAL THERMAL PROTECTOR WILL OPEN,** the orange overload indicator lamp will come on, and all welder functions except for the cooling fan will shut off. If this happens, DO NOT switch off or unplug the welder. Leave it turned on so the fan continues to run and cool the unit. After cooling, the thermal protector will automatically reset and the welder will be able to function normally again. Even so, you should wait at least fifteen minutes after the overload light comes on before starting welding again. Resuming before the fifteen minutes is up may result in less-than-specified duty cycle performance.
2. **SHOULD YOU FIND THAT THE WELDER WILL NOT WELD FOR EVEN ONE-AND-A-HALF MINUTES WITHOUT STOPPING,** turn down the wire feed

OPERATION

to the lowest wire speed setting that still produces a smooth arc. Welding with the wire feed speed set too high will cause an excessive current draw and will shorten the duty cycle.

MAINTENANCE AND SERVICE

WARNING! *If the equipment does not work normally, you should stop working at once and check for reasons for the trouble.*

1. **USE A PROFESSIONAL FOR MAINTENANCE** rather than making repairs yourself.
2. **USE ONLY RECOMMENDED REPLACEMENT PARTS.**
3. **BEFORE PERFORMING ANY MAINTENANCE, MAKE SURE TO REMOVE THE WELDER FROM POWER AT THE SOURCE.**

DANGER! *If the cable is replaced improperly, the bared wire may contact the grounded objects, leading to stiking an accidental arc. This can damage your eyes or cause a fire. If your body contacts ground cable clamp or lead, you may be subject to severe burns or death.*

4. **THE TRANSFORMER DOES NEED NOT ANY MAINTENANCE** except to remove dust and dirt. Use a low-pressure stream of air to clean and dry it.
5. **WHEN THE WIRE ON THE WIRE FEED SPOOL IS USED UP,** you will need to replace it following the steps in Set-Up, above.
6. **STORE CABLES IN A CLEAN AND DRY PLACE,** out of the way where they could be subject to damage.

WARNING! *Before commencing any repairs, cut the main switch and breaker.*

TRANSPORT & STORAGE

1. **KEEP THIS MACHINE FREE FROM RAIN AND SNOW** during transportation and storage.
2. **TAKE NOTICE OF WARNINGS** on packing box when loading and unloading.
3. **STORAGE FOR THE WELDER MUST BE IN A DRY, WELL-VENTILATED PLACE** where the temperature range does not exceed -13° — 131°F (-25° — +55°C), free from corrosive gases and dust. The relative humidity can not be more than 90%.
4. **AFTER THE PACKAGE HAS BEEN OPENED,** it is suggested to repack the product as per the above requirements for future storage and transport. A thorough cleaning is required and you must seal the machine in the plastic bag inside the box for storage.
5. **KEEP THE PACKING MATERIALS WITH THE MACHINE** to protect it during long transportation. If the machine needs transfer, a wooden case is required. Labels such as 'Lift' and 'Keep from rain' should be labeled on the case.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
No current output	No voltage input	Check the power source fuse and breaker
	Incorrect fuse or breaker	Replace the fuse and breaker
	Overload protection is triggered	Wait until unit cools down

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Low output / poor weld penetration	Extension cord too long or incorrect gauge	Refer to Extension Cords in Functional Description in this manual
	Loose connection inside the machine	Clean out machine with compressed air. Clean and tighten connections
	Welding wire is of incorrect composition or size	Use correct wire
	Poor ground or loose connection	Re-position ground clamp and check ground cable to clamp connection
	Contact tip is wrong for wire size	Use correct size
	Loose torch connection or faulty torch assembly	Tighten connection or replace torch
	Welding polarity is wrong	Check Welding Polarity in Set-Up in this manual and re-set
	Dirty or corroded welding wire	Replace the spool of wire
Welder does not weld	Wrong input power	Check the power supply
	Output current is wrong	Check ground connection to work piece
	Output cable has a poor connection	Check the output connection
	Dirt or impurities on the workpiece	Clean the workpiece surfaces
Difficulty striking an arc	Wrong welding wire	Use the correct wire and contact tip
	Workpiece is not correctly grounded	Check to ensure a good connection
Wire feeds, but will not strike an arc	Poor ground or loose connection	Check connections & tighten as necessary
	Poor torch connection or torch is faulty	Check torch connections or replace torch
Poor wire feed	Not enough pressure on the wire feed drive	Tighten the compression nut
	Spool wing nut is too loose	Tighten wing nut
	Wire has been oxidized	Replace the spool of wire
Wire is jamming at the drive roller	Too much tension on the drive roller	Adjust wire feed drive tension
	Torch liner worn or damaged	Replace torch liner
	Contact tip is blocked or dammaged	Replace contact tip
	Torch liner stretched or too long	Trim liner to correct length
Arc strikes, but wire does not feed	Faulty wire feed drive assembly	Replace wire feed drive assembly
	No tension on drive roller	Adjust wire feed drive tension
	Drive motor is faulty (this is rare)	Replace drive motor
Current is poor	Input voltage is inadequate	Check input voltage against rated voltage
	Bad connection	Check connection of grounding clamp and cable
	One or more switches broken	Have them replaced by a qualified technician
The machine does not work when switched on	No current	Check the power source fuse and breaker
	Power cord or switch damaged	Check and replace the damaged item
	Damaged transformer	Replace the transformer
	Circuit board damaged	Replace the circuit board

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Nothing works except the fan	Duty cycle has been exceeded and thermal protection opened	Let cool at least 10 minutes
	Faulty torch trigger	Replace torch trigger
	Faulty transformer (this is rare)	Replace transformer
Nothing works	Short circuit	Reset circuit breaker by depressing reset button inside acccess panel
Weld is dirty, porous, and/or brittle	Nozzle is plugged	Clean or replace torch nozzle
	Shielding gas is not being supplied	Empty gas cylinder
		Gas flow is restricted
		Gas flow set too low at the regulator
	Gas type is incorrect	Check the Gas Selection section in this manual
	Dirty or corroded welding wire	Replace the spool of wire
Welding wire burns back to contact tip	Torch liner worn or damaged	Replace torch liner
	Torch liner stretched or too long	Trim liner to correct length
	Contact tip is wrong for wire size	Use correct size
	Contact tip is blocked or dammaged	Replace contact tip
	Wire feed speed is too slow	Increase speed
Ground clamp and / or ground cable gets hot	Poor connection between ground clamp and ground cable	Tighten connection or replace cable
Torch nozzle arcs to the work surface	Slag buildup inside nozzle or nozzle is shorted	Clean or replace torch nozzle

WARRANTY

All products distributed by Unison Products Inc. are warranted against manufacturers' faults and defects for a period of two years from the date of purchase by the end user. The Company will REPAIR OR REPLACE, AT ITS OWN OPTION, merchandise deemed by the company to be defective, provided that is has not been misused, abused, altered, or repaired by anyone other than an authorized repair center. Retain proof of purchase.

This warranty does not extend to parts deemed consumables, such as electric motor brushes, welding contact tips, etc. All warranty claims must have prior authorization and must be shipped prepaid to an authorized repair depot, accompanied by a copy of the invoice specifying the date that the item was sold to the end user.

PARTS LIST

Please refer to the schematic drawing on the pages following.

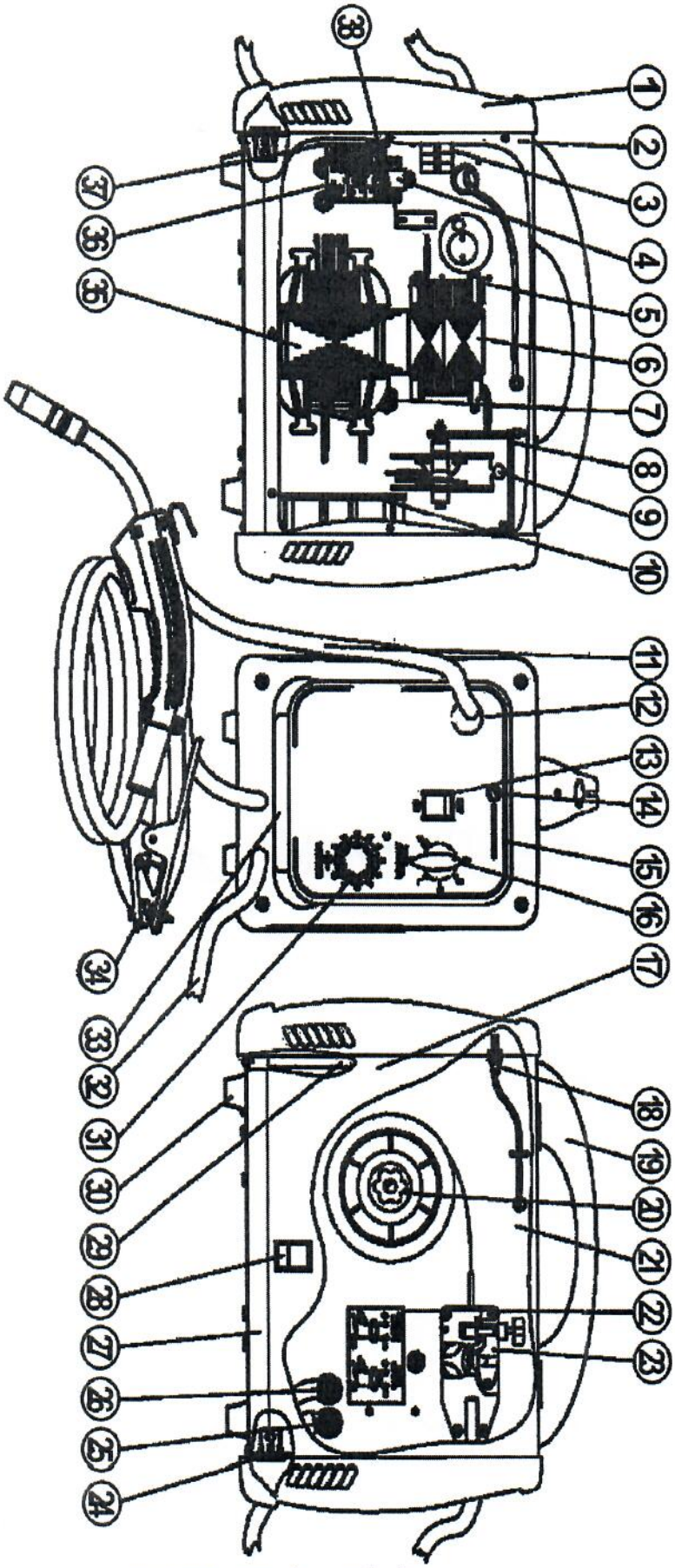
ITEM	DESCRIPTION	QTY.
W-1	Plastic bezel	2
W-2	Right panel	1
W-3	Voltage switch	1
W-4	Control transformer	1
W-5	Thermostat	1
W-6	Reactor	1
W-7	Hex nut	1
W-8	Rectifier bracket	1
W-9	Rectifier	1
W-10	Fan assembly	1
W-11	MIG torch assembly	1
W-12	Gun grommet	1
W-13	Main power switch	1
W-14	Thermal overload indicator	1
W-15	Front panel	1
W-16	Voltage selector switch	1
W-17	Left access panel	1
W-18	Gas hose connector	1
W-19	Carry handle	1
W-20	Spool holder	1
W-21	Interior bulkhead	1
W-22	Polarity label	1
W-23	Wire feed assembly	1
W-24	Cable holder	2
W-25	Connection pole black	1
W-26	Connection pole red	1
W-27	Underpan	1
W-28	Door spring latch	1
W-29	Back panel	1
W-30	Rubber feet	4
W-31	Wire feed potentiometer knob	1
W-32	Power cord with plug	1
W-33	Input / Output label 230 V 60 Hz	1
W-34	Ground cable & clamp	1
W-35	Main transformer 230 V 60 Hz	1
W-36	Control PCB	1
W-37	PCB holder	1
W-38	Circuit breaker	1

ITEM	DESCRIPTION	QTY.
T-1	Contact tip	1
T-2	Nozzle	1
T-3	Torch neck	1
T-4	Gas valve	1
T-5	Switch contact plate	1
T-6	Trigger	1
T-7	Protection tube	1
T-8	Handle	1
T-9	Gas hose	1
T-10	Liner	1
T-11	Main cable	1

SCHEMATIC DRAWING / SCHÉMA

ENGLISH

FRANÇAIS

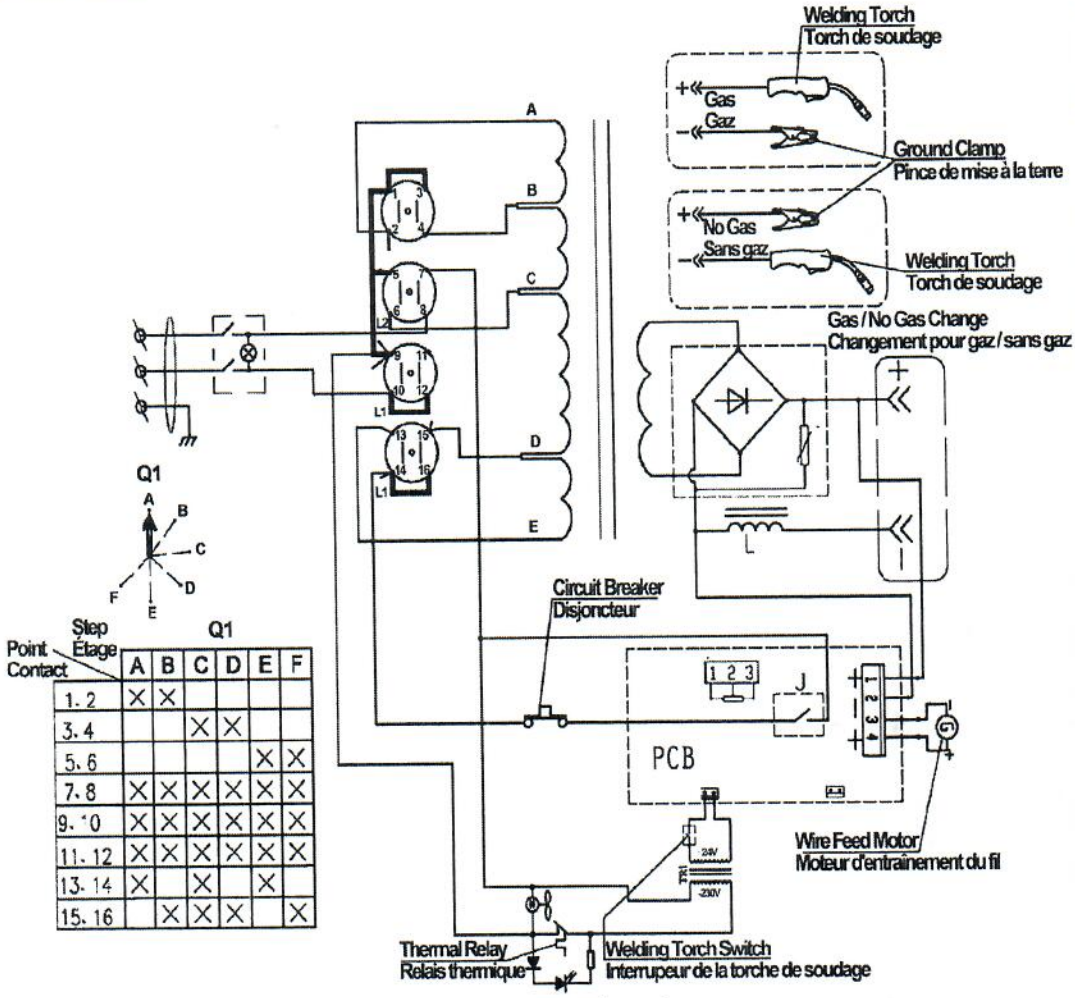


GENERAL SCHEMATIC / SCHÉMA GÉNÉRAL

SCHÉMA / SCHEMATIC DRAWING

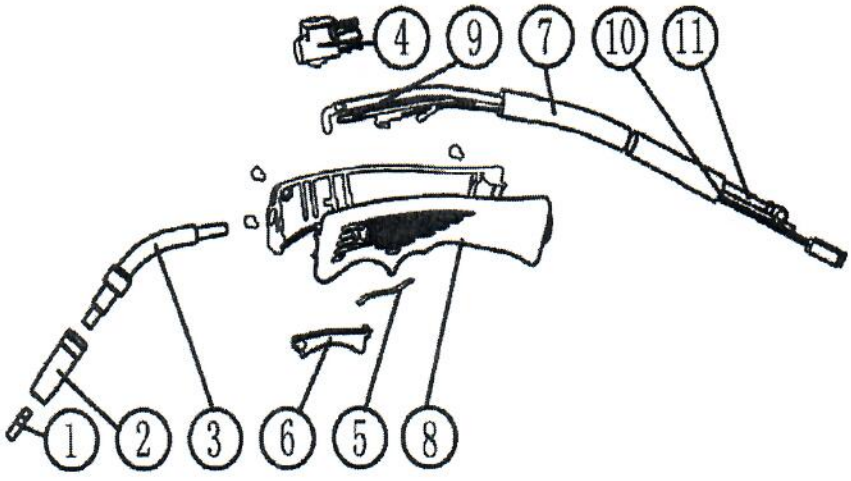
ENGLISH

FRANÇAIS



Point Contact \ Step Etage	A	B	C	D	E	F
1. 2	X	X				
3. 4			X	X		
5. 6					X	X
7. 8	X	X	X	X	X	X
9. 10	X	X	X	X	X	X
11. 12	X	X	X	X	X	X
13. 14	X		X		X	
15. 16		X	X	X		X

ELECTRICAL DRAWING / SCHÉMA ÉLECTRIQUE



TORCH SCHEMATIC / SCHÉMA DE LA TORCHE

N.B. *For reference only. No notification will be given if the details change. We reserve the right to update the machine without notification.*

N.B. *Pour référence seulement. Aucune notification ne sera accordé si les détails changent. Nous nous réservons le droit de mettre à jour la machine sans notification*