

BENCHMARKTM MC

INVERTER FLUX-CORE WELDER KIT



120V 60Hz

5 year limited warranty on tool

LIMITED
5 YEAR*
WARRANTY


229683
Inverter FC 125

**READ ALL INSTRUCTIONS BEFORE FIRST USE.
KEEP THIS MANUAL FOR FUTURE REFERENCE.
KEEP AWAY FROM CHILDREN.**



**WEAR CSA APPROVED
EYE PROTECTION**



**WEAR EAR
PROTECTION**



**WEAR A
FACE MASK**

PRODUCT SPECIFICATIONS

BENCHMARK FLUX CORE WELDER	
Input Voltage	1ph 120V
Input Power (KVA)	2.76
Input Current (A)	23
Output Current Range (A)	30-125A
Max. Output Current	125A/20.3V
No-load Voltage (V)	42
Rated Duty Cycle	30% at 90A
Efficiency (%)	85
Power Factor	0.67
Protection Class	IP21S
Insulation Class	H
Welder Dimensions	12.5"x5.6"x10.2" (31.6x14.1x26cm)
Net Weight	16.5Lb (7.5 Kg)
Input Power Cord Length	3m/10ft
MIG Torch Length	1.8m/5.9ft
Earth Clamp Length	1.8m/5.9ft

NEED ASSISTANCE?

Call us on our toll- free customer support line:

1-866-349-8665 (Monday through Friday 9am – 5pm Eastern Standard Time)

- Technical questions
- Replacement parts
- Parts missing from package

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GENERAL SAFETY WARNINGS















IMPORTANT SAFETY INSTRUCTIONS

Read and understand all safety and operational instructions. Failure to follow the safety rules listed below and other basic safety precautions may result in serious personal injury. Keep this manual, sales receipts and applicable warranty forms for future reference.

SAFETY SYMBOLS

The purpose of safety symbols is to alert you of the potential safety RISKS. Recognize and understand them. Follow the instructions provided.

SYMBOL	MEANING
 DANGER	Failure to obey a DANGER safety alert WILL result in serious personal injury or death to you or to others. Always obey all messages following this symbol to reduce the risk of serious personal injury or death.
 WARNING	Failure to obey a WARNING safety alert MAY result in serious personal injury or death to you or to others. Always obey all messages following this symbol to reduce the risk of potential serious personal injury or death.
 CAUTION	Failure to obey a CAUTION safety alert MAY result in personal injury or property damage to you or to others. Always obey all messages following this symbol to reduce the risk of personal injury or property damage.
 NOTICE  CAUTION	Failure to obey a NOTICE or a CAUTION (without a safety alert) MAY result in property damage to you or to others. Always obey all messages following this symbol to reduce the risk of property damage.
 DANGER  	ALWAYS WEAR EYE PROTECTION THAT CONFORMS WITH CSA Z94.3 or ANSI SAFETY STANDARD Z87.1 FLYING DEBRIS can cause permanent eye damage. Prescription eyeglasses ARE NOT a replacement for proper eye protection. The usage of a safety standard compliant face shield placed over proper safety glasses or goggles can reduce the risk of facial injury. Non-compliant eyewear can cause serious injury if broken during the operation of a power tool.
 WARNING 	Use hearing protection, particularly during extended periods of operation of the tool, or if the operation is noisy.
 WARNING 	WEAR A DUST MASK THAT IS DESIGNED TO BE USED WHEN OPERATING A POWER TOOL IN A DUSTY ENVIRONMENT.

SYMBOL	MEANING
 WARNING   	<p>Always wear non-slip gloves that fit properly to protect your hands and to help you grip the tool.</p> <p>Always wear sturdy clothing with long sleeves and long pants. Never operate the tool while wearing shorts, short sleeve shirt or while shirtless.</p> <p>Always wear non-slip safety boots to prevent foot injuries and slipping that could cause loss of control of the tool.</p>
 WARNING 	<p>To avoid electrical hazards, fire hazards or damage to the tool, use proper circuit protection.</p> <p>This machine is wired at the factory for 120V AC operations. Plug the power cord into a properly grounded, GFCI protected 120VAC receptacle that matches the plug. The circuit must be equipped with delayed action-type circuit breaker or fuses. To avoid shock or fire, replace power cord immediately if it is worn, cut or damaged in any way.</p>
 WARNING 	<p>WARNING: Ventilation openings in batteries and chargers must always be open to allow cooling air to circulate freely. Air vents that are blocked, restricted or covered may result in the battery or charger overheating. Overheating may lead to damage to the tool or cause a fire, resulting in possible serious injury.</p>
	ELECTRIC SHOCK CAN KILL
	FUMES AND GASES
	FIRE HAZARDS
	ARC RAYS
	HOT MATERIALS
	MAGNETIC FIELDS

GENERAL SAFETY INSTRUCTIONS

WARNING: OWNER'S MANUAL.

Read and understand this owner's manual BEFORE using machine.

TRAINED OPERATORS ONLY. Untrained operators have a higher risk of being hurt or killed. Only allow trained/supervised people to use this machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use - especially around children. Make your workshop kid proof!

DANGEROUS ENVIRONMENTS. Do not use machinery in areas that are wet, cluttered, or have poor lighting. Operating machinery in these areas greatly increases the risk of accidents and injury.

MENTAL ALERTNESS REQUIRED. Full mental alertness is required for safe operation of machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

ELECTRICAL EQUIPMENT INJURY RISKS. You can be shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

DISCONNECT POWER FIRST. Always disconnect machine from power supply before making adjustments, changing tooling, or servicing machine. This prevents an injury risk from unintended startup or contact with live electrical components.

EYE PROTECTION. Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are NOT approved safety glasses.

WEARING PROPER APPAREL. Do not wear clothing, apparel or jewellery that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to reduce risk of slipping and losing control or accidentally contacting cutting tool or moving parts.

HAZARDOUS DUST. Dust created by machinery operations may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material. Always wear a NIOSH-approved respirator to reduce your risk.

HEARING PROTECTION. Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

REMOVE ADJUSTING TOOLS. Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

USE CORRECT TOOL FOR THE JOB. Only use this tool for its intended purpose - do not force it or an attachment to do a job for which it was not designed. Never make unapproved modifications—modifying tool or using it differently than intended may result in malfunction or mechanical failure that can lead to personal injury or death!

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

CHILDREN & BYSTANDERS. Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

GUARDS & COVERS. Guards and covers reduce accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly before operating machine.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

NEVER STAND ON MACHINE. Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

STABLE MACHINE. Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

USE RECOMMENDED ACCESSORIES. Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

UNATTENDED OPERATION. To reduce the risk of accidental injury, turn machine OFF and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

MAINTAIN WITH CARE. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

DAMAGED PARTS. Regularly inspect machine for damaged, loose, or misaligned parts - or any condition that could affect safe operation. Immediately repair/replace before operating machine. For your own safety, DO NOT operate machine with damaged parts!

MAINTAIN POWER CORDS. When disconnecting cord-connected machines from power, grab and pull the plug—NOT the cord. Pulling the cord may damage the wires inside. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

SERVICE

- Have your machinery serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the machinery is maintained.

SPECIFIC SAFETY RULES FOR FLUX CORE WELDER

⚠ WARNING: In order to avoid mistakes that could cause serious injury, read the following steps carefully and understand them thoroughly before using this welder.

WELDING FUMES. Breathing welding fumes can cause suffocation or poisoning without warning. Keep your head out of welding fumes. Use adequate ventilation at the arc to safely remove the fumes from your breathing zone and the general area. Use ANSI approved respirators for the type of welding operation. Protect others from these fumes.

WELDING IN A CONFINED SPACE CAN BE HAZARDOUS. Always open all covers, sustain forced ventilation, remove toxic and hazardous materials, and provide a power disconnect to the welder inside the workspace. Always work with someone who can give you help from outside the space. Welding can displace oxygen. Always check for safe breathing atmosphere and provide air-supplied respirators if necessary. Keep in mind that all normal welding hazards are intensified in a confined space.

ELECTRIC SHOCK. DO NOT touch live electrical parts. Connect welder to power source with approved earth ground. Make sure all electrical connections are tight, clean, and dry. Connect workpiece to approved earth ground. The work lead is NOT a ground connection and is to be used only to complete the working welding circuit.

PREVENT FIRES. Welding work zones must be kept clear of flammable liquids, such as gasoline and solvents; combustible solids, such as paper and wood; and flammable gases, such as acetylene and hydrogen. Provide approved fire barriers and fire extinguishing equipment for the welding zone. Stay alert for sparks and spatter thrown into cracks and crevices that can start a smoldering fire. Inspect the work area again one hour after welding for any potential fire hazards.

WORKING AREA. Keep working area clear of any material not involved in the welding operation. Keep all equipment, workpieces, and work surfaces clean, dry, and free of entanglements. Keep lead cables organized and away from your body.

PROTECT BODY FROM ARC BURNS, SPARKS, AND SPATTER. Wear correct and approved eye, ear, and body protection. Wear complete body protection, such as clean and oil-free protective clothing, leather gloves, protective cap, heavy long-sleeve shirt, cuffless pants, and high leather boots. DO NOT wear jewellery or frayed clothing. Use a welding helmet with the correct shade of filter for the operation. Protect other people and property in your working zone from exposure to arc radiation, sparks, and spatter.

HANDLING GAS CYLINDERS. Regardless of content, pressurized gas cylinders can explode. Always secure a protector cap in place over the outlet valve assembly when moving the cylinder. A broken off valve could release the pressurized contents and cause the cylinder to be hurled about at dangerously high speeds, causing serious property damage, personal injury, or death. Always use safe methods when moving gas cylinders. Always secure a gas cylinder to a wall or approved cylinder cart with a chain before using or storing.

PROTECT GAS CYLINDERS FROM HEAT OR DAMAGE. An excess of heat can cause the pressurized gas to expand and explode the cylinder. Never weld on the gas cylinder. Damaging the outside of the cylinder can cause the cylinder to crack

and explode. Exploding pressurized gas cylinders can cause serious property damage, personal injury, or death.

ELECTRIC AND MAGNETIC FIELDS (EMF). Welding operations create EMF around the welding equipment and workpieces. Workers who have pacemakers must consult with their physician before using this equipment or being within 50 feet of welding operations.

EXPERIENCING DIFFICULTIES. If you are experiencing difficulties performing the intended operation, stop using the equipment.

Keep the environment you will be welding in free from flammable materials.

Always keep a fire extinguisher accessible to your welding environment.

Always have a qualified person install and operate this equipment.

Make sure the area is clean, dry and ventilated. Do not operate the welder in humid, wet or poorly ventilated areas.

Always have your welder maintained by a qualified technician in accordance with local, provincial and national codes.

Always be aware of your work environment. Be sure to keep other people, especially children, away from you while welding.

Check all components to ensure they are clean and in good operating condition before use.

Do not operate the welder if the output cable, wire, or any part of the system is wet.

Do not immerse them in water.

Do not allow any body part to come in contact with the wire if you are in contact with the material being welded, ground or wire from another welder.

Do not weld if you are in an awkward position. Always have a secure stance while welding to prevent accidents. Wear a safety harness if working above ground.

Do not drape cables over or around your body.

Wear a full-coverage helmet with shade (see ANSI Z87.1 safety standard) and safety glasses while welding.

Wear proper gloves and protective clothing to prevent your skin from being exposed to hot metals, UV and IR rays.

Do not overuse or overheat your welder.

Allow proper cooling time between duty cycles.

Always use this welder in the rated duty cycle to prevent excessive heat and failure.

Do not attempt to repair or maintain the welder while the power is on.

Do not touch the electrode and the ground or grounded work piece at the same time.

Do not use a welder to thaw frozen pipes.












SAVE THIS USER MANUAL

WARNING:

MISUSE or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

SAFETY SYMBOLS

The rating plate on your tool may show symbols. These represent important information about the product or instructions on its use.

	WARNING: Please read all of the safety and operating instructions carefully before using this tool. Please pay particular attention to all sections of this User Guide that carry warning symbols and notices. Some of the following symbols may be used on this tool.
	Observe caution and safety notes.
	To reduce the risk of injury, user must read and understand User Guide before using this tool.
	Wear ear protection.
	Wear protective helmet and eye protection.
	Switch off and remove plug from power source before cleaning or maintenance.
	Do not use in the rain or leave outdoors while it is raining.
	Keep bystanders away.
	Don't touch the inlet and outlet when the vacuum cover is opened or the tube is removed.
	Double insulation.
	Remove plug from the power source immediately if the power cord is damaged or cut.

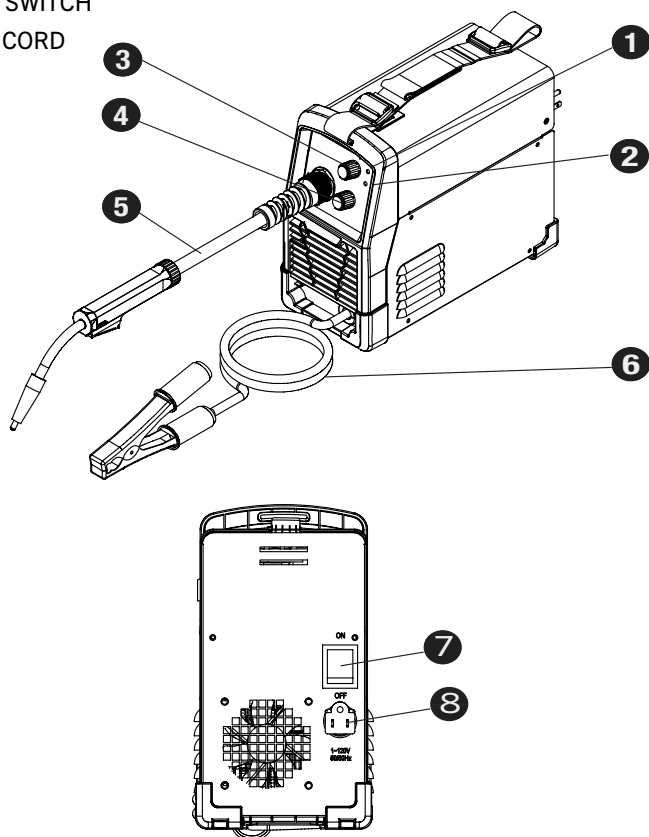
KNOW YOUR BENCHMARK FLUX CORE WELDER

Attention

Always be sure that the machinery is switched off and unplugged before adjusting or checking function on the machinery.

FUNCTIONS

1. POWER INDICATOR
2. OVERLOAD INDICATOR
3. WELDING CURRENT
4. VOLTAGE
5. WELDING CABLE AND FLUX-CORE GUN
6. GROUND CABLE AND CLAMP
7. ON/OFF SWITCH
8. POWER CORD



POWER INDICATOR

When the machine is turned on, the power indicator will be on.

Overload Indicator

When this indicator is on, it shows the machine is overloaded and the internal temperature is too high. Weld output will turn off automatically but the fan will still be working. When the internal temperature is decreased, the overload light will turn off and the machine will be ready to weld.

Welding Voltage

Set output voltage and wire speed. Refer to the “set up” chart inside the wire feed compartment.

Welding cable and Flux-Core Gun

The welding wire is driven through the welding cable and Flux-Core gun to the work piece. It is fixed to the drive system.

Ground Cable and Clamp

The ground cable and clamp is attached to the work piece to complete the flow of current needed to weld.

ON/OFF Switch

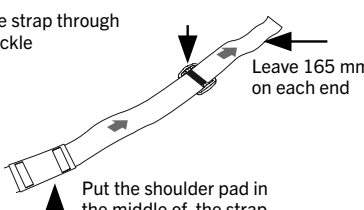
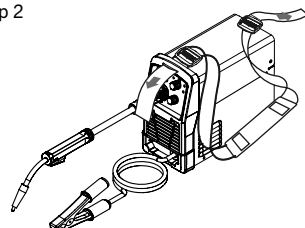
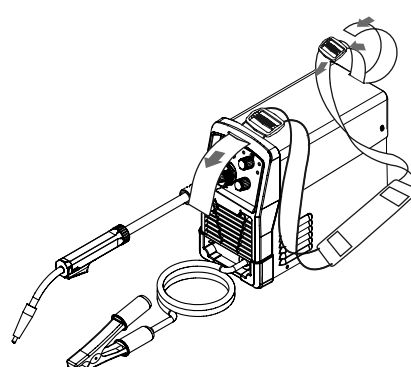
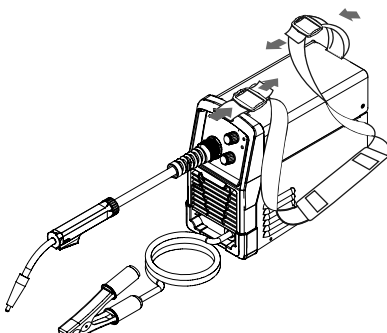
In the “off” position, no power is being supplied to the welder. In the “ON” position, power is supplied to the main transformer and control circuit.

Power Cord

The power cord connects the welder to the 120-V power supply. Plug into a 120-V/20-A receptacle to supply power to the welder

ASSEMBLY

INSTRUCTIONS FOR SHOULDER STRAP INSTALLATION

<p>Step 1 Get the strap through the buckle</p>  <p>Leave 165 mm on each end</p> <p>Put the shoulder pad in the middle of the strap</p>	<p>Step 2</p> 
<p>Step 3 Pull the two ends through the buckle</p>  <p>Install the strap onto the machine</p>	<p>Step 4 Pull the strap tight enough until it is locked in place by the buckle</p> 

ASSEMBLY INSTRUCTIONS

1. Power requirement

AC single-phase 120 V (110-130 V), 60 Hz fused with a 20-A time-delayed fuse or circuit breaker is required. DO NOT OPERATE THIS UNIT if the ACTUAL power source voltage is less than 105 V AC or greater than 132 V AC.

BEFORE YOU START—DESCRIPTION

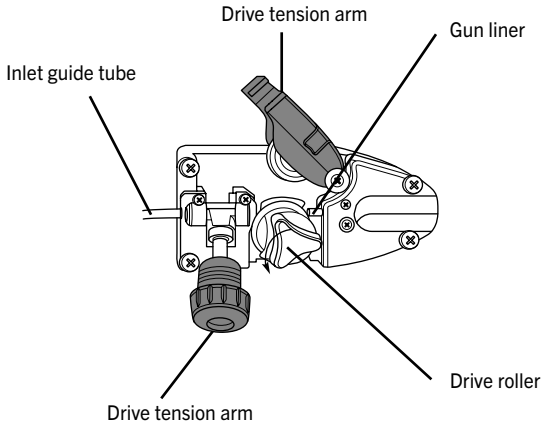
Connect your welder's power cord to a properly grounded 120-V AC, 60-Hz, single-phase, 20-A power source.

2. Extension cord

During normal use an extension cord is not necessary. It is strongly recommended that an extension cord should not be used because of the voltage drop they produce. This drop in voltage can affect the performance of the welder. If you need to use an extension cord it must be a #12 gauge cord at the least. Do not use an extension cord over 25' (7.6 m) in length.

3. Install the wire roller

Before installing any welding wire into the unit, the properly-sized groove must be positioned on the wire drive mechanism. Adjust the drive roller according to the following steps, see following picture about the wire feeder structure:



- 3.1. Open the door to the welder drive compartment.
- 3.2. Remove the drive tension (see 1) by loosening the tension adjusting knob and lifting the drive tension adjustor away from the drive tension arm (see 2).

Pull the drive tension arm away from the drive roller (see 3). See following images for reference.

- 3.3. If a wire is already installed in the welder, roll it back onto the wire spool by hand-turning the spool counter-clockwise. Be careful not to allow the wire to come out of the rear end of the inlet guide tube without holding onto it or it will unspool itself. Put the end of the wire into the hole on the outside edge of the wire spool and bend it over to hold the wire in place. Remove the spool of wire from the drive compartment of the welder.
- 3.4. Rotate the drive roller cap counter-clockwise and remove it from the drive roller.
- 3.5. Pull the drive roller off of the drive roller shaft.

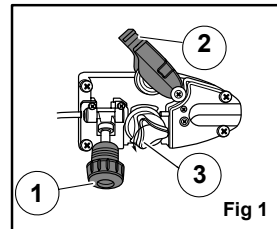


Fig 1

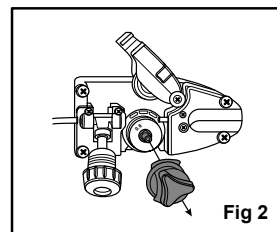


Fig 2

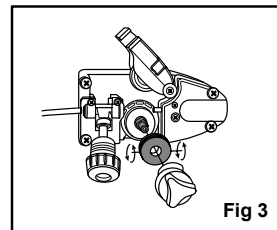


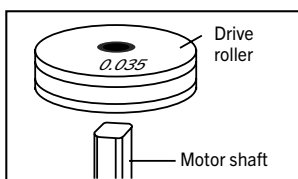
Fig 3

RECOMMENDED WIRE

3.6 Depending on the wire diameter, select the correct groove according to the following table about the relationship between wire diameter and wire roller groove size.

Wire Diameter	Roller Groove
0.030" (0.8 mm)	0.030" (0.8 mm)
0.035" (0.9 mm)	0.035" (0.9 mm)

The drive roller has two wire-size grooves built into it. When installing the drive roller, the number stamped on the drive roller for the wire size you are using should be facing you. Push the drive roller onto the drive roller shaft.



3.7. Reinstall the drive roller cap and lock in place by turning it clockwise.

3.8. Close the door to the welder drive compartment.

4. Install the wire

4.1 Select the wire.

Wire Type	Available or not
MIG wire	No
Flux-core wire 0.030" (0.8 mm)	Yes
Flux-core wire 0.035" (0.9 mm)	Yes

4" (10 cm) wire spools of 0.030" (0.8 mm) or 0.035" (0.9 mm).

Self-shielding flux-core wire can be used on this welder.

Steel from 18 gauge up to 3/16" thick can be welded with this wire.

NOTE:

- Metal thinner than 18 gauge cannot be welded with this machine. Attempting to do so will cause burn-through in the metal you are intending to weld.
- Remove any wire that is rusty; if the whole spool is rusty, discard it.

This welder uses both 4" (10 cm) spools of 0.030 or 0.035" (0.8 or 0.9 mm) thick wire.

4.2 Install the wire.

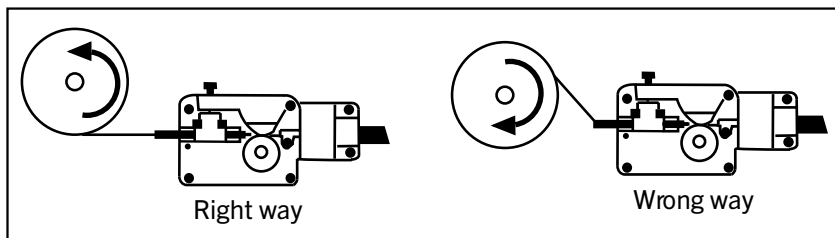
4.2.1 Remove the nozzle and contact tip from the end of the torch assembly.

4.2.2 Make sure the proper groove on the drive roller is in place for the wire installed.

If not, change the drive roller as described above.

4.2.3 Unwrap the spool of wire and then find the leading end of the wire. The wire goes through a hole in the outer edge of the spool and is bent over the spool edge to prevent the wire from unspooling BUT DO NOT UNHOOK IT at this point.

4.2.4 Place the spool on the spool holder in such a manner that the welding wire comes off the bottom of the spool into the drive mechanism. See following diagram.



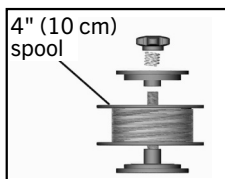
Wire installation

WARNING!

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

- Metal thinner than 18 gauge cannot be welded with this machine. Attempting to do so will cause burn through in the metal you are intending to weld.
- If the wire is rusty, remove any wire with rust. If the whole spool is rusty, discard it.
- Before installing, make sure that you have removed any old wire from the torch assembly. This will help to prevent the possibility of the wire jamming inside the torch liner.
- Be very careful when removing the welding nozzle. The contact tip on this welder is live whenever the torch trigger is pulled. Make sure the POWER is turned OFF.

4.2.5 The welder can use 4" (10 cm) spool, please see the following chart. The adjustment knob is designed to adjust the pressure tension of the wire spool.



4.2.6. Once adjustment knob is installed, set the spool tension.

- a) With one hand, turn the wire spool and continue turning it while adjusting the tension on the spool.
- b) With your free hand, tighten the drive tension adjustment knob.
- c) Stop tightening when drag is felt on the wire spool that you are turning, then stop hand-turning the wire spool.

4.2.7. After checking to make sure that your welder is disconnected from the AC power source, free the leading end of the wire from the spool, but do not let go of it until told to do so, or the wire will unspool itself.

4.2.8. Using a wire cutter, cut the bent end off the leading end of the wire so that only a straight leading end remains.

4.2.9. Loosen the tension adjusting knob holding the drive tension arm in place and lift the tension arm up off the drive roller.

4.2.10. Insert the leading end of the wire into the inlet guide tube. Then push it across the drive roller and into the torch assembly about 6" (15 cm).

4.2.11. Line the wire up to place in the groove of drive roller, then allow the drive tension arm to drop onto the drive roller.

4.2.12. Flip the quick-release drive tension back up into position on the drive tension arm.

4.2.13. Tighten (turn clockwise) the drive tension adjusting knob until the tension roller is applying enough force on the wire to prevent it from slipping out of the drive assembly.

4.2.14. Let go of the wire.

CAUTION

If TOO MUCH tension is applied to the wire spool, the wire will slip on the drive roller or will not be able to feed at all. If TOO LITTLE tension is applied, the spool of wire will want to unspool itself. Readjust the drive brake tension as necessary to correct for either problem.

4.2.15. Connect the welder power cord to the AC power source. Turn the welder ON. Set the VOLTAGE switch to the voltage (heat) setting recommended for the gauge metal that is to be welded. Refer to the label mounted on the cover, inside the drive compartment.

4.2.16. Set the WIRE SPEED control to the middle of the wire speed range.

4.2.17. Straighten the torch cable and pull the trigger on the welding torch to feed the wire through the torch assembly. When at least 1" (2.5 cm) of the wire sticks out past the end of the torch, release the trigger.

4.2.18. Turn the power switch to the OFF position.

4.2.19. Select a contact tip stamped with the same diameter as the wire being used.

NOTE: Due to inherent variances in flux-cored welding wire, it may be necessary to use a contact tip one size larger than your flux core wire if wire jams occur.

4.2.20. Slide the contact tip over the wire (protruding from the end of the torch). Thread the contact tip into the end of the torch and hand-tighten securely.

4.2.21. Install the nozzle on the torch assembly. For best results, coat the inside of the nozzle with antistick spray or gel.

4.2.22. Cut off the excess wire that extends past the end of the nozzle.

4.2.23. Turn the welder ON.

5. Setting the wire tension

5.1. Press the trigger on the torch.

5.2. Turn the drive tension adjustment knob clockwise, increasing the drive tension until the wire seems to feed smoothly without slipping.

⚠ WARNING:

Arc flash can injure eyes! To reduce the risk of arc flash, make sure that the wire coming out of the end of the torch does not come into contact with work piece, ground clamp or any grounded material during the drive tension setting process, or arcing will occur.

OPERATION

1. Main control component

Power switch - The power switch supplies electrical current to the welder. Whenever the power switch is in the ON position, the welding circuit is activated. ALWAYS turn the power switch to the OFF position and unplug the welder before performing any maintenance.

Voltage selector - The voltage selector controls the welding heat. This unit has two-step voltage control. Refer to the label inside the welder side door for recommended voltage selector settings for your welding job.

Wire speed control - The wire speed control adjusts the speed at which the wire is fed out of the welding torch. The wire speed needs to be closely matched (tuned in) to the rate at which it is being melted off. Some things that affect wire speed selection are the type and diameter of the wire being used, the heat setting selected, and the welding position to be used.

Note: The wire will feed faster without an arc. When an arc is being drawn, the wire speed will slow down.

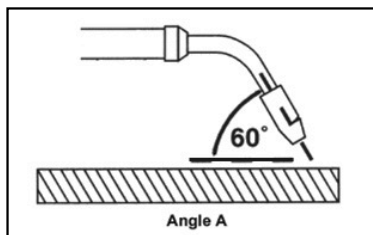
2. Hold the torch

The best way to hold the welding torch is the way that feels most comfortable to you. While practicing using your new welder, experiment holding the torch in different positions until you find the one that seems to work best for you.

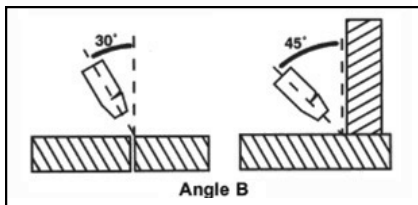
3. Position the torch to the work piece

There are two angles of the torch nozzle in relation to the work piece that must be considered when welding.

3.1. Angle A can be varied, but in most cases the optimum angle will be 60 degrees, the point at which the torch handle is parallel to the work piece. If angle A is increased, penetration will increase. If angle A is decreased, penetration will decrease as well.



3.2. Angle B can be varied for two reasons: to improve the ability to see the arc in relation to the weld puddle and to direct the force of the arc.



4. Distance from the work piece

If the nozzle is held off the work piece, the distance between the nozzle and the work piece should be kept constant and should not exceed 1/4" (6 mm) or the arc may begin sputtering, signaling a loss in welding performance.

5. Tuning in the wire speed

This is one of the most important parts of MIG welder operation and must be done before starting each welding job or whenever any of the following variables are changed: heat setting, wire diameter, or wire type.

5.1. Connect the ground clamp to a scrap piece of the same type of material which you will be welding. It should be equal to or greater than the thickness of the actual work piece, and free of oil, paint, rust, etc.

5.2. Select a heat setting.

5.3. Hold the torch in one hand, allowing the nozzle to rest on the edge of the workpiece farthest away from you, and at an angle similar to that which will be used when welding.

5.4. With your free hand, turn the wire speed dial to maximum and continue to hold onto the knob.

5.5. Lower your welding helmet and pull the trigger on the torch to start an arc, then begin to drag the torch toward you while simultaneously turning the wire speed dial counter-clockwise.

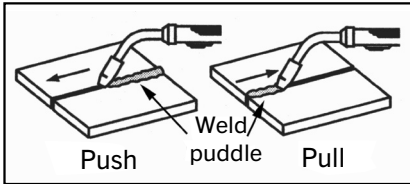
5.6. LISTEN! As you decrease the wire speed, the sound that the arc makes will change from a sputtering to a high-pitched buzzing sound and then will begin sputtering again if you decrease the wire speed too much. The point on the wire speed adjustment where the high-pitched buzzing sound is achieved is the correct setting. You can use the wire speed control to slightly increase or decrease the heat and penetration for a given heat setting by selecting higher or lower wire speed settings. Repeat this tune-in procedure if you select a new heat setting, a different diameter wire, or a different type of welding wire.

6. Welding Techniques

6.1 Moving the torch

Torch travel refers to the movement of the torch along the weld joint and is broken into two elements: direction and speed. A solid weld bead requires that the welding torch be moved steadily and at the right speed along the weld joint. Moving the torch too fast, too slow, or erratically will prevent proper fusion or create a lumpy, uneven bead.

Travel direction is the direction the torch is moved along the weld joint in relation to the weld puddle. The torch is either **PUSHED** into the weld puddle or **PULLED** away from the weld puddle.



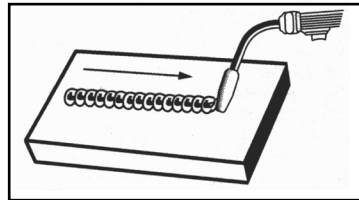
For most welding jobs, you will pull the torch along the weld joint to take advantage of the greater weld puddle visibility.

Travel speed is the rate at which the torch is being pushed or pulled along the weld joint. For a fixed heat setting, the faster the travel speed, the lower the penetration and the lower and narrower the finished weld bead. Likewise, the slower the travel speed, the deeper the penetration and the higher and wider the finished weld bead.

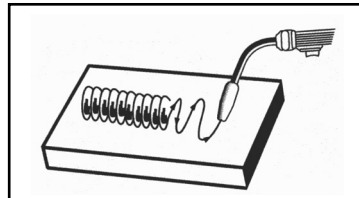
6.2. Types of welding bead

As you become more familiar with your new welder and better at laying some simple weld beads, you can begin to try some different weld bead types.

The stringer bead is formed by travelling with the torch in a straight line while keeping the wire and nozzle centered over the weld joint. See following figure.

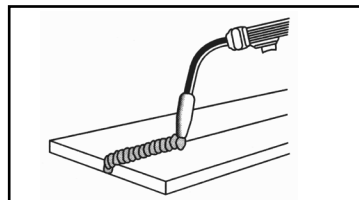


The weave bead is used when you want to deposit metal over a wider space than would be possible with a stringer bead. It is made by weaving from side to side while moving with the torch. It is best to pause momentarily at each side before weaving back the other way.



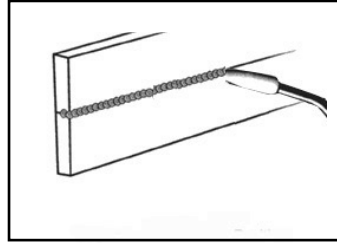
6.3 Welding position

FLAT POSITION This is easiest of the welding positions and is most commonly used. It is best if you can weld in the flat position if at all possible as good results are easier to achieve.



HORIZONTAL POSITION.

This is performed very much the same as the flat weld except that angle B (see HOLDING THE TORCH) is such that the wire is directed more toward the metal above the weld joint. This is to help prevent the weld puddle from running downward while still allowing slow enough travel speed. A good starting point for angle B is about 30 degrees DOWN from being perpendicular to the work piece.

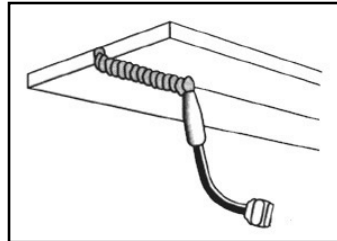


VERTICAL POSITION.

It is easier for many people to pull the torch from top to bottom. It can be difficult to prevent the puddle from running downward. Pushing the torch from bottom to top may provide better puddle control and allow slower rates of travel speed to achieve deeper penetration. When vertical welding, angle B (see HOLDING THE TORCH) is usually always kept at zero, but angle A will generally range from 45 to 60 degrees to provide better puddle control.

OVERHEAD POSITION.

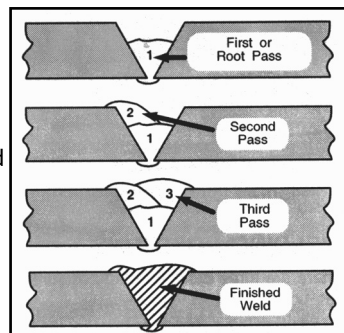
This is the most difficult welding position. Angle A (see HOLDING THE TORCH) should be maintained at 60 degrees. Maintaining this angle will reduce the chances of molten metal falling into the nozzle. Angle B should be held at zero degrees so that the wire is aiming directly into the weld joint. If you experience excessive dripping of the weld puddle, select a lower heat setting. Also, the weave bead tends to work better than the stringer.



6.4 Multiple pass welding

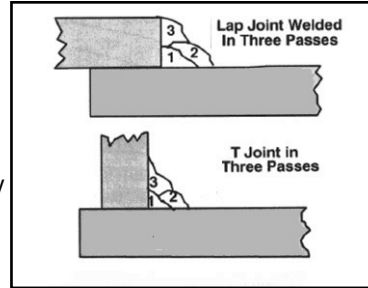
Butt Weld Joints. When butt welding thicker materials, you will need to prepare the edges of the material to be joined by grinding a bevel on the edge of one or both pieces of the metal being joined. When this is done, a V is created between the two pieces of metal, that will have to be welded closed. In most cases more than one pass or bead will need to be laid into the joint to close the V. Laying more than one bead into the same weld joint is known as a multiple-pass weld.

The illustrations in following figure show the sequence for laying multiple pass beads into a single V butt joint.



NOTE:

WHEN USING SELF-SHIELDING FLUX-CORED WIRE it is very important to thoroughly chip and brush the slag off each completed weld bead before making another pass or the next pass will be of poor quality. Fillet Weld Joints. Most fillet weld joints, on metals of moderate to heavy thickness, will require multiple pass welds to produce strong joint. The illustrations in Figure 19 show the sequence of laying multiple pass beads into a T fillet joint and a lap fillet joint.

**⚠ WARNING:**

PEENING THE SLAG FROM A WELD JOINT CAUSES SMALL CHIPS OF METAL TO FLY THROUGH THE AIR.

- Metallic chips flying through the air can cause eye injury or injury to other parts of the head, hands or exposed portions of the body.
- Wear goggles or eyeglasses with side shields and protect the hands and other exposed parts of the body with protective garments, or if possible, work with a shield between the body and the workpiece.

MAINTENANCE

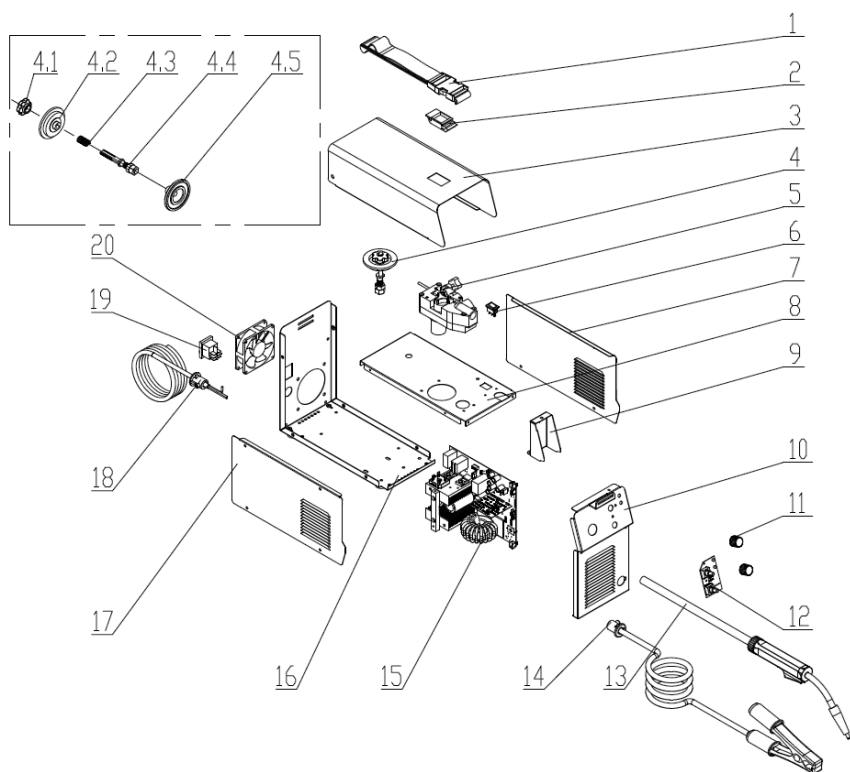
The welder needs regular maintenance:

- Periodically clean dust, dirt, grease, etc. from your welder. Every six months, or as necessary, remove the cover panel from the welder and air blow any dust and dirt that may have accumulated inside the welder.
- Replace power cord, ground cable ground clamp, or electrode assembly when damaged or worn.
- Store in a clean dry facility, free from corrosive gas, excess dust and high humidity. Store in a temperature range from -12 to 49oC (10 to 120oF) and relative humidity not more than 90%.
- When transporting or storing the welder after use, it is recommended to repack the product as it was received for protection. Cleaning is required before storage and you must seal the plastic bag in the box for storage.

TROUBLESHOOTING

Problem	Possible Cause	Corrective Action
Welder does not work when the main switch is turned on.	<ol style="list-style-type: none"> 1. No power input. 2. The power cord or power plug is broken. 3. Main switch is broken. 4. Transformer is broken. 	<ol style="list-style-type: none"> 1. Check circuit or fuse of power source. 2. Replace power cord. 3. Replace switch. 4. Replace the transformer.
Welder cannot weld.	<ol style="list-style-type: none"> 1. Incorrect power input. 2. Inadequate current at output. 3. Poor connection of output cable. 	<ol style="list-style-type: none"> 1. Check the power source. 2. Check the welding cable and grounding are reliably connected to welder and workpiece. 3. Check the output connection.
Welder blows fuse.	Wrong fuse in power supply. Check the fuse in power.	<ol style="list-style-type: none"> 1. Source should be 20 A.
Arc is hard to start.	<ol style="list-style-type: none"> 1. The wrong wire. 2. Base metal not grounded reliably. 	<ol style="list-style-type: none"> 1. Use the correct one. 2. Make sure the connection is good.
Bad wire feed.	<ol style="list-style-type: none"> 1. There is not enough pressure. 2. Adjustor of spool holder is too loose. 3. Wire has been oxidized. 	<ol style="list-style-type: none"> 1. Tighten the drive tension adjustor on wire feeder. 2. Adjust the wing nut on the spool holder. 3. Replace wire spool.
Others.		Contact us.

EXPLODED VIEW



PARTS LIST

⚠ WARNING: When servicing, use only original equipment replacement parts. The use of any other parts may create a safety hazard or cause damage to the brushless power washer.

Any attempt to repair or replace electrical parts on this power washer may create a safety hazard unless repairs are performed by a qualified technician. For more information, call the Toll-free Helpline, at 1-866-349-8665; Monday - Friday: 9am to 5pm Eastern Standard Time.

Always order by key number.

Key #	Part #	Part Name	Quantity
1	1150-002-001	HANDLE	1
2	1150-002-002	DOOR LATCH	1
3	1150-002-003	TOP PANEL	1
4	1150-002-004	SPOOL HOLDER	1
4.1	1150-002-004.1	ADJUSTING NUT	1
4.2	1150-002-004.2	HOLDER END, LOOSE	1
4.3	1150-002-004.3	SPRING	1
4.4	1150-002-004.4	BOLT	1
4.5	1150-002-004.5	HOLDER END, FIXED	1
5	1150-002-005	DRIVER ROLLER	1
6	1150-002-006	SWITCH	1
7	1150-002-007	LEFT PANEL	1
8	1150-002-008	MIDDLE BOARD	1
9	1150-002-009	SHIELDING BOX	1
10	1150-002-010	FRONT PANEL	1
11	1150-002-011	POTENTIOMETER KNOB	2
12	1150-002-012	PCB BOARD	1
13	1150-002-013	MIG TORCH	1
14	1150-002-014	GROUND CABLE	1
14.1	1150-002-014.1	GROUND CABLE CLAMP	2
15	1150-002-015	MAIN CONTROL BOARD	1
16	1150-002-016	BOTTOM	1
17	1150-002-017	RIGHT PANEL	1
18	1150-002-018	POWER CABLE	1
19	1150-002-019	MAIN SWITCH	1
20	1150-002-020	FAN	1

WARRANTY

BENCHMARK FLUX CORE WELDER

If this Benchmark tool fails due to a defect in material or workmanship within five years from the date of purchase, return it to any Home Hardware store with the original bill of sale for exchange. 3-year warranty for the battery and charger. This warranty does not include expendable parts including but not limited to blades, brushes, belts, light bulbs.

This warranty covers defects in material or workmanship only. It does not cover normal wear and tear, failure due to abuse/misuse, or defects caused by careless or accidental mishandling. If this Benchmark product is used for commercial or rental purposes, this warranty does not apply.

INVERTER FLUX-CORE WELDER KIT



120V 60Hz

5 year limited warranty on tool

BENCHMARK™

BENCHMARK TOOLS CANADA

ST. JACOBS, ONTARIO N0B 2N0

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CUSTOMER SERVICE/TECH SUPPORT

1-866-349-8665

1150-002

Made in China



* This Benchmark™ product carries a five (5) year LIMITED warranty against defects in workmanship and materials. The charger and batteries carry a three (3) year LIMITED warranty. See Owner's Manual for full details.



229683
Inverter FC 125

**READ ALL INSTRUCTIONS BEFORE FIRST USE.
KEEP THIS MANUAL FOR FUTURE REFERENCE.
KEEP AWAY FROM CHILDREN.**



**WEAR CSA APPROVED
EYE PROTECTION**



**WEAR EAR
PROTECTION**



**WEAR A
FACE MASK**