FIRSTESS MP200 PRO

IGBT INVERTER MULTI-PROCESS WELDER

(Synergic MIG | Pulse MIG | Manual MIG | Flux-Cored
HF & Lift TIG | Pulse TIG | Stick | Pulse Stick | Plasma Cutting)

OPERATOR'S MANUAL

YESWELDER ®

To help us serve you better, go to www.yeswelder.com

Congratulations on your new YesWelder product! We at YesWelder create quality products at discounted prices to make welding affordable to everyone. To help us serve you better and for further questions, visit www.yeswelder.com. Thank you for your purchase.

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1. SAFETY

THANK YOU FOR SELECTING A QUALITY PRODUCT BY YESWELDER.

PLEASE EXAMINE THE PACKING BOX AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, the title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be filed by the purchaser against the transportation company when the shipment is received.

SAFETY DEPENDS ON YOU

YESWELDER arc welding and cutting equipment are designed and built with safety. However, your overall safety can be increased by proper installation and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And most importantly, think before you act and be careful.

⚠ WARNING

This statement appears where the information must be followed precisely to avoid serious personal injury or loss of life.

⚠ CAUTION

This statement appears where the information must be followed to avoid minor personal injury or damage to this equipment.

KEEP YOUR HEAD OUT OF THE FUMES.

DON'T get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance from the arc.
READ and obey the Safety Data Sheet (SDS) and the warning label on all welding materials containers.
USE ENOUGH VENTILATION or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area.
IN A LARGE ROOM OR OUTDOORS, natural ventilation may be adequate if you keep your head out of the fumes (See below).
USE NATURAL DRAFTS or fans to keep the fumes away from your face.

If you develop unusual symptoms, see your supervisor. Perhaps the welding atmosphere and ventilation system should be checked.

WEAR CORRECT EYE, EAR & BODY PROTECTION

PROTECT your eyes and face with welding helmet properly fitted and with proper grade of filter plate (See ANSI Z49.1).
PROTECT your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.
PROTECT others from spatter, flash, and glare with protective screens or barriers.
IN SOME AREAS, protection from noise may be appropriate.
BE SURE protective equipment is in good condition. Also, wear safety glasses in work area
AT ALL TIMES.

SPECIAL SITUATIONS
DO NOT WELD OR CUT containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned.
DO NOT WELD OR CUT painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.

Additional precautionary measures:
PROTECT compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.
BE SURE cylinders are never grounded or part of an electrical circuit.
REMOVE all potential fire hazards from welding area.
ALWAYS HAVE FIRE FIGHTING EQUIPMENT READY FOR IMMEDIATE USE AND KNOW HOW TO USE IT.

1. SAFETY

WARNINGS

CALIFORNIA PROPOSITION 65 WARNINGS

WARNING: Breathing welding fumes and gases can expose you to chemicals including nickel and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always use enough ventilation or exhaust to keep fumes and gases away from your breathing zone.
- Wear respiratory protection if adequate ventilation is not available.
- Follow all safety instructions in this manual.

For more information go to www.P65 warnings.ca.gov/diesel

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

WARNING: Cancer and Reproductive Harm www.P65warnings.ca.gov

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended you download free PDF of Standard ANSI Z49.1 from the American Welding Society.
https://www.aws.org/library/doclib/AWS-Z49-2021.pdf

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.

FOR WELDING AND CUTTING EQUIPMENT

Read and understand all safety instructions before operating this equipment. Improper use can cause fire, electric shock, severe injury, or death.

1.a. **Electrical Safety**
Disconnect input power before installation, maintenance, or adjustment. Do not touch live parts. Electric shock can kill. Ensure proper grounding according to local electrical codes. Keep cables, connectors, and power sources dry and free from oil or grease.

1.b. **Fumes and Gases**
Welding and cutting generate hazardous fumes and gases. Always provide adequate ventilation. Use local exhaust or fume extraction in confined spaces. Wear approved respiratory protection if ventilation is insufficient.

1.c. **Fire and Explosion Prevention**
Keep flammable materials away from the work area. Sparks and hot metal can ignite fires. Do not weld or cut on containers that have held flammable substances unless properly cleaned. Keep fire extinguishing equipment nearby and be trained in its use.

1.d. **Personal Protection**
Wear approved helmet or face shield, gloves, flame-resistant clothing, and safety footwear. Protect eyes and skin from arc rays, sparks, and hot metal. Use appropriate hearing protection when necessary.

1.e. **Equipment Safety**
Keep all safety guards, covers, and panels in place during operation. Inspect cables, torches, hoses, and consumables regularly. Replace damaged or worn parts immediately. Use only recommended accessories and consumables.

1.f. **Work Environment**
Keep the work area clean, dry, and well lit. Do not operate the equipment in wet or damp conditions. Ensure stable footing and a safe working surface free from trip hazards.

ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and workcables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

1. SAFETY

ELECTRIC SHOCK CAN KILL.

3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground. **In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:**
- Semiautomatic DC Constant Voltage (Wire) Welder.
- DC Manual (Stick) Welder.
- AC Welder with Reduced Voltage Control.

3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.

3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

3.e. Ground the work or metal to be welded to a good electrical (earth) ground.

3.f. Maintain the electrode stinger, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

3.g. Never dip the electrode in water for cooling.

3.h. Never simultaneously touch electrically “hot” parts of electrode stingers connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

3.j. Also see Items 6.c. and 8.

ARC RAYS CAN BURN.

4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Welding shield and filter lens should conform to ANSI Z87. I standards.

4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.

4.c. Protect other nearby personnel with suitable, nonflammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES CAN BE DANGEROUS.

5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding hardfacing (see instructions on container or SDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation unless exposure assessments indicate otherwise. In confined spaces or in some circumstances, outdoors, a respirator may also be required. Additional precautions are also required when welding on galvanized steel.**

5.b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.

5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

5.e. Read and understand the manufacturer’s instructions for this equipment and the consumables to be used, including the Safety Data Sheet (SDS) and follow your employer’s safety practices. SDS forms are available from your welding distributor or from the manufacturer.

5.f. Also see item 1.b.

1. SAFETY

WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.

6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.

6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).

6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

6.h. Also see item 1.c.

6.I. Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, MA 022690-9101.

6.j. Do not use a welding power source for pipe thawing.

CYLINDER MAY EXPLODE IF DAMAGED.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

7.c. Cylinders should be located:
- •Away from areas where they may be struck or subjected to physical damage.
- •A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

7.d. Never allow the electrode, electrode stinger or any other electrically "hot" parts to touch a cylinder.

7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-l, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.

FOR ELECTRICALLY POWERED EQUIPMENT.

8.a. Turn off the power using the disconnect switch at the fuse box before working on the equipment.

8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.

8.c. Ground the equipment following the U.S. National Electrical Code and the manufacturer's recommendations.

USING GENERATORS

WARNING: Operation of this equipment from unsuitable generator power sources may result in unstable output voltage and excessive Total Harmonic Distortion (THD), leading to overheating, erratic arc performance, or irreversible damage to internal electronic components.

Generator operation is not recommended unless the following conditions are met:

- **Recommended continuous rated output:** 15 kW (provides adequate reserve capacity for full machine performance under varying load conditions)
- **Total Harmonic Distortion (THD):** ≤ 6% at rated output
- **Voltage stability:** ±10% of nominal supply voltage under load

Failure to comply with these specifications may cause machine malfunction or permanent damage.
Such damage is excluded from warranty coverage.

1. SAFETY

TECHNICAL SPECIFICATIONS: MP200 PRO

INPUT-SINGLE PHASE ONLY		
Standard Voltage /Frequency	Input Current	Recommended Receptacle
240V±10% 50/60Hz	$I_{1\ max}$=34.8A $I_{1\ eff}$=17.4A	NEMA 6-50
120V±10% 50/60Hz	$I_{1\ max}$=39A $I_{1\ eff}$=24.7A	NEMA 5-15

RATED OUTPUT-DC ONLY@40°C				
Voltage	Mode	Duty Cycle @40°C	Current	Volts at Rated Current
240V	GMAW (MIG)	25%	200A	24V
		60%	130A	20.5V
		100%	100A	19V
	GTAW (TIG)	25%	200A	18V
		60%	130A	15.2V
		100%	100A	14V
	SMAW (STICK)	25%	180A	27.2V
		60%	117A	24.7V
		100%	90A	23.6V
	PAC (CUT)	25%	40A	96V
		60%	26A	90.4V
		100%	20A	88V
120V	GMAW (MIG)	40%	120A	20V
		60%	98A	18.9V
		100%	76A	17.8V
	GTAW (TIG)	40%	120A	14.8V
		60%	98A	14V
		100%	76A	13.1V
	SMAW (STICK)	40%	120A	24.8V
		60%	98A	24V
		100%	76A	23.1V
	PAC (CUT)	40%	25A	90V
		60%	21A	88.4V
		100%	16A	86.4V

OUTPUTRANGE				
Voltage	Mode	Open Circuit Voltage	Welding Current Range	Welding Voltage Range
240V	GMAW	81V	30A~200A	15.5V~24V
	SMAW		10A~180A	20.4V~27.2V
	GTAW		10A~200A	10.4V~18V
	PAC	333V	15A~40A	86V~96V
120V	GMAW	81V	30A~140A	15.5V~21V
	SMAW		10A~120A	20.4V~24.8V
	GTAW		10A~120A	10.4V~14.8V
	PAC	333V	15A~25A	86V~90V

OTHER PARAMETERS				
Machine	Power Factor	Efficiency	Protection Class	Insulation Class
MP200 PRO	0.8	≥80%	IP21S	F

MACHINE DIMENSION				
Machine	Length	Width	Height	Weight
MP200 PRO	20.87"	9.45"	15.75"	33.95lb
	530mm	240mm	400mm	15.4Kg

TEMPERATURE RANGE	
Operating Temperature Range	Storage Temperature Range
-20°C ~ +50°C(-4°F~122°F)	-20°C ~ +50°C(-4°F~122°F)

Read the entire installation section before you start the installation.

INSTALLATION

⚠ WARNIG

ELECTRIC SHOCK can kill.

- **Only qualified personnel should perform this installation.**
- **Only personnel reading and understanding the MP200 PRO Operator's Manual should install and operate this equipment.**
- **The machine must be plugged into a grounded receptacle per national, local, or other applicable electrical codes.**
- **The MP200 PRO power switch should be in the OFF("O") position when installing the work cable and gun and connecting the power cord to input power.**

SELECT SUITABLE LOCATION

Locate the MP200 PRO in a dry place with free clean air circulation to minimize the chance of dirt accumulation that can block air passages and cause overheating.

STACKING

MP200 PRO cannot be stacked.

TILTING

The machine should be placed on a secure, level surface or a recommended cart. The equipment may topple over if this requirement is not followed.

1. SAFETY

SAFETY PRECAUTIONS

Read entire operation section before operating the WIRE FEEDER WELDER.

⚠ WARNING

ELECTRIC SHOCK can kill.

- Do not touch electrically live parts such as output terminals or internal wiring.
- Insulate yourself from the work and ground.
- Always wear dry insulating gloves.

FUMES AND GASES can be dangerous.

- Keep your head out of fumes.
- Use ventilation or exhaust to remove fumes from breathing zone.

WELDING SPARKS can cause fire or explosion

- Keep flammable material away.
- Do not weld on closed containers.

ARC RAYS can burn eyes and skin.

- Wear eye, ear and body protection.

Observe all safety information throughout this manual.

PRODUCT DESCRIPTION (PRODUCT CAPABILITIES)

This advanced, multi-process inverter welder combines MIG, Flux-Cored, TIG, Stick, and Plasma Cutting in one compact and portable unit, delivering versatility for both professional and workshop applications.

MIG Welding (GMAW) – Supports synergic, pulse, and manual modes. Synergic MIG simplifies setup with automatic parameter adjustment, while pulse MIG improves arc stability, reduces spatter, and delivers excellent control and weld appearance across various materials. In manual MIG mode, the operator can set wire feed speed and voltage independently for maximum flexibility. Suitable for mild steel, stainless steel, and aluminum (with spool gun).

Flux-Cored Welding (FCAW-S, Innershield) – Works with self-shielded flux-cored wire, eliminating the need for shielding gas. Supports both synergic and manual modes. In manual FCAW mode, the operator can set wire feed speed and voltage separately, allowing precise adjustment when using a wire feeder gun. Ideal for outdoor use and welding on painted, coated, or slightly contaminated surfaces, though the weld finish is less refined than gas-shielded MIG.

TIG Welding (GTAW) – Offers both HF start and lift arc ignition for flexibility. Standard HF TIG delivers smooth arc starts and precise control on critical materials. Pulse TIG (HF or Lift) enhances heat control, reduces warping, and provides superior weld quality on stainless steel and aluminum.

Stick Welding (SMAW) – Provides reliable performance with a wide range of electrodes. Pulse Stick improves arc stability and penetration, making it suitable for thicker sections and out-of-position welding. Rugged and versatile, ideal for outdoor and heavy-duty applications.

Plasma Cutting (PAC) – Equipped for plasma arc cutting on a variety of metals, offering clean and precise cuts with a compact, portable setup. Requires an external air compressor with suitable pressure and flow.

This welder's multi-process capability makes it highly adaptable, covering fabrication, repair, automotive, and hobbyist needs, while delivering professional-level results across diverse materials and applications.

COMMON WELDING ABBREVIATIONS

GMAW (MIG/MAG)
Gas Metal Arc Welding
SMAW(STICK)
Shielded Metal Arc Welding
GTAW(TIG)
Gas Tungsten Arc Welding
FCAW-S (Innershield)
Self-Shielded Flux-Cored Arc Welding
PAC (Plasma Cutting)
Plasma Arc Cutting

2. INSTALLATION

2.1 Accessories

❶ Firstess MP200 PRO Welder

❷ Work Clamp

❸ Electrode Holder

❹ Drive Rollers

V-Groove Drive Roller: .025"&.030"
V-Groove Drive Roller: .030"&.035" (on the machine)
V-Groove Drive Roller: .035"&.045"
K-Groove Drive Roller: .030"&.035"
U-Groove Drive Roller: .035"&.045"

❺ 240V~120V Power Adapter

❻ 24KD MIG Gun

.030"/0.8mm Contact Tip
.035"/0.9mm Contact Tip
.035"/0.9mm Aluminum Contact Tip
.045"/1.2mm Aluminum Contact Tip

❼ 13ft WP-26 TIG Torch

with M16*1.5 Connector and 5-PIN Control Cable

❽ 13ft Cleaning Torch

with 10-25 Quick Connector
with Brass Nozzle and Cleaning Brush

❾ 13ft AG60 Plasma Torch

with M16*1.5 Connector and 5-PIN Control Cable

❿ Air Filter Regulator

Built-in Air Filter Regulator with 1/4" NPT Air Connector

⓫ Graphene Feeding Liner

⓬ 6ft Gas Hose

⓭ Hex Screwdriver

⓮ USB-C Flash Drive

⓯ Operator's Manual

2.2 Controls and Settings

1. **7-Inch LCD Screen**
   Displays welding parameters, values, and system settings clearly.
2. **Wire Inching Button**
   Press to activate fast wire feed in MIG and Flux-cored modes.
3. **Wire Speed/Amperage Adjustment Knob**
   MIG/MAG/Flux Mode: Rotate to adjust wire feed speed.
   Stick/TIG/CUT Mode: Rotate to adjust amperage.
   TIG Mode (Clean): Rotate to select voltage value (5–24 V).
4. **Home Menu Button**
   Quickly return to the home menu for welding process selection and basic settings.
5. **Multi-Function Control Knob**
   Home Screen: Rotate to select welding mode or system setting.
   Parameter Screen: Rotate to highlight a parameter, press to confirm and enter submenu. Press and hold to reset to the default settings.
   Submenu: Rotate to adjust values, press to save.
   Memory Renaming: Hold to clear all characters.
6. **Back Button**
   Press to return to the previous screen or settings.
7. **Fine Adjustment Knob**
   MIG/MAG/Flux Mode: Rotate to fine-tune welding voltage.
8. **Memory Button**
   Press to access stored memory channels.
9. **Euro Torch Connector**
   Connector for standard MIG/MAG torch or Spool gun.
10. **Wire Drive Polarity Lead**
    Lead used to set wire feed polarity.
11. **Spool Gun Control Socket**
    Socket for spool gun connection.
12. **Trigger Connector Receptacle**
    Control interface for TIG and Plasma Cutting operations.
13. **Positive Output Receptacle**
14. **Work Clamp Receptacle (for Plasma Cutting)**
    Receptacle for work clamp connection in plasma cutting mode.
15. **Negative Output Receptacle**
16. **Pilot Arc Connector**
17. **Torch Connector (TIG / Plasma Cutting)**

2.2 Controls and Settings

18 **Gas Inlet**

19 **Power Switch**

20 **Input Power Cable**

21 **Built-in Air Filter Regulator with 1/4" NPT Air Connector**

22 **Cooling Fan**

23 **Wire Spool Spindle and Brake**
Holds the welding wire spool securely and allows controlled tension during feeding.

24 **Wire Feeder & Components**
Includes drive rollers, guide tube, and related parts for smooth wire feeding.

25 **USB-C Upgrade Port**
Reserved port for potential future firmware upgrades via USB-C connection.

26 **Wire Feed Roller Storage Compartment**
Convenient, secure storage for quick access to rollers.

2.3 Installing the MIG Gun Assembly

Connect the standard MIG welding gun to the Euro Torch Connector on the front of the welder. Make sure the gun connector is fully inserted into the wire drive system, then tighten the thumbscrew to secure it in place.

2.4 Gas Cylinder and Regulator Connection

For both MIG/MAG welding and HF/Lift TIG welding, shielding gas is supplied through the machine's rear gas inlet. A gas hose connects from this inlet to the regulator, which is securely attached to the gas cylinder. The cylinder must be positioned upright in a well-ventilated area and properly secured to prevent tipping.

Setup steps:

- Ensure the regulator valve is fully closed by turning the knob counterclockwise.
- Attach the regulator securely to the appropriate cylinder:
  – **MIG/MAG:** typically use a mixed shielding gas (e.g., Ar/CO_2) depending on the material.
  – **TIG:** use pure argon only.

- Connect the gas hose from the regulator to the machine's rear gas inlet.
- Open the cylinder valve and adjust the gas flow to the recommended level:
  – **MIG/MAG:** around 20~30 CFH.
  – **TIG:** typically 15~20 CFH.

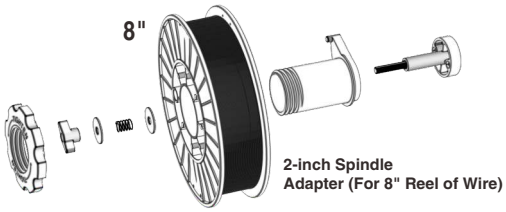
- Press the gun trigger (MIG/MAG) or briefly open the TIG torch valve to confirm proper shielding gas flow.

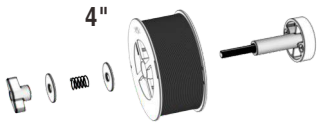
WARNING: Cylinders are highly pressurized. Handle with care. Serious accidents can result from improper handling or misuse of compressed gas cylinders. Please do not drop the cylinder, knock it over, and expose it to excessive heat, flames, or sparks. Do not strike it against other cylinders or strike an arc on it.

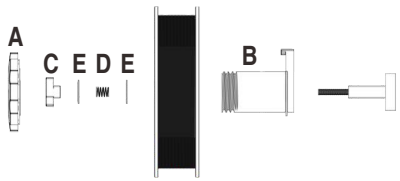
2.5 Installing the Welding Wire

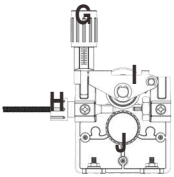
ENSURE GAS AND ELECTRICAL SUPPLIES ARE DISCONNECTED. Before proceeding, remove the nozzle and the contact tip from the gun.

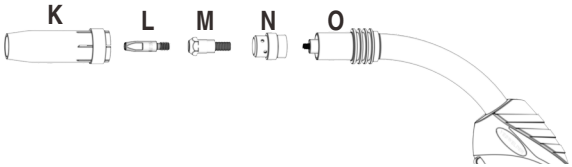
WARNING: ELECTRIC SHOCK CAN KILL! Always turn the Power SWITCH OFF and unplug the welder's **INPUT POWER CABLE** from the AC power source before installing wire. When the gun trigger is depressed, the drive rolls, spool of wire, wire being fed, and electrode are all electrically live (hot).











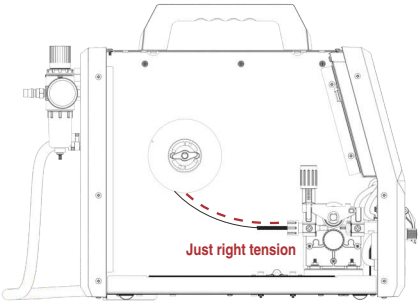
2.5.1 Installing 4-Inch Spool (See Figure For Part Identification):

- Open the access panel.
- Unscrew and remove the wire spool retention cap used for 8-inch spools (A) and store it someplace safe.
- Remove the spindle adapter for 8-inch spools (B) and keep it someplace safe.
- Remove the nut (C), spring (D), and washers (E).
- Prepare a wire spool by removing any outer wrapping. Locate the leading end of the wire, which is secured through a hole in the spool's outer edge and bent over to prevent un-spooling. Do not unhook it at this stage.
- Place the spool on the WIRE SPOOL SPINDLE so that the wire un-spools from the bottom, and the spool will rotate counterclockwise.
- Place the washer, wire spool, bushing, spring, and nut back.
- Proceed to the "FEEDING WIRE THROUGH THE MIG GUN" instructions below.

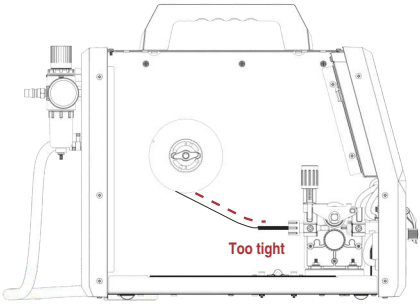
2.5.2 Installing 8-Inch Spool (See Figure For Part Identification):

- Open the access panel.
- Unscrew and remove the wire spool retention cap (A).
  Note: If the wire spool retention cap and the spindle adapter for 8-inch spools (B) are not present (the machine was last used with a 4-inch spool), put the spindle adapter for 8-inch spools back in place.
- Ensure all of the components used for a 4-inch spool are still in place. They are necessary for 8-inch spools as well (nut (C), spring (D), and washers (E)).
- Remove the outer wrapping from the spool of wire and then find the leading end of the wire (it 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 yet.
- Place the spool on the spindle adapter for an 8-inch spool so that the wire unspools from the bottom, and the spool will rotate counterclockwise.
  Note: Be sure the alignment pin near the base of the spindle adapter for 8-inch spools is inserted in the corresponding hole on the spool.
- Thread the wire spool retention cap back in place.

2.6 Feeding Wire Through the MIG Gun:



CORRECT



INCORRECT

Before beginning, ensure all necessary components are correctly assembled and the machine is powered off. Follow the steps below to properly feed wire through the MIG gun, ensuring smooth and efficient welding performance.

Secure the Wire Spool
Unhook the wire and hold both the wire end and the spool in one hand. Use the other hand to tighten the Spool Tension Nut (C) slightly, ensuring the spool doesn't spin freely but isn't too tight, which could cause inconsistent feeding.

Trim the Wire End
While holding the wire in place, use a wire cutter to trim the bent end, leaving a straight section of wire.

Open the Drive Mechanism
Release the drive roller pressure arm (I) by pulling the Pressure Arm Adjustment Knob (G) toward you. Lift the pressure arm and insert the wire into the Inlet Guide Tube (H), pushing it across the Drive Roller (J) and into the Gun Assembly(O)approximately six inches.
Important: Before proceeding, verify that the drive roller is the correct size and type for the wire size being used. Incorrect roller selection can result in poor wire feeding performance or damage to the wire.
Reference section 3.5 below for instructions on selecting the appropriate roller size and type.

Align the Wire
Align the wire within the groove of the drive roller. Lower the pressure arm back onto the roller, securing it by pulling the adjustment knob over the pressure arm. Tighten the knob enough to prevent the wire from slipping.

Note: Excessive pressure can cause wire feeding issues or damage the motor.

Release the Wire
Once the wire is secured, release it.

Remove Nozzle, Contact Tip, Contact Tip Holder, and Gas Diffuser
Remove the Nozzle (K), Contact Tip (L), Contact Tip Holder (M), and Gas Diffuser (N) from the Gun Assembly(O).

Connect Power to the Welder
Plug the welder's INPUT POWER CABLE into the power source. Adjust the machine's front panel settings as per the setup chart inside the machine door.

Feed the Wire Through the Gun
Pull the MIG gun trigger to feed the wire through the Gun Assembly(O). Check for slippage and, if necessary, adjust the pressure arm knob for proper tension.

Reinstall Contact Tip, Contact Tip Holder, Gas Diffuser, and Nozzle
Once approximately one inch of wire extends from the end of the gun, slide the Contact Tip (L) over the wire and screw it securely into place. Then install the Contact Tip Holder (M), followed by the Gas Diffuser (N), and finally reinstall the Nozzle (K) over the Gun Assembly(O).

Trim Excess Wire
Trim any excess wire extending beyond the nozzle, leaving about 1/4 inch.

Fine-Tune Drive Pressure
Adjust the pressure arm knob until the wire feeds smoothly without slipping.

Note: Ensure the correct tension to prevent slippage or excessive pressure that could crush the wire.

Verify Spool Tension
Ensure the wire stays under proper tension on the spool without loosening when the feeding stops.

Components Overview:
Nozzle (K): Covers the tip of the gun to focus gas flow.
Contact Tip (L): Conducts electricity to the welding wire.
Contact Tip Holder (M): Secures the contact tip in place.
Gas Diffuser (N): Evenly distributes gas for shielding.
Gun Assembly (O): The complete welding torch, including all attached components.

KEEP THE GUN STRAIGHT. WHEN FEEDING A NEW WIRE THROUGH THE LINER, MAKE SURE THE WIRE IS CUT CLEANLY (NO BURRS OR ANGLES) AND THAT AT LEAST 1" FROM THE END IS STRAIGHT (NO CURVES). FAILURE TO FOLLOW THESE INSTRUCTIONS COULD CAUSE DAMAGE TO THE LINER.

WHEN CHECKING THE CORRECT EXIT OF THE WIRE FROM THE GUN DO NOT BRING YOUR FACE NEAR THE GUN. YOU MAY RUN THE RISK OF BEING WOUNDED BY THE OUTGOING WIRE. DO NOT BRING YOUR FINGERS CLOSE TO THE FEEDING MECHANISM WHEN WORKING! THE ROLLS, WHEN MOVING, MAY CRUSH FINGERS. PERIODICALLY CHECK THE ROLLS. REPLACE THEM WHEN THEY ARE WORN AND COMPROMISE THE REGULAR FEEDING OF THE WIRE.

3. OPERATION

3.1 Performance Data Plate And Duty Cycle

On the machine, there is a plate that includes all the operating specifications for your new unit. The duty cycle rating of a welding machine defines how long the operator can weld and how long the welding machine must rest and be 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.

For example, a welding machine has a duty cycle rating of 30% at the rated output of 90A. With that welding machine, you can weld at 90 A output for three (3) minutes out of every 10 min with the remaining seven (7) minutes required for cooling.

The duty cycle of your new welding machine can be found on the data plate affixed to the machine. The picture below shows that the “X” row lists duty cycle percentages while the “I2” row lists the amp draw corresponding to the duty cycle. Various duty cycles at other amperages are listed on your data plate.

MODEL: MP200 PRO		**S/N:**							
1~ U1 I2 1~ 1~		ANSI/IEC STD.60974-1							
		U_1=120V				U_1=240V			
		30A/15.5V~140A/21V				30A/15.5V~200A/24V			
		X	40%	60%	100%	X	25%	60%	100%
	U_0=81V	I2	120A	98A	76A	I2	200A	130A	100A
		U2	20V	18.9V	17.8V	U2	24V	20.5V	19V
1~50Hz/60Hz		$I_{1\ max}$=32A				$I_{1\ max}$=34.8A			
		$I_{1\ eff}$=20.3A				$I_{1\ eff}$=17.4A			
		U_1=120V				U_1=240V			
		10A/10.4V~120A/14.8V				10A/10.4V~200A/18V			
		X	40%	60%	100%	X	25%	60%	100%
	U_0=81V	I2	120A	98A	76A	I2	200A	130A	100A
	U_r=13V	U2	14.8V	14V	13.1V	U2	18V	15.2V	14V
1~50Hz/60Hz		$I_{1\ max}$=26.7A				$I_{1\ max}$=27.8A			
		$I_{1\ eff}$=16.9A				$I_{1\ eff}$=13.9A			
		U_1=120V				U_1=240V			
		10A/20.4V~120A/24.8V				10A/20.4V~180A/27.2V			
		X	40%	60%	100%	X	25%	60%	100%
	U_0=81V	I2	120A	98A	76A	I2	180A	117A	90A
		U2	24.8V	24V	23.1V	U2	27.2V	24.7V	23.6V
1~50Hz/60Hz		$I_{1\ max}$=39A				$I_{1\ max}$=34A			
		$I_{1\ eff}$=24.7A				$I_{1\ eff}$=17A			
		U_1=120V				U_1=240V			
		15A/86V~25A/90V				15A/86V~40A/96V			
		X	40%	60%	100%	X	25%	60%	100%
	U_0=333V	I2	25A	21A	16A	I2	40A	26A	20A
		U2	90V	88.4V	86.4V	U2	96V	90.4V	88V
1~50Hz/60Hz		$I_{1\ max}$=32A				$I_{1\ max}$=30A			
		$I_{1\ eff}$=20.3A				$I_{1\ eff}$=15A			
Cooling Mode: Fan Cooling		Insulation Grade: F				**IP21S**			

3.2 Internal Thermal Protection

If you exceed the welding machine duty cycle, the thermal protection system will engage, shutting off all welding current output. After cooling, the thermal protector will automatically reset, and the welding functions can resume. The user needs to know it is the expected behavior of this machine. However, it would be best if you waited at least ten minutes after the thermal protector engages 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.

CAUTION: DO NOT REGULARLY EXCEED THE DUTY CYCLE OR DAMAGE TO THE WELDER CAN RESULT.

3.3 Welding Preparation

The key to making a good weld is preparation. It includes studying the process and equipment and practicing welding before attempting to weld the finished product. An organized, safe, ergonomic, comfortable, and well-lit work area should be prepared for the operator. The work area should be free of all flammables, with a fire extinguisher and a bucket of sand available to smother potential possible fires.

To properly prepare for welding with your new welder, it is necessary to:

- Read the safety precautions at the front of this manual.
- Prepare an organized, well-lit work area.
- Protect the eyes and skin of the operator and bystanders.
- Attach the work clamp to the bare metal to be welded, ensuring good contact.
- When MIG/MAG, Flux-cored Welding, ensure that the wire-roller groove in the roller corresponds to the diameter and type of wire used.
- Plug the machine into a suitable power outlet, and recommend NEMA6-50.
- Completely open the gas cylinder valve. Adjust the gas pressure regulator to the correct flow rate. (Not applicable to Stick welding / SMAW).

EXPOSURE TO A WELDING ARC IS EXTREMELY HARMFUL TO THE EYES AND SKIN. PROLONGED EXPOSURE TO A WELDING ARC CAN CAUSE BLINDNESS AND BURNS. NEVER STRIKE AN ARC OR BEGIN WELDING UNLESS YOU ARE ADEQUATELY PROTECTED. WEAR FIRE RESISTANT WELDING GLOVES, HEAVY LONG SLEEVED SHIRT, CUFFLESS PANTS; HIGH TOPPED SHOES AND A WELDING HELMET.

3.4 Welding Wire Selection

This welder can work with solid steel wire and stainless steel wire from .023"~.045" (0.6~1.2mm) diameter (MIG welding,"GMAW"), with .030"~.035" (0.8~0.9mm) flux-core wire and with .035"~.045" (0.9~1.2mm) Silicon and Magnesium aluminum wire.

3.5 Wire Feed Roller Selection

Select the appropriate V-groove, U-groove, or K-groove roller based on the wire type and diameter to ensure smooth feeding and optimal performance.

Type	Size		Suitable Welding Wire
V-Groove Roller	.025"/.030"	0.6/0.8mm	ER70S-6 mild steel wire, ER308L stainless steel
	.030"/.035"	0.8/0.9mm	
U-Groove Roller	.035"/.045"	0.9/1.2mm	ER5356 magnesium aluminum welding wire ER4043 silicon aluminum welding wire
K-Groove Roller	.030"/.035"	0.8/0.9mm	E71-GS flux-core wire

3.6 Gas Selection

Select the appropriate shielding gas based on the material and welding process being used. Below is a brief introduction to the gas requirements for each mode:

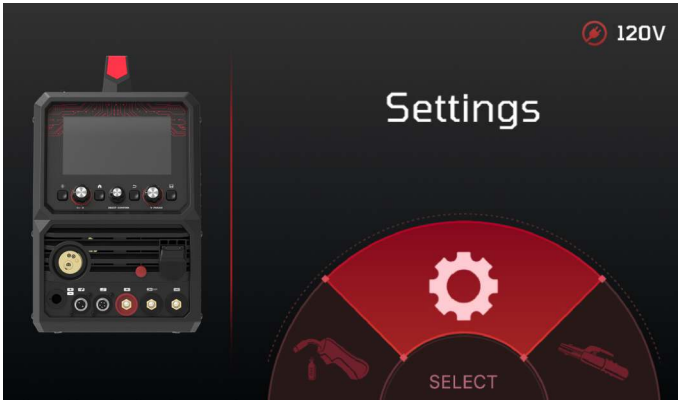
Shielding Gas Selection Guide

Mode	MATERIAL	GAS
MIG/MAG Pulse Off	Steel	75% Argon 25%CO_2
MIG/MAG Pulse Off		100%CO_2
MIG/MAG Pulse On		90% Argon 10%CO_2
MIG/MAG Pulse On	Stainless Steel	98% Argon 2%CO_2
MIG/MAG Pulse Off		He Tri-Mix, 98% Argon 2%CO_2
MIG/MAG Pulse On/Off	Aluminum	100% Argon
Flux-cored	Steel/Stainless Steel	No Gas
TIG	Steel	100% Argon
	Stainless Steel	
Stick	Steel	No Gas

3.7 Setup for Home Menu

After powering on the machine and the startup screen appears, use the Home Menu button to navigate to the main menu. From there, users can choose the welding mode (MIG/MAG, Flux-cored, TIG, Stick, CUT) and adjust the machine's basic settings.

Note: The machine is tested before shipment. When restarted, it will automatically return to the screen used prior to shut-down. To access the main menu in this case, press the Menu button on the panel.



In the Home Menu, each welding process features specific parameter icons on the screen. These icons represent various adjust-able settings. For a clear understanding of these settings, refer to the "Welding Processes and Parameter Icon Reference Table". This table helps users quickly identify and adjust the parameters for each welding process.

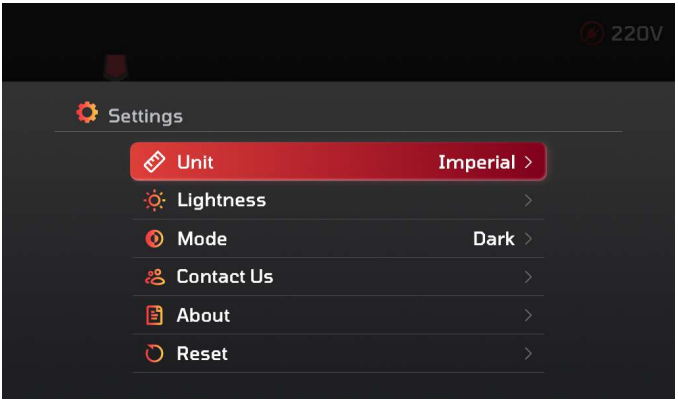
Welding Processes and Parameter Icon Reference Table

Parameter		MIG/MAG	Flux-Cored	TIG	Stick	CUT
	MIG Mode Selection	√	√	-	-	-
	MIG Gun/Spool Gun Selection	√	√	-	-	-
	Material Selection	√	√	√	-	-
	Gas Selection	√	-	-	-	-
	Diameter Selection	√	√	√	√	-
	Thickness Selection	√	√	√	√	-

Parameter						
	Gas Check	√	-	-	-	√
	Torch Trigger Mode	√	√	√	-	√
	Foot Pedal	-	-	√	-	-
	Pulse	√	-	√	√	-
	VRD	-	-	-	√	-
	Arc Force	-	-	-	√	-
	Hot Start	-	-	-	√	-
	Help Function	√	√	√	√	√
	Pre Air	-	-	-	-	√
	Post Air	-	-	-	-	√
	Inductance	√	√	-	-	-
	Burn Back	√	√	-	-	-

3.8 Basic Machine Settings

In this section, users can configure the machine's basic settings, including the following:



Unit: Choose between imperial or metric units.

Lightness: Adjust screen brightness, ranging from levels 0 to 10.

Mode: Select between Light mode or Dark mode.

Reset: Perform a system reset.

Contact: Display contact information.

About: View the machine's version.

3.9 Set Up for MIG/MAG Welding(GMAW)

3.9.1 Basic Connections

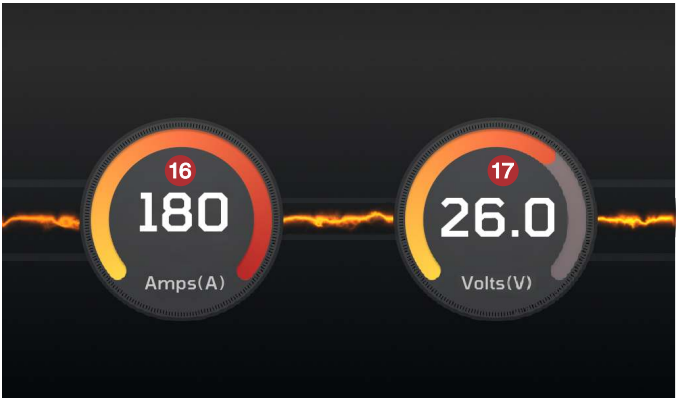
- Connect the MIG gun to the Euro Torch Connector on the machine .
- Attach the Wire Drive Polarity Lead to the Positive (+) Output Terminal.
- Connect the work clamp to the Negative (-) Output Terminal, ensuring it is securely attached to clean, bare metal on the workpiece (avoid rust or paint).
- Load the wire spool into the cabinet and feed it through the wire feeder into the gun (see “Installing the Welding Wire”).
- Connect the gas line to the regulator and connect it to the gas cylinder.
- Press the gun trigger or press the Wire Inching Button to load the wire through the gun.
- Turn on the gas cylinder, pull the trigger to check for gas flow, and set the flow rate between 20~30 CFH.
- Power on the machine and select MIG/MAG welding process with Home Menu page. Navigate to the MIG/MAG parameter settings page.
- Choose the wire type: Steel, Stainless Steel, Al Si 5% Al Mg 5%.
- Select the gas type: 75% Argon / 25% CO_2, 100% CO_2, He Tri-Mix, 90% Argon / 10% CO_2, 98% Argon / 2% CO_2, or 100% Argon.
- Choose the wire diameter (.023"~.045").
- Select the panel thickness (20ga~3/8").
- Set torch trigger operation 2T/4T/Spot.
- Choose standard MIG gun mode, trigger the torch control switch to feed the wire, and begin welding.

3.9.2 Overview of Basic MIG/MAG Parameters

This section provides an overview of the basic parameters available in MIG/MAG welding mode. It covers all core adjustable settings and is structured to assist with efficient setup and optimal welding performance.

This section provides an overview of basic MIG/MAG parameters for welding tasks:

1. **Mode Selection:**
   Synergic Mode: Voltage and wire feed speed are automatically adjusted according to the selected material, wire type, and thickness. Suitable for rapid setup and general applications.
   Manual Mode: Allows full manual control of the welding process.
2. **Torch Selection:** Switch between the standard MIG torch and the optional spool gun depending on the specific welding application and wire type being used.
3. **Material Selection:** Choose the material (Steel, Stainless Steel, Al Si 5% and Al Mg 5%) to set the appropriate welding parameters.
4. **Gas Type Selection:** Choose the appropriate gas mixture from options such as 75% Argon / 25% CO_2, 100% CO_2, He Tri-Mix, 90% Argon / 10% CO_2, 98% Argon / 2% CO_2, or 100% Argon.
5. **Wire Diameter Selection:** Select the appropriate wire diameter based on the material thickness and welding application. Available options include wire diameters typically ranging from 0.6mm to 1.2mm (.023"~.045").
6. **Thickness Selection:** Adjust the thickness setting to match the workpiece's thickness (20 ga~ 3/8"). This setting ensures proper heat input and weld penetration, providing a solid and consistent weld bead.
7. **Gas Checking:** Activates the gas flow to verify proper shielding gas output without starting the welding process.
8. **Torch Trigger Operation Selection:** Torch Trigger Operation Selection – Choose 2T, 4T, or Spot mode:
   2T: Hold trigger to weld, release to stop.
   4T: Press/release to start, press/release again to stop (reduces finger fatigue).
   Spot: Welds for preset time (0.1~10 s)
9. **Pulse Function:** Turn Pulse On or Off.
10. **Inductance:** Adjust inductance value from -10 to 10 to control arc characteristics and spatter.
11. **Burn-Back:** Set burn-back ratio (-50 to 50) to control wire stick-out and prevent sticking after welding.
12. **Help Function:** Select this option to enter the Help page for guidance.
13. **Wire Feed Speed and Current Display:** Shows the wire feed speed along with the corresponding current value, ensuring proper setup for stable welding.
14. **Voltage Display:** Shows the set voltage along with any fine-tuning adjustments. The smaller display shows the fine-tuned voltage value, adjustable within ±5V.
15. **Memory Function:** Access the memory settings with up to 20 memory slots for saving preferred welding parameters.
16. **Real-time Amperage Display:** Displays the real-time amperage during the welding process.
17. **Real-time Voltage Display:** Displays the actual voltage during welding.



3.9.3 Basic MIG/MAG Welding Parameter Recommendation

The welder features two modes: Synergic and Manual. In Synergic mode, the wire feed speed and voltage are preset to match the selected material and thickness, with the voltage adjustable within ±5V for fine-tuning. In Manual mode, users can adjust the wire feed speed within a range of 79~512 IPM and the voltage from 13~26V.

To assist users in achieving optimal welding results, the following table provides recommended Synergic mode settings for various materials, wire diameters, and plate thicknesses in MIG/MAG welding.

Basic MIG/MAG Welding Recommended Parameter Settings (in Synergic mode)

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness							
							20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
Pulse Off	240V	Steel	75%Ar 25%CO_2	.023"(0.6mm)	WFS(IPM)	79~512	197	295	394	500	/	/	/	/
				.023"(0.6mm)	Voltage(V)	13.5~18	14.7	16	17	18	/	/	/	/
				.023"(0.6mm)	Amperage(A)	30~110	50	60	80	110	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~512	94	98	126	169	280	382	461	/
				.030"(0.8mm)	Voltage(V)	14.5~22.5	14.8	15	15.8	16.5	18	20	21.6	/
				.030"(0.8mm)	Amperage(A)	50~170	50	60	80	90	120	150	170	/
				.035"(0.9mm)	WFS(IPM)	79~512	/	87	98	150	217	331	390	488
				.035"(0.9mm)	Voltage(V)	14.3~23.3	/	14.3	14.6	15	17.5	21	21.8	23.3
				.035"(0.9mm)	Amperage(A)	60~200	/	60	80	90	120	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~236	/	/	/	79	106	154	189	217
				.045"(1.2mm)	Voltage(V)	15.7~21	/	/	/	15.7	16.2	18.2	19.4	20.1
				.045"(1.2mm)	Amperage(A)	100~200	/	/	/	100	120	170	190	200
		Steel	100%CO_2	.023"(0.6mm)	WFS(IPM)	79~512	197	295	394	512	/	/	/	/
				.023"(0.6mm)	Voltage(V)	15.8~19	16.5	17.3	18	19	/	/	/	/
				.023"(0.6mm)	Amperage(A)	30~90	50	60	80	90	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~512	98	110	126	169	299	449	500	/
				.030"(0.8mm)	Voltage(V)	14.6~23.5	15.3	15.5	16	17	19.5	22.2	23.2	/
				.030"(0.8mm)	Amperage(A)	50~170	50	60	80	90	120	165	170	/
				.035"(0.9mm)	WFS(IPM)	79~512	/	79	94	130	217	350	433	492
				.035"(0.9mm)	Voltage(V)	15~25.5	/	15	15.8	17.5	19.8	22.5	24.5	25.5
				.035"(0.9mm)	Amperage(A)	60~200	/	60	80	90	120	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~236	/	/	/	79	106	154	177	217
				.045"(1.2mm)	Voltage(V)	17.5~23.7	/	/	/	17.5	18.8	20.2	21	23
				.045"(1.2mm)	Amperage(A)	105~200	/	/	/	105	120	170	190	200
		Stainless Steel	98%Ar 2%CO_2	.023"(0.6mm)	WFS(IPM)	79~512	276	374	512	/	/	/	/	/
				.023"(0.6mm)	Voltage(V)	15~18	16.7	17.3	18	/	/	/	/	/
				.023"(0.6mm)	Amperage(A)	30~80	50	60	80	/	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~512	157	197	256	276	421	512	/	/
				.030"(0.8mm)	Voltage(V)	14.2~21.6	16.3	16.8	17.9	18.2	20.1	21.6	/	/
				.030"(0.8mm)	Amperage(A)	57~160	57	65	80	90	120	160	/	/
				.035"(0.9mm)	WFS(IPM)	79~512	102	138	165	197	295	433	472	512
				.035"(0.9mm)	Voltage(V)	14.2~24.4	15.3	15.8	16.2	17	19.6	22.8	24.1	24.4
				.035"(0.9mm)	Amperage(A)	50~200	50	60	80	90	120	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~236	/	/	79	91	138	205	217	236
				.045"(1.2mm)	Voltage(V)	14.7~19	/	/	14.7	14.8	16.5	18.4	18.6	19
				.045"(1.2mm)	Amperage(A)	80~200	/	/	80	90	130	170	190	200
		Stainless Steel	He Tri-Mix	.023"(0.6mm)	WFS(IPM)	79~512	354	433	512	/	/	/	/	/
				.023"(0.6mm)	Voltage(V)	15~18	17.2	17.6	18	/	/	/	/	/
				.023"(0.6mm)	Amperage(A)	30~80	50	60	80	/	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~512	177	197	236	295	402	512	/	/
				.030"(0.8mm)	Voltage(V)	19~23	19	19.2	19.7	20.2	21.5	23	/	/
				.030"(0.8mm)	Amperage(A)	50~160	50	60	80	90	120	160	/	/
				.035"(0.9mm)	WFS(IPM)	79~512	/	126	150	185	319	433	472	512
				.035"(0.9mm)	Voltage(V)	15.5~26	/	15.5	16.5	17.3	21.1	23.6	24.9	26
				.035"(0.9mm)	Amperage(A)	60~200	/	60	80	90	120	160	180	200
				.045"(1.2mm)	WFS(IPM)	79~295	/	/	/	91	161	197	236	295
				.045"(1.2mm)	Voltage(V)	16~23.6	/	/	/	16	18.3	19.1	19.8	23.6
				.045"(1.2mm)	Amperage (A)	90~200	/	/	/	90	120	170	190	200
		Al Si 5%	100% Ar	.035"(0.9mm)	WFS(IPM)	79-512	/	228	276	315	354	413	472	/
				.035"(0.9mm)	Voltage(V)	13~26	/	13	14.6	16	22	25.5	26	/
				.035"(0.9mm)	Amperage(A)	60~170	/	60	80	90	120	150	170	/
				.045"(1.2mm)	WFS(IPM)	79~354	/	/	118	157	197	276	315	354
				.045"(1.2mm)	Voltage(V)	13~26	/	/	13	15.5	20.5	23.5	24.5	26
				.045"(1.2mm)	Amperage(A)	80~200	/	/	80	90	120	170	190	200
		Al Mg 5%	100% Ar	.035"(0.9mm)	WFS(IPM)	79~512	/	201	264	315	480	512	/	/
				.035"(0.9mm)	Voltage(V)	13~22	/	13	13	15.2	23.5	22	/	/
				.035"(0.9mm)	Amperage(A)	50~135	/	50	70	75	120	135	/	/
				.045"(1.2mm)	WFS(IPM)	79~472	/	/	157	236	315	354	394	453
				.045"(1.2mm)	Voltage(V)	13~24	/	/	13	13.5	20.5	21.7	23	23.7
				.045"(1.2mm)	Amperage(A)	80~200	/	/	80	90	120	170	190	200

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness							
							20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
Pulse On	240V	Steel	90%Ar 10%CO_2	.030"(0.8mm)	WFS(IPM)	79~472	138	165	197	236	354	433	472	/
				.030"(0.8mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.030"(0.8mm)	Amperage(A)	50~170	50	60	80	90	120	150	170	/
				.035"(0.9mm)	WFS(IPM)	79~172	/	/	157	189	252	335	429	472
				.035"(0.9mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.035"(0.9mm)	Amperage(A)	80~200	/	/	80	90	120	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~236	/	/	/	79	138	165	197	217
				.045"(1.2mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.045"(1.2mm)	Amperage(A)	90~200	/	/	/	90	120	170	190	200
		Stainless Steel	98%Ar 2%CO_2	.030"(0.8mm)	WFS(IPM)	79~472	177	197	276	315	453	/	/	/
				.030"(0.8mm)	Voltage(V)	15~25	/	/	/	/	/	/	/	/
				.030"(0.8mm)	Amperage(A)	50~135	50	60	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~472	/	114	150	201	291	358	421	453
				.035"(0.9mm)	Voltage(V)	16~25	/	/	/	/	/	/	/	/
				.035"(0.9mm)	Amperage(A)	60~200	/	60	80	90	120	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~236	/	/	/	79	126	169	197	217
				.045"(1.2mm)	Voltage(V)	19~25	/	/	/	/	/	/	/	/
				.045"(1.2mm)	Amperage(A)	90~200	/	/	/	90	120	170	190	200
		Al Si 5%	100% Ar	.035"(0.9mm)	WFS(IPM)	79-512	/	134	169	209	331	457	512	/
				.035"(0.9mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.035"(0.9mm)	Amperage(A)	35~150	/	35	45	65	120	140	150	/
				.045"(1.2mm)	WFS(IPM)	79~394	/	/	134	169	236	276	315	374
				.045"(1.2mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.045"(1.2mm)	Amperage(A)	80~200	/	/	80	90	120	170	190	200
		Al Mg 5%	100% Ar	.035"(0.9mm)	WFS(IPM)	79~512	/	165	213	287	512	/	/	/
				.035"(0.9mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.035"(0.9mm)	Amperage(A)	40~120	/	40	60	70	120	/	/	/
				.045"(1.2mm)	WFS(IPM)	79~394	/	/	157	197	315	394	453	512
				.045"(1.2mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.045"(1.2mm)	Amperage(A)	80~200	/	/	80	90	120	170	190	200

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness							
							20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
Pulse Off	120V	Steel	75%Ar 25%CO_2	.023"(0.6mm)	WFS(IPM)	79~512	197	295	394	500	/	/	/	/
				.023"(0.6mm)	Voltage(V)	13.5~18	14.7	16	17	18	/	/	/	/
				.023"(0.6mm)	Amperage(A)	30~120	50	60	80	120	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~280	94	98	126	169	280	/	/	/
				.030"(0.8mm)	Voltage(V)	14.5~18	14.8	15	15.8	16.5	18	/	/	/
				.030"(0.8mm)	Amperage(A)	50~120	50	60	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~217	/	87	98	150	217	/	/	/
				.035"(0.9mm)	Voltage(V)	14.3~17.5	/	14.3	14.6	15	17.5	/	/	/
				.035"(0.9mm)	Amperage(A)	60~120	/	60	80	90	120	/	/	/
		Steel	100%CO_2	.023"(0.6mm)	WFS(IPM)	79~512	197	295	394	512	/	/	/	/
				.023"(0.6mm)	Voltage(V)	15.8~19	16.5	17.3	18	19	/	/	/	/
				.023"(0.6mm)	Amperage(A)	30~90	50	60	80	90	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~299	98	110	126	169	299	/	/	/
				.030"(0.8mm)	Voltage(V)	14.6~19.5	15.3	15.5	16	17	19.5	/	/	/
				.030"(0.8mm)	Amperage(A)	50~120	50	60	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~217	/	79	94	130	217	/	/	/
				.035"(0.9mm)	Voltage(V)	15~19.8	/	15	15.8	17.5	19.8	/	/	/
				.035"(0.9mm)	Amperage(A)	60~120	/	60	80	90	120	/	/	/
		Stainless Steel	98% Ar 2%CO_2	.023"(0.6mm)	WFS(IPM)	79~512	276	374	512	/	/	/	/	/
				.023"(0.6mm)	Voltage(V)	15~18	16.7	17.3	18	/	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~80	50	60	80	/	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~421	157	197	256	276	421	/	/	/
				.030"(0.8mm)	Voltage(V)	14.2~20.1	16.3	16.8	17.9	18.2	20.1	/	/	/
				.030"(0.8mm)	Amperage(A)	57~120	57	65	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~295	102	138	165	197	295	/	/	/
				.035"(0.9mm)	Voltage(V)	14.2~19.6	15.3	15.8	16.2	17	19.6	/	/	/
				.035"(0.9mm)	Amperage(A)	50~120	50	60	80	90	120	/	/	/
		Stainless Steel	He Tri-Mix	.023"(0.6mm)	WFS(IPM)	79~512	354	433	512	/	/	/	/	/
				.023"(0.6mm)	Voltage(V)	15~18	17.2	17.6	18	/	/	/	/	/
				.023"(0.6mm)	Amperage(A)	30~80	50	60	80	/	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~402	177	197	236	295	402	/	/	/
				.030"(0.8mm)	Voltage(V)	19~21.5	19	19.2	19.7	20.2	21.5	/	/	/
				.030"(0.8mm)	Amperage(A)	50~120	50	60	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~319	/	126	150	185	319	/	/	/
				.035"(0.9mm)	Voltage(V)	15.5~21.1	/	15.5	16.5	17.3	21.1	/	/	/
				.035"(0.9mm)	Amperage(A)	60~120	/	60	80	90	120	/	/	/
		Al Si 5%	100% Ar	.035"(0.9mm)	WFS(IPM)	79~354	/	228	276	315	354	/	/	/
				.035"(0.9mm)	Voltage(V)	13~22	/	13	14.6	16	22	/	/	/
				.035"(0.9mm)	Amperage(A)	60~120	/	60	80	90	120	/	/	/
		Al Mg 5%	100% Ar	.035"(0.9mm)	WFS(IPM)	79~480	/	201	264	315	480	/	/	/
				.035"(0.9mm)	Voltage(V)	13~22	/	13	13	15.2	22	/	/	/
				.035"(0.9mm)	Amperage(A)	50~120	/	50	70	75	120	/	/	/

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness							
							20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
Pulse On	120V	Steel	90%Ar 10%CO_2	.030"(0.8mm)	WFS(IPM)	79~354	138	165	197	236	354	/	/	/
				.030"(0.8mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.030"(0.8mm)	Amperage(A)	50~120	50	60	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~252	/	/	157	189	252	/	/	/
				.035"(0.9mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.035"(0.9mm)	Amperage(A)	80~120	/	/	80	90	120	/	/	/
		Stainless Steel	98%Ar 2%CO_2	.030"(0.8mm)	WFS(IPM)	79~453	177	197	276	315	453	/	/	/
				.030"(0.8mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.030"(0.8mm)	Amperage(A)	50~120	50	60	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~291	/	114	150	201	291	/	/	/
				.035"(0.9mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.035"(0.9mm)	Amperage(A)	60~120	/	60	80	90	120	/	/	/
		Al Si 5%	100% Ar	.035"(0.9mm)	WFS(IPM)	79~331	/	134	169	209	331	/	/	/
				.035"(0.9mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.035"(0.9mm)	Amperage(A)	35~120	/	35	45	65	120	/	/	/
		Al Mg 5%	100% Ar	.035"(0.9mm)	WFS(IPM)	79~512	/	165	213	287	512	/	/	/
				.035"(0.9mm)	Voltage(V)	/	/	/	/	/	/	/	/	/
				.035"(0.9mm)	Amperage(A)	40~120	/	40	60	70	120	/	/	/

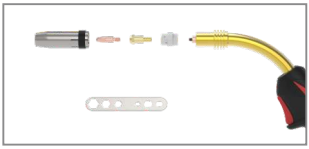
Note: The above parameters are for reference only. Actual welding results may vary due to factors such as material condition, environmental conditions, and specific project requirements.

3.9.4 How to Weld Aluminum with Graphene Using the Standard MIG Gun

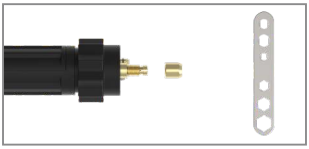
The MIG gun provided with the machine can be equipped with the included graphene liner for aluminum welding. The supplied graphene liner is also compatible with the YW-L150-10E gun. If using other graphene liners or MIG guns, make sure both are compatible to ensure proper operation.

Below are the steps for using the MIG gun provided with the machine along with the included graphene liner for aluminum welding:

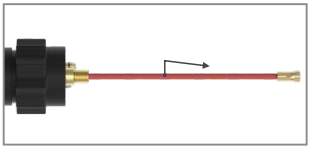
1. Lay the gun straight on the ground and remove consumables on the front-end parts.
2. Remove the liner retaining nut.
3. Pull the existing steel wire feed liner out of the gun cable assembly.
4. Unravel the graphene liner and feed it slowly through the torch cable until it exits the front end. ⚠Avoid kinking, which will cause damage and require replacement.
5. Place the tip holder over the end of the liner and, screw it into the torch neck, tighten it up. Reinstall aluminum-specific consumables: A+ contact tip, nozzle, and gas diffuser.
6. Fit the o-ring, and liner retaining nut.
7. Push the liner fully into the torch lead and tighten the liner retaining nut.
8. Release the drive roller.
9. Loosen the Allen screw slightly with the supplied hex key, then push the wire guide forward from the rear using a screwdriver.
10. Remove the outlet guide tube from the Euro connector with long nose pliers.
11. Remove the existing inlet guide tube from the wire feeder and replace it with the supplied graphene inlet guide tube, securing it with the retaining screw.
12. Insert the excess graphene liner into the outlet guide tube hole of the Euro connector.
13. Route the extended graphene liner up and over the drive roller.
14. Tighten the torch Euro connection to the machine Euro connector.
15. Cut off the excess liner with a sharp knife.
16. Install the correct size U-knurled drive roller and feed the matching aluminum wire.
17. Install the aluminum spool and feed the wire through.
18. Power on, set material to Aluminum, select “MIG Gun” in the torch menu, and adjust welding parameters.



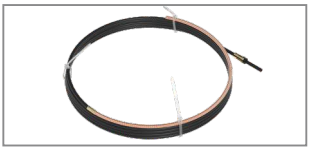
• Remove the MIG torch consumables.



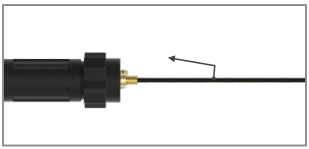
• Remove the liner retaining nut.



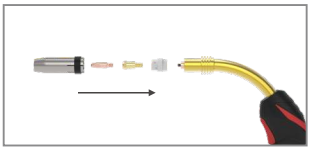
• Pull out the liner completely.



• Untie the new liner.



• Feed the liner in short forward movements down the cable assembly all the way through and out the torch end.



• Install a matched contact tip and other front-end accessories to the torch. It is ready for welding.

• Push the liner firmly into the torch lead and tighten retaining nut.

• Disengage the drive roller.

• Loosen the Allen screw slightly with the suppied hex key, then push the wire guide forward from the rear using a screwdriver.

• Remove the outlet guide tube from the front-end euro connector using long nose pliers.

• Remove the existing inlet guide tube from the wire feeder and replace it with the supplied graphene inlet guide tube, securing it with the retaining screw.

• Feed the extended graphene liner into the outlet guide tube hole of the machine Euro connector.

• Feed the extended graphene liner over the drive roller into the inlet guide tube part.

• Tighten the torch Euro connection to the Euro connector.

• Cut the extended liner with a sharp knife. The remaining part should be about 1/16"~5/64"(1.6mm~2mm) away from the wire drive roller.

• Replace the inlet guide tube with the the supplied graphene inlet guide tube and secure it with the retaining screw.

• Install the aluminum spool and feed the wire through.

• Turn on the power source on and select welding mode and set the welding parameters.

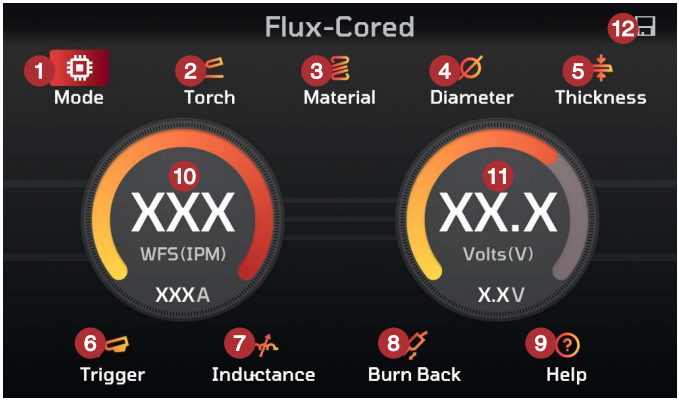
3.10 Set Up for Flux-cored Welding (FCAW-S)

3.10.1 Basic Connections

- Connect the MIG gun to the Euro Torch Connector.
- Attach the Wire Drive Polarity Lead to the Negative (-) Output Terminal.
- Connect the work clamp to the Positive (+) Output Terminal, ensuring a solid connection to clean, bare metal (avoid rust or paint).
- Load the wire spool into the cabinet and feed it through the wire feeder into the gun (see “Installing the Welding Wire”).
- Press the gun trigger or press the Wire Inching Button to load the wire through the gun.
- Power on the machine and select Flux-cored welding process with Home Menu page. Enter the Flux-cored parameter settings page.
- Choose the wire diameter (.030"~.045").
- Select the panel thickness (18ga~3/8").
- Set torch trigger operation 2T/4T/Spot.
- Choose standard MIG gun mode, trigger the torch control switch to feed the wire, and begin welding.

3.10.2 Overview of Basic Flux-cored Parameters

This section provides an overview of basic Flux-cored parameters for welding tasks:



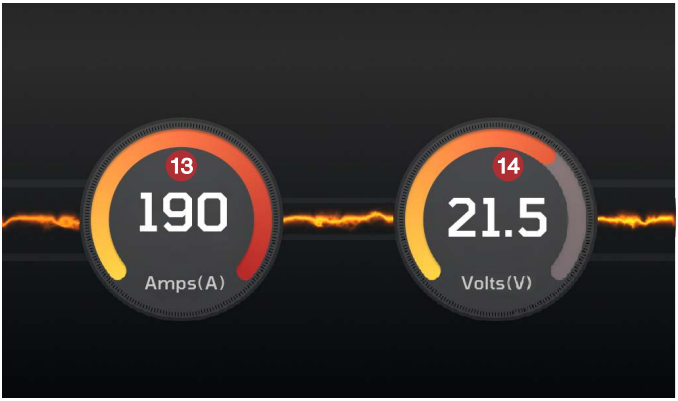
1. **Mode Selection:**
   Synergic Mode: Voltage and wire feed speed are automatically adjusted according to the selected material, wire type, and thickness. Suitable for rapid setup and general applications.
   Manual Mode: Allows full manual control of the welding process.
2. **Torch Selection:** Switch between the standard MIG torch and the optional spool gun depending on the specific welding application and wire type being used.
3. **Material Selection:** Choose the material Steel / Stainless Steel to set the appropriate welding parameters.
4. **Wire Diameter Selection:** Select the appropriate wire diameter based on the material thickness and welding application. Available options include wire diameters typically ranging from 0.8mm to 0.9mm (.030"~.035").
5. **Thickness Selection:** Adjust the thickness setting to match the workpiece's thickness (18ga~3/8"). This setting ensures proper heat input and weld penetration, providing a solid and consistent weld bead.
6. Torch Trigger Operation Selection – Choose 2T, 4T, or Spot mode:

   2T: Hold trigger to weld, release to stop.

   4T: Press/release to start, press/release again to stop (reduces finger fatigue).

   Spot: Welds for preset time (0.1~10s).
7. **Inductance:** Adjust inductance value from -10 to 10 to control arc characteristics and spatter.
8. **Burn-Back:** Set burn-back ratio (-50 to 50) to control wire stick-out and prevent sticking after welding.
9. **Help Function:** Select this option to enter the Help page for guidance. This section is currently reserved.
10. **Wire Feed Speed and Current Display:** Shows the wire feed speed along with the corresponding current value, ensuring proper setup for stable welding.
11. **Voltage Display:** Shows the set voltage along with any fine-tuning adjustments. The smaller display shows the fine-tuned voltage value, adjustable within ±5V.
12. **Memory Function:** Access the memory settings with up to 20 memory slots for saving preferred welding parameters.
13. **Real-time Amperage Display:** Displays the real-time amperage during the welding process.
14. **Real-time Voltage Display:** Displays the actual voltage during welding.

Note: In Synergic mode, all parameters are adjustable. In Manual mode, only MIG Gun, Trigger Mode, Inductance, and Burn-Back can be changed.



3.10.3 Flux-cored Welding Parameters Recommendation

The welder supports two operating modes: Synergic Mode and Manual Mode. In Synergic Mode, the machine automatically sets voltage, wire diameter, and wire feed speed according to the selected material and thickness for consistent welding performance. In Manual Mode, users may use the recommended table as a reference while adjusting the wire feed speed within 79~512 IPM and the voltage from 13~26 V.

The table below lists the suggested Synergic Mode settings for various materials, wire diameters, and plate thicknesses in Flux welding.

Basic Flux-cored Welding Recommended Parameter Settings (Synergic Mode)

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness						
							18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
2T/4T/SPOT/ MIG Gun /Spool Gun	240V	Steel	/	.030"(0.8mm)	WFS(IPM)	79~492	138	157	197	315	394	472	/
				.030"(0.8mm)	Voltage(V)	13.8~20.3	14.2	15	16.5	18	19	20	/
				.030"(0.8mm)	Amperage(A)	50~190	60	80	90	130	170	190	/
				.035"(0.9mm)	WFS(IPM)	79~492	98	142	173	276	378	433	480
				.035"(0.9mm)	Voltage(V)	15~20.5	15	16.3	17.6	19.2	19.7	20	20.5
				.035"(0.9mm)	Amperage(A)	60~200	60	80	90	120	170	190	200
		Stainless Steel		.030"(0.8mm)	WFS(IPM)	79~492	138	157	197	315	394	472	/
				.030"(0.8mm)	Voltage(Vag)	13.8~20.3	14.2	15	16.5	18	19	20	/
				.030"(0.8mm)	Ampere(A)	50~190	60	80	90	120	170	190	/
				.035"(0.9mm)	WFS(IPM)	79~492	98	142	173	276	378	433	480
				.035"(0.9mm)	Voltage(V)	15~20.5	15	16.3	17.6	19.2	19.7	20	20.5
				.035"(0.9mm)	Amperage(A)	60~200	60	80	90	120	170	190	200
	120V	Steel		.030"(0.8mm)	WFS(IPM)	79~315	138	157	197	315	/		
				.030"(0.8mm)	Voltage(V)	13.8~18	14.2	15	16.5	18			
				.030"(0.8mm)	Amperage(A)	50~120	60	80	90	120			
				.035"(0.9mm)	WFS(IPM)	79~276	98	142	173	276			
				.035"(0.9mm)	Voltage(V)	15~19.2	15	16.3	17.6	19.2			
				.035"(0.9mm)	Amperage(A)	60~120	60	80	90	120			
		Stainless Steel		.030"(0.8mm)	WFS(IPM)	79~315	138	157	197	315			
				.030"(0.8mm)	Voltage(V)	13.8~18	14.2	15	16.5	18			
				.030"(0.8mm)	Amperage(A)	50~120	60	80	90	120			
				.035"(0.9mm)	WFS(IPM)	79~276	98	142	173	276			
				.035"(0.9mm)	Voltage(V)	15~19.2	15	16.3	17.6	19.2			
				.035"(0.9mm)	Amperage(A)	60~120	60	80	90	120			

Note: these values serve as general guidelines, and actual welding performance may differ depending on variables such as material condition, environmental factors, and specific requirements of project requirements.

3.11 Spool Gun Setup

3.11.1 Spool Gun Connections

This section explains how to connect the welding machine and spool gun. The connection method may vary depending on the welding process, such as MIG/MAG or Flux-Cored welding. It is recommended to use the YesWelder standard LBT150 spool gun; using other brands or non-standard guns may cause deviations in certain preset parameters, affecting welding performance.

Connection for Spool Gun- MIG/MAG Welding

- Plug the 2-pin Spool Gun Control Cable into the Spool Gun Socket.
- Connect to Wire Drive Polarity (+) Lead to the Positive (+) Output Terminal.
- Connect the Work Clamp into the Negative (-) Output Terminal.
- Connect the gas line to the regulator and connect to the gas cylinder with the appropriate shielding gas.
- Install the spool gun (follow the installation instruction below).
- Turn the power source on and choose MIG/MAG process in the Home Menu page.
- Set the torch at spool gun mode.
- Turn on the gas cylinder valve and set the flow rate to between 20~30 CFH.
- Set other welding parameters and begin welding.

Connection for Spool Gun- Flux-cored Welding

• Plug the 2-pin Spool Gun Control Cable into the Spool Gun Socket.
• Connect to Wire Drive Polarity(+) Lead to the Negative (-) Output Terminal.
• Connect the Work Clamp into the Positive (+) Output Terminal.
• Install the spool gun (follow the installation instruction below).
• Turn the power source on and choose Flux-cored process in the Home Menu page.
• Set the torch at spool gun mode.
• Set other welding parameters and begin welding.

3.11.2 Basic Spool Gun Installation

Below is a basic guide for the spool gun installation. Follow the steps as shown in the image to ensure proper setup and optimal performance.

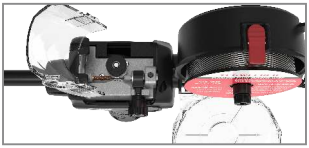
1. Insert the optional YesWelder LBT150 spool gun into the Euro MIG connection socket on the front panel and secure it. Connect and tighten the control cable to the receptacle.
2. Based on the Spool Gun Connection section, install the wire drive polarity lead and work clamp as needed for the specific setup.
3. Press the Cover Release clip on the spool gun to open the wire housing cover.
4. Place the wire on the spool holder. Remove the tensioner before placing the spool and reinstall it afterward.
5. Adjust the spool holder's tension to enable a smooth and stable wire feeding.
6. Remove the gas nozzle and contact tip from the welding torch.
7. Install a correct-sized contact tip, screw the contact tip into the tip holder of the torch, and tighten it up.
8. Turn on the power source on and select MIG/MAG or Flux process on the Home Menu page.
9. Navigate to the “Torch” menu and choose the “Spool Gun” option.

• Insert the optional YesWelder LBT150 spool gun into the Euro MIG connection socket on the front panel and secure it. Connect and tighten the control cable to the receptacle.

• Based on the Spool Gun Connection section, install the wire drive polarity lead and work clamp as needed for the specific setup.

• Press the Cover Release clip on the spool gun to open the wire housing cover.

• Place the wire on the spool holder. Remove the tensioner before placing the spool and reinstall it afterward.



• Adjust the spool holder's tension to enable a smooth and stable wire feeding.

• Remove the gas nozzle and contact tip from the welding torch.

• Install a correct-sized contact tip, screw the contact tip into the tip holder of the torch, and tighten it up.

• Turn on the power source on and select MIG/MAG or Flux process on the Home Menu page.

• Navigate to the “Torch” menu and choose the “Spool Gun” option.

3.12 Set Up for TIG Welding(GTAW)

3.12.1Basic Connections

Setting up the Equipment for TIG Welding (GTAW): The machine includes a TIG torch, but Lanthanated Tungsten electrodes and filler rods must be purchased separately before welding.

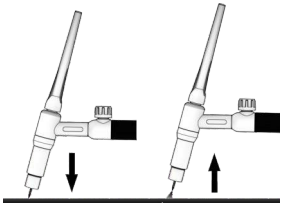
WARNING: TIG TORCH IS ALWAYS LIVE (ELECTRICALLY HOT). Use caution and ensure the TIG torch is not in contact or close to a conductive or grounded material.

- Remove the Wire Drive Polarity Lead from the Positive (+) Output and Negative (-) Output Terminals.
- Connect the TIG torch cable to the Torch Connector (TIG / Plasma Cutting).
- Connect the work cable connector to the welder's Positive (+) Output Terminal.
- Ensure the work clamp has good contact with the workpiece on a clean, bare metal surface free of rust, paint, or coating
- Connect the gas hose from the machine's gas inlet to the gas regulator, then to the Argon cylinder (100% Argon only). Open the cylinder valve, verify proper gas flow, and set the regulator to 15-20 CFH.
- Set the tungsten electrode to extend approximately 1/8"~1/4" inch from the gas cup. Ensure you are using the correct size and type of tungsten electrode. Smaller electrodes are suitable for lower welding currents. The tungsten must have a sharpened tip for direct current (DC) welding.
- Put the TIG torch away from all conductive materials.
- Turn on the welder's power switch.
- Select the TIG process with the Multi-Function Control Knob on the Home Menu Page.
- Select material and tungsten diameter to match the project.
- Set the welding amperage through the Wire Speed/Amperage Adjustment Knob.
- Press the TIG torch switch to start the shielding gas flow.
- Initiate the welding arc:
  - **a. HF TIG:** Hold the torch near the workpiece and the arc will start automatically.
  - **b. Lift TIG:** Briefly touch the tungsten electrode to the workpiece, then lift slightly. The machine will increase voltage and current to establish the arc.

REMEMBER TO CLOSE THE VALVE ON THE GAS CYLINDER IMMEDIATELY AFTER ALL WELDING IS COMPLETED.

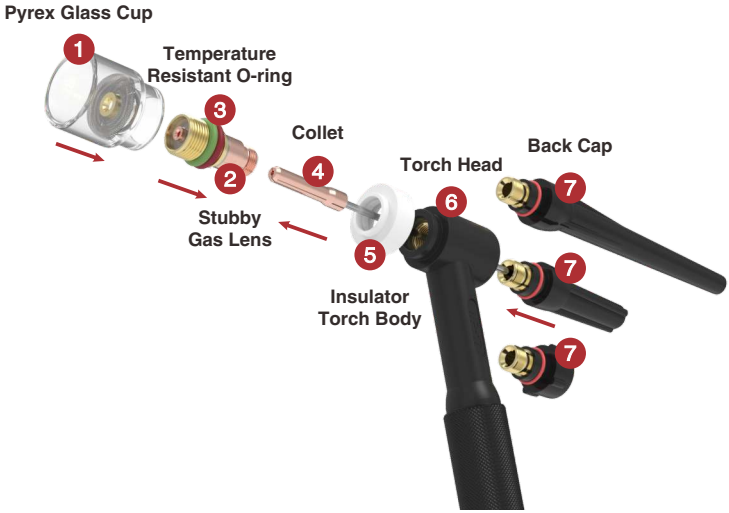
Welding Tips:

- Always work with clean, dry, and well-prepared materials for best results.
- Hold the torch at a 45° angle to the workpiece, keeping the gas cup about 1/2" above the surface.
- Maintain smooth and steady torch movement throughout the weld to ensure consistent results.
- Avoid welding in drafty environments, as drafts can disrupt the shielding gas and cause porosity defects.
- Keep the wire and liner clean. Avoid using rusty or dirty wire, as it can affect weld quality.
- Do not bend or kink the welding torch cable, as this can restrict gas flow and damage the internal components.



3.13.2 TIG Torch Assembling

Assemble the TIG torch correctly to ensure proper shielding, arc stability, and optimal welding performance.



Here’s step-by-step guidance for assembling the TIG torch:

Match Collet and Collet Body:
Collet (4): Holds the tungsten electrode in place within the Torch Head (6).

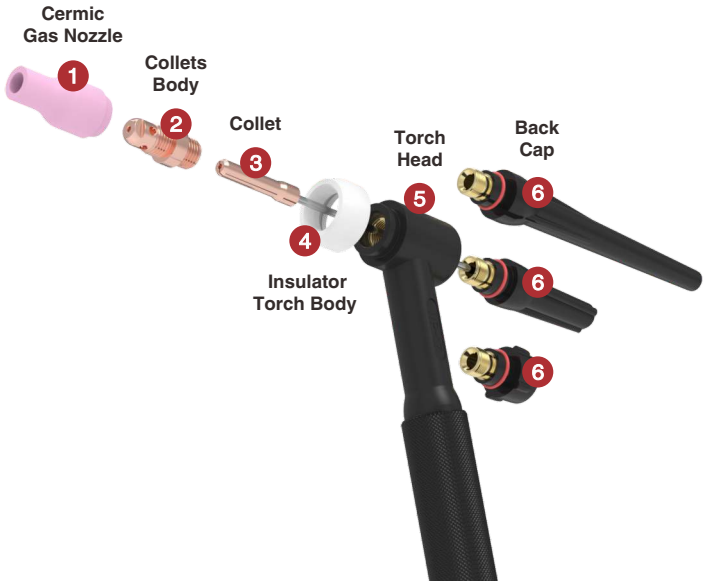
Thread Collet Body:
• Stubby Gas Lens (2): Functions as the Collet Body, providing enhanced gas coverage and flow.
• Screw the Stubby Gas Lens (2) into the Torch Head (6).

Ceramic Nozzle Selection:
Pyrex Glass Cup (1): Thread this nozzle onto the Stubby Gas Lens (2) for gas shielding and better visibility during welding.

Insert Collet and Electrode:
Insert the Collet (4) into the Stubby Gas Lens (2), then insert the tungsten electrode.

Secure Electrode:
Back Cap (7): Tighten to lock the tungsten electrode in place, ensuring that 1/8" to 1/4" of the tungsten protrudes from the Pyrex Glass Cup (1).

Additional Components:
• Temperature Resistant O-ring (3): Seals the gas flow in high-temperature areas, typically around the gas lens or torch head.
• Insulator Torch Body (5): Provides insulation around the Torch Head (6) to prevent overheating.



Here’s step-by-step guidance for assembling the TIG torch:

Install the Collet Body:
Thread the Collet Body (2) into the Torch Head (5) securely.

Insert the Collet:
Place the Collet (3) inside the Collet Body. This holds the tungsten electrode.
Insert the Tungsten Electrode: Insert the tungsten electrode through the Collet (3), leaving 1/8" to 1/4" of the electrode extending from the gas nozzle.

Tighten with Back Cap:
Screw the Back Cap (6) onto the rear of the Torch Head (5) to lock the tungsten electrode in place.

Insert Collet and Electrode:
Insert the Collet (4) into the Stubby Gas Lens (2), then insert the tungsten electrode.

Attach Insulator and Gas Nozzle:
Place the Insulator Torch Body (4) over the Torch Head (5) to protect the assembly from heat. Thread the Ceramic Gas Nozzle (1) onto the Collet Body for proper shielding gas coverage during welding.

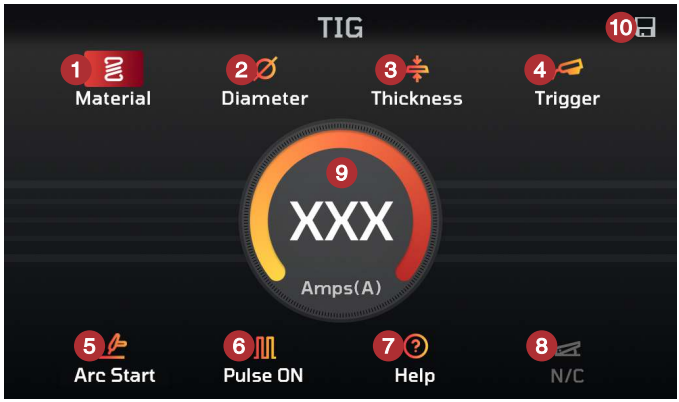
TIG Electrodes Specification Reference Table

Material	Thickness (inch/mm)	Tungsten Diameter	Tungsten Type	Filler Metal	Ceramic Nozzle Size	Gas Flow (CFH)	Amperage Range (A)
Carbon Steel	1/16"~1/8" (1.5~3.0mm)	1/16" (1.6mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray)	ER70S-6	#5~#6	15~20 CFH	50~150A
	1/8"~1/4" (3.0~6.0mm)	3/32" (2.4mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray)	ER70S-6	#6~#7	15~25 CFH	150~200A
	1/4"~3/8" (6.0~10.0mm)	1/8" (3.2mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray)	ER70S-6	#6~#7	15~25 CFH	150~250A
	3/8" and above (10mm +)	5/32" (4.0mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray)	ER70S-6	#7~#8	20~30 CFH	200~250A
Stainless Steel	1/16"~1/8" (1.5~3.0mm)	1/16" (1.6mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray) Rare Earth (Purple)	ER308/ER316	#5~#6	15~20 CFH	50~150A
	1/8"~1/4" (3.0~6.0mm)	3/32" (2.4mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray) Rare Earth (Purple)	ER308/ER316	#6~#7	15~25 CFH	150~250A
	1/4"~3/8" (6.0~10.0mm)	1/8" (3.2mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray) Rare Earth (Purple)	ER308/ER316	#6~#7	15~25 CFH	150~250A
	3/8" and above (10mm +)	5/32" (4.0mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray) Rare Earth (Purple)	ER308/ER316	#7~#8	20~30 CFH	200~250A

This chart serves as a general guideline; actual results may differ based on welding methods, equipment calibration, and the specific application.

3.12.3 Overview of Basic TIG Parameters

This section provides an overview of basic TIG parameters for welding tasks:



1. **Material Selection:** Choose the material (steel or stainless steel) to set the appropriate welding parameters.
2. **Tungsten Diameter Selection:** Select the tungsten diameter (from .040" to 5/32") based on material and current. This affects arc stability and heat distribution.
3. **Thickness Selection:** Set the machine to match material thickness (from 18 Ga to 3/8"). This ensures proper penetration and weld bead formation, and aligns with the selected amperage and electrode diameter.
4. Torch Trigger Operation Selection – Choose 2T, 4T, or Spot mode:
   2T: Hold trigger to weld, release to stop.
   4T: Press/release to start, press/release again to stop (reduces finger fatigue).
   Spot: Welds for preset time (0.1~10 s)
5. **Arc Start:** Select Lift Start or HF Start for normal welding parameters, or Clean to enter the cleaning page (other parameters disabled).
6. **Pulse Function:** Turn Pulse On or Off. When Pulse is On, the following parameters can be adjusted:
   Background Current: 10~90 %
   Pulse Ratio: 10~90 %
   Pulse Frequency: 0.1~50 Hz
7. **Help Function:** Select this option to enter the Help page for guidance.
8. **Foot Pedal Icon:** Automatically detected when the foot pedal is connected; the icon will illuminate.
9. **Amperage Display:** Shows the selected welding amperage on the main screen.
10. **Memory Function:** Access the memory settings with up to 20 memory slots for saving preferred welding parameters.
11. **Real-time Amperage Display:** Displays the real-time amperage during the welding process.

3.12.4 Preset TIG Parameters (Not Adjustable)

In TIG mode, certain parameters are factory preset and cannot be adjusted by the operator. These values are optimized for stable arc ignition and reliable welding performance:

Pre-gas time: 200 ms
Post-gas time: 4 s
Start current: 50 A (Lift TIG), 35 A (HF TIG)
Upslope time: 30 ms
Downslope time: 0ms
End current: Follows the set welding current

Note:

Since these parameters are not user-adjustable, only welding current and pulse-related settings can be modified in TIG mode.

3.12.5 TIG Welding Parameters Recommendation

Proper configuration of welding parameters is critical for achieving optimal TIG welding results. This section details recommended settings based on material type, thickness, and tungsten diameter. This section provides recommended settings based on material type, thickness, and tungsten diameter. Following these guidelines ensures accurate heat control, improved weld quality, and enhanced performance.

TIG Welding Recommended Parameter Settings

Voltage	Material	Diameter	Amperage	Thickness						
				18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
				1.2mm	1.6mm	2.0mm	3.2mm	4.8mm	6.4mm	9.5mm
240V	Steel	.040" (1.0mm)	10~200A	40	50	65	/	/	/	/
		1/16" (1.6mm)		40	50	65	95	/	/	/
		3/32" (2.4mm)		40	50	65	95	130	160	200
		1/8" (3.2mm)		40	50	65	95	130	160	200
	Stainless Steel	.040" (1.0mm)		40	50	65	/	/	/	/
		1/16" (1.6mm)		40	50	65	95	/	/	/
		3/32" (2.4mm)		40	50	65	95	130	160	200
		1/8" (3.2mm)		40	50	65	95	130	160	200
120V	Steel	.040" (1.0mm)	10~120A	40	50	65	/	/	/	/
		1/16" (1.6mm)		40	50	65	95	/	/	/
		3/32" (2.4mm)		40	50	65	95	/	/	/
		1/8" (3.2mm)		/	/	/	/	/	/	/
	Stainless Steel	.040" (1.0mm)		40	50	65	/	/	/	/
		1/16" (1.6mm)		40	50	65	95	/	/	/
		3/32" (2.4mm)		40	50	65	95	/	/	/
		1/8" (3.2mm)		/	/	/	/	/	/	/

The amperage settings outlined are aligned with material thickness, type, and tungsten diameter. These recommendations serve as a reference to assist users in setting up their welding parameters. Users should adjust the settings to their specific welding conditions and needs to ensure the best possible results.

3.12.6 Pulse Welding Parameters (Optional)

In pulse mode, the welding current alternates between a high (peak) current and a low (background) current. This process helps reduce overall heat input, improve arc stability, and minimize distortion. It is especially useful when welding thin or heat-sensitive materials. This machine allows adjustment of the following pulse parameters:

1. Pulse (On/Off)

• Enables or disables pulse welding.
• Recommended for thin materials or when improved bead control and appearance are required.

2. Background Current (10~90%)

• Sets the percentage of peak current maintained during the background cycle.
• Lower values reduce heat input; higher values improve arc stability.
• Suggested range:

a. Thin materials: 20~40%
b. Medium thickness: 30~60%
c. Thick sections: 50~70%

3. Pulse Ratio (10~90%)

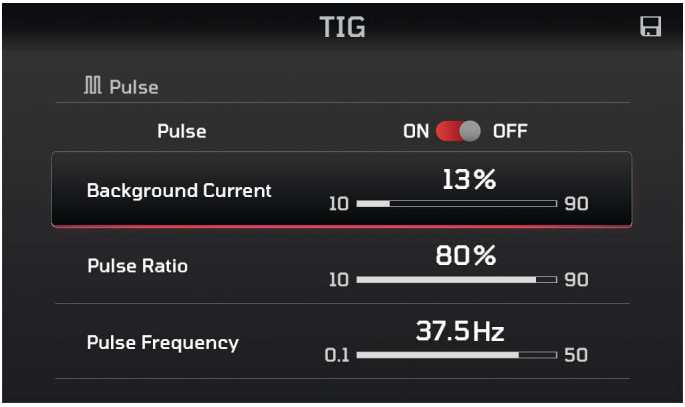
• Defines the proportion of time spent at peak current versus background current in each cycle.
• Higher ratios increase penetration; lower ratios reduce heat input.
• Suggested range:

a. Thin/heat-sensitive materials: 30~50%
b. General welding: 50~70%
c. Deep penetration: 60~80%

4. Pulse Frequency (0.1~50 Hz)

• Determines the number of pulse cycles per second.
• Affects arc stability, weld appearance, and ease of control.
• Suggested range:

a. 0.5~2 Hz: Clear, visible pulse effect for heat control and training
b. 10~20 Hz: Balanced arc stability and control
c. 20~50 Hz: Very stable arc, smooth bead appearance



3.12.7 Cleaning Function (Optional)

This machine is equipped with a cleaning torch (10-25 quick-connect interface) for post-weld cleaning of weld surfaces. The cleaning function is intended exclusively for use after welding in TIG mode. It serves to remove oxides, slag, and spatter remaining on the weld area. The cleaning operates at 24V DC, ensuring low-voltage safe operation. Proper post-weld cleaning improves weld quality, enhances arc stability for subsequent passes, and prevents contamination from residual materials.

Applications:

After welding: Remove slag and oxidation from welds for a cleaner, smoother weld finish and improved quality.
Note: The cleaning function is only for post-weld use. Do not operate the cleaning torch before or during the welding process.

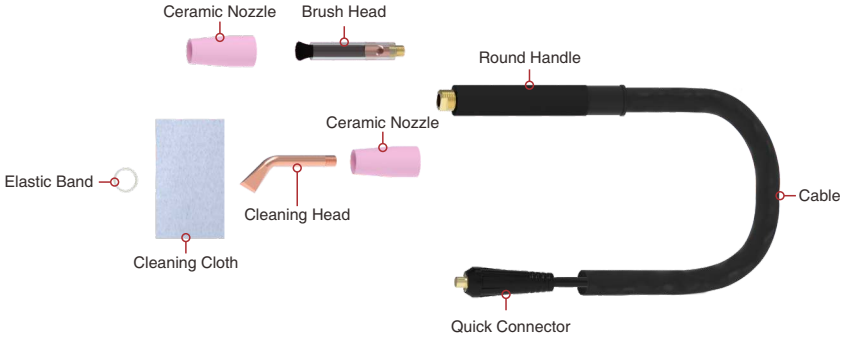
Components (see illustration)

Cleaning Cloth: Wrapped around the cleaning head for precise surface cleaning.
Elastic Band: Secures the cleaning cloth to prevent loosening.
Cleaning Head: Copper elbow that holds the cleaning cloth, suitable for corners and tight areas.
Ceramic Nozzle: Mounted on the cleaning or brush head for positioning and protection.
Brush Head: Metal brush for direct weld cleaning, offering higher efficiency.
Round Handle: Connects to the hand piece for stable grip.
Cable Assembly: Connects the handle to the power source.
Quick Connector (10-25): Connects the torch to the machine output.

Installation Methods

Method 1: Ceramic Nozzle + Brush Head + Round Handle + Cable + Quick Connector Suitable for general weld cleaning, faster and more efficient.

Method 2: Cleaning Cloth + Elastic Band + Cleaning Head + Ceramic Nozzle + Round Handle + Cable + Quick Connector



Note:

The machine does not include cleaning fluid. Users should select an appropriate cleaning solution based on weld material and desired cleaning effect.

Tool Comparison

Tool	Cleaning Area	Efficiency	Recommended Use	Notes
Cleaning Head with Cleaning Cloth	Flat weld surfaces	Mode rate	Post-weldcleaning, flatwelds	Slower than brush; less effective in corners; requires sponge wrap; only for post-weld cleaning.
Brush Head	Any weld seam or gap	High	Post-weldcleaning	Efficient for all welds; faster cleaning; only for use after welding

Operating Steps

1. **Connect the cleaning torch:** Insert the quick-connect plug into the Negative (-) output and secure firmly.
2. **Connect the work clamp:** Attach the ground clamp to the Positive (+) output and ensure solid contact with the workpiece.
3. **Select cleaning mode:** Choose “TIG Cleaning” on the panel.
4. **Operate the cleaning torch:**
   a. Use the Brush Head for faster, efficient cleaning of weld seams or gaps.
   b. Use the Copper Head with Sponge for flat welds.
   c. **Clean only after welding has finished.**
   d. Move evenly; avoid staying in one spot too long.
5. **Finish cleaning:** Confirm the weld surface is free of slag and oxidation.

Safety Notes

• Cleaning function operates at 5~24V DC, ensuring safe, low-voltage operation.
• Use the cleaning function **only after welding**; do not use before or during welding.
• Avoid concentrating the nozzle in one spot to prevent surface damage.
• Check the weld surface after cleaning to ensure all debris and residues are removed.

3.12.8 Optional Foot Pedal Installation

This machine supports the use of a foot pedal for enhanced precision and control during TIG welding. When connected, the foot pedal allows:

- Welding switch control – the arc can be started and stopped through the pedal, eliminating the need to manually initiate or break the arc with the torch.
- Current adjustment – the pedal provides real-time control of the welding current during operation, offering greater flexibility and improved weld quality.

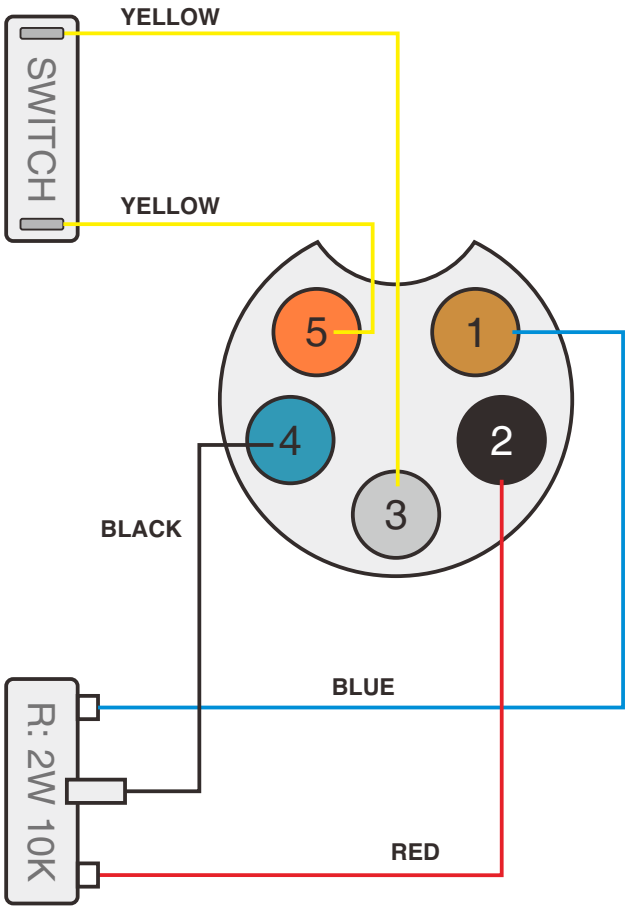
Note: The foot pedal is not included with the machine and must be purchased separately.

Foot Pedal Wiring Requirements

To ensure proper functionality and connection with the machine, the foot pedal must meet specific conditions:

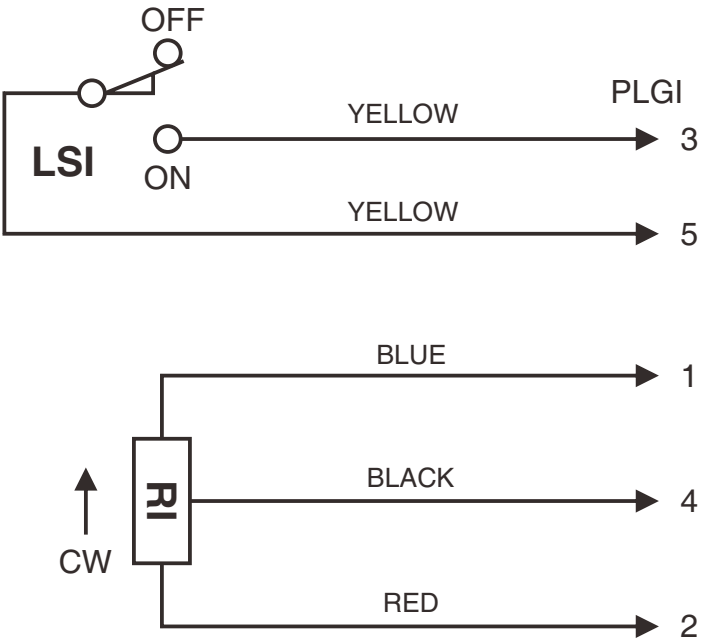
- **Internal Structure:** The foot pedal must contain an inching switch and a 10K sliding potentiometer, designed for precise control of welding current and switching in TIG mode.
- **Connector Specification:** The pedal requires a 5-pin connector for wiring.

Ensure the pedal meets these specifications to achieve reliable operation and compatibility with the machine. Refer to the diagram below for the correct pin configuration.



ELECTRICAL DIAGRAMS

Electrical Wiring Diagram-2



Automatic Pedal Recognition

Once the foot pedal meets the specified conditions and is connected using the 5-pin connector, the machine will automatically recognize it. The system will switch to TIG welding process and enable foot pedal control for welding functions.

Simply connect the foot pedal, and the machine will recognize it instantly, allowing real-time control of welding current and switching through the pedal. When the foot pedal is in use, the torch switch mode is disabled.

Foot Pedal Connection

Using the equipped TIG Torch with the Foot Pedal by following steps:

1. **Adjust Gas Flow:** Set the shielding gas flow at the regulator to achieve the appropriate flow rate. Ensure effective coverage of the weld area.
2. **Connect Foot Pedal:** Attach the five-pin foot pedal to the welding machine. Ensure all connections are secure and properly configured.
3. **Start Welding Process:** Use the torch switch and foot pedal to initiate the arc, selecting either HF TIG or Lift TIG mode. The foot pedal will control the welding current.
4. **Control Current:** Adjust the welding current in real-time by varying the pressure on the foot pedal. This allows for precise control of the current based on welding needs.
5. **End Welding Operation:** Release the foot pedal to stop the arc.
6. **Inspect Equipment:** After welding, check the settings and condition of the equipment to ensure everything is correctly set and functioning properly.

3.13 Set up for Stick Welding (SMAW)

3.13.1 Basic Connections

- Remove the Wire Drive Polarity Lead form the Positive (+) Output and Negative (-) Output Terminal (Remove the MIG gun at the same time).
- Check the electrode packaging to determine the recommended polarity and connect the electrode holder and work clamp to the Positive (+) or Negative (-) Output Terminal accordingly.
- Place the electrode into the electrode holder firmly.
- Ensure the work clamp has good contact with the workpiece on a clean, bare metal surface free of rust, paint, or coating.
- Turn the power source on and select the Stick welding process with Multi-Function Control Knob on the Home Menu Page.
- Set the amperage with the Wire Speed/Amperage Adjustment Knob.
- Strike the electrode against the workpiece to create an arc and hold the electrode steady to maintain the arc.
- Hold the electrode slightly above the work, maintaining the arc while traveling at an even speed.
- To finish the weld, break the arc by quickly snapping the electrode away from the workpiece.
- Wait for the weld to cool and carefully chip away the slag to reveal the weld metal below.

3.13.2 Polarity Setup for Stick Welding (SMAW):

DCEP (Direct Current Electrode Positive):

Connect the electrode holder to the Positive (+) Output Terminal and the work clamp (connected to the workpiece) to the Negative (-) Output Terminal.
Recommended for most stick welding applications, as it provides deeper penetration on thicker materials.

DCEN (Direct Current Electrode Negative):

Connect the electrode holder to the Negative (-) Output Terminal and the work clamp to the Positive (+) Output Terminal. Recommended for welding thin metals or when required by specific electrode types.

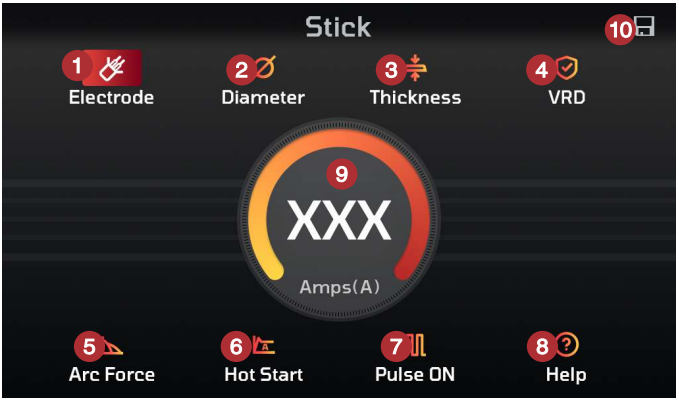
Electrode Recommendations

Electrode	Polarity	Usage
E7018, E6011, E6013	DCEP (or AC for 6011, 6013)	Best for clean, bare steel; suitable for moderate penetration.
E6010	DCEP only	Deep penetration electrode used for pipe welding and heavy penetration applications.

However, various electrodes require a different polarity for optimum results. Please follow the electrode manufacturer's recommendation on the correct polarity.

3.13.3 Overview of Basic Stick Parameters

This section provides an overview of basic Stick welding parameters for welding tasks:



1. **Electrode Type Selection:** Choose from electrode types ranging from 7XXX to 6XXX series.
2. **Electrode Diameter Selection:** Select electrode diameters from 1/16" to 5/32".
3. **Thickness Selection:** Pick the appropriate material thickness from 20ga to 3/8". The selected thickness corresponds with welding amperage and electrode diameter.
4. **VRD Function:** Turn the VRD (Voltage Reduction Device) on or off for safety during idle periods.
5. **Arc Force Function:** Adjust the arc force setting between 0~10 for greater control over arc stability.
6. **Hot Start Function:** Modify the hot start level from 0~10 to improve arc ignition.
7. **Pulse Function:** Turn Pulse On or Off.
8. **Help Function:** Select this option to enter the Help page for guidance.
9. **Amperage Display:** Shows the selected welding amperage on the main screen.
10. **Memory Function:** Access the memory settings with up to 20 memory slots for saving preferred welding parameters.
11. **Real-time Amperage Display:** Displays the real-time amperage during the welding process.

In Stick Welding (SMAW) welding process, operators can fine-tune specific parameters to optimize welding performance based on the material, application, and environmental conditions. Below is a detailed explanation of each adjustable feature:

VRD (Voltage Reduction Device) – Optional Feature:

The Voltage Reduction Device (VRD) is an optional safety feature designed to reduce open circuit voltage (OCV) when the electrode is not in contact with the workpiece. This function significantly lowers the risk of electric shock, particularly in wet or confined working environments.

- **Operation:** When VRD is active, a low sensing voltage is maintained between the electrode and the workpiece until the electrode makes contact. Once contact is established, full welding voltage is applied.
- **Usage Recommendation:** The VRD function is recommended for applications in high-risk environments, such as damp or enclosed areas, where there is a heightened risk of electrical shock.

Arc Force – Adjustable Parameter:

Arc Force dynamically increases the welding current when the arc voltage drops due to short arc length. This feature helps maintain arc stability and prevents the electrode from sticking to the workpiece.

Functionality: Arc Force compensates for voltage drops by boosting current, ensuring that consistent heat is maintained during welding.

Adjustment Guidance: Arc Force can be set between 1 and 10. Higher settings increase current, preventing electrode sticking, but may lead to additional spatter. Lower settings result in a smoother arc and less spatter but may increase the risk of electrode sticking in certain situations.

Example: If the preset current is 50A and Arc Force is set to 2, the welding current will increase to 60A during operation to stabilize the arc. At higher preset currents, such as 200A, Arc Force adjusts to prevent excessive current, ensuring safe operation.

Hot Start – Adjustable Parameter:

Hot Start improves arc ignition by briefly increasing the welding current when starting the weld, reducing the risk of the electrode sticking to the workpiece.

Importance: This feature is particularly useful in conditions where materials have poor surface conditions, electrodes are damp, or when welding with difficult-to-start electrodes.

Adjustability: The Hot Start function can be set between 0 and 10. Higher settings provide more initial amperage, improving arc initiation and increasing weld penetration at the start.

Example: With a preset current of 50A and a Hot Start setting of 2, the welding current will momentarily spike to 60A during arc initiation before stabilizing back at 50A once the arc is fully established.

Anti-Stick – Built-in Feature:

The Anti-Stick function is a built-in safety feature that automatically cuts off the welding current when the electrode sticks to the workpiece, preventing the electrode from fusing to the workpiece.

Operation: When the electrode sticks to the workpiece, the welding machine automatically cuts off the current, allowing the operator to easily break the electrode free without damaging the workpiece or the equipment.

Automatic Function: This feature is built-in and does not require manual adjustment. It helps protect the equipment and ensures a smooth welding process by minimizing the risk of electrode fusion and machine overload.

Pulse – Adjustable Parameter:

Pulse mode alternates the welding current between a high peak and a low base current. This helps control heat input, reduce spatter, and improve arc stability, especially for thin materials.

Functionality: Pulse ensures strong penetration during the peak and maintains the arc during the base phase, resulting in smoother welds.

Adjustment Guidance: Pulse can be turned ON or OFF. Enable it for better control and cleaner welds on thin or heat-sensitive materials.

3.13.4 Stick Welding Parameters Recommendation

The table below outlines optimal parameter settings based on electrode types, material thicknesses, and specific job requirements. These recommendations assist users in configuring their machine for maximum efficiency and weld quality.

Stick Welding Recommended Parameter Settings

Voltage	Electrode Type	Diameter	Amperage	Thickness							
				20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
				0.9mm	1.2mm	1.6mm	2.0mm	3.2mm	4.8mm	6.4mm	9.5mm
240V	6***	1/16" (1.6mm)	10~180A	28	33	36	45	/	/	/	/
		3/32" (2.4mm)		/	/	/	70	90	/	/	/
		1/8" (3.2mm)		/	/	/	/	105	120	130	/
		5/32" (4.0mm)		/	/	/	/	/	155	160	180
	7***	1/16" (1.6mm)		28	33	36	45	/	/	/	/
		3/32" (2.4mm)		/	/	/	70	90	/	/	/
		1/8" (3.2mm)		/	/	/	/	105	120	130	/
		5/32" (4.0mm)		/	/	/	/	/	155	160	180
120V	6***	1/16" (1.6mm)	10~120A	/	33	36	45	/	/	/	/
		3/32" (2.4mm)		/	/	/	70	90	/	/	/
	7***	1/16" (1.6mm)		/	33	36	45	/	/	/	/
		3/32" (2.4mm)		/	/	/	70	90	/	/	/

Selecting the appropriate welding current for the job is essential to prevent common welding defects and ensure a high-quality weld.

Low current can result in difficulty striking and maintaining a stable arc, with the electrode tending to stick to the workpiece. This leads to shallow penetration and a rounded, weak weld profile.

High current introduces risks such as excessive heat, which may burn through the base metal, cause undercut, and result in significant spatter buildup on the work surface.

After selecting the appropriate welding current, fine-tune additional parameters such as Arc Force and Hot Start. Proper adjustments of these settings, in alignment with the chosen current, will enhance arc stability, penetration, and overall weld quality.

3.14 Set up for Palsma Cutting

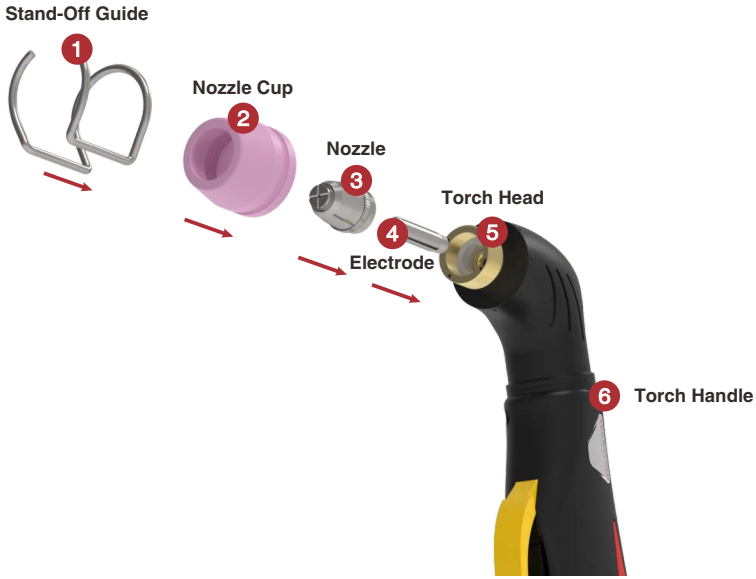
3.14.1 Basic Connections

- Connect the Cutting torch to the Torch Connector.
- Plug the 5-pin torch control switch cable into to Trigger Connector Receptacle.
- Connect the work clamp to the Work Clamp Receptacle (for Plasma Cutting), ensure it has good contact with the workpiece on a clean, bare metal surface free of rust, paint, or coating. Note: correct connection may damage the machine.
- The air filter regulator is pre-installed. Connect the NPT 1/4" inlet fitting on the regulator to the air compressor to supply clean, regulated air.
- Set the air pressure to 3~4 BAR/ 43~58PSI.
- Attach the work clamp securely to the workpiece.
- Keep the cutting torch away from all conductive materials.
- Plug the power cable into a suitable outlet (recommended: NEMA 6-50R).
- Turn on the power and select the Plasma Cut process from the Home Menu.
- Trigger the torch to ensure proper air flow and pilot arc. The machine supports HF non-contact arc ignition.
- Use the Multi-Function Control Knob to select cutting parameters, including current, pre-flow time, and post-flow time
- Position the torch head near the workpiece and trigger the torch control switch to initiate the arc using the HF (high-frequency) non-contact start.

3.14.2 Cut Torch Assembling

The AG60 plasma cutting torch consists of several core consumable and structural components. Proper assembly is essential for stable arc initiation, cutting performance, and consumable lifespan.

1. **Stand-Off Guide:** Keeps a consistent distance between the nozzle tip and the workpiece to ensure stable arc length and cut quality.
2. **Nozzle Cup:** Protects the nozzle and electrode while maintaining proper gas flow for arc stability.
3. **Nozzle:** Directs the compressed air and plasma arc precisely to the cutting point.
4. **Electrode:** Conducts current and forms the plasma arc. Regular replacement is required for consistent performance.
5. **Torch Head:** The front body of the torch; provides connection points for the electrode, nozzle, and cup, and channels current and gas.
6. **Torch Handle:** Provides ergonomic grip and houses the trigger switch for arc initiation and control.



Assembly Instructions

Insert the **Electrode** into the **Torch Head** and ensure it is seated firmly.
Place the **Nozzle** over the Electrode at the front of the Torch Head.
Screw the **Nozzle Cup** onto the Torch Head to lock the Nozzle and Electrode in place. Hand-tighten only.
Attach the **Stand-Off Guide** to the Nozzle Cup.
Verify all parts are clean, properly aligned, and securely fitted before operation.

Safety Notes

Always disconnect power before replacing or assembling consumables.
Replace worn **Electrodes** and **Nozzles** promptly to avoid poor cuts.
Keep **Nozzle Cup** and **Stand-Off Guide** clean from slag or spatter buildup.
Only use original AG60 consumables to ensure performance and safety.

3.14.3 Air Supply Requirements

The plasma cutting machine requires an external air compressor.
Gas type: Use clean, dry, oil-free compressed air for most cutting applications.
For specific materials:
Nitrogen – stainless steel, aluminum (smooth cut, less oxidation)
Oxygen – mild steel (fast cutting, clean edge)
Argon-Hydrogen mix – stainless steel, aluminum, thick alloys (high-quality cut)
Recommended working pressure: 0.3~0.4 MPa (43~58 PSI / 3~4 bar).
Air flow capacity: ≥ 5.3 CFM (150~190 L/min).
Tank capacity (recommended): ≥ 25~30 gallons (≈100~120 L) to ensure stable pressure during continuous cutting.

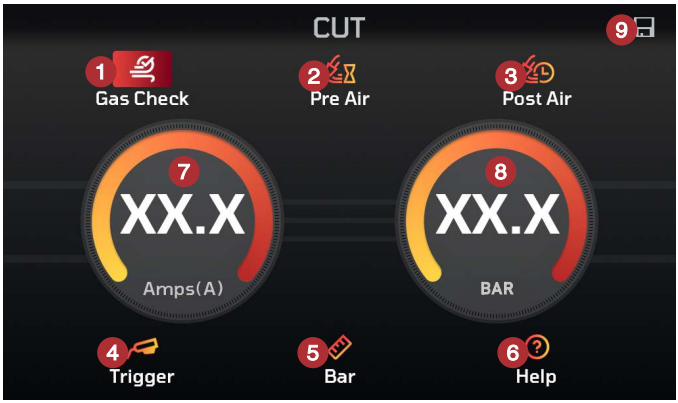
Important:

Use clean, dry, oil-free gas only. Contaminants such as oil, water, or moisture can damage the plasma torch and internal components, reduce cut quality and speed, limit cutting thickness, and shorten consumable life.

3.14.4 Overview of Basic Cut Parameters

All primary cutting parameters are managed through the Multi-Function Control Knob. Rotate to select a parameter, press to confirm, and adjust its value. The Wire Speed/Amperage Adjustment Knob is dedicated to setting the cutting current, while air pressure is regulated by the external air filter/regulator (oil-water separator) and displayed in real time on the screen.

The following parameters can be reviewed and adjusted:



1. **Gas Check:** Verifies that gas supply pressure is sufficient to maintain stable cutting and protect the torch.
2. **Pre Air Time:** Sets the duration of gas flow before arc initiation, ensuring adequate shielding of the workpiece and torch tip.
3. **Post Air Time:** Sets the duration of gas flow after the arc stops, protecting the torch and workpiece surface from oxidation.
4. **Torch Trigger Operation Selection:** Choose between 2T/4T torch operation modes.

• 2T: press to start, release to stop.
• 4T: press to start, press again to stop; suitable for extended cuts.

5. **Pressure Unit:** Selects the unit of gas pressure display: bar or psi, according to user preference.
6. **Help Function:** Select this option to enter the Help page for guidance. This section is currently reserved.
7. **Amperage Display:** Displays the selected cutting amperage on the main screen.
8. **Air Pressure Display:** Shows the current air pressure value in real time.
9. **Memory Function:** Access the memory settings with up to 20 memory slots for saving preferred cutting parameters.
10. **Real-time Amperage Display:** Displays the real-time amperage during the cutting process.

Cutting Parameters		
Paramter	240V	120V
Pre Air Time	0.3s~3s	0.3s~3s
Post Air Time	2s~20s	2s~20s
Amperage	15A~40A	15A~25A
Air Pressure	0~99.9Bar	0~99.9Bar

3.14.5 Recommend Cutting Thickness

The following tables list recommended parameters for common cutting applications, primarily for mild steel.

.Recommended Cutting Thickness (Quality Cut Range): The material thickness where smooth edges, stable arc performance, and consistent cut quality can normally be achieved.

.Maximum Cutting Thickness (Severance Limit): The upper limit of the machine's capacity. At this range, cut quality decreases, travel speed must be reduced, and multiple passes may be required.

• Cutting current, travel speed, and torch height/angle should always be adjusted according to material type, thickness, and surface condition.

Notes:

Values are for reference only. Actual performance depends on material, gas quality, operator technique, and environment.

Thicker materials may require slower travel speeds or multiple passes.

Detailed data is provided for mild steel. For stainless steel and aluminum, due to higher thermal conductivity, melting points, and complex gas requirements (e.g., N_2, N_2/H_2, Ar/H_2), only simplified recommendations are given in the table below.

Cutting Performance Reference for Mild Steel				
Cutting Amperage	Recommended Air Pressure	Quality Cutting Thickness	Maximum Cutting Thickness	Recommend Cutting Speed
15~20A	0.3~0.4 MPa / / 3.0~4.0 BAR / 43~58 PSI	30~16 Ga (0.8~2.0 mm)	1/8" (3 mm)	59~118 in/min (1500~3000 mm/min)
20A		1/16"~1/8" (1.5~3.0 mm)	3/16" (5 mm)	47~79 in/min (1200~2000 mm/min)
25A		16Ga~5/32" (2.0~4.0 mm)	1/4" (6 mm)	31~59 in/min (800~1500 mm/min)
30A		1/8"~1/4" (3.0~6.0 mm)	5/16" (8 mm)	24~39 in/min (600~1000 mm/min)
35A		3/16"~5/16" (5.0~8.0 mm)	3/8" (10 mm)	16~28 in/min (400~700 mm/min)
40A	0.35~0.4 MPa / 3.5~4.0 BAR / 43~58 PSI	1/4"~3/8" (6.0~10.0 mm)	1/2" (12 mm)	12~20 in/min (300~500 mm/min)

Recommended Cutting Parameters – Aluminum Alloy vs Stainless Steel					
Thickness	Current	Air Pressure	Speed	Stainless Steel	Aluminum
28GA~1/8" (1~3 mm)	20~30A	0.5~0.55 MPa / 5.0~5.5 BAR / 72.5~79.8 PSI	Fast	Prone to deformation; narrow kerf; stable torch height required; slight dross.	Overheats easily; high-speed cut; very narrow kerf; minimal dross.
5/32"~1/4" (4~6 mm)	35~45A	0.55~0.6 MPa / 5.5~6.0 BAR / 79.8~87 PSI	Medium	Optimal range; smooth cut; light dross; easy to remove.	Optimal range; vertical cut; very little dross; best cut quality.

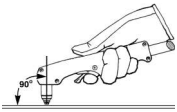
Note:

For stainless steel and aluminum, always perform test cuts before production and adjust current, gas type, and travel speed based on material thickness, joint type, and operator experience.

3.14.6 Cutting Operation Guidelines and Precautions

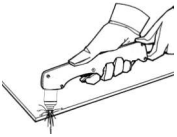
To ensure optimal cutting performance, safety, and extended equipment life, please follow the guidelines below. The illustrated table summarizes the most important tips for plasma cutting, including torch angle, positioning, starting technique, speed control, and maintenance.

Review these recommendations before operation.



1. Torch Angle and Position

- Keep the torch nozzle perpendicular to the workpiece, maintaining a 90° angle for stable cutting.
- Correct positioning ensures reliable arc transfer and helps maintain a consistent kerf.
- Avoid unnecessary arc starts to reduce wear on the nozzle and electrode.



2. Edge-Start Procedure

- Secure the workpiece and place the torch at the edge, holding the nozzle square to the surface.
- Press the trigger to initiate the arc and wait until full penetration is achieved.
- Begin moving the torch steadily along the cut line. Edge starting reduces spatter and extends consumable life.

3. Torch Movement

- Move the torch smoothly along the workpiece to keep the cut steady.
- Pulling or dragging the torch usually provides better stability than pushing.
- Consistent movement helps maintain uniform kerf width and cut quality.

4. Cutting Speed and Spark Observation

- Proper speed is indicated when sparks exit from the underside of the workpiece at a 15°~30° angle.
- If sparks spray upward, slow down the travel speed or increase the cutting current.
- Correct speed minimizes dross and improves cut surface quality.

5. Straight Cuts with a Guide

- Use a straight edge or guide bar to maintain alignment and accuracy during straight cuts.

6. Extended Arc Considerations

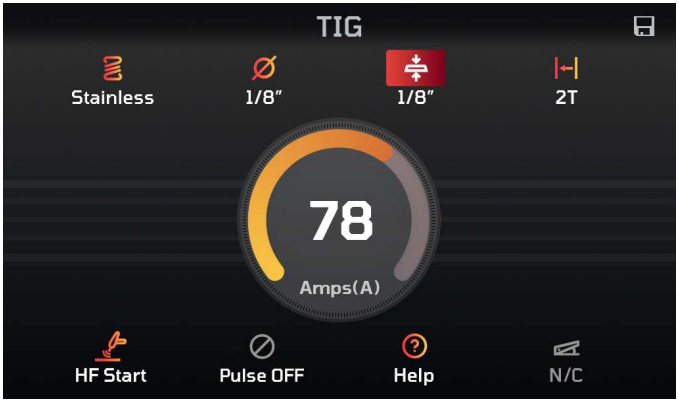
- Avoid stretching the arc excessively, as it increases power demand, reduces duty cycle, and may cause overheating or breaker trips.
- On lower-capacity power supplies, extended arc use can accelerate system overheating.
- Starting the cut from the workpiece edge is recommended to reduce spatter damage and prolong consumable service life.

3.15 Setup for Memory Saving and Loading

The Memory function allows users to store welding and cutting parameters—such as voltage, wire feed speed, amperage, and cutting current—under designated memory channels. These stored settings can be easily recalled, adjusted, and saved for future use. The system supports up to 20 memory slots for MIG/MAG welding, and 20 slots for Flux-cored, TIG, Stick welding, and Plasma Cutting, ensuring quick access to optimized parameters for a wide range of applications.

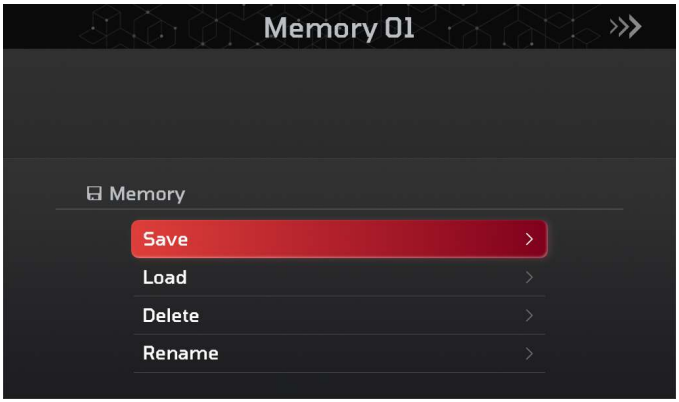
Accessing and Selecting Channels

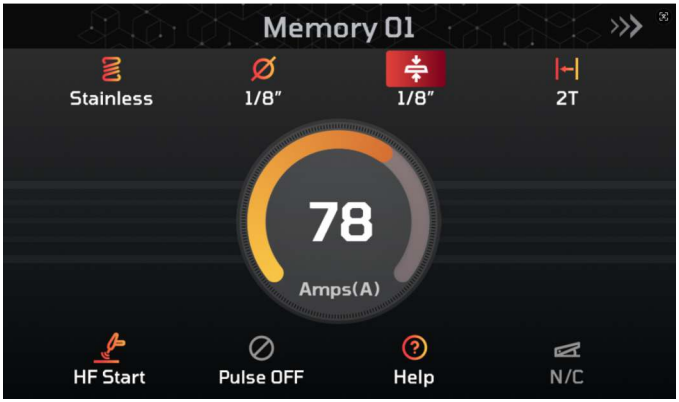
Press the Memory Button to open the memory screen.
Rotate the Multi-Function Knob to scroll through available channels (each mode supports up to 20).
Press the Multi-Function Knob to open the channel menu. Available options are: SAVE / RECALL / DELETE / RENAME.

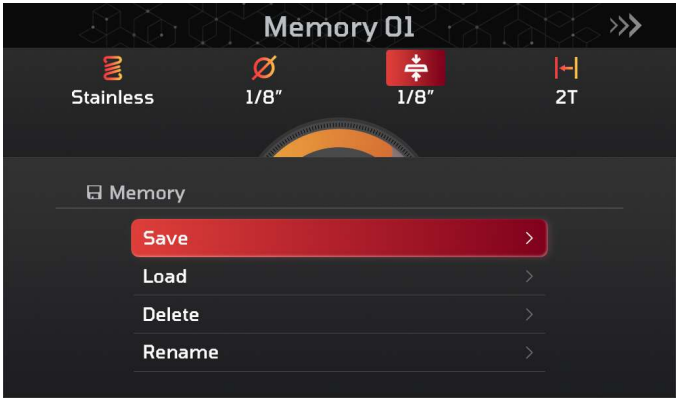


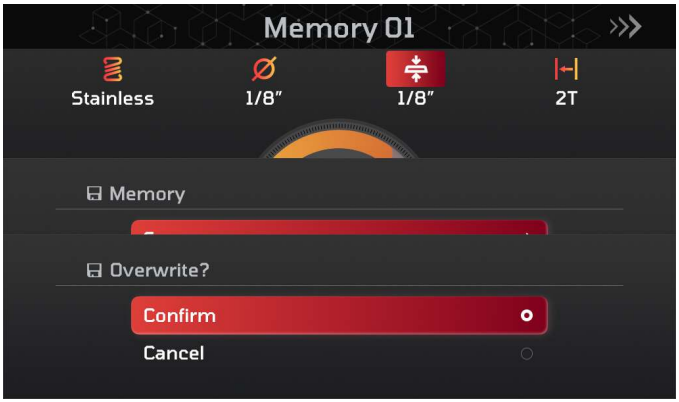
Saving Parameters

Empty channel: Parameters are saved as-is under the current voltage.
Channel with existing data: Saving will overwrite the stored parameters with the current voltage values.



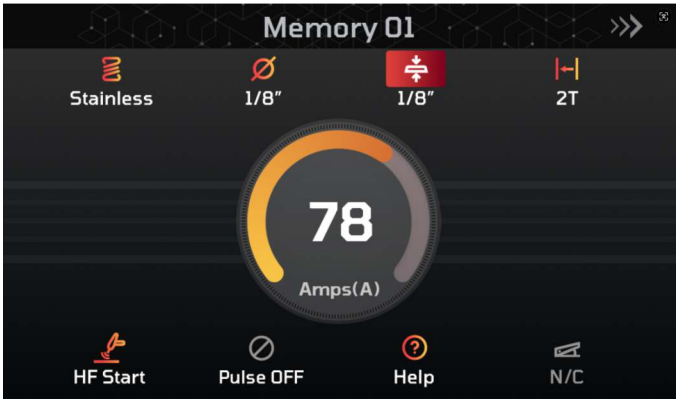


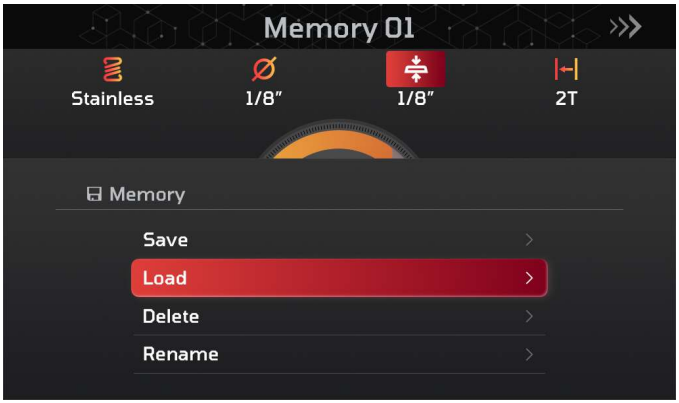


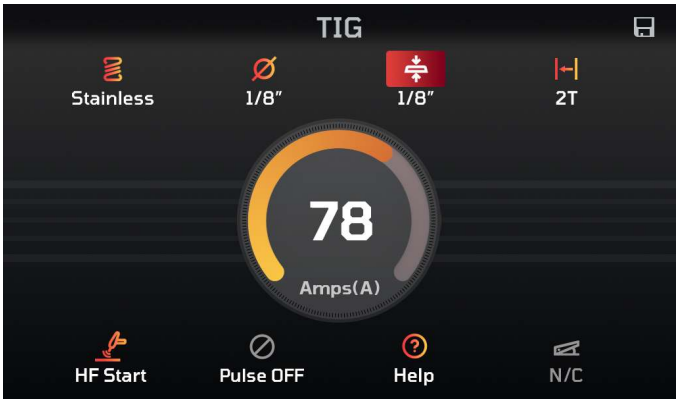


Recalling Parameters

Same voltage: Select RECALL to load the stored parameters and return to the welding/cutting main parameter page.
Different voltage: When recalling a memory channel saved under a different voltage, the machine will load the stored parameters with automatic adjustment if needed.
Parameter values are applied as follows:
If parameters saved at a higher voltage are recalled on a lower voltage (e.g., 240V to 120V), any values exceeding the lower voltage limits will be capped at the maximum allowed by the current voltage.
If parameters saved at a lower voltage are recalled on a higher voltage (e.g., 120V to 240V), the parameters will be applied as saved, without adjustment.

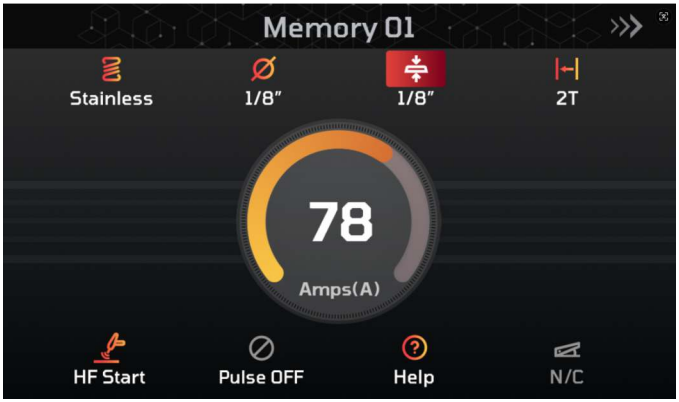


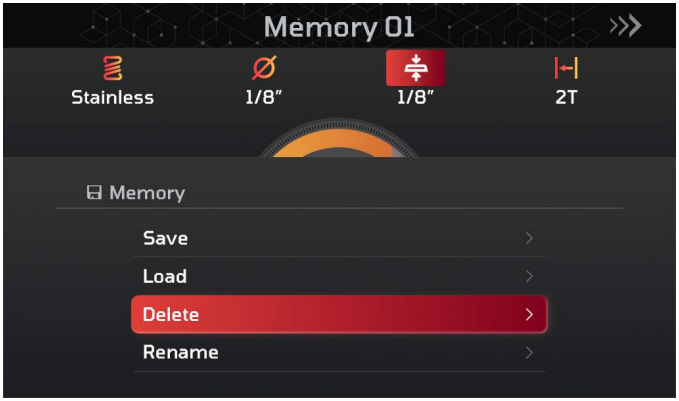


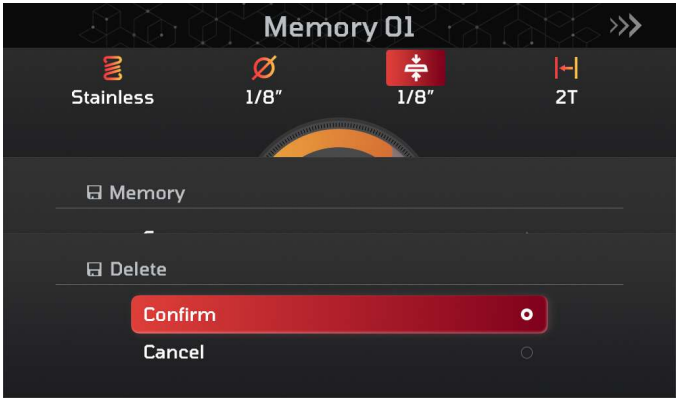


Deleting Parameters

Deletes all parameters of the selected channel, including records under the current voltage and other voltages.



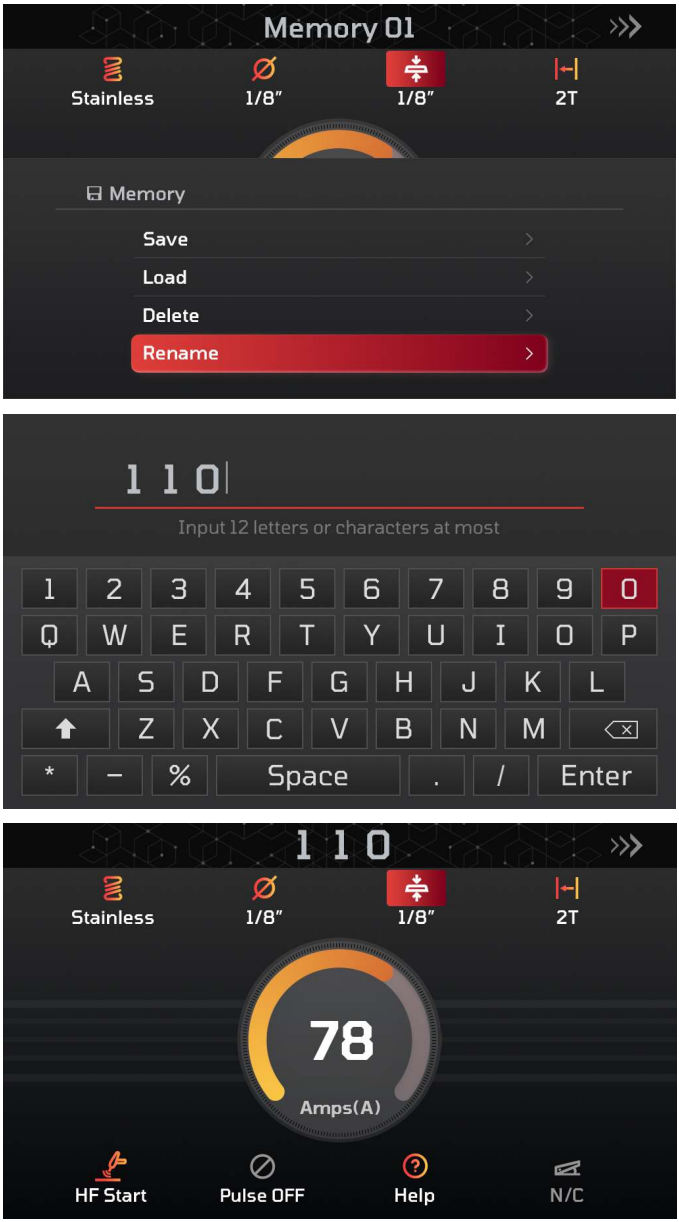

Memory 01
Stainless
1/8″
1/8″
2T
Memory
Save
Load
Delete
Rename


Memory 01
Stainless
1/8″
1/8″
2T
Memory
Delete
Confirm
Cancel


Memory 01
Empty Content
Select

Renaming Channels

Allows naming of the selected channel, whether it is empty or already has saved parameters under different voltages.



To rename a channel:

Rotate the Wire Speed/Amperage Adjustment Knob to move the cursor vertically and select a character.
Rotate the Multi-Function Knob to move the cursor horizontally, then press it to confirm your selection.
Up to 12 characters can be entered.
Hold down the Multi-Function Knob to clear all characters.
Select ENTER or press the Fine Adjustment Knob to confirm the name and exit editing.
Select the “x” symbol to delete the previous character.

3.16 Help Guide Information

This welding machine comes equipped with a comprehensive Help Guide to assist users in setup, operation, and maintenance. The guide is accessible directly on the machine's interface. To use it, rotate the Multi-Function Knob to select a menu, then press the knob to confirm and view its content. The guide covers the following areas:

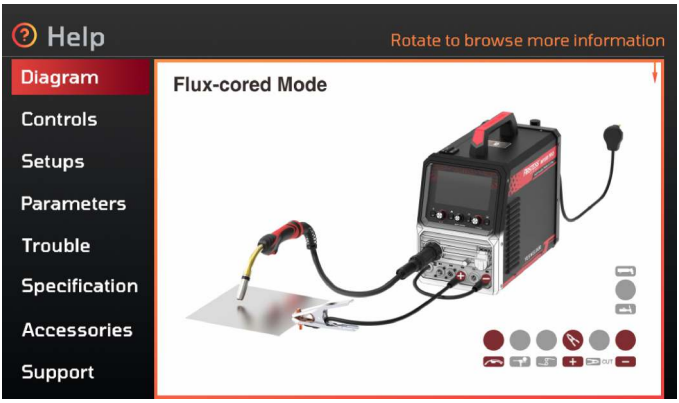


Diagram: Provides a visual overview of the machine's wiring connections and configuration options for various welding processes.

Controls: Offers a basic introduction to the machine's digital display and control panel, including key functions and navigation instructions.

Setups: Guides users through basic setup instructions and provides recommended settings for different welding processes and materials.

Parameters: Explains the adjustable parameters available on the machine, helping users understand their function and impact on welding performance.

Trouble: Assists in troubleshooting common issues and provides maintenance tips for optimal machine operation.

Specification: Lists the technical specifications of the machine, detailing its performance capabilities and safety standards.

Accessories: Introduces compatible accessories and consumables that enhance the machine's functionality.

Support: Includes contact information for technical support and service inquiries.

For specific parameter values and settings, please refer directly to the machine's on-screen guide.

4. MAINTENANCE & SERVICING

4.1 General Maintenance

This welder has been engineered to need minimal service providing that a few very simple steps are taken to properly maintain it.

- Keep the cabinet cover closed at all times unless the wire needs to be changed or the driving pressure needs adjusting.
- Keep all consumables (contact tips, nozzles, and liner) clean and replace them when necessary. See “Consumable Maintenance” (below) and “Troubleshooting” (page 59) for detailed information.
- Replace INPUT POWER CABLE, ground cable, work clamp, or gun assembly when damaged or worn.
- Avoid directing grinding particles towards the welder. These conductive particles can build up inside the machine and cause severe damage.
- Periodically clean dust, dirt, grease, etc. from your welder. Every six months or as necessary, remove the side panels from the welder and use compressed air to blow out any dust and dirt that may have accumulated inside the welder.
- If available, use compressed air to clean the liner periodically, especially when changing wire spools

WARNING: DISCONNECT FROM POWER SOURCE WHEN CARRYING OUT THIS OPERATION.

- The wire feed drive roller could wear out during service. Therefore, replacing the drive roller is required under specific circumstances. For example, if the idler roller and the wire feed drive roller make contact when the correct size of welding wire in the groove of the drive roller, the wire feed drive roller must be replaced immediately.
- Check all cables periodically. They must be in good condition and not cracked.

WARNING: ELECTRIC SHOCK CAN KILL! Be aware that the ON/OFF SWITCH, when OFF, does not remove power from all internal circuitry in the welder. To reduce the risk of electric shock, always unplug the welder from its AC power source and wait several minutes for electrical energy to discharge before removing side panels.

4.2 Consumable Maintenance

IT IS VERY IMPORTANT TO MAINTAIN THE CONSUMABLES TO AVOID THE NEED FOR PREMATURE REPLACEMENT OF THE GUN ASSEMBLY.

MAINTAINING THE CONTACT TIP:

The purpose of the CONTACT TIP is to transfer welding current to the welding wire while allowing the wire to pass through it smoothly.

Always use a contact tip stamped with the same diameter as the wire.

- If the wire burns back into the contact tip, remove it from the gun and clean the hole running through it with an oxygen-acetylene torch tip cleaner or tip drill. If the burned-back wire cannot be removed, the contact tip must be replaced.
- A failure mode of the contact tip is a worn-out hole with enlarged hole size. A worn-out contact tip usually results in unstable arc characteristics and difficult arc starting.

CAUTION: KEEP THE GAS NOZZLE CLEAN!

During the welding, spatter and slag can build up inside the gas nozzle. The user must clean the gas nozzle periodically. Failure to clean and/or replace the gas nozzle in a timely fashion could cause damage to the front end of the gun assembly, which is not replaceable. The inaction results may require the replacement of the entire gun assembly.

Failure to keep the nozzle adequately cleaned can result in the following problems:

If the spattering buildup inside the gas nozzle bridges the gas nozzle and the welding torch, it allows the welding current to pass through the gas nozzle beside the contact tip. This phenomenon causes erratic welds and less weld penetration. In addition, it leads to an overheating of the end of the welding gun and, in turn, damages the welding gun.

TESTING FOR A SHORTED NOZZLE

Arcing between the nozzle and the workpiece means the nozzle is shorted.

Unplug the AC power source, and use an ohmmeter to measure the resistance between the gas nozzle and the contact tip. If the resistance is not unlimited, the nozzle is shorted. Please clean or replace the gas nozzle.

5. TROUBLESHOOTING

HOW TO USE TROUBLESHOOTING GUIDE

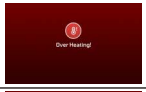
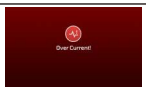
This Troubleshooting Guide is provided to help you locate and fix possible machine malfunctions. Follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).
Look under the column labeled “PROBLEM (SYMPTOMS)”. This column describes the sign that the machine is showing. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. POSSIBLE CAUSE.
The second column labeled “POSSIBLE CAUSE”, lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION
This column provides a course of action for the possible cause, If you do not understand or cannot perform the Recommended Course of Action safely, contact YESWELDER support@yeswelder.com.

OBSERVE ALL SAFETY GUIDELINES DETAILED THROUGHOUT THIS MANUAL

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
	Wire Feed Jam! / Feeder Problem!	Wire isn’t feeding properly – check drive roll, liner, and connections.
	Output Short!	Something’s shorted – check cables and connections, make sure work clamp isn’t touching metal.
	Low Air Pressure	Air supply too low – check compressor, hoses, and regulators.
	Overheating	Machine is hot – let it cool, check ventilation and fan.
	Overcurrent / Current Too High	Welding current too high – check settings, cables, and possible short.
	Gun trigger pressed before power-on	Release trigger and restart. If problem remains, trigger switch circuit may be faulty.
	Welding current exceeds machine’s capacity	Reduce welding current or contact support for assistance.
Frequent circuit breaker Trips.	Machine is drawing too much amperage due to use of larger size electrode.	Use a smaller electrode.
	Machine is not the only piece of electrical equipment on the circuit.	Make sure the welder is on a dedicated circuit or is the only equipment plugged into a circuit.
	Circuit breaker is incorrect/insufficient for use with this machine.	Verify that the circuit breaker for the circuit is a 30A breaker for 120V and 20A for 240V. If it is not, have a qualified electrician install the proper breakers.
Screen’s OFF, No output power, Fan not operating.	Despooler tension too high.	Connect machine to proper input power source.
		Verify that circuit breaker has not been tripped in your main power panel. Reset if needed.
		Wire loose connection.
	POWER SWITCH is OFF.	Ensure POWER SWITCH (rear) is in the ON position.
Screen is OFF, but fan is operating	Power supply issue.	Check and secure power connections to display/control board.
	Control board malfunction	Contact our support team for further assistance and repair.

MIG WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
No arc or wire feed. Screen's on, Fan operates normally (can be heard, auto start/stop).	Gun trigger is not being pulled or is not making contact.	Ensure the trigger is fully pulled. Inspect and replace the trigger switch if it is faulty.
	Incorrect gun mode selected (Spool gun vs. Standard).	Check and adjust the gun mode settings to match the correct gun type.
	Exceeded duty cycle; thermal protection engaged	Allow the machine to cool down. Stay within the machine's duty cycle to avoid overheating.
	Insufficient air flow causing machine to overheat before reaching duty cycle.	Ensure proper ventilation and airflow around the machine. Check the fan for blockages or malfunctions.
	Wire Feed Motor Fault.	Inspect the wire feed motor and connections. Replace if necessary.
	Control Board Malfunction.	Inspect the control board for damage. Contact our support team for further assistance and repair.
	Blocked or Worn Contact Tip.	Clean or replace the contact tip. Ensure it's the right size for the wire.
Feed motor operates but wire will not feed.	Insufficient feed drive roller pressure.	Adjust drive roller pressure.
	Burr on end of wire.	Re-cut wire so it is square with no burr.
	Liner blocked or damaged.	Clear with compressed air or replace liner.
	Despooler tension too high.	Adjust despooler tension.
Wire feeds but no arc.	Incorrect polarity setting.	Verify polarity is correct for the type of wire used. For flux-cored wire, set to DCEN; for solid wire, set to DCEP.
	Poor ground connection.	Ensure the ground clamp is securely attached to clean, bare metal.
	No gas flow (if MIG welding with solid wire).	Check the gas flow and ensure the cylinder is not empty and the regulator is set properly.
	Settings such as voltage or wire feed speed may be incorrect, preventing arc formation.	Adjust the voltage, wire feed speed, and other arc settings to match the material and process.
	Control board malfunction.	Inspect the control board for issues. Contact our support team for further assistance and repair.
	Faulty or dirty nozzle.	Clean or replace the nozzle.
	Faulty contact tip.	Inspect and replace the contact tip if worn out or damaged.
	Trigger not pulled while wire is in contact with workpiece.	Pull the trigger while in contact with the workpiece. The machine does not arc unless the trigger is pulled.
	Internal connection issue in the welding machine.	Check internal machine connections or contact technical support.

MIG WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
Poor quality welds.	Insufficient gas at weld area.	Check that the gas is not being blown away by drafts and, if so, move to a more sheltered weld area. If not, check gas cylinder contents, gauge, regulator setting, and operation of gas valve.
	Rusty, painted, oily or greasy workpiece	Ensure workpiece is clean and dry.
	Poor ground connection or torch/electrode connection.	Check work clamp/workpiece connection and all connections to the machine.
	Incorrect settings.	Check welding parameters and polarity.
Arc works but not feeding wire.	No pressure on the drive roller; insufficient or excessive pressure on the drive roller.	Adjust the drive pressure. See “Installing The Welding Wire”.
	Wire spool is empty.	Check if wire is in place and replace if necessary.
Wire is “bird-nesting” at the drive roller or jamming.	Too much pressure on drive roller.	Adjust the drive pressure. See “Installing The Welding Wire”.
	Contact tip is clogged or damaged.	Replace contact tip.
	Worn guides or drive roll alignment.	Replace parts.
Low output or non-penetrating weld.	Weld parameters too low.	Adjust welding parameters.
	Wrong type or size wire.	Use .030" (0.8mm) ~ .035" (0.9mm) wire.
	Poor ground connection or gun connection.	Reposition clamp and check cable to clamp connection. Check connection of ground cable, gun, and Wire Polarity Drive Lead.
	Wrong size or worn contact tip.	Use .030" (0.8mm) or 0.035" (0.9mm) contact tip with the corresponding wire. Replace contact tip if worn.
	Input power too low.	Have a qualified electrician verify the voltage at your outlet. If the voltage is appropriate, verify that the circuit wiring is sufficient for the circuit breaker size.
	Stick out too long.	Decrease stick out (the amount the wire extends past the contact tip).
Work clamp, ground cable, and/or welding cable get hot.	Bad ground or loose ground connection.	Check the connection of the work clamp and gun to the machine. Check the connection of the MIG Gun Connection. Check connection of the ground cable to the work clamp. Tighten cable connection to work clamp if needed. Ensure the connection between the work clamp and workpiece is good and on clean, bare (not painted or rusted) metal. Make sure cable is not damaged.
Gun nozzle arcs to work surface.	Spatter or Slag build-up inside nozzle or nozzle is clogged.	Clean or replace nozzle as needed.
Wire burns back to contact tip.	Wire feed speed may be too high, causing the wire to burn back to the contact tip.	Reduce the wire feed speed.
	High voltage can overheat the wire, leading to burn back.	Decrease the voltage settings.
	Stick-out too short.	Increase stick-out (the amount the wire extends past the contact tip).
	Insufficient or incorrect gas flow can cause arc instability.	Adjust the gas flow to the recommended level.
	The contact tip may be worn, dirty, or not the right size for the wire.	Clean, replace, or ensure the tip size matches the wire.

TIG WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
Arc will not start (no ignition, either mode).	Ground clamp not connected properly.	Ensure solid ground connection to clean, bare metal.
	Electrode too far from workpiece at ignition.	Bring electrode within 1–2 mm of workpiece before triggering.
	HF module not functioning (HF TIG only).	Check/replace HF module, inspect spark gap if user-accessible.
	Worn or contaminated tungsten electrode.	Replace or regrind tungsten, ensure clean tip.
	Torch trigger switch not working.	Inspect switch, cable and plug for continuity.
	Welding machine in wrong mode (Stick or Plasma).	Switch to correct TIG mode and check indicator.
	Negative/positive cable misconnected.	Check correct polarity (DCEN for steel, DCEP for aluminum with electrode positive in special cases).
Weak or unstable arc.	Argon gas supply too low or off.	Open gas valve and verify flow rate (typically 6-12 L/min).
	Electrode contaminated.	Remove and regrind or replace tungsten tip.
	Incorrect tungsten size or type for amperage.	Use recommended tungsten for set current.
	Loose or corroded torch connections.	Tighten and clean all torch and cable connections.
	Current setting too low.	Increase welding amperage as appropriate.
	Bad gas or contaminated argon.	Replace with certified pure argon.
Porous or contaminated weld (porosity, holes).	No gas flow or gas leak.	Inspect hoses, regulator, and torch for leaks, check cylinder valve.
	Air draft blowing away shielding gas.	Shield weld area from draft, use gas lens if needed.
	Dirty material or filler rod.	Clean base metal and filler rod thoroughly (remove oils, oxidation, paint, etc.).
	Electrode or torch nozzle contaminated.	Clean or replace as required.
Electrode burns back rapidly, melts or is consumed quickly.	Torch set to wrong polarity.	Verify DCEN for most TIG welding (electrode negative).
	Gas supply interrupted.	Check and restore gas flow.
	Excessive welding current.	Lower current, use correct tungsten diameter.
	Electrode extends too far from gas cup.	Reduce electrode stick-out to 1/8"~1/4" beyond cup.
Arc wandering (difficulty keeping arc stable).	Gas cup too small or missing.	Use appropriately sized ceramic gas cup for joint and tungsten diameter.
	Electrode not centered in cup.	Adjust and ensure tungsten centered in torch/nozzle.
	Excessive argon flow rate.	Reduce flow rate to avoid turbulence (start with 8–10 L/min).
	Magnetic arc blow (rare in AC, more in DC).	Change ground position, reduce work cable loops/length.

TIG WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
Contaminated tungsten (blackened, ball end, non-pointed)	Touching tungsten to work or filler repeatedly	Practice “lift” or “HF start” technique, avoid striking arc on filler rod
	Incorrect polarity (DCEP instead of DCEN)	Check and correct polarity
Premature arc stopping/arc outage	Trigger released or loose trigger wire	Retry, inspect/replace torch switch and cable
	Poor ground or intermittent power input	Inspect ground clamp, input cord, and power connections
Torch overheating	Excessive current for torch rating	Use lower current or upgrade to higher-rated torch
	Insufficient coolant flow (water-cooled torches)	Check coolant reservoir/pump, inspect hoses for blockages
Excessive spatter (TIG process, though rare)	Too high amperage or improper shielding	Reduce current, check gas flow and tungsten prep
No post-flow or insufficient post-flow (tungsten oxidizing)	Post-gas timer set too low or faulty	Increase/set post-flow time (4–10 seconds usual) or service gas solenoid
Loss of HF start, only Lift TIG working	HF circuit fault/dirty points	Clean, adjust or repair HF unit per manual
Intermittent gas flow (gas surges or stops)	Regulator malfunction or blocked hose	Check, clean, or replace regulator/hose/torch gas valve
Filler rod melting before entering puddle	Filler held in arc, not puddle	Feed filler only to the leading edge of weld puddle

STICK WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
Poor starting.	Poor work clamp connection.	Check and secure work connection.
Stick electrode “blasts off” when arc is struck.	Current may be set too high for electrode size.	Adjust current.
Electrode “stick” in weld puddle.	Current may be set too low for electrode size.	Adjust current.
Porosity – small cavities or holes resulting from gas pockets in weld metal.	Arc length too long.	Reduce arc length.
	Damp electrode.	Use dry electrode.
	Workpiece dirty.	Remove all grease, oil, moisture, rust, paint, coatings, slag, and dirt from work surface before welding.
Excessive Spatter – scattering of molten metal particles that cool to solid form near weld bead.	Amperage too high for electrode.	Decrease amperage or select larger electrode.
	Arc length too long or voltage too high.	Reduce arc length or voltage.
Incomplete Fusion – failure of weld metal to fuse completely with base metal or a preceeding weld bead.	Insufficient heat input.	Increase amperage. Select larger electrode and increase amperage.
	Improper welding technique.	Place stringer bead in proper location at joint during welding.
		Adjust work angle or widen groove to access bottom during welding.
		Momentarily hold arc on groove side walls when using weaving technique.
		Keep arc on leading edge of weld puddle.
	Workpiece dirty.	Remove all grease, oil, moisture, rust, paint, coatings, slag, and dirt from work surface before welding.
Lack Of Penetration – shallow fusion between weld metal and base metal.	Improper joint preparation.	Material too thick. Joint preparation and design must provide access to bottom of groove.
	Improper weld technique.	Keep arc on leading edge of weld puddle.
	Insufficient heat input.	Increase amperage. Select larger electrode and increase amperage.
		Reduce travel speed.
Burn Through – weld metal melting completely through base metal resulting in holes where no metal remains.	Excessive heat input.	Select lower amperage. Use smaller electrode.
		Increase or maintain steady travel speed.

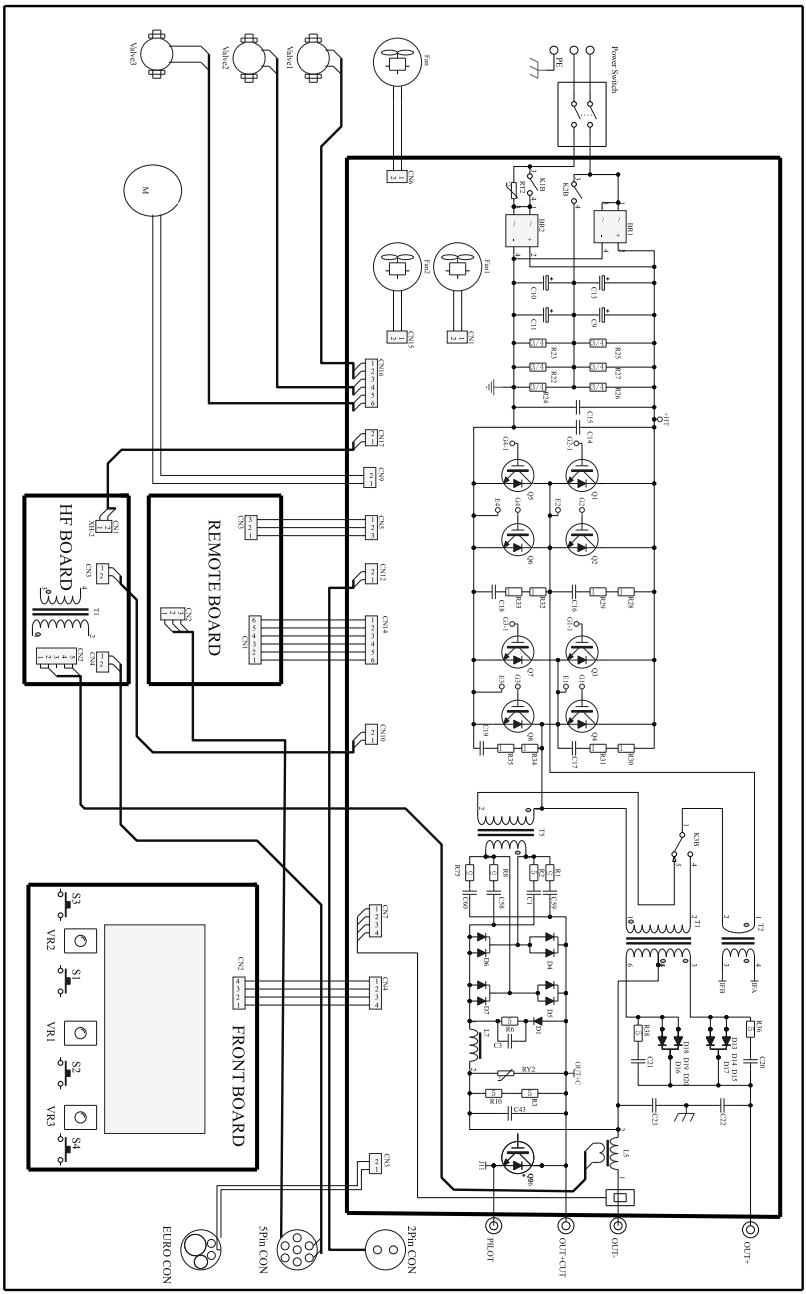
CUT WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
Arc fails to initiate (no HF pilot arc).	Poor ground connection to workpiece.	Verify and reposition work clamp for clean metal-to-metal contact.
	Excessively dirty or painted work surface.	Clean work surface area for electrical contact.
	Damage or loose torch lead.	Inspect and resecure/replace torch cable and torch lead connector.
	Weak or faulty HF spark module.	Consult service manual; inspect spark gap, replace module if necessary.
	Worn or contaminated AG60 torch consumables (electrode, nozzle, ceramic shield).	Inspect and replace damaged components with genuine AG60 parts.
	Low air pressure or insufficient flow.	Set compressor/regulator to manufacturer's recommended air pressure (usually 0.4–0.6 MPa).
Arc starts but does not transfer to metal.	Torch tip too far from work surface.	Lower torch until nozzle contacts work surface; for AG60 it is recommended to drag the nozzle.
	Incorrect torch angle.	Hold torch perpendicular (90°) to work for optimal transfer.
	Damaged electrode or nozzle.	Replace with new, genuine AG60 consumables.
	Pilot arc not being sustained.	Inspect pilot arc circuit, torch wiring, and torch consumables.
	Ground clamp has poor contact.	Reposition clamp; clean contact point.
Weak or unstable cutting arc.	Fluctuating air supply or compressor output.	Check compressor operation; inspect for leaks or blockages in airline/hose.
	Inconsistent input power or voltage drop.	Use correct power source and minimize extension cord length.
	Faulty or worn torch consumables.	Refit, clean, or replace nozzle/electrode.
	Electrode stick-out excessive.	Adjust electrode protrusion within recommended limits.
Poor cut quality (irregular edge, heavy dross or slag).	Cutting speed too fast or too slow.	Adjust torch travel speed for optimal cut.
	Torch held at improper angle.	Maintain perpendicular position during cutting.
	Worn electrode or nozzle.	Inspect for wear or distortion, replace as needed.
	Contaminated air supply (moisture, oil, dirt).	Add/filter air dryer to compressor, drain accumulated water.
	Material too thick for machine rating.	Confirm plate thickness is within model's max cut rating.

CUT WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
Excessive dross build-up.	Cutting speed too slow (bottom dross).	Increase torch travel speed.
	Cutting speed too fast (top surface dross).	Slow down torch movement for cleaner edge.
	Current set too low.	Increase output amperage.
	Torch angle incorrect.	Keep torch vertical to minimize dross.
Consumables burn out quickly or abnormal wear.	Gas pressure too low or improper flow.	Set and maintain correct air pressure.
	Excess moisture or oil in compressed air.	Use moisture separator/filter; drain tank regularly.
	Poor assembly or loose consumables.	Disassemble/reassemble torch head, ensuring snug fit of consumables.
	Cutting material exceeds torch/machine capacity.	Only cut materials within the specified thickness/rating.
Arc extinguishes or stops during cut.	Input power interrupted or fluctuates.	Check power supply and connections.
	Torch trigger malfunction.	Test and replace trigger handle or wiring if faulty.
	Pilot arc circuit interruption.	Inspect pilot arc module and related wiring.
	Cable or torch overheating.	Let torch cool down; check for excessive extension or high duty cycle.
Excess spatter or rough cut surface.	Incorrect air pressure or flow.	Adjust regulator for correct air pressure and flow rate.
	Consumables misaligned or wrong type.	Use genuine AG60 torch parts only; confirm correct installation.
Torch overheating.	Excessive cutting duration or overcurrent.	Pause operation to let torch cool down; verify settings within duty cycle rating.
	Restricted airflow through torch.	Clean/replace torch head components to allow for proper cooling air passage.
Unusual noise or vibration during operation.	Loose or misaligned consumables/torch head components.	Inspect and tighten/replace all torch head parts.

6. WIRING DIAGRAM



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