FIRSTESS DP200

IGBT INVERTER MULTI-PROCESS WELDER
(DUAL PULSE MIG, FLUX-CORED, LIFT TIG, STICK)

Manual Version: V5.1-May 2025
Software Version: 5.1

OPERATOR'S MANUAL

YESWELDER®

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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 diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects, or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an exposed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

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 ENGINE POWERED EQUIPMENT.

1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.

1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.

1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

1.d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.

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.

1. SAFETY

TECHNICAL SPECIFICATIONS: DP200

INPUT-SINGLE PHASE ONLY		
Standard Voltage /Frequency	Input Current	Recommended Receptacle
240V±10% 50/60Hz	$I_{1\ max}$=35A $I_{1\ eff}$=17.4A	NEMA 6-50
120V±10% 50/60Hz	$I_{1\ max}$=40A $I_{1\ eff}$=20A	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
120V	GMAW (MIG)	25%	120A	20V
		60%	78A	17.9V
		100%	60A	17V
	GTAW (TIG)	25%	120A	14.8V
		60%	78A	13.2V
		100%	60A	12.4V
	SMAW (STICK)	25%	120A	24.8V
		60%	78A	23.2V
		100%	60A	22.4V

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
120V	GMAW		30A~140A	15.5V~21V
	SMAW		10A~120A	20.4V~24.8V
	GTAW		10A~120A	10.4V~14.8V

OTHER PARAMETERS				
Machine	Power Factor	Efficiency	Protection Class	Insulation Class
DP200	0.8	≥80%	IP21S	F

PACKING DIMENSIONS				
Machine	Length	Width	Height	Weight
DP200	21.3"	14.9"	17.9"	44.86lb
	540mm	380mm	460mm	20.35Kg

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 DP200 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 DP200 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 DP200 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

DP200 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 compact, portable wire feed welder offers versatile capabilities, including MIG (GMAW), flux-cored (FCAW), stick welding (SMAW), and DC lift TIG welding (GTAW) on mild steel and stainless steel.

MIG Welding requires shielding gas to protect the weld pool during cooling, sourced locally based on the material. It's ideal for thinner materials, providing a clean finish, particularly for automotive body panels.

Self-Shielded Flux-Cored Welding eliminates the need for additional shielding gas, using flux additives in the wire to protect the weld. It's effective for medium to thicker materials and works well on painted or rusty surfaces, making it suitable for outdoor use, though the finish may not be as refined as MIG welding.

Stick Welding (SMAW) is portable and versatile, allowing for welding in various positions. It's effective for thicker materials and outdoor environments, accommodating various electrodes.

DC Lift TIG Welding (GTAW) requires a lift TIG torch with a gas valve for optimal performance. It excels in high-quality, precise welds on thin materials, providing excellent control. The machine lacks a built-in gas solenoid, requiring manual gas flow management. The arc is initiated with a lift arc technique for clean starts, enhancing efficiency and weld quality in precision 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

2. INSTALLATION

2.1 Accessories

❶ **Firstess DP200 Welder**

❷ **Welding Wires**

❸ **Work Clamp**

❹ **Electrode Holder**

❺ **Drive Rollers**

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

❻ **240V~120V Power Adapter**

❼ **24KD MIG Gun**

❽ **Contact Tips (4pieces)**

❾ **Gas Hose**

❿ **Graphene Feeding Liner**

⓫ **Operator's Manual**

2.2 Controls and Settings

1 **7-Inch LCD Screen**
Clearly displays various parameters and values.

2 **Value Adjustment Knob**
In MIG/MAG/Flux Welding Process:
a. Hold the button for 3 seconds for inching wire feed.
b. Rotate to adjust wire feeding speed.
c. Click to enter advanced parameters, rotate to adjust parameter values.
In Stick and TIG Welding Process:
Rotate to adjust the amperage.
On Help page:
Rotate to switch between different guides.

3 **Home Menu Knob**
Quickly return to the home menu for welding process selection or basic settings.

4 **Function Knob**
Rotate to select a parameter, click to confirm.
Hold to switch to Synergic MIG mode or Manual MIG mode in MIG/MAG/Flux welding.

5 **Help Knob**
Enter the help guide information.
Press and hold to enter the setting menu.

6 **Back/Voltage Fine-Tuning Knob**
a. Click to return to the previous settings menu.
b. Rotate to fine-tune the voltage in MIG/MAG/Flux Mode.
c. Hold to reset to the default settings.

7 **Euro Torch Connector**
8 **Wire Drive Polarity Lead**
9 **Spool Gun Control Socket**
10 **Foot Pedal Control Socket**
11 **Positive Output Terminal**
12 **Negative Output Terminal**
13 **Power Switch**
14 **MIG/MAG Gas Inlet**
15 **Input Power Cable**
16 **Cooling Fan**

2.2 Controls and Settings

TYPE1

TYPE2

17 **Wire Spool Spindle and Brake**
18 **Wire Feeder & Components**
19 **USB-C Upgrade Port**
20 **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 MIG welding, the gas supply system requires a separate gas cylinder (not included with the machine and must be purchased separately). The gas hose connects from the machine's rear gas inlet to the regulator, which is then attached to the gas cylinder. The cylinder should be securely positioned in a well-ventilated area to prevent accidents, such as tipping over.

Setup steps:

- Ensure the regulator valve is fully closed by turning the knob counterclockwise.
- Attach the gas regulator securely to the cylinder valve.
- Connect the gas hose from the regulator to the machine's gas inlet at the rear.
- Open the cylinder valve and adjust the gas flow to around 20~30 CFH (Cubic Feet per Hour).
- Pull the MIG gun trigger to confirm that shielding gas flows through the gun.

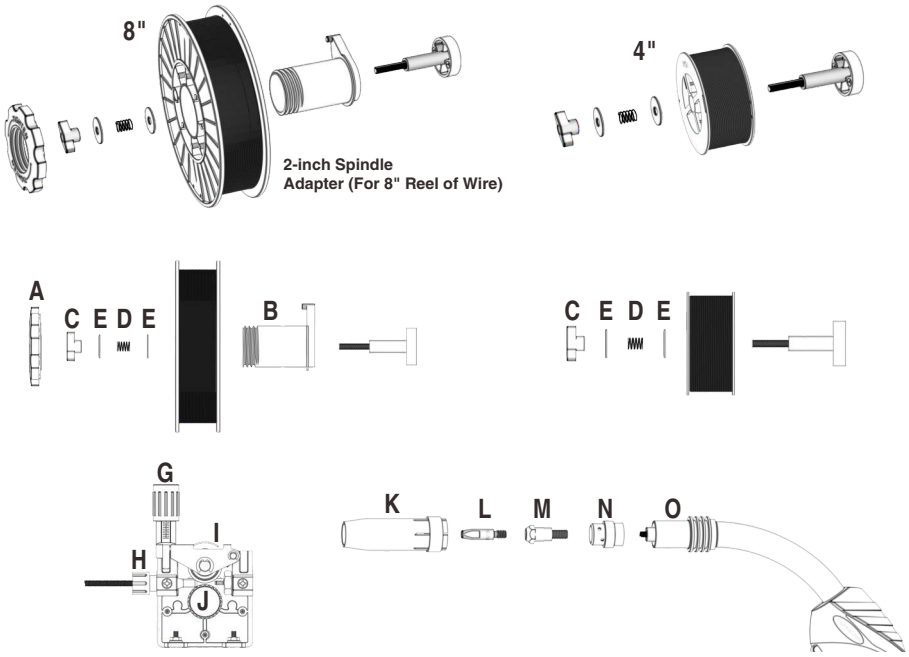
For Lift TIG welding, the gas is supplied through the hose attached to the Lift TIG torch (which is also sold separately). This hose is connected directly to the gas regulator and cylinder, bypassing the machine's rear gas inlet.

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).



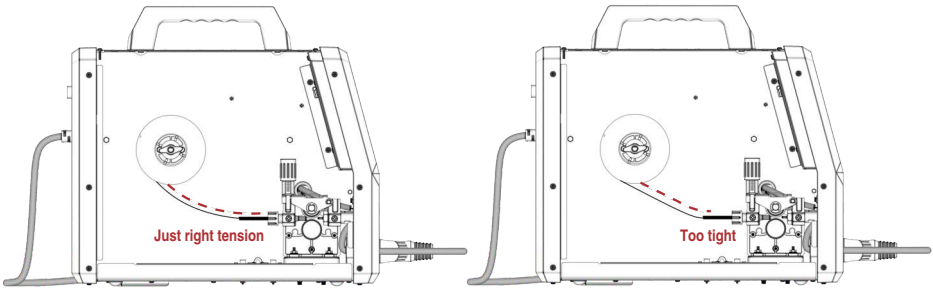
2.5.1 Installing 4-Inch Spool (See Figure For Part Identification):

- 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 ©, 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.

YESWELDER		Serial NO.:							
1~ f1 f2									
		U_1 =240V				U_1 =120V			
		30A/15.5V to 200A/24V				30A/15.5V to 140A/21V			
		X	25%	60%	100%	X	25%	60%	100%
S	Uo=81V	I_2	200A	130A	100A	I_2	120A	78A	60A
		U_2	24V	20.5V	19V	U_2	20V	17.9V	17V
1~50/60Hz		I_{1max} =34.8A		I_{1eff} = 17.4A		I_{1max} =31A		I_{1eff} =15.5A	
		10A/10.8V to 200A/18V				10A/10.4V to 120A/14.8V			
		X	25%	60%	100%	X	25%	60%	100%
S	Uo=81V Ur=13V	I_2	200A	130A	100A	I_2	120A	78A	60A
		U_2	18V	15.2V	14V	U_2	14.8V	13.2V	12.4V
1~50/60Hz		I_{1max} =27.8A		I_{1eff} =13.9A		I_{1max}=26.7A		I_{1eff} =13.4A	
		10A/20.4V to 180A/27.2V				10A/20.4V to 120A/24.8V			
		X	25%	60%	100%	X	25%	60%	100%
S	Uo=81V	I_2	180A	117A	90A	I_2	120A	78A	60A
		U_2	27.2V	24.7V	23.6V	U_2	24.8V	23.2V	22.4V
1~50/60Hz		I_{1max} =34A		I_{1eff} =17A		I_{1max} =40A		I_{1eff} =20A	
IP21S	Class F	Cooling Mode: Fan Cooling							

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 .024"~.045" (0.6~1.2mm) diameter (MIG welding,“GMAW”), with .030"~.045" (0.8~1.2mm) 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	.030"/.035"	0.8/0.9mm	ER70S-6 mild steel wire, ER308L stainless steel
	.025"/.030"	0.6/0.8mm	
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/Dual Pulse		90% Argon 10%CO_2
MIG/MAG Pulse On/Dual Pulse	Stainless Steel	98% Argon 2%CO_2
MIG/MAG Pulse Off		He Tri-Mix, 98% Argon 2%CO_2
MIG/MAG Pulse Off	Aluminum	100% Argon
MIG/MAG Pulse On/Dual Pulse		
Flux-cored	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) 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
Gas	Gas Selection	√	-	√	-
Material	Material Selection	√	-	√	-
Diameter	Diameter Selection	√	√	√	√
Thickness	Thickness Selection	√	√	√	√
Trigger	Torch Trigger Selection	√	√	-	-
Torch	MIG Gun/Spool Gun Selection	√	√	-	-

Parameter		 MIG/MAG	 Flux-cored	 TIG	 Stick
Gas Check	Gas Check	√	-	-	-
Pulse	Pulse Setting	√	-	-	-
Advanced	Advanced Setting	√	√	-	-
Spot Time	Spot Time	-	-	√	-
Foot Pedal	Foot pedal	-	-	√	-
Electrode	Electrode Type Selection	-	-	-	√
Arc Force	Arc Force	-	-	-	√
Hot Start	Hot Start	-	-	-	√
VRD	VRD	-	-	-	√
Help	Help Function	√	√	√	√
Memory	Memory	√	√	√	√

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.

Language: English.

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

Mode: Select between bright mode or dim 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 hold Value Adjustment Knob 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, AL4043 (Al Si), or AL5356 (Al Mg).
- 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 (.024"~.045").
- Select the panel thickness (24ga~3/8").
- Set torch trigger operation 2T/4T/Spot/S4T.
- Choose standard MIG gun mode, trigger the torch control switch to feed the wire, and begin welding.

After completing the basic MIG setup, two welding modes are available: Synergic and Manual, selectable based on operational requirements.

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.

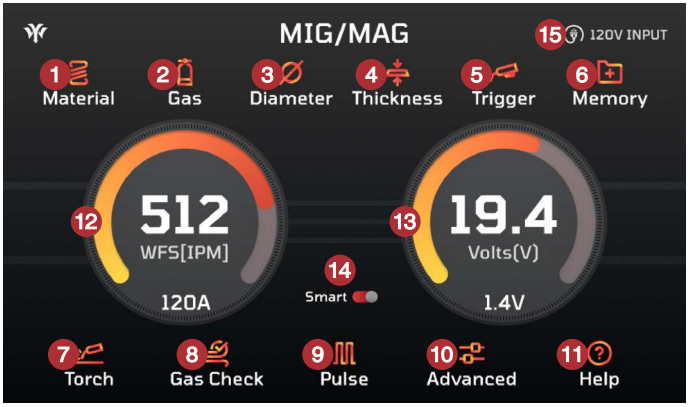
Manual Mode: Provides independent control of all key parameters, allowing greater flexibility for precise or advanced welding tasks.
The following sections outline the functions and parameter settings of each mode in detail.

3.9.2 MIG/MAG Synergic MIG Mode

This section introduces the basic parameters available in synergic MIG/MAG welding mode. It includes an overview of core adjustable parameters, baseline recommendations for typical materials, and specific guidance for selecting and using single or dual pulse modes. The structure is intended to assist with efficient setup and optimal performance.

Overview of Basic MIG/MAG Parameters

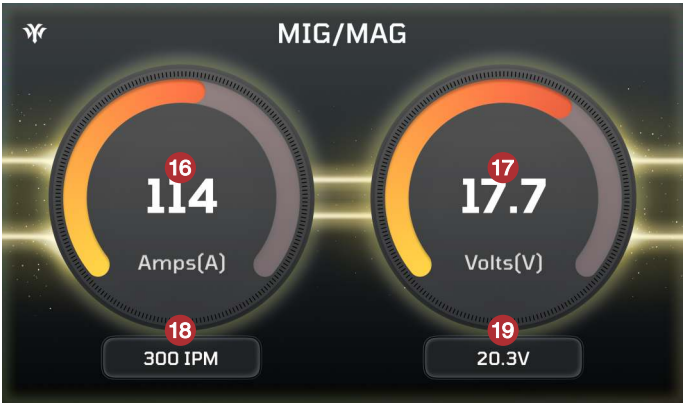
This section provides an overview of basic MIG/MAG parameters for welding tasks:



1. **Material Selection:** Choose the material (Steel, Stainless Steel, AL 4043 and AL 5356) to set the appropriate welding parameters.
2. **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 (.024"~.045").
3. **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.
4. **Thickness Selection:** Adjust the thickness setting to match the workpiece's thickness (24 ga~ 3/8"). This setting ensures proper heat input and weld penetration, providing a solid and consistent weld bead.
5. **Torch Trigger Operation Selection:** Choose between 2T/4T/Spot/S4T torch operation modes.
6. **Memory Function:** Access the memory settings with up to 50 memory slots for saving preferred welding parameters.
7. **Torch Selection:** Switch between the standard MIG torch and the optional spool gun depending on the specific welding application and wire type being used.
8. **Gas Checking:** Activates the gas flow to verify proper shielding gas output without starting the welding process.
9. **Pulse Settings:** Choose between single pulse, dual pulse, or disable the pulse mode.
10. **Advanced Settings:** Enter the advanced settings to customize various welding parameters such as wire feed speed, burn-back and inductance, allowing for precise adjustments to suit specific welding requirements.
11. **Help Function:** Press to open the help information page for guidance.
12. **Wire Feed Speed and Current Display:** Shows the wire feed speed along with the corresponding current value, ensuring proper setup for stable welding.
13. **Voltage Display:** Shows the set voltage along with any fine-tuning adjustments. The smaller display indicates the fine-tuned voltage value when adjustments are applied.
14. **Smart Key Display:** press and hold the function knob to switch Smart Mode ON or OFF.

    Smart ON: Enables Synergic MIG mode with automatic adjustment of voltage and wire feed speed based on wire and material.

    Smart OFF: Enters Manual MIG mode, allowing full manual control of welding parameters.
15. **Input Voltage Display:** Shows the current input voltage to monitor power supply stability and ensure proper machine operation.
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.
18. **Pre-set Wire Feed Speed:** Shows the pre-set wire feed speed as selected in the basic parameter page.
19. **Pre-set Voltage:** Displays the voltage matched with the pre-set voltage.



Basic MIG/MAG Welding Parameter Recommendation

The DP200 features a synergic setting that provides preset parameters for different material thicknesses. Users can manually adjust the wire feed speed, while the machine automatically adjusts the current and voltage. Additionally, the voltage can be fine-tuned within a range of ±5V for precise control.

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

Basic MIG/MAG Welding Recommended Parameter Settings

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness									
							24ga	22ga	20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
Pulse Off 2T/4T/ SPOT/ S4T MIG Gun /Spool Gun	240V	Steel	75%AR 25%CO_2	.024"(0.6mm)	WFS(IPM)	79~512	138	157	197	295	394	500	/	/	/	/
				.024"(0.6mm)	Voltage(V)	13.5~18	13.8	14.1	14.7	16	17	18	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~120	30	40	50	60	80	120	/	/	/	/
				.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	130	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	130	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~236	/	/	/	/	/	79	106	154	189	217
				.045"(1.2mm)	Voltage(V)	15~19.2	/	/	/	/	/	15	15.8	17.5	18.5	19
				.045"(1.2mm)	Amperage(A)	90~200	/	/	/	/	/	90	130	170	190	200
		Steel	100%CO_2	.024"(0.6mm)	WFS(IPM)	79~512	126	138	197	295	394	512	/	/	/	/
				.024"(0.6mm)	Voltage(V)	15.8~19	16.2	16.3	16.5	17.3	18	19	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~90	30	40	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	130	165	170	/
				.035"(0.9mm)	WFS(IPM)	79~472	/	/	/	79	94	130	217	350	378	437
				.035"(0.9mm)	Voltage(V)	15~24.2	/	/	/	15	15.8	17	18.8	21.5	22.2	23.6
				.035"(0.9mm)	Amperage(A)	60~200	/	/	/	60	80	90	130	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~236	/	/	/	/	/	79	106	154	177	217
				.045"(1.2mm)	Voltage(V)	17.5~23.3	/	/	/	/	/	17.5	18.8	19.8	20.6	22.5
				.045"(1.2mm)	Amperage(A)	90~200	/	/	/	/	/	90	130	170	190	200
		Stainless Steel	98%AR 2%CO_2	.024"(0.6mm)	WFS(IPM)	79~512	154	197	276	374	512	/	/	/	/	/
				.024"(0.6mm)	Voltage(V)	15~18	15	16.1	16.7	17.3	18	/	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~80	30	40	50	60	80	/	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~512	/	/	157	197	256	276	472	/	/	/
				.030"(0.8mm)	Voltage(V)	14.2~21.6	/	/	16.3	16.8	17.9	18.2	21.1	/	/	/
				.030"(0.8mm)	Amperage(A)	57~145	/	/	57	65	80	90	120	/	/	/
				.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	.024"(0.6mm)	WFS(IPM)	79~512	157	220	354	433	512	/	/	/	/	/
				.024"(0.6mm)	Voltage(V)	15~18	15.1	16.5	17.2	17.6	18	/	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~80	30	40	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	130	160	/	/
				.035"(0.9mm)	WFS(IPM)	79~512	/	/	/	126	150	185	319	390	409	512
				.035"(0.9mm)	Voltage(V)	15.5~26	/	/	/	15.5	16.5	17.3	21.1	22.3	22.9	26
				.035"(0.9mm)	Amperage(A)	60~200	/	/	/	60	80	90	130	170	190	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	130	170	190	200
		AL 4043	100% AR	.035"(0.9mm)	WFS(IPM)	79-512	/	/	/	157	228	315	354	413	427	/
				.035"(0.9mm)	Voltage(V)	13~26	/	/	/	13	13	17.5	22	25.5	26	/
				.035"(0.9mm)	Amperage(A)	60~170	/	/	/	60	80	90	130	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	130	170	190	200
		AL 5356	100% AR	.035"(0.9mm)	WFS(IPM)	79~512	/	/	/	201	264	315	370	480	512	/
				.035"(0.9mm)	Voltage(V)	13~23	/	/	/	13	13	15.2	21.2	22.8	23	/
				.035"(0.9mm)	Amperage(A)	50~145	/	/	/	50	70	75	115	135	145	/
				.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	130	170	190	200

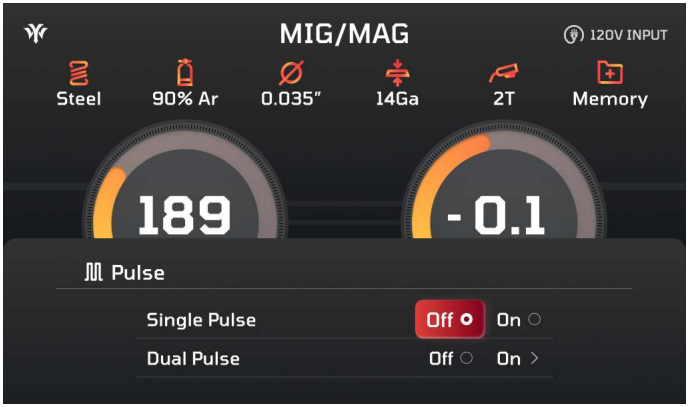
Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness									
							24ga	22ga	20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
Pulse Off 2T/4T/ SPOT/ S4T MIG Gun /Spool Gun	120V	Steel	75%AR 25%CO_2	.024"(0.6mm)	WFS(IPM)	79~512	138	157	197	295	394	500	/	/	/	/
				.024"(0.6mm)	Voltage(V)	13.5~18	13.8	14.1	14.7	16	17	18	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~120	30	40	50	60	80	120	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~295	/	/	94	98	126	169	280	/	/	/
				.030"(0.8mm)	Voltage(V)	14.5~18.3	/	/	14.8	15	15.8	16.5	18	/	/	/
				.030"(0.8mm)	Amperage(A)	50~133	/	/	50	60	80	90	130	/	/	/
				.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)	60~130	/	/	/	60	80	90	130	/	/	/
		Steel	100%CO_2	.024"(0.6mm)	WFS(IPM)	79~512	126	138	197	295	394	512	/	/	/	/
				.024"(0.6mm)	Voltage(V)	15.8~19	16.2	16.3	16.5	17.3	18	19	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~90	30	40	50	60	80	90	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~315	/	/	98	110	126	169	299	/	/	/
				.030"(0.8mm)	Voltage(V)	14.6~19.7	/	/	15.3	15.5	16	17	19.5	/	/	/
				.030"(0.8mm)	Amperage(A)	50~133	/	/	50	60	80	90	130	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~217	/	/	/	79	94	130	217	/	/	/
				.035"(0.9mm)	Voltage(V)	15~18.8	/	/	/	15	15.8	17	18	/	/	/
				.035"(0.9mm)	Amperage(A)	60~130	/	/	/	60	80	90	130	/	/	/
		Stainless	98% Ar 2%CO_2	.024"(0.6mm)	WFS(IPM)	79~512	154	197	276	374	512	/	/	/	/	/
				.024"(0.6mm)	Voltage(V)	15~18	15	16.1	16.7	17.3	18.8	/	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~80	30	40	50	60	80	/	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~472	/	/	157	197	256	276	472	/	/	/
				.030"(0.8mm)	Voltage(V)	14.2~21.1	/	/	16.3	16.8	17.9	18.2	21.1	/	/	/
				.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	.024"(0.6mm)	WFS(IPM)	79~512	157	220	354	433	512	/	/	/	/	/
				.024"(0.6mm)	Voltage(V)	15~18	15.1	16.5	17.2	17.6	18	/	/	/	/	/
				.024"(0.6mm)	Amperage(A)	30~80	30	40	50	60	80	/	/	/	/	/
				.030"(0.8mm)	WFS(IPM)	79~413	/	/	177	197	236	295	402	/	/	/
				.030"(0.8mm)	Voltage(V)	19~21.6	/	/	19	19.2	19.7	20.2	21.5	/	/	/
				.030"(0.8mm)	Amperage(A)	50~133	/	/	50	60	80	90	130	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~335	/	/	/	126	150	185	319	/	/	/
				.035"(0.9mm)	Voltage(V)	15.5~21.3	/	/	/	15.5	16.5	17.3	21.1	/	/	/
				.035"(0.9mm)	Amperage(A)	60~138	/	/	/	60	80	90	130	/	/	/
		AL 4043	100% AR	.035"(0.9mm)	WFS(IPM)	79~374	/	/	/	157	228	315	354	/	/	/
				.035"(0.9mm)	Voltage(V)	13~22	/	/	/	13	13	17.5	22	/	/	/
				.035"(0.9mm)	Amperage(A)	60~136	/	/	/	60	80	90	130	/	/	/
		AL 5356	100% AR	.035"(0.9mm)	WFS(IPM)	79~374	/	/	/	201	264	315	370	/	/	/
				.035"(0.9mm)	Voltage(V)	13~21.2	/	/	/	13	13	15.2	21.2	/	/	/
				.035"(0.9mm)	Amperage(A)	50~115	/	/	/	50	70	75	115	/	/	/

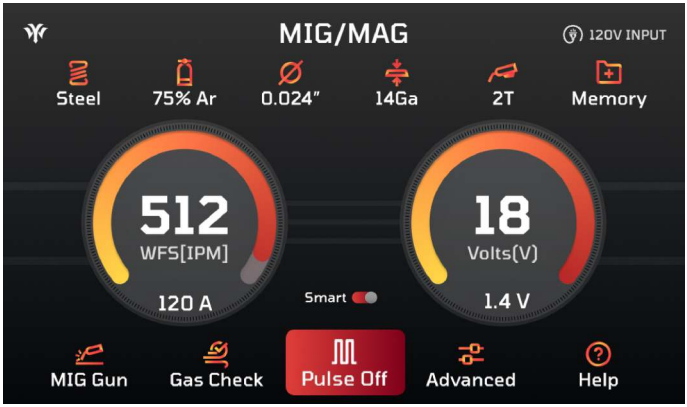
Note: The above parameters are for reference only. Actual welding results may vary due to factors such as material condition, environmental conditions, and specific project requirements.

How to Select Between Single and Dual Pulse MIG/MAG Welding

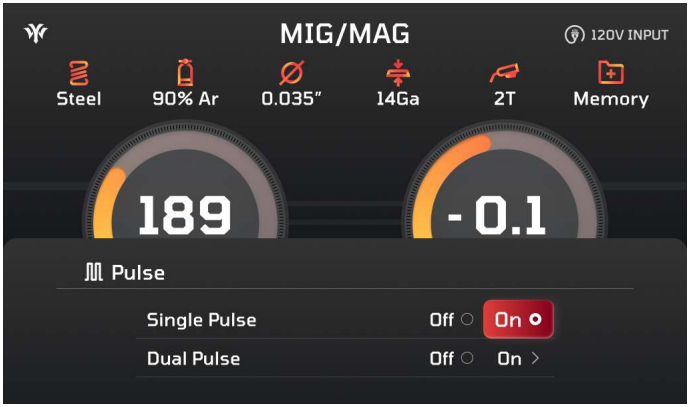
By following these steps, users can effectively manage and customize the pulse settings to match their specific welding needs, ensuring enhanced control and improved weld quality.

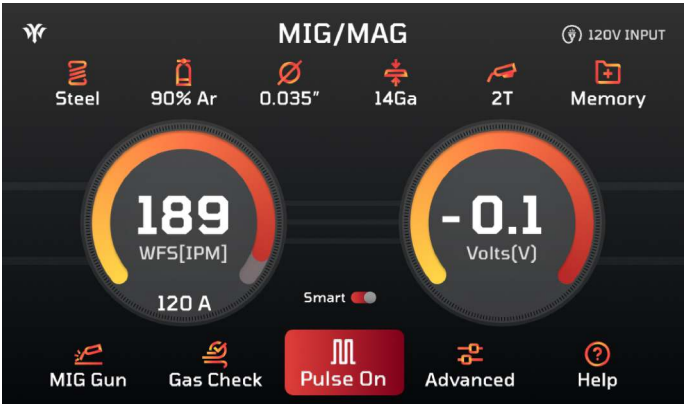
Access Pulse Function to Navigate to the pulse function menu to view pulse options. If Single Pulse is off, “Pulse Off” will appear, indicating that the pulse feature is disabled.



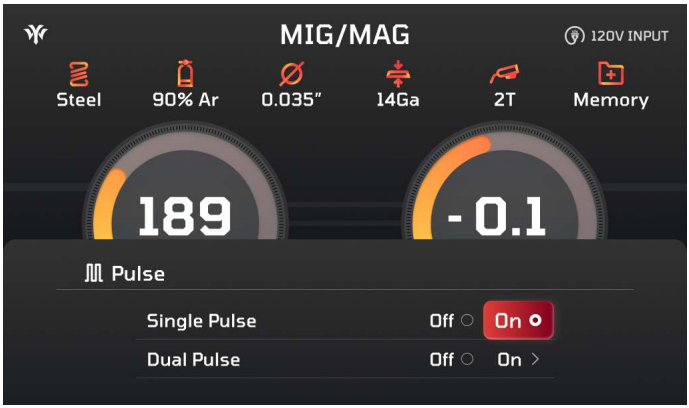


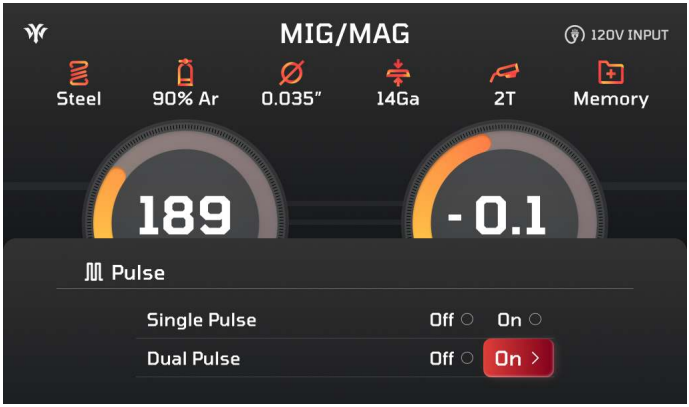
If Single Pulse is on and Dual Pulse is off, “Pulse On” will be displayed, signifying that single pulse mode is active.

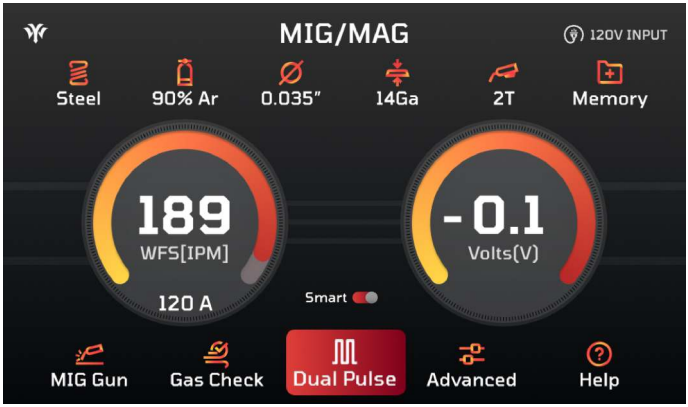




If both Single Pulse and Dual Pulse are enabled, the system will automatically navigate to the advanced pulse settings menu. When press the Back Knob, it will display “Dual Pulse” within the pulse function.







Basic Single and Dual Pulse MIG/MAG Welding Parameter Recommendation

The Pulse Mode offers advanced control for a more stable arc, reduced spatter, and minimized material distortion, ideal for welding stainless steel, aluminum, and thicker materials. Pulse welding is particularly effective in controlling heat input, which is crucial when working with thin or heat-sensitive materials. This machine supports both single pulse and dual pulse modes:

Single Pulse Mode: Provides a stable arc with controlled heat input, perfect for precision welding on various metals.

Dual Pulse Mode: Alternates between high and low current pulses, further improving heat management and reducing material warping, especially useful for aesthetic welds on aluminum and stainless steel.

Here is a sample table of recommended basic parameters for MIG/MAG pulse welding, including material type, shielding gas, wire diameter, wire feed speed, welding current, and voltage values:

Recommended Basic Parameter Table for Pulse Welding (Single and Dual Pulse)

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness									
							24ga	22ga	20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
Pulse On /Dual Pulse 2T/4T/ SPOT/ S4T MIG Gun /Spool Gun	240V	Steel	90%AR 10%CO_2	.030"(0.8mm)	WFS(IPM)	79~472	/	/	138	165	197	236	472	/	/	/
				.030"(0.8mm)	Voltage(V)	Not display										
				.030"(0.8mm)	Amperage(A)	50~120	/	/	50	69	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~472	/	/	/	/	157	189	252	299	335	429
				.035"(0.9mm)	Voltage(V)	Not display										
				.035"(0.9mm)	Amperage(A)	80~200	/	/	/	/	80	90	120	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~236	/	/	/	/	/	106	138	165	197	217
				.045"(1.2mm)	Voltage(V)	Not display										
				.045"(1.2mm)	Amperage(A)	90~200	/	/	/	/	/	90	140	170	190	200
		Stainless Steel	98%AR 2%CO_2	.030"(0.8mm)	WFS(IPM)	79~472	/	/	177	197	276	316	453	/	/	/
				.030"(0.8mm)	Voltage(V)	Not display										
				.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)	Not display										
				.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)	Not display										
				.045"(1.2mm)	Amperage(A)	90~200	/	/	/	/	/	90	140	170	190	200
		AL 4043	100% AR	.035"(0.9mm)	WFS(IPM)	79~512	/	/	/	134	169	209	331	457	512	/
				.035"(0.9mm)	Voltage(V)	Not display										
				.035"(0.9mm)	Amperage(A)	35~150	/	/	/	35	45	65	100	140	150	/
				.045"(1.2mm)	WFS(IPM)	79~394	/	/	/	/	134	169	236	276	315	374
				.045"(1.2mm)	Voltage(V)	Not display										
				.045"(1.2mm)	Amperage(A)	80~200	/	/	/	/	80	90	140	170	190	200
		AL 5356	100% AR	.035"(0.9mm)	WFS(IPM)	79~512	/	/	/	165	213	287	413	512	/	/
				.035"(0.9mm)	Voltage(V)	Not display										
				.035"(0.9mm)	Amperage(A)	40~155	/	/	/	40	60	70	110	155	/	/
				.045"(1.2mm)	WFS(IPM)	79~512	/	/	/	/	157	197	315	394	453	512
				.045"(1.2mm)	Voltage(V)	Not display										
				.045"(1.2mm)	Amperage(A)	80~200	/	/	/	/	80	90	140	170	190	200

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness									
							24ga	22ga	20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
Pulse On /Dual Pulse 2T/4T/ SPOT/ S4T MIG Gun /Spool Gun	120V	Steel	90%AR 10%CO_2	.030"(0.8mm)	WFS(IPM)	79~472	/	/	/	/	197	236	472	/	/	/
				.030"(0.8mm)	Voltage(V)	Not display										
				.030"(0.8mm)	Amperage(A)	50~120	/	/	/	/	80	90	120	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~256	/	/	/	/	157	189	252	/	/	/
				.035"(0.9mm)	Voltage(V)	Not display										
				.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)	Not display										
				.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)	Not display										
				.035"(0.9mm)	Amperage(A)	60~120	/	/	/	60	80	90	120	/	/	/
		AL 4043	100% AR	.035"(0.9mm)	WFS(IPM)	79~394	/	/	/	134	169	209	331	/	/	/
				.035"(0.9mm)	Voltage(V)	Not display										
				.035"(0.9mm)	Amperage(A)	35~120	/	/	/	35	45	65	100	/	/	/
		AL 5356	100% AR	.035"(0.9mm)	WFS(IPM)	79~437	/	/	/	165	213	287	413	/	/	/
				.035"(0.9mm)	Voltage(V)	Not display										
				.035"(0.9mm)	Amperage(A)	40~120	/	/	/	40	60	70	110	/	/	/

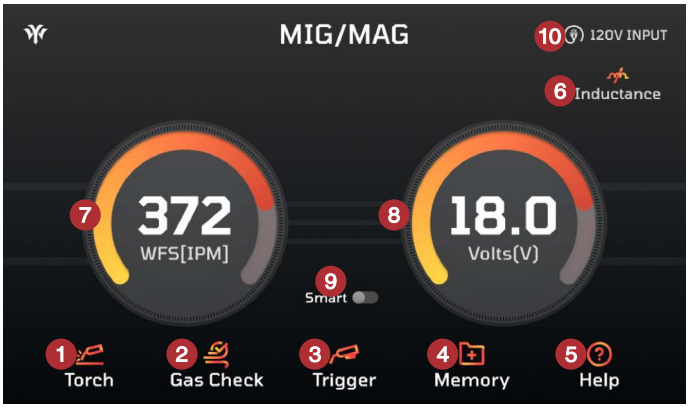
These values can serve as a reference, but actual settings may vary based on the specific machine and application.

The table above provides recommended parameters not include specific voltage recommendations. Due to current machine settings, this version of the machine does not display recommended voltage values and only shows fine-tuning voltage values for manual adjustment.

Recommended voltage values will be included in a future update to simplify the setup process. Feedback on this feature is welcomed as the manufacturer continues to enhance the machine's functionality.

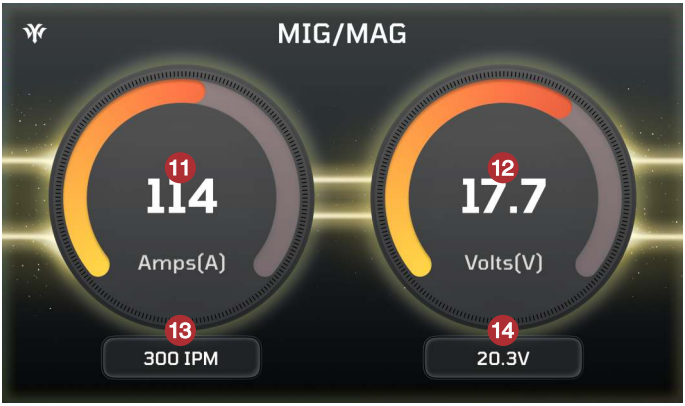
3.9.3 MIG/MAG Manual MIG Mode

This section outlines the key adjustable parameters available in manual MIG/MAG mode. Unlike synergic mode, all welding parameters-including voltage, wire feed speed, and inductance-must be set manually. This mode is intended for users who require full control over the welding process.



1. **Torch Selection:** Switch between the standard MIG torch and the optional spool gun depending on the specific welding application and wire type being used.
2. **Gas Checking:** Activates the gas flow to verify proper shielding gas output without starting the welding process.
3. **Torch Trigger Operation Selection:** Choose between 2T/4T/Spot/S4T torch operation modes (S4T not available).
4. **Memory Function:** Access the memory settings with up to 50 memory slots for saving preferred welding parameters.
5. **Help Function:** Press to open the help information page for guidance.
6. **Inductance Adjustment:** Set between -10 and +10 to fine-tune arc softness and spatter control.
7. **Wire Feed Speed Display:** Shows the wire feed speed setting. Range: 79~512 IPM (2~13 m/min).
8. **Voltage Display:** Shows the voltage setting. Range: 13~22V@120V; 13~26V@240V.

9. **Smart Key Display:** press and hold the function knob to switch Smart Mode ON or OFF
   Smart ON: Enables Synergic MIG mode with automatic adjustment of voltage and wire feed speed based on wire and material.
   Smart OFF: Enters Manual MIG mode, allowing full manual control of welding parameters.
10. **Input Voltage Display:** Shows the current input voltage to monitor power supply stability and ensure proper machine operation.
11. **Real-time Amperage Display:** Displays the real-time amperage during the welding process.
12. **Real-time Voltage Display:** Displays the actual voltage during welding.
13. **Pre-set Wire Feed Speed:** Shows the pre-set wire feed speed as selected in the basic parameter page.
14. **Pre-set Voltage:** Displays the voltage matched with the pre-set voltage.



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

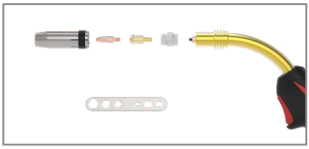
The MIG gun provided with the machine can be equipped with the included graphene liner for aluminum welding in both pulse and non-pulse modes. The supplied graphene liner is also compatible with the YW-L150-10E gun. If using other graphene liners or MIG guns, make sure both are compatible to ensure proper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

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

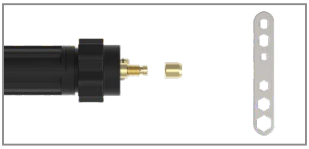
1. Lay the gun straight on the ground and remove consumables on the front-end parts.
2. Remove the liner retaining nut.
3. Pull the steel wire feed liner out of the gun cable assembly.
4. Unravel the graphene wire feed liner and feed the liner in short forward movements down the cable assembly all the way through and out the torch end. Avoid kinking the liner. Kinking the liner will damage it and require replacement.
5. Place the tip holder over the end of the liner and, screw it into the torch neck, tighten it up. Reassemble the consumables with a special aluminum A+ contact tip, nozzle, and gas diffuser.
6. Fit the o-ring, and liner retaining nut.
7. Push the liner firmly into the torch lead and tighten the liner retaining nut.
8. Disengage the drive roller.
9. Loosen the black retaining clip of the outlet guide tube. Use a screwdriver to press against the front end of the inner tube in the torch connector to make it easier to remove the black clip.
10. Remove the outlet guide tube from the front-end euro connector using long nose pliers.
11. Unscrew the inlet guide tube from the wire feeding mechanism.
12. Feed the extended graphene liner section into the outlet guide tube hole of the machine Euro connector.
13. Feed the extended graphene liner up and over the drive roller.
14. Tighten the torch Euro connection to the machine Euro connector.

15. Cut the extended liner with a sharp knife.
16. Install the correct sized U Knurled Drive roller, and feed the correct diameter of aluminum welding wire.
17. Remove the metal tube from the inlet guide tube.
18. Cut a slightly longer tube based on the metal guide tube.
19. Replace the inlet guide tube with the graphene liner and re-install the inlet guide to the wire feeding mechanism.
20. Install the aluminum spool and feed the wire through.
21. Turn on the power source on and select welding mode and set the welding parameters.

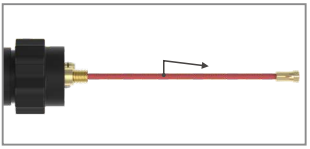
    Note: Set the material in aluminum and set "Torch" menu with "MIG Gun" option.



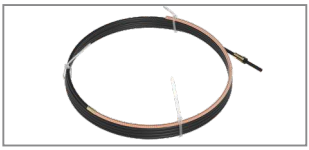
• Remove the MIG torch consumables.



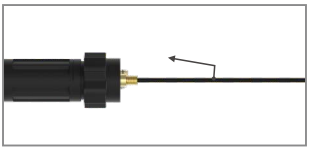
• Remove the liner retaining nut.



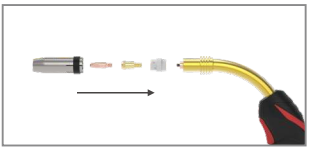
• Pull out the liner completely.



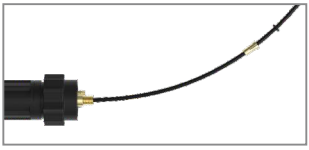
• Untie the new liner.



• 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 black retaining clip of the outlet guide tube. Use a screwdriver to press against the front end of the inner tube to remove the black clip.

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

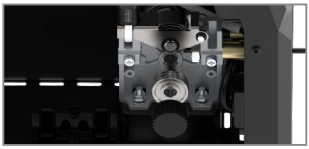
• Unscrew the inlet guide tube from the wire feeding mechanism.

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

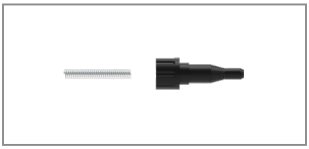
• Feed the extended graphene liner over the drive roller into the inlet guide tube part.

• Tighten the torch Euro connection to the Euro connector.

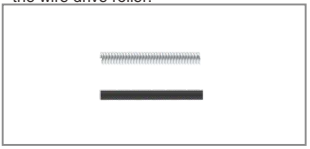
• Cut the extended liner with a sharp knife. The remaining part should be about 1/16"~5/64"(1.6mm~2mm) away from the wire drive roller.



• Install the correct sized U Knurled Drive roller, and with the correct diameter knurl inside.



• Remove the metal tube from the inlet guide tube.



• Cut a slightly longer tube based on the metal guide tube.

• Replace the inlet guide tube with the graphene liner and re-install the inlet guide to the wire feeding mechanism.

• 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 hold Value Adjustment Knob 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 (24ga~3/8").
- Set torch trigger operation 2T/4T/Spot/S4T.
- Choose standard MIG gun mode, trigger the torch control switch to feed the wire, and begin welding.

After completing the basic FLUX setup, two welding modes are available: Synergic and Manual, selectable based on the application.

Synergic Mode: The machine automatically matches voltage and wire feed speed based on wire type and thickness, streamlining setup for efficient operation.

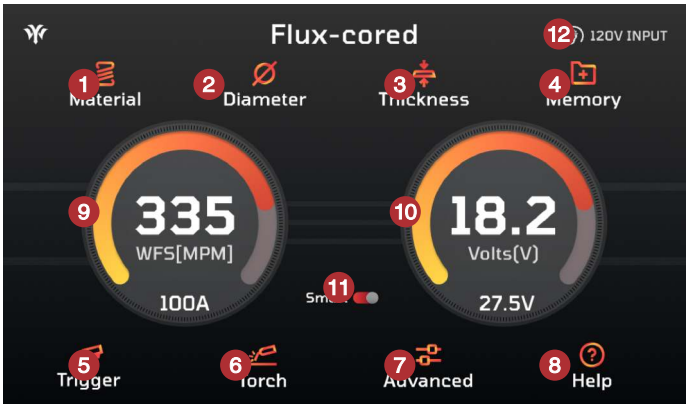
Manual Mode: Allows full manual adjustment of welding parameters, offering enhanced control for specific materials or welding preferences.

3.10.2 Flux-cored Synergic Mode

This section introduces the basic parameters available in flux-cored welding mode. It includes an overview of key adjustable parameters and recommended baseline settings for common applications. The structure is intended to support efficient setup and consistent welding performance across different conditions.

Overview of Basic Flux-cored Parameters

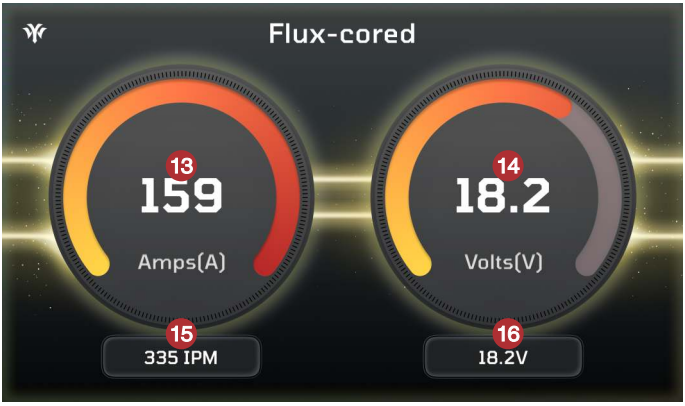
This section provides an overview of basic Flux-cored parameters for welding tasks:



1. **Material Selection:** Only Steel available.
2. **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 1.2mm (.030"~.045").
3. **Thickness Selection:** Adjust the thickness setting to match the workpiece's thickness (24ga~3/8"). This setting ensures proper heat input and weld penetration, providing a solid and consistent weld bead.
4. **Memory Function:** Access the memory settings with up to 20 memory slots for saving preferred welding parameters.
5. Torch Trigger Operation Selection: Choose between 2T/4T/Spot/S4T torch operation modes.
6. **Torch Selection:** Switch between the standard MIG torch and the optional spool gun depending on the specific welding application and wire type being used.
7. **Advanced Settings:** Enter the advanced settings to customize various welding parameters such as wire feed speed, burn-back and inductance, allowing for precise adjustments to suit specific welding requirements.
8. **Help Function:** Press to open the help information page for guidance.
9. **Wire Feed Speed and Current Display:** Shows the wire feed speed along with the corresponding current value, ensuring proper setup for stable welding.
10. **Voltage Display:** Shows the set voltage along with any fine-tuning adjustments. The smaller display indicates the fine-tuned voltage value when adjustments are applied.
11. **Smart Key Display:** press and hold the function knob to switch Smart Mode ON or OFF

    Smart ON: Enables Synergic MIG mode with automatic adjustment of voltage and wire feed speed based on wire and material.

    Smart OFF: Enters Manual MIG mode, allowing full manual control of welding parameters.
12. **Input Voltage Display:** Shows the current input voltage to monitor power supply stability and ensure proper machine operation.
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.
15. **Pre-set Wire Feed Speed:** Shows the pre-set wire feed speed as selected in the basic parameter page.
16. **Pre-set Voltage:** Displays the voltage matched with the pre-set voltage.



Flux-cored Welding Parameters Recommendation

To achieve optimal welding results, it's crucial to select the appropriate settings for specific welding application. The table below provides recommended voltage, wire diameter, and wire feed speed values for various materials. Adjusting these parameters based on the material and wire type ensures efficient performance and high-quality welds.

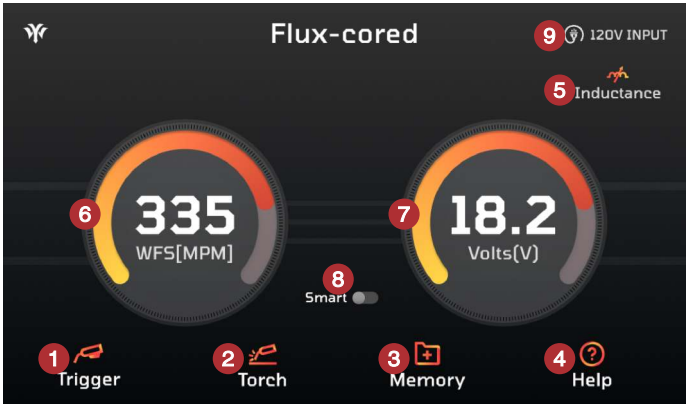
Basic Flux-cored Welding Recommended Parameter Settings

Mode	Voltage	Material	Gas Type	Wire Diameter	Parameter	Display	Thickness									
							24ga	22ga	20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
2T/4T/SPOT/S4T MIG Gun /Spool Gun	240V	Steel	/	.030"(0.8mm)	WFS(IPM)	79~492	/	/	118	138	157	197	315	394	472	/
				.030"(0.8mm)	Voltage(V)	13.8~20.3	/	/	13.8	14.2	15	16.5	18	19	20	/
				.030"(0.8mm)	Amperage(A)	50~190	/	/	50	60	80	90	130	170	190	/
				.035"(0.9mm)	WFS(IPM)	79~492	/	/	/	98	142	173	220	315	378	480
				.035"(0.9mm)	Voltage(V)	15~20.5	/	/	/	15	15.9	16.6	18	18.5	19.2	20.5
				.035"(0.9mm)	Amperage(A)	60~200A	/	/	/	60	80	90	130	170	190	200
				.045"(1.2mm)	WFS(IPM)	79~209	/	/	/	/	/	79	130	177	197	209
				.045"(1.2mm)	Voltage(V)	15.2~19.5	/	/	/	/	/	15.2	17	18.5	19	19.5
				.045"(1.2mm)	Amperage(A)	90~200	/	/	/	/	/	90	130	170	190	200
	120V	Steel	/	.030"(0.8mm)	WFS(IPM)	79~335	/	/	118	138	157	197	315	/	/	/
				.030"(0.8mm)	Voltage(Vag)	13.8~18.2	/	/	13.8	14.2	15	16.5	18	/	/	/
				.030"(0.8mm)	Ampere(A)	50~140	/	/	50	60	80	90	130	/	/	/
				.035"(0.9mm)	WFS(IPM)	79~236	/	/	/	98	142	173	220	/	/	/
				.035"(0.9mm)	Voltage(V)	15~18	/	/	/	15	15.9	16.6	18	/	/	/
				.035"(0.9mm)	Amperage(A)	60~136	/	/	/	60	80	90	130	/	/	/

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.

3.10.3 Manual Flux-Cored Mode Overview

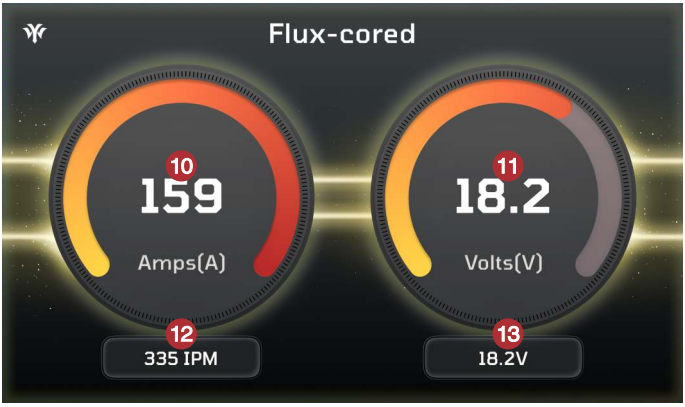
This section introduces the adjustable parameters available in manual flux-cored welding mode. Users can independently set values such as voltage and wire feed speed based on welding needs. This mode is designed for greater flexibility in a variety of welding conditions and materials.



1. **Torch Trigger Operation Selection:** Choose between 2T/4T/Spot/S4T torch operation modes (S4T not available).
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. **Memory Function:** Access the memory settings with up to 50 memory slots for saving preferred welding parameters.
4. **Help Function:** Press to open the help information page for guidance.
5. **Inductance Adjustment:** Set between -10 and +10 to fine-tune arc softness and spatter control.
6. **Wire Feed Speed Display:** Shows the wire feed speed setting. Range:79~512 IPM (2~13 m/min).
7. **Voltage Display:** Shows the voltage setting. 13~22V@120V; 13~26V@240V.
8. **Smart Key Display:** press and hold the function knob to switch Smart Mode ON or OFF.

   Smart ON: Enables Synergic MIG mode with automatic adjustment of voltage and wire feed speed based on wire and material.

   Smart OFF: Enters Manual MIG mode, allowing full manual control of welding parameters.
9. **Input Voltage Display:** Shows the current input voltage to monitor power supply stability and ensure proper machine operation.
10. **Real-time Amperage Display:** Displays the real-time amperage during the welding process.
11. **Real-time Voltage Display:** Displays the actual voltage during welding.
12. **Pre-set Wire Feed Speed:** Shows the pre-set wire feed speed as selected in the basic parameter page.
13. **Pre-set Voltage:** Displays the voltage matched with the pre-set voltage.



3.11 Spool Gun Setup

3.11.1 Spool Gun Connections

This section provides instructions on connecting the welding machine and spool gun. The connection setup varies depending on the welding process, such as MIG/MAG or Flux. The machine is compatible with the optional YesWelder LBT150 spool gun or any compatible Euro-connect spool gun with two-pin control cable from other brand.

Connection for Spool Gun- MIG/MAG Welding (Pulse Off/Pulse On/Dual Pulse)

- 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.

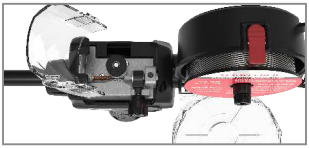
1. Insert the optional YesWelder LBT150 spool gun into the Euro MIG connection socket on the front panel and secure it. Connect and tighten the control cable to the receptacle.
2. Based on the Spool Gun Connection section, install the wire drive polarity lead and work clamp as needed for the specific 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 Advanced Settings for Synergic Mode

3.12.1 Overview of Adjustable Advanced Parameters

The welding machine offers various advanced settings that can be flexibly adjusted to optimize welding parameters. These adjustments help operators tailor the welding process to different tasks and material requirements, improving both the quality and efficiency of welding operations.

Advanced parameters can be accessed by pressing the Value Adjustment Knob or navigating to the Advanced settings on the parameter page. The advanced parameters are closely tied to the selected Torch Trigger Operation Selection, which include 2T, 4T, Spot, and S4T modes:

2T Mode:
1. Press the torch trigger to ignite the arc, and the machine will feed wire at the selected welding speed.
2. Release the trigger to stop wire feeding and extinguish the arc.

4T Mode:
1. Press the torch trigger to ignite the arc, and the machine will start at the selected welding wire feeding speed.
2. Release the trigger to maintain the wire feeding speed for continuous welding.
3. Press the trigger again to reduce the wire feeding speed to the crater (or pilot arc) wire feeding speed.
4. Release the trigger to stop the arc and complete the weld.

Spot Mode:
The spot welding time can be adjusted between 0.1 and 10 seconds. This is the duration for which the arc remains active before automatically shutting off.

1. Press the torch trigger to ignite the arc, and the wire feeding speed will rise to the preset value.
2. Once the spot time has elapsed, the wire feeding speed decreases, and the arc is extinguished.

S4T Mode:
1. Press the torch trigger to ignite the arc, and the wire feeding speed will reach the initial (start) wire feeding speed.
2. Release the trigger to ramp up the wire feeding speed to the selected welding speed.
3. Press the trigger again to reduce the wire feeding speed to the crater (pilot arc) wire feeding speed.
4. Release the trigger to stop the arc and end the welding cycle.

Note:
- When “Spot” option is selected, the machine will automatically open the Spot Time Adjustment page, allowing to set the desired spot welding time.
- When “S4T” option is selected, the machine will directly navigate to the Advanced Settings page for further adjustments.

3.12.2 2T/4T/SPOT Advanced Parameter Details for GMAW and FCAW

In 2T/4T/Spot torch trigger operations, the specific parameters are as follows:

- **Inductance:** Controls arc dynamics. Higher values smooth the arc and reduce spatter, while lower values increase penetration. Ideal for managing the weld pool, especially for thin sheets or stainless steel.
- **Pre-flow Time:** Sets the duration for shielding gas release before arc initiation to protect the weld area from oxidation. Essential for materials like aluminum and stainless steel.
- **Welding Wire Feed Speed:** Determines the wire speed during welding, affecting weld pool size and bead filling. Adjust according to material thickness and welding method for process stability.
- **Fine-tune Voltage:** Allows precise voltage adjustments to control arc length, heat input, and weld bead quality, optimizing performance for various materials and thicknesses.
- **Burn-back Setting:** Adjusts in levels to control burn-back time, ensuring a smooth wire end for optimal arc starts under various welding conditions.
- **Post-flow Time:** Controls the gas flow duration after welding to prevent oxidation during cooling. Crucial for enhancing weld quality, especially with high-temperature alloys or aluminum.

2T/4T/Spot Advanced Parameter Setting Page(MIG/MAG Pulse off)

2T/4T/Spot MIG/MAG Advanced Parameter Details

Torch Mode	Voltage	Material	Gas Type	Diameter	Inductance	Pre-flow	Welding WFS	Fine-Tune Voltage	Voltage	Post-flow
2T/4T /Spot	240V	Steel	75% AR 25% CO_2	.024"(0.6mm)	-10~10	0.1~10S	79~512	-5~5V	0~50	0.1~25s
				.030"(0.8mm)			79~512			
				.035"(0.9mm)			79~512			
				.045"(1.2mm)			79~236			
			100% CO_2	.024"(0.6mm)			79~512			
				.030"(0.8mm)			79~512			
				.035"(0.9mm)			79~472			
				.045"(1.2mm)			79~236			
		Stainless Steel	98% AR 25% CO_2	.024"(0.6mm)			79~512			
				.030"(0.8mm)			79~512			
				.035"(0.9mm)			79~512			
				.045"(1.2mm)			79~236			
		Stainless Steel	He Tri-Mix	.024"(0.6mm)			79~512			
				.030"(0.8mm)			79~512			
				.035"(0.9mm)			79~512			
				.045"(1.2mm)			79~295			
		AL 4043	100% AR	.024"(0.6mm)			79~512			
				.030"(0.8mm)			79~354			
		AL 5356		.035"(0.9mm)			79~512			
				.045"(1.2mm)			79~472			
	120V	Steel	75%AR 25%CO_2	.024"(0.6mm)			79~512			
				.030"(0.8mm)			79~295			
				.035"(0.9mm)			79~217			
		Steel	100% CO_2	.024"(0.6mm)			79~512			
				.030"(0.8mm)			79~315			
				.035"(0.9mm)			79~217			
		Stainless Steel	98%AR 25%CO_2	.024"(0.6mm)			79~512			
				.030"(0.8mm)			79~472			
				.035"(0.9mm)			79~295			
		Stainless Steel	He Tri-Mix	.024"(0.6mm)			79~512			
				.030"(0.8mm)			79~413			
				.035"(0.9mm)			79~335			
		AL 4043	100% AR	.035"(0.9mm)			79~374			
		AL 4043	100% AR	.035"(0.9mm)			79~374			

2T/4T/Spot Advanced Parameter Setting Page(Flux-cored)

2T/4T/Spot MIG/MAG Advanced Parameter Details(Flux-cored)

Torch Mode	Voltage	Material	Gas Type	Diameter	Inductance	Welding WFS	Fine-Tune Voltage	Burn Back
2T/4T/Spot	240V	Steel	/	.030"(0.8mm)	-10~10	79~492	-5~5V	10~90
				.035"(0.9mm)		79~492		
				.045"(1.2mm)		79~209		
	120V	Steel		.030"(0.8mm)		79~335		
				.035"(0.9mm)		79~236		

3.12.3 S4T Advanced Parameter Details for GMAW and FCAW

In S4T mode, additional parameters are introduced beyond the standard 2T/4T/SPOT settings, offering enhanced control at critical stages of the welding process. These parameters include:

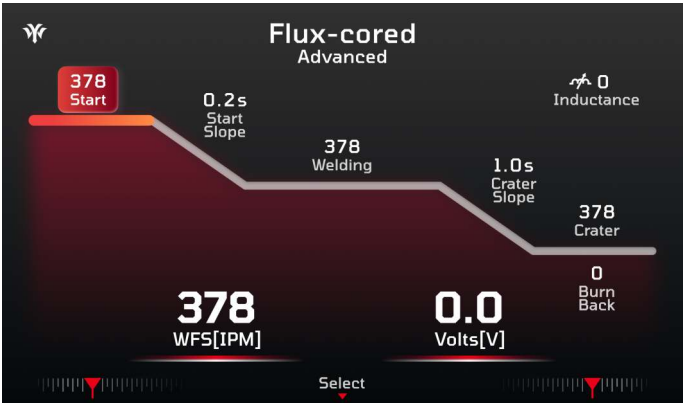
- **Start Wire Feed Speed:** Ensures stable arc initiation and consistent weld pool formation for smoother weld starts.
- **Slope-up Time:** Gradually increases current, reducing thermal shock and ensuring a smooth transition into full welding.
- **Slope-down Time:** Enables a controlled current decrease, minimizing crater formation and improving overall weld quality.
- **Crater Wire Feed Speed:** Manages the wire feed rate at the end of the weld, helping reduce defects such as porosity and providing a cleaner finish.

S4T Advanced Parameter Setting Page(MIG/MAG Pulse off)

S4T MIG/MAG Advanced Parameter Details

Torch Mode	Voltage	Material	Gas Type	Dia.	Pre-flow	Start WFS	Start Slope	Welding WFS	Fine-Tune Voltage	Crater Slope	Crater WFS	Burn Back	Post-flow	Inductance
S4T	240V	Steel	75% AR 25% CO_2	.024" (0.6mm)	0.1~10s	79~512	0~10s	79~512	-5~5V	0~10s	79~512	0~50	0.1~25s	-10~10
				.030" (0.8mm)		79~512		79~512			79~512			
				.035" (0.9mm)		79~512		79~512			79~512			
				.045" (1.2mm)		79~236		79~236			79~236			
			100% CO_2	.024" (0.6mm)		79~512		79~512			79~512			
				.030" (0.8mm)		79~512		79~512			79~512			
				.035" (0.9mm)		79~472		79~472			79~472			
				.045" (1.2mm)		79~236		79~236			79~236			
		Stainless Steel	98% AR 2% CO_2	.024" (0.6mm)		79~512		79~512			79~512			
				.030" (0.8mm)		79~512		79~512			79~512			
				.035" (0.9mm)		79~512		79~512			79~512			
				.045" (1.2mm)		79~236		79~236			79~236			
		Stainless Steel	He Tri-Mix	.024" (0.6mm)		79~512		79~512			79~512			
				.030" (0.8mm)		79~512		79~512			79~512			
				.035"(0.9 mm)		79~512		79~512			79~512			
				.045" (1.2mm)		79~295		79~295			79~295			
		AL 4043	100% AR	.024" (0.6mm)		79~512		79~512			79~512			
				.030" (0.8mm)		79~354		79~354			79~354			
		AL 5356		.035" (0.9mm)		79~512		79~512			79~512			
				.045" (1.2mm)		79~472		79~472			79~472			
	120V	Steel	75% AR 25% CO_2	.024" (0.6mm)		79~512		79~512			79~512			
				.030"(0.8 mm)		79~295		79~295			79~295			
				.035" (0.9mm)		79~217		79~217			79~217			
		Steel	100% CO_2	.024" (0.6mm)		79~512		79~512			79~512			
				.030" (0.8mm)		79~315		79~315			79~315			
				.035" (0.9mm)		79~217		79~217			79~217			
		Stainless Steel	98% AR 2% CO_2	.024" (0.6mm)		79~512		79~512			79~512			
				.030" (0.8mm)		79~472		79~472			79~472			
				.035" (0.9mm)		79~295		79~295			79~295			
		Stainless Steel	He Tri-Mix	.024" (0.6mm)		79~512		79~512			79~512			
				.030" (0.8mm)		79~413		79~413			79~413			
				.035" (0.9mm)		79~335		79~335			79~335			
		AL 4043	100% AR	.035" (0.9mm)		79~374		79~374			79~374			
		AL 4043	100% AR	.035" (0.9mm)		79~374		79~374			79~374			

S4T Advanced Parameter Setting Page(Flux-cored)



S4T Advanced Parameter Details(Flux-cored)

Torch Mode	Voltage	Material	Gas Type	Dia.	Start WFS	Start Slope	Welding WFS	Fine-Tune Voltage	Crater Slope	Crater WFS	Burn Back	Indu-ctance
S4T	240V	Steel	/	.030" (0.8mm)	79~492	0~10s	79~492	-5~5V	0~10s	79~492	10~90	-10~10
				.035" (0.9mm)	79~492		79~492			79~492		
				.045" (1.2mm)	79~209		79~209			79~209		
	120V	Steel		.030" (0.8mm)	79~335		79~335			79~335		
				.035" (0.9mm)	79~236		79~236			79~236		

3.12.4 Single and Dual Pulse Advanced Parameters

In Single Pulse Mode, the adjustable parameters in 2T/4T/SPOT/S4T modes are the same as those in standard MIG/MAG mode, allowing for consistent control over welding performance.

2T/4T/ Spot Advanced Parameter Setting Page (MIG/MAG Pulse on-Single Pulse)

2T/4T/ Spot Advanced Parameter Details (MIG/MAG Pulse on-Single Pulse)

Torch Mode	Voltage	Material	Gas Type	Diameter	Induc-tance	Pre-flow	Welding WFS	Fine-Tune Voltage	Burn Back	Post-flow
2T/4T/ Spot	240V	Steel	90%AR 10%CO_2	.030"(0.8mm)	-10~10	0.1~10s	79~472	-5~5V	0~50	0.1~25s
				.035"(0.9mm)			79~472			
				.045"(1.2mm)			79~236			
		Stainless Steel	98%AR 2%CO_2	.030"(0.8mm)			79~472			
				.035"(0.9mm)			79~472			
				.045"(1.2mm)			79~236			
		AL 4043	100% AR	.035"(0.9mm)			79~512			
				.045"(1.2mm)			79~394			
		AL 5356	100% AR	.035"(0.9mm)			79~512			
				.045"(1.2mm)			79~512			
	120V	Steel	98%AR 10%CO_2	.030"(0.8mm)			79~472			
				.035"(0.9mm)			79~256			
		Stainless Steel	98%AR 2%CO_2	.030"(0.8mm)			79~453			
				.035"(0.9mm)			79~291			
		AL 4043	100% AR	.035"(0.9mm)			79~394			
		AL 5356	100% AR	.035"(0.9mm)			79~437			

2T/4T/ Spot Advanced Parameter Details (MIG/MAG Pulse on-Single Pulse)

S4T Advanced Parameter Details (MIG/MAG Pulse on-Single Pulse)

Torch Mode	Vol-tage	Mat-erial	Gas Type	Dia.	Pre-flow	Start WFS	Start Slope	Welding WFS	Fine-Tune Voltage	Crater Slope	Crater WFS	Burn Back	Post-flow	Induc-tance
S4T	240V	Steel	90%AR 10%CO_2	.030"(0.8mm)	0.1~10s	79~472	0~10s	79~472	-5~5V	0~10s	79~472	0~50	0.1~25s	-10~10
				.035"(0.9mm)		79~472		79~472			79~472			
				.045"(1.2mm)		79~236		79~236			79~236			
		Stainless Steel	98%AR 2%CO_2	.030"(0.8mm)		79~472		79~472			79~472			
				.035"(0.9mm)		79~472		79~472			79~472			
				.045"(1.2mm)		79~236		79~236			79~236			
		AL 4043	100% AR	.035"(0.9mm)		79~512		79~512			79~512			
				.045"(1.2mm)		79~394		79~394			79~394			
		AL 5356	100% AR	.035"(0.9mm)		79~512		79~512			79~512			
				.045"(1.2mm)		79~512		79~512			79~512			
	120V	Steel	90%AR 10%CO_2	.030"(0.8mm)		79~472		79~472			79~472			
				.035"(0.9mm)		79~256		79~256			79~256			
		Stainless Steel	98%AR 2%CO_2	.030"(0.8mm)		79~453		79~453			79~453			
				.035"(0.9mm)		79~291		79~291			79~291			
		AL 4043	100% AR	.035"(0.9mm)		79~394		79~394			79~394			
		AL 5356	100% AR	.035"(0.9mm)		79~437		79~437			79~437			

In Dual Pulse Mode, additional parameters such as Dual Pulse Frequency, Dual Pulse Base Value, and Dual Pulse Duty Cycle are introduced. These parameters allow for more precise adjustments in pulse timing and waveform, enhancing weld quality by offering greater control over heat input and reducing distortion, especially on thinner materials or aluminum.

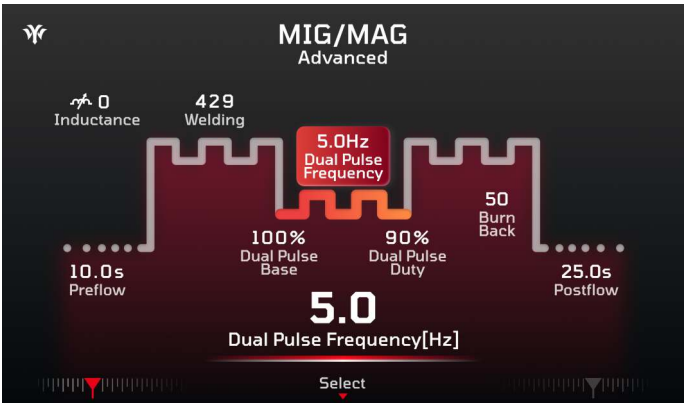
Dual Pulse Frequency: Controls the frequency of the pulse, regulating the cycle of welding current fluctuations.

Dual Pulse Base Value: Sets the base current during the pulse, influencing weld penetration and bead profile.

Dual Pulse Duty Cycle: Adjusts the ratio of high current duration to the pulse cycle, affecting heat input and weld quality.

These settings enable welders to achieve greater precision and more stable welding quality in Dual Pulse mode.

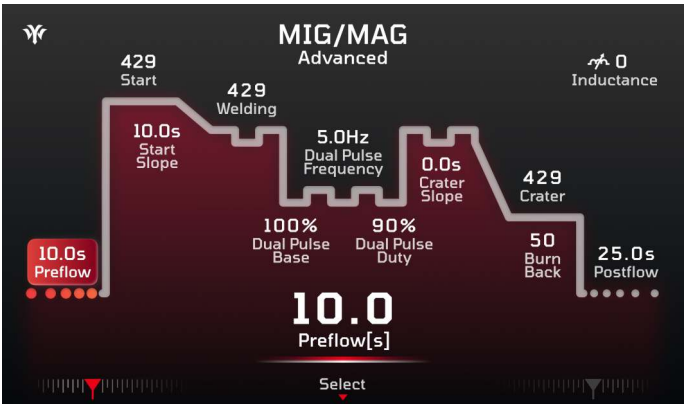
2T/4T/ Spot Advanced Parameter Details (MIG/MAG Pulse on-Single Pulse)



2T/4T/ Spot Advanced Parameter Details (MIG/MAG Dual Pulse)

Torch Mode	Voltage	Material	Gas Type	Dia.	Inductance	Pre-flow	Welding WFS	Fine-Tune Voltage	Dual Pulse Frequency	Dual Pulse Base	Dual Pulse Duty	Burn Back	Post-flow
2T/4T/Spot	240V	Steel	90%AR 10%CO_2	.030"(0.8mm)	-10~10	0.1~10s	79~472	-5~5V	0.1-5Hz	10~100%	10~90%	0~50	0.1~25s
				.035"(0.9mm)			79~472						
				.045"(1.2mm)			79~236						
		Stainless Steel	98%AR 2%CO_2	.030"(0.8mm)			79~472						
				.035"(0.9mm)			79~472						
				.045"(1.2mm)			79~236						
		AL 4043	100% AR	.035"(0.9mm)			79~512						
				.045"(1.2mm)			79~394						
		AL 5356	100% AR	.035"(0.9mm)			79~512						
				.045"(1.2mm)			79~512						
	120V	Steel	90%AR 10%CO_2	.030"(0.8mm)			79~472						
				.035"(0.9mm)			79~256						
		Stainless Steel	98%AR 2%CO_2	.030"(0.8mm)			79~453						
				.035"(0.9mm)			79~291						
		AL 4043	100% AR	.035"(0.9mm)			79~394						
		AL 5356	100% AR	.035"(0.9mm)			79~437						

S4T Advanced Parameter Setting Page (MIG/MAG Dual Pulse)



S4T Advanced Parameter Details (MIG/MAG Dual Pulse)

Torch Mode	Voltage	Material	Gas Type	Dia.	Pre-flow	Start WFS	Start Slope	Welding WFS	Fine-Tune Voltage	Dual Pulse Frequency	Dual Pulse Base	Crater Slope	Crater Slope	Crater WFS	Burn Back	Post-flow	Inductance
S4T	240V	Steel	90% AR 10% CO_2	.030" (0.8mm)	0.1~10s	79~472	0~10s	79~472	-5~5V	0.5~5Hz	10~100%	10~90%	0~10s	79~472	0~50	0.1~25s	-10~10
				.035" (0.9mm)		79~472		79~472						79~472			
				.045" (1.2mm)		79~236		79~236						79~236			
		Stainless Steel	98% AR 2% CO_2	.035" (0.9mm)		79~472		79~472						79~472			
				.030" (0.8mm)		79~472		79~472						79~472			
				.045" (1.2mm)		79~236		79~236						79~236			
		AL 4043	100% AR	.035" (0.9mm)		79-512		79-512						79-512			
				.045" (1.2mm)		79~394		79~394						79~394			
		AL 5356	100% AR	.035" (0.9mm)		79-512		79-512						79-512			
				.045" (1.2mm)		79-512		79-512						79-512			
	120V	Steel	90% AR 10% CO_2	.030" (0.8mm)		79~472		79~472						79~472			
				.035" (0.9mm)		79~256		79~256						79~256			
		Stainless Steel	98% AR 2% CO_2	.030" (0.8mm)		79~453		79~453						79~453			
				.035" (0.9mm)		79~291		79~291						79~291			
		AL 4043	100% AR	.035" (0.9mm)		79~394		79~394						79~394			
		AL 5356	100% AR	.035" (0.9mm)		79~437		79~437						79~437			

3.13 Set Up for Lift Arc TIG Welding(GTAW)

3.13.1Basic Connections

Setting up the Equipment for TIG Welding (GTAW): The TIG torch is not included with the machine. For optimal performance, we recommend using the additional YesWelder WP-17V-35 Lift TIG torch and Lanthanated Tungsten electrodes.

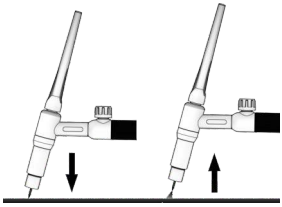
WARNING: TIG TORCH IS ALWAYS LIVE (ELECTRICALLY HOT). Use caution and ensure the TIG torch is not in contact or close to a conductive or grounded material.

- Remove the Wire Drive Polarity Lead from the Positive (+) Output and Negative (-) Output Terminals.
- Connect the TIG torch cable to the welder's Negative (-) Output Terminal.
- 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 TIG torch gas line to the gas regulator (use 100% Argon gas only).Turn on the gas at the regulator, check for gas flow, and adjust the flow rate as needed.
- Set the tungsten electrode to extend approximately 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 Lift TIG process with the Control Knob on the Home Menu Page.
- Open the gas valve on the TIG torch to start the gas flow. Set the flow rate to 20~30 CFH.
- Select material and tungsten diameter to match the project.
- Set the welding amperage through the Value Adjustment Knob.
- Turn the valve on the TIG torch to start the shielding gas flow.
- Initiate the welding arc with a lift arc technique:
  a. Briefly touch the tungsten electrode to the workpiece.
  b. Lift the electrode slightly, and the machine will automatically increase the voltage and current to establish the arc.

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

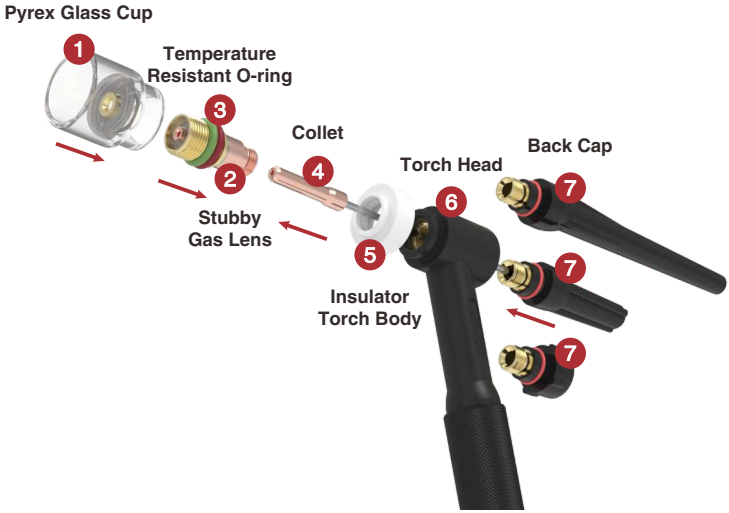
Welding Tips:

- 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).

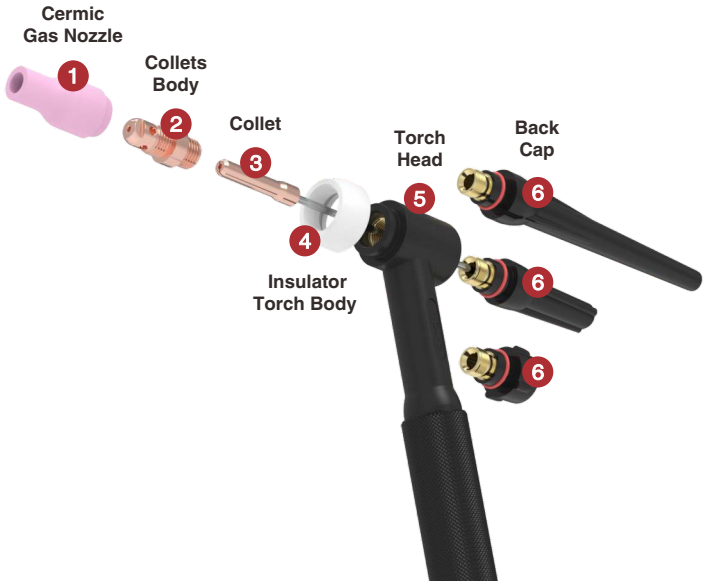
Thread Collet Body:
• Stubby Gas Lens (2): Functions as the Collet Body, providing enhanced gas coverage and flow.
• Screw the Stubby Gas Lens (2) into the Torch Head (6).

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

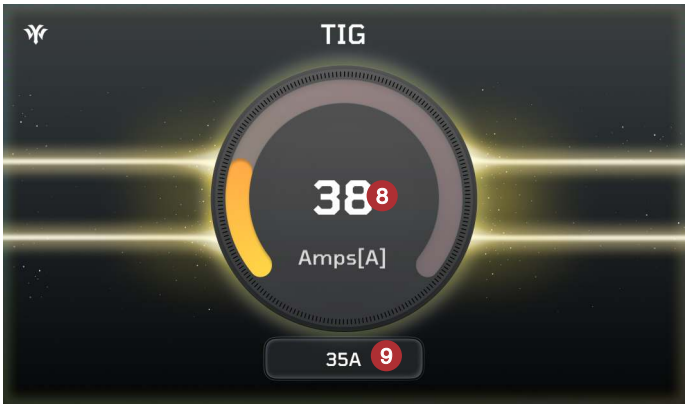
Material	Thickness (inch/mm)	Tungsten Diameter	Tungsten Type	Filler Metal	Ceramic Nozzle Size	Gas Flow (CFH)	Amperage Range (A)
Carbon Steel	1/16"~1/8" (1.5~3.0mm)	1/16" (1.6mm)	2% Thoriated (Red) 2% Lanthanated (Blue) 2% Ceriated (Gray)	ER70S-6	#5~#6	15~20 CFH	50~150A
	1/8"~1/4" (3.0~6.0mm)	3/32" (2.4mm)	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.

3.13.3 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 1/16" 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 24 Ga to 3/8"). This ensures proper penetration and weld bead formation, and aligns with the selected amperage and electrode diameter.
4. **Memory Function:** Access the memory settings with up to 20 memory slots for saving preferred welding parameters.
5. **Spot Timer:** Adjust the spot timer to control the weld duration, ensuring the desired weld quality and strength.
6. **Help Function:** Press to open the help information page for guidance.
7. **Amperage Display:** Shows the selected welding amperage on the main screen.
8. **Real-time Amperage Display:** Displays the real-time amperage during the welding process.
9. **Pre-set Amperage:** Shows the pre-set amperage as selected in the basic parameter page.



3.13.4 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									
				24ga	22ga	20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
240V	Steel	1/16" (1.6mm)	10~200A	18	20	25	40	50	65	95	/	/	/
		3/32" (2.4mm)		18	20	25	40	50	65	95	130	160	200
		1/8" (3.2mm)		18	20	25	40	50	65	95	130	160	200
	Stainless Steel	1/16" (1.6mm)		18	20	25	40	50	65	95	/	/	/
		3/32" (2.4mm)		18	20	25	40	50	65	95	130	160	200
		1/8" (3.2mm)		18	20	25	40	50	65	95	130	160	200
120V	Steel	1/16" (1.6mm)	10~120A	18	20	25	40	50	65	95	/	/	/
		3/32" (2.4mm)		18	20	25	40	50	65	95	/	/	/
	Stainless Steel	1/16" (1.6mm)		18	20	25	40	50	65	95	/	/	/
		3/32" (2.4mm)		18	20	25	40	50	65	95	/	/	/

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.

3.13.5 Optional Foot Pedal Installation

In the Lift TIG welding process, this machine supports the connection of a foot pedal to provide enhanced precision during welding by allowing adjustment of the welding current. However, please note the following:

- The foot pedal cannot control the welding switch (arc start or stop) in Lift TIG mode. The arc must be initiated and terminated manually by lifting and breaking the arc.
- The foot pedal is solely used to adjust the current during welding, offering greater flexibility and control over the welding process.

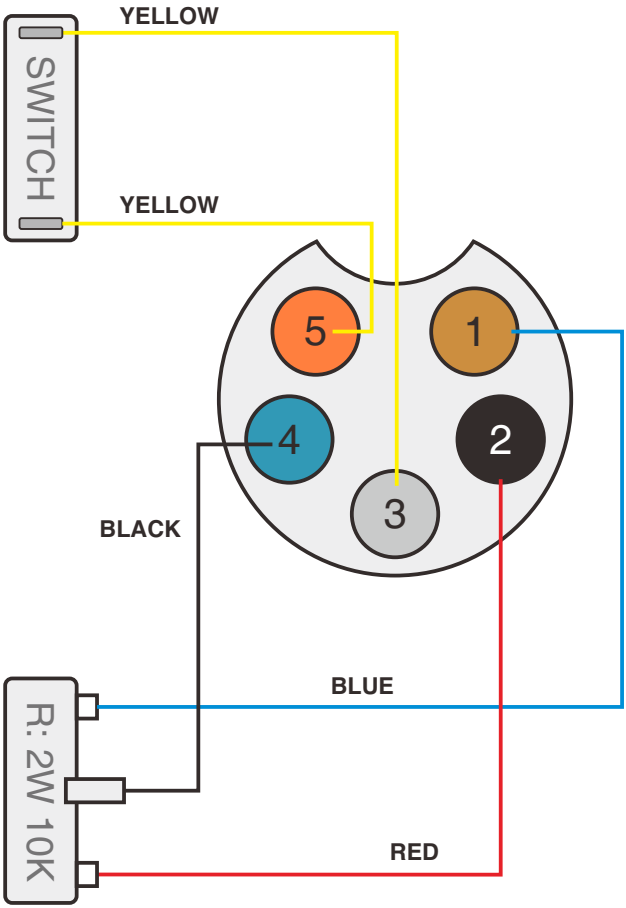
Note: The foot pedal is not included with the machine and must be purchased separately.

Foot Pedal Wiring Requirements

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

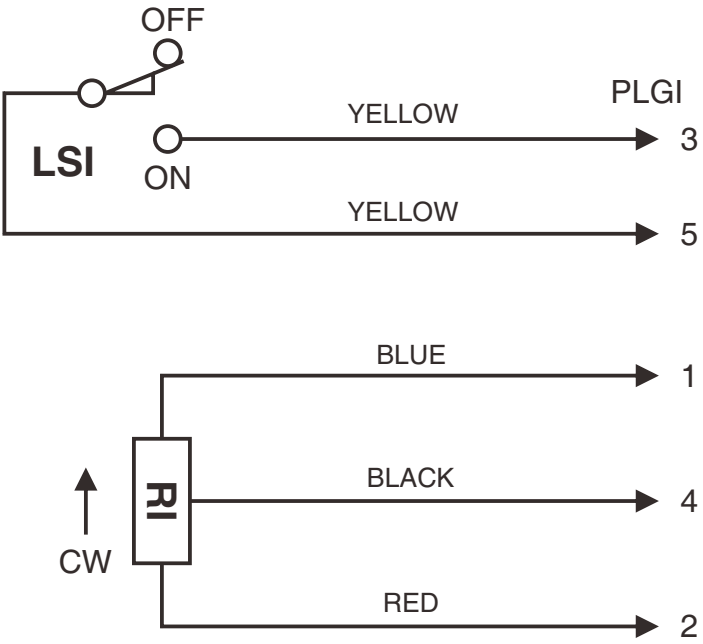
- **Internal Structure:** The foot pedal must contain an inching switch and a 10K sliding potentiometer, designed for precise control of welding current and switching in TIG mode.
- **Connector Specification:** The pedal requires a 5-pin connector for wiring.

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.

Foot Pedal Connection

Using the optional Lift Arc TIG Torch with the Foot Pedal by following steps:

1. **Adjust Gas Flow:** Set the gas valve on the torch 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:** Engage the foot pedal to power up the machine and ignite the arc using the lift arc method. 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 terminate the welding arc and power down the machine.
6. **Inspect Equipment:** After welding, check the settings and condition of the equipment to ensure everything is correctly set and functioning properly.

3.14 Set up for Stick Welding (SMAW)

3.14.1 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 Function Knob on the Home Menu Page.
- Set the amperage with the Value 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.

3.14.2 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.

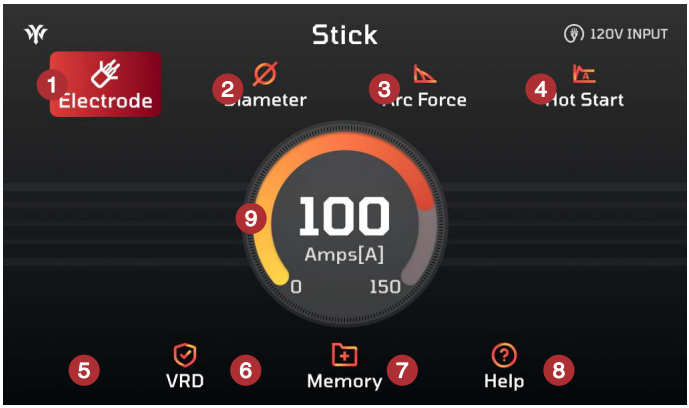
Electrode Recommendations

Electrode	Polarity	Usage
E7018, E6011, E6013	DCEP	This electrode is best for use with clean, bare steel and is suitable for moderate penetration.
E6010	DCEN	This electrode is usually used for building up heavy deposits of materal with less penetration and thin sheet welding.

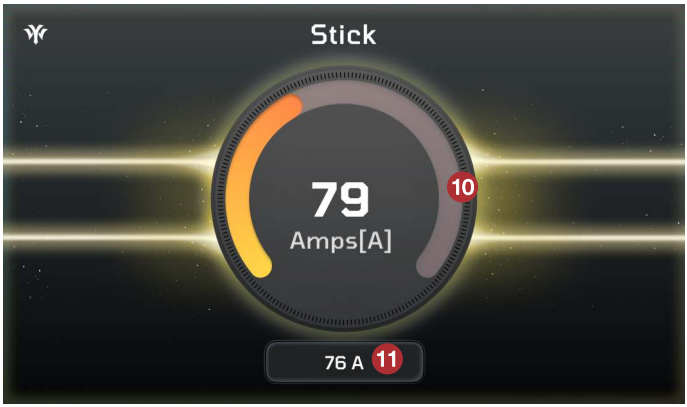
However, various electrodes require a different polarity for optimum results. Please follow the electrode manufacturer's recommendation on the correct polarity.

3.14.3 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 24ga 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. **Memory Function:** Access the memory settings with up to 20 memory slots for saving preferred welding parameters.
8. **Help Function:** Press to open the help information page for guidance.
9. **Amperage Display:** Shows the selected welding amperage on the main screen.
10. **Real-time Amperage Display:** Displays the real-time amperage during the welding process.
11. **Pre-set Amperage:** Shows the pre-set amperage as selected in the basic parameter page.



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.

3.14.4 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									
				24ga	22ga	20ga	18ga	16ga	14ga	1/8"	3/16"	1/4"	3/8"
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	/	/	28	33	36	45	/	/	/	/
		3/32" (2.4mm)		/	/	/	/	/	70	90	/	/	/
	7***	1/16" (1.6mm)		/	/	28	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.

3.15 Setup for Memory Saving and Loading

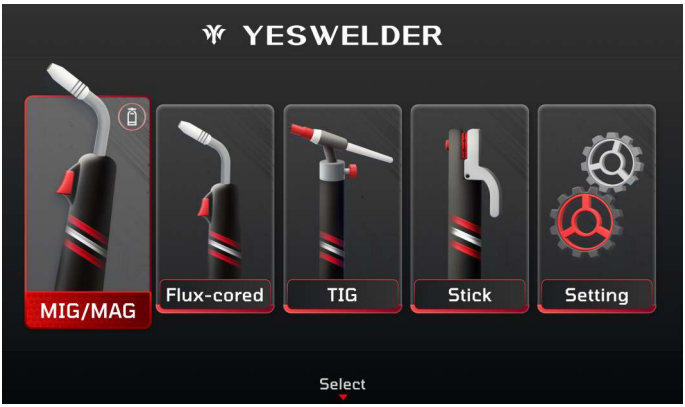
The Memory function allows users to store welding parameters such as voltage, wire feed speed, and amperage settings under designated memory channels. These stored settings can be easily recalled, adjusted, and saved as needed for future use.

The system supports up to 50 memory slots for MIG/MAG welding, and 20 slots for Flux-cored, TIG, and Stick welding, ensuring quick access to optimized parameters for various welding applications.

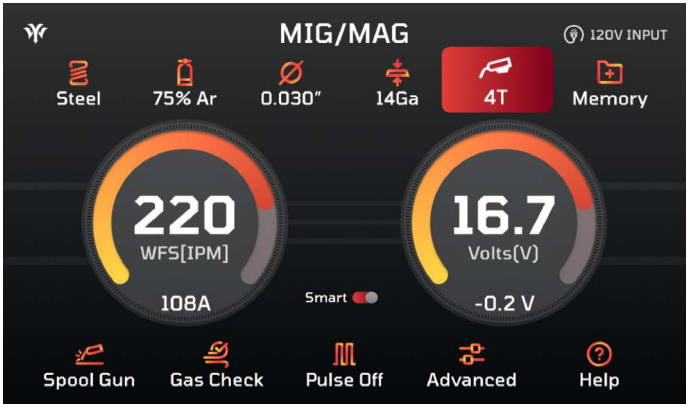
3.15.1 How Save Memory

To save welding parameters, follow these steps:

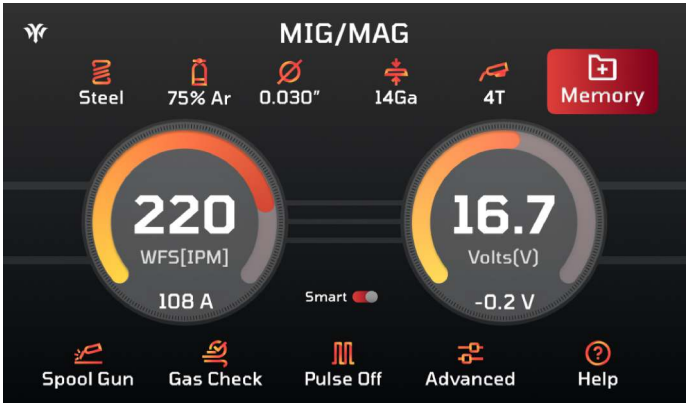
1. Select Welding Processes
From the Home Menu, select the desired welding process and access the corresponding parameter settings page.



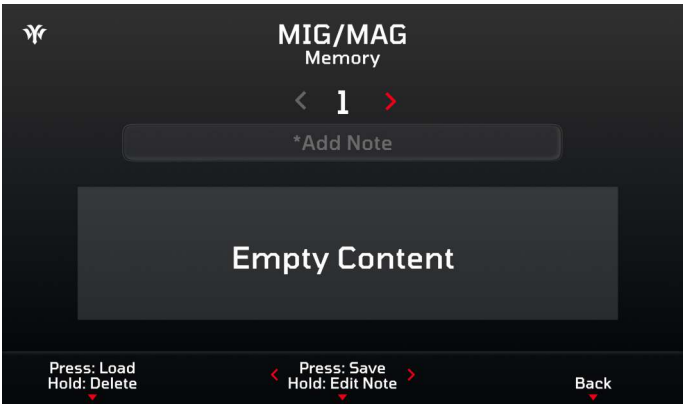
2. Set Parameters
Adjust the necessary parameters, such as material, torch trigger operation, voltage, wire feed speed, and advanced settings and so on.



3. Select Memory Parameter Option
In the parameter settings page, find and select “Memory” option.



4. Confirm and Save
Choose a memory channel, then press Function Knob to confirm and save the parameters.



5. Name the Memory Channel
Press and hold Function Knob to enter the naming page. Rotate Function Knob or use Value Knob to select characters. Press Function Knob to confirm.

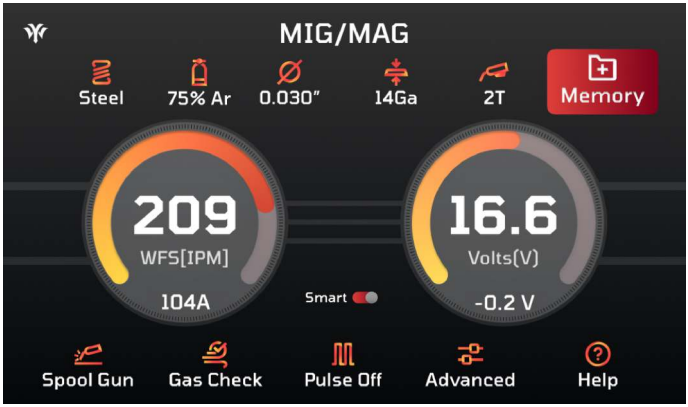
6. Complete Naming
Press the Back Knob to exit naming, completing the memory save process.

3.15.2 Memory Recall & Delete

To access previously saved parameters or manage unused memory:

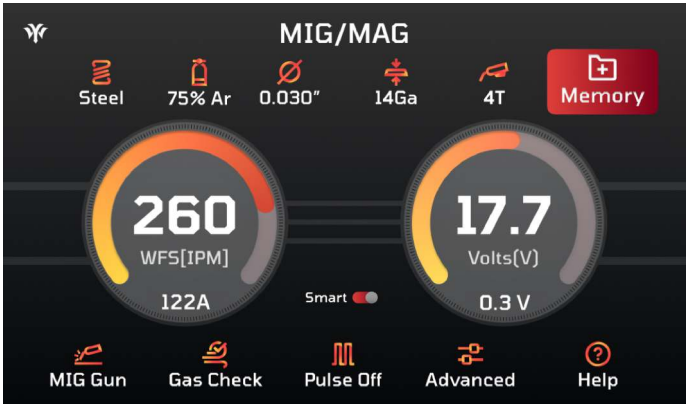
1. Select Welding Processes
From the Home Menu, select the desired welding process and access the corresponding parameter settings page.

2. Select Memory Parameter Option
In the parameter settings page, find and select “Memory” option.

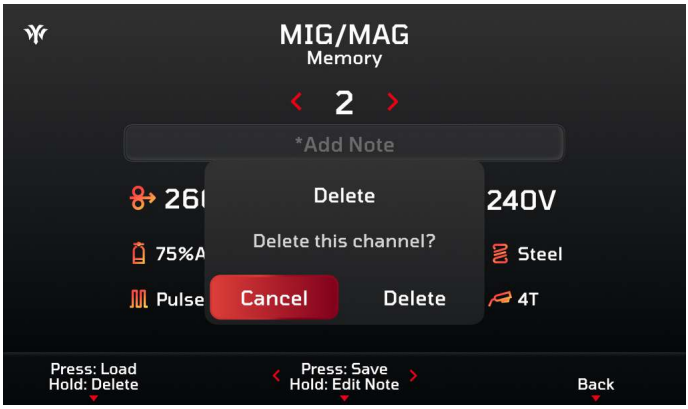


3. Select Memory Channel
Rotate Function Knob to browse memory channels. You can identify the channel by its name or stored parameters. Press Function Knob to confirm the channel.

4. Recall or Delete Parameters
Recall: Press Value Knob to jump to the parameter settings page and apply the saved parameters for welding.



Delete: Press and hold Value Knob to enter delete confirmation. Rotate Function Knob to choose “Delete” or “Cancel”, then press Function Knob to confirm.



3.16 Software Upgrade Guide

Please follow the steps below to upgrade the welding machine software and check the software version after the upgrade:

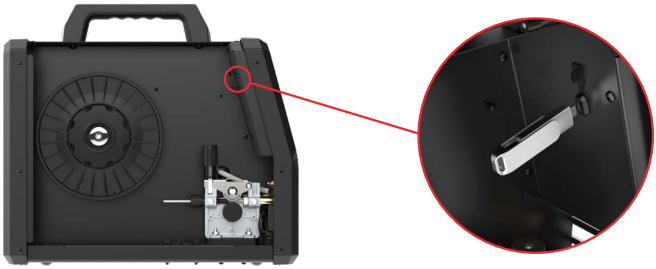
1. Prepare the USB Drive
- Extract the downloaded upgrade package.
- Copy the two .bin files and the private folder to the USB drive (USB-C output).

USB Drive Requirements:
1. **Format:** FAT32
2. **Capacity:** Less than 32GB (8GB or smaller is recommended)
3. **No Adapters:** Avoid using adapters or extension cables, as they may cause recognition issues.

File Requirements:
1. All three files must be placed in the root directory of the USB drive.
2. Do not modify the names or types of the files/folders.
3. It’s recommended that the USB drive contains no unrelated files.

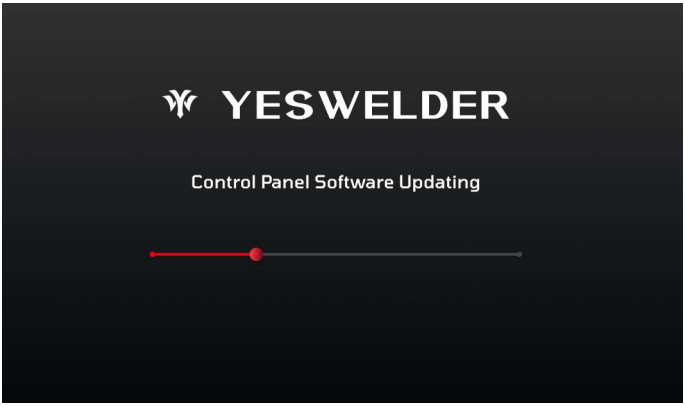
C113.bin F303.bin private

2. Connect the Device for Upgrade
- Make sure the welding machine is turned off, then insert the USB drive into the USB-C upgrade port located on the wire feeding section of the machine.
- Turn on the welding machine.



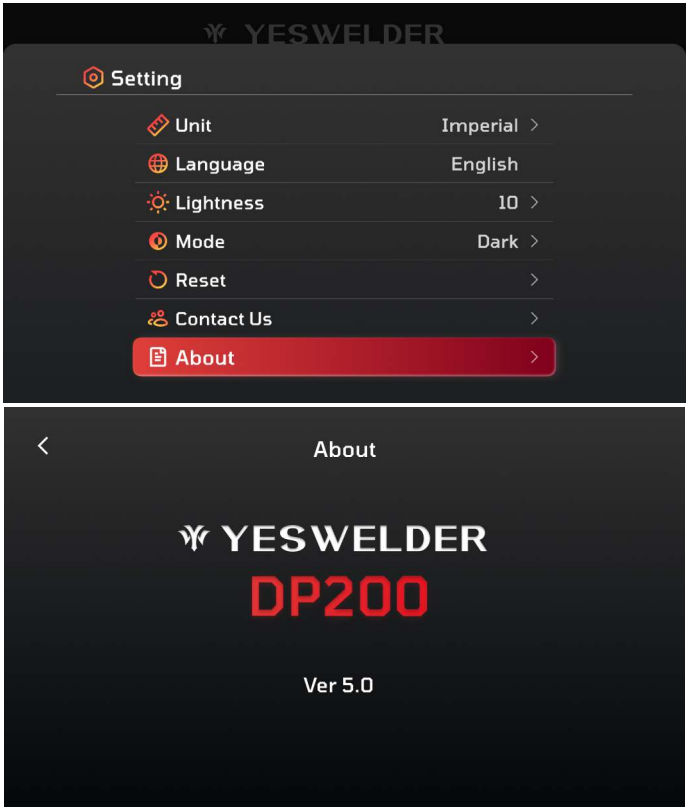
3. Complete the Upgrade

- The machine will automatically detect the upgrade files on the USB drive, and the screen will display a progress bar. The upgrade may take approximately 4 minutes.
- Once the upgrade is complete, turn off the welding machine and remove the USB drive from the USB-C upgrade port.



4. Verify the Upgrade

- After the upgrade is complete, restart the welding machine.
- Go to the settings section of the machine and check the software version.
- Confirm that the software has been updated to the latest version.



3.17 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, and 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.

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

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

SKU List: Recommends consumables and spare parts, with associated SKU numbers for easy reordering.

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 27) 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
	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.	No input power.	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.

Lift TIG WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
Poor starting.	Poor work clamp connection.	Check and secure work connection.
	Start current is too low.	Increase Start current.
Black area along weld bead.	Oily or organic contamination on work	Clean work piece.
	Tungsten electrode may be contaminated.	Grind to clean electrode.
	Leaks in gas line or torch connection.	Check connection.
	Gas tank is near empty.	Replace the gas tank.
Unstable Arc.	Contaminated base metal.	Remove materials like paint, grease, oil, and dirt, including mill scale from base metal.
	Tungsten is contaminated.	Remove 25/64" of contaminated tungsten and re-grind the tungsten.
	Arc length too long.	Lower torch so that the tungsten is off of the work piece 5/64"-13/64"(2-5mm).
Arc wanders.	Tungsten incorrect or in poor condition.	Check that correct type of tungsten is being used. Remove tungsten 3/4" from the weld end and re-sharpen the tungsten.
	Insufficient gas shielding.	Check and set the gas flow between 20-30 CFH flow rate.
	Contaminated gas or leaks in gas line, torch, or connections.	Check gas line & connections.
	Poorly prepared tungsten.	Recommend tungsten grind angles range from 15 to 60 degrees based on the type of metal, joint design and penetration you desire. Standard is 30 degrees.
	Contaminated base metal.	Remove contaminating materials like paint, grease, oil, and dirt, including mill scale from base metal.
	Contaminated/Incorrect filler.	Check the filler wire and remove all grease, oil, or moisture from filler metal.

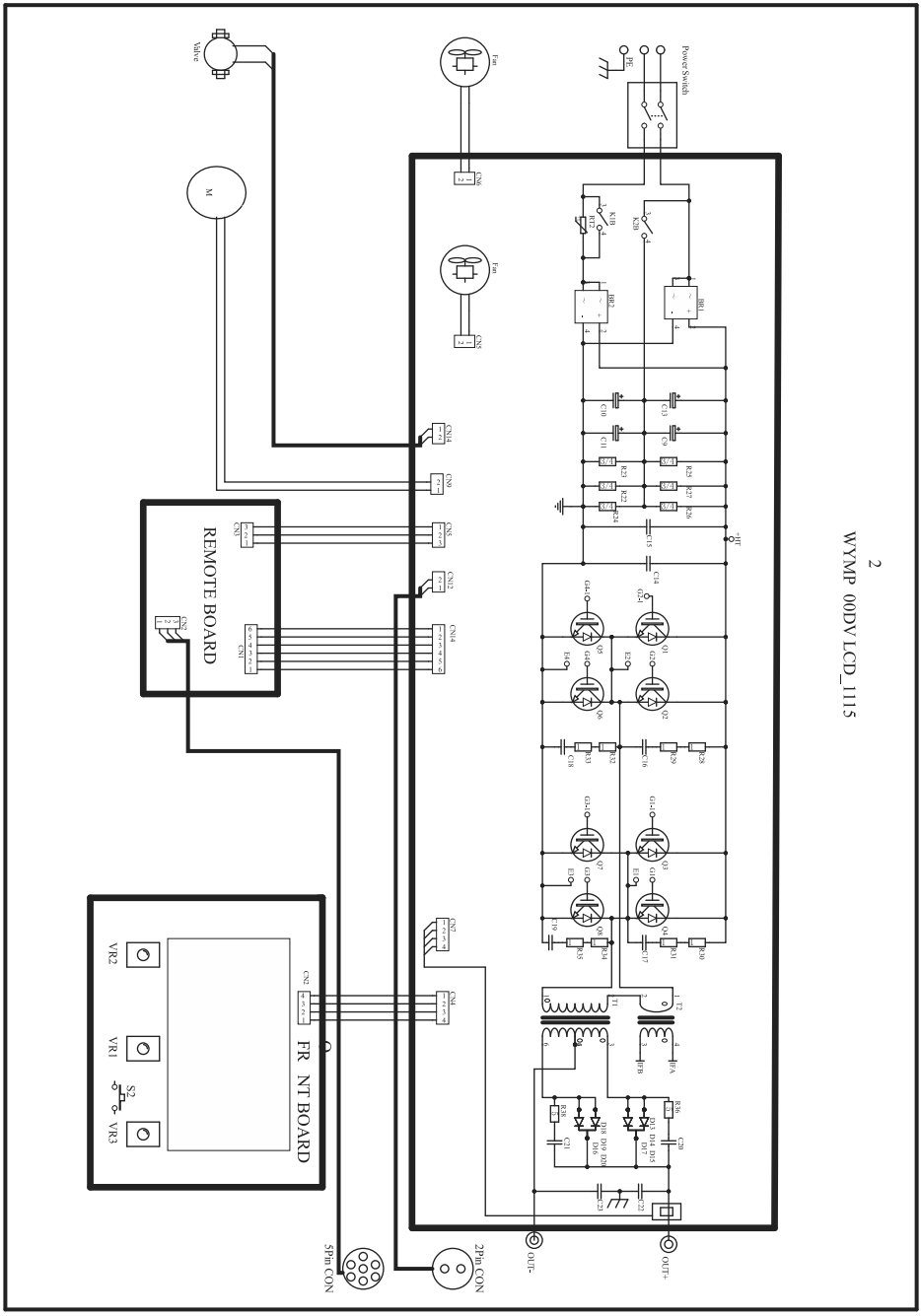
Lift TIG WELDING ISSUES

PROBLEM	POSSIBLE CAUSE	COURSE OF ACTION
Lift TIG does not initiate an arc.	No gas, incorrect gas flow.	Check the gas is connected and cylinder valve open, check hoses, gas valve and torch are not restricted. Set the gas flow between 20-30 CFH flow rate.
	Poor work clamp connection.	Check & secure work clamp.
	Contaninated Tungsten.	Grind to ctean Tungsten.
	Loose connection.	Check all connectors and tighten.
	Earth clamp not connected to work.	Connect the work clamp directly to the work piece wherever possible.
Tungsten burning away quickly.	Incorrect Gas/Inadequate gas flow.	Check the gas cylinder contains pure Argon gas and is connected and the torch gas valve is open. Set the gas flow between 20-30 CFH flow rate.
	Back cap not fitted correctly.	Make sure the torch back cap is fitted so that the o-ring is inside the torch body.
	Incorrect tungsten being used.	Check and change the tungsten type if necessary.
Contaminated tungsten.	Touching tungsten into the weld pool.	Keep tungsten from contacting weld puddle. Raise the torch so that the tungsten is off of the work piece 1/8-1/4.
	Touching the filler wire to the tungsten.	Keep the filler wire from touching the tungsten during welding, feed the filler wire into the leading edge of the weld pool in front of the tungsten.
	Tungsten melting into the weld pool.	Check that correct type of tungsten is being used. Too much current for the tungsten size so reduce the amps or change to a larger tungsten.

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.
		changed the word "work" to "electrode" to help better exapling angle when welding various positions.
		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.

6. WIRING DIAGRAM



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