Operation manual

6-in-1 multifunctional fully digital welding machine

MIG160PRO

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1. Product Introduction

1.1 Product Overview

The MIG-160PRO is a professional-grade, multi-process digital welding machine engineered with advanced IGBT inverter technology. Operating at a high inverter frequency range (25–50 kHz), this unit efficiently converts standard utility AC power into high-performance, stable DC output using precise Pulse Width Modulation (PWM). This state-of-the-art inverter design drastically reduces the machine's overall weight while boosting power conversion efficiency by over 30% compared to traditional transformer-based welders, ensuring exceptional portability for workshop or field fabrication.

1.2 Core Performance Features

- **Multi-Process Versatility (6-in-1):** Supports Gas MIG (Solid Wire), Gasless MIG (Flux-Cored Wire), Stick (MMA), Lift TIG, Spool Gun, and specialized Spot Welding operations to handle diverse material fabrication demands.
- **Smart Synergic Control:** Features built-in digital synergic software that automatically matches wire diameter, base metal type, and optimal current, making it highly accessible for beginners while providing professional-grade manual micro-adjustments for experienced fabricators.
- **Superior Arc Stability:** Equipped with a unique digital electronic reactor circuit to precisely control short-circuit and globular metal transitions. This delivers an exceptionally smooth arc, minimal spatter, deep penetration aesthetics, and a high-consistency weld quality.
- **Comprehensive Digital Dual Display**: Features a premium full-color high-definition dual digital interface. It shows real-time welding amperage and voltage for MMA and Lift TIG modes; in synergic MIG modes, the screen displays preset reference parameters to assist with quick setup, reducing setup times and eliminating guesswork in varied lighting environments.

1.3 Technical Specifications

The specifications below represent the definitive operational metrics for the MIG-160PRO.

Performance Parameter	**Specification / Value (US Standard)**
Power Supply Voltage	1-Phase AC 110V / 220V ±15%, 50/60Hz
Rated Input Current	MIG: 33A
Output Current Range	30A – 160A (full 160A on 220V; max 120A on 110V household power)
Output Voltage Range	15V – 22V (Smart Synergic Tracking)
Rated Duty Cycle	60% @ 160 Amps (@ 104°F / 40°C)

Performance Parameter	Specification / Value (US Standard)
Wire Feed Speed Range	80 – 590 IPM (Inches Per Minute)
Applicable Plate Thickness	24 Gauge to 1/4" (0.5mm – 6.4mm)
Protection Rating	IP21S (Moisture & Dust Resistant)
Bare Machine Weight	17.6 lbs (8.0 kg)

1.4 Standard Accessories Pack

Please verify that all the high-performance accessories listed below are included in your package. If any items are missing, contact our product technicians immediately.

1. **MIG-160PRO Multi-Process Welding Machine Main Unit — 1 UNIT**
2. **Heavy-Duty MIG Welding Torch (9.84 ft / 3m) — 1 PC**
3. **Professional MMA Electrode Holder with 6.56ft/2m Cable — 1 PC**
4. **Heavy-Duty Ground Clamp with 6.56ft/2m Cable — 1 PC**
5. **6.56ft Gas Hose with 2pcs Hose Clamps — 1 SET**
6. **110V to 220V Outlet Adapter (rated 50A) — 1 PC**
7. **US Standard Power Cord (5.91ft) — 1 PC**
8. **Auto-Darkening Welding Helmet (Free Bonus) — 1 PC**
9. **Heavy-Duty Split Leather Welding Gloves (Free Bonus) — 1 Pair**
10. **Dual Groove Wire Feed Drive Rollers (.030”/.035”) — 1 SET(Spare Replacement)**
11. **Flux-Cored Welding Wire Spool (.030”) — 1 ROLL**
12. **MIG Ceramic Gas Cups — 2 Pieces**
13. **MIG Contact Tips, 6 Pack Total: 3 x .030" & 3 x .035"**
14. **Official User Manual & Limited Warranty Certificate — 1 PC**

2. Welding Environment & Safety

CALIFORNIA PROPOSITION 65 WARNING

WARNING: This product, when used for welding, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer.

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

2.1 Operating Environment Guidelines

(1) **Humidity Control:** Ensure the welding area is completely dry, with a relative humidity level strictly below 90%.

(2) **Operating Temperature:** Maintain an ambient operating temperature range between -10°C to 40°C (14°F to 104°F).

(3) **Weather Protection:** Do not operate the machine in direct sunlight, rain, or snow. Always keep the machine body dry and shielded from weather elements.
(4) **Contamination Prevention:** Avoid operating the equipment in dusty, hazardous, or highly corrosive environments.
(5) **Ventilation Clearances:** The machine requires effective and unobstructed airflow for heat dissipation. Keep all ventilation slots clear and maintain at least 0.3 meters (1 foot) of clearance from surrounding objects and walls.
(6) **Overload Protection:** Never exceed the rated current based on the duty cycle. Excessive current shortens machine life and may cause permanent thermal damage.
NOTE: This welder is designed for intermittent DIY, home garage and light-fabrication use. Long-hour continuous industrial operation beyond the rated 60% duty cycle will trigger overheat protection.
WARNING: Welding fumes produced during operation contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Always use adequate ventilation or approved respirator when welding.

2.2 Electrical & Grounding Safety

- Proper Grounding (Mandatory): Before operation, ensure the machine is properly grounded. Connect the grounding screw on the rear panel to a secure earth point using a heavy-duty copper cable of at least 10 AWG (6mm²) to eliminate the risk of electric shock or static discharge.
- Input Voltage Safety: Verify that your wall outlet matches the machine's voltage requirements before plugging it in. Never modify the power plug or force it into an ungrounded or damaged receptacle.
- Adapter Usage: The included 110V-to-220V outlet adapter is a plug/socket adapter for outlet compatibility only — it does not convert voltage. When the machine is connected to a 110V household outlet through this adapter, the internal auto-adaptive circuit handles operation automatically. Always use the included adapter and a wall circuit rated for the machine's input current to prevent overheating.

Extension Cords: If an extension cord is required, use a heavy-duty, high-gauge copper cord (12 AWG or larger for short distances) to prevent severe voltage drops and overheating.
110V Circuit Requirements: On 110V household power, the machine can deliver **peak output up to 120A**, but your wall circuit is the real limiting factor. Use a dedicated 20A breaker and keep continuous welding output below 80A (around 60A on a shared 15A circuit) to prevent breaker tripping. Full 160A output requires a 220V circuit.

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⚠ **CAUTION:** ***This machine features auto-adaptive 110V/220V input; voltage handling is internal and no external transformer is required. Do not open the machine or modify the power cord. Note: on a 110V household circuit the maximum output current is lower than on 220V (see Section 1.3 and Section 2.2).***

2.3 Personal Protective Equipment (PPE) Requirements

To ensure absolute personal safety and prevent injuries from electric shock, arc radiation, and flying sparks, always wear the following compliant PPE when operating this welder:

- **Welding Helmet:** Always wear a welding helmet equipped with a proper shade rating (**Shade 9 to 13** depending on the welding process) to protect your eyes and face from harmful ultraviolet (UV) and infrared (IR) rays.
- **Protective Clothing:** Wear flame-resistant (FR) clothing, such as leather welding jackets, heavy aprons, and long-sleeved shirts. Avoid synthetic or polyester garments, as they melt easily when exposed to sparks.
- **Hand & Foot Protection:** Always wear completely dry, insulated heavy leather welding gloves and oil-resistant, steel-toed work boots.
- **Respiratory Safety:** Avoid inhaling welding fumes. Ensure the work area has adequate ventilation, or use a NIOSH-approved respirator when welding in confined or semi-enclosed spaces.

2.4 Fire and Explosion Prevention

- **Combustible Clearance:** Maintain a minimum safety clearance of **35 feet (10.7 meters)** between the welding workspace and any flammable materials (including gasoline, solvents, aerosol cans, paint, wood, and dry paper).
- **Fire Extinguisher Availability:** Always keep an **ABC-rated fire extinguisher** fully charged and readily accessible within arm's reach of the welding station.
- **Post-Welding Inspection:** After completing a welding session, thoroughly inspect the entire area for at least 30 minutes to ensure no smoldering embers, smoke, or hidden sparks are present.

2.5 Quick Safety Reference: Do's and Don'ts

Do's (Recommended Actions)	**Don'ts (Prohibited Actions)**
DO verify the machine is securely grounded using a **10 AWG** wire before turning it on.	**DO NOT** operate the welding machine in wet, rainy, or high-humidity environments.
DO keep an **ABC fire extinguisher** nearby and clear all flammables within 35 feet.	**DO NOT** block or cover the cooling fan ventilation slots on the machine housing.
DO wear standard **Shade 9-13 welding helmets** and flame-resistant leather apparel.	**DO NOT** exceed the specified duty cycle or overload the rated welding current.
DO use a heavy-duty **12 AWG** or larger extension cord to prevent dangerous voltage drops.	**DO NOT** perform welding tasks near volatile chemicals, fuel tanks, or explosive gases.

3. Setup & Installation Guide

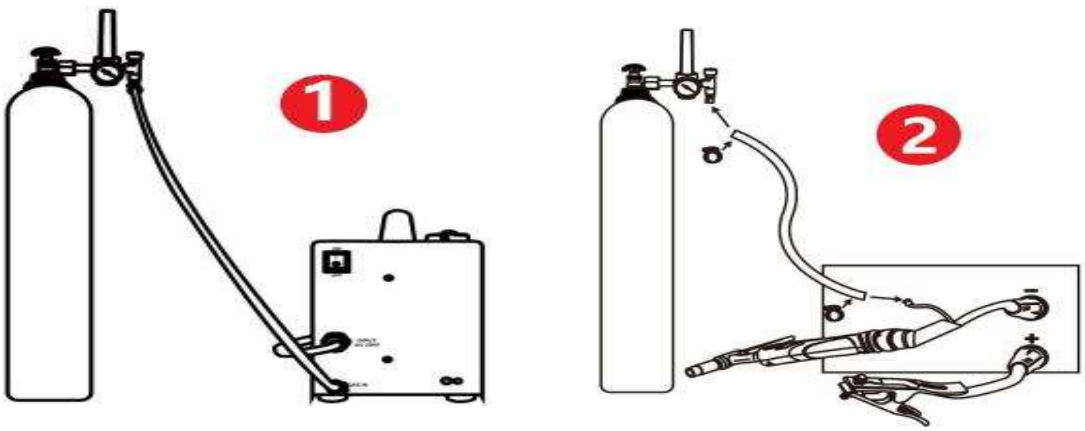
3.1 Gas Shielded MIG Welding (Solid Wire - DCEP Polarity)

This configuration is optimized for welding carbon steel or stainless steel using solid wire with a shielding gas supply.

1. **Power Off Safeguard:** Ensure the welding machine's primary power switch on the rear panel is turned **OFF** before initiating any cable connections.
2. **Polarity Configuration (DCEP):** * Take the internal welding polarity changeover cable (the short lead exiting the machine's front chassis) and insert it firmly into the **Positive (+) DINSE socket**. Twist clockwise to lock it completely.
    - Insert the heavy-duty **Ground Work Clamp** quick-connector into the **Negative (-) DINSE socket**. Twist clockwise until fully secured.
3. **Torch Installation:** Connect the integrated MIG Welding Torch euro-connector to the primary drive outlet on the front panel. Securely hand-tighten the retaining nut to prevent wire-feeding friction.
4. **Shielding Gas Delivery Setup:**
    - Securely thread the **Gas Flowmeter Regulator** onto your compressed shielding gas cylinder (A 75% Argon / 25% CO2 mixture is recommended for general steel fabrication).
    - Connect one end of the premium gas hose to the inlet fitting on the rear panel of the MIG-160PRO, and secure the opposite end to the regulator outlet. Ensure all hose clamps are tightened to eliminate gas leaks.
    - Open the cylinder valve slowly and calibrate the regulator flow rate to **15–20 CFH** (Cubic Feet per Hour) while driving wire.

Gas Shielded Welding Installation

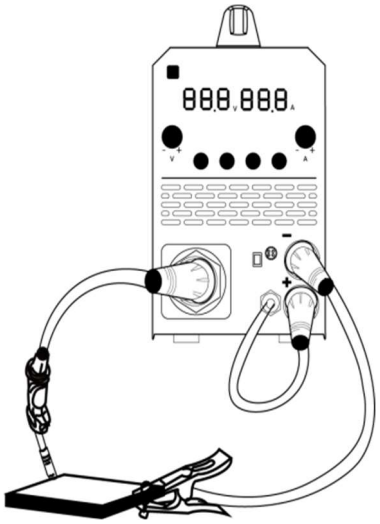
5. ① MIG Welding: Connect the gas regulator/flow meter to the gas cylinder securely. Ensure all connections are tight to prevent leaks. Attach the gas hose to the machine’s rear gas inlet and the regulator, securing both ends with the provided clamps. Check all connections for leaks before operation.
6. ② LIFT TIG Welding: Securely connect the gas regulator/flow meter to the argon gas cylinder. Connect the gas hose from the TIG torch directly to the gas regulator/flow meter. Ensure all connections are tight and leak-free.



Operating Procedures for MIG Gas Shielded Welding

Preparation: * **Wire Feed:** Refer to Section 4.1 for wire installation. Use a V-groove drive roller for solid steel/stainless steel wires.

- **Gas:** Connect the gas cylinder and regulator (Refer to Section 2.3).
- **Polarity:** Insert the MIG gun into the positive (+) connector and the work clamp into the negative (-) connector (DCEP).



Operation:

1. **Trigger:** Press the torch trigger; the wire feeder will drive the wire through the torch tip.
2. **Settings:** Select the appropriate MIG mode, material, and wire diameter on the control panel.
3. **Adjustment:** Adjust the amperage based on material thickness. Fine-tune the voltage and inductance settings to achieve the desired bead profile and penetration.

3.2 Gasless MIG Welding (Flux-Cored Wire - DCEN Polarity)

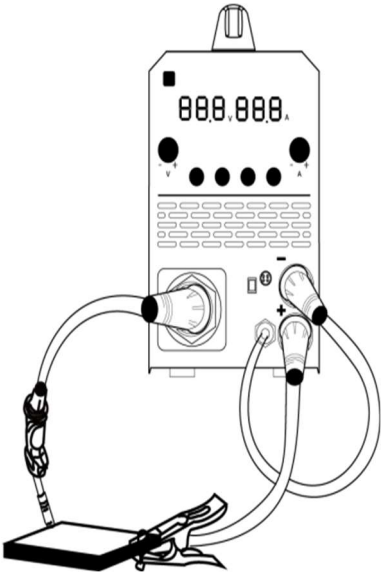
This configuration is optimized for outdoor welding or structural fabrication using self-shielding flux-cored wire without external gas cylinders.

1. **Power Off Safeguard:** Ensure the machine's primary power switch is turned **OFF**.
2. **Polarity Configuration (DCEN):**
    - Take the internal welding polarity changeover cable and insert it firmly into the **Negative (-) DINSE socket**. Twist clockwise to lock it securely.
    - Insert the heavy-duty **Ground Work Clamp** quick-connector into the **Positive (+) DINSE socket**. Twist clockwise to lock it completely. *(Note: Failing to reverse polarity for flux-cored wire will result in excessive spatter, severe porosity, and poor penetration).*
3. **Torch Installation:** Connect the integrated MIG Welding Torch euro-connector to the primary drive outlet on the front panel and tighten the retaining nut securely.
4. **Drive Roller Verification:** Ensure that the pre-installed **Knurled (serrated) drive roller** is aligned with your wire diameter (0.030" or 0.035"). Do not use a smooth V-groove roller, as it will slip on soft flux-cored wires.

Gasless Welding (Flux-Cored) - Knurled Roller

Preparation:

- **Wire Feed:** Refer to Section 4.1 for wire installation. Use the appropriate diameter Knurled drive roller for flux-cored wire.
- **Polarity:** Insert the MIG gun quick-connect into the **negative (-)** connector and the work clamp quick-connect into the **positive (+)** connector on the front panel (DCEN).



Operation:

1. **Wire Feed:** Press the torch trigger to feed the wire through the torch until it protrudes from the contact tip.
2. **Settings:** Select "Flux" mode on the front control panel.
3. **Selection:** Choose the correct material type and wire diameter on the panel settings.
4. **Adjustment:** Adjust the amperage according to the material thickness. Fine-tune the voltage and inductance for optimal arc stability and bead appearance.

Welding Operation Instruction

On display: After turning on the power supply, the [Multifunctional data display window] will flash for 3 seconds (or until any button/knob on the front panel is pressed).

Polarity Selection Procedures: There are two basic ways to configure the welder:

- **Direct Current Electrode Positive (DCEP):** Connect the welding torch/electrode holder to the positive (+) connector and the ground clamp to the negative (-) connector on the front panel. Suitable for most solid wires and basic (low hydrogen) stick electrodes.
- **Direct Current Electrode Negative (DCEN):** Connect the welding torch/electrode holder to the negative (-) connector and the ground clamp to the positive (+) connector on the front panel. Suitable for flux-cored (gasless) wire.

Note: Polarity must be selected based on the welding process requirements. Incorrect polarity will result in arc instability, excessive spatter, and lack of fusion.

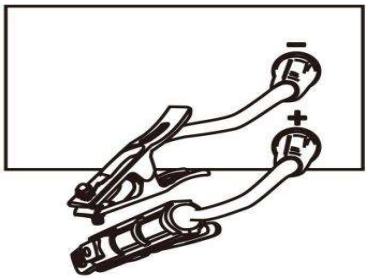
3.3 Stick Welding (MMA / Manual Metal Arc - DCEP Polarity)

This configuration is optimized for traditional stick welding utilizing shielded electrodes (such as E6013, E7018, or E6011).

1. **Power Off Safeguard:** Ensure the machine's primary power switch is turned **OFF**.
2. **Polarity Configuration (DCEP):**
   - Insert the quick-connector of the **Professional Electrode Holder** (Stick Clamp) cable into the **Positive (+) DINSE socket**. Twist clockwise until fully locked.
   - Insert the quick-connector of the **Heavy-Duty Ground Work Clamp** cable into the **Negative (-) DINSE socket**. Twist clockwise until locked. *(Note: While certain specialized welding electrodes may specify DCEN polarity on their packaging, standard consumer fabrications run predominantly on DCEP for optimal arc smoothness and deeper material penetration).*

STICK (MMA) Welding Operation Procedures:

1. Ensure the electrode holder is connected to the positive (+) connector.
2. Securely attach the ground clamp to the workpiece and connect it to the negative (-) connector.
3. Use appropriate electrodes (e.g., E7018). *Note: Cellulose electrodes are not recommended for this machine.*
4. Maintain a steady arc and travel speed.

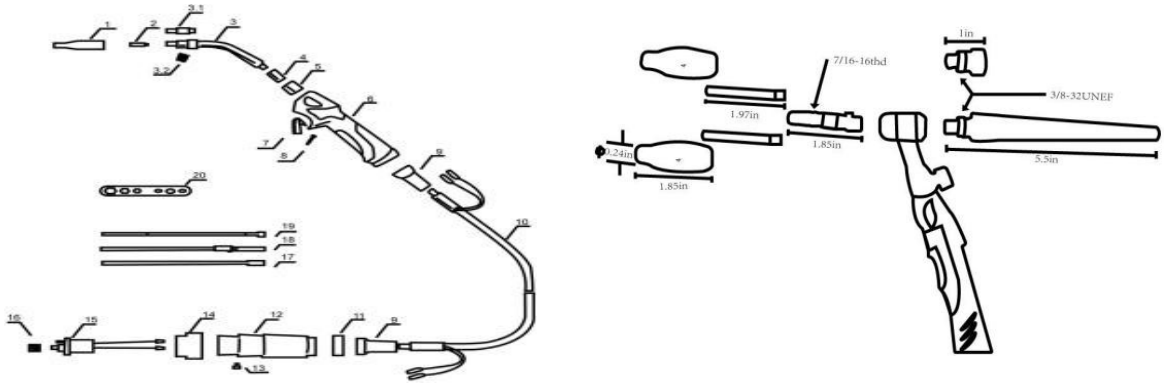


3.4 Lift TIG Welding (DCEN Polarity)

This configuration is optimized for precise steel or stainless steel TIG welding using a Lift TIG torch and standard pure Argon shielding gas.

1. **Power Off Safeguard:** Ensure the machine's primary power switch is turned **OFF**.
2. **Polarity Configuration (DCEN):** * Insert the quick-connector of your specialized Lift TIG Torch (not included) into the **Negative (-) DINSE socket**. Twist clockwise until fully locked.
    - Insert the quick-connector of the heavy-duty **Ground Work Clamp** cable into the **Positive (+) DINSE socket**. Twist clockwise until completely locked. *(Note: Running TIG on DCEP will instantly melt your tungsten electrode and ruin the weld puddle).*
3. **Shielding Gas Connection:** The TIG torch gas hose must be connected directly to your Argon gas regulator on the cylinder. Calibrate the flow rate to **12–15 CFH** (Cubic Feet per Hour) of 100% Pure Argon.

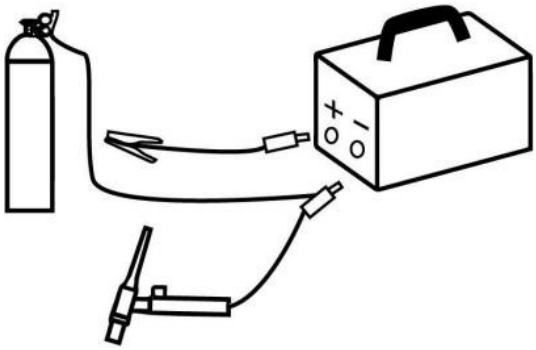
MIG & TIG Torch Exploded Diagram

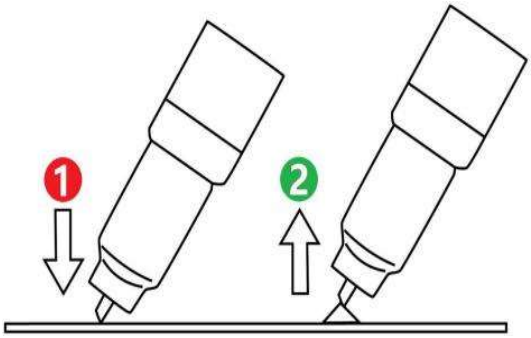


4. -TIG torch is not included in standard accessories
5. **Consumable Notice:** The torch nozzle (1) and contact tip (2) are considered consumables and have a finite service life. Regularly inspect them for spatter buildup or excessive wear, and replace them as needed to maintain optimal arc stability and welding performance.

Operation of LIFT TIG Function

1. **Installation:** Follow the installation instructions to connect the TIG torch and work clamp.
2. **Setup:** Connect the TIG torch to the negative (-) connector and the work clamp to the positive (+) connector (DCEN).
3. **Gas Connection:** Connect the gas hose to the argon gas regulator/flow meter (Refer to Section 2.3).
4. **Operation:** Select LIFT TIG mode on the control panel and adjust the amperage as required.
5. **Arc Initiation:** Touch the tungsten electrode to the workpiece, then lift it slightly to initiate the arc.





3.5 Spool Gun Welding (Aluminum Welding Setup)

This configuration is specifically engineered for welding aluminum using a dedicated Spool Gun to prevent soft aluminum wire from kinking.

1. **Power Off Safeguard:** Ensure the machine's primary power switch is turned **OFF**.
2. **Polarity Configuration (DCEP):**
    - Take the internal welding polarity changeover cable and insert it firmly into the **Positive (+) DINSE socket**. Twist clockwise to lock it.
    - Insert the quick-connector of the heavy-duty **Ground Work Clamp** cable into the **Negative (-) DINSE socket**. Twist clockwise to secure it.
3. **Control Signal Connection:** Plug the Spool Gun's multi-pin control aviation plug into the dedicated control socket on the lower-left front panel. Secure the retaining collar ring hand-tight.
4. **Shielding Gas Delivery:** Connect your gas hose to a 100% Pure Argon gas cylinder regulator. Calibrate the flow meter to **20–25 CFH** for stable aluminum arc defense.

Spool Gun Operation

Note: Spool gun is an optional accessory and is not included in the standard package.

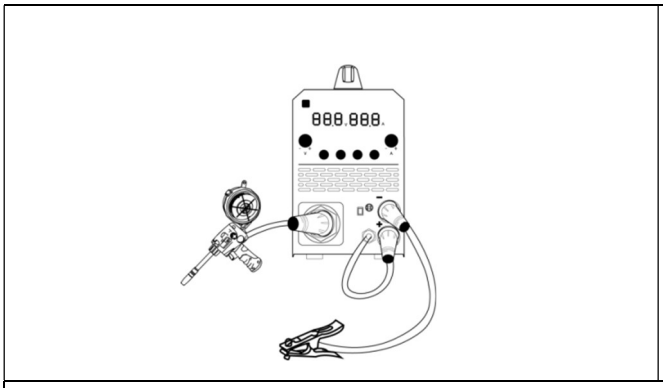
Overview: The Spool gun is designed specifically for aluminum welding. It features an integrated wire feeding mechanism, bypassing the machine's internal wire feeder.

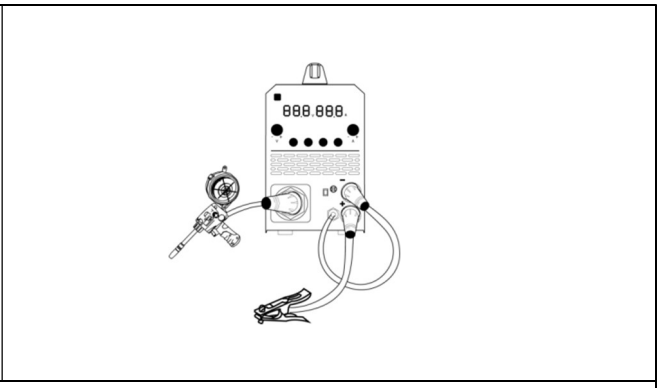
Setup & Operation:

1. **Connection:** Connect the Spool gun to the machine's MIG torch terminal and

connect the control plug to the designated port on the front panel.

2. **Polarity (DCEP):** For aluminum welding, set the welder to **DCEP (Direct Current Electrode Positive)** mode. Connect the Spool gun to the positive (+) connector and the work clamp to the negative (-) connector.
3. **Mode Selection:** Select "Spool Gun" mode on the front control panel. The machine will automatically disable the internal wire feeder when this mode is active.
4. **Welding:** Adjust the wire feed speed and amperage directly on the Spool gun or the front panel (depending on model) to suit your aluminum workpiece thickness.





Welding Process	Polarity	Cable Connection
MIG (Solid Wire)	DCEP	Torch to (+),Ground to (-)
Flux-Cored (Gasless)	DCEN	Torch to (-), Ground to (+)
STICK (MMA)	DCEP	Electrode Holder to (+), Ground to (-)
LIFT TIG	DCEN	TIG Torch to (-), Ground to (+)
Spool Gun (Aluminum)	DCEP	Spool Gun to (+), Ground to (-)

Aluminum Welding Guide

Note: Aluminum welding requires specific techniques due to its high thermal conductivity.

Preparation:

- **Surface Prep:** Clean the aluminum surface with a dedicated stainless steel brush to remove the oxide layer. Clean the wire with acetone if necessary.
- **Setup:** Ensure you have the correct contact tip and drive roller for aluminum wire. Use 100% Argon gas.
- **Polarity:** Set the welder to **DCEP** (Connect Spool Gun to positive, work clamp to negative).
- **Technique:** Use the "Push" technique (torch pointing in the direction of travel) for better weld bead control.

Aluminum Welding Precautions:

- **Heat Management:** Aluminum dissipates heat rapidly; start with a slightly higher current than you would for steel.
- **Gun Angle:** Maintain a consistent gun angle and travel speed. When the molten pool forms, move the gun forward steadily.

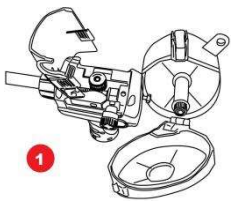
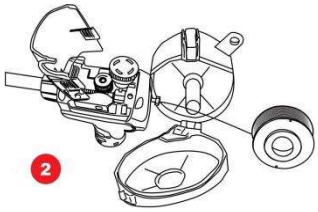
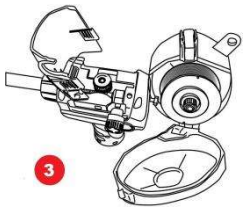
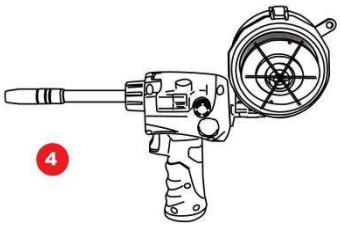
Welding Wires of Other Diameters

The machine's synergic system automatically matches optimal parameters for standard wire sizes. For non-standard diameters not listed on the panel, use the following guide:

Setup:

1. **Drive Roller:** Install the drive roller that matches your wire diameter and type (Knurled for flux-cored; V-groove for solid).
2. **Mode Selection:** Select the closest available diameter setting on the control panel.
3. **Fine-Tuning:** Use the **Voltage/Amperage adjustment knobs** to manually fine-tune the arc characteristics until you achieve a stable arc and optimal penetration.

MIG Spool Gun Installation.

			
1	Open the side panel, release the tension arm, and open the wire feed drive housing.		
2	Align the wire diameter with the corresponding drive roller groove.		
3	Mount the wire spool onto the spindle and secure it with the locking nut.		
4	Feed the wire into the guide tube, close the drive housing, and lock the tension arm.		

4. Wire Feeder Operation & Threading Guide

4.1 Drive Roller Selection & Guide

Before mounting the wire spool, you must select and align the correct drive roller groove based on your wire type and diameter:

- **Smooth V-Groove Roller (Included Accessory):** Specifically designed for hard **Solid Wires** used in Gas MIG operations (0.030" or 0.035").
- **Knurled / Serrated Roller (Pre-installed):** Specifically designed for soft **Flux-Cored Wires** used in Gasless MIG operations. The teeth prevent wire slippage without crushing the soft jacket.

Drive Roller Selection Guide

- *To ensure optimal arc stability and consistent wire feeding, select the appropriate drive roller based on your wire material and diameter.*

Drive Roller Type	Welding Wire Type	Wire Diameter (mm / in)	Compatible Material
V-Groove Roller	Solid Wire	0.8 / 0.030" – 1.0 / 0.040"	Carbon Steel, Stainless Steel
Knurled-Groove Roller	Flux-Cored Wire	0.8 / 0.030" – 1.0 / 0.040"	Carbon Steel (Gasless)
U-Groove Roller	Aluminum Wire	1.0 / 0.040" – 1.2 / 0.047"	Aluminum Alloys

4.2 Wire Spool & Feeder Installation

1. **Mounting the Spool:** Open the side wire-feeder compartment door. Remove the retaining nut and tension spring from the spool shaft hub. Mount your wire spool (compatible with both 2 lbs / 4” or 11 lbs / 8” spools) onto the hub, ensuring the alignment pin engages correctly. Re-secure the spring and retaining nut hand-tight.
2. **Releasing Drive Tension:** Disengage the pressure arm by flipping down the tension adjustment knob assembly. Lift up the upper pressure arm idler roller.
3. **Pre-Threading Preparation:** Pull out the lead of the welding wire from the spool carefully. **Do not let go of the wire, or it will unspool wildly.** Cut off the deformed, bent end of the wire using wire cutters to ensure a perfectly straight lead edge.
4. **Threading the Feeder Mech:** Manually slide the straight wire end through the inlet guide tube, over the selected drive roller groove, and into the outlet guide liner toward the central euro-connector block.
5. **Engaging the Drive Mechanism:** Lower the upper pressure arm. Flip the tension adjustment knob assembly back into its vertical position. Tighten the tension knob moderately.
6. **Feeding Wire to the Torch:** Straighten the MIG torch cable layout completely on the floor. Turn the welder's power switch **ON**. Press and hold the trigger on the MIG torch to drive the wire through the internal cable liner until it protrudes approximately 1/4" past the copper contact tip. Turn the machine **OFF** and re-install the gas nozzle.



Wire Spool Installation Guide

The MIG-160PRO supports both 4" (1kg / 2lb) and 8" (5kg / 11lb) spools. Ensure correct installation based on your spool size.

Installation Steps:

1. **Prepare the Spool:** Place the spool onto the spindle. For 4" spools, ensure the adapter is correctly seated to maintain stability.
2. **Secure the Spool:** Fasten the spool in place with the provided washer, spring, and tension nut. Tighten the nut until there is slight tension—just enough to prevent the spool from unwinding freely (free-spooling) when you stop welding.
3. **Thread the Wire:** While holding the wire lead firmly with one hand to prevent it from springing out, use wire cutters to snip off the bent or crooked tip. Insert the straight wire lead into the **inlet guide tube** of the wire feeder.

Spool Compatibility Table:

- **Small Spool (4"):** Use for 1kg (2lb) capacity.
- **Large Spool (8"):** Use for 5kg (11lb) capacity.
- **Supported Diameters:** Compatible with 0.030" (0.8mm) and 0.035" (0.9mm) wire.

⚠ **CRITICAL NOTE:** Always ensure the wire feeds from the **bottom** of the spool into the feeder. Refer to the diagrams below to verify your installation matches the orientation.





Note: Specific installation steps and tension adjustment, please refer to Section 4.3

Welding Wire Installation Steps

Proper wire installation is critical for smooth, jam-free welding. Follow these steps to ensure your wire feeder is configured correctly.

Drive Roller Selection Guide: *Matching the drive roller groove to your wire type is essential to prevent slipping or crushing:*

- **V-Groove Roller (Smooth):** For Solid Wires (Carbon/Stainless Steel).
- **Knurled Roller (Teeth-edged):** For Flux-Cored Wires (Gasless). **CRITICAL:** Do not use V-groove rollers for flux-cored wire; it will cause slipping and erratic feeding.
- **U-Groove Roller (Smooth/Rounded):** For Soft Wires (Aluminum).

Step-by-Step Installation:

1. **Mount the Spool:** Align the spool hole with the alignment pin on the shaft. Secure it with the retaining nut. **Note:** Do not overtighten; slight drag is needed to prevent

free-spooling.

2. **Prep the Wire Lead:** Hold the wire firmly to prevent it from uncoiling. Snip off the first 1 inch of bent wire to ensure a perfectly straight lead edge.
3. **Thread the Feeder:** Release the pressure arm by flipping down the tension knob. Thread the wire through the rear guide tube, over the roller groove, and into the front guide socket by about 2 inches.
4. **Set Tension (The "Slip Test"):** Flip the pressure arm back to the locked position. To verify tension, block the wire at the torch nozzle with a piece of wood. Pull the trigger—the drive roller should slip slightly without bending the wire inside the cabinet. If the wire bunches up, the tension is too high (risk of "bird-nesting").

⚠ **PRO-TIP:** Always ensure the wire feeds from the **bottom** of the spool (as shown in the green checkmark illustration below) to maintain proper alignment with the feed path.

4.3 Wire Feeding & Tension Adjustment

1. Roller Selection: Ensure the drive roller groove size matches your welding wire diameter.

2. Threading the Wire: * Release the tension arm by rotating the drive tension knob downward.

- Pass the welding wire through the rear inlet guide tube and over the drive roller groove.
- Carefully guide the wire through the front outlet guide tube until it extends approximately 2–3 inches (50–75mm) beyond the torch tip.

3. Securing the System: Lower the tension arm and lock it by rotating the tension knob upward.

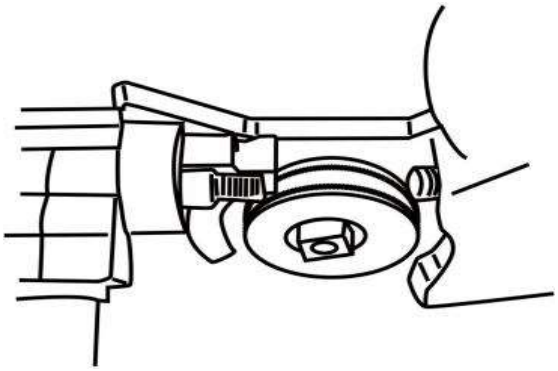
4. Adjusting Tension (The "Slip Test"): Adjust the tension knob to ensure smooth, consistent feeding. To test the tension, block the wire at the torch nozzle with a piece of wood and pull the trigger. The drive roller should slip slightly without bending the wire.

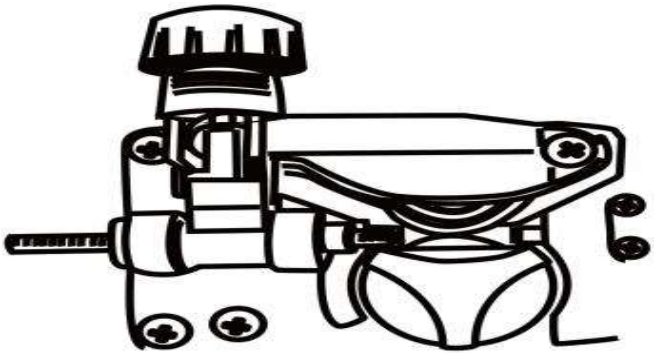
- ⚠ **CRITICAL:** Do not overtighten. Excessive pressure will deform the wire and cause a "bird’s nest" (a severe tangle of wire) inside the cabinet.

Roller Specifications:

- **External Diameter:** 30mm
- **Internal Diameter:** 10mm

- **Height:** 10mm





4.4 Operation & Setup Instructions

1. Wire Preparation: Before feeding, unscrew the nozzle and contact tip from the welding torch.

2. Power Up: Switch on the machine using the power button located on the rear panel.

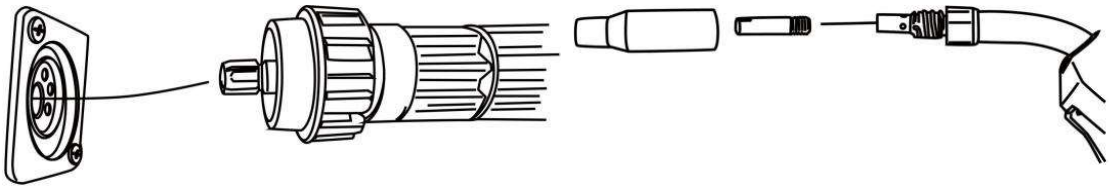
3. Process Selection: Press the [Process] button to toggle between MIG, Flux-Cored (Gasless), Stick (MMA), or Lift TIG modes. The indicator light will highlight your active selection.

4. Parameter Adjustment: Rotate the main amperage knob to set your desired current. The machine's intelligent synergic system will automatically match the optimal voltage for your wire diameter and material type.

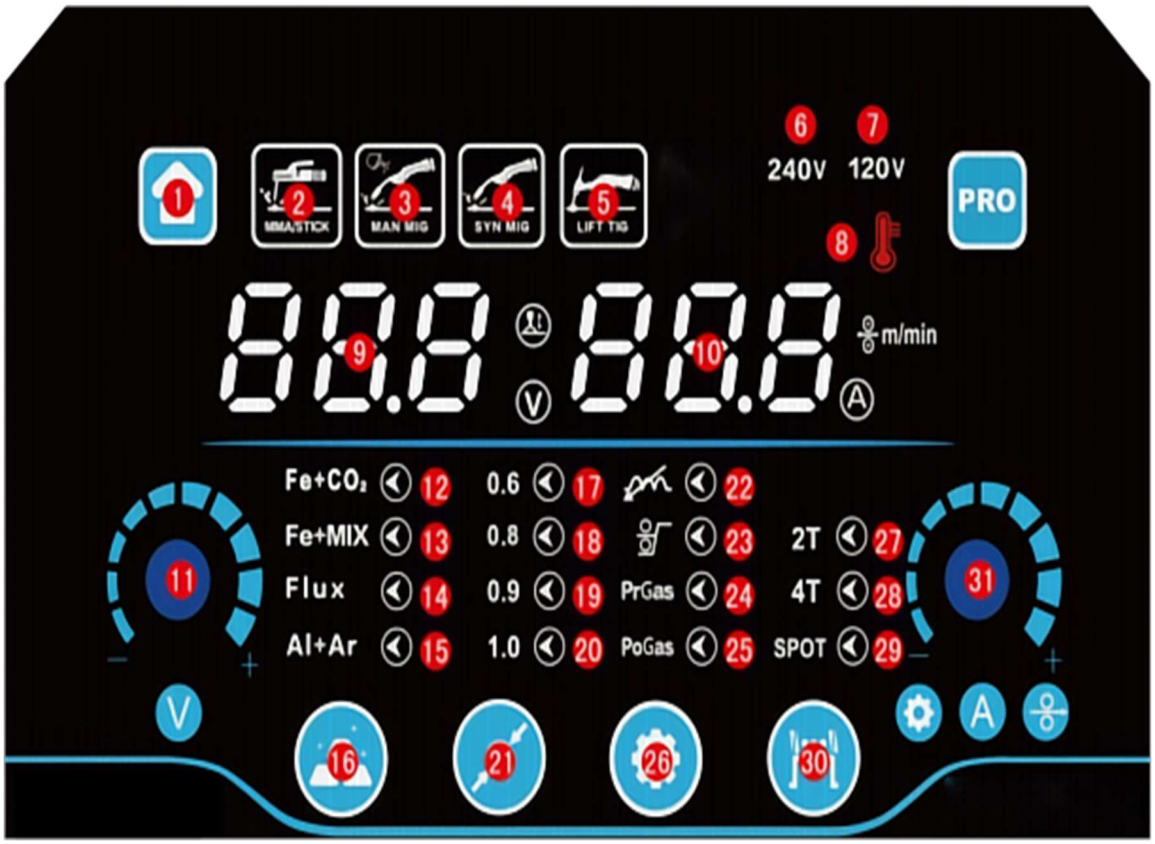
5. Fine-Tuning (Arc Control): Inductance is adjusted from the parameter menu — press the [Function] key to cycle to the Inductance item, then turn the [A] knob to set the level from -10 to +10:

- **Soft Arc (Low Inductance):** Smoother arc with less spatter; ideal for thin materials.
- **Hard Arc (High Inductance):** More concentrated arc with deeper penetration; ideal for thicker materials or vertical welding.

5. **Finalizing:** Once the wire feeds through the torch, reinstall the contact tip and nozzle. You are now ready to weld.



5. Control Panel Operations & Digital Interface



1	Function selection button: Cycles through [2], [3], [4], and [5].
2	Stick (SMAW) mode indicator.
3	**Manual MIG mode**: Voltage and wire feed speed are adjusted independently. Recommended for experienced users.
4	**Synergic MIG mode**: Intelligent automatic parameter matching. Recommended for beginners.
5	Lift TIG mode indicator.
6	220V Input Indicator (lights up when the machine is running on 220V).
7	110V Input Indicator (lights up when the machine is running on 110V household power).
8	**Error/Protection indicator**: Displays "Err 1" for Overheat (resets after cooling) or "Err 2" for system fault (contact support)
9	Voltage display.
10	Amperage/Wire Feed Speed display. Display scale up to 250A (shared series scale); actual max output 160A. On 110V household power, available output is limited by the wall circuit (see Section 2.2).
•	Temperature icon (°C): lights up between the two displays when the internal overheating protection is active.
11	Voltage/Amperage adjustment knob.

12	MIG CO2 mode: For 100% CO2 shielding gas and solid wire.
13	MIG MIX mode: For mixed gas (Argon/CO2) and solid wire.
14	Flux-Cored mode: Designed for use with Knurled Roller.
15	Aluminum mode: Optimized for aluminum alloys; spool gun recommended.
16	Material selection button: Cycles through [12], [13], [14], and [15].
17	Welding wire diameter selection: 0.6mm.
18	Welding wire diameter selection: 0.8mm.
19	Welding wire diameter selection: 0.9mm.
20	Welding wire diameter selection: 1.0mm.
21	Wire diameter selection button: Cycles through [17], [18], [19], and [20].
22	Inductance adjustment: Adjusts soft or hard arc characteristics for all MIG modes.
23	Arc start speed: Adjusts the initial wire feed speed for a smoother start.
24	Pre-flow time: Adjusts gas flow duration before arc initiation.
25	Post-flow time: Adjusts gas flow duration after welding to protect the weld bead.
26	Function selection button: Cycles through [22], [23], [24], and [25].
27	2T mode: Standard trigger control (Press to weld, release to stop).
28	4T mode: Latch trigger control (Press to start, press again to stop).
29	Spot welding: Precise timer-controlled spot welding mode.
30	Trigger mode selection button: Cycles through [27], [28], and [29].
31	Current/Wire feed speed adjustment knob.
32	PRO Series Badge: identifies this unit as the MIG160 PRO model. It is a printed marking only — not a button.

5.1 Interface Layout & Button Descriptions

The MIG-160PRO features a premium, full-color high-definition dual digital interface. Understanding the control cluster ensures rapid setup and precise multi-metal adaptation.

1. **Welding Process Selector Button (Function):** Press this tactile button repeatedly to toggle through the 6 available welding modes indicated on the display screen: **Gas MIG, Gasless MIG (Flux-Cored), Lift TIG, Stick (MMA), Spot Welding, and Spool Gun Mode**.
2. **Gas Type Selector Button:** Active during MIG processes. Allows the operator to instantly switch between shielding gas parameters: **100% CO2, 75% Argon / 25% CO2 Mix, or Gasless (Flux-Cored)**. The internal microprocessor automatically recalibrates the synergic arc curves based on your selection.
3. **Wire Diameter Selector Button:** Press to select the wire gauge currently loaded in your feeder box. Four sizes are supported: **0.023" (0.6mm), 0.030" (0.8mm), 0.035" (0.9mm) and 0.039" (1.0mm)**.
4. **Primary Parameter Adjustment Knob (Left):** * **In Synergic MIG/Gasless MIG Modes:** Turning this knob adjusts the target welding **Amperage (Current)**. The smart software will automatically match and synchronize the optimal wire feed

speed and reference voltage simultaneously.
    - **In Stick (MMA) & Lift TIG Modes:** Directly controls the precise output welding current (Amperage) from 30A to 160A.
5. **Voltage Adjustment Knob (Left, marked "V") / Amperage Knob (Right, marked "A"):**
    - **Left knob (V) — Voltage Micro-Adjustment:** Allows professional fabricators to micro-adjust the pre-set synergic voltage by **-5.0V to +5.0V** to customize heat input according to specialized joint profiles or individual speed preferences.
    - **Inductance Control (menu item — not a physical knob):** Press the [Function] key to cycle to the Inductance item, then turn the [A] knob to select a value from -10 to +10.
        - **Higher Inductance:** Delivers a softer, wider arc puddle with **virtually zero spatter** and fluid wetting action (perfect for high-aesthetic flat steel plates).
        - **Lower Inductance:** Delivers a crisper, deeper-penetrating arc with a fast-freezing weld puddle (ideal for out-of-position or vertical-up welding environments).

For Synergic MIG Mode:

This MIG160 PRO has a maximum rated output of 160A DC. We use a unified modular UI platform across our complete welder lineup (160A / 200A / 250A models), so the LCD interface adopts a full 250A reference scale. Readings shown in synergic mode are preset reference parameters mapped to this 250A UI scale, not instantaneous real arc current. Actual welding output will never exceed the rated 160A and varies based on wire type, arc length, grounding setup and operating conditions. MMA stick welding mode displays real working current within the rated capacity.

5.2 Advanced Synergic Micro-Adjustments

In addition to automatic synergic matching, the MIG-160PRO allows professional fabricators to fine-tune specific arc parameters for specialized fabrication tasks.

1. Inductance Control (Dynamic Spatter Control)

- **Function:** Adjusts the arc hardness and puddle fluidity.
- **Adjustment Range:** -10 to +10.
- **Professional Tip:** Increase the inductance setting for a softer, wider arc puddle with minimal spatter—ideal for high-aesthetic flat steel fabrication. Decrease for a crisper, deeper-penetrating arc—essential for vertical or out-of-position welding.

2. Burn-Back Control (Wire Tip Length)

- **Function:** Controls the duration of power applied after the trigger is released to ensure the wire tip does not fuse to the contact tip or the weld puddle.
- **Professional Tip:** If you notice the wire is "stubbing" into the workpiece upon arc termination, slightly increase the Burn-Back setting. If the wire is burning back too far into the gas nozzle, decrease the setting.

3. Spot Welding Timer

- **Function:** Sets the precise duration for a single spot weld cycle (0.1s – 5.0s).

- **Application:** Ideal for consistent, repetitive tack welds or sheet metal assembly where high-precision heat control is required to prevent burn-through.

4. Pre-Flow & Post-Flow Gas (Smart-Automated)

- **Pre-Flow:** Automatically purges the torch line for 0.3s before arc initiation to ensure a clean gas environment.
- **Post-Flow:** Automatically maintains gas shielding for 1.0s after arc termination, protecting the cooling weld puddle from atmospheric oxidation and extending contact tip/nozzle service life.

⚠ **NOTE:** > *These advanced micro-adjustments are designed for professional fine-tuning. If you are a beginner, we recommend maintaining default settings until you become comfortable with the arc characteristics of your specific welding wire and metal thickness.*

6. Welding Techniques & Material Thickness Chart

Appendix — Welding Parameter List (for reference)

The values listed in the following table are the general specification values under standard condition

"These values are for reference only. Actual welding parameters may vary based on material type, shielding gas composition, and operator technique. Test on scrap material before final welding."

6.1 Optimal Welding Parameters (Reference Chart)

		Plate thickness（mm）	Wire diameter (mm)	Gap (mm)	Current（A）	Voltage（V）	Welding speed (cm/min)	Wire extension (mm)	Gas flow rate (CFH)
Square butt welding	Low welding speed	0.8	0.8,0.9	0	60～70	16～16.5	50～60	10	20
		1.0	0.8,0.9	0	75～85	17～17.5	50～60	10	20～30
		1.2	0.8,0.9	0	80～90	16～16.5	50～60	10	20～30
		1.6	0.8,0.9	0	95～105	17～18	45～50	10	20～30
		2.0	1.0	0～0.5	110～120	18～19	45～50	10	20～30
		2.3	1.0	0.5～1.0	120～130	19～19.5	45～50	10	20～30
		3.2	1.0	1.0～1.2	140～150	20～21	45～50	10～15	20～30
		4.5	1.0	1.0～1.2	160～180	22～23	45～50	15	30

High welding speed	0.8	0.8,0.9	0	100	17	130	10	30
	1.0	0.8,0.9	0	110	17．5	130	10	30
	1.2	0.8,0.9	0	120	18．5	130	10	30
	1.6	1.0	0	160	19．5	130	10	30

	Plate thickness (mm)	Wire diameter (mm)	Current (A)	Voltage (V)	Welding speed (cm/min)	Wire extension (mm)	Gas flow rate (CFH)
Fillet Welding	1.6	0.8,0.9	60～80	16～17	40～50	10	20
	2.3	0.8,0.9	80～100	19～20	40～55	10	20～30
	3.2	1.0	120～160	20～22	35～45	10～15	20～30
	4.5	1.0	150～180	21～23	30～40	10～15	40～50

6.2 Professional Welding Tips (Technique & Angle)

		Plate (mm)	Wire (mm)	Torch Angle (°)	Current (A)	Voltage (V)	Speed (cm/min)	Ext. (mm)	Gas flow rate (CFH)
T-Joint Welding	Low welding speed	1.0	0.8,0.9	45	70～80	17～18	50～60	10	20～30
		1.2	0.9,1.0	45	85～90	18～19	50～60	10	20～30
		1.6	1.0	45	100～110	19～20	50～60	10	20～30
		2	1.0	45	115～125	19～20	50～60	10	20～30
		2.3	1.0	45	130～140	20～21	50～60	10	20～30
		3.2	1.0	45	150～170	21～22	45～50	15	30～40
		4.5	1.0	45	140～200	22～24	45～50	15	30～40
	High welding	1.0	0.8,0.9	45	140	19～20	160	10	30
		1.2	0.8,0.9	45	130～150	19～20	120	10	30
		1.6	1.0	45	180	22～23	120	10	30～40

Horizontal fillet welding	Low welding speed	0.8	0.8,0.9	10	60～70	16～17	40～45	10	20～30
		1.2	0.8,0.9	30	80～90	18～19	45～50	10	20～30
		1.6	0.8,0.9	30	90～100	19～20	45～50	10	20～30
		2.3	0.8,0.9	47	100～130	20～21	45～50	10	20～30
			1.0	47	120～150	20～21	45～50	10	20～30
		3.2	1.0	47	150～160	20～22	35～45	10～15	40～50

7. Daily Maintenance and Care

Note: Regular maintenance ensures optimal performance and extends the lifespan of your welder. Always disconnect the machine from the power source before performing maintenance.

7.1 Maintenance Guidelines:

- **Dust Removal:** Regularly clean the machine with dry, compressed air. In dusty or high-smoke environments, perform this cleaning at least once a month. Keep air pressure low to avoid damaging sensitive internal components.
- **Connections:** Periodically inspect all electrical connections, plugs, and sockets. Ensure they are secure and free of oxidation. If oxidation is present, gently clean the terminals before reconnecting.
- **Moisture Prevention:** Keep the machine dry and away from moisture. If the machine becomes wet, allow it to dry completely before use.
- **Storage:** If the machine will not be used for an extended period, store it in its original packaging in a clean, dry, and well-ventilated area.

7.2 Professional Maintenance (Authorized Service Only):

- **Internal Service:** Any internal components, such as wire feeder motor, commutators, or gear mechanisms, should only be serviced by authorized technicians. Attempting to disassemble these components may void your warranty.

7.3 Periodic Inspection (Professional Only)

Note: The following checks should be performed by an authorized technician or experienced user.

Component	Inspection Focus
Power Supply	Inspect power cord for damage/fraying; ensure all connections are secure.
Cooling Fan	Verify fan operation and clear any dust or debris obstructing airflow.
Welding Torch	Inspect nozzle for spatter buildup and contact tip for wear; replace if necessary.
Wire Liner	Ensure the liner is not kinked or clogged; replace if wire feed is inconsistent.
Cables	Periodically check all output/ground cable insulation for cracks or exposed wires.

8 Troubleshooting: "First Aid" for Your Welder

If your MIG-160PRO stops working, don't panic. Most issues can be resolved in under 2 minutes by following these simple steps.

⚠ Critical Error Codes (What to do immediately)

If the digital display shows an "Err" code, follow these steps to reset the system safely:

Fault codes	Description	Potential Cause	Recommended Action
Err 1	Overheat protection.	Machine duty cycle exceeded.	Allow the machine to cool down; fan will continue to run.
Err 2	Under-Voltage Protection	Input voltage is unstable or too low.	1.Plug the welder directly into a wall outlet on a **20A circuit (110V household power), keep continuous output below 80A, and** do not share the circuit with heaters, compressors or air conditioners. 2.Remove any extension cord or power strip, or upgrade to a 12AWG (or thicker) cord shorter than 25 ft. 3.Try another outlet / reset the breaker.

Quick Fixes (Common "No-Arc" Issues)

If you pull the trigger and nothing happens, check these three common "culprits" first:

- **Check the Ground Clamp: It must be attached to clean, bare metal—not rust or paint.**
- **Check the Polarity: Ensure your cable connections match the process (MIG/DCEP or Flux-Cored/DCEN) as shown on the front panel label.**
- **Check the Wire Feed: If the wire is "stubbing" or not feeding, ensure the drive roller groove matches your wire diameter and the tension knob isn't too tight**

8.1Common Troubleshooting Guide

Note: Before performing internal maintenance, ensure the machine is disconnected from the power source.

Issue	Potential Cause	Recommended Solution
Machine won't power on (Display off, fan not rotating)	Power supply interruption or switch issue.	Ensure the power switch is ON and the power cord is securely plugged into a stable outlet.

Machine powered on, but no welding output	Poor connection or trigger fault.	Check if the ground clamp is securely attached to the workpiece; inspect the torch trigger and cable for any damage or loose connections.
Display lights up but no wire feeds when the trigger is pulled	Wire feed motor plug loose or disconnected; trigger switch fault; control board issue	Re-seat the feed motor plug inside the machine and test again; check the trigger; if unresolved, contact our product technicians
Abnormal indicator light on (Overheat or Over-current)	Machine duty cycle exceeded or abnormal voltage.	Stop welding; allow the machine to idle and cool down. If the issue persists, power off and restart the unit.

8.2 Welding Quality Troubleshooting

Abnormal Condition	Potential Cause	Recommended Action
No Arc Starting	Poor ground or no power.	Check ground clamp connection and power source.
No Gas Flow	Blocked hose or empty cylinder.	Inspect gas hose for kinks; verify gas pressure/supply.
Unstable Arc	Improper settings or wire feed.	Adjust voltage/wire feed speed; check contact tip.
Wire Sticking	Low voltage or feed speed too high.	Increase voltage or decrease wire feed speed.
Wire feed stuttering or inconsistent feeding	Tension knob set too low; clogged liner; tangled wire spool; drive roll groove not matched to wire size	Start tension at mid-scale and increase gradually; clean or replace the liner; re-seat the wire spool; match the drive roll groove to the wire diameter
Excessive spatter	Inductance set too high; shielding gas flow outside the proper range	Adjust the inductance toward minus (-) to soften the arc; keep gas flow at 20-30 CFH and check for leaks
Burn-back (wire fuses to the contact tip)	Post-flow time set improperly; trigger released at the wrong moment	Adjust post-flow time in the menu; release the trigger at the end of the weld
Porosity (Blowholes)	Lack of shielding gas.	Ensure gas flow is sufficient and no wind interference.

8.3 Symbol Definition:

Symbol	Safety Warnings
	**Electric Shock:** Touching live electrical parts may cause fatal electric shock or burns.
	**Fumes & Gases:** Welding fumes are hazardous. Ensure adequate ventilation to avoid suffocation.
	**Fire Hazard:** Sparks and hot metal can cause fires. Never weld near flammable substances or sealed containers to prevent explosion or rupture. Ensure all connections are secure to prevent heat buildup.
	**Arc/Spatter:** Arc light can cause severe eye irritation and skin burns. Always use proper protective gear.
	**Gas Cylinders:** Handle gas cylinders with care; improper use of high-pressure gas can lead to serious accidents.
	**Moving Parts:** Keep fingers, hair, and clothing away from cooling fans and other moving parts.
	**Wire Ejection:** Welding wire can eject from the torch and cause injury to eyes or skin.
	**Lifting Hazard:** Never stand beneath the machine while lifting to prevent injuries from falling equipment.

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radiofrequency energy and, if not installed and used in accordance with the operating instructions, may cause harmful interference to radio communications.

Operation of this device is subject to the following two conditions:

1. This device may not cause harmful interference;
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE: Normal arc welding operation may generate radiofrequency interference.

WARNING: Any changes or modifications to this welding machine not explicitly approved by the manufacturer will void your FCC operating authorization.

If this unit causes radio/TV interference, perform these corrective steps:

1. Reposition receiving antenna;
2. Increase separation distance between welder and receiver;
3. Plug welder into a separate wall circuit;
4. Consult a professional RF technician.

Manufacturer: Shenzhen Changming Deng Welding Intelligent Technology Co., Ltd.

U.S. Authorized Representative / FCC Responsible Party: MEGELA INC. (Attn: Edward Adam)-
U.S. Address: 9435 Waterstone Blvd STE 140, Cincinnati, OH 45249, USA
U.S. Tel: +1 905-231-0955

Test Report No.: SZZJ2026020101E

IMPORTANT USAGE LIMITATION

This equipment is designed for home DIY, light-fabrication and **educational/training use**. It is not intended for continuous production-line operation. Continuous commercial production use is not covered under the limited warranty.

Appendix: Auto-Darkening Welding Helmet User Guide (Free Bonus)

Your MIG160PRO package includes an auto-darkening welding helmet (Model AT172). This appendix explains its specifications, operation, adjustment, and maintenance.

A.1 Technical Specifications

Parameter	Value
Optical Class	1/1/1/2
Viewing Area	93 mm x 43 mm
Switching Time (Light to Dark)	0.1 ms (1/10,000 s)
Light State Shade	DIN4
Dark State Shade	DIN9 - DIN13 (adjustable)
UV/IR Protection	Shade DIN16 (full-time, in both light and dark states)
Power ON/OFF	Automatic
Power Supply	Solar-assisted, replaceable CR2032 lithium coin cell (210 mAH)
Low Battery Indicator	LED indication
Sensors	2 pcs
Operating Temperature	-5 C to +55 C
Storage Temperature	-20 C to +70 C

A.2 Instructions for Use

1. Self-check: Press the "Self-check" button lightly and observe that the darkening shield turns from bright to dark - this indicates the equipment functions normally. If there is no change, the battery may need to be replaced.

2. Selection of shade number: Depending on the welding process, select the appropriate shade number (DIN9-13) based on the distance between the welding mask and the workpiece to be welded. For grinding, adjust the shade knob to the off state or switch the selector to GRIND (if equipped).

3. Sensitivity selection: Match the sensitivity to the intensity of the arc light. High sensitivity is suitable when the current is small and the arc light is weak. Low sensitivity is suitable when the arc light is strong, there is strong ambient light on site, or the distance between the mask and the weld is very small.

4. Delay selection: Long delay is suitable when welding is performed with great current; short delay is suitable when spot (tack) welding is performed.

A.3 Headband Adjustment

1. Adjusting headband size: Rotate the handle on the headband. Rotating the handle clockwise tightens the headband, while rotating it counterclockwise loosens the headband. Adjust the headband size so it is comfortable and will not fall, thereby ensuring safety.

2. Adjusting headband depth: Adjust the strainer on the top of the headband to different positions to change the depth of the headband. This adjusts the wearing comfort and the relative position between your eyes and the darkening shield to ensure the best performance.

A.4 Battery Replacement & Care

Replace the battery when the low-battery LED indicator lights up, or when the shield fails to

darken during the self-check. Use a CR2032 lithium coin cell. To prolong battery life, store the helmet in a non-light environment (box or cabinet, etc.) when it is not in use.

WARNING - INGESTION HAZARD: This product contains a button cell or coin battery. Keep coin cell batteries away from children. Swallowing or insertion of a coin battery can cause severe internal burns and death within 2 hours.

- Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.
- Even used batteries may cause severe injury or death.
- Call a local poison control center for treatment information.
- Compatible battery type: CR2032 lithium coin cell. Nominal battery voltage: 3V.
- Non-rechargeable batteries are not to be recharged.
- Do not force discharge, recharge, disassemble, heat above 70 C (158 F) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.

Battery handling (replaceable battery)

- Ensure the batteries are installed correctly according to polarity (+ and -).
- Do not mix old and new batteries, different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.
- Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations.
- Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.

A.5 Fault-Finding Guide

When a fault occurs, the protection ability will decrease. Stop using the helmet immediately and check according to the table below.

Fault	Probable Cause	Action
Red indicator lights	Low battery voltage	Replace the battery
Pressing the self-test button fails to darken	1. Low battery voltage; 2. Working environment too dark	1. Replace the battery; 2. Increase the brightness of the working environment
Automatic darkening failure	1. In Grind mode; 2. Low battery voltage; 3. Working environment too dark	1. Switch to automatic darkening mode; 2. Replace the battery; 3. Increase the brightness of the working environment

9. Warranty Policy

We take great pride in the quality and craftsmanship of our products. This product is warranted against defects in materials and workmanship for a period of 12 months from the date of original purchase. If a defect covered by this warranty occurs, we will, at our discretion, repair or replace the product at no additional charge. In addition, technical support is available for the lifetime of the product.

Warranty Exclusion

Malfunction, component damage or equipment failure caused by **continuous production-line overload** operation shall not be covered under the 12-month limited warranty. This product is engineered for **home DIY, light-fabrication and educational/training welding tasks**.

Warranty Exclusions: This warranty does not cover defects or damage resulting from:

- Use of the product for **continuous production-line operation**.
- Operation with incorrect voltage or improper power supply.
- Use of unauthorized accessories or consumables.
- Failure to follow operating instructions or improper installation.
- Accidental damage, misuse, neglect, or unauthorized repairs.
- Normal wear and tear.

Customer Support: Thank you for choosing **Shimmerwelden**. We value your welding experience and are committed to continuous engineering optimization and dedicated customer care.

If you encounter any operational issues, setup confusion, or shipping damages, **please do not return the product to the store**. Contact our specialized product technicians directly for assistance.