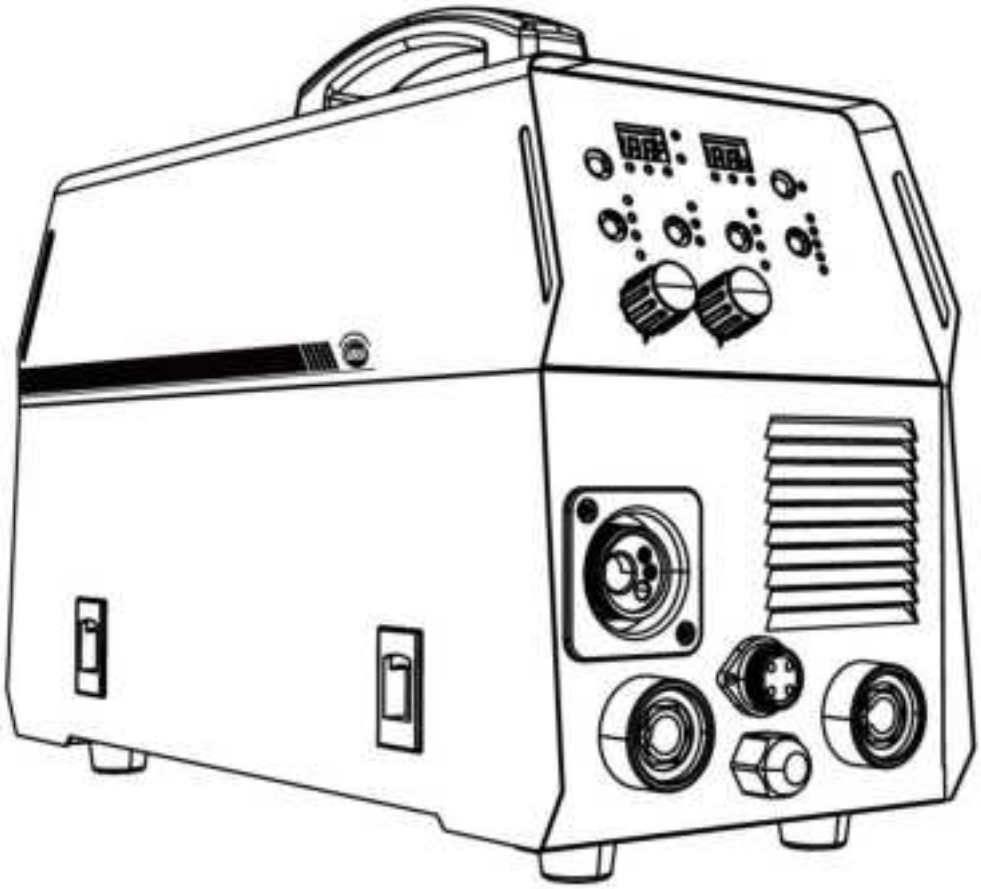
ARCCAPTAIN®

Inverter Welding Machine

MIG200 Fit



User Manual

www.arccaptain.com

Dear Valued Customer,

Thank you for going with ARCCAPTAIN! We're all about making welders superior for you. ARCCAPTAIN was built by high quality components, every single unit machine was passed multiple industry leading laboratory tests to provide a great welding experience and performance.

Two-year warranty service is provide to yours! When unpacking, make sure that the product is intact and undamaged. DO NOT return directly before contact our customer service.

Six ways to connect us and join in ARCCAPTAIN Community:

Email: service@arccaptain.com

Online: www.arccaptain.com/pages/contact-us

Facebook: arccaptainwelder

Instagram: arccaptain_welder

Youtube: arccaptain-weld

Whatsapp: +19892449456

This manual is designed to help you get the most out of your ARCCAPTAIN products. Please save this manual and take time to read the safety warnings and precautions, assembly, operating, inspection, maintenance. They will help you protect yourself against potential hazards on the worksite. Failure to do so can result in serious injury!

Save for future reference:

Product：	
Date Purchased:	
Serial Number:	
Product Feedback:	

CONTENTS

1.SAFETY

⚠ WARINING READ ALL SAFETY WARNINGS BEFORE WORKING!

Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. Save all warnings and instructions for future reference!

If you encounter any issues during installation or operation, refer to the relevant sections in this manual for inspection. If you're still unsure or unable to resolve the problem, please contact ARCCAPTAIN professional support.

1.1 General Safety

- **Do NOT use the welder if the switch does not turn it on and off.**
- **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the welder.**
- **Ensure the switch is off before connecting to power or moving the welder to prevent accidental starting.**
- **Always maintain and use safety guards, covers, and devices properly.**
- **Keep hands, hair, clothing, and tools away from moving parts like V-belts, gears, and fans.**
- **Follow these instructions and consider working conditions when using the welder and accessories.**
- **This manual may not cover every possible situation. It's important for the operator to use common sense and caution while using this product.**

1.2 Electrical Safety

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

- **DO NOT weld in a damp area or come in contact with a moist or wet surface.**
- **DO NOT modify any wiring, ground connections, switches, or fuses in this welding equipment.**
- **DO NOT come into physical contact with any part of the welding current circuit, including the workpiece, ground clamp, electrode or welding wire, and metal parts on the electrode holder or MIG gun.**
- **DO NOT connect the ground clamp to electrical conduit, and DO NOT weld on electrical conduit.**
- **NEVER leave the Welder unattended while energized. Turn off the power if you have to leave.**
- **DO NOT attempt to plug the welder into the power source if the ground prong on INPUT POWER CABLE plug is bent over, broken off, or missing.**
- **DO NOT alter INPUT POWER CABLE or plug in any way.**
- **People with pacemakers should consult their physicians before use. Magnetic field can make cardiac pacemaker a bit wonky.**

⚠ WARINING REPLACING COMPONENTS CAN BE DANGEROUS!

- **Only experts should replace machine parts. Avoid dropping foreign objects into the machine during component replacement. Ensure correct wire connections after replacing PCBs to prevent property damage.**

1.3 Fire Safety

⚠ WARINING BEWARE OF FIRE HAZARD!

- **Place the machine on non-combustible surfaces to prevent fires.**
- **Ensure no flammable materials are near the working area to reduce fire risk.**
- **Avoid installing the machine near water sources to prevent water damage.**
- **Always weld/cut materials in a dry environment with humidity below 90% and maintain a working temperature between -10°C and 40°C.**
- **When welding/cutting outdoors, ensure shelter from sunlight and rain, keeping the machine dry at all times.**
- **Do not operate the machine in dusty or chemically corrosive environments.**
- **Remove or secure all combustible materials within a 35 feet (10 meters) radius of the work area. Use fire-resistant material to cover or seal open doorways, windows, cracks, and other openings.**
- **Improper use can lead to fire or explosion. Avoid flammable materials near the working area, keep a fire extinguisher nearby with trained personnel, refrain from cutting closed containers, and do not use the machine for pipe thawing.**

1.4 Fumes and Gases Safety

⚠ WARINING SMOKE CAN BE HARMFUL TO YOUR HEALTH!

- **Keep your head away from the smoke while cutting to avoid breathing in harmful gases.**
- **Ensure the working area is well-ventilated with exhaust or ventilation equipment during cutting.**
- **Only work in a confined area if it's well-ventilated, or wear an air-supplied respirator.**

1.5 Arc Rays and Noice Safety

⚠ WARINING

EXCESSIVE NOISE DOES GREAT HARM TO HEARING!

ARC RADIATION MAY HURT YOUR EYES AND BURN YOUR SKIN !

- **Arc radiation can harm eyes and skin; excessive noise can damage hearing.**
- **Use certified welding eye protection with at least a number 10 shade lens rating.**
- **Wear leather leggings and fire-resistant shoes or boots; avoid clothing that can catch sparks or molten metal. Do not touch hot workpiece with bare hands.**
- **Keep clothing free of flammable substances and wear dry, insulating gloves and protective clothing.**
- **Wear an approved head covering and use appropriate welding attire.**
- **When welding overhead or in confined spaces, use flame-resistant ear plugs or ear**

muffs.

- **Wear ear covers or other hearing protectors when cutting.**

1.6 Gas Shielded Welding – Cylinder Safety

⚠ WARINING CYLINDERS CAN EXPLODE WHEN DAMAGED!

- **Never weld on a pressurized or closed cylinder.**
- **Avoid letting the electrode holder, electrode, welding torch, or welding wire touch the cylinder.**
- **Keep cylinders away from all electrical circuits, including welding circuits.**
- **Always keep the protective cap on the valve except when the cylinder is in use.**
- **Use only the correct gas shielding equipment designed for your specific type of welding, and maintain it properly.**
- **Protect gas cylinders from heat, physical damage, slag, flames, sparks, and arcs.**
- **Always follow proper procedures when moving cylinders.**
- **Do not install the machine in an environment with explosive gas to avoid an explosion.**

1.7 Additional Safety Information

- **Use only the supplied power cord for this welder or an identical replacement cord. Do not install a thinner or longer cord on this Welder.**
- **Maintain labels and nameplates on the Welder. These carry important information.**
- **Ensure the ground clamp is securely connected to the workpiece during welding.**
- **Pressing the gun switch when welding or cutting.**
- **When disposing of the cutting machine, please note the following:**
  Burning electrolytic capacitors on the main circuit or PCB board may cause explosions. Burning plastic components such as the front panel may produce toxic gases. Dispose of it as industrial waste.

2. PRODUCT INSTRUCTION

2.1 Function Overview

This is MIG200 Fit, with advanced technology, perfect function and high performance. This ultra-portable welding system is suitable for various application needs.

- 6 in 1 Multi-functions: Gas MIG/Gasless MIG/MMA /TIG/Spot welding/Spool Gun are available.
- Synergic MIG: Automatic matching of the voltage & wire feeding speed by adjusting wire diameter, material.
- Separated MIG：Output voltage and wire feed speed adjustment，meet your welding requirement.
- Accurate Preset Parameter: 10 groups parameter can be set and storage for each welding mode.
- 2T/4T: Realize wide application, easy welding and continuous long-term welding.
- Hot Start: Make the arc ignition in MMA welding easier and more reliable.

- Arc Force: Obviously improve the performance of the machine contribute to long-distance welding.
- Anti-stick: Improve welding performance to prevent stickiness.
- VRD: Reduce the risk of electric shock to ensure operator's safety.
- Suitable for 2lb/10lb MIG wire.

2.2 Package

Name	Specification	Quantity (pcs)
Welding machine	MIG200 Fit	1
MIG welding torch	10ft	1
Torch accessories	Conduct tips	2
Ground clamp	10ft	1
Electrode holder	10ft	1
Gas hose	10ft	1
Adapter	220V to 110V	1
Operator's manual	For MIG200 Fit	1

2.3 Technical Parameters

Technical Parameter	Units	Model MIG200 Fit	
Rated input voltage	**V**	AC110V±15% 50/60HZ	AC220V±15% 50/60HZ
Rated input power	**KVA**	4.9	6.9
Rated input current	**A**	44.2	31.4
Welding current range (MMA)	**A**	20～140	20～200
Welding current range (TIG)	**A**	20～140	20～200
Welding voltage range (MIG)	**A**	30～140	30～200
	V	11～22	11～26
Rated duty cycle	**%**	60	60
Open circuit voltage	**V**	U_0: 64 U_r:15.5	
Overall efficiency	**%**	85	
Enclosure class	**IP**	21S	
Power factor	**COSφ**	0.72	
Insulation class		H	
Standard		ANSI/NEMA/IEC 60974-1	
Noise	**db**	＜70	

Dimension	inch	18.5 x14 x 7.9	
Weight	lb	21.6lb	
Applicable electrode/wire	inch	1/16”-1/8” 0.023”/0.030”/0.035”	1/16”-5/32”” 0.023”/0.030”/0.035”/0.040”

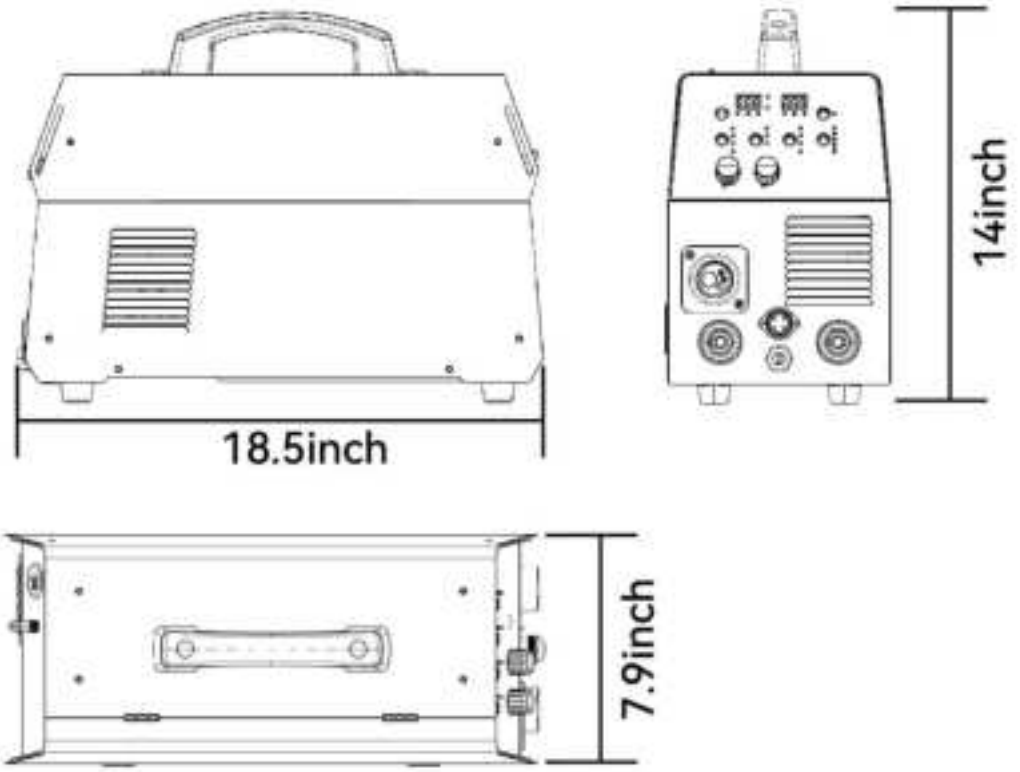
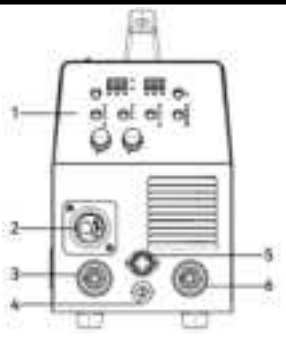
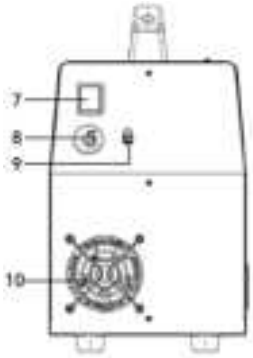


Figure 1 Size

3. OPERATION CONTROL AND INSTRUCTIONS

3.1 Panel Instruction

Part	Picture
1. Operating area **2. Euro connector for MIG torch** **3. "+" output terminal** **4. Polarity changeover plug** **5. Socket for Spool gun** **Hole 1: Spool gun** power source ”+” **Hole 2: Spool gun** power source ”-” **Hole 3~4:** Null **6. "-" output terminal**	 Figure 2  Figure 3 Socket for Spool gun

7. Power switch **8. Input power cable** **9. Gas inlet** **10. Cooling Fan**	 Figure 4

3.2 Multi-function Digital Operation Description

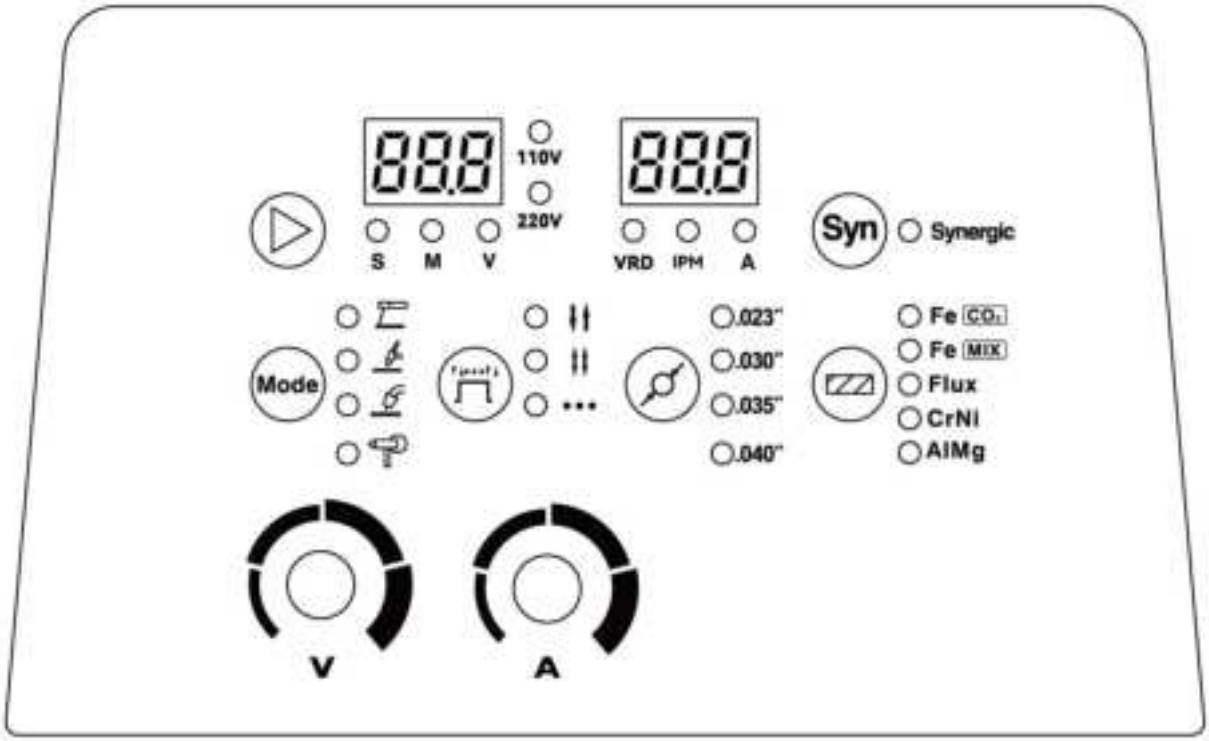
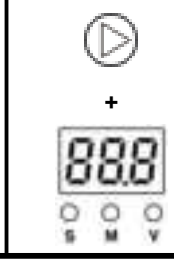


Figure 5 operation panel

- **Detailed description for operation panel functions：**

NO.	Picture	Description	Item	Function
1		**Parameter setting and display area for spot welding time, parameter group storage, voltage**		Parameter switch button
			S	Spot welding time LED
			M	Parameter group storage LED*
			V	Voltage parameter LED
				Parameter LED display

	110V 220V	**Input voltage**	110V	Input voltage is 110V
			220V	Input voltage is 220V
2	888 VRD IPM A	**VRD, feed speed and current**	VRD	VRD LED
			IPM	Wire feed speed LED
			A	Current parameter LED
			888	Parameter LED display
3	Syn + Synergic	**Synergic selection button**	Syn	Switch button for “synergic” and “separated” *
			Synergic	MIG “synergic”LED The LED is on when the machine is in “synergic”
4	Model +	**Welding process selection area**	Model	Welding process selection button
				MMA LED
				Lift TIG LED
				MIG LED
				MIG spool gun LED
5	Speed +	**MIG operation mode selection area**	Speed	MIG operation mode selection button
				2T LED
				4T LED
				Spot welding LED
6	+ .023" .030" .035" .040"	**MIG diameter selection area**		MIG diameter selection button
			.023"	Φ0.023 inch wire diameter LED
			.030"	Φ0.030 inch wire diameter LED
			.035"	Φ0.035 inch wire diameter LED
			.040"	Φ0.040 inch wire diameter LED
7	+ +	**MIG material selection area**		Material selection button
			Fe CO_2	Steel(carbon steel) + CO_2 100% +ER50S-6/ER70S-6
			Fe MIX	Steel(carbon steel) + Ar80% CO_2 20% +ER50S-6/ER70S-6

	○ Fe CO2 ○ Fe MIX ○ Flux ○ CrNi ○ AlMg		Flux	FCAW+gasless+E71T-GS
			CrNi	CrNi(stainless steel) + Ar98% CO_2 2% + ER308
			AlMg	AlMg(Aluminum-magnesium alloy) + Ar100% + ER5356
8		**Voltage and spot welding time adjustment knob**	V	Subtle adjustment on welding voltage in MIG “synergic”mode
			V	Welding voltage adjustment in MIG “separated”mode
			S	In MIG “spot welding”mode, press switch button and select “S” for spot welding time adjustment.
9		**Current and wire feed speed adjustment knob**	A	Welding current adjustment in MIG “synergic” mode
			IPM	Wire feed speed adjustment in MIG “separated” mode
			A	Welding current adjustment in MMA mode
			A	Welding current adjustment in TIG mode

***VRD switch**

Please refer to **9.Engineer Mode**

*** Parameter group**

“ **M** ”, function of parameter group storage and usage, is in support of ten parameter group storage“0~9” with one group covering all adjustable parameters on the machine panel, including welding mode and the related conditions and settings. Prior to any other parameters, the parameter group will automatically save the adjusted parameters(save after keeping the same parameters for 20S).The parameter group keeps the last used parameters when the machine is turned on again.No designated button for storage and no manual operation for parameter storage and usage.It is easy to use parameter group. Press the parameter switch button , turn on the parameter group “ **M** ” LED, and switch parameter groups by encoder “ **V** ” . Select the parameter group and work with the related parameters, and the group will automatically save the adjusted parameters.

*** MIG welding mode “Synergic” and “separated”**

There are two MIG/MAG welding mode, “synergic” and “separated”, for welding specification adjustment:

Synergic: Current and voltage settings vary with different welding wire, wire diameter and gas; and also at the same welding current, wire feed speed and synergic voltage may differ; the welder will auto-match preset current and welding voltage, and users can adjust the inductance to the standard position according to the process requirements.

In synergic mode, the welder panel will display preset current on the right LED and preset voltage on the left LED. The synergic parameter database will auto-match the voltage based on the preset current, with adjustment range of synergic voltage ±3.0V.

This MIG mode is suitable for unskilled welders

Separated: No relation between wire feed speed and voltage adjustment, and users need to set values separately.

This MIG model is suitable for skilled welders

- **Attention**

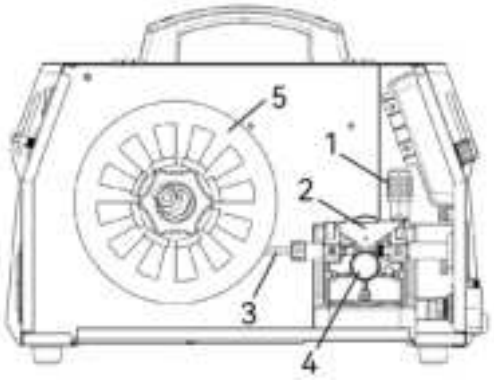
Attention! Please select welding functions according to welding requirements. During welding, choose proper welding process and parameters according to the technology requirements of workpiece. With improper welding process and parameters, there will be unstable arc, excessive spatter and wire and electrode sticking during welding.

Current display shows actual welding current, while voltage display shows actual welding voltage during welding. Below is display in standby:

Welding process	Voltage display	Current display
MMA	Open circuit voltage or VRD voltage（V）	Preset current value（A）
TIG	Open circuit voltage or VRD voltage（V）	Preset current value（A）
MIG	Preset voltage value（V）	Preset wire feed speed（m/min）

※During MIG welding, actual welding current is displayed when current knob is not rotated, preset wire feed speed is displayed when current knob is rotated.

3.3 Wire Feeding Description

Part name	Function	Picture
1. Feed Tensioner	Fixed the Idler Arm and adjusts the pressure on the wire	 Figure 6 Inside wire feeder
2.Idler Arm	Press down on the welding wire	
3. Wire Inlet Liner	Guide the welding wire into the wire feeder	
4. Feed Roller	V0.8-0.9 feed roller,Transfer welding wire	
5. Wire Spool	Fixed welding wire spool	

3.4 Nameplate

On the machine, there is a plate that includes all the operating specifications for your new unit. The serial number of the product is also found on this plate.

Figure 7 Nameplate

4. INSTALLATION AND CONNECTION

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

Check and follow the instructions listed in the "Safety" section of this manual.

⚠ WARINING DO NOT set up without SWITCH OFF !

4.1 Selecting the Welding Wire

This welder is compatible with **2lb** or **10lb** spools of 0.023", 0.030", 0.035", or 0.040" MIG wire. Using thicker wire will not improve welding performance on thicker materials, nor will it increase deposition rate. Additionally, it may strain your AC power source.

- **Matching table of relation between welding wire, diameter, shielding gas, material and wire feeding roll：**

In synergic mode, different welding wire, diameter, shielding gas, material and wire feeding roll have corresponding matching relationship as below table. Please select correct settings to achieve optimal

welding performance.

Item \ Function	Fe CO_2	Fe MIX	Flux	CrNi	AlMg
MATERIAL	STEEL	STEEL	FLUX CORED	STAINLESS	ALUMINIUM
WIRE TYPE	ER70S-6	ER70S-6	E71T-GS	ER308	ER5356
DRIVE ROLLER	V GROOVE	V GROOVE	KNURLED	V GROOVE	U GROOVE
POLARITY	DCEP	DCEP	DCEN	DCEP	DCEP
GAS TYPE	100%CO_2	20%CO_2+80%Ar	NO GAS	2%CO_2+98%Ar	100%Ar

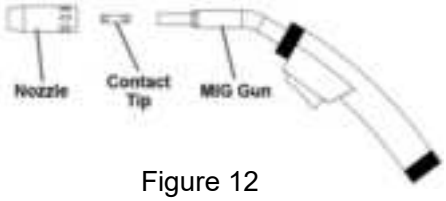
NOTE: Oxidized welding wire can affect welding results.

If you find rust on a wire spool, it's best to throw it away. But before you do, unwind a bit of wire to see if the rest is still good. If it's also rusty, get rid of the whole spool.

4.2 Checking the Torch Accessories

⚠ WARINING DO NOT set up without SWITCH OFF !

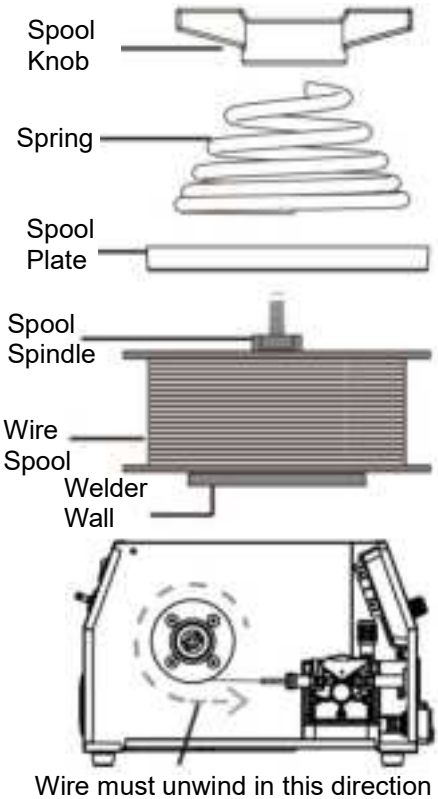
Before welding, verify that the contact tip size in your MIG torch matches your welding wire type. Do as following steps.

Description	Picture
1. Continuously rotate the nozzle clockwise, as if pulling it upwards. Since the nozzle is spring-loaded internally, some force is required to remove it. **NOTICE: ONLY TURN CLOCKWISE.**	 Figure 10
2.Use a wrench to turn the tip of the contact nozzle counterclockwise. While doing so, ensure to steady the torch with one hand. Removing the torch might be difficult if it's not stabilized.	 Figure 11
3.Checking the size number on the contact tip. The original machine is equipped with 0.035” type. If not confirmed with your welding wire, change it.	
4. Replace the nozzle in counterclockwise	 Figure 12

4.3 Installing the Welding Wire

NOTE: Turn machine power switch to the OFF position before working inside the wire feed enclosure. Make sure that the wire feed drive roll and the contact tip of the gun match the diameter and type of wire used.

NOTE: DO NOT unhook leading end of the wire! It will prevents scattering the entire coil of wire.

Description	Picture
1.Pull up on the Door Latch, then open the Door. Then you will see Wire Spool and wire feeder.	 Figure 13 Door latch
2. Start to install the wire: Turn **counterclockwise** to remove the spool knob.	 Figure 14
3.Remove the spool plate, then spool spindle will be exposed.	
4.Place the wire spool over the spool spindle. **NOTICE:** **To prevent wire feed problems, set the leading end of spool wire towards to wire inlet liner (refer to the picture), so that it will unwind counterclockwise.** **NOTICE:** **To prevent welding wire to unravel and unspool which can cause tangling and feeding problems, DO NOT release the wire before spool knob replace.**	
5.Replace the spool plate back on the spool spindle.	
6.Replace the spring and spool knob over the spool plate, then turn the spool knob clockwise to tighten. **NOTICE:** **If Wire Spool can spin freely, Knot is too loose. This will cause the welding wire to unravel and unspool which can cause tangling and feeding problems.**	

4.4 Wire Feeding Installation

⚠ WARINING DO NOT set up without SWITCH OFF !

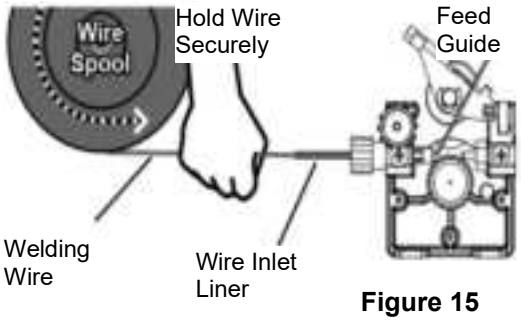
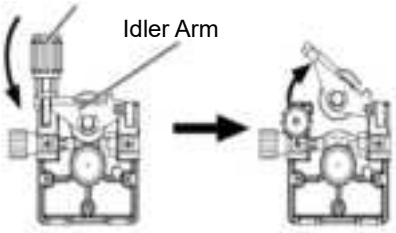
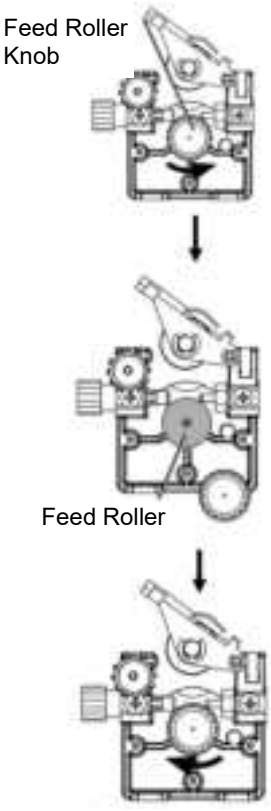


Figure 15

NOTE: MUST Securely hold onto the end of the welding wire and keep tension on it during the following steps. If this is not done, the welding wire will unravel and unspool which can cause tangling and feeding problems!

Description	Picture
1.Release **Feed Tensioner** and rotate the **Idler Arm** away from the **Feed Roller**. **NOTICE:** ***Feed Tensioner knob could be turn counterclockwise to loosen it. Then, pull it down to remove tension. The spring-loaded Idler Arm will move upwards as illustrated.**	Feed Tensioner Idler Arm  Figure 16
2.Feed roller instructions. Ensure that the visible, stenciled size on the drive roll side facing you matches the wire size being used. **NOTICE:** ***The original machine is equipped with a 0.035in knurled groove feed roller and a 0.035in flux core wire(ONLY for Flux cored wire).** ***If not match, need to change feed roller:** • Unscrew the Feed Roller Knob counterclockwise. • Remove the Feed Roller Knob to access the Feed Roller. • Flip or replace the Feed Roller as necessary. Ensure it matches the wire type and diameter indicated on the Spool.	Feed Roller Knob  Feed Roller Figure 17
3.Carefully detach the end of the wire from the spool. Maintain tension on the wire to prevent the	

spool from unwinding.

NOTICE: DO NOT release the wire

4.Trim all bent and crimped wire. Ensure the cut end is smooth without any burrs or sharp edges; re-cut if necessary.

5.Keep tension on the wire and guide at least 12 inches of wire through the **Wire Inlet Liner**, over the **Feed Roller**, and into the **gun liner**.

NOTICE: The spool will rotate in a counter-clockwise fashion.

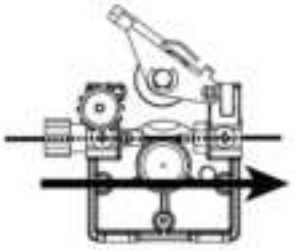


Figure 18

6.Close the **Idler Arm** and turn down the **Feed Tensioner** until the idle roller presses down firmly on the wire.

Now you may release the welding wire. Make sure the wire is positioned in the groove of the lower feed roller.

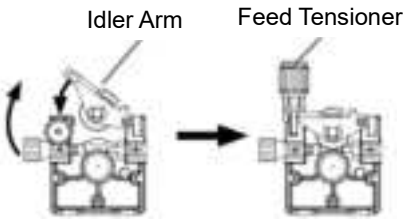


Figure 19

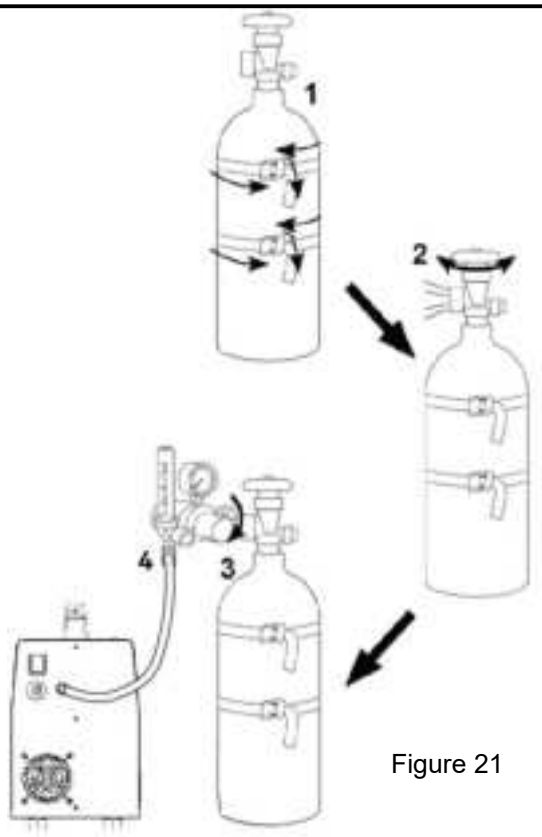
7.The **Feed Tensioner** on the **Idler Arm** adjusts the pressure on the wire .Adjust pressure by turning the **Feed Tensioner** to prevent spool overrun, but still allow smooth and easy wire feeding. Start with the pressure set to an intermediate value. Readjust, if necessary. If the drive roll slips while feeding wire, the pressure should be increased until the wire feeds properly.

5. Operation for MIG Welding

⚠ WARINING DO NOT set up without SWITCH OFF !

5.1 Connection

Description	Picture
1. Connect the ground clamp to “-” negative polarity **NOTICE:** • **The ground clamp connector MUST be tightly connected to the socket to avoid power short circuit.**	 Figure 20
2. Connect the polarity changeover plug to “+” Positive polarity **NOTICE:** **The polarity changeover plug MUST be tightly connected to the socket to avoid power short**	

circuit.	
3. Connect the welding gun to euro connector **NOTICE:** **The MIG gun connector MUST be tightly connected to the socket to avoid power short circuit or air leakage**	
1. With assistance, place an 100% CO2 cylinder (not included) onto a cabinet or cart near the Welder and secure the cylinder in place with two straps (not included) to prevent tipping.	 Figure 21
2. Remove the cylinder’s cap. Stand to the side of the valve opening, then open the valve briefly to blow dust and dirt from the valve opening. Close the cylinder valve.	
3. Locate the Regulator and close its valve until it is loose, then thread Regulator onto cylinder and wrench-tighten connection.	
4. Connector the gas hose to the Regulator’s Outlet and the welder’s Gas inlet connector. **NOTICE:** **The gas hose connector MUST be tightly connected to the socket to avoid air leakage.**	

5.2 Input Power Connection

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

NOTICE: The following steps require applying power to the Welder with the cover open.

To prevent serious injury from fire or electric shock:

1.DO NOT touch anything, especially not the ground clamp, with the gun or welding wire or an arc will be ignited.

2. DO NOT touch internal Welder Components while it is plugged in.

The MIG200 Fit operates with a **110V or 220V** power supply. Plug the Power Cord into a properly grounded. Set MIG Gun down on nonconductive, nonflammable surface away from any grounded objects. And then turn the Power Switch ON.

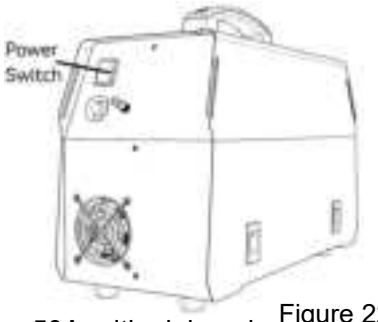


Figure 22

NOTE：

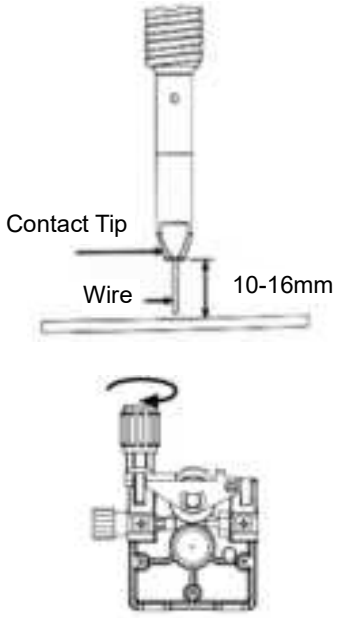
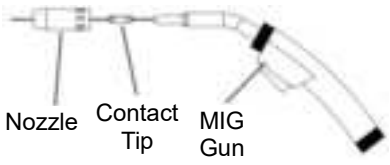
- For optimal performance, connect the MIG200 Fit to a 50A branch circuit. If connected to a circuit with lower capacity, expect reduced welding current and duty cycle. The circuit must be equipped over 50A with delayed action-type circuit breaker or fuses.
- Ensure the mains supply voltage remains within ±15% of the rated value (110V/110V). Low voltage can lead to subpar welding results, while excessively high voltage may cause components to overheat and potentially fail. Check whether the voltage value varies in acceptable range with a multi-meter.
- Code Requirements for Electrical Input Connections
- This welding machine must be connected to a power source in accordance with applicable electrical codes. The National Electrical Code provides standards for amperage handling capability of supply conductors based on duty cycle of the welding source.
- NOTICE: Do not remove the power cord ground prong.

If there is any other question about the installation meeting applicable electrical code requirements, consult a qualified electrician.

5.3 Wire Stick Out

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

Description	Picture
1.Set the Mode Switch to MIG setting.	
2. Inching In MIG mode, not during welding, press torch trigger for at least 3S, the welder will go in fast inching status, closing output port voltage and gas valve. Release torch trigger,the welder will stop inching.	

3. Press and hold the gun trigger to load the wire through the gun, until the wire feeds through the end of the Gun. **NOTE:** • Before feeding, Remove the nozzle and contact tip before feeding the wire to ensure smooth wire feeding. • If the wire does not feed properly and the Spool is stationary, turn OFF and unplug the Welder and slightly tighten the Feed Tensioner clockwise before retrying. • If the wire stops instead of bending, disconnect the Welder, tighten the Feed Tensioner slightly clockwise, and try again. If the wire bends due to feed pressure, the tension is set correctly. • Point the Gun away from all objects. • The welding wire should match the Feed Roller and contact tips.	 **Figure 23**
4.Turn off the machine after the wire stick out. Then install the nozzle and contact tip. **NOTE:** Cut the wire 3/8” to 5/8” from the end of the tip.	 **Figure 24**
5.Turn on the machine. The machine is now ready to weld.	
6.Close the Door Latch. Make sure. Door is securely latched.	

5.4 Operation

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

- Turn on the power switch of the machine, and the power indicator illuminates.
- Select proper working mode and proper function according your welding situation.
- Clamp the Ground clamp onto the workpiece, The Ground clamp must be securely connected to the workpiece.

Function with synergic	Part	Select
Select MIG	Mode	
Open SYN	Syn	Synergic

Select wire diameter		.023"/.030"/.035"/.040"
Select MIG material according to the workpiece and inlet gas, For details, see **3.2 Multi-function digital operation panel**		Fe CO_2 Fe MIX CrNi
Turn the knob to find the required current		
Select 2T / 4T / Spot		
If you select spot mode Please adjust the spot time		

Function with separated	Part	Select
Select MIG		
Close SYN	Synergic	/
Turn the knob to find the required voltage		
Turn the knob to find the required IPM		
Select 2T / 4T / Spot		
If you select spot mode Please adjust the spot time		

NOTICE:

-
- **Always weld clean, dry and well-prepared material.**
- **Hold gun at a 45° angle to the workpiece with nozzle about 1/2” from the surface.**
- **Move the gun smoothly and steadily as you weld.**

- **On thin gauge material, move quickly and only weld 1/4" stitch-welds at a time to avoid melt-through.**
- **Avoid welding in very drafty areas. A weak, pitted and porous weld will result due to drafts blowing away the**
- **Keep wire and liner clean. Do not use rusty wire.**
- **Sharp bends or kinks in the welding cable should be avoided**
- **ONLY use MIG solid welding wire.**

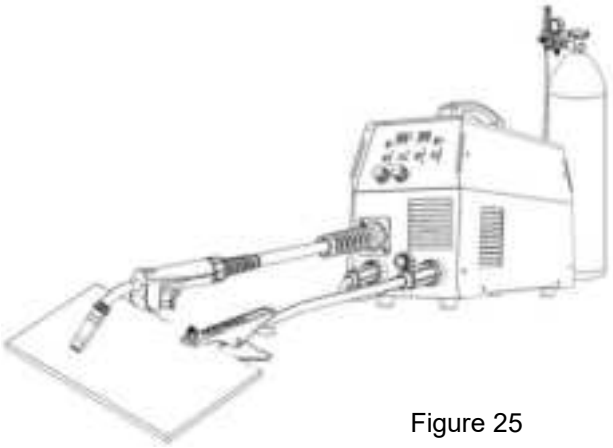


Figure 25

MIG Welding parameters table（for reference only）

Note:
This set-up information is intended to act as a guide only.
Please refer to operating manual for further information.

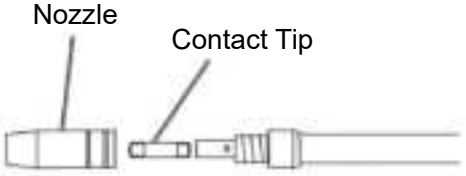
MATERIAL	WIRE TYPE	DRIVE ROLLER	POLARITY	GAS TYPE	GAS FLOW RATE	WIRE Ø	Material Thickness: 19ga (1mm) V/	14ga (2mm) V/	11ga (3mm) V/	8ga (4mm) V/	6ga (5mm) V/
STEEL	SOLID ER70S-6	V GROOVE	DCEP	CO_2	17-25CFH(8-12L/min)	.023"(0.6mm)	18.8	22.0	-	-	-
	SOLID ER70S-6	V GROOVE	DCEP	CO_2	17-25CFH(8-12L/min)	.030"(0.8mm)	18.4	21.2	25.3	26.5	-
	SOLID ER70S-6	V GROOVE	DCEP	CO_2	17-25CFH(8-12L/min)	.035"(0.9mm)	18.0	21.5	23.7	26.1	28.0
	SOLID ER70S-6	V GROOVE	DCEP	CO_2	17-25CFH(8-12L/min)	.040"(1.0mm)	17.9	20.3	22.3	26.0	28.0
	SOLID ER70S-6	V GROOVE	DCEP	ARCO$_2$	17-25CFH(8-12L/min)	.023"(0.6mm)	17.5	20.0	-	-	-
	SOLID ER70S-6	V GROOVE	DCEP	ARCO$_2$	17-25CFH(8-12L/min)	.030"(0.8mm)	16.5	18.5	20.0	24.5	27.0
	SOLID ER70S-6	V GROOVE	DCEP	ARCO$_2$	17-25CFH(8-12L/min)	.035"(0.9mm)	15.8	17.4	19.7	21.3	28.0
	SOLID ER70S-6	V GROOVE	DCEP	ARCO$_2$	17-25CFH(8-12L/min)	.040"(1.0mm)	15.4	17.8	18.4	21.0	25.0
	E71T-GS	KNURLED	DCEN	NO GAS	-	.030"(0.8mm)	15.7	17.8	20.0	21.0	22.0
	E71T-GS	KNURLED	DCEN	NO GAS	-	.035"(0.9mm)	16.0	19.0	20.0	21.0	22.0
	E71T-GS	KNURLED	DCEN	NO GAS	-	.040"(1.0mm)	15.5	17.3	18.8	21.0	22.5
STAINLESS	ER308LSI	V GROOVE	DCEP	ARCO$_2$	17-25CFH(8-12L/min)	.030"(0.8mm)	16.2	18.3	23.3	24.0	-
	ER308LSI	V GROOVE	DCEP	ARCO$_2$	17-25CFH(8-12L/min)	.035"(0.9mm)	15.5	17.1	17.9	22.5	25.5
	ER308LSI	V GROOVE	DCEP	ARCO$_2$	17-25CFH(8-12L/min)	.040"(1.0mm)	15.0	17.2	18.2	19.6	24.8

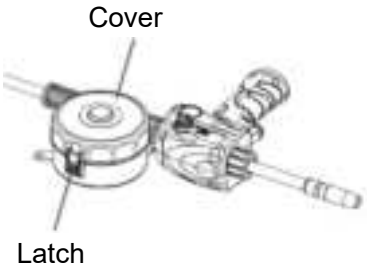
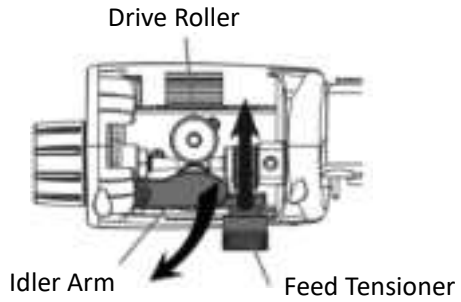
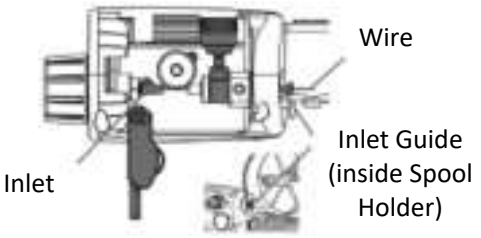
6. Operation for Spool gun

⚠ WARINING DO NOT set up without SWITCH OFF !

6.1 Set Up Spool gun

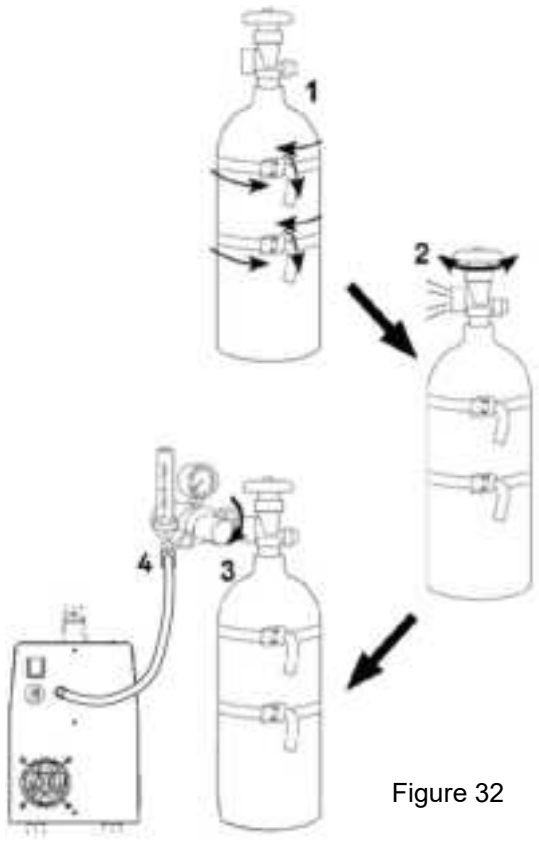
⚠ WARINING BEWARE OF ELECTRIC SHOCK!

Description	Picture
• Pull the Nozzle to remove it. Unscrew the Contact Tip counterclockwise and remove.	 Figure 26

● Open Latch and remove Cover. **note:** To prevent unraveling, leave wire secured to Spool.	 Figure 27
● Loosen Spool Tension Nut. ● Install Spool so wire will feed clockwise. ● Tighten Spool Tension Nut until Spool cannot spin freely.	 Figure 28
● Open Wire Feed Cover. ● Pull up on Feed Tensioner, then swing up and over to expose Idler Arm. ● Open Idler Arm to expose wire feed components. ● Remove Drive Roller knob. Make sure number on Drive Roller matches wire diameter. Flip Drive Roller if necessary.	 Figure 29
● Hold end of wire while releasing from Spool. Cut off any bent wire. ● Keeping tension on Spool, feed Wire through Inlet Guide and 1/4" into Inlet . ● Close Idler Arm and Feed Tensioner. ● Replace Spool Cover. ● Set Spool Gun down on nonconductive, nonflammable surface away from any grounded objects.	 Figure 30

6.2 Connection

Description	Picture
1. Connect the ground clamp to “-” negative polarity **NOTICE:** **The ground clamp connector MUST be tightly connected to the socket to avoid power short circuit.**	 Figure 31

2. Connect the spool gun to euro connector **NOTICE:** **The spool gun connector MUST be tightly connected to the socket to avoid power short circuit or air leakage**	
3. Connect the polarity changeover plug to “+” Positive polarity **NOTICE:** **The polarity changeover plug MUST be tightly connected to the socket to avoid power short circuit.**	
4. Connect the spool gun control line to socket and tighten it.	
1. With assistance, place an 100% argon cylinder (not included) onto a cabinet or cart near the Welder and secure the cylinder in place with two straps (not included) to prevent tipping.	 Figure 32
2. Remove the cylinder’ s cap. Stand to the side of the valve opening, then open the valve briefly to blow dust and dirt from the valve opening. Close the cylinder valve.	
3. Locate the Regulator and close its valve until it is loose, then thread Regulator onto cylinder and wrench-tighten connection.	
5. Connector the gas hose to the Regulator’s Outlet and the welder’s Gas inlet connector. **NOTICE:** **The gas hose connector MUST be tightly connected to the socket to avoid air leakage.**	

6.3 Input Power Connection

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

NOTICE: The following steps require applying power to the Welder with the cover open.

To prevent serious injury from fire or electric shock:

1.DO NOT touch anything, especially not the ground clamp, with the gun or welding wire or an arc will be ignited.

2. DO NOT touch internal Welder Components while it is plugged in.

The MIG200 Fit operates with a **110V or 220V** power supply. Plug the Power Cord into a properly grounded. Set MIG Gun down on nonconductive, nonflammable surface away from any grounded objects. And then then turn the Power Switch ON.

NOTE：

- For optimal performance, connect the MIG200 Fit to a 50A branch circuit. If connected to a circuit with lower capacity, expect reduced welding current and duty cycle. The circuit must be equipped over 50A with delayed action-type circuit breaker or fuses.
- Ensure the mains supply voltage remains within ±15% of the rated value (110V/110V). Low voltage can lead to subpar welding results, while excessively high voltage may cause components to overheat and potentially fail. Check whether the voltage value varies in acceptable range with a multi-meter.

Figure 33

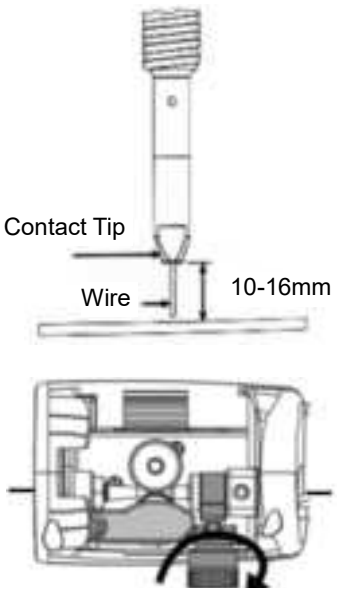
- Code Requirements for Electrical Input Connections
- This welding machine must be connected to a power source in accordance with applicable electrical codes. The National Electrical Code provides standards for amperage handling capability of supply conductors based on duty cycle of the welding source.
- NOTICE: Do not remove the power cord ground prong.

If there is any other question about the installation meeting applicable electrical code requirements, consult a qualified electrician.

6.4 Wire Stick Out

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

Description	Picture
1.Set the Mode Switch to Spool gun MIG setting.	
2. Inching In Spool gun MIG mode, not during welding, press torch trigger for at least 3S, the welder will go in fast inching status, closing output port voltage and gas valve. Release torch trigger,the welder will stop inching.	

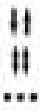
3. Press and hold the gun trigger to load the wire through the gun, until the wire feeds through the end of the Gun. **NOTE:** • Before feeding, Remove the nozzle and contact tip before feeding the wire to ensure smooth wire feeding. • If the wire does not feed properly and the Spool is stationary, turn OFF and unplug the Welder and slightly tighten the Feed Tensioner clockwise before retrying. • If the wire stops instead of bending, disconnect the Welder, tighten the Feed Tensioner slightly clockwise, and try again. If the wire bends due to feed pressure, the tension is set correctly. • Point the Gun away from all objects. • The welding wire should match the Feed Roller and contact tips.	 Figure 34
4.Turn off the machine after the wire stick out. Then install the nozzle and contact tip. **NOTE:** Cut the wire 3/8” to 5/8” from the end of the tip.	 Figure 35
5.Turn on the machine. The machine is now ready to weld.	
6.Close the Door Latch. Make sure. Door is securely latched.	

6.5 Operation

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

- Turn on the power switch of the machine, and the power indicator illuminates.
- Select proper working mode and proper function according your welding situation.
- Clamp the Ground clamp onto the workpiece, The Ground clamp must be securely connected to the workpiece.

Function with separated	Part	Select
Select MIG		
Turn the knob to find the required voltage		

Turn the knob to find the required IPM		
Select 2T / 4T / Spot		
If you select spot mode Please adjust the spot time		

NOTICE:

- **Always weld clean, dry and well-prepared material.**
- **Hold gun at a 45° angle to the workpiece with nozzle about 1/2" from the surface.**
- **Move the gun smoothly and steadily as you weld.**
- **On thin gauge material, move quickly and only weld 1/4" stitch-welds at a time to avoid melt-through.**

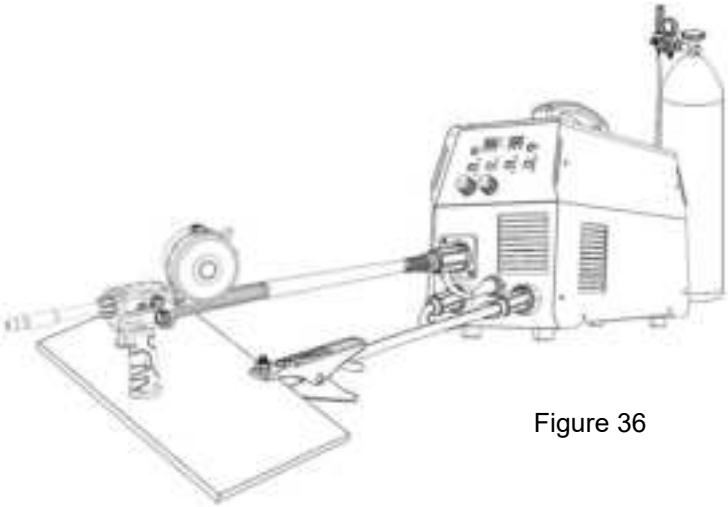


Figure 36

- **Avoid welding in very drafty areas. A weak, pitted and porous weld will result due to drafts blowing away the**
- **Keep wire and liner clean. Do not use rusty wire.**
- **Sharp bends or kinks in the welding cable should be avoided**
- **ONLY use MIG solid welding wire.**
- **MIG Welding parameters table（for reference only）**

Note:
This set-up information is intended to act as a guide only.
Please refer to operating manual for further information.

MATERIAL	WIRE TYPE	DRIVE ROLLER	POLARITY	GAS TYPE	GAS FLOW RATE	WIRE Ø	Material Thickness: 19ga (1mm) V / IPM	14ga (2mm) V / IPM	11ga (3mm) V / IPM	8ga (4mm) V / IPM	6ga (5mm) V / IPM
ALUMINIUM	ER5356	U GROOVE	DCEP	ARGON	17-25CFH(8-12L/min)	.035"(0.9mm)	13.5 / 340	15.7 / 560	17.0 / 640	-	-
	ER5356	U GROOVE	DCEP	ARGON	17-25CFH(8-12L/min)	.040"(1.0mm)	14.0 / 280	15.7 / 440	18.0 / 560	19.0 / 640	-

7. Operation for MIG Flux-Cored Welding

⚠ WARINING DO NOT set up without SWITCH OFF !

7.1 Connection

Description	Picture
1. Connect the ground clamp to “+” positive polarity **NOTICE:** • **The ground clamp connecter MUST be tightly connected to the socket to avoid power short circuit.**	 Figure 37
2. Connect the polarity changeover plug to “-” negative polarity **NOTICE:** **The polarity changeover plug MUST be tightly connected to the socket to avoid power short circuit.**	
3. Connect the welding gun to euro connector **NOTICE:** **The MIG gun connecter MUST be tightly connected to the socket to avoid power short circuit.**	

7.2 Input Power Connection

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

NOTICE: The following steps require applying power to the Welder with the cover open.

To prevent serious injury from fire or electric shock:

1.DO NOT touch anything, especially not the ground clamp, with the gun or welding wire or an arc will be ignited.

2. DO NOT touch internal Welder Components while it is plugged in.

The MIG200 Fit operates with a **110V or 220V** power supply. Plug the Power Cord into a properly grounded. Set MIG Gun down on nonconductive, nonflammable surface away from any grounded objects. And then then turn the Power Switch ON.

NOTE：

- For optimal performance, connect the MIG200 Fit to a 50A branch circuit. If connected to a circuit with lower capacity, expect reduced welding current and duty cycle. The circuit must be equipped over

50A with delayed action-type circuit breaker or fuses.

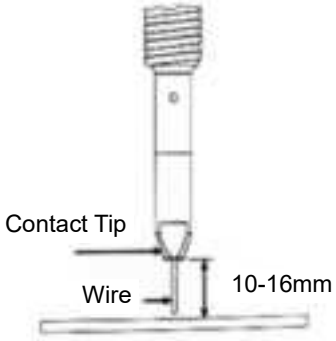
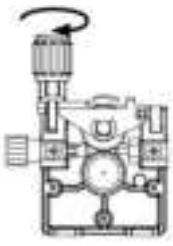
- Ensure the mains supply voltage remains within ±15% of the rated value. Low voltage can lead to subpar welding results, while excessively high voltage may cause components to overheat and potentially fail. Check whether the voltage value varies in acceptable range with a multi-meter.
- Code Requirements for Electrical Input Connections
- This welding machine must be connected to a power source in accordance with applicable electrical codes. The National Electrical Code provides standards for amperage handling capability of supply conductors based on duty cycle of the welding source.
- NOTICE: Do not remove the power cord ground prong.

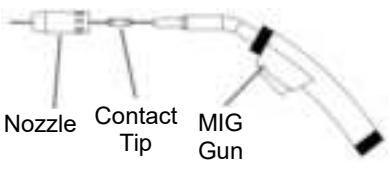
Figure 38

If there is any other question about the installation meeting applicable electrical code requirements, consult a qualified electrician.

7.3 Wire Stick Out

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

Description	Picture
1.Set the Mode Switch to MIG setting.	
2. Inching : In MIG mode, not during welding, press torch trigger for at least 3S, the welder will go in fast inching status, closing output port voltage and gas valve. Release torch trigger,the welder will stop inching.	
3. Press and hold the gun trigger to load the wire through the gun, until the wire feeds through the end of the Gun. **NOTE:** ● Before feeding, Remove the nozzle and contact tip before feeding the wire to ensure smooth wire feeding. ● If the wire does not feed properly and the Spool is stationary, turn OFF and unplug the Welder and slightly tighten the Feed Tensioner clockwise before retrying. ● If the wire stops instead of bending, disconnect the Welder, tighten the Feed Tensioner slightly clockwise, and try again. If the wire bends due to feed pressure, the tension is set correctly. ● Point the Gun away from all objects.	  Figure 39

4.Turn off the machine after the wire stick out. Then install the nozzle and contact tip. **NOTE:** Cut the wire 3/8” to 5/8” from the end of the tip.	 Figure 40
5.Turn on the machine. The machine is now ready to weld.	
6.Close the Door. Make sure. Door is securely latched.	

7.4 Operation

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

- Turn on the power switch of the machine, and the power indicator illuminates.
- Select proper working mode and proper function according your welding situation.

Function with synergic	Part	Select
Select MIG		
Open SYN		Synergic
Select wire diameter		.023"/.030"/.035"/.040"
Select Flux-Cored		Flux
Turn the knob to find the required current		
Select 2T / 4T / Spot		
If you select spot mode Please adjust the spot time		

- Clamp the Ground clamp onto the workpiece, The Ground clamp must be securely connected to the workpiece.

NOTICE:

- **Always weld clean, dry and well-prepared material.**
- **Hold gun at a 45° angle to the workpiece with nozzle about 1/2" from the surface.**
- **Move the gun smoothly and steadily as you weld.**
- **On thin gauge material, move quickly and only weld 1/4" stitch-welds at a time to avoid melt-through.**

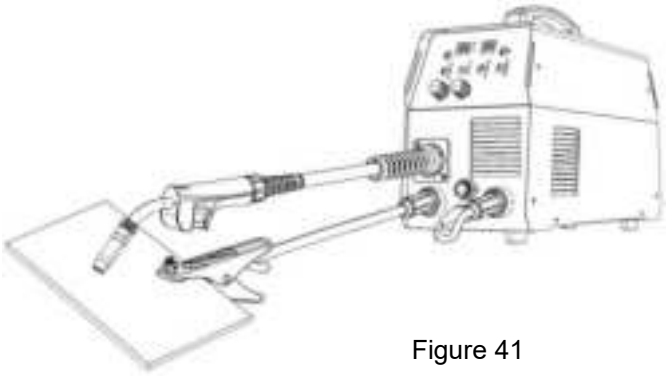


Figure 41

- **Avoid welding in very drafty areas. A weak, pitted and porous weld will result due to drafts blowing away the**
- **Keep wire and liner clean. Do not use rusty wire.**
- **Sharp bends or kinks in the welding cable should be avoided**
- **ONLY use Flux Cored MIG welding wire.**
- **Flux core MIG Welding parameters table（for reference only）**

Note:
This set-up information is intended to act as a guide only.
Please refer to operating manual for further information.

MATERIAL	WIRE TYPE	DRIVE ROLLER	POLARITY	GAS TYPE	GAS FLOW RATE	WIRE Ø	Material Thickness: 18ga (1mm) V/IPM/WIRE SPEED	14ga (2mm) V/IPM/WIRE SPEED	11ga (3mm) V/IPM/WIRE SPEED	8ga (4mm) V/IPM/WIRE SPEED	6ga (5mm) V/IPM/WIRE SPEED
STEEL	E71T-GS	KNURLED	DCEN	NO GAS	-	.030"(0.8mm)	15.7 — 132 — 3.3	17.8 — 240 — 6.0	20.0 — 380 — 9.6	21.0 — 440 — 11.0	22.0 — 520 — 13.5
	E71T-GS	KNURLED	DCEN	NO GAS	-	.035"(0.9mm)	16.0 — 82 — 3.5	19.0 — 180 — 4.1	20.0 — 260 — 6.3	21.0 — 300 — 7.5	22.0 — 340 — 8.5
	E71T-GS	KNURLED	DCEN	NO GAS	-	.040"(1.0mm)	15.5 — 85 — 2.6	17.3 — 152 — 3.8	18.8 — 212 — 5.3	21.0 — 288 — 7.0	22.5 — 340 — 8.5

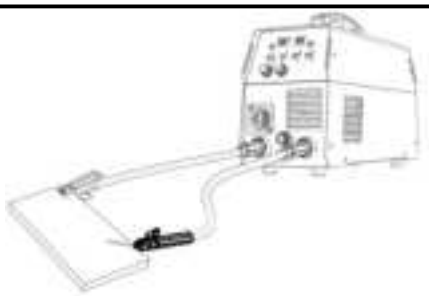
8. Operation for MMA and TIG

⚠ WARINING **DO NOT set up without SWITCH OFF !**

8.1 MMA Welder Cable Connection

NOTICE: Before setting up or using this product for new function, make sure to read the entire Important Safety Information section at the beginning of this manual!

Description	Picture
1. Connect the **ground clamp** to "-" Negative polarity **NOTE:** • **The ground clamp connecter MUST be tightly connected to the socket to avoid power short circuit.** • **Ensure the ground clamp is connected on clean, bare metal (not rusty or painted).**	 Figure 42 DCEP

2. Connect the **Electrode Holder** to "+" Positive polarity **NOTE: The Electrode Holder connecter MUST be tightly connected to the socket to avoid power short circuit.**	
3. When you use Alkaline rods (E7018), need to DCEP, that is connect the holder and ground clamp as mentioned above in above 1. and 2. If you use Acidic rods(E6013), need to DCEN, that is connect the holder to "-"and ground clamp to "+" . **NOTE: Incorrect wiring can affect welding results.**	 Figure 43 DCEN
4. Place the bare metal end of the Stick Electrode (sold separately) inside the jaws of the Electrode Holder. **NOTE: Set Electrode Holder down on nonconductive, nonflammable surface away from any grounded objects.Install Stick Electrode with the machine turned off.**	 Figure 44

8.2 MMA Welder Operation

⚠ WARINING **BEWARE OF ELECTRIC SHOCK!**

NOTICE: The following steps require applying power to the Welder with the cover open.
To prevent serious injury from fire or electric shock:
1.DO NOT touch anything, especially not the ground clamp, with the gun or welding wire or an arc will be ignited.
2. DO NOT touch internal Welder Components while it is plugged in.

Operation steps	Picture
1. connect power cord **NOTE: Turn the Power Switch off before connecting Power Cord. Plug the Power Cord into a properly grounded and rated receptacle that matches the plug. The circuit must be equipped with delayed action-type circuit breaker or fuses.**	 Figure 45

2. Place the bare metal end of the Stick Electrode (sold separately) inside the jaws of the Electrode Holder.	
3. Turn the Power Switch **ON**. The Operation interface will light up and the Cooling fan will rotate. **NOTE:Welder is now energized and open circuit Voltage is present.**	 Figure 46
4. Select MMA	
5. Stroke the workpiece lightly to ignite the arc. Tips for igniting the arc: a. Tap the surface with the Electrode. b. Stroke the surface with the Electrode. c. Strike the surface like a match with the Electrode.	
6. After the arc ignites: a. Lift the Electrode off workpiece the same distance as the diameter of the bare metal end. b. Tilt Electrode back 10 to 20 degrees. c. Drag Electrode to the back end of the weld puddle to deposit material as needed.	
7. The initial settings may need to be adjusted after stopping and carefully inspecting the weld.Proper welding takes experience.	
8. When finished welding; lift the Electrode from the workpiece, then set Electrode Holder down on nonconductive, nonflammable surface away from any grounded objects.	
9. Turn the Power Switch OFF **NOTE:** **To prevent accidents, after use:** **• Allow Welder to cool down.** **• Unplug Welder's power cord from outlet.** **• Remove Ground Clamp.** **• Disconnect Electrode Holder and Ground Cables.**	
10. Clean, then store Welder and its accessories indoors out of children's reach.	

8.3 MMA Welding parameters table

Following table is suitable for mild steel welding. For other materials, consult related materials and welding process for reference.

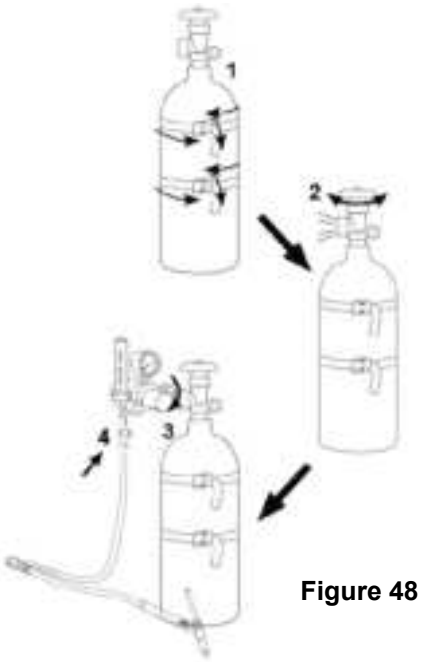
Material Type	Electrode Type	Electrode Thickness	1/16'' 1.6mm	3/32'' 2.5mm	1/8'' 3.2mm	5/32'' 4.0mm
Steel	E60XX	Amperage Range (A)	30-60A	60-90A	80-130A	120-200A
		Polarity	DCEP+			
	E70XX	Amperage Range (A)	—	70-110A	80-150A	130-200A
		Polarity	DCEN-			

8.4 Lift TIG Welder Cable Connection

⚠ WARINING **BEWARE OF ELECTRIC SHOCK!**

NOTICE: The following steps require applying power to the Welder with the cover open.
To prevent serious injury from fire or electric shock:
1.DO NOT touch anything, especially not the ground clamp, with the gun or welding wire or an arc will be ignited.
2. DO NOT touch internal Welder Components while it is plugged in.

Description	Picture
1. Connect the **ground clamp** to "+" Positive polarity **NOTICE:** • **The ground clamp connecter MUST be tightly connected to the socket to avoid power short circuit.** • **Ensure the ground clamp is connected on clean, bare metal (not rusty or painted).**	 **Figure 47**
2. Connect the **tig gun（WP-17V）** to "-" Negative polarity **NOTICE:** • **The tig gun connecter MUST be tightly connected to the socket to avoid power short circuit.**	

1. With assistance, place an 100% Argon cylinder (not included) onto a cabinet or cart near the Welder and secure the cylinder in place with two straps (not included) to prevent tipping.	 Figure 48
2. Remove the cylinder's cap. Stand to the side of the valve opening, then open the valve briefly to blow dust and dirt from the valve opening. Close the cylinder valve.	
3. Locate the Regulator (included) and close its valve until it is loose, then thread Regulator onto cylinder and wrench-tighten connection.	
4. Connect Shielding Gas Hose on TIG Torch Cable Connector to the Regulator's Outlet and wrench-tighten connection.	

- **Sharpen tungsten Electrode**

WARNING! TO PREVENT SERIOUS INJURY: Some Electrodes may contain materials that are hazardous to breathe. Wear a respirator and ANSI-approved safety goggles when grinding an Electrode.

To avoid Electrode contamination, dedicate a fine grit grinding wheel exclusively to Electrode grinding.

1. Shut off the welder and wait until Electrode and Torch have cooled enough to handle.
2. Remove Back Cap to release Collet's grip on Electrode.
3. Pull Electrode out from front of Torch. (Pulling it from rear will damage Collet and create burrs on Electrode).
4. If Electrode has dulled or been otherwise contaminated, use pliers or a suitable tool to grip the Electrode above the contaminated section and snap off the end of the Electrode.
5. Lightly press Electrode tip against the surface of the grinding wheel at an angle Rotate Electrode tip until a blunt point is formed.

NOTE: Grinding direction must be parallel to length of Electrode.

6. The conical portion of the ideal tip will be 2-1/2 times as long as the Electrode diameter.
7. Re-insert Electrode into Collet with tip protruding 1/8"-1/4" beyond the Ceramic Nozzle, then re-tighten the Back Cap to secure the Electrode in place.

Figure 49

- **Assemble tig torch**

1. Consult Settings Chart, on top of Welder, to determine proper Tungsten Electrode size to be used with thickness of material to be welded.
2. Match Collet and Collet Body sizes to Tungsten Electrode size.
3. Thread Collet Body into the front of the Torch.
4. Make sure Ceramic Nozzle size is appropriate for application.
5. Thread Ceramic Nozzle onto Collet Body.
6. Insert Collet into back of Torch and into Collet Body.
7. Insert Tungsten Electrode into Collet on front of Torch.
8. Lock Electrode in place with Back Cap. Electrode should protrude 1/8" to 1/4" beyond the Ceramic Nozzle.

NOTE: The tig torch and tungsten electrode are not included in the machine. If you need to purchase, please log in to the official website: WWW.ARCCAPTAIN.COM

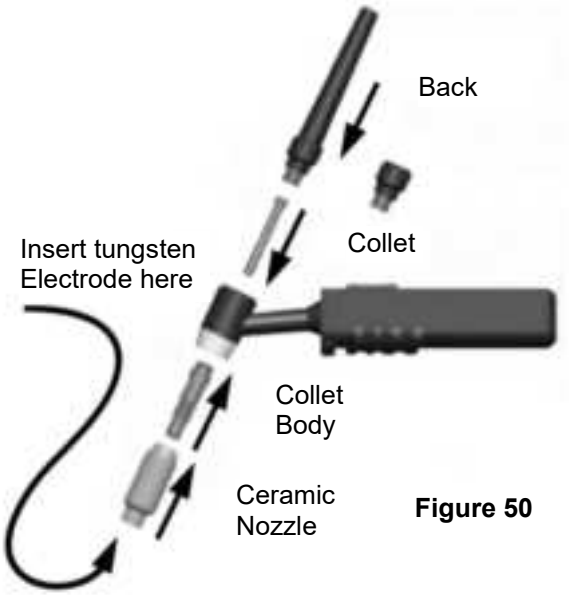


Figure 50

8.5 Lift tig Welder Operation

⚠ WARINING **BEWARE OF ELECTRIC SHOCK!**

NOTICE: The following steps require applying power to the Welder with the cover open.
To prevent serious injury from fire or electric shock:
1.DO NOT touch anything, especially not the ground clamp, with the gun or welding wire or an arc will be ignited.
2. DO NOT touch internal Welder Components while it is plugged in.

Operation steps
1. Open gas cylinder's valve all the way. **NOTE: TO PREVENT DEATH FROM ASPHYXIATION:** **Do not open gas without proper ventilation. Fix gas leaks immediately.** Shielding gas can displace air and cause rapid loss of consciousness and death. **Shielding gas without carbon dioxide can be even more hazardous because asphyxiation can start without feeling shortness of breath.**
2. Set Flow Gauge to SCFH value

3. connect power cord **NOTE: Turn the Power Switch off before connecting Power Cord. Plug the Power Cord into a properly grounded and rated receptacle that matches the plug. The circuit must be equipped with delayed action-type circuit breaker or fuses.**	 Figure 51
4. Turn the Power Switch **ON**. **NOTE: Set TIG Torch down on nonconductive, nonflammable surface away from any grounded objects.** The Operation interface will light up and the Cooling fan will rotate.	 Figure 52
5. Select Lift TIG **NOTE:Welder is now energized and open circuit Voltage is present.**	

6. Hold TIG Torch in one hand and the TIG Rod (sold separately) in other hand. Both hands need to wear protective gloves.
WARNING! TO PREVENT SERIOUS INJURY: Metalwork bench must be grounded when TIG welding.
NOTE: Maintain a constant distance between the Tungsten Electrode and the workpiece: between 1 and 1.5 times the diameter of the Electrode.

7. The initial settings may need to be adjusted after stopping and carefully inspecting the weld. Please refer to **6.7 Lift TIG Welding parameters table**，Proper welding takes experience.

8. Open valve on TIG Torch to start gas flow.

9. To initiate welding arc, touch Electrode to work piece and lift.

10. When welding puddle is hot enough, tilt Torch backward about 10-15 degrees from vertical and move it back slightly. Add TIG Rod material as needed to the front end of the weld puddle.

11. Alternate between pushing the torch/weld puddle and adding the TIG Rod material.
NOTE: Remove the TIG Rod each time the Electrode is advanced, but do not remove it from the gas shield. This prevents oxidation from contaminating the weld.

12. When finished welding, pull Torch away from work piece until welding arc is broken, then return the gas coverage until weld solidifies.

13. Close valve on TIG Torch and turn Right Knob to OFF to turn off power to TIG Torch.

14. Set TIG Torch down on nonconductive, nonflammable surface away from any grounded objects.

15. Turn the Power Switch OFF.

16. To prevent accidents, after use:
• Allow Welder to cool down.
• Unplug Welder’s power cord from outlet.
• Remove Ground Clamp from workpiece or table.
• Disconnect TIG Torch and Ground Cables.

- Close gas cylinder's valve securely, remove regulator and replace cap.
- Disconnect Gas Hose from Welder.
- Store and secure gas cylinder.
- Clean, then store Welder and its accessories indoors out of children's reach.

8.6 Lift TIG Welding parameters table

Following table is suitable for stainless steel welding. For other materials, consult related materials and welding process for reference.

Tungsten Diameter	Filler Rod	Material	16ga 1.6mm	10ga 3.2mm	6ga 4.8mm	3ga 6.0mm
1/16'' 1.6mm	1/16'' 1.6mm	Steel	60-90A	80-115A		
		Stainless	40-70A	65-110A		
3/32'' 2.4mm	3/32'' 2.4mm	Steel			115-165A	
		Stainless			100-150A	
1/8'' 3.2mm	3/32'' 2.4mm	Steel				160-200A
		Stainless				135-200A

9. Engineer Mode

⚠ WARINING **BEWARE OF ELECTRIC SHOCK!**

- A default set of common welding parameters for this machine can be revised by revising system parameters in case of need. Below is method:

NOTE:

- **The default parameters of the welder are modified for experienced welders.**
- **The default parameters of the welder have been set in the best state. Do not change the default parameters of the welder unless necessary.**

NO	operation	Picture
1	Press **MIG operation mode selection button** without releasing, turn on the power switch of the welder. As soon as display shows **"P1"**, release **MIG operation mode selection button** to enter revision interface of system	

	parameters.	
2	Select system parameters of **MIG, TIG** or **MMA** by pressing **Welding process selection button**.	
3	Select the parameter to be revised by rotating **Welding Voltage** knob. Revise the parameter value by rotating **Welding Current** knob. After revision, press **Synergic** button to save.	
4	After revising parameters, press **operation selection** button again to exit the setting of system parameters to be in normal standby.	

- **System parameter:**

MIG mode

No.	Function parameter	Default	Setting range	Unit	Description
P1	Background parameters initialization	0	0/1	-	Restore factory default (Select “1” to restore factory default)
P2	Welding time calculation	0.0	0.0～999	day	Calculate welding time
P3	Burn-back time at MIG	200	0～400	ms	Burn-back time at MIG
P4	Burn-back voltage at MIG	12.0	10.0～18.0	V	Given output voltage of removing metal ball after releasing torch trigger at MIG
P5	Pre-flow time at MIG	5	0～300	ms	Pre-flow time at MIG
P6	Post-flow time at MIG	0.2	0.0～2.0	S	Post-flow time at MIG

MMA mode

No.	Function parameters	Default	Setting range	Unit	Description
P1	Background parameters initialization	0	0/1	-	Restore factory default (Select “1” to restore factory default)
P2	Welding time calculation	0.0	0.0～999	day	Calculate welding time
P3	VRD switch at MMA	0	0/1	-	VRD switch at MMA （ “0”: VRD is off, “1”： VRD is on）
P4	Arc-force current at MMA	50	20～80	A	Given current value when output voltage is below 14V at MMA
P5	Arc ignition current at MMA	60	20～100	A	Given current value of arc ignition at MMA
P6	Arc ignition time at MMA	400	300～999	ms	Duration for given current value of arc ignition at MMA

TIG mode

No.	Function parameters	Default	Setting range	Unit	Description
P1	Background parameters initialization	0	0/1	-	Restore factory default (Select “1” to restore factory default)
P2	Welding time calculation	0.0	0.0～999	day	Calculate welding time
P3	Lift TIG current	50	35～65	A	Current value when tungsten and workpiece are shorted at Lift TIG
P4	Post-flow time at TIG*	2.0	1.0-10.0	S	Post-flow time at TIG

10. MIG Basic Welding Technique

⚠ WARINING **BEWARE OF ELECTRIC SHOCK!**

NOTICE: The following steps require applying power to the Welder with the cover open.
To prevent serious injury from fire or electric shock:
1.DO NOT touch anything, especially not the ground clamp, with the gun or welding wire or an arc will be ignited.
2. DO NOT touch internal Welder Components while it is plugged in.

10.1 Basic MIG Welding

Good weld quality and profile depend on factors like gun angle, travel direction, electrode extension (stick out), feeding speed, base metal thickness, wire feed speed (amperage), and arc voltage. Here are some basic guidelines to help with your setup:

- **Gun Position and Travel Direction**

Gun position refers to how the wire is directed at the base metal, including the angle and travel direction chosen. Feeding speed and work angle affect the weld bead profile and penetration depth.

- **Push Technique**

In the push technique, the wire is positioned at the leading edge of the weld pool and pushed towards the unmelted work surface. This technique offers a clear view of the weld joint and wire direction. It directs heat away from the weld puddle, allowing for faster feeding speeds, resulting in a flatter weld profile with light penetration. It's suitable for welding thin materials, producing wider and flatter welds with minimal cleanup or grinding required.

- **Perpendicular Technique**

In the perpendicular technique, the wire is fed directly into the weld. This method is primarily used in automated situations or when necessary. It typically results in a higher weld profile and deeper penetration.

- **Drag Technique**

With the drag technique, the gun and wire are pulled away from the weld bead. The arc and heat focus on the weld pool, resulting in more heat on the base metal, deeper melting, increased penetration, and a higher weld profile with more buildup.

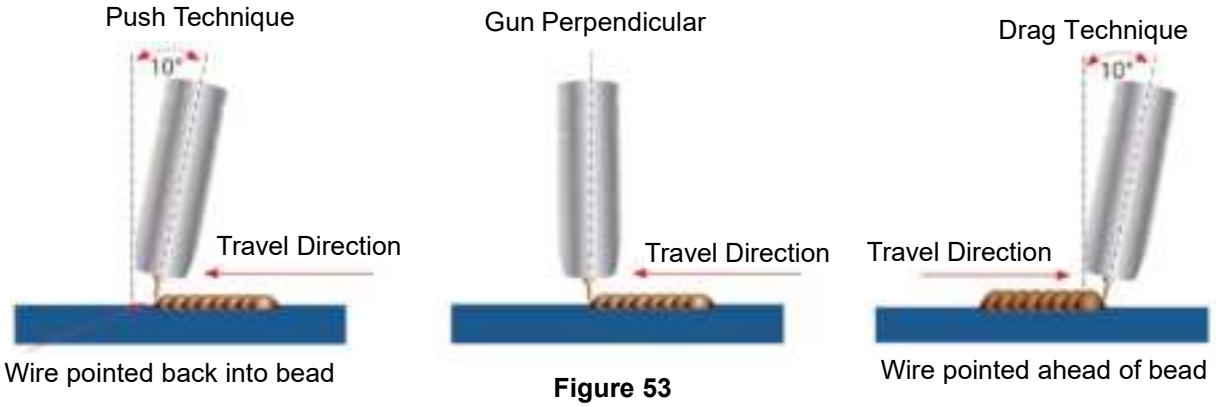


Figure 53

- **Travel Angel**

Travel angle is the right to left angle relative to the direction of welding. A travel angle of 5°- 15° is ideal and produces a good level of control over the weld pool. A travel angle greater that 20° will give an unstable arc condition with poor weld metal transfer, less penetration, high levels of spatter, poor gas shield and poor quality finished weld.

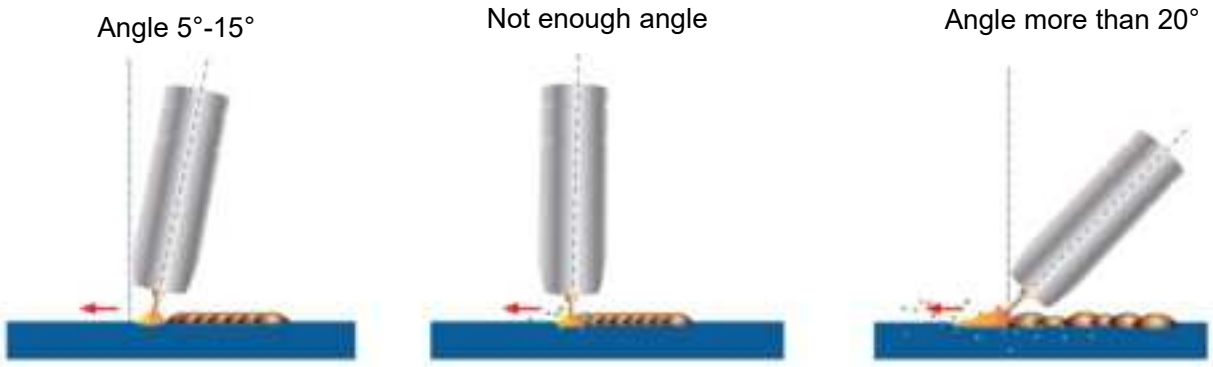


Figure 54

- **Angle to Work**

The work angle is the forward back angle of the gun relative to the work piece.The correct work angle provides good bead shape, prevents undercut, uneven penetration, poor gas shield and poor quality finished weld.

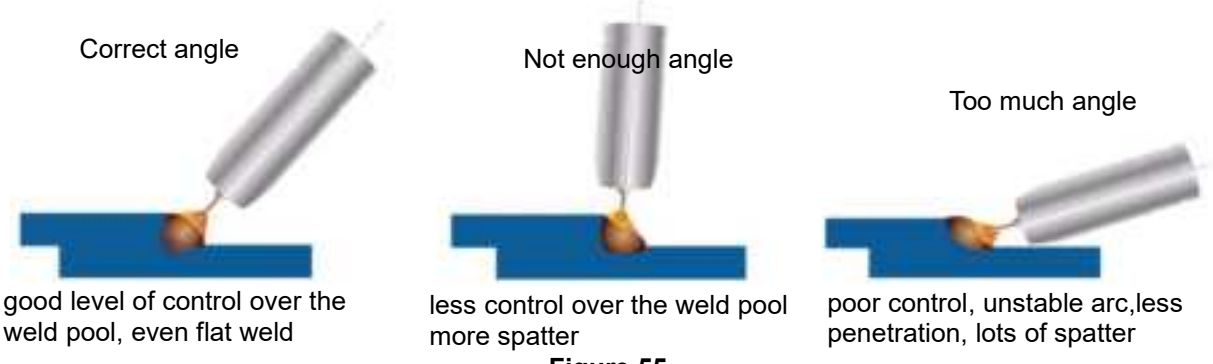


Figure 55

- **Stick Out**

Stick out is the length of the unmelted wire protruding from the end of the contact tip. A constant even stick out of 0.2-0.4in will produce a stable arc, and an even current flow providing good penetration and

even fusion. Too short stick out will cause an unstable weld pool, produce spatter and over heat the contact tip. Too long stick out will cause an unstable arc, lack of penetration, lack of fusion and increase spatter.

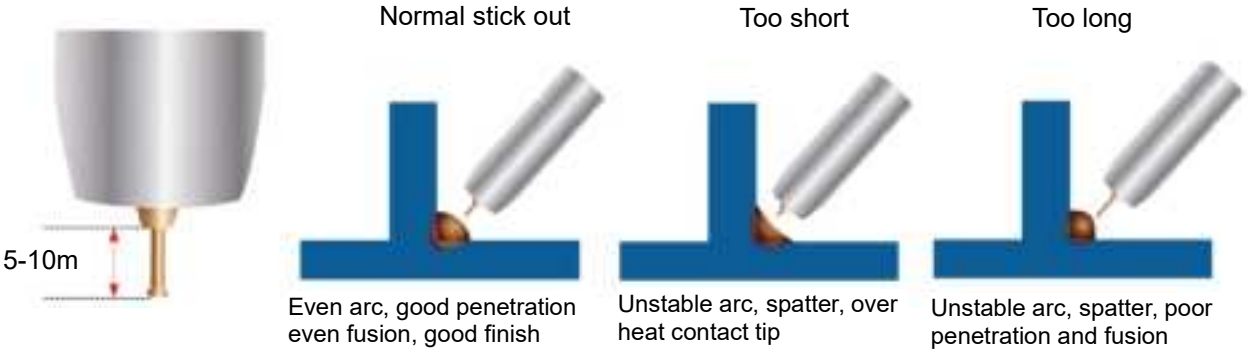


Figure 56

10.2 Feeding Speed

Feeding speed refers to how quickly the gun is moved along the weld joint, measured in inches per minute. It can vary based on conditions and the welder's skill, limited by their ability to control the weld pool. The push technique allows for faster feeding speeds compared to the drag technique. Gas flow should match the feeding speed, increasing with faster feeding and decreasing with slower speed. Feeding speed should match the amperage and decreases as material thickness and amperage increase.

- **Too Fast Feeding Speed**

Too fast feeding speed results in insufficient heat per inch of travel, leading to less penetration and reduced weld fusion. The weld bead solidifies quickly, trapping gases inside and causing porosity. Undercutting of the base metal may occur, leaving an unfilled groove in the base metal.

- **Too Slow Feeding Speed**

Too slow feeding speed produces a wide weld with inadequate penetration and fusion. The arc energy remains on top of the weld pool, resulting in excessive weld metal deposition per inch and poor-quality weld deposits.

- **Correct Feeding Speed**

The correct feeding speed maintains the arc at the leading edge of the weld pool, allowing sufficient melting of the base metal for good penetration, fusion, and wetting out of the weld pool. This produces a high-quality weld deposit.

11. MAINTENANCE

⚠ WARINING **BEWARE OF ELECTRIC SHOCK!**

NOTICE: To prevent serious injury, fire, and burns:

Unplug the welder.

Place the MIG gun on a heat-proof, electrically non-conductive surface.

Allow all parts of the welder to cool completely before servicing.

11.1 Routine and Periodic Maintenance

- **Before Each Use -**Check over machine and accessories for any obvious condition that may prevent safe performance or operation, repair or replace items as necessary to correct any abnormal condition.
  - loose hardware
  - misalignment or binding of moving parts
  - damaged cord/electrical wiring
  - frayed or damaged cables
  - cracked or broken parts
  - any other condition that may affect its safe operation.
- Store in a clean and dry location.
- **For optimal weld quality, clean and inspect the contact tip and nozzle before each use. Cleaning Tip and Nozzle-** With the power switch OFF, keep the contact tip and nozzle clean to prevent issues like shorted nozzles, poor welds, and overheating of the gun.

NOTE:

- Make sure that the entire Mig gun is completely cool and that the power cord is unplugged from the electrical outlet before proceeding.
- Torch accessories are consumables, ARCCAPTAIN provided more for your replacement.

11.2 Daily maintenance

The power of the switching box and the welding machine should be shut down before daily checking (except appearance checking without contacting the conductive body) to avoid personal injury accidents such as electric shock and burns.

- Daily checking is very important in keeping the high performance and safe operation of this welding machine.
- Do daily checking according to the table below, and clean or replace components when necessary.
- In order to ensure the high performance of the machine, please choose components provided by ARCCAPTAIN when replacing components.

Daily checking of the welding machine

Items	Checking requirements	Remarks
Front panel	Whether any of the components are damaged or loosely connected; Whether the output quick sockets are tightened; Whether the abnormity indicator illuminates.	If unqualified, check the interior of the machine, and tighten or replace the components.
Back panel	Whether the input power cable and buckle are in good condition; Whether the air intake is unobstructed.	

Cover	Whether the bolts are loosely connected.	If unqualified, tighten or replace the components.
Chassis	Whether the screws are loosely connected.	
Routine	Whether the machine enclosure has color fading or overheating problems; Whether the fan sounds normal when the machine is running; Whether there is abnormal smell, abnormal vibration or noise when the machine is running.	If abnormal, check the interior of the machine.
Cleaning the Feed Rolls	Clean the grooves in the drive rolls frequently. This can be done by using a small wire brush. Also wipe off, or clean the grooves on the upper feed roll. After cleaning, tighten the feed roll retaining knobs.	

Daily checking of the cables

Items	Checking requirements	Remarks
Earth cable	Whether the grounding wires (including workpiece Earth wire and welding machine earth wire) break off.	If unqualified, tighten or replace the components.
Welding cable\ MIG gun	Whether the insulating layer of the cable is worn, or the conductive part of the cable is exposed; Whether the cable is drawn by an external force; Whether the cable connected to the workpiece is well connected.	Use appropriate methods according to the work site situation to ensure safety and normal cutting.

12. TROUBLESHOOTING

⚠ WARINING DO NOT set up without SWITCH OFF !

NOTICE: For safety and to maintain warranty validity:

- **Only qualified authorized personnel should perform service and repairs!**
- **Unauthorized repairs may endanger the technician and machine operator!**
- **To prevent electrical shock, follow all safety precautions in this manual!**
- **Use only original spare parts when replacing components!**
- **When ordering spare parts, provide machine type, serial number, and item number, along with type designation and item number of the spare parts!**

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three step procedure listed below.

- **Locate Problem(Symptom)**

Look under the column labeled “PROBLEM(SYMPTOMS)”. This column describes possible **symptoms** that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

- **Possible Cause**

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

- **Recommended Course of Action**

This column provides a course of action for the Possible Cause, generally it states to contact you local after-sales service center.

Problem (symptoms)	Possible areas of mis-adjustment	Recommended course of action
Bead is too thick(intermittently)	Feeding speed is slow and/or inconsistent	Increase and maintain a constant feeding speed.
	Output heat range is too high.	Set the knob to low
Bead does not penetrate base metal.	Feeding speed is inconsistent.	Decrease and maintain a constant feeding speed.
	Output heat range is too low.	Set the knob to high
Wire sputters and sticks to workpiece	The wire is damp.	Change to dry wire. Be sure wire is stored in a dry location
	Wire feed speed is too fast.	Reduce wire feed speed.
Edge of weld has ragged depressions	Feeding speed is too fast.	Reduce feeding speed.
	Wire feed speed is too fast.	Reduce wire feed speed.
	Output heat range is too high	Set the knob to low
There is no current after turning on the machine.	The power cord is not well connected.	Reconnect the power cord.
	The welding machine fails.	Ask professionals to check.
The fan does not work during welding.	The power cord for the fan is not well connected.	Reconnect the power cord for the fan.
	Auxiliary power fails.	Ask professionals to check.
The overheating indicator is on.	The overheating protection circuit works.	It can be recovered after the machine cools down.

There is no response when pushing the torch trigger and the alarm indicator does not illuminate.	The torch trigger fails.	Repair or replace the welding torch.
When the torch trigger is pushed, there is gas output, but there is no output current, and the alarm indicator does not illuminate.	The earth cable is not well connected with the workpiece.	Reconnect it.
	The torch trigger fails.	Repair or replace the welding torch.
There is output current when pushing the torch trigger to feed gas, but the wire feeder does not work.	The wire feeder is clogged.	Unclog it.
The welding current is unstable.	The wire feeder fails.	Repair it.
	The control PCB or wire feeding power PCB inside the machine fails.	Replace it.
	The pressure arm on the wire feeder is not properly adjusted.	Adjust it to get proper pressure.
	The drive roll does not match the wire size being used.	Make sure they match with each other.
	The contact tip of the welding torch is badly worn.	Replace it.
	The wire-feeding tube of the welding torch is badly worn.	Replace it.
	The electrode is of poor quality.	Use electrode of good quality.

Common Failure Analysis and Troubleshooting:

Common failure and troubleshooting

Failure	Cause	Solution
Turn on the machine, there is no current	● Power is not well connected ● Welder fails	● Reconnect power ● Ask professional personnel for help
Fan does not work during welding	●Fan power cord is not well connected ● Auxiliary power supply fails	● Reconnect fan power cord ● Ask professional personnel for help
Display “E10”	● Over-current protection for	● Restart the welder, if problem cannot be solved,

	welder	contact maintenance personnel
Display “E14”	●Short-circuit current protection	● Restart the welder, if problem cannot be solved, contact maintenance personnel
Display “E15”	● Power limitation protection	● Restart the welder, if problem cannot be solved, contact maintenance personnel
Display “E20”	●Over-current protection for wire feeder	● Restart the welder, if problem cannot be solved, contact maintenance personnel
Display “E60”	● Overheat protection	● It gets to normal after cooling the welder

GMAW (MIG/MAG) failure and troubleshooting

Failure	Cause	Solution
There are no response and error code after pressing torch trigger	● Torch is not well connected to wire feeder ● Torch trigger fails	● Reconnect torch and wire feeder ● Repair or replace the torch
There are gas output and wire feeding after pressing torch trigger but no current output and error code	● Ground wire is not well connected to workpiece ● Wire feeding unit or torch fails	● Reconnect ground wire and workpiece ● Repair the wire feeding unit or torch
There are gas supply and current output but no wire feeding after pressing torch trigger	●Wire feeding unit is stuck ●Wire feeder fails ●Control board in the welder fails	● Unblock the wire feeding unit ● Repair the wire feeder ● Ask professional personnel for help
Welding current is instable	●Unsuitable moment adjustment for wire feeder ● Wire feed rolls do not match welding wire ● Contact tip is worn severely ● Wire liner of torch is worn severely ●Welding wire is of poor quality	● Readjust moment of wire feeder ● Select suitable wire feed rolls and welding wire ● Replace the contact tip of torch ● Replace the wire liner ● Replace wire with one of better quality

If you do not understand or are unable to perform the Recommended Course of Action safely, contact **arccaptain.com** for after-sale service.

Save for future reference:	
Product：	
Date Purchased:	
Serial Number:	
Product Feedback:	