

PRO-SERIES

888-736-5094 **Equipment**
www.ProSeriesEquipment.com

ALL FOR AUTO

ITEM NO:PSEW-2210

USER MANUAL



FOLLOW THE INSTRUCTIONS CAREFULLY TO GRANT THE MACHINE A CORRECT FUNCTION AND LONG SERVICE LIFE.

KEEP THE MANUAL NEAR THE MACHINE ALL TIME AND MAKE SURE ALL USERS HAVE READ THIS.

CONTENTS

1. Safety Precautions Symbols	1
2. Symbols And Descriptions	2
3. Accessories And Spare Parts	3
4. Installation	
4-1. Specifications	4
4-2. Duty Cycle And Overheating	5
4-3. Machine Installation	6
4-4. Selecting A Location	7
4-5. Installing Gas Supply	8
4-6. Connecting Input Power	9
4-7. Threading Welding Wire	10
4-8. Changing Drive Roll	11
4-9. Typical MIG process Connection	12
4-10. Welding Gun	13
5. Operation	
5-1. Controls	14
5-2. Holding And Positioning Welding Gun	15
5-3. Conditions That Affect Weld Bead Shape	16
5-4. Gun Movement During Welding	17
5-5. Poor Weld Bead Characteristics	18
5-6. Good Weld Bead Characteristics	19
6. Troubleshooting	
6-1. Excessive Spatter	20
6-2. Porosity	21
6-3. Excess Penetration	22
6-4. Lack Of Penetration	23
6-5. Incomplete Fusion	24
6-6. Burn-Through	25
6-7. Waviness Of Bead	26
6-8. Distortion	27
6-9. Troubleshooting Guide For Semiautomatic Welding Equipment	28
7. Exploded View	29
8. Electrical Diagram	30
9. Packing List	

Preface

Please read this instruction manual carefully before using and the equipment and refer to it as needed to ensure the continued safe operation of the equipment.

- ▲ This instruction manual should be read completely before attempting to use or service the equipment. Failure to follow the instructions in this manual could result in property damage, severe personal injury, or death.

▲ The following warnings and important notices are used in the instruction manual:

	Improper use of this equipment can cause serious or fatal injury		WARNING	Improper use of this equipment can cause personal injury or property property damage
--	--	---	---------	--



DANGER

Improper use of this equipment can cause serious or fatal injury



- ◆ Magnetic fields can affect pacemakers. Pacemaker wearers keep away from the equipment. Wearers should consult their doctor before going near equipment operations.



- ◆ Do not touch any live electrical parts. Wear dry, hole-free insulating gloves and body protection. The input power circuit and machine internal circuit are live with high voltage when power is on. Touching live electrical parts can cause fatal shocks or severe burns. High voltage exists in the power supply socket. Never touch the conductor terminals with bare hand.



- ◆ Input power installation must meet national standard. All electrical connections must be made by a qualified electrician. Insulated gloves and shoes must be worn when connecting input power or maintaining equipment.



- ◆ Never disassemble, repair, alter or rebuild the equipment without approval from the manufacturer. There is a risk for electrical shock and fire.

- ◆ Make sure the supply cable is up to national standard or local code. Use only the right gauge of electrical wire/cable. There is a risk of fire or electrical shock if overload building wiring—be sure power supply system is properly sized, rated and protected to handle this unit.

- ◆ Replace power cord/wire/cable immediately—bare wiring can kill.



- ◆ Electric shock can kill. Properly ground this equipment according to its user manual and national standard.



- ◆ Do not step on, twist or pull the power cord..

- ◆ Frequently inspect input power cord and regularly clean the unit to remove dust and dirt. Any worn or damaged power cord or internal components in heavy dust may cause electrical shock, short circuit or fire.



- ◆ In the event of abnormal, operation must be immediately stopped. If smoke, smell or abnormal noise is produced by the unit, disconnect the power cord immediately and contact your local dealer. Do not use it until the problem is fixed.



- ◆ Do not operate or place the device near water or in wet locations. Risk for electrical shock or damage to the device.



- ◆ Do not operate the equipment in potential hazardous areas : chemicals, oil, gas and mining, or the worksites where power supply system is in poor condition.



- ◆ Hot parts can cause severe burns. Do not touch workpieces or metallic parts of torch with bare hands during or after welding. Allow cooling period and use a proper tools or wear welding gloves to handle hot parts to prevent burns.



- ◆ Use only well-maintained device. Inspect and maintain the device for safety every 12 months, including cleaning and removing dust. Repair or replace damaged parts/cables at once.



- ◆ Follow the installation and operation instruction to ensure user safety and proper equipment performance. It is the responsibility of the owner to ensure that the equipment has been installed and operated as specified in the instructions provided. The manufacturer takes no responsibility for any loss or damage suffered as a result of using the equipment incorrectly or improperly.



WARNING

Improper use of this equipment can cause personal injury or property property damage



The equipment is designed for welding of metals only. Do not use the equipment for other purposes. This may cause fire or electrical shock



Never place any materials/objects on top of the equipment to avoid fire and electrical shock. Do not locate equipment on, over, or near combustibles in worksite. The flying sparks can cause fires and burns. Do not weld where flying sparks can strike flammable material.



Read instruction manual before using equipment. Use only the spare parts supplied or approved by manufacturer.



Keep away from moving parts such as fans. Moving fans cause injury when changing welding wire.



Moving wire feed rollers and spools can cause injury when changing welding wire.



Keep your hand away from the opening of the welding torch when the torch trigger is pressed. The wire coming out from torch will cause injury of hands.



Overuse can cause overheating. Avoid overuse of the equipment which can cause components to overheat and equipment to shorter life.



Make sure gas bottle and gas regulator are in good conditions. It may cause explosion if the gas bottle or regulator is damaged.



Follow the installation and operation instruction to ensure user safety and proper equipment performance. It is the responsibility of the owner to ensure that the equipment has been installed and operated as specified in the instructions provided. The manufacturer takes no responsibility for any loss or damage suffered as a result of using the equipment incorrectly or improperly.





















NOTE

- ◆ The equipment must be used by qualified personnel familiar with electronic equipment.
- ◆ Do not place the equipment on unstable or uneven ground. The equipment might fall causing injuries and damage to the equipment.
During operation process, the equipment should keep a distance about 10cm from the wall to keep air way clear.
- ◆ Avoid using the equipment in the environments with high humidity (above 90%), high temperature (above 40°C), low temperature (below 5°C), high frequency source nearby, chemical and drug, water vapor for condensation, dust or vibration.
- ◆ Make sure the facility supply voltage and frequency are the same as shown on name plate. The supply cable must be properly sized and rated.
- ◆ The connection between the main power supply and the equipment should be as short as possible.
- ◆ Use a dry cloth to clean the dirt on the equipment.
- ◆ Do not forget to take back all repair tools/objects inside the equipment after repair/ maintenance, such as screws, bolts or nuts. The left out metallic objects inside the equipment can cause damage to the equipment.
- ◆ Follow the instructions of this user manual to operate the equipment.
- ◆ We have made installation and operation quick and easy. Please operate the buttons and switches gently with your hands, only one button each time. The sensitive control circuit will be damaged if pressing the buttons with a hard and sharp thing such as screw driver and, pen.
- ◆ Turn off all equipment when not in use.
- ◆ Follow the installation and operation instruction to ensure user safety and proper equipment performance. It is the responsibility of the owner to ensure that the equipment has been installed and operated as specified in the instructions provided. The manufacturer takes no responsibility for any loss or damage suffered as a result of using the equipment incorrectly or improperly.

Symbols And Descriptions

Symbols And Definitions

A Amperes	 Gas Metal Arc Welding (GMAW) Gun	I On	% Percent
V Volts	 Wire Feed	O Off	 Increase
I₂ Rated Welding Current	IP Degree Of Protection	 Protective Earth (Ground)	 Line Connection
S₁ Power Rating, Products Of Voltage And Current	 Single Phase	 No—Do Not DO This	 Loose Shield Cup
HZ Hertz	X Duty cycle	 Gas Input	 Adjust Air/Gas Pressure
U₁ Primary voltage	 Direct Current	 Gas Output	 Do Not switch While welding
U₀ Rated No Load Voltage (Average)	 Constant Current	 Input	 Wire Feed Spool Gun
U₂ Conventional Load Voltage	 Temperature	 Voltage Input	

Description:

Our semi-automatic welder is an all-in-one MIG shielding gases welder (GMAW) with high efficiency that is an ideal substitute for manual arc welding.































Most advanced circuit design and technology are adopted. Excellent performances, supreme reliability, quality welding requirements can be satisfied. Spot weld, groove weld, and fillet weld are available. Most commonly used shielding gases are applicable such as Co₂, AR, CO₂+AR, CO₂+O, etc.

Suitable for welding of various metallic materials such as mild steel, low carbon steel, low alloy steel, stainless steel, steel, iron, copper, aluminum, nickel, etc.

Extensively used in the welding and field operation of oil pipeline, chemical, car fabrication, shipyard, etc.

Accessories And Spare Parts

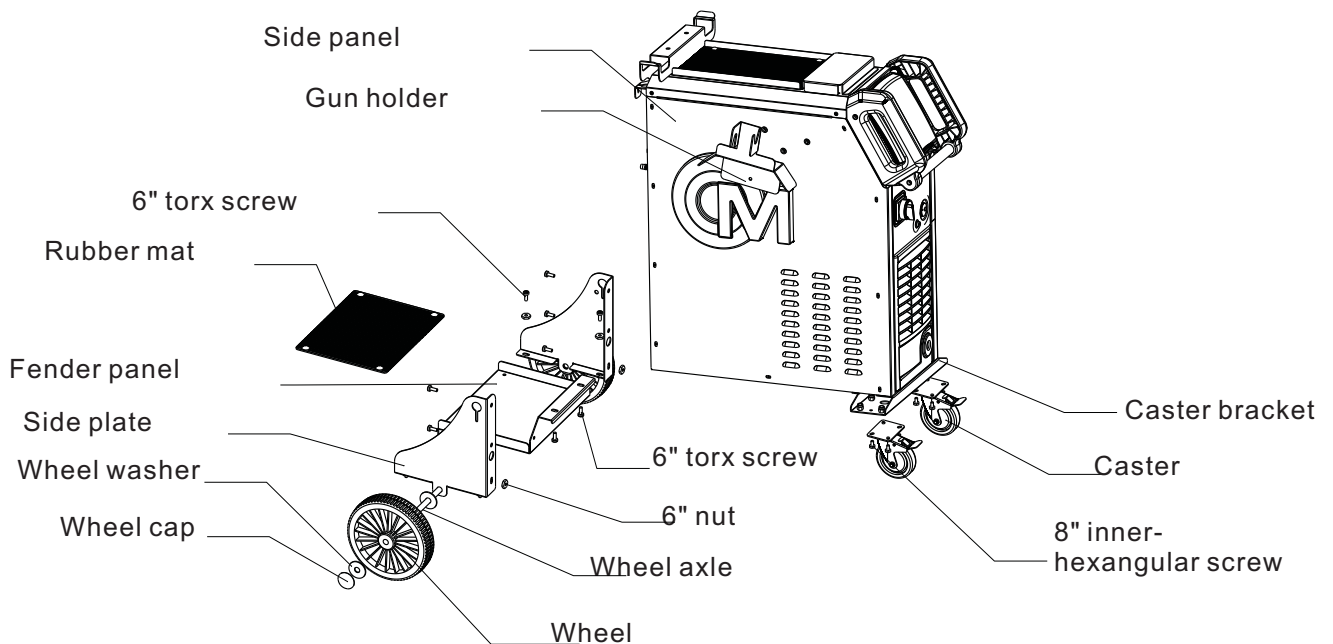
Accessories And Spare Parts List

	Pressure Regulator	NO. C001		Adjustment Switch	NO. C002		European Connector	NO. C003
	Contact Tip	NO. C004		Output Cable	NO. C005		Spool Spindle	NO. C006
	Welding Gun	NO. C007		Collect Body	NO. C008		Fan	NO. C009
	Front Adaptor	NO. C010		Wire Guide	NO. C011		Shield Cup	NO. C012
	Trigger Potentiometer	NO. C013		Fuse Socket	NO. C014		Chain	NO. C015
	Capacitor	NO. C016		Electromagnetism	NO. C017		24AK Gooseneck	NO. C018
	Feeder Potentiometer	NO. C019		15AK Gooseneck	NO. C020		Feeder Motor	NO. C021
	Anti-Clogging Ointment	NO. C022		Control Transformer	NO. C023		European Connector Shield	NO. C024
	Panel Socket	NO. C025		Digital Display	NO. C026		Front Wheel	NO. C027
	Back Wheel	NO. C028		Hose	NO. C029		Circuit Board	NO. C030

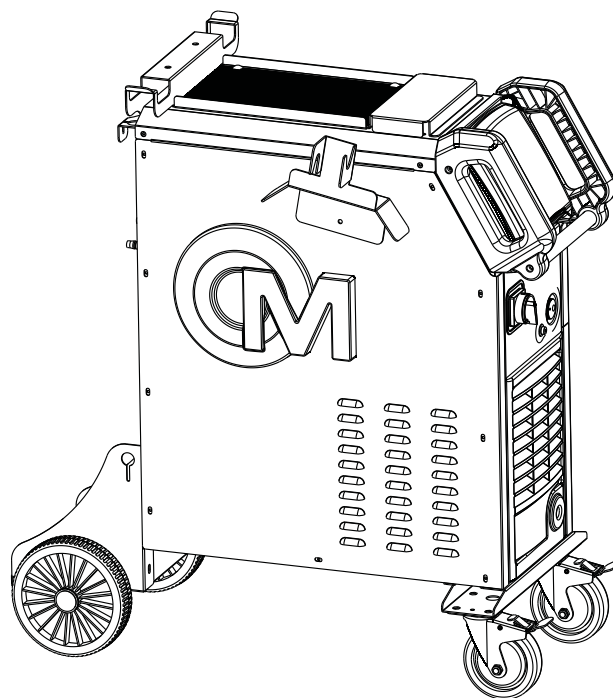
Remarks:

1. Optional orders for above accessories and components are available.
2. Model and part number required when ordering parts from your local distributor.

Installation Instruction



Install the gun holder to the side panel; install the side plates to the fender panel; install the wheel axle and wheels to the fender panel; install the fender panel to the back panel (using 6" torx screws and nuts); install casters to the caster bracket (using 8" inner-hexagonal screws); put the rubber mat on the fender panel.



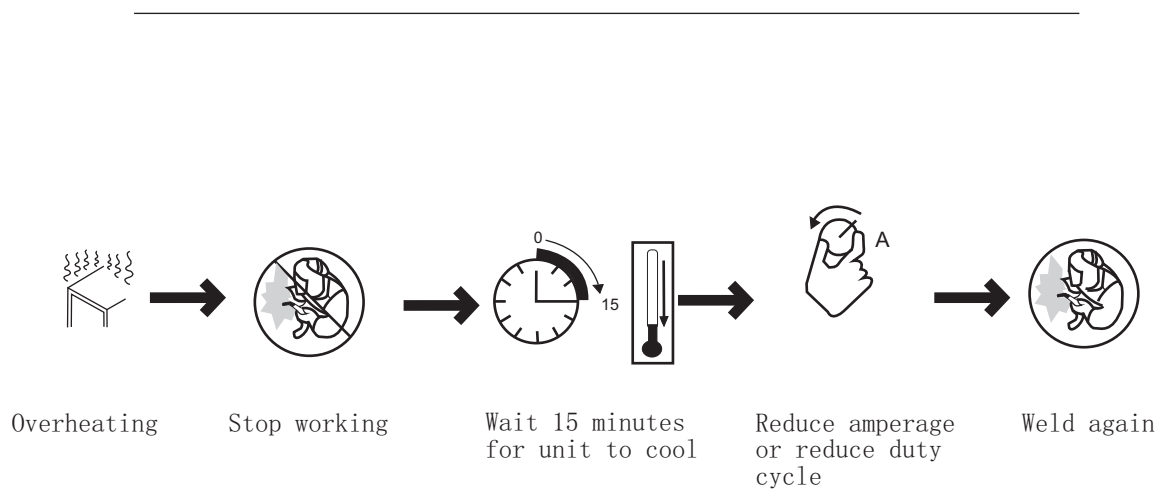
INSTALLATION

1. Specifications

Parameter	Model	FY-4250/2E
Voltage (V)		AC 380V/3ph
Frequency (Hz)		50 / 60
Rated Max Input Current (A)		16.8
Max Effective Input Current (A)		12.5
No-load Voltage (V)		20-37
Welding Current (A)		35-250A
Duty Cycle		35%
Output Current/Voltage		35A/17V- 250A/26.5V
Insulation Grade		F
Wire Diameter		Mild Steel Solid Wire 0.8/1.0mm
Type		One-piece
Dimensions (mm)		850×380×890
Voltage Adjustment		10/6 stages
Weight (kg)		98

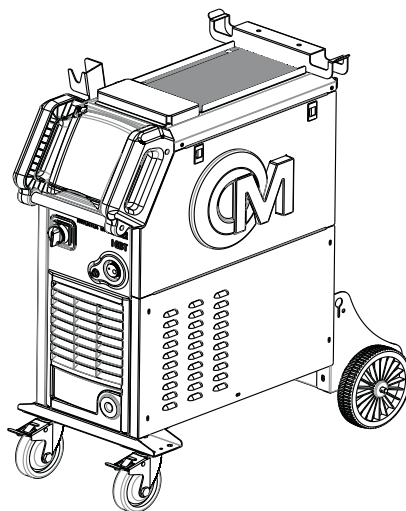
2. Duty Cycle And Overheating

1. Overheat protection is installed on the aluminium board of main transformer and rectifier. The unit produces heat while welding.
2. If unit overheats, output stops, and cooling fan runs.
3. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.



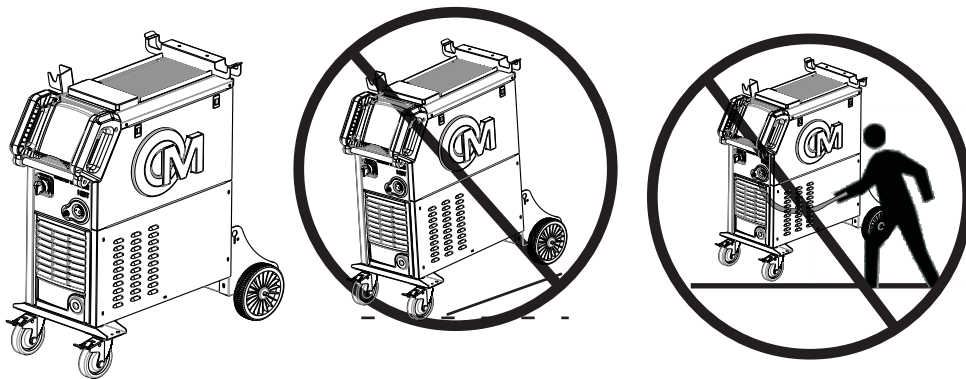
3. Machine Installation

1. Open the package and find out the Owner's Manual.
2. Check the details of accessories according to packing list that attached to this manual.
3. Properly install this equipment as following diagram. Inspect the unit for any damage. If so, contact your local distributor or service agency.
- 4) The unit should not be located under sunshine. The worksite should be in low humidity and without dust.
- 5) Operating Temperature range: -10°C $-+40^{\circ}\text{C}$.
- 6) Storage Temperature range: -25°C $-+56^{\circ}\text{C}$.
- 7) At least 20cm of space for airflow, 30cm of space for two units located side by side.
- 8) Use tent to protect the machine from stormy weather when operate outdoor.
- 9) Welding produces fumes and gases, Breathing these fumes and gases can be hazardous to your health. If inside, less than 300m, Ventilate the area.
- 10) Properly ground this equipment.
- 11) The input power cord gradient should not more than 15° .




4、 Selecting a Location

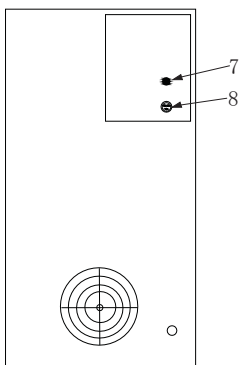
- 1) Select a correct location to place the unit.
- 2) Determine input power cord length according to its actual operation requirement. Input power cord must have a minimum inside diameter of 6mm.²
- 3) Do not move or operate unit where it could tip.
- 4) Use cart or unit handle to move unit. Do not pull the cords to move unit.
- 5) Moving gas cylinder and main unit to high separately. Use lifting eye to lift unit only, not running gear, gas cylinders, or any other accessories.
- 6) Optional order for individual wire feeder is available. The wire feeder and welding gun divide from the main unit. It is more convenient to operate.



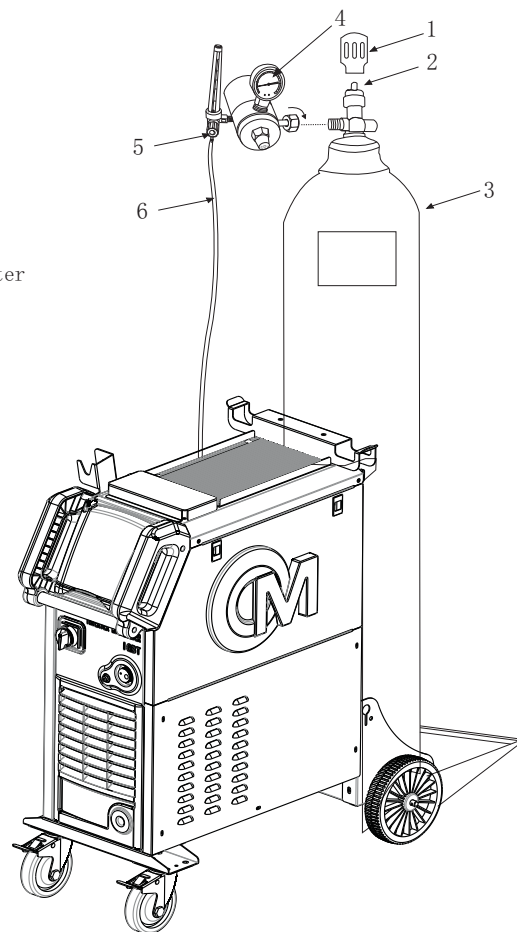
5、Installing Gas Supply

- 1)、Cap
- 2)、Cylinder valve
(Remove cap, stand to side of valve, and open valve slightly. Gas flow blows dust and dirt from valve. Close valve)
- 3)、Cylinder
- 4)、Regulator/Flowmeter
(Install so face is vertical)
- 5)、Flow Adjust
(Typical pressure is 0.05-0.15MPa)
- 6)、Hose
- 7)、Hose Connection
(Connect gas hose between regulator/flowmeter and the unit)
- 8)、Regulator/Flowmeter heating socket
(For low temperature worksite, please plug the regulator/flowmeter to the socket for heating.)

 DO NOT Use other gases regulator/flowmeter with CO₂ shielding gas.

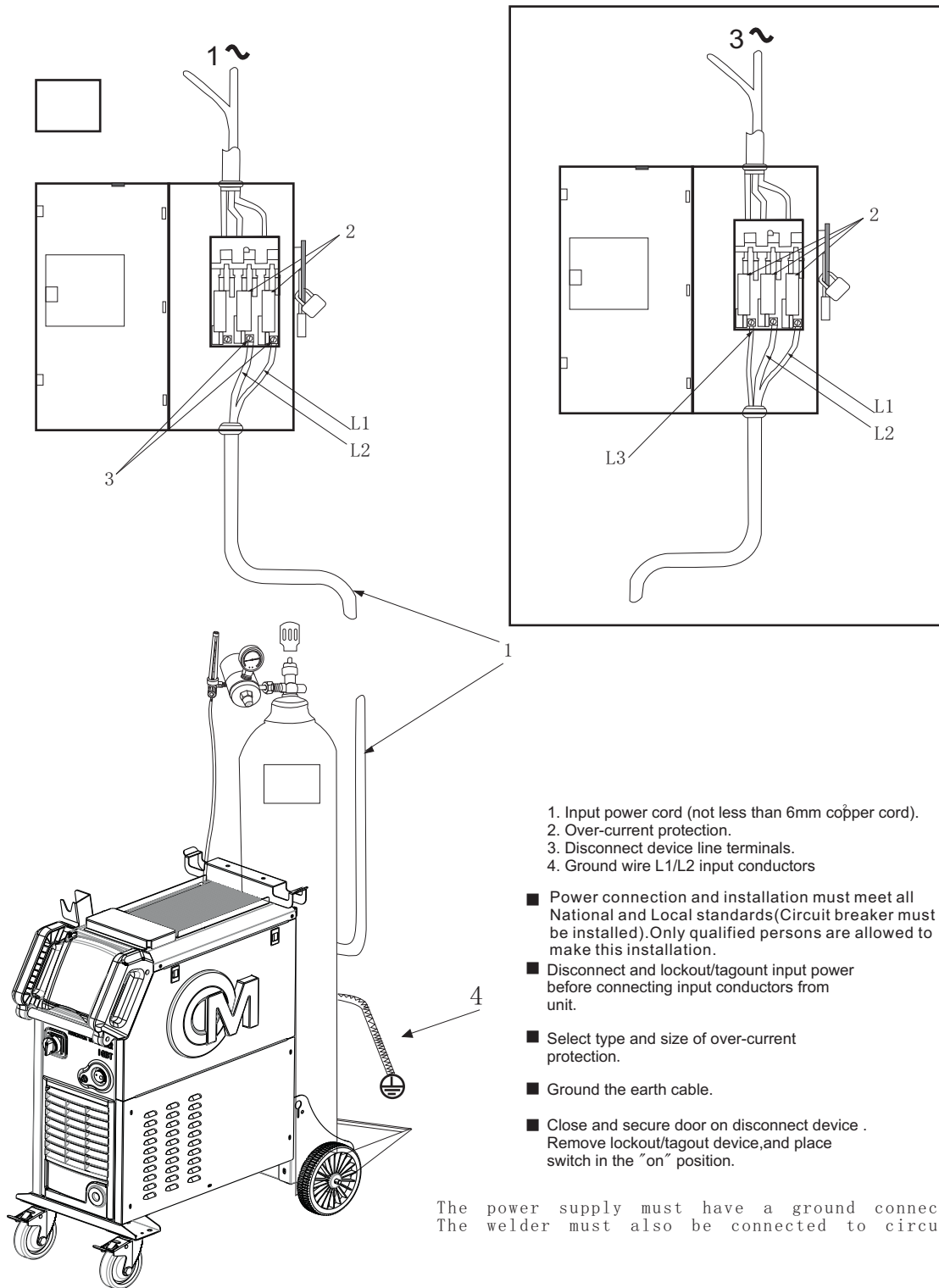


Rear Panel



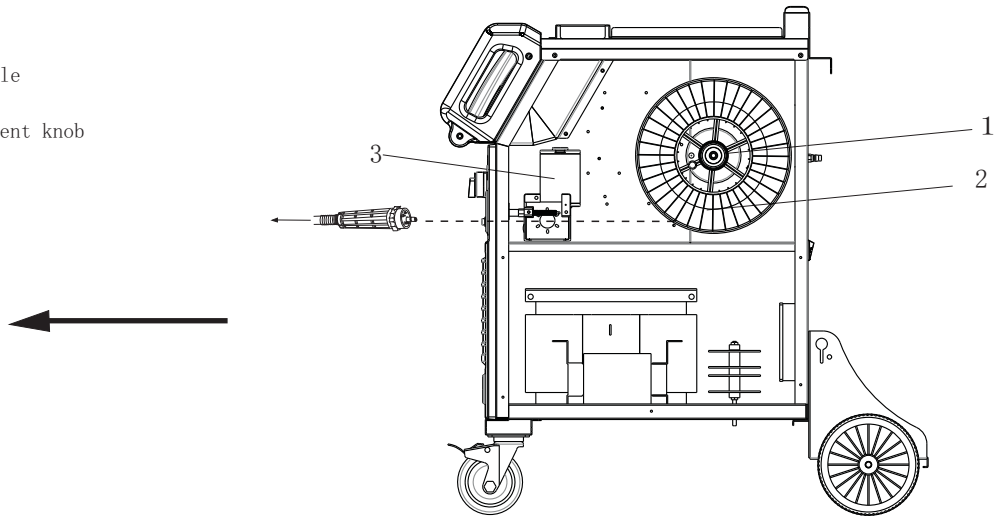
6. Connecting Input Power

The power supply must have a ground connection.
The welder must also be connected to circuit breaker.

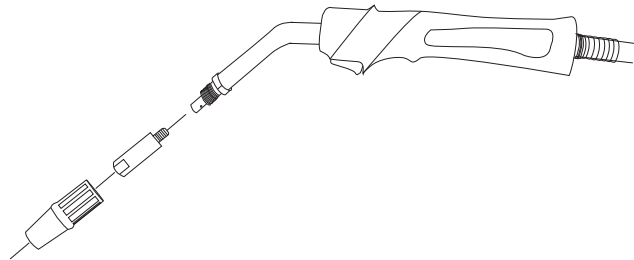


7、 Threading Welding Wire

- 1 、 Wire spool spindle
- 2 、 Welding Wire
- 3 、 Pressure adjustment knob

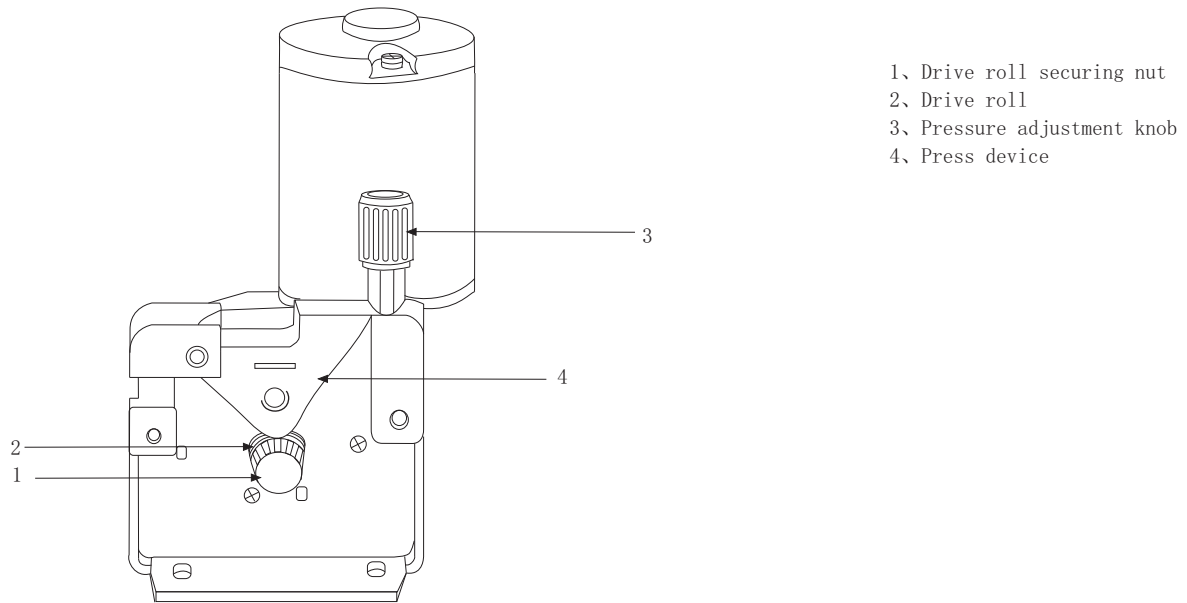


1. Open wire spool spindle; install wire spool; release pressure adjustment knob; pull and hold wire. Push wire thru guides into drive roll. Close wire spool spindle tightly to prevent slipping (Feed wire to check wire spool installation).
2. Set a desired drive roll pressure, close and tighten pressure adjustment knob.
3. Press gun trigger and let go of wire.



4. Remove gun nozzle and contact tip.
5. Press gun trigger until wire comes out of gun. Reinstall contact tip and nozzle.
6. Feed wire to check drive roll pressure , tighten knob enough to prevent slipping.
7. Cut off wire if welding wire extends too far beyond nozzle.

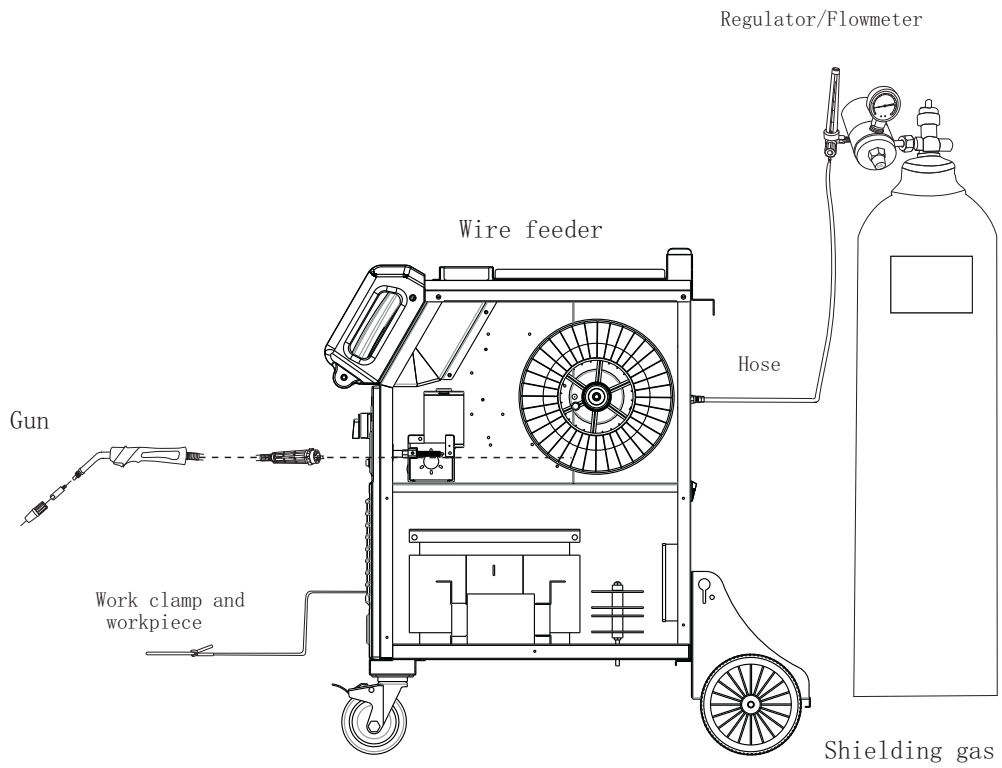
8、 Changing Drive Roll



Changing Drive roll:

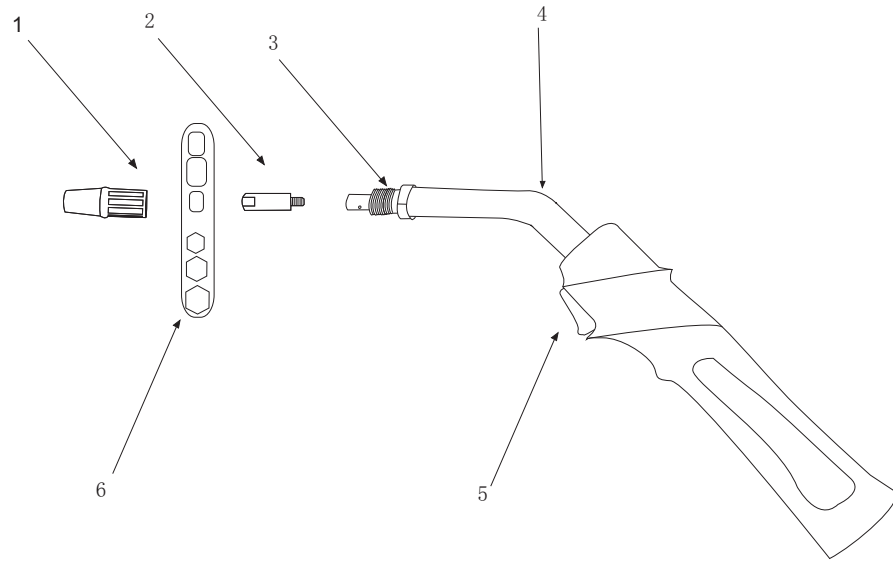
- 1、 Release pressure adjustment knob .Press wire device springs open.
- 2、 Loosen securing nut ,Remove drive roll.
- 3、 The drive roll consists of two different sized grooves.Reinstall the desired wire sized groove close to the motor shaft.
- 4、 Tighten securing nut.
- 5、 Replace press wire device, and set a desired pressure.
- 6、 Make sure drive roll groove lines up with wire guide.

9、 Typical MIG Process Connection



Weld current can damage electronic parts in vehicles. Disconnect both battery cables before welding on a vehicle. Place work clamp as close to the weld as possible.

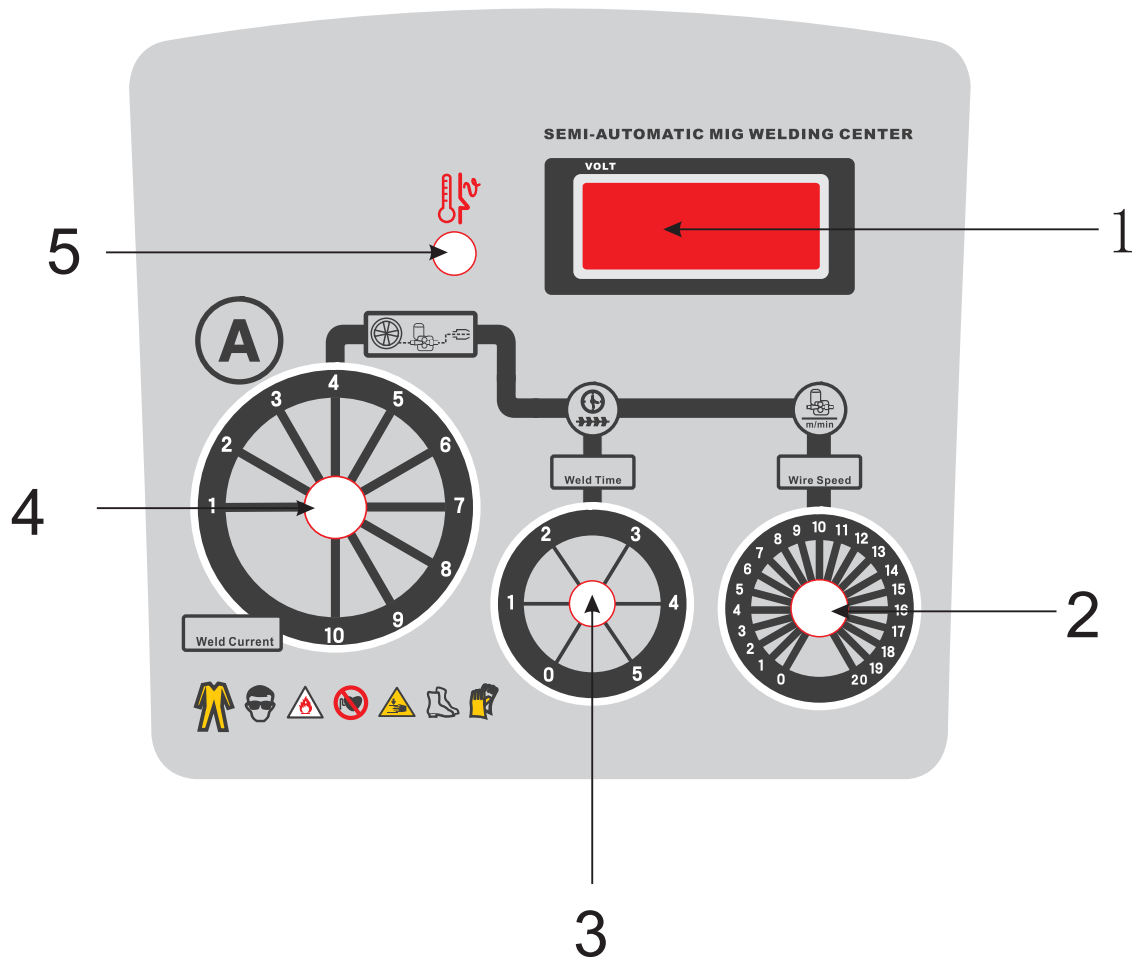
10. Welding Gun



- | | |
|------------------------|----------|
| 1、 Shield cup | C012 |
| 2、 Contact tip | C004 |
| 3、 Front adaptor | C010 |
| 4、 Gooseneck (15/24AK) | C020/018 |
| 5、 Trigger | |
| 6、 Spanner | |

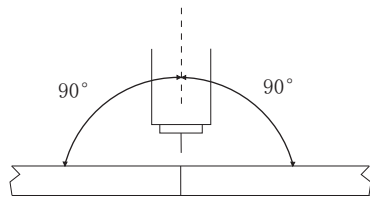
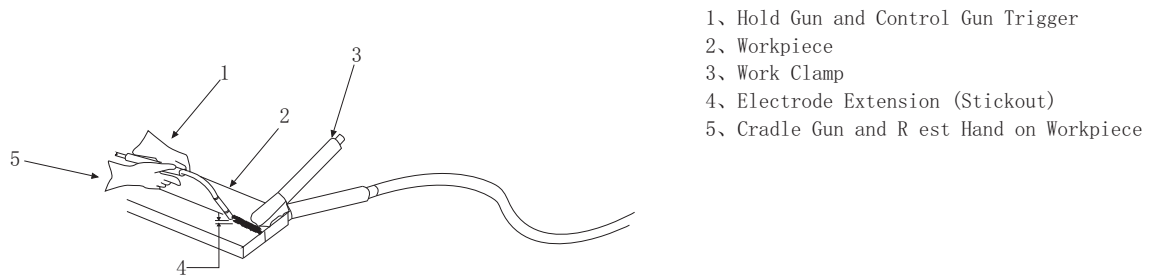
Operation

1、Controls

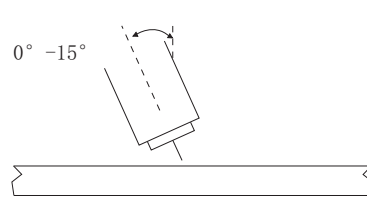


1. Display
2. Wire speed adjustment
3. Weld time extension
4. Weld current adjustment
5. Indicator light

2、 Holding And Positioning Welding Gun

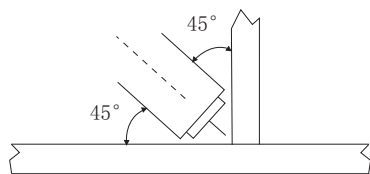


End View Of Work Angle

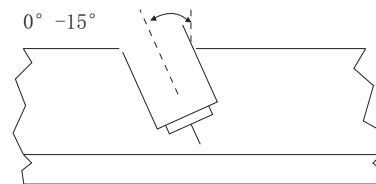


Side View Of Gun Angle

GROOVE WELDS



End View Of Work Angle

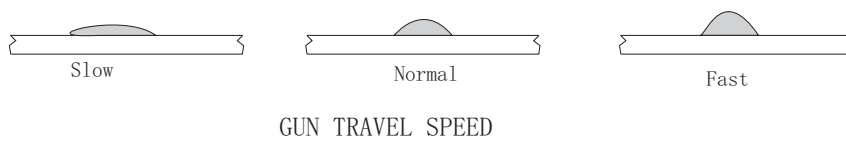
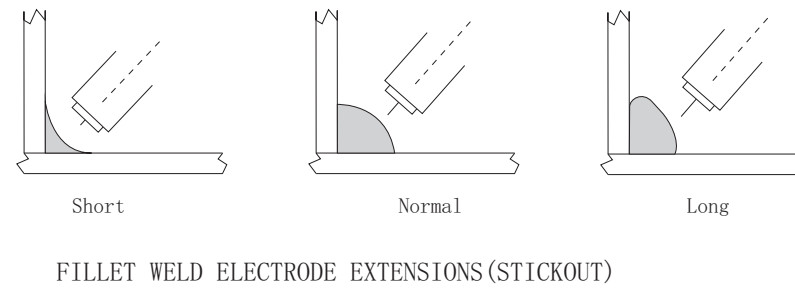
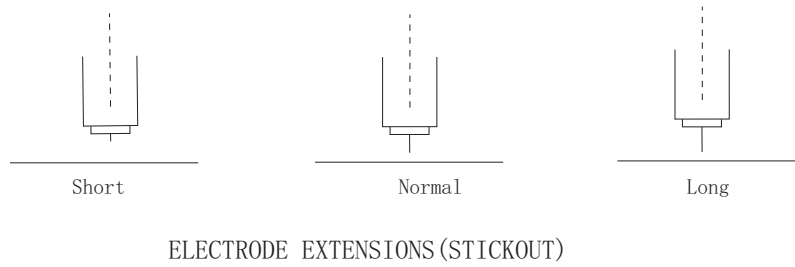
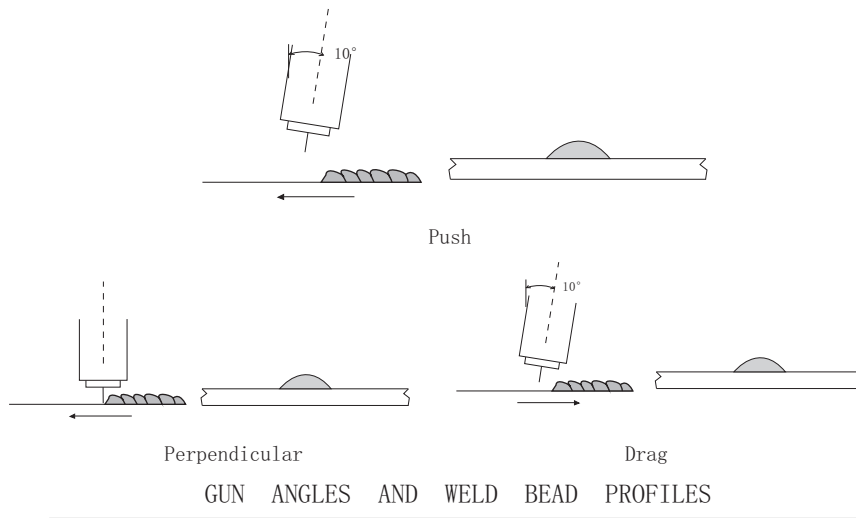


Side View Of Gun Angle

FILLET WELDS

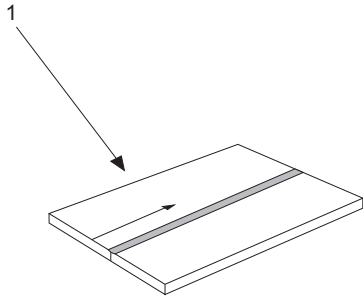
Welding wire is energized when gun trigger is pressed. Before lowering helmet and pressing trigger, be sure wire size is correct to past end of contact tip, and tip of wire is positioned correctly on seam.

3、 Conditions That Affect Weld Bead Shape

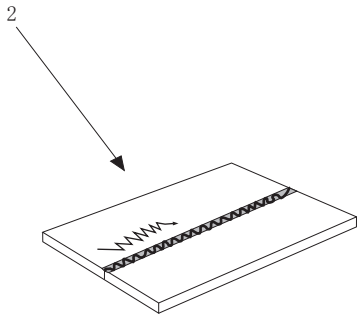


Weld bead shape depends on gun angle , direction of travel, electrode extension(stickout), travel speed, thickness of base metal, wire feed speed(weld current), and voltage.

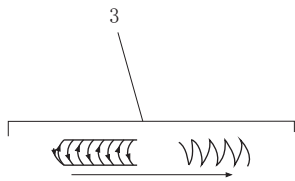
4、 Gun Movement During Welding



1、 Stringer Bead
Steady Movement Along Seam

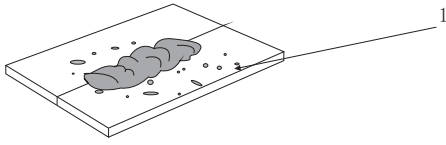


2、 Weave Bead
Side To Side Movement Along Seam

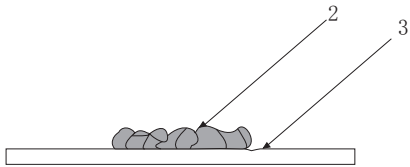


3、 Weave Patterns
Use weave patterns to cover a wide area
in one pass of the electrode.

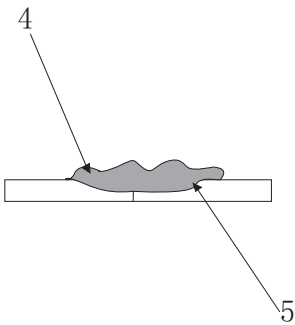
5、 Poor Weld Bead Characteristics



1、 Large Spatter Deposits

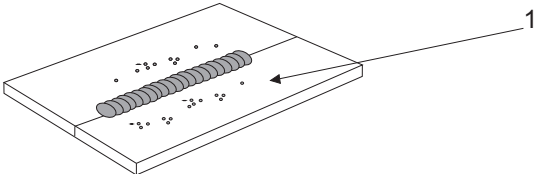


2、 Rough , Uneven Bead
3、 Slight Crater During Welding

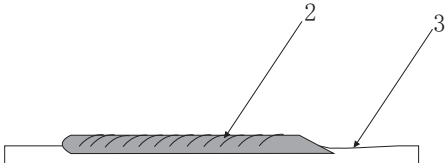


4、 Bad Overlap
5、 Poor Penetration

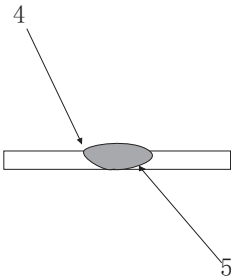
6、 Good Weld Bead Characteristics



1、 Fine Spatter



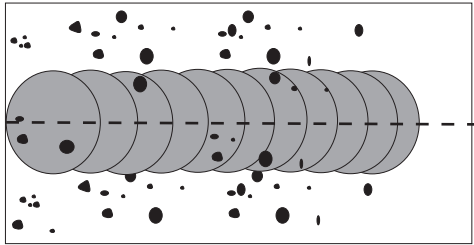
2、 Uniform Bead
3、 Moderate Crater During Welding



4、 No Overlap
5、 Good Penetration into Base Metal

Troubleshooting

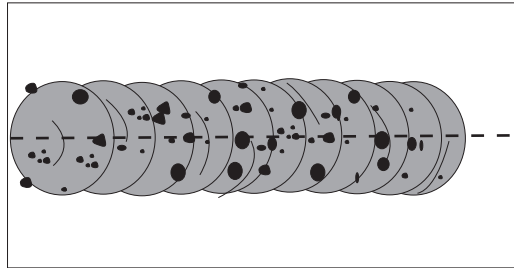
1. Excessive Spatter



Excessive Spatter:
Scattering of molten metal particles that cool to solid form near weld bead.

Possible Causes	Corrective Actions
Wire feed too high	Select lower wire feed speed
Voltage too high	Select lower voltage range
Electrode extension (stickout) too long	Use shorter electrode extension (stickout)
Workpiece dirty	Remove all grease, oil, moisture, rust, paint, undercoating, and dirt from surface before welding.
Insufficient shielding gas at welding arc.	Increase flow of shielding gas at regulator/flowmeter and/or prevent drafts near welding arc
Dirty Welding wire	Use clean, dry welding wire.
	Eliminate pickup of oil or lubricant on welding wire from feeder or liner.

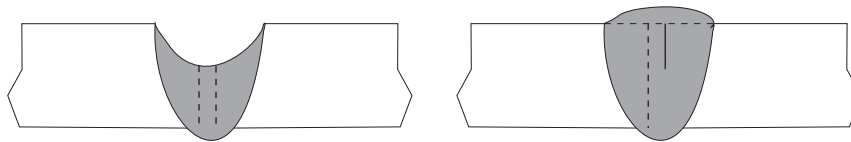
2、Porosity



Porosity:
Small cavities or holes resulting from gas pockets in weld metal.

Possible Causes	Corrective Actions
Insufficient shielding gas at welding arc.	Increase flow of shielding gas at regulator / flowmeter and/or prevent drafts near welding arc.
	Remove spatter from gun nozzle.
	Check gas hoses for leaks.
	Adjust nozzle distance from workpiece.
Wrong gas	Hold gun near bead at end of weld until molten metal solidifies.
Dirty welding wire	Use welding grade shielding gas ;change to different gas.
	Use clean, dry welding wire.
Workpiece dirty	Eliminate pick up of oil or lubricant on welding wire from feeder or liner.
	Remove all grease, oil, moisture, rust, paint, coatings, and dirt from work surface before welding.
Welding wire extends too far out of nozzle	Use a more highly deoxidizing welding wire (contact supplier)
	Do not extend wire too far beyond nozzle.

3、 Excessive Penetration



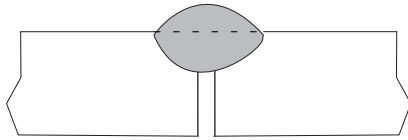
Excessive Penetration

Good Penetration

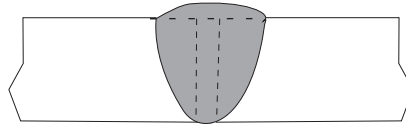
Excessive Penetration :
Weld metal melting through base metal and hanging underneath weld.

Possible Causes	Corrective Actions
Excessive heat input	Select lower voltage range and reduce wire feed speed.
	Increase travel speed.

4、 Lack Of Penetration



Lack of Penetration

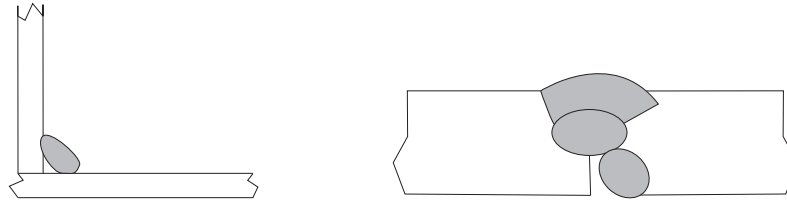


Good Penetration

Lack Of Penetration:
Shall fusion between weld metal and base metal.

Possible Causes	Corrective Actions
Improper joint preparation.	Material too thick. Joint preparation and design must provide access to bottom of groove while maintaining proper welding wire extension and arc characteristics.
Improper weld technique.	Maintain normal gun angle of 0 to 15 degrees to achieve maximum penetration.
	Keep arc on leading edge of weld puddle.
Insufficient heatinput.	Do not extend wire too far from nozzle.
	Select higher wire feed speed and/or select higher voltage range.
	Reduce travel speed.

5、 Incomplete Fusion

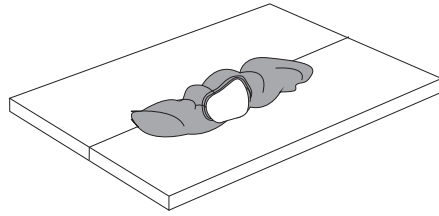


Incomplete Fusion:

Failure of weld metal to fuse completely with base metal or a preceding weld bead.

Possible Causes	Corrective Actions
Workpiece dirty	Remove all grease, oil, moisture, rust, paint, undercoating, and dirt from work surface before welding.
Insufficient heat input.	Select higher voltage range and/or adjust wire feed speed.
Improper welding technique	Place stringer bead in proper location(s) at joint during welding.
	Adjust work angle or widen groove to access bottom during welding.
	Momentarily hold arc on groove side walls when using weaving technique.
	Keep arc on leading edge of weld puddle.
	Use correct gun angle of 0 to 15 degrees.

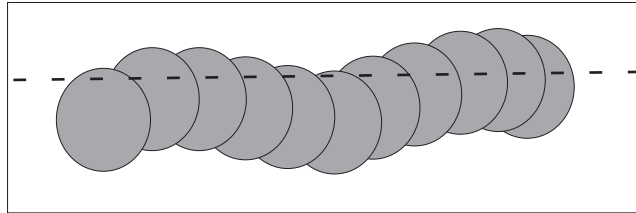
6、 Burn-Through



Burn-Through:
Weld metal melting completely through base metal resulting in holes where no metal remains.

Possible Causes	Corrective Actions
Excessive heat input.	Select lower voltage range and reduce wire feed speed.
	Increase and/or maintain steady travel speed.

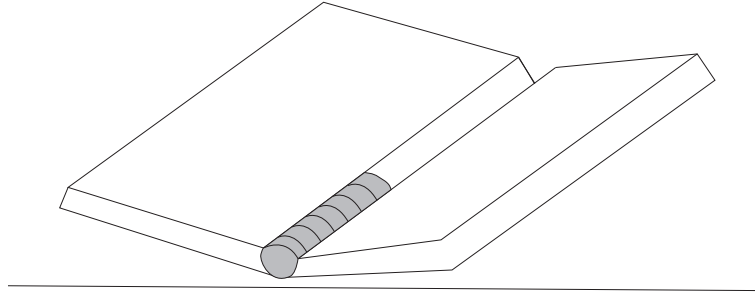
7. Waviness Of Bead



Waviness Of Bead:
Weld metal that is not parallel and does not cover joint formed by base metal.

Possible Causes	Corrective Actions
Welding wire extends too far out of nozzle.	Do not extend wire too far from nozzle.
Unsteady hand	Support hand on solid surface or use two hands.

8、 Distortion



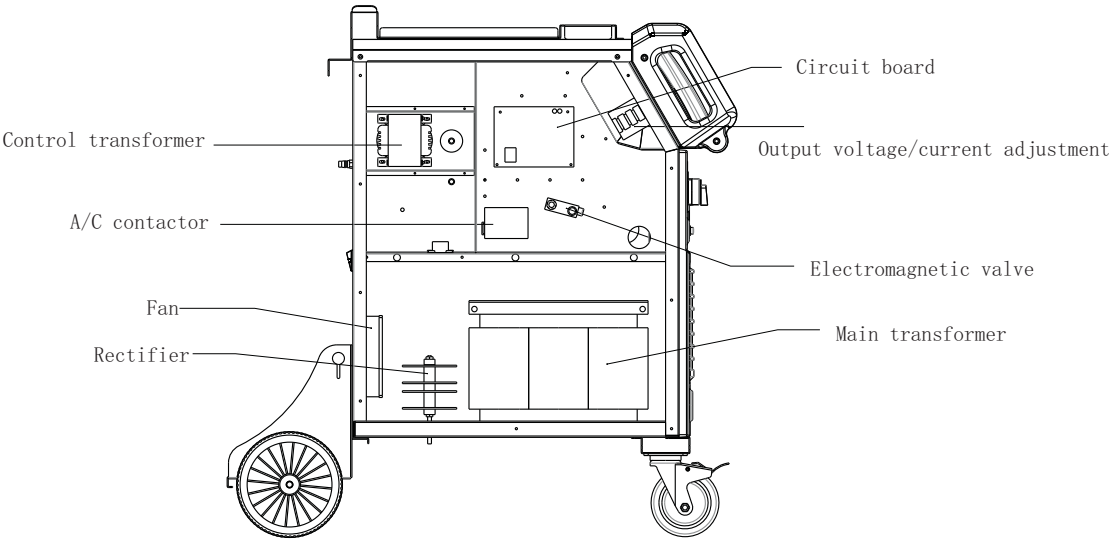
Distortion:
Contraction of weld metal during welding that forces base metal to move.

Possible Causes	Corrective Actions
Excessive heat input.	Use restraint (clamp) to hold base metal in position.
	Make tack welds along joint before starting welding operation.
	Select lower voltage range and/or reduce wire feed speed.
	Increase travel speed.
	Weld in small segments and allow cooling between welds.

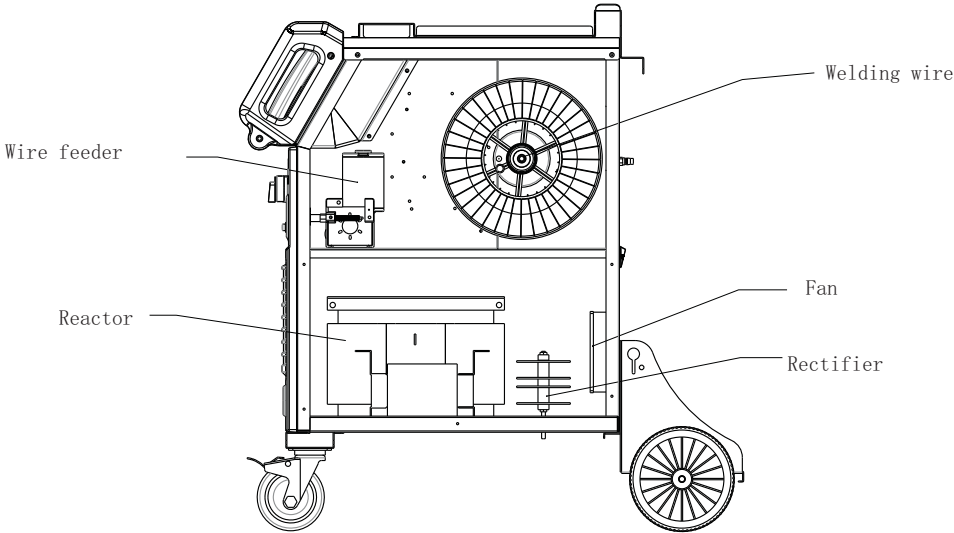
9、Troubleshooting Guide For Semiautomatic Welding Equipment

Problem	Probable Cause	Remedy
Arc can not weld , incomplete fusion	<ol style="list-style-type: none"> 1)Not enough power phase. 2)Too low welding voltage. 	<ol style="list-style-type: none"> 1)Check power source. 2)Select higher voltage range.
No wire feed	<ol style="list-style-type: none"> 1)Drive roll groove dose not line up with wire guide. 2)Obstruction in wire guide. 3)Drive roll pressure too high. 4)Incorrect wire size. 5)Obstruction in wire inlet guide or contact tip. 6)Dirty or bad quantity welding wire. 7)Press wire device pressure too low. 	<ol style="list-style-type: none"> 1)Aligning drive roll and wire guide. 2)Clear obstruction in wire guide or replace it if necessary. 3)Readjust drive roll pressure. 4)Replace wire or wire guide. 5)Clear obstruction in gun contact tip or liner. 6)Use good quantity welding wire. 7)Readjust screws.
Excessive spatter	<ol style="list-style-type: none"> 1)Wire feed speed too high. 2>Contact tip damaged. 	<ol style="list-style-type: none"> 1) Select lower wire feed speed. 2)Replace contact tip.
Small cavities or holes resulting from gas pockets in weld metal	<ol style="list-style-type: none"> 1)Insufficient shielding gas at welding arc. 2)Regulator\flowmeter damaged. 3>Contact tip damaged. 4)Leakage, outside gas mix with shielding gas. 	<ol style="list-style-type: none"> 1)Increase flow of shielding gas at regulator /flowmeter. 2)Replace regulator/flowmeter. 3)Replace contact tip. 4)Check gas hoses for leaks.
Welding arc not stable	<ol style="list-style-type: none"> 1)Welding wire dirty. 2)Bad contact of work clamp. 3)Wrong size gun liner or contact tip, or contact tip worn. 	<ol style="list-style-type: none"> 1) Use clean, dry welding wire . 2)Connect work clamp to get good metal to metal as contact. 3)Replace contact tip.
Low or unstable wire speed	<ol style="list-style-type: none"> 1)Distorted welding wire. 2)Obstruction in gun contact tip or liner. 	<ol style="list-style-type: none"> 1)Eliminate pickup of distorted welding wire from feeder or liner, or readjust drive roll pressure. 2)Replace contact tip or liner.
No weld output	<ol style="list-style-type: none"> 1)Main transformer overheats ,overheat protection working. 2) Fuse broken. 3)Gun trigger damaged or plug worn. 	<ol style="list-style-type: none"> 1)Wait 15-30 mins for unit to cool. 2) Replace fuse. 3)Replace gun trigger or plug

Exploded View

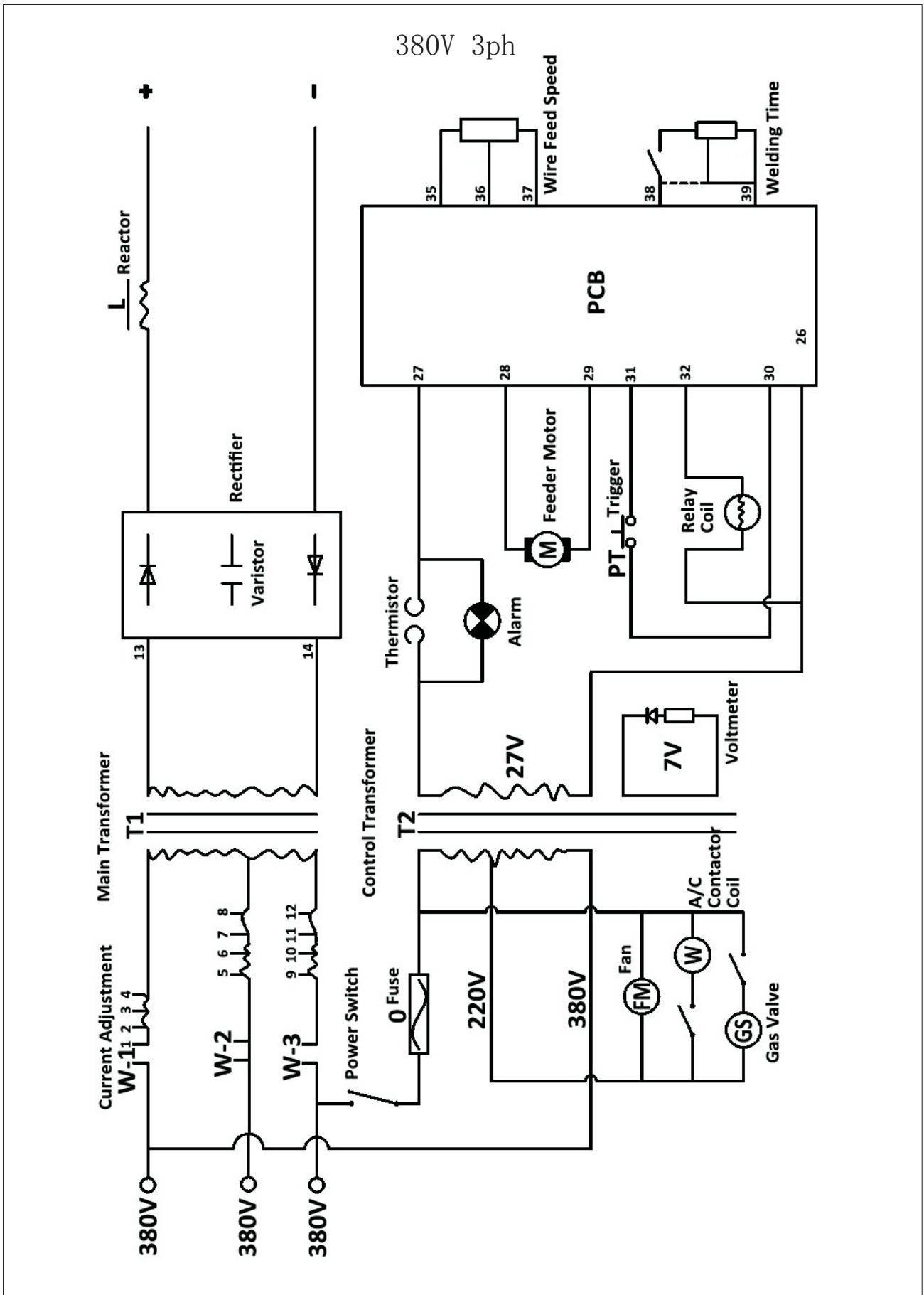


Left-side view



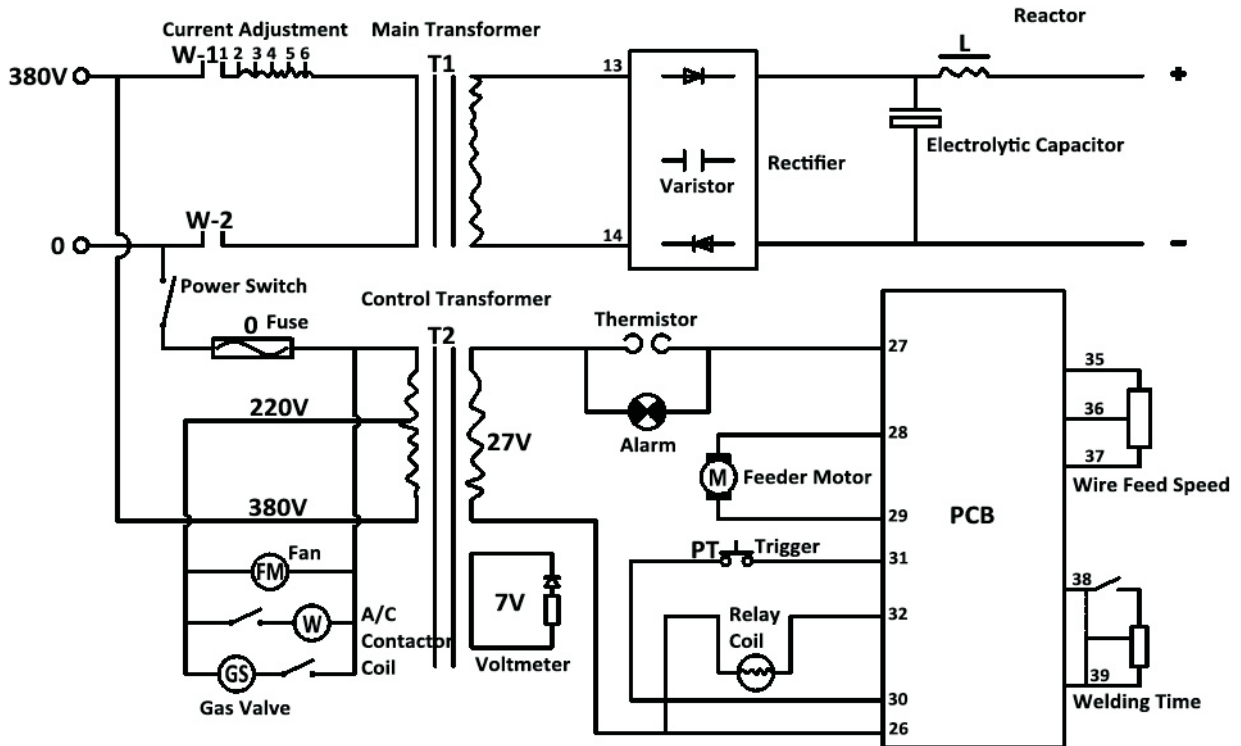
Right-side view

Circuit Diagram



Circuit Diagram

380V 1ph



220V 1ph

