FY-TECH

Instruction Manual

CE

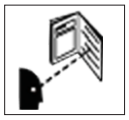
FYMIG5260

Our equipment is approved by the following car manufacturers(China)

CONTENTS

1. SAFETY PRECAUTIONS SYMBOLS

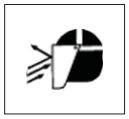
To protect yourself and others from injury, read and follow these precautions before installation and operation.



Read instructions.
1. Read the manual before using or servicing unit.
2. Use only manufacturer's supplied replacement.

Exploding parts can injure. Always wear a face shield and long sleeves.

Static can damage PC boards
1. Put on grounded wrist strap before handing boards or parts。
2. Use proper static-proof bags and boxes to store, move or ship PC boards.



1. Wear approved face shield or safety goggles with side shields.
2. Wear proper body protection to protect skin.

Flying metal can injure eyes. Wear safety glasses with side shields or face shield.

1. Magnetic fields can affect pacemakers. Pacemaker wearers keep away.
2. Wearers should consult their doctor before going near plasma arc cutting operations.

Overuse can cause overheating. Allow cooling period, follow rated duty cycle before starting to weld again.

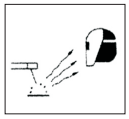
Cylinders can explode if damaged. Gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Be sure to treat them carefully.

Do not weld in the height!

Fire or explosion hazard.
Do not locate unit on, over, or near combustible surfaces. Do not install unit near flammables.

Electric shock can kill:
1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Do not wrap electrical cable around your body.
4. Ground the workpiece with a good electrical ground.

Fumes and gases can be hazardous:
Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health. If inside, ventilate the area. Do not weld in a confined space only if it is well ventilated.



Eye protection for welding:
Current level in amperage / Minimum shade number
30-150A / #8
150-300A / #10
300-500A / #12

Moving parts can cause injury.

Keep away from moving parts such as fans.

The heat from the workpiece can cause serious burns.

Keep away from the torch tip.

Remove all flammables of the welding area.

Falling unit can cause injury.

Never cut on pressurized cylinder.

Protect yourself!

Warn others!

Factory safety!

Maintenance regularly!

2. SYMBOLS AND DESCRIPTIONS

Symbols and Definitions

A Amperes	Gas Metal Arc Welding (GMAW) Gun	I On	% Percent
V Volts	Wire Feed	O Off	Increase
I_2 Rated Welding Current	IP Degree of Protection	Protective Earth (Ground)	Line Connection
S_1 Power Rating, Products of Voltage and Current	1~ Single Phase	No / Do Not Do This	Loose Shield Cup
HZ Hertz	X Duty Cycle	Gas Input	Adjust Air/Gas Pressure
U_1 Primary Voltage	Direct Current	Gas Output	Do Not Switch While Welding
U_0 Rated No Load Voltage (Average)	Constant Current	Input	Wire Feed Spool Gun
U_2 Conventional Load Voltage	Temperature	V 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, nicket, etc. Extensively used in the welding and field operation of oil pipeline, chemical, car fabrication, shipyard, etc.

3. INSTALLATION

3.1 Specifications

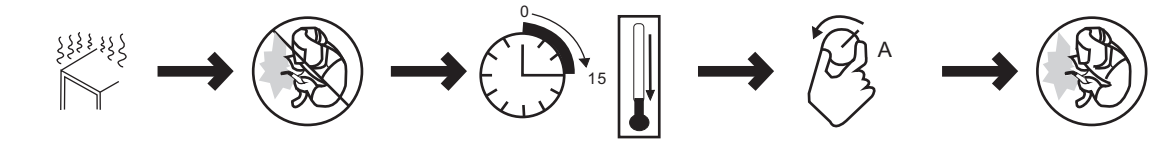
Model	FYMIG5300
Input Voltage (V)	Ac380 Three Phase
Frequency (Hz)	50/60
Rated Input Power (KW)	10
Rated Input Current (A)	15
Rated Output Current (A)	300
Output Voltage (V)	15.7-31
No-load Voltage (V)	50
Welding Wire Diameter (mm)	0.6, 0.8, 0.9, 1.0
Duty Cycle	65%
Insulation Class	F
Dimensions (mm)	1050*520*930

3.2 Duty Cycle and Overheating

1. Overheat protection is installed on the aluminium board of main transformer and rectifier. The unit products 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.

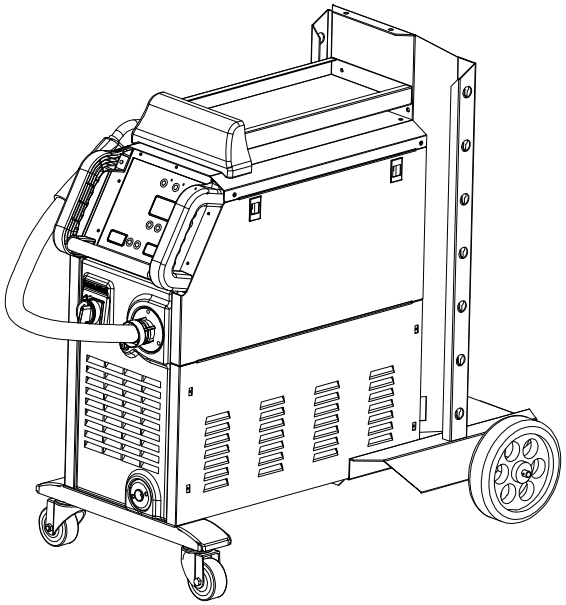


Overheating Stop working Wait 15 minutes for unit to cool Reduce amperage or reduce duty cycle Weld again

3. INSTALLATION

3.3 Machine Installation

1. Open the package and find out the 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 to +40°C.
6. Storage Temperature range: -25°C to +56°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^3, Ventilate the area.
10. Properly ground this equipment.
11. The input power cord gradient should not more than 15°.



3. INSTALLATION

3.4 Selecting a Location

1. Select a correct location to place the unit.

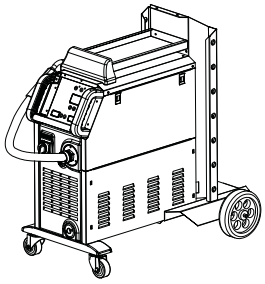
2. Determine input power cord length according to its actual operation requirement. Input power cord must have a minimum inside diameter of 6mm2.

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 hight sparaely.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 fe eder and welding gun divide from the main unit.It is more convenient to operate.

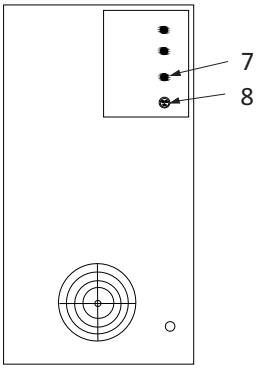


3. INSTALLATION

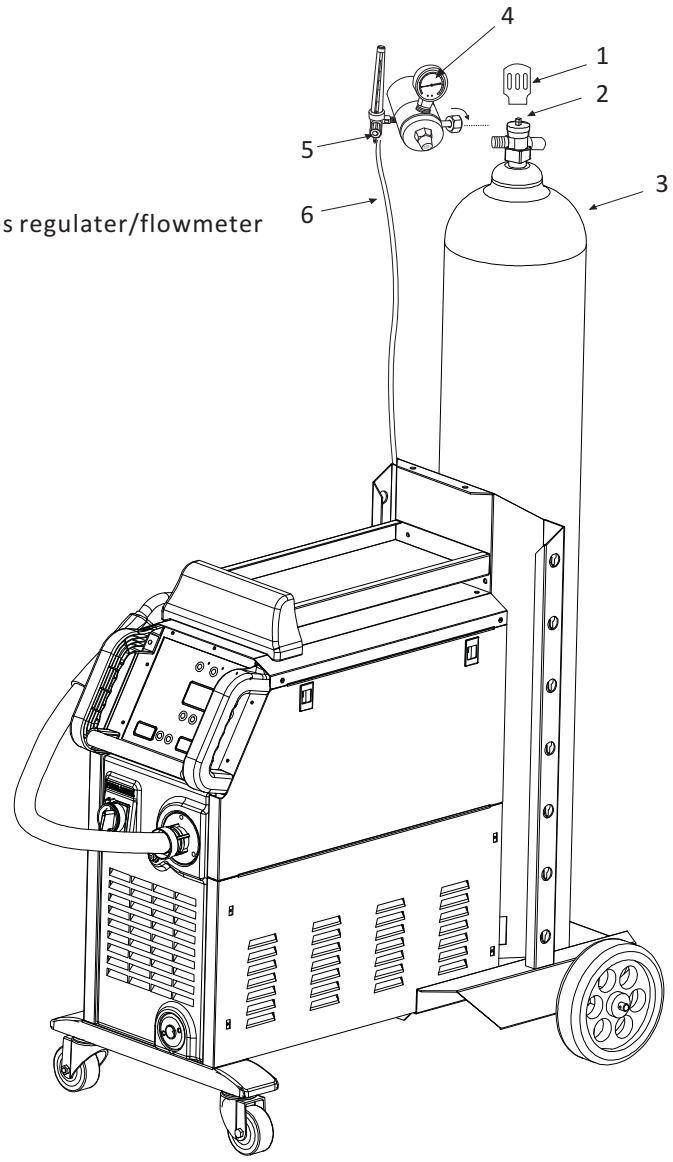
3.5 Installing Gas Supply

1. Cap
2. Cylinder valve (Remove cap, stand to side of valve, and open valve slightly. Gas flow blows dust and dirt from vavle. Close vavle.)
3. Cylinder
4. Regulator/Flowmeter (Make sure the surface is vertical while installing.)
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.

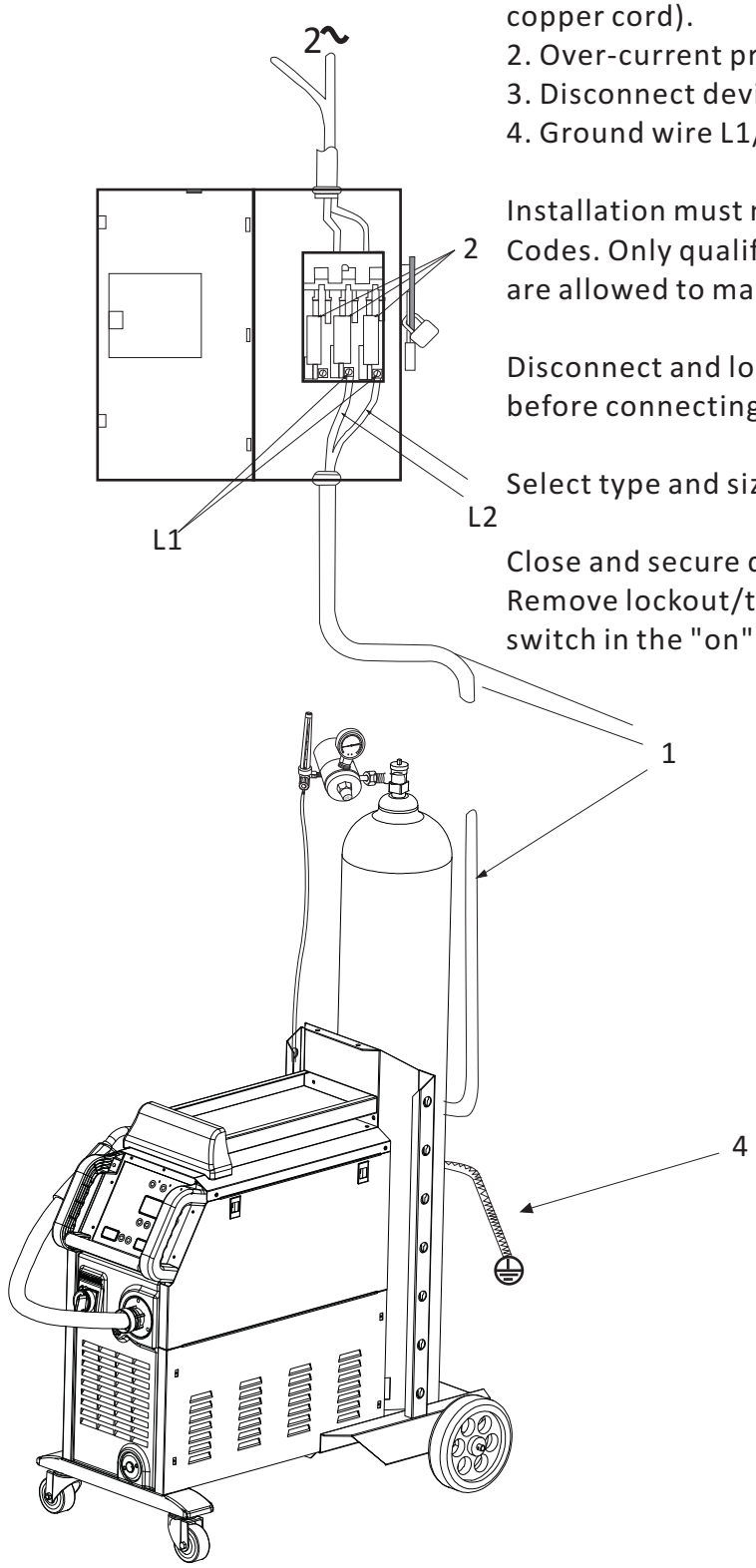
⚠ DO NOT use other gases regulater/flowmeter with CO^2 shielding gas.



Rear Panel



3.6 Connecting Input Power



1. Input power cord (not less than 6mm^2 copper cord).
2. Over-current protection.
3. Disconnect device line terminals.
4. Ground wire L1/L2 input conductors.

Installation must meet all National and Local Codes. Only qualified persons are allowed to make this installation.

Disconnect and lockout/tagout input power before connecting input conductors from unit.

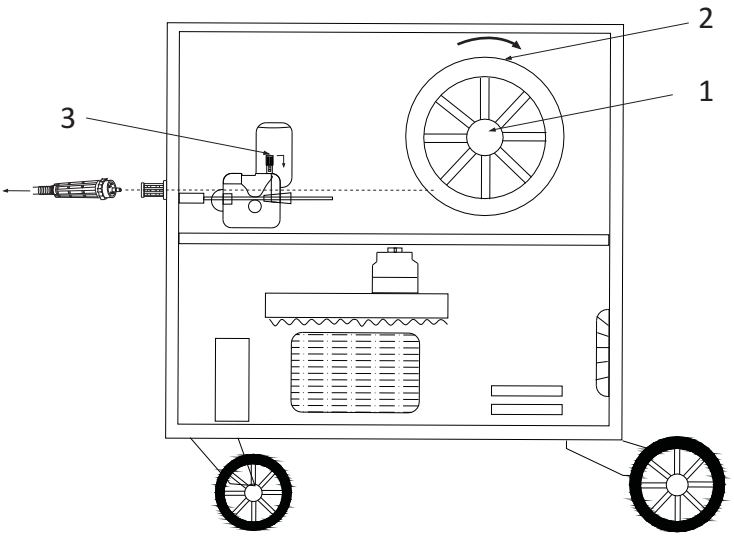
Select type and size of over-current protection.

Close and secure door on disconnect device. Remove lockout/tagout device, and place switch in the "on" position.

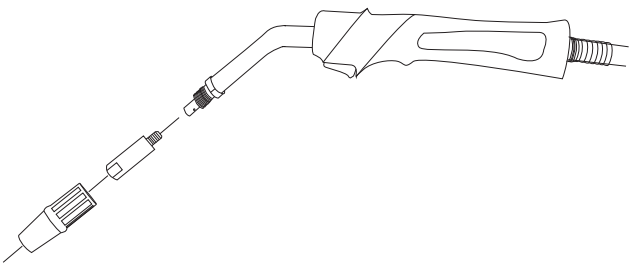
3. INSTALLATION

3.7 Threading Welding Wire

1. Wire spool spindle
2. Welding wire
3. Pressure adjustment knob

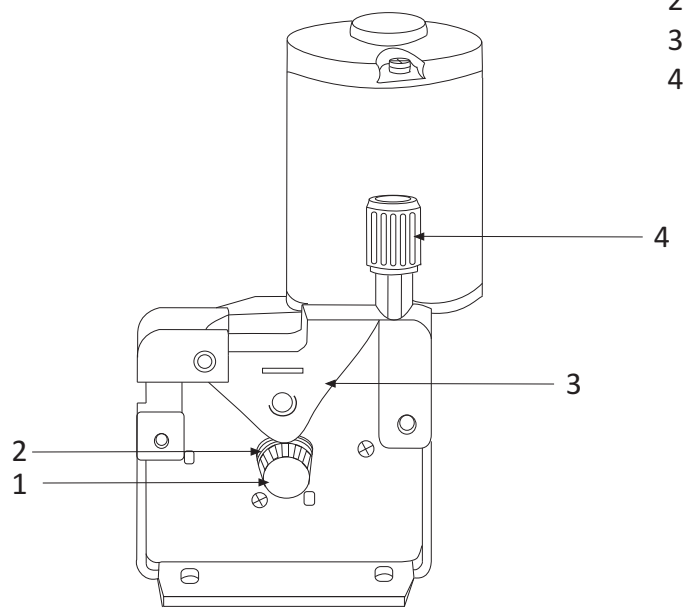


1. Open wire spool spindle; install wire spool; release pressure adjustment knob; pull and hold wire.
Push wire thru guides into drive roll. Close wire spool spindle tightly to prevent slipping (Feed wire to check wire spool installation).
2. Set a desired drive roll pressure, close and tighten pressure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



3.8 Changing Drive Roll

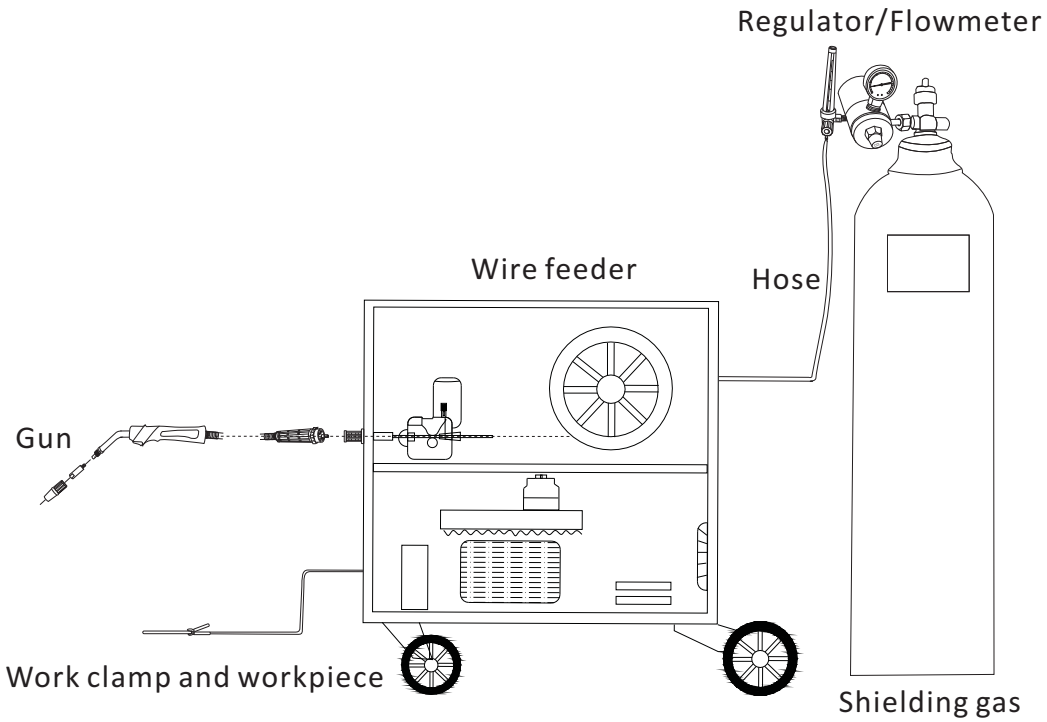
1. Drive roll securing nut
2. Drive roll
3. Pressure adjustment knob
4. Press device



Changing Drive roll:

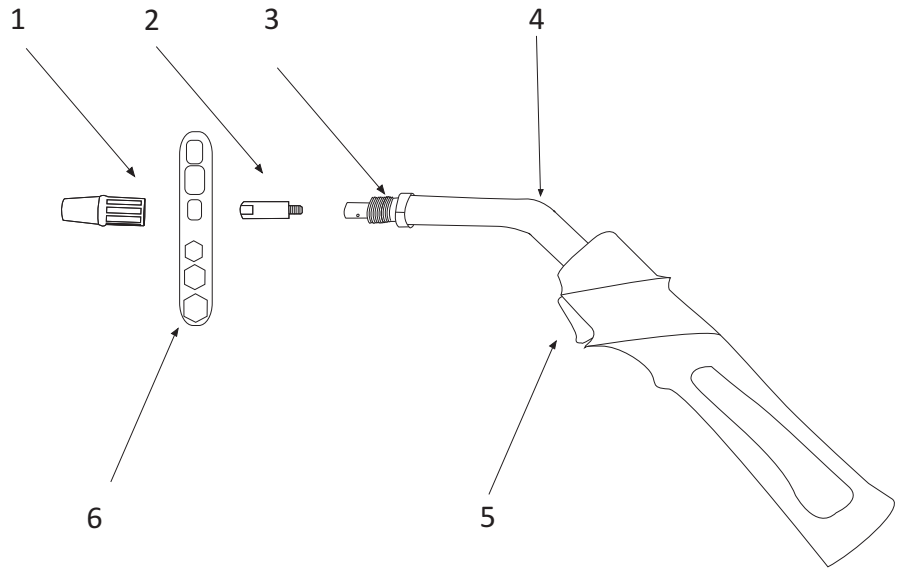
1. Release pressure adjustment knob. Press wire device springs open.
2. Loosen securing nut, Remove drive roll.
3. The drive roll consists of two different sized grooves. Reinstall the desired wire sized groove close to the motor shaft.
4. Tighten securing nut.
5. Replace press wire device, and set a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

3.9 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.

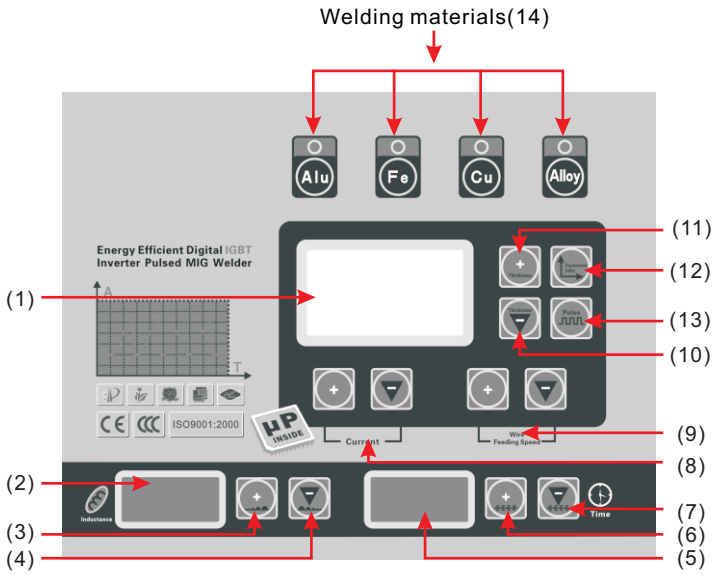
3.10 Welding Gun



1. Shield cup C012
2. Contact tip C004
3. Front adaptor C010
4. Gooseneck (15/24AK) C020/C018
5. Trigger
6. Spanner

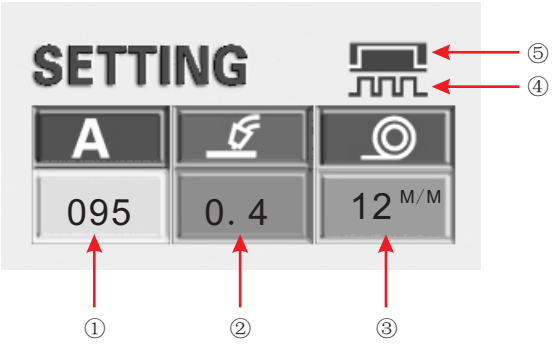
Operation

1. Operation Panel



(1). LCD panel
(2) .Inductance display
(3)/(4) .Inductance adjustment
(Default setting, do not adjust unless necessary. Remember that the higher the inductance, the deeper the fusion.)
(5) .Time display
(6)/(7) .Time adjustment
(8). Current adjustment
(9) .Wire feeding speed adjustment
(10)/(11) .Thickness adjustment
(12) .Equipment information
(13). Pulse / Regular
(14) .Welding materials

2. Setting Screen



①. Current display
②. Material thickness
③. Wire feeding speed
④. Pulse welding
⑤. Regular welding (it is regular welding as shown in the figure)

Attention!

1.Generally only need to adjust (10) and (11). Do not need adjust other preset parameters.

2.According to actual situations, sometimes can fine tune (8) and (9) to achieve the best welding effect.

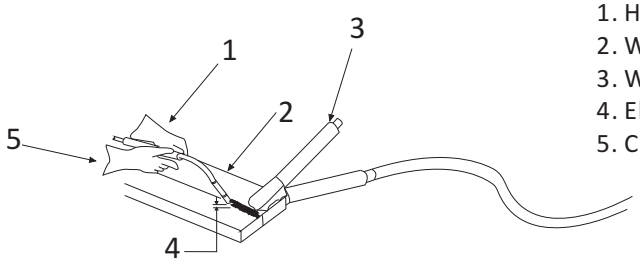
3.Restore factory default settings：

Press (12), LCD panel (1) shows equipment information. Then press and hold (3) and (6) at the same time for about 10s. Turn off the machine then turn it on.

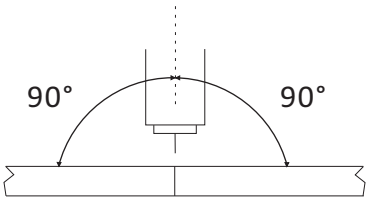
4.Regular and pulse switching: The machine is preset as regular mode as ⑤ in the figure. Press (13) to switch the mode to pulse welding indicated by a highlighted black box over the program icon as ④ in the figure. Then (9) is used to adjust the pulse frequency instead of wire feeding speed. Press (13) again, switch to regular welding mode again.

5.Spot welding time adjustment: The defualt setting is FFF -- manual mode. It will switch to aoto mode if adjust (6) and (7). For example spot welding time 0.1 means 0.1s, which means that when you press and release the trigger once, the machine will stop after feeding wire 0.1s (welding only 0.1s even if you press and hold the trigger all the time).

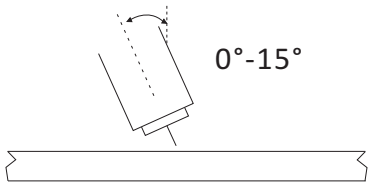
4.2 Holding and Positioning Welding Gun



1. Hold gun and control gun trigger
2. Workpiece
3. Work clamp
4. Electrode extension (stickout)
5. Cradle gun and rest hand on workpiece

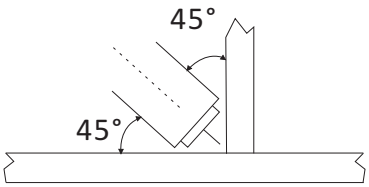


End view of work angle

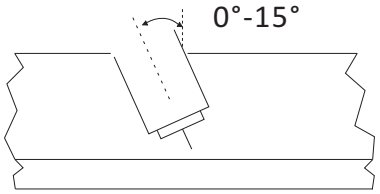


Side view of gun angle

GROOVE WELDS



End view of work angle

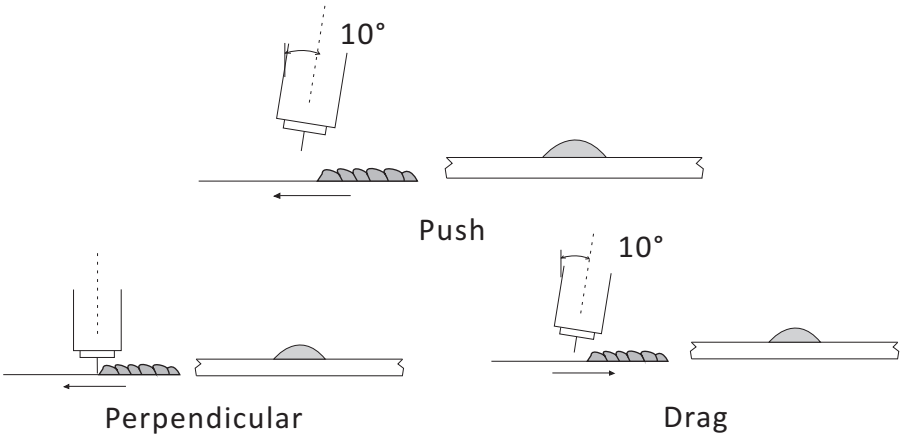


Side view of gun angle

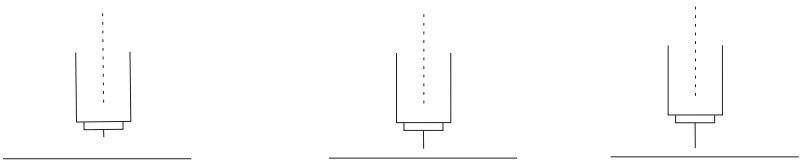
FILLET WELDS

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.

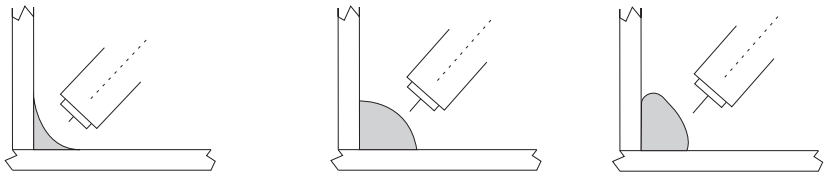
4.3 Conditions that Affect Weld Bead Shape



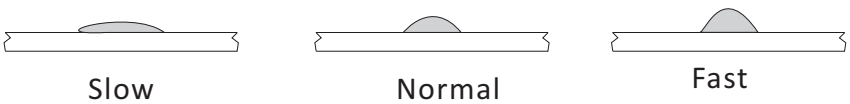
GUN ANGLES AND WELD BEAD PROFILES



ELECTRODE EXTENSIONS (STICKOUT)



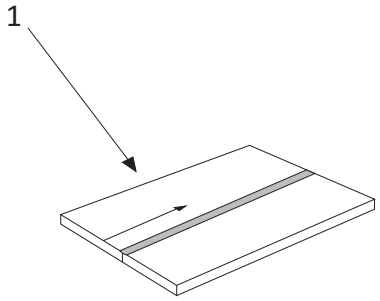
FILLET WELD ELECTRODE EXTENSIONS (STICKOUT)



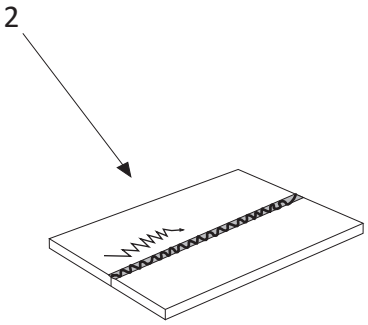
GUN TRAVEL SPEED

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.

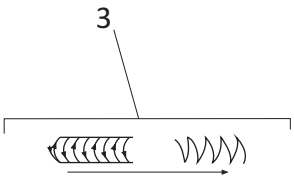
4.4 Gun Movement during Welding



1. Stringer Bead
Steady movement along seam

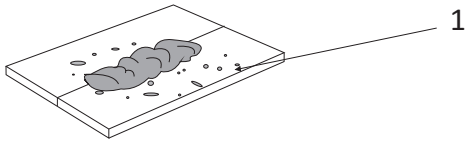


2. Weave Bead
Side to side movement along seam

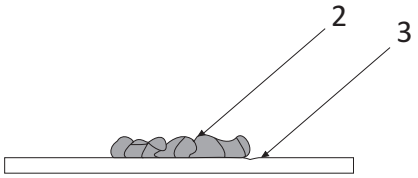


3. Weave Patterns
Use weave patterns to cover a wide area in one pass of the electrode

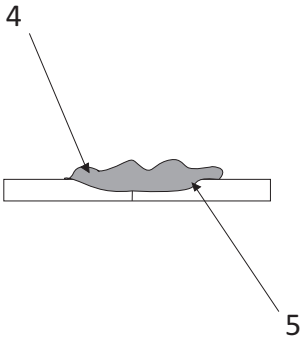
4.5 Poor Weld Bead Characteristics



1. Large Spatter Deposits

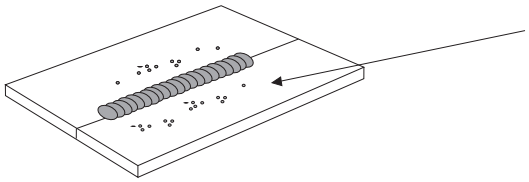


2. Rough, Uneven Bead
3. Slight Crater during Welding

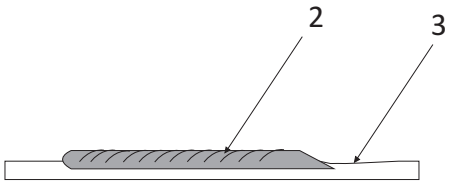


4. Bad Overlap
5. Poor Penetration

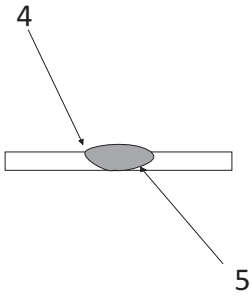
4.6 Good Weld Bead Characteristics



1. Fine Spatter



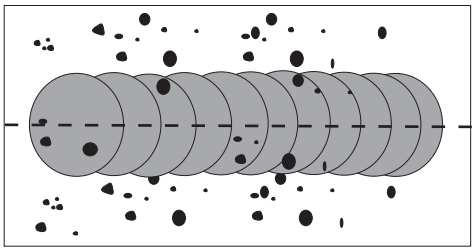
2. Uniform Bead
3. Moderate Crater during Welding



4. No Overlap
5. Good Penetration into Base Metal

5. TROUBLESHOOTING

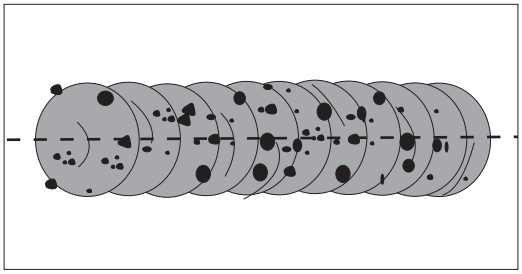
5.1 Excessive Spatter



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 under coating, 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

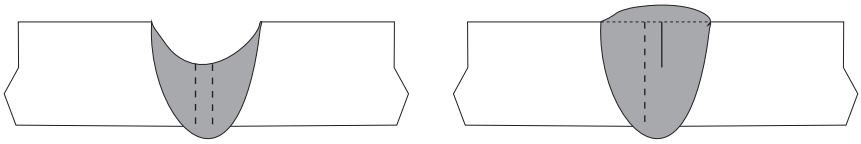
5.2 Porosity



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
	Hold gun near bead at end of weld until molten metal solidifies
Wrong gas	Use welding grade shielding gas, change to different gas
Dirty welding wire	Use clean, dry welding wire
	Eliminate pick up of oil or lubricant on welding wire from feeder or liner
Workpiece dirty	Remove all grease, oil, moisture, rust paint under coating, and dirt from surface, before welding
	Use a more highly deoxidizing welding wire (contact supplier)
Welding wire extends too far out of nozzle	Do not extend wire too far beyond nozzle

5.3 Excessive Penetration

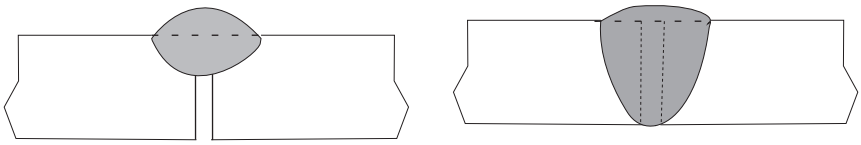


Excessive Penetration　　Good Penetration

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

5.4 Lack of Penetration

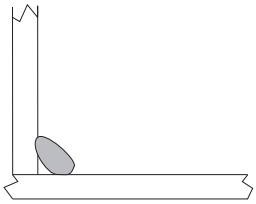


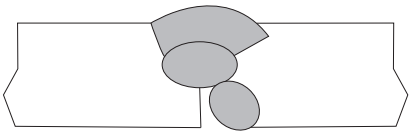
Lack of Penetration　　Good Penetration

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 characteristic
Improper weld technique	Maintain normal gun angle of 0 to 15 degrees to achieve maximum penetration
	Keep arc on leading edge of weld puddle
	Do not extend wire too far from nozzle
Insufficient heat input	Select higher wire feed speed and/or select higher voltage range
	Reduce travel speed

5.5 Incomplete Fusion

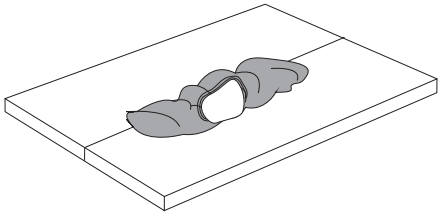




Failure of weld metal to fuse completely with base metal or a preceeding weld bead.

Possible Causes	Corrective Actions
Improper joint preparation	Remove all grease, oil, moisture, rust paint under coating, and dirt from surface, before welding
Improper weld technique	Select higher voltage range and/or adjust wire feed speed
Insufficient heat input	Place stringer bead in proper locations 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

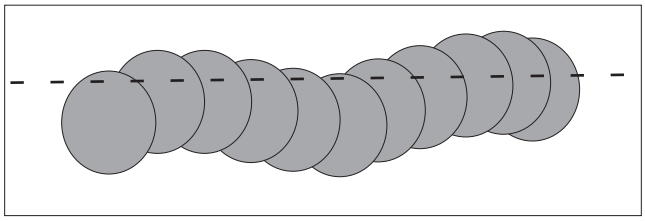
5.6 Burn Through



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

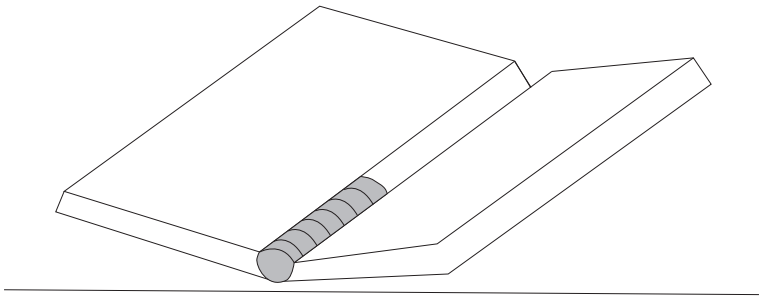
5.7 Waviness of Bead



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

5.8 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

5. TROUBLESHOOTING

5.9 Other Troubleshooting

Problem	Probable Cause	Remedy
Arc can not weld Incomplete fusion	1. Not enough power phase 2. Too low welding voltage	1. Check power source 2. Select higher voltage range
No wire feed	1. Drive roll groove does 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	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	1. Wire feed speed too high 2. Contact tip damaged	1. Select lower wire feed speed 2. Replace contact tip
Small cavities or holes resulting from gas pockets in weld metal	1. Insufficient shielding gas at welding arc 2. Regulator/flowmeter damaged 3. Contact tip damaged 4. Leakage, outside gas mix with shielding gas	1. Increase flow of shielding gas at regulator/flowmeter 2. Replace regulator/flowmeter 3. Replace contact tip 4. Check gas hoses for leaks
Welding are not stable	1. Welding wire dirty 2. Bad contact of work clamp 3. Wrong size gun liner or contact tip, or contact tip worn	1. Use clean, dry welding wire 2. Connect work clamp to get good to metal as contact 3. Replace contact tip
Low or unstable wire speed	1. Distorted welding wire 2. Obstruction in gun contact tip or liner	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	1. Main transformer overheats, overheat protection working 2. Fuse broken 3. Gun trigger damaged or plug worn	1. Wait 15-30 mins for unit to cool 2. Replace fuse 3. Replace gun trigger or plug