WELDING AND CUTTING TOTAL SOLUTION

OWNER'S MANUAL

POWERTIG 300DP III

WARNING:

Read carefully and understand all **ASSEMBLY AND OPERATION INSTRUCTIONS** before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

2017VERSION

GENERAL SAFETY RULES

 **WARNING: Read and understand all instructions.** Failure to follow all instructions listed below may result in serious injury.

 **CAUTION: Do not allow persons to operate or assemble this POWERTIG 300DPIII welder until they have read this manual and have developed a thorough understanding of how the POWERTIG 300DPIII welder works.**

 **WARNING: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions or situations that could occur.** It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

1.1 Your Welding Environment

-Keep the environment you will be welding in free from flammable materials.
-Always keep a fire extinguisher accessible to your welding environment.
-Always have a qualified person install and operate this equipment.
-Make sure the area is clean, dry and ventilated. Do not operate the welder in humid, wet or poorly ventilated areas.
-Always have your welder maintained by a qualified technician in accordance with local, state and national codes.
-Always be aware of your work environment. Be sure to keep other people, especially children, away from you while welding.
-Keep harmful arc rays shielded from the view of others.
-Mount the welder on a secure bench or cart that will keep the welder secure and prevent it from tipping over or falling.

1.2 Your Welder's Condition

-Check ground cable, power cord and welding cable to be sure the insulation is not damaged. Always replace or repair damaged components before using the welder.
-Check all components to ensure they are clean and in good operating condition before use.

1.3 Use of Your Welder

⚠ CAUTION

Do not operate the welder if the output cable, electrode, torch is wet. Do not immerse them in water. These components and the welder must be completely dry before attempting to use them.
-Follow the instructions in this manual.
-Keep welder in the off position when not in use.
-Connect ground lead as close to the area being welded as possible to ensure a good ground.
-Do not allow any body part to come in contact with the welding wire if you are in contact with the material being welded, ground or electrode from another welder.
-Do not weld if you are in an awkward position. Always have a secure stance while welding to prevent accidents. Wear a safety harness if working above ground.

-Do not drape cables over or around your body.
-Wear a full coverage helmet with appropriate shade (see ANSI Z87.1 safety standard) and safety glasses while welding.
-Wear proper gloves and protective clothing to prevent your skin from being exposed to hot metals, UV and IR rays.
-Do not overuse or overheat your welder. Allow proper cooling time between duty cycles.
-Keep hands and fingers away from moving parts.
-Do not point torch at any body part of yourself or anyone else.
-Always use this welder in the rated duty cycle to prevent excessive heat and failure.

1.4 Specific Areas of Danger, Caution or Warning

Electrical Shock

⚠WARNING

Electric arc welders can produce a shock that can cause injury or death. Touching electrically live parts can cause fatal shocks and severe burns. While welding, all metal components connected to the wire are electrically hot. Poor ground connections are a hazard, so secure the ground lead before welding.
-Wear dry protective apparel: coat, shirt, gloves and insulated footwear.
-Insulate yourself from the work piece. Avoid contacting the work piece or ground.
- Do not attempt to repair or maintain the welder while the power is on.
-Inspect all cables and cords for any exposed wire and replace immediately if found.
-Use only recommended replacement cables and cords.
-Always attach ground clamp to the work piece or work table as close to the weld area as possible.
-Do not touch the welding wire and the ground or grounded work piece at the same time.
-Do not use a welder to thaw frozen pipes.

Fumes and Gases

⚠WARNING

-Fumes emitted from the welding process displace clean air and can result in injury or death.
-Do not breathe in fumes emitted by the welding process. Make sure your breathing air is clean and safe.
-Work only in a well-ventilated area or use a ventilation device to remove welding fumes from the environment where you will be working.
-Do not weld on coated materials (galvanized, cadmium plated or containing zinc, mercury or barium). They will emit harmful fumes that are dangerous to breathe. If necessary use a ventilator, respirator with air supply or remove the coating from the material in the weld area.
-The fumes emitted from some metals when heated are extremely toxic. Refer to the material safety data sheet for the manufacturer's instructions.
-Do not weld near materials that will emit toxic fumes when heated. Vapors from cleaners, sprays and degreasers can be highly toxic when heated.

UV and IR Arc Rays

⚠ DANGER

The welding arc produces ultraviolet (UV) and infrared (IR) rays that can cause injury to your eyes and skin. Do not look at the welding arc without proper eye protection.
-Always use a helmet that covers your full face from the neck to top of head and to the back of each ear.
-Use a lens that meets ANSI standards and safety glasses. For welders under 160 Amps output, use a shade 10 lens; for above 160 Amps, use a shade 12. Refer to the ANSI standard Z87.1 for more information.

-Cover all bare skin areas exposed to the arc with protective clothing and shoes. Flame-retardant cloth or leather shirts, coats, pants or coveralls are available for protection.
-Use screens or other barriers to protect other people from the arc rays emitted from your welding.
-Warn people in your welding area when you are going to strike an arc so they can protect themselves.

Fire Hazards

⚠WARNING

Do not weld on containers or pipes that contain or have had flammable, gaseous or liquid combustibles in them. Welding creates sparks and heat that can ignite flammable and explosive materials.
-Do not operate any electric arc welder in areas where flammable or explosive materials are present.
-Remove all flammable materials within 35 feet of the welding arc. If removal is not possible, tightly cover them with fireproof covers.
-Take precautions to ensure that flying sparks do not cause fires or explosions in hidden areas, cracks or areas you cannot see.
-Keep a fire extinguisher close in the case of fire.
-Wear garments that are oil-free with no pockets or cuffs that will collect sparks.
-Do not have on your person any items that are combustible, such as lighters or matches.
-Keep work lead connected as close to the weld area as possible to prevent any unknown, unintended paths of electrical current from causing electrical shock and fire hazards.
-To prevent any unintended arcs, cut wire back to ¼" stick out after welding.

Hot Materials

⚠ CAUTION

Welded materials are hot and can cause severe burns if handled improperly.
-Do not touch welded materials with bare hands.
-Do not touch TIG gun nozzle after welding until it has had time to cool down.

Sparks/Flying Debris

⚠ CAUTION

Welding creates hot sparks that can cause injury. Chipping slag off welds creates flying debris.
-Wear protective apparel at all times: ANSI-approved safety glasses or shield, welder's hat and ear plugs to keep sparks out of ears and hair.

Electromagnetic Field

⚠ CAUTION

-Electromagnetic fields can interfere with various electrical and electronic devices such as pacemakers.
-Consult your doctor before using any electric arc welder or cutting device
-Keep people with pacemakers away from your welding area when welding.
-Do not wrap cable around your body while welding.
-Wrap TIG gun and ground cable together whenever possible.
-Keep TIG gun and ground cables on the same side of your body.

Shielding Gas Cylinders Can Explode

⚠WARNING

High pressure cylinders can explode if damaged, so treat them carefully.
-Never expose cylinders to high heat, sparks, open flames, mechanical shocks or arcs.
-Do not touch cylinder with TIG gun.
-Do not weld on the cylinder
-Always secure cylinder upright to a cart or stationary object.
-Keep cylinders away from welding or electrical circuits.
-Use the proper regulators, gas hose and fittings for the specific application.
-Do not look into the valve when opening it.
-Use protective cylinder cap whenever possible

1.5 Proper Care, Maintenance and Repair

⚠ DANGER

-Always have power disconnected when working on internal components.
- Do not touch or handle PC board without being properly grounded with a wrist strap. Put PC board in static proof bag to move or ship.
-Do not put hands or fingers near moving parts such as drive rolls of fan

POWERTIG 300DPIII USE AND CARE

- **Do not modify the POWERTIG 300DPIII in any way.** Unauthorized modification may impair the function and/or safety and could affect the life of the equipment. There are specific applications for which the **POWERTIG 300DPIII** was designed.
- **Always check of damaged or worn out parts before using the POWERTIG 300DPIII.** Broken parts will affect the **POWERTIG 300DPIII** operation. Replace or repair damaged or worn parts immediately.
- **Store idle POWERTIG 300DPIII.** When **POWERTIG 300DPIII** is not in use, store it in a secure place out of the reach of children. Inspect it for good working condition prior to storage and before re-use.

Notice: * If the welder continues to work too long time, the Heat Protection Indicator on the panel would be on, indicating that the inner temperature rise inside the welder had exceed the designed permitted temperature. At this time, stop the welding work, wait until the welder cooled inside and the Heat Protection Indicator turned off, then continue to work again;
* Cut off the power switch and Argon valve, before leaving the welding place temporarily or after the welding worked finished;
* Welders should wear canvas work clothes and welding face shield to prevent arc light and heat radiation;
* Put light-proof screen around the work area to prevent others influenced by the arc lights.
* Flammable, explosive items could not be put near the welding area;
* Every outlet of the welder should be connected and earthed correctly.

Notice: The cover protection degree of the **POWERTIG 300DPIII** inverter TIG welder is IP21S.When the welder is operated, do not insert finger or round stick diameter less than 12.5mm (especially metal stick) into the welder; Do not allow to press heavily onto the welder.

TECHNICAL SPECIFICATION

TERM	UNIT	POWERTIG 300DPIII
Rated Input Voltage	V	400
Power Frequency	Hz	50/60
Rated Input Capacity	KVA	12.8
Rated Input Current	A	18.5
Output No Load Voltage	V	68
Rated Working Voltage	V	32V/MMA；22V/TIG
Welding Current	A	10～300
Current Up Time	S	0～15
Current Drop Time	S	0～25
Pulse Frequency	Hz	0.5～200
Pulse Width Adjustment	%	15～85
Post Flow Time	S	0～30
Rated Duty Cycle	%	35
Cooling Type		Air cooling
Effiency	η	≥ 85%
Power Factor	Cosφ	0.93
Insulation Degree		H
Cover Protection Degree	IP	IP21S
Weight	kg	18
Dimension L×W×H	mm	508*241*408

No special advice on above parameter. The nameplate parameter on the welder is prior.

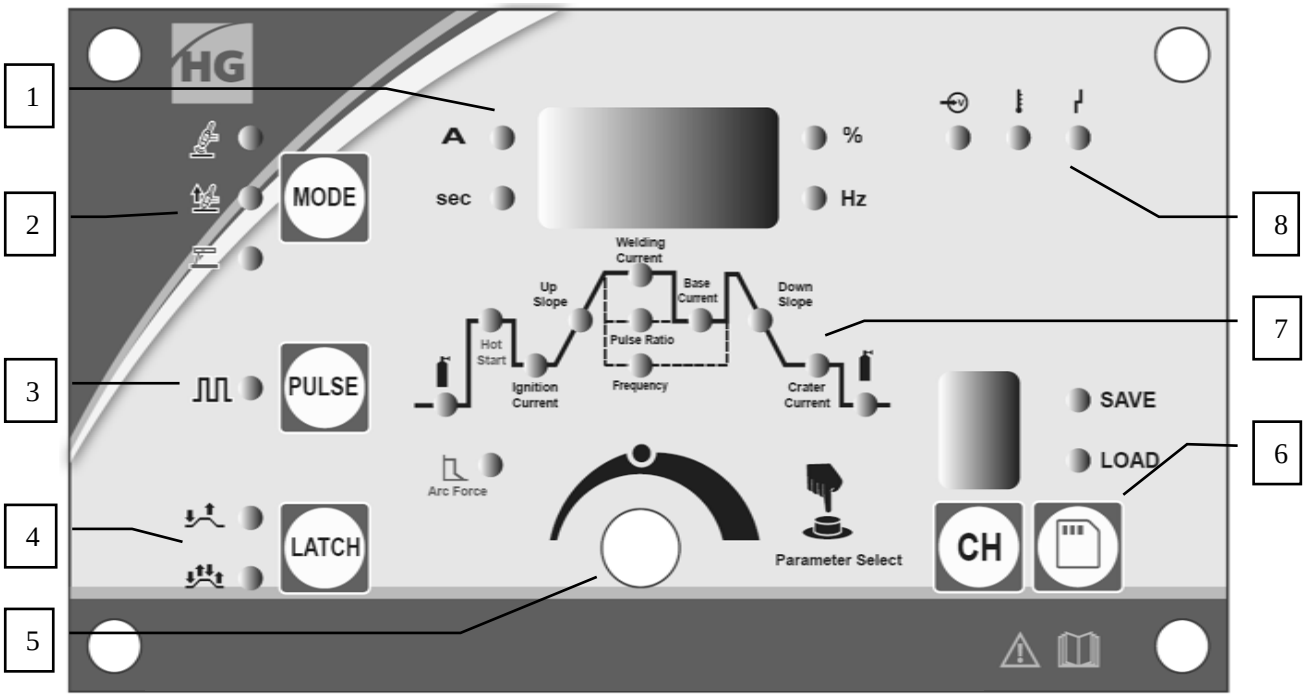
KNOW YOUR WELDER

Description

POWERTIG 300DPIII is a digitization model can be used for MMA、DCTIG and PULSE TIG, the parameters can be preset and showed, welding current can real-time display, this is very easy operation.

1. Front panel

1. 1. Know the Front panel

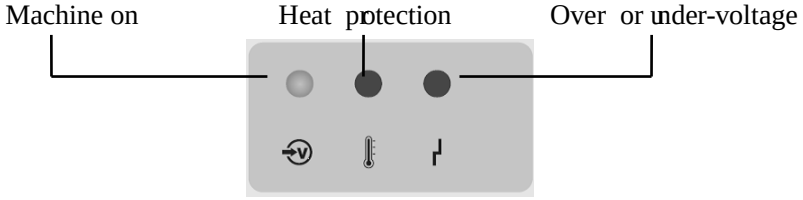


1. Numerical displays and units lights of the panel
2. Welding mode choose and indicator
3. TIG pulse function indicator
4. Welding process control choose
5. Choose and adjustment of welding parameter
6. Save and load of parameters
7. Type of parameter indicator
8. Status indicator of welder

1.2. Numerical displays and units lights of the panel

Display of welding current when machine is working and preset parameter, such as “Up slope”, ”Pulse Ratio”, when machine is idle and meanwhile the related units lights is on.

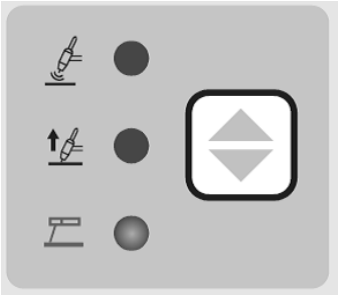
1.3. Status indicator of welder



The state light of machine on is on when the machine is powered on.

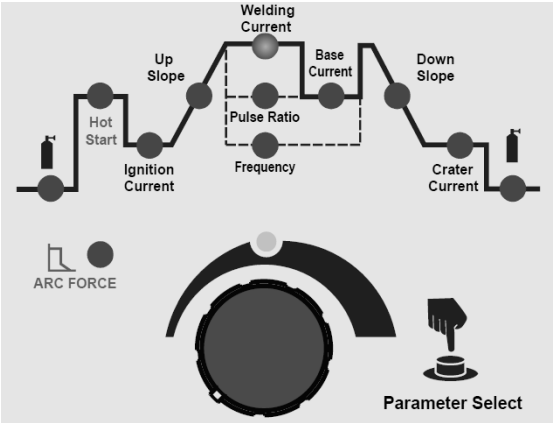
The state light of heat protection is on when the machine has over-heated. Let the machine on so that the fan will cool the machine. Wait until the light goes off, and you can continue welding.
The state light for wrong voltage turns on if the mains voltage is too high or too low. Check the mains voltage. The wrong voltage light will also turn on if there is a momentaneous over-voltage or under-voltage in the mains supply.

1.4. Welding mode choose and indicator



Type of machine can be chosen among HFTIG, LIFTTIG and MMA by press option keys with yellow arrow, at the same time the indicator of type of machine light up.
Under TIG mode the Pulse Switch, Processing Selection and function of parameters' save and usable will be available.

1.5. MMA Welding



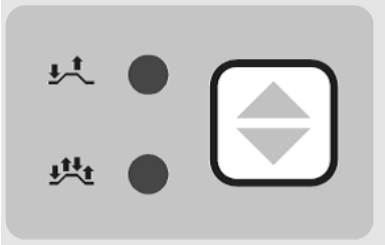
->1.Under mode stick welding, you can press button Parameter Selection and choose Welding Current, Hot Start and Arc Force. At same time the corresponding parameters' indicator light up.
->2.The previous chosen parameters can be adjusted by turning coding knob, at the same time the current parameters can be written on the digital panel.
Note: Adjustment of Hot Start is for hot arc current.
Adjustment of Arc Force is for percentage.

1.6. TIG Welding

1.6.1. Pulse Switch

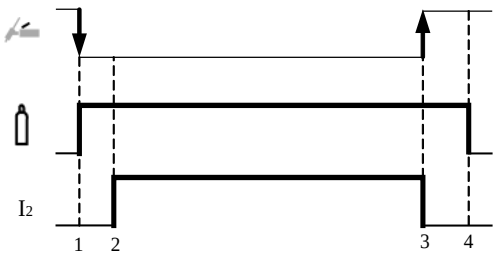
Under TIG mode, you can press buttons on the left icon to start and cancel pulse function. When Pulse indicator lights up the pulse function is available and when the indicator snobs out the pulse function is unavailable. When the Pulse function is available, the Peak Current, Base Current, Pulse Frequency and Pulse Ratio functions are available and can be adjusted.

1.6.2. Operation Selection



Under TIG mode, you can press buttons on the left icon to choose 2T or 4T. Under 4T mode, the Ignition Current, Up Slope, Down Slope and Crater Current are available and can be adjusted. How to operate the 2T and 4T as following:

1. 2T Operation



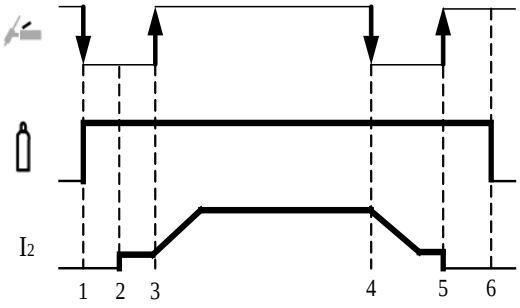
>1. Press down button of torch, valve starts work, enter **pre-flow** stage.

>2. Setting time of pre-flow is end, machine output the setting welding current.

>3. Release button of torch, machine stops work, but valve keeps work, machine enter post flow stage.

>4. If **post flow** time is end, the valve stops work.

2. 4T Operation



>1. Press down button of torch, valve works, machine enter **pre-flow** stage.

>2. Setting time of pre-flow time is arrived, machine output presetting **ignition current**.

>3. Release button of torch, machine goes up by setting **up slope time** until up to setting current.

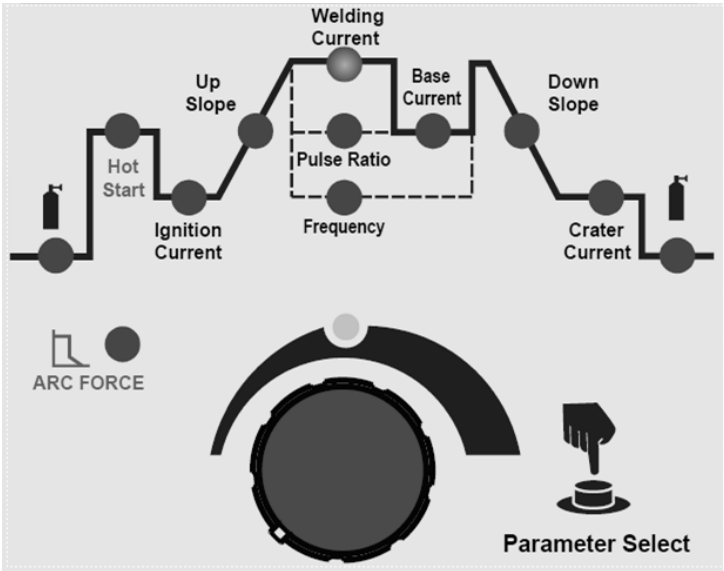
>4. Press down button of torch again, current goes down by setting **down slope time** until up to the setting **crater current**

>5. Release button of torch again, machine stops work, but the valve keeps work, machine enter **post flow** stage

>6. Setting **post flow** time is end, the valve stops work.

1.6.3. Parameter Setting

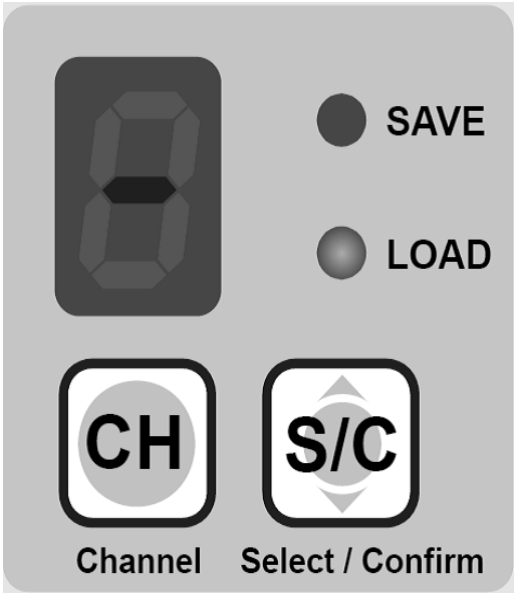
○



Under **TIG mode**, you can press button Parameter to choose parameters, the choosing parameters and corresponding units can be watched on digital and units sign parts (under TIG mode parameters that can be chosen and parameters of corresponding units see below table). Then you can adjust chosen parameters by adjustment of coding knob (adjusting range of every parameter can be referred in the parts technical parameters).

1	Pre-flow Time (sec)	2	Ignition Current (A)
3	Up Slope Time (sec)	4	Welding Current (A)
5	Pulse Ratio (%)	6	Pulse Frequency (Hz)
7	Base Current (A)	8	Down Slope Time (sec)
9	Crater Current (A)		

1.6.4. Parameters save and load (only available under TIG mode)



1. Parameters saving:

> To active the functions of Storage and adjustment, you should press the S/C button last for 2 or 3 seconds, and then the numerical digital of channel become to twinkling.

> Click S/C button to choose storage function, at the same time SAVE indicator lights up.

> Choose storage channel by press CH button, 0-9 channels are available.

> pressing S/C button last for 2 or 3 seconds to confirm saving, channel digital tube and indicator snub out at the same time (if do not press S/C button to confirm, 4seconds later the operation automatic be canceled, digital tube and indicator snub out at the same time).

2. Parameters loading:

> pressing S/C button last for 2 or 3 seconds, to active loading and adjustment functions, channel digital tube twinkle.

> Click S/C button to choose loading function, at the same time LOAD indicator light up and parameters of corresponding channels can be watched on panel. And you can lookup every parameter by button Parameter Selection.

> Choose usable channel by press button CH, 0-9 channels can be chosen.

> Pressing button S/C last for 2 or 3 seconds to confirm loading, and the digital become to keeping light up, and the parameter loading is success. (if do not press S/C button to confirm, 4seconds later the operation automatic be canceled, digital tube and indicator snub out at the same time.)

INSTALLATION

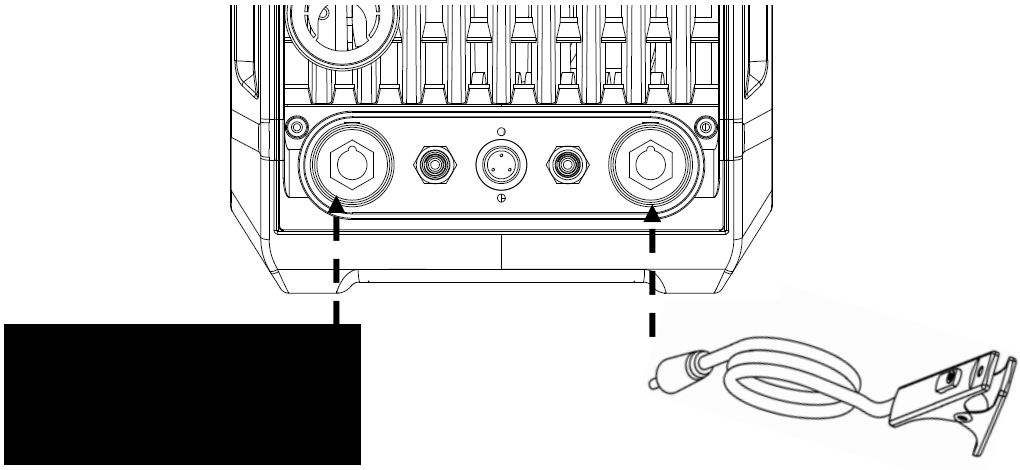
1.POWER REQUIREMENT - AC 3 phase 400V, 50/60 HZ with a 30 amp circuit breaker is required. DO NOT OPERATE THIS UNIT if the ACTUAL power source voltage is less than 340 volts AC or greater than 460 volts AC.

⚠WARNING

- **High voltage danger from power source! Consult a qualified electrician for proper installation of receptacle. This welder must be grounded while in use to protect the operator from electrical shock.**
- **Do not remove grounding prong or alter the plug in any way. Do not use any adapters between the welder's power cord and the power source receptacle. Make sure the POWER switch is OFF when connecting your welder's power cord to a properly grounded 380 VAC, 60 HZ, 3Phase, 30 Amp input power supply.**

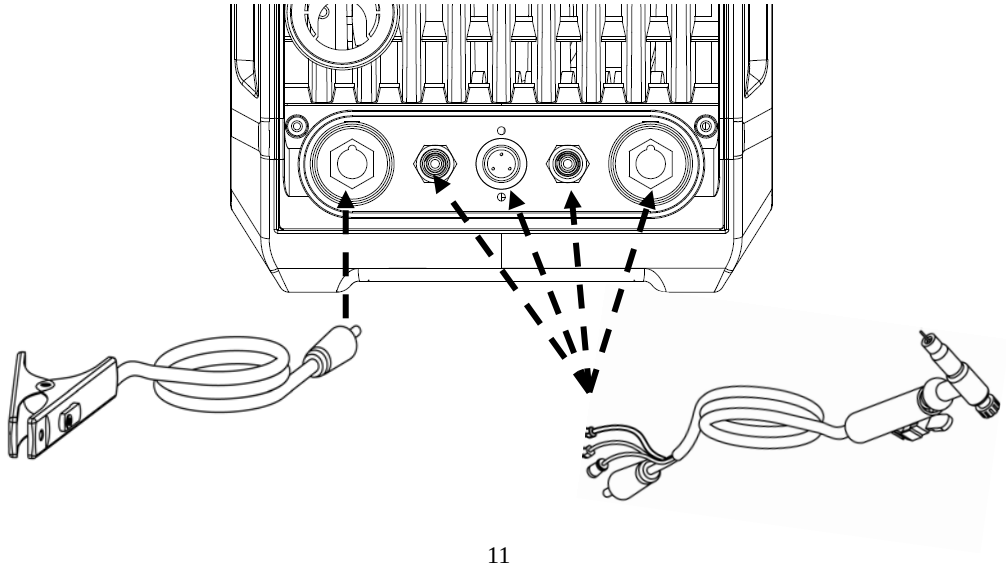
2. EXTENSION CORD - We do not recommend an extension cord because of the voltage drop they produce. This drop in voltage can affect the performance of the welder. If you need to use an extension cord, we recommend you check with a qualified electrician and your local electrical codes for your specific area. Do not use an extension cord over 25 ft. in length.

3. MMA mode connection method

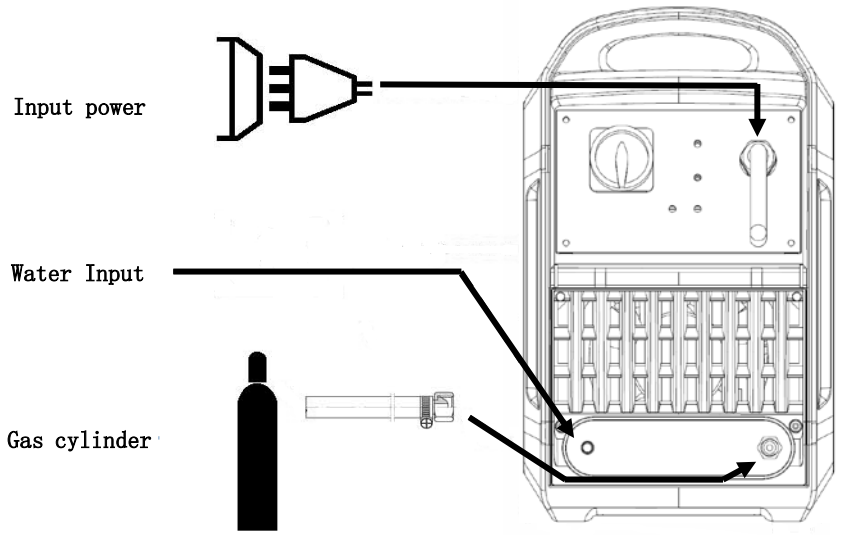


Note: As difference of electrode, cable connecting method may be exchanged!

4. TIG mode connection method



5. Input connection method



⚠WARNING

EXPOSURE TO A WELDING ARC IS EXTREMELY HARMFUL TO THE EYES AND SKIN! Prolonged exposure to the welding arc can cause blindness and burns. Never strike an arc or begin welding until you are adequately protected. Wear flame-proof welding gloves, a heavy long sleeved shirt, trousers without cuffs, high topped shoes, and an ANSI approved welding helmet.

OPERATION

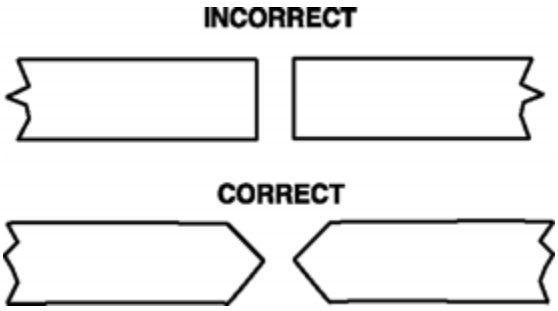
⚠WARNING

High voltage danger from power source! Consult a qualified electrician for proper installation of receptacle at the power source. This welder must be grounded while in use to protect the operator from electrical shock. If you are not sure if your outlet is properly grounded, have it checked by a qualified electrician. Do not cut off the grounding prong or alter the plug in any way and do not use any adapter between the welder's power cord and the power source receptacle. Make sure the POWER switch is OFF then connect your welder's power cord to a properly grounded 380 VAC, 60 HZ, 3 phase, 50 amp power source.

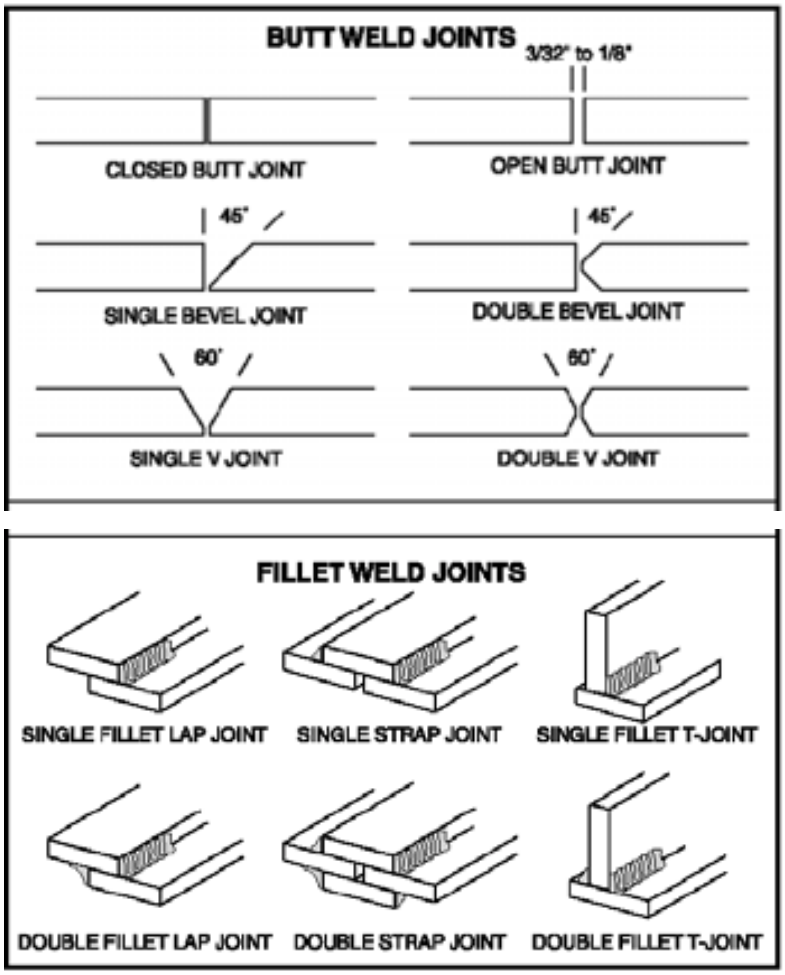
1.Stick Welding Skill

1.1. Preparing the Joint

Before welding, the surface of work piece needs to be free of dirt, rust, scale, oil or paint or it will create brittle and porous welds. If the base metal pieces to be joined are thick or heavy, it may be necessary to bevel the edges with a metal grinder, the correct bevel should be around 60 degree. See following picture:



Based on different welding position, there are different welding joint, see following images for more information.



1.2. GROUND CLAMP CONNECTION

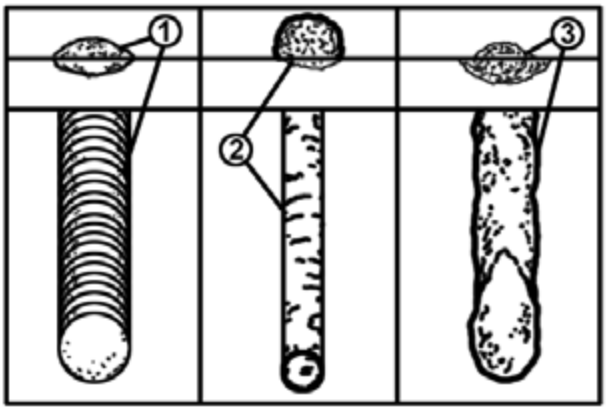
Clear any dirt, rust, scale, oil or paint on the ground clamp. Make certain you have a good solid ground connection. A poor connection at the ground clamp will waste power and heat. Make sure the ground clamp touches the metal.

1.3. ELECTRODE

The welding electrode is a rod coated with a layer of flux. When welding, electrical current flows between the electrode (rod) and the grounded metal work piece. The intense heat of the arc between the rod and the grounded metal melts the electrode and the flux. For best performance on this unit, we suggest the use of 6013 electrodes.

1.4. SELECTING THE PROPER ELECTRODE

There is no golden rule that determine the exact rod or heat setting required for every situation. The type and thickness of metal and the position of the work piece determine the electrode type and the amount of heat needed in the welding process. Heavier and thicker metals required more amperage. It is best to practice your welds on scrap metal which matches the metal you intend to work with to determine correct heat setting and electrode choice. See the following helpful trouble shooting tips to determine if you are using a correct electrode.



1.4.1. When proper rod is used:
1.4.1.a. The bead will lay smoothly over the work without ragged edges
1.4.1.b. The base metal puddle will be as deep as the bead that rises above it
1.4.1.c. The welding operation will make a crackling sound similar to the sound of eggs frying
1.4.2. When a rod too small is used;
1.4.2. a. The bead will be high and irregular
1.4.2. b. The arc will be difficult to maintain
1.4.3. When the rod is too large
1.4.3. a. The arc will burn through light metals
1.4.3. b. The bead will undercut the work
1.4.3. c. The bead will be flat and porous
1.4.3. d. Rod may be freeze or stick to work piece

Note: Rate of travel over the work also affects the weld. To ensure proper penetration and enough deposit of rod, the arc must be moved slowly and evenly along the weld seam.

1.5.SETTING THE AMPERAGE CONTROL

The welder has an infinite current control. It is capable of welding with electrodes up to 3/32” diameter. There is no golden rule that determines the exact amperage required for every situation. It is best to practice your welds on scrap metal which matches the metals you intend to work with to determine correct setting for your job. The electrode type and the thickness of the work piece metal determine the amount of heat needed in the welding process. Heavier and thicker metals require more voltage (amperage), whereas lighter and thinner metals require less voltage (amperage). Consult the welding electrode packaging for recommended welding amperage range.

1.6. WELDING TECHNIQUES

The best way to teach yourself how to weld is with short periods of practice at regular intervals. All practice welds should be done on scrap metal that can be discarded. Do not attempt to make any repairs on valuable equipment until you have satisfied yourself that your practice welds are of good appearance and free of slag or gas inclusions.

1.6.1. Holding the electrode

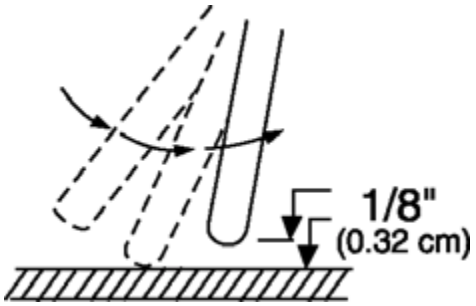
The best way to grip the electrode holder is the way that feels most comfortable to you. Position the Electrode to the work piece when striking the initial arc it may be necessary to hold the electrode perpendicular to the work piece. Once the arc is started the angle of the electrode in relation to the work piece should be between 10 and 30 degrees. This will allow for good penetration, with minimal spatter.

1.6.2. Striking the arc

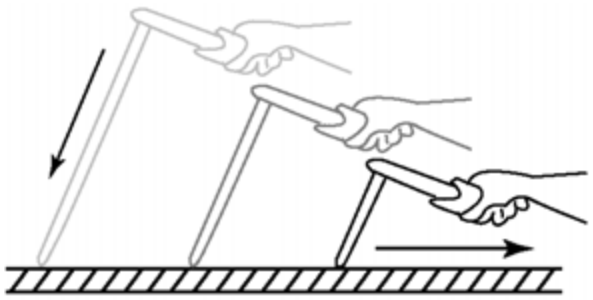
⚠WARNING

EXPOSURE TO A WELDING ARC IS EXTREMELY HARMFUL TO THE EYES AND SKIN! Prolonged exposure to the welding arc can cause blindness and burns. Never strike an arc or begin welding until you are adequately protected. Wear flame-proof welding gloves, a heavy long sleeved shirt, trousers without cuffs, high topped shoes, and an ANSI approved welding helmet.

Scratch the work piece with the end of electrode to start arc and then raise it quickly about 1/8 inch gap between the rod and the work piece, see following picture



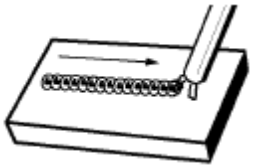
It is important that the gap be maintained during the welding process and it should be neither too wide or too narrow. If too narrow, the rod will stick to the work piece. If too wide, the arc will be extinguished. It needs much practice to maintain the gap. The beginners may usually get sticker or arc extinguishing. When the rod is stuck to the work piece, gently rock it back and forth to make them separate. If not, a short circuit will occur and it will break the welder. A good arc is accompanied by a crisp, cracking sound. The sound is similar to that made by eggs frying. To lay a weld bead, only 2 movements are required; downward (as the electrode is consumed) and in the direction the weld is to be laid, as in following figure:



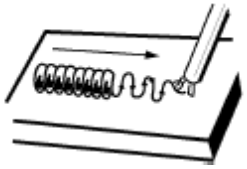
1.6.3. Types of weld bead

The following paragraphs discuss the most commonly used arc welding beads.

The stringer bead Formed by traveling with the electrode in a straight line while keeping the electrode centered over the weld joint.



Stringer Bead

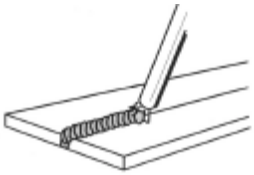


Weave Bead

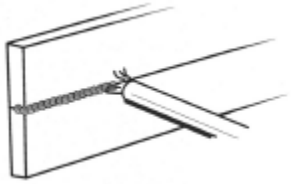
The weave bead Used when you want to deposit metal over a wider space than would be possible with a stringer bead. It is made by weaving from side to side while moving with the electrode. It is best to hesitate momentarily at each side before weaving back the other way.

1.6.4. Welding position

Flat position It is easiest of the welding positions and is most commonly used. It is best if you can weld in the flat position if at all possible as good results are easier to achieve.



Flat Position

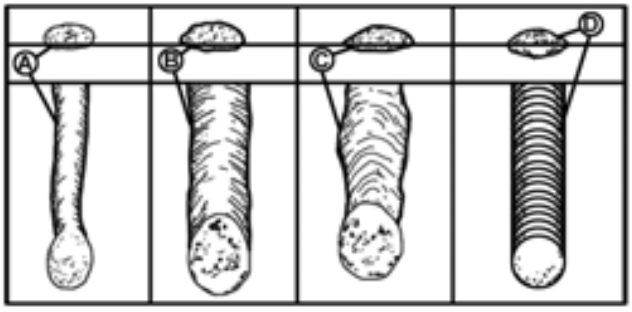


Horizontal Position

The horizontal position it is performed very much the same as the flat weld except that the angle is different such that the electrode, and therefore the arc force, is directed more toward the metal above the weld joint. This more direct angle helps prevent the weld puddle from running downward while still allowing slow enough travel speed to achieve good penetration. A good starting point for your electrode angle is about 30 degrees DOWN from being perpendicular to the work piece.

1.6.5. Judge the good weld bead

When the trick of establishing and holding an arc has been learned, the next step is learning how to run a good bead. The first attempts in practice will probably fall short of acceptable weld beads. Too long of an arc will be held or the travel speed will vary from slow to fast (see following)



A. Weld speed is too fast.

B. Weld speed is too slow.

C. Arc is too long.

D. Ideal weld.

A solid weld bead requires that the electrode be moved slowly and steadily along the weld seam. Moving the electrode rapidly or erratically will prevent proper fusion or create a lumpy, uneven bead.

⚠WARNING

ELECTRIC SHOCK CAN KILL! To prevent ELECTRIC SHOCK, do not perform any welding while standing, kneeling, or lying directly on the grounded workpiece.

1.6.6. Finish the bead

As the coating on the outside of the electrode burns off, it forms an envelope of protective gases around the weld. This prevents air from reaching the molten metal and creating an undesirable chemical reaction. The burning coating, however, forms slag. The slag formation appears as an accumulation of dirty metal scale on the finished weld. Slag should be removed by using a chipping hammer.

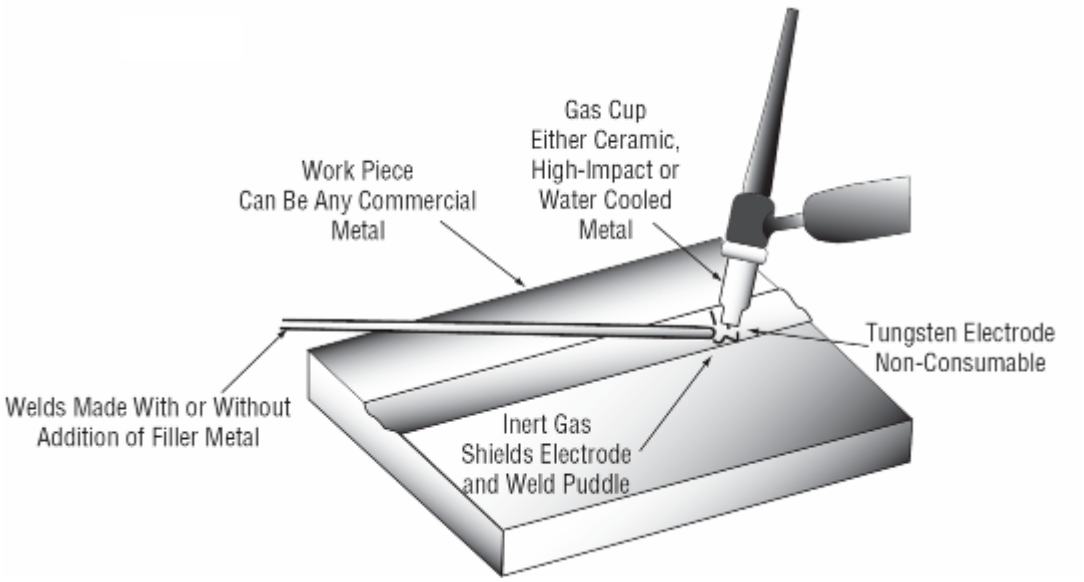
⚠WARNING

PEENING THE SLAG FROM A WELD JOINT CUASES SMALL CHIPS OF METAL TO FLY THROUGH THE AIR! Metallic chips flying through the air can cause eye injury or injury to other parts of the head, hands or exposed portions of the body. Wear goggles or safety glasses with side shields and protect the hands and other exposed parts of the body with protective garments, or if possible, work with a shield between the body and the work piece.

The intense heat produced at the arc sets up strains in the metal joined by welding. Peening the weld not only removes the scale left behind in the welding but relieves the internal strains developed by the heating and cooling process.

2. TIG welding skill

Gas Tungsten Arc Welding (GTAW) or TIG (Tungsten Inert Gas) as it is commonly referred to, is a welding process in which fusion is produced by an electric arc that is established between a single tungsten (non-consumable) electrode and the work piece. Shielding is obtained from a welding grade shielding gas or welding grade shielding gas mixture which is generally Argon based. A filler metal may also be added manually in some circumstances depending on the welding application.



Welding regulations parameter table (only for reference)

Base Metal Thickness	DC Current for Mild Steel	DC Current for Stainless Steel	Tungsten Electrode Diameter	Filler Rod Diameter (if required)	Argon Gas Flow Rate	Joint Type
0.040" 1.0 mm	35-45 40-50	20-30 25-35	0.040" 1.0 mm	1/16" 1.6 mm	10 CFH(5 LPM)	Butt/Corner Lap/Fillet
0.045" 1.2 mm	45-55 50-60	30-45 35-50	0.040" 1.0 mm	1/16" 1.6 mm	13 CFH(6 LPM)	Butt/Corner Lap/Fillet
1/16" 1.6 mm	60-70 70-90	40-60 50-70	1/16" 1.6 mm	1/16" 1.6 mm	15 CFH(7 LPM)	Butt/Corner Lap/Fillet
1/8" 3.2 mm	80-100 90-115	65-85 90-110	1/16" 1.6 mm	3/32" 2.4 mm	15 CFH(7 LPM)	Butt/Corner Lap/Fillet
3/16" 4.8 mm	115-135 140-165	100-125 125-150	3/32" 2.4 mm	1/8" 3.2 mm	21 CFH(10 LPM)	Butt/Corner Lap/Fillet
1/4" 6.4 mm	160-175 170-200	135-160 160-180	1/8" 3.2 mm	5/32" 4.0 mm	21 CFH(10 LPM)	Butt/Corner Lap/Fillet

Tungsten Electrode Types

Electrode Type (Ground Finish)	Welding Application	Features	Color Code
Thoriated 2%	DC welding of mild steel, stainless steel and copper	Excellent arc starting, Long life, High current carrying capacity	Red
Zirconated 1%	High quality AC welding of aluminium, magnesium and their alloys.	Self cleaning, Long life, Maintains balled end, High current carrying capacity.	White
Ceriated 2%	AC & DC welding of mild steel, stainless steel, copper, aluminium, magnesium and their alloys	Longer life, More stable arc, Easier starting, Wider current range, Narrower more concentrated arc.	Grey

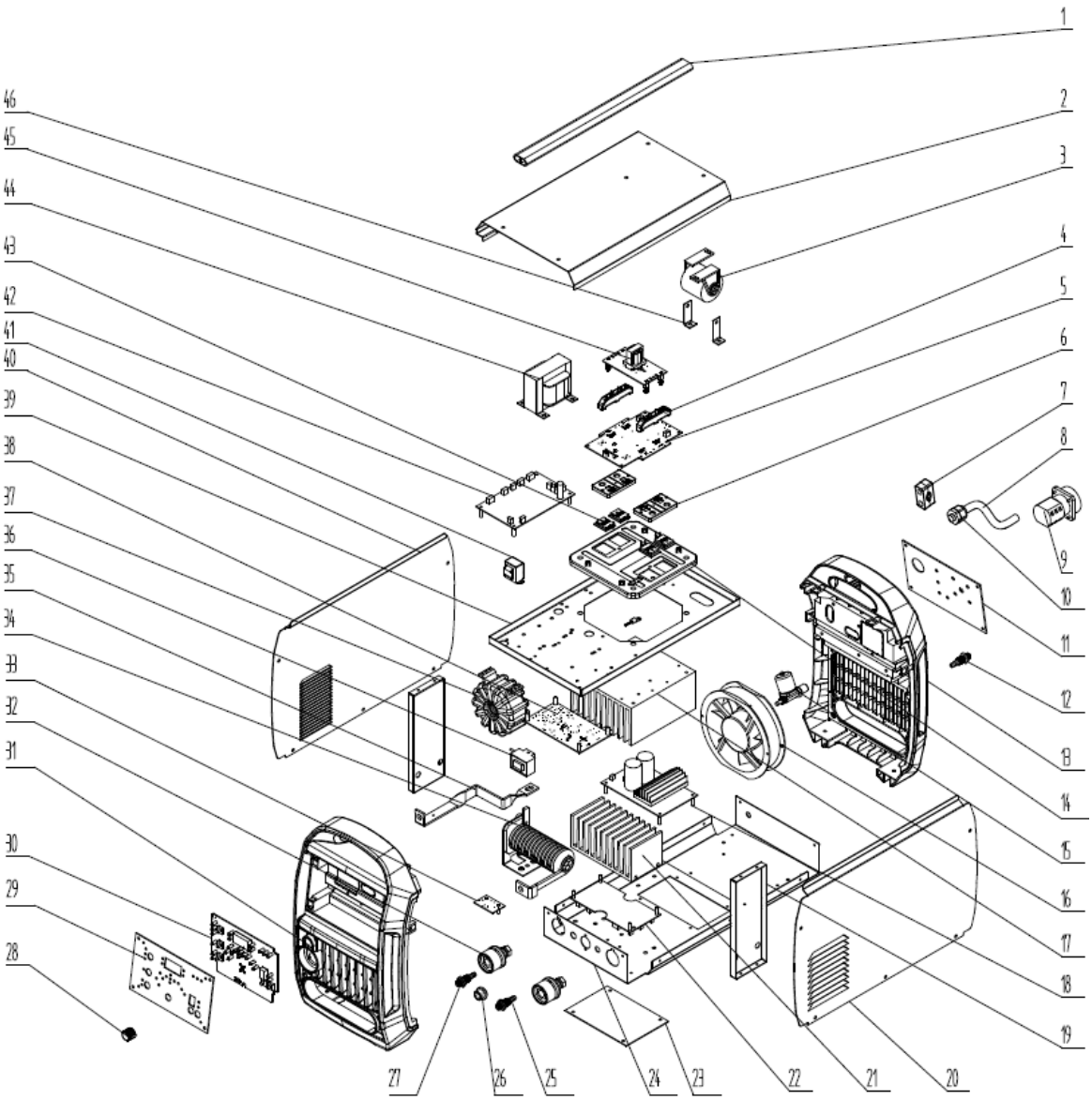
TIG Welding is generally regarded as a specialized process that requires operator competency. While many of the principles outlined in the previous Arc Welding section are applicable a comprehensive outline of the TIG Welding process is outside the scope of this Operating Manual.

TROUBLESHOOTING

Serial	Fault	Analysis of fault	Method of overcome fault	
1	fan don't rotate	Fan is broken	change fan	
		connecting cable drop up (or break off)	find where is cable break up and connect it	
2	no arc high frequency	switch of torch is broken	change switch of torch	
		main control board was broken	change main control board	
		connecting cable drop up (or break off)	find where is cable break up and connect it	
3	no Argon output	no Argon input	check flow meter and hose and recovery to feed welder air	
		main control board was broken	change main control board	
		electromagnetic gas valve was broken	change electromagnetic gas valve	
		air path was blocked	clean foreign body and dredge air path	
4	no cooling water output	water pressure is not enough	increase cooling water pressure	
		water path was blocked	clean foreign body and dredge water path	
5	protection indicator light up	inner overheat	when the inner temperature is low recover normal	
		15% over/lack pressure over 15% of power supply	when voltage normal machine will recovery	
6	panel knob do	potentiometer was broken	change potentiometer	

	not work	main control board was broken	change main control board	
		connecting cable drop up (or break off)	find where is cable break up and connect it	
7	Ammeter no display	Ammeter was broken	change Ammeter	
		connecting cable drop up (or break off)	find where is cable break up and connect it	
		main control board was broken	change main control board	
8	arc is no smooth	torch and machine is fault connected	check and correct by manual	
		Argon no pure	use Argon with purity 99.99%	
		Tungsten electrode is not good or pinhead is broken	change use correct tungsten electrode	
9	power trip	first time power on after long time power was cut off (over 2 days)	No fault, charge filter capacitor of power main circuit cause power trip, switch on main power again.	
10	others		please contact with manufacturer or supplier	

DIAGRAM & PARTS LIST



No.	ERP CODE	Name	Model	Units	quantity
1	20020170016	Handle	PMH200.42.12AE12-1/V1.0	PCS	1
2	11010011527	Cover	INVERDELTA 300W ii	PCS	1
3	20070120109	HF filter capacitor	MLC-LS 40uF±5%/800V.DC/60A	PCS	1
4	20070050002	Fixed plate for driving PCB	HG2ZX7400K.2.3-2	PCS	2
5	11050110250	Power amplify PCB	HG2ZX7400K2.3.1	PCS	1
6	20050050567	Protection plate for IGBT	HG2ZX7400K.2.3-3	PCS	2
7	20050170019	Tension disc	NB500.5-2	PCS	2
8	12070024081	Power line	PTP300.10.14P33.2.2	PCS	1
9	20070800378	Switch	LW39-16B-9GA-06/3BK	PCS	1
10	20040300009	Fixed holder for power line	EG-16(PG16)	PCS	1
11	11020015775	Back panel plate	PTAP200.17.14P12.3.1	PCS	1
12	11020020081	Water pipe connector	PTP300.20.14A33.2-1	PCS	1
13	20050050643	Plastic front frame	PMU200.23.12PE12.2.1-1	PCS	
14	20050050176	Insulation plate for Heat sink	HG2ZX7400K.2.12	PCS	1

15	11110330058	Gas valve	PTP300.20.14A33.2.2	PCS	1
16	20070890009	Fan	G17040HA2BT 30W/0.18A/AC220V/50HZ	PCS	1
17	20070430156	Heat sink	HG2ZX7400K.7.4-1	PCS	1
18	11050010093	Power PCB	ZX7-400KE	PCS	1
19	11020010301	Fixed plate for rectifier and heat sink	HG2ZX7400K.7-2	PCS	2
20	11010021176	Right side panel	PMU200.23.12PE12.7	PCS	1
21	20070430156	Heat sink	HG2ZX7400K.7.4-1	PCS	1
22	12010100117	Rectifier PCB	ZX7-400K	PCS	
23	11020014513	Up baffle	POWERTIG 300DPIII	PCS	1
24	11010040169	Bottom plate	POWERTIG 300KPIII	PCS	1
25	20020020025	Water pipe connector	8HG.177.018 V3.0	PCS	1
26	20030302258	Torch switch	PTP300.20.14A33.1.2 V3.0	PCS	1
27	20070660003	Argon connector	POWERTIG 300KPIII	PCS	1
28	20070110069	Potentiometer Knob	KN-28B-6	PCS	1
29	11020015948	Supporting plate	POWERTIG 300KDPIII	PCS	1
30	11050070479	Panel PCB	POWERTIG 300KDPIII	PCS	1
31	20050050643	Plastic front frame	PMU200.23.12PE12.2.1-1	PCS	1
32	20070570185	Quick connector	DKJ35-70	PCS	2
33	11050110266	Loading small PCB	PTP300.20.14A33.1.7 V1.2	PCS	1
34	11040050077	Coupling transformer	A169PTIG300KDG6-2/V1.0	PCS	1
35	11020014512	Busbar	A169PTIG300KDG6-9	PCS	1
36	20070390035	Hall sensor	PE400.11.24A33.4/V1.0	PCS	1
37	20070250028	Main transformer	HG2ZX7400K.2.1	PCS	1
38	11050100059	Arc ignition PCB	WSM-315K	PCS	1
39	11010050088	Mounting plate	HG2ZX7400K.2.13	PCS	1
40	11010021182	Left side panel	PTAP200.17.14P12.6	PCS	1
41	20070250080	Control transformer	PTP300.10.14P33.1.1.1	PCS	1
42	11050020381	Main control PCB	PTP300.20.14A33.1.8 V2.0	PCS	1
43	20070330085	IGBT TUBE	FGL40N120ANDTU (Fairchild)	PCS	4
44	20070250080	Control transformer	PTP300.10.14P33.1.1.1	PCS	1
45	11050030059	Driving PCB	HG2ZX7400K.2.2 V1.3	PCS	1
46	11030040170	Capacitor busbar	HG2ZX7400K.2-1	PCS	1

The Circuit Chart