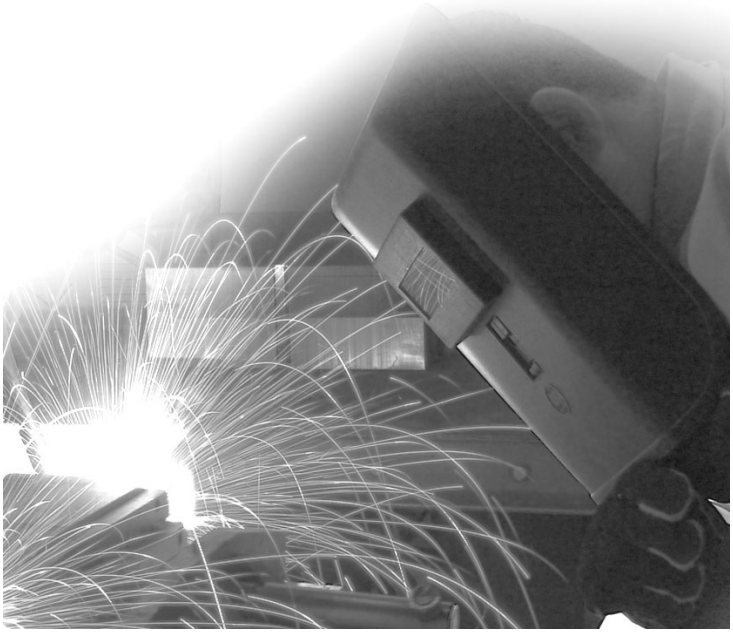
WELDING AND CUTTING TOTAL SOLUTION

OWNER'S MANUAL

PROTIG -PIII SERIES



⚠ 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.

CATALOGUE

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 PROTIG PIII SERIES until they have read this manual and have developed a thorough understanding of how the PROTIG PIII SERIES 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.

SAVE THESE INSTRUCTIONS

IMPORTANT SAFETY CONSIDERATIONS

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, wire or wire feed system 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 and stay away from the drive rolls.

-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

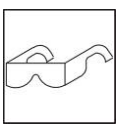
⚠WARNING

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 MIG 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 MIG gun and ground cable together whenever possible.

-Keep MIG 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 MIG 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

PROTIG PIII SERIES USE AND CARE

- **Do not modify the PROTIG PIII SERIES 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 **PROTIG PIII SERIES** was designed.
- **Always check of damaged or worn out parts before using the PROTIG PIII SERIES.** Broken parts will affect the **PROTIG PIII SERIES** operation. Replace or repair damaged or worn parts immediately.
- **Store idle PROTIG PIII SERIES.** When **PROTIG PIII SERIES** 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.

WELDING MACHINE INTRODUCTION

PROTIG-PIII SERIES Digital Inverter DC welding machine is the use of an inert gas (argon) as a protective medium arc, the use of a high melting point of the metal tungsten or tungsten oxide as an electrode, the workpiece as the other electrode, using high pressure high frequency or high-voltage pulse to advance into the inert gas ionization weld region, and between the tungsten electrode and the workpiece to ignite arc welding molten metal so as to achieve an effect of welding equipment. Its rapid power fluctuations can give good compensation, for a variety of welding processes can quickly and accurately control, so smooth and soft welding, small splash, weld easily controlled. In welding low carbon steel, stainless steel, high-strength steel and alloy steel and other materials can obtain high-quality welds.

Characteristics of welding machines are:

TIG welding process does not melt, the arc is relatively stable, easy to control weld quality.

can be filled wire, the wire can not fill, both suitable for welding sheet metal, also suitable for welding thicker plate.

concentrated heat from the arc when welding sheet metal deformation of the workpiece is significantly less than arc welding and hand.

suitable for all position welding.

particularly suitable for welding thin 3mm or less, less than 1mm thick sheet can also be satisfied with the quality of welding.

gentle arc, arc focus on good, fillet welds easily, but also for reliable positioning welding.

EMC Category: A category;

PROTIG-PIII SERIES Digital Inverter DC welding machine uses advanced digital control technology, the use of international advanced IGBT (insulated gate bipolar transistor) power module as a converter device, combined with specially developed digital control circuit high so that the whole of consistency and reliability, fast dynamic response, stable arc characteristics. This series welding machine has: DC welding, DC MMA, and many other functions, it can basically meet the requirements of various welding processes. It is widely used in pressure vessels, construction, shipbuilding, petrochemical and other sectors of production and maintenance.

PROTIG PIII Series Digital Inverter DC welding machine has the following characteristics:

fully retained ZX7 welder function, to buy a welder equal PROTIG PIII series has two different products.

All welding parameters can be accurately preset users to quickly set up to facilitate the welding parameters needed.

functional, TIG has a 2-step, 4-step, spot and intermittent welding functions; remote control function is automatically identified.

PROTIG PIII Series welding specifications: PROTIG 315PIII，PROTIG 400III, PROTIG 500PIII.

The content of this specification has corrupted, or welding feature
changes, this specification is subject to change without notice.

TECHMICAL SPECIFICATION

Environmental condition

* The surrounding temperature range

* when working：-10~+40℃；During transport or in storage:-20~+55℃

* Relative humidity：when at 40℃：≤50%；when at 20℃：≤90%。

* Dust, acid , corrosive gas or matter in the air less than normal content

Besides matter is produced in welding process. Place is not drastic motion.

* Altitude less than 1000m

* Keep from raining when it is used outdoor.

Power supply requirement

* Service voltage waveform should be actual sine wave, frequency jitter is less than±1% of rated value.

* Fluctuation of service voltage is less than±10% of rated value.

* Unbalance rate of 3ph service voltage≤5%

PROTIG PIII Series Digital Inverter DC welding machine adopts the international advanced IGBT (insulated gate bipolar transistor) and fast recovery diode as a major power and the transfer of power conversion devices that can precisely control the arc, combined with pre-ventilation, lag breathe and non-contact high-frequency arc, to ensure the establishment of an easy and stable arc burning, plus the protection feature allows the welder reliable quality.

Welder obtained through the air switch SW1 3 ~ XXXV frequency alternating current, the three-phase rectifier bridge rectifier BR1, the capacitors C5, C6 filter into DC via IGBT (TR1, TR2) bridge inverter consisting of reverse into about after the AC 20KHz, and then by the intermediate frequency transformer T1 transformer, the fast recovery tube D1, D2, D3 rectified output steady for welding with DC power supply. While the output transformer T4 is coupled to a high-pressure high-frequency pulse arc coupled to the negative terminal of the output is very convenient way to non-contact arc welding.

The main structure of the welder

PROTIG PIII Series Digital Inverter DC welding machine with a freely movable box structure: half of the front panel to adjust the display panel is equipped with various parameter adjustment knob; the lower half is equipped with current output "+" extremely fast socket, the current output "-" very fast socket, gun control cable connector, remote control socket, and torch gas torch water interfaces and interfaces; equipped with a cooling fan on the rear panel, the power input leads and power switch, cooling water inputs and argon gas inputs; bottom of the tank is equipped with four wheel and the front mounted lever.

The main technical data welder

380V

Item	unit	PROTIG 315PIII	PROTIG 400PIII	PROTIG 500PIII
Input power	V	3～380		
frequency	Hz	50/60		
Rated input capacity	KVA	12.5	17.2	20
Rated input current	A	19	26	30
OCV	V	70	70	70
Rated welding voltage	V	22.6	26	30
Welding current	A	20～315	20～400	20～500
Base current	A	20～315	20～400	20～500
Tig welding current	A	20～315	20～400	20～500
MMA welding current	A	25～315	25～350	25～400
Current up, down time	s	0～10		
Pulse frequency	Hz	0.5～250		
duty ratio	%	0～100		
Gas pre-flow	s	0.3～10		
Gas post-flow	s	0.5～25		
Rated output	%	60		
Cool type		Fan cooled		
TIG arc		HF		
Efficiency	η	≥ 85%		
Power factor	Cosφ	0.93		
Insulation grade	level	H		
IP	IP	IP21S		
oversize L×W×H	mm	719*308*633		
weight	kg	38	38	39

400V

Item	unit	PROTIG 315PIII	PROTIG 400PIII	PROTIG 500PIII
Input power	V	3～400		
frequency	Hz	50/60		
Rated input capacity	KVA	13.2	18.1	20.8
Rated input current	A	19	26	30
OCV	V	73	73	73
Rated welding voltage	V	22.6	26	30
Welding current	A	20～315	20～400	20～500

Base current	A	20～315	20～400	20～500
Tig welding current	A	20～315	20～400	20～500
MMA welding current	A	25～315	25～350	25～400
Current up, down time	s	0～10		
Pulse frequency	Hz	0.5～250		
duty ratio	%	0～100		
Gas pre-flow	s	0.3～10		
Gas post-flow	s	0.5～25		
Rated output	%	60		
Cool type		Fan cooled		
TIG arc		HF		
Efficiency	η	≥ 85%		
Power factor	Cosφ	0.93		
Insulation grade	level	H		
IP	IP	IP21S		
oversize L×W×H	mm	719*308*633		
weight	kg	38	38	39

415V

Item	unit	PROTIG 315PIII	PROTIG 400PIII	PROTIG 500PIII
Input power	V	3～415		
frequency	Hz	50/60		
Rated input capacity	KVA	13.7	18.7	21.6
Rated input current	A	19	26	30
OCV	V	65	65	70
Rated welding voltage	V	22.6	26	30
Welding current	A	20～315	20～400	20～500
Base current	A	20～315	20～400	20～500
Tig welding current	A	20～315	20～400	20～500
MMA welding current	A	25～315	25～350	25～400
Current up, down time	s	0～10		
Pulse frequency	Hz	0.5～250		
duty ratio	%	0～100		
Gas pre-flow	s	0.3～10		
Gas post-flow	s	0.5～25		
Rated output	%	60		
Cool type		Fan cooled		
TIG arc		HF		

Efficiency	η	≥ 85%		
Power factor	Cosφ	0.93		
Insulation grade	level	H		
IP	IP	IP21S		
oversize L×W×H	mm	719*308*633		
weight	kg	38	38	39

440V

Item	unit	PROTIG 315PIII	PROTIG 400PIII	PROTIG 500PIII
Input power	V	3～440		
frequency	Hz	50/60		
Rated input capacity	KVA	12.5	17.2	20
Rated input current	A	19	26	30
OCV	V	67	67	71
Rated welding voltage	V	22.6	26	30
Welding current	A	20～315	20～400	20～500
Base current	A	20～315	20～400	20～500
Tig welding current	A	20～315	20～400	20～500
MMA welding current	A	25～315	25～350	25～400
Current up, down time	s	0～10		
Pulse frequency	Hz	0.5～250		
duty ratio	%	0～100		
Gas pre-flow	s	0.3～10		
Gas post-flow	s	0.5～25		
Rated output	%	60		
Cool type		Fan cooled		
TIG arc		HF		
Efficiency	η	≥ 85%		
Power factor	Cosφ	0.93		
Insulation grade	level	H		
IP	IP	IP21S		
oversize L×W×H	mm	719*308*633		
weight	kg	38	38	39

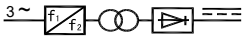
Note: The duty cycle is determined at 40 ° under.

HF arc by way of illustration

This arc with the traditional touch-starting methods are fundamentally different, without the tungsten electrode and the workpiece perform short arc, is the use of high-voltage high-frequency pulses of air ionization by ionization of the air ion conductivity, thereby an arc.

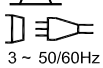
Remark & Sign of Illustration

 ground connection

 3ph static frequency changer—transformer—rectifier

 MIG/MAG。

 MMA。



3ph, rated frequency 50Hz，operating frequency 60Hz。

X：duty cycle.

I1max.A：rated max input current.

I1eff...A：max effective input current.

I2：rated welding current.

U0：rated no loading voltage

U1：rated input voltage.

U2：loading voltage

...V：unit of voltage

...A：unit of current

...%：unit of duty cycle

...A/...V to ...A/...V：output range。Min or max rated welding current and relevant loadingvoltage.

IP21S：enclosure protection class. IP is code letter（International Protection）。2 refer to prevent someone′s finger to approach risk part；prevent no less than12.5mm solid to into the shell。1 refer to prevent to drip from vertical direction；Vertical drop of water should be no harmful effects。S refer to when movable part of equipment is static, the waterproof test can be processed.

H：H Insulation grade。

FUNCTION DESCRIPTION

manual welding

This mode is equivalent to the function of the dc arc welding machine, the manual welding electrode welding function. This mode is equivalent to the function of the dc arc welding machine, the manual welding electrode welding function.

DC argon arc welding

Widely used in a variety of carbon steel, alloy steel, stainless steel, copper and copper alloys, nickel and nickel alloy welding, especially suitable for thin plate welding (3 mm or less) and plate (> 3 mm) in the opening of one side welding groove butt weld, double-sided molding, backing welding process, especially suitable for argon arc welding backing, dc manual arc welding more than cover the welding process.

DC pulsed argon arc welding

Is suitable for thin plate welding, and is suitable for any position of continuous welding, do not need to adjust the welding specification for welding position change.In both to get a large penetration, and expect to reduce the welding heat affected zone, pulse welding current, the current base value, the

selection of proper duty ratio will be able to well meet the needs of the concrete.Pulse welding current is to strengthen the mixing of molten pool, to minimize the pores.Under the same line energy, dc pulse arc than dc constant current arc penetration is big, pulse current of coagulation, form and normal form is different, it can improve the mechanical properties of a particular joint.Properly adjusting the parameters of the pulse and the welding speed, smooth dc pulse argon arc welding can form uniform and controllable fusion zone (scales).

CURRENT ADJUST DESCRIPTION

Welding current

Arc welding current refers to the "hand/argon arc" mediation function mode the size of the welding current, refers to the pulse welding at the same time, the current in the largest value.At this time of the arc heat is big, the workpiece heated, it is used to welding.

background current

Base value is to point to in the pulse electric current welding current, the value of the current in the hours.When current is small, small arc heat and artifacts have the ability to when the welding current is working to heat transfer of molten pool, thus reducing due to local overheating deformation.

Pulse Frequency Modulation

Pulse frequency refers to the pulse argon arc welding state, the current in the welding current and base value current switching between speed and frequency of 0.5 ~ 25.0 Hz.

pulse width regulating

Pulse welding current pulse width at a ratio of the pulse cycle time (that is, the duty ratio), the duty cycle adjustable in the range of 0 ~ 100%.Such as: the frequency of 5 hz (its pulse cycle is 200 ms) of each welding current in the pulse current time is 80 ms, so, the pulse width is: 80÷200×100% = 40%.

rise time

From above freezing to rise time refers to the current time value of the welding current is used to.It to slow down the current rising rate, current slow rise, gradually melted the artifacts, ensure that when the welding current will suddenly increase has reached the welding technological requirements, time of 0 ~ 10 s.

fall time

Fall time is refers to the current from the welding current dropped to zero value all of our time.It to slow the rate of decline in current and electric current to slow down, gradually submerged arc pit, ensure the quality of the welding at the end of the time of 0 ~ 10 s.

pre-airing time

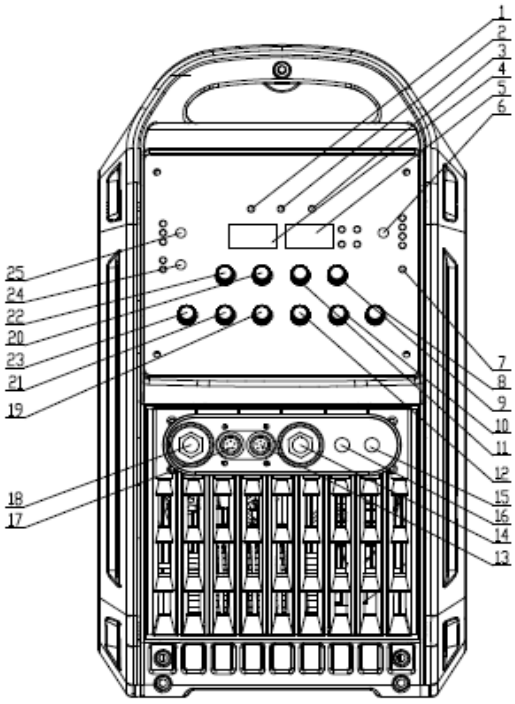
Pre aeration time refers to the welding at the start of the shielding gas before working circuit, high frequency arc used to rule out there in the air in the gas pipeline, prevent bad arc instantaneous gas oxidation defects, and time is 0.3 ~ 10 s.

postflow time

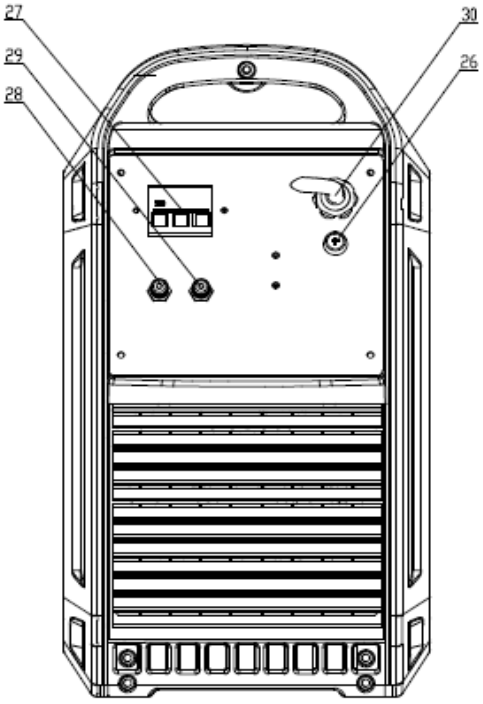
postflow Time "means after the arc extinguishing, to protect the workpiece is not protected by oxidation

and continue to transport the time of the gas.Welding is under the high temperature, high temperature hot will be oxide parts quickly.And although, at the end of the welding arc extinguishing no longer heated the artifacts, but molten pool need to place a time, in the break time continue to transport is necessary to protect gas pool, the time is 0.5 ~ 25 s.

OPERATION METHOD （See the panel figure）



FRONT PANEL



BACK PANEL

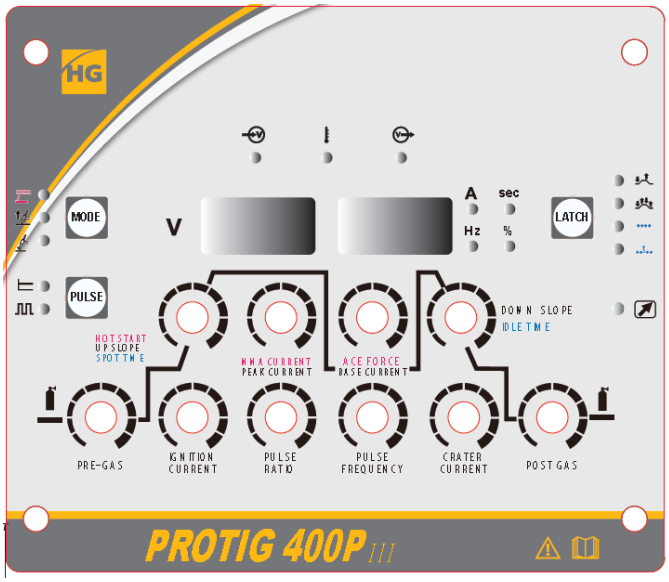
1 power indicator	2 protection indicator	3 working indicator	4 voltage diplay
5 welding data display	6 Argon arc welding trigger mode selection	7 remote control light	8 postflow timeadjusting knob
9 Fell/rest time adjusting knob	10 arc current adjusting knob	11 base value/push current adjusting knob	12 pulse frequency regulating knob
13 torch switch	14 output current quick plug from the socket	15 shielding gas output interface	16 water cooling output interface
17 “+”connector	18 remote control socket	19 Peak current duty ratio adjustment knob	20 Gas welding current adjustment knob
21 Arc current adjusting knob	22 Rose / hot spot welding time adjusting knob ignition	23 Plenum adjusting knob in advance	24 Dc/pulse argon arc welding
25 Welding function to choose	26 Control transformer fuse	27 power switch	28 Shielding gas input interface

29 Water input interface　　30 input power supply terminal 3 ~ 380

Manual welding

use "hand contact arc/argon arc/high frequency argon arc" function on hand position, located in the "hand arc welding", namely into manual electric arc welding mode.The adjustment knob is to adjust the welding current, welding current 25A　to 400 A.

Also has hot arc adjustment knob and thrust adjustment knob function to improve the welding arc and droplet transition process.



DC argon arc welding

use "hand contact arc/argon arc/high frequency argon arc" function in contact or high frequency argon arc, namely into argon arc welding mode;Then the pulse/dc mode on dc mode, namely into dc argon arc welding mode, the adjustable knobs as below:

Adjust the welding current adjustment knob to adjust welding current, 20 ~ 500 a.

Adjustment pre aeration time adjustment knob to adjust pre aeration time, 0.3 ~ 10 s.

Adjustment arc starting current adjustment knob to adjust the arc current, 20 ~ 500 a.

Adjustment rise time adjustment knob to adjust welding current rise time, 0 ~ 10 s.

Adjustment fall time adjustment knob to adjust welding current fall time, 0 ~ 10 s.

Adjustment crater arc current adjustment knob to adjust crater arc current, 20 ~ 500 a.

Adjustment lag expired adjustment knob adjust lag time expired, 0.5 ~ 25 s;

DC pulsed argon arc welding

use "hand contact arc/argon arc/high frequency argon arc" function in contact or high frequency argon arc, namely into argon arc welding mode;Then pulse/dc mode in the pulse mode, namely into pulse argon arc welding mode, the adjustable knobs as below:

Adjustment pre aeration time adjustment knob to adjust pre aeration time, 0.3 ~ 10 s.

Adjust the welding current adjustment knob to adjust pulse welding current, 20 ~ 500 a.

Adjustment base value current adjustment knob to adjust base value pulse current, 20 ~ 500 a.

Adjust the pulse frequency adjustment knob to adjust pulse frequency, 0.5 ~ 25.0 Hz;
Adjustment arc starting current adjustment knob to adjust the arc current, 20 ~ 500 a.
Adjustment rise time adjustment knob to adjust welding current rise time, 0 ~ 10 s.
Adjustment fall time adjustment knob to adjust welding current fall time, 0 ~ 10 s.
Adjustment crater arc current adjustment knob to adjust crater arc current, 20 ~ 500 a.
Adjustment lag expired time adjustment knob to adjust lag time expired, 0.5 ~ 25 s;

Welding specification parameter table（For reference only）

position	material	connector	work piece thickness (mm)	wire diameter Φ (mm)	Welding current (A)	polarity	argon flow (dm^3/min)	tungsten bars		
								diameter Φ (mm)	taper angle	flat top diameter Φ (mm)
DC	stainless steel	Straight edge docking	1.6~3.0	1.6~2.5	50~90	DC straight polarity	8~12	1.0	12~20°	0.12~0.25
		Vtype groove	> 3.0~6.0		70~120			1.6	25~30°	0.50~0.75
		Xtype groove	> 6.0~12	2.5~3.2	100~150		10~14	2.4	35~45°	0.75~1.10
Arc welding	carbon steel	butt joint	≤ 4	3.2	160~210	DC inversed grafting	/	/	/	/
			4~12	3~4	210~270		/	/	/	/
			> 12	≥ 4	260~300		/	/	/	/

welding machine maintenance and maintenance

Inverter welding machine and the big difference is that a lot of the welder USES a traditional modern electronic components, high technology content, is a high-tech product, so the technical requirements of maintenance personnel is higher.But because there are few easy wear components, so everyday except the body appearance clean job need to be maintained on a regular basis.Repair welding shall be conducted by professional maintenance personnel are responsible for.When the user can't rule out the failure or don't have the ability to repair, should be timely and contact the manufacturer or supplier, get technology, repairs, spare parts supply and service and support.

Welding machine maintenance main work：

* dedusting

Regularly by professional maintenance staff with dry compressed air (use air compressor or the tiger skin) for the inside of a welding machine dust removal, at the same time pay attention to check whether there is any looseness or internal fasteners and connections, if any should be ruled out in

time.Generally in dust without serious dust once a year, in the case of dust serious, once or twice every quarter.。

* Keep the welding cable plug contact is good

When you use should check the contact of the welding cable plug in.Fixed used by the operator to check at least once a month once, in the mobile when using the inspection should be done before use。

note：*Machine voltage is high, to prevent accidental electric shock during maintenance of the safety measures. Not trained personnel are strictly prohibited to open the case

* If dust should cut off power supply before

* When the dust shall not be arbitrarily motivation inside wiring or damaged components.

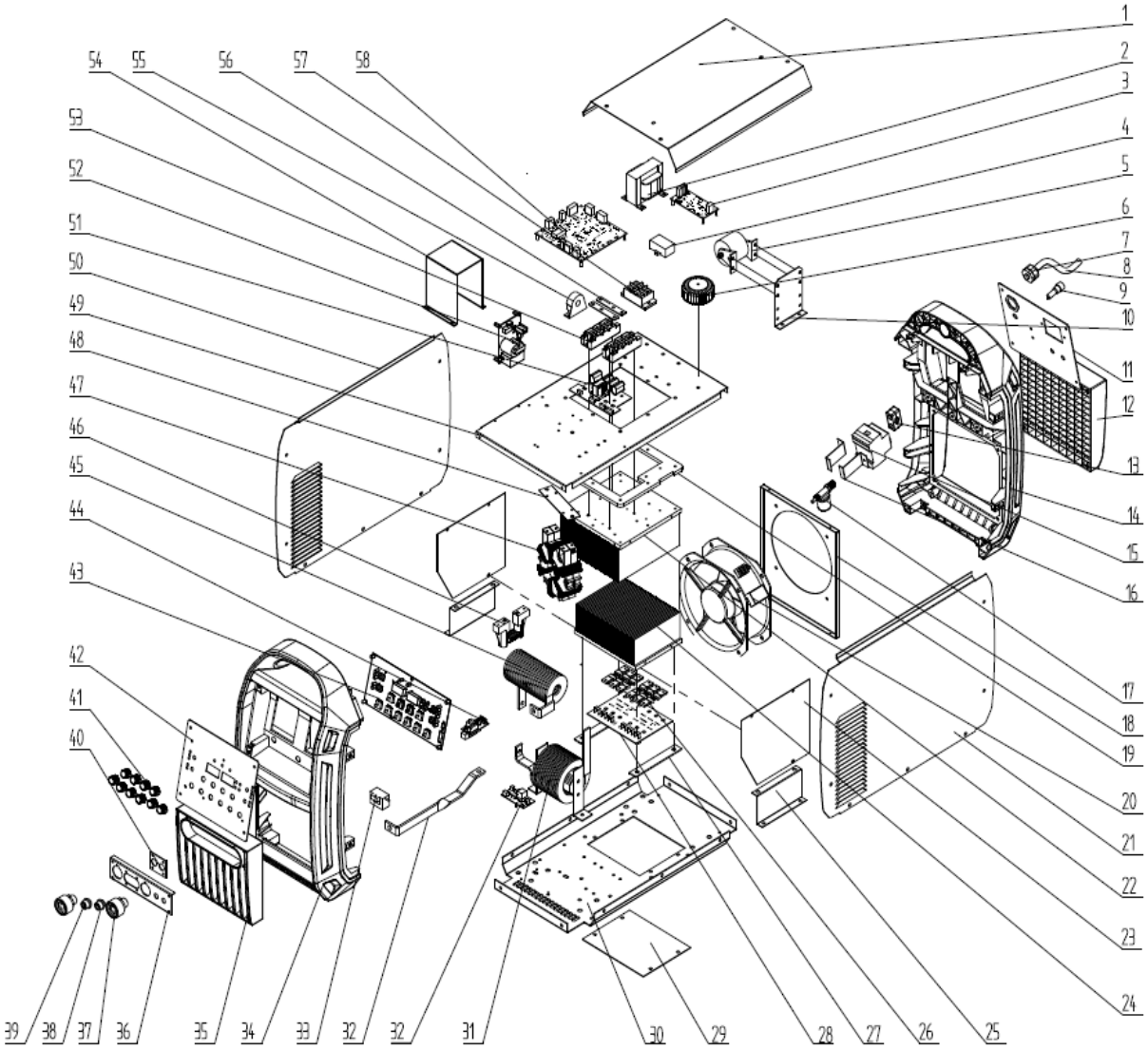
ATTENTION：

* The ‘Protection Indicator’ on the panel will be on after a long time operation, it shows that the inner temperature is over the permitted data. The machine should be stopped using for some time to let it cool down. It can continually use after the light is off.
* Cannot used the water cooler Tig torch to large current welding when without the water supply.
* Under the water cooler condition also need supply the argon.
* The power source, Argon valve and cooling water should be switch off after the operation or leaving job site temporarily.
* Welders should dress canvas work suit and wear mask to prevent arc light and thermal radiation.
* Light separating screen should be put in the job site to prevent arc hurting other people.
* Inflammable or explosive materials are prohibited to access the job site.
* Every connector of welder should be connected correctly and grounded reliably.

TROUBLE SHOOTING

No	Breakdown	Analysis	Solutions
1	Cooling fan not working	Fan is broken	Replace or repair
		Wire is broken /falling off	Find the disconnection and connect it reliably
2	NO HF arc-pilot	Torch switch is broken	Replace
		Main PCB is broken	Replace
		Wire is broken /falling off	Find the disconnection and connect it reliably
3	No output argon	No Argon input	Check the regulator & gas pipe and resume supplying gas to welder
		Main PCB is broken	Replace
		Gas valve is broken	Replace
		Gas path jammed	Remove foreign matter & dredge path
4	Lack water indicator is on	Water pressure is not enough	Increase the water pressure
		Water path is Jammed	Remove foreign matter & dredge path
5	Overheating protection indicator light on	Inside case over heating	Recover after the inner temperature cool down
		Heat relay is broken	Replace
		Power over or under voltage +-15%	Until the voltage is normal
6	Panel current knob malfunction	The relevant potentiometer is broken	Replace
		Main PCB is broken	Replace
		Wire is broken /falling off	Find the disconnection and connect it reliably
7	Current meter no display Current meter no display	Wire is broken /falling off	Find the disconnection and connect it reliably
		PCB is broken	Replace
		Wire is broken /falling off	Find the disconnection and connect it reliably
8	Arc pilot not smooth	False connection between torch and welder	Check & correct according the manual
		Argon not pure	Change 99.99% Argon
		Tungsten electrode not good or pin head broken	Change to eligible electrode
9	Power trip	Power switch first time turn on after long time(over two days)cut off	Filter capacitor’s charge in the main circuit lead to trip, return on the switch is OK.
10	others		Please connect with our company

SPARE PARTS LIST

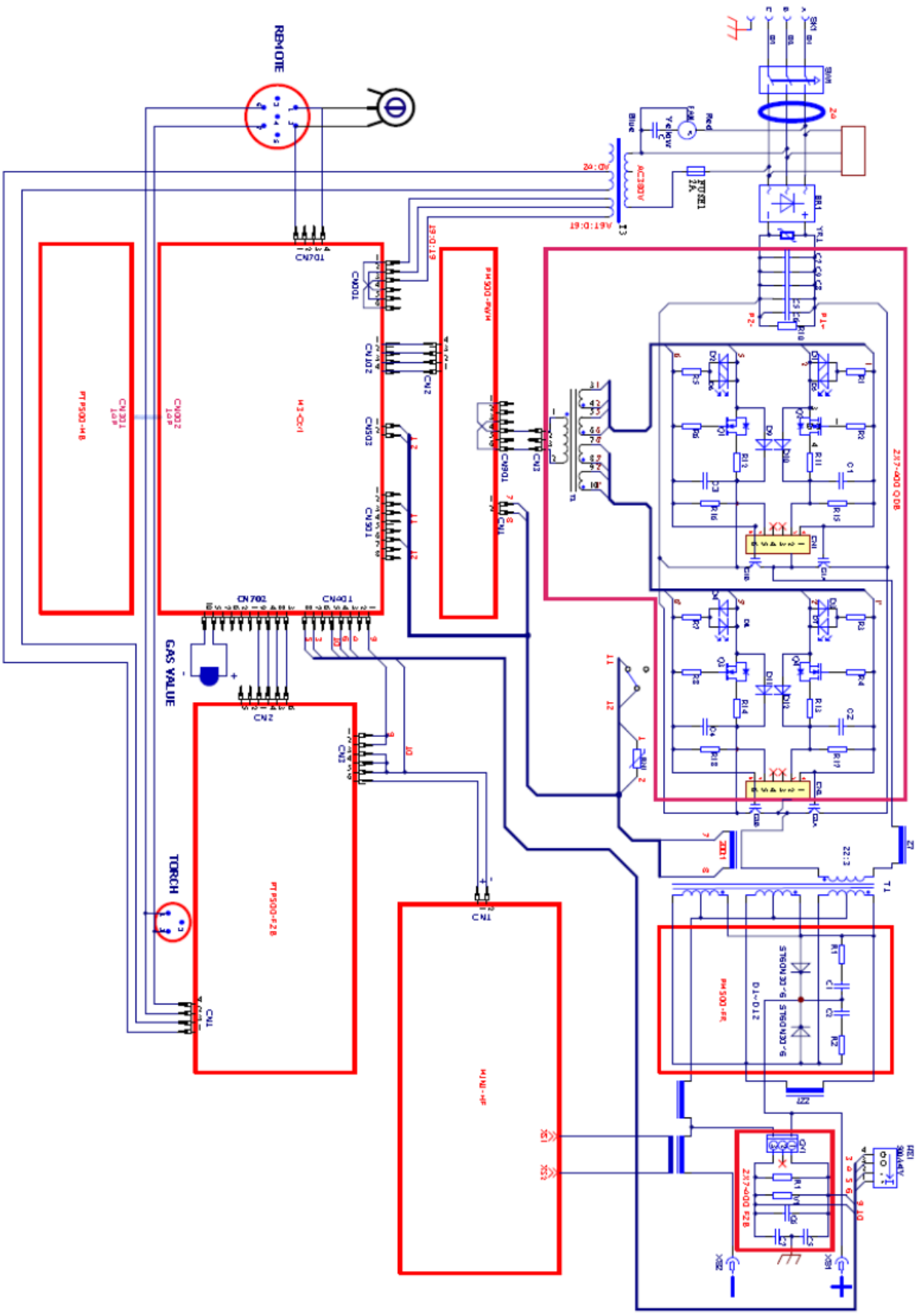


NO	code（EBS）	English name	specifications	Qty
1	11010011795	cover	PROTIG 500W PULSEii	1
2	20070250092	control transformer	PTP500.10.24D33.3.1 380V/19/19/24V/73W/0.5KVA	1
3	11050110283	PWM PCB board	NB-350E	1
4	20070120123	capacitor	DMJ-MT 40uF±5%/800V DC	
5		filter capacitor		1
6	20030302216	common mode inductance	NB500E/PM500.10.24D33.3.2	1
7	20040300009	cable fixed head	EG-21	1
8	11110150117	power input cable	PROTIG 400W PULSE	1
9	20070520004	fuse	BF015 6.3A/250V	1
10	11020013352	capacitor fixed plate	NB500E/PM500.10.24D33.3.6	1
11	11010032554	back panel fixed plate	PRPTIG 400W PULSE	1
12	20050050650	fan window	INVERMIG 500E/232*205.5*52.1	1
13	20050170019	cable press plate	NB500.5-2	2
14	20050050654	plastic panel	INVERMIG-500E/572*308	1
15	20070800139	breaker	断路器	1
16	11020011828	switch	8HG.125.044	2
17	20070550033	magnetic valve	VZCT2.2/0-0.6MPa	1
18	11020015828	fan fixed plate	INVERMIG 500E	1
19	20050050179	heat sink insulating plate	ZX7400E.2.2-1	1
20	20070890147	fan		1
21	11010021179	left panel	INVERMIG-500W	1
22	11020013350	fast recovery heat sink insulating plate	NB500E/PM500.10.24D33.8.3-2	2
23	20070430166	heat sink	200*200*100/IGBT	1
24	20070430165	heat sink	散热器 ROHS	1
25	11020013349	fast recovery heat sink holder	NB500E/PM500.10.24D33.8.3-1	2
26	20070280135	fast recovery diode	STTH6003CW 60A/300V	12
27	11020013350	fast recovery heat sink insulating plate	NB500E/PM500.10.24D33.8.3-2	2
28	11050110262	output rectifier board	NB500E/PM500.10.24D33.8.3.1.1	1
29	11010060796	bottom panel up shield plate	NB500E/PM500.10.24D33.8-1	1
30	11010041326	bottom panel	INVERMIG 500E	1
31	11040030254	output reactor assembly	WSM-500	1
32	11050110246	output small load plate	PE500.11.44D33.5.1	1

33	11110270047	hall	PM500.10.24D33.7	1
34	20050050654	plastic panel	572*308V1.0/PANTONG130C	1
35	20050050651	fan window	INVERMIG 500E/232*205.5*55	1
36	11020015867	output fixed plate	PRPTIG 400W PULSE	1
37	20070570206	quick socket	DKJ50-70	2
38	20030300632	torch switch	WSM-500E/PTP500.10.24D33.2.3	1
39	20030300482	aviation socket	WSM-500E/PTP500.10.24D33.2.2	1
40	11020015866	switch support plate	PROTIG 500W PULSE	1
41	20070110068	potentiometer knob	KN-21B-6/黑色	10
42	11020015868	print support plate	PRPTIG 400W PULSE	1
43	11050070461	panel control PCB board	PROTIG 400W PULSE	1
44	11050110459	torch switch insulating PCB board	WSM-315E	1
45	11040050093	coupling transformer	PROTIG 500W PULSE	1
46	20070040090	filter inductance	ZX7400E.4/8.85uH/7 匝	1
47	20070250056	main transformer	T100*60*20/37:5:5/16.5KVA	1
48	11020015128	transformer fixed plate	NB500.3.8	1
49	11010050417	mounting plate	INVERMIG 500E	1
50	11010021178	right panel	INVERMIG-500W	1
51	11050030064	drive PCB board	NB500E/PM500.10.24D33.3.8	1
52	11050100046	arcing PCB board	WSM-300W/PTP300.10.44D33.3.2	1
53	20070330067	IGBT module	IGBT 模块 ROHS	2
54	11020013850	arc board fixed plate	WSM-500E/PTP500.10.24D33.6	1
55	11120270006	transformer harness	NB500E/PM500.10.24D33.3.4.1	1
56	11030040012	IGBT busbar	NB350G.4-3	2
57	20070370028	3ph rectifier bridge	MDS75-14 75A/1400V	1
58	11050020850	main control PCB board	WSM-400E	1

Notice: The spare parts listed above is only for reference.

CIRCUIT CHART



COMPLETE SET SPECIFICATION

*	PROTIG-XXXPIII Inverter DC Pulse TIG Welder	1
*	Product Certificate	1
*	Warranty Card	1
*	Operator's Manual	1
*	Torch	1
*	Pottery nozzle (with one on the torch)	3
*	Tungsten electrode holder (with one on the torch)	3
*	Electrode Cup (with one on the torch)	Long and short each
*	TIPS	1
*	Gas hoop	2
*	Gas hose	1
*	Earth cable (with clamps and quick connector)	1

Remarks: a) No guarantee has been made yet to get the welding accessories repaired at any time because of its breakable attribute

TRANSPORT & STORAGE

*** NOTE:The handle should not be used for hoisting transportation.**

* The machines should be free from rain and snow. Keep notice of Attention sign on the packing box. The storage ware should keep dry and air circulation & free from corrosive gas or dust. The tolerable temperature ranges from -25% to +55%, and the relative humidity can not be more than 90%.

* After the package has been opened, it is suggested to repack the product as per requirement for future storage and transport. (Cleaning job is required before storage and sealing the plastic bag for storage in the box.)

* Users should keep the packing materials with the machines to keep well storage during the long transportation. If the machines need transfer during the transportation, then wooden box is required. Sign such as 'Lift' and 'Free of rain' should be labeled on the box.