THANKS FOR PURCHASING OUR PRODUCT

TIG180D

INVERTER
DC TIG/PULSE TIG/DC MMA
WELDING MACHINE

ASSEMBLY AND OPERATING INSTRUCTIONS

(be suitable for 1x220~240V)

SAFETY PRECAUTIONS

Follow these precautions carefully. Improper use of any welder can result in injury or death.

1. ONLY CONNECT WELDER TO A POWER SOURCE FOR WHICH IT WAS DESIGEND. The specification plate on the welder lists this information. When welding outdoors only use an extension cord intended for such use.

2. ONLY OPERATE WELDER IN DRY LOCATIONS and on cement or masonry floor. Keep area clean and uncluttered.

3. KEEP ALL COMBUSTIBLES AWAY FROM WORK SITE.

4. DO NOT WEAR CLOTHING THAT HAS BEEN CONTAMINATED with grease or oil.

5. KEEP CABLES DRY AND FREE FROM OIL AND GREASE and never coil around shoulders.

6. SECURE WORK WITH CLAMPS or other means; don't over reach when working.

7. NEVER STRIKE AN ARC ON A COMPRESSED GAS CYLINDER

8. DON'T ALLOW THE INSULATED PORTION OF THE ELECTRODE HOLDER TO TOUCH THE WELDING GROUND WHILE CURRENT IS FLOWING.

9. SHUT OFF POWER AND UNPLUG MACHINE WHEN REPAIRING OR ADJUSTING. Inspect before every use. Only use identical replacement parl.

10. FOLLOW ALL MANUFACTURER'S RULES on operating switches and making adjustments.

11. ALWAYS WEAR PROTECTIVE CLOTHING when welding . This includes: long sleeved shirt(leather sleeves), protective apron without pockets, long protective pants and boots. When handing hot materials, wear asbestos gloves.

12. ALWAYS WEAR A WELDER'S HELMET WITH PROTECTIVE EYE PIECE when welding. Arcs may cause blindness. Wear a protective cap underneath the helmet.

13. WHEN WELDING OVERHEAD, BEWARE OF HOT METAL DROPPINGS. Always protect the head, hand, feet and body.

14. KEEP A FIRE EXTINGUISHER CLOSE BY AT ALL TIMES.

15. DO NOT EXCEED THE DUTY CYCLE OF THE MACHINE. The rated cycle of a welding machine is the percentage of a ten minute period that the machine can operate safely at a given output setting.

16. KEEP ALL CHILDREN AWAY FROM WORK AREA. When storing equipment, make sure it is out of reach of children.

17. GUARD AGAINST ELECTRIC SHOCK. DO not work when tired. Do not let body come In'contact with grounded surfaces.

1. MAIN USAGE AND THE RANGE OF USAGE(APPLICATIONS):

TIG180D inverse argon arc welder with international advanced technology is a new variety of welding machine using MOSFET(or IGBT). It has performance and high efficiency that the traditional welder can not be compared with. TIG180D welder is triple functional machine used as MMA/DC TIG,PULSE TIG welder. The welding current and pulse frequency is all infinitely and independently adjustable. All ferrous metal, copper and stainless steel material can be omnibearing welding in all position.The welding current is stable. The welding seam is nice.few spatters and low noise occurs during welding.It has high frequency arc striking. The welder has outstanding feature of minimum current. The minimum current can be up to 5A.Protection measures of the welder are perfect. The welder is reliable,light in weight and easy to use. It is particularly suitable for enterprise of plant and mine, build, decoration and maintenance sectors.

2. MAIN TECHNICAL SPECIFICATIONS

Model	TIG180D
Power Supply Voltage	AC 220/230/240V 50Hz
No-load Voltage	70V
Rated Output Current	180A
Rated Duty Cycle	35%
Peak Cur. Adjusting Range	5-180A(TIG) 5-160A(Stick)
base Amps	5-180A
Start current	5~150A
End current	5~150A
Pulse Width Ratio	5%-95%
Pulse Frequency	0.5 - 500Hz
TIG Arc starting mode	high frequency arc striking
Up-slope,Down-slope time	0-25 S
Pre Flow Time	0~10S
Post Flow Time	0~25S
Mass	9.8kg
Protection Class of enclosure	I P21S

3. OPERATING CONDITION AND WORK SURROUNDING

1. Operating condition:

Voltage of power source: AC220/230/240V±10%

Frequency: 50/60Hz

Reliable grounding protection

2. Work surrounding

(1) relative humidity: ≤90%(average monthly temperature≤20℃)

(2) ambient temperature: -10℃ - 40℃

(3) The welding site should have no harmful gas, chemicals, molds and inflammable matter, explosive and corrosive medium, no big vibration and bump to the welder.

(4) Avoiding rain water. Operating in rain is not allowed.

4. DESCRIPTION OF THE ERECTION

a. Before welding , the operator should read the operation instructions and uses the welder correctly according to the process specification.

b. Checking the welder appearance for deformation and damage.

c. For the safety of the equipment and the persons, the customer must correctly make grounding or protecting according to the power supply system: using 4 mm^2 lead to connect the protection grounding of the welder.

d. Welding operation should be carried out in dry and good ventilating area. The surrounding objects should be not less than 0.5m away from the welder.

e. Checking the welder output connector for tightness.

f. The welder can not be moved or the cover can not be opened during the power is on and welding operation is carried out.

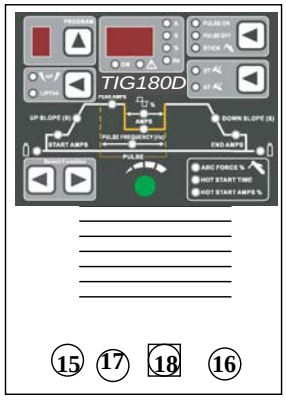
g. The welder should be cared,used and managed by specialized person.

h. Confirming that the power source is 220/**230/240V**

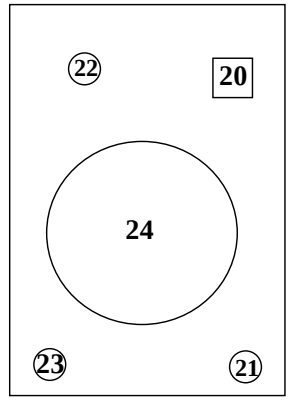
It can not be connected with 380V power absolutely.

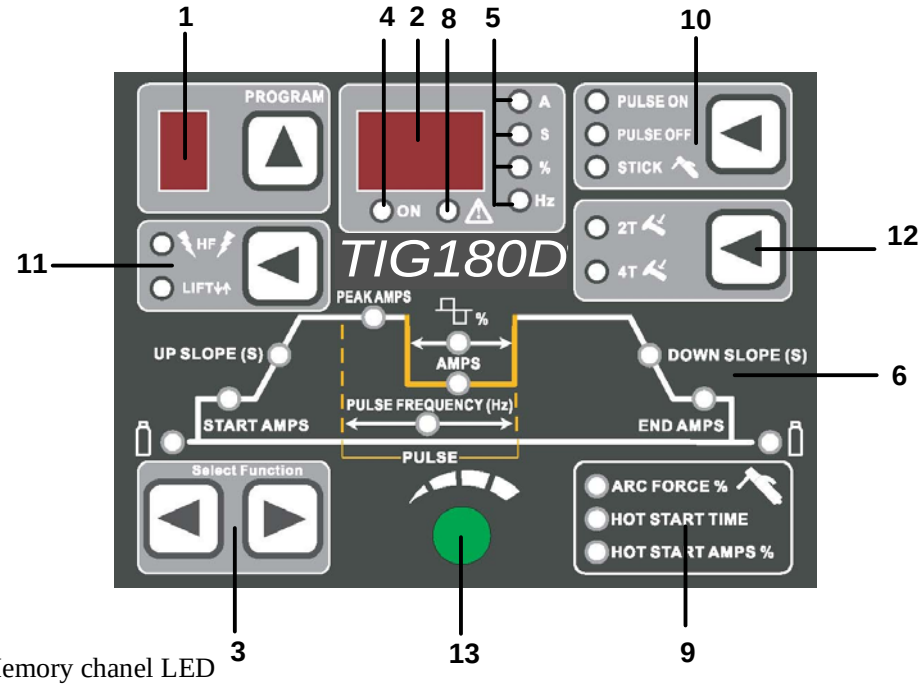
5. SKETCH OF THE PANEL FUNCTION

1. FRONT PANEL



2. BACK PANEL





1.Memory chanel LED

2. Data Display meter

3. Parameter Select function

4.indicating light of power

5. A --unit of current

S -- unit of up & downslope time & pre& post flow time

% -- unit of peak time on

Hz-- unit of pulse freq.

6. indicating light of Parameter Select function（Pre-flow /Start current/Up slope/Welding Amps/Pulse peak amps/ peak time on/ pulse freq./down slope/end current/post flow)

8.warning indicating light

9.indicating light of MMA Parameter Select function（arcforce slector /Hot start time/hot start amp）

10.Pulse on /pulse off/MMA slector

11.HF/LIFT slector

12. 2 steps/ 4 steps slector

13. Data Display Adjustment Knob

15. output"-" （ Ground clamp） 16. output"+"（Welding holder）

17.argon out 18.argon arc control (or remote control)

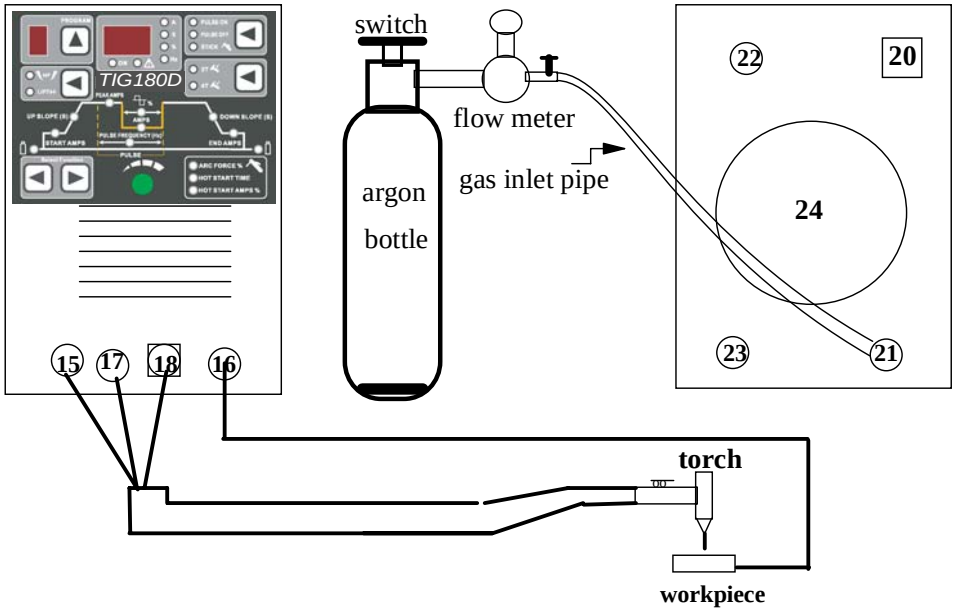
19.nameplate 20. power switch

21.argon inlet 22.power supply

23.safety earthing column 24.fan

6.METHOD OF THE OPERATION

6.1.ARGON ARC WELDING(TIG)



6.1.1 CLEARING BEFORE WELDING

Tungsten argon arc welding is very sensitive to surface contamination of filled metal. Therefore before welding is carried out,grease, paint and coating on the surface,lubricant for machining and oxidized film should be removed.

1.2 DC ARGON ARC WELDING

①.selector "10" onto the position " pulse off " ,Connecting the gas inlet pipe to inlet "21" of the welding.

②.Connecting gas inlet pipe of the welding torch to argon output of welder "17".

③.Putting the aerial plug of the welding torch in the argon arc control socket "18".

④.Testing gas: get the power of the welder ready and switch on the power "2", open the argon

bottle switch and switch on the flow meter, press the torch switch, select suitable argon flow.

⑤. .Regulating the base current knob "13". Selecting suitable welding current according to thickness of the workpiece to be welded.. Selecting suitable current down slope time and after flow time according to the current.

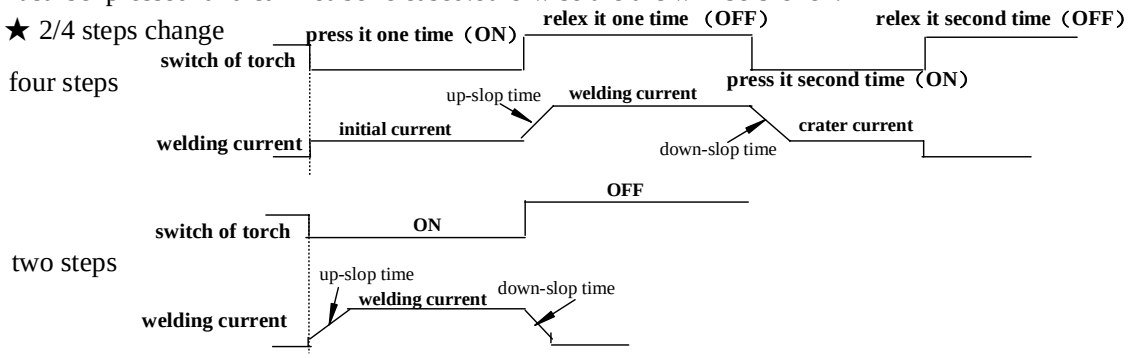
Notice 1: The current indicating meter on the front panel is used to display the preset output current level before welding, and actual output level while welding: A lit display indicates input power is turned on.

Notice 2: When using '**Adjustable foot control** '.regulating the current with sole. welding current will increase gradually when you step at full tilt the '**Adjustable foot control**' with sole.

⑥. Tungsten electrode end is 2-3mm away from the welding workpiece. Press the torch switch,arc striking will occur.

Notice: During welding, when the" 12. 2steps/4steps switch"on "2 steps", switch of the torch

must be pressed and can not be released.otherwise the arc will be broken.



⑦.Releasing the switch of the torch, welding current will reduce gradually (time is adjustive) and arc extinguishes.The welding torch can not be removed as soon as the arc extinguishing. Let the protection gas cooling down for the welding seam not to be oxidized.

⑧.When the welding operation is finished, turn off argon bottle switch and cut off input power of the welder.

1.3 PULSE ARGON ARC WELDING

①. Selection of peak current and base current:

②. selector "10" onto the position " pulse on ", The frequency changes between 0.5-500Hz.

③.select peak time on ratio: It can be selected between 5%-95%.

④.select up-slope&down slope time: It can be selected between 0-25S.

⑤.Gas connecting and testing,are generating and are blowing off etc. are all the same as DC are welding.

6.2.Hand welding with electrode

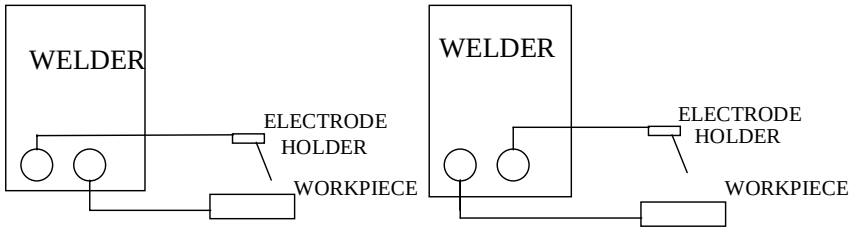
①.selector "10" onto the position " MMA "

②.Regulating Current Knob"3" to select right welding current

select empiric formula:I=40d, d is dia. of the electrode.

③.Notice positive and negative connection during welding.

A. POSITIVE CONNECTION B . NEGATIVE CONNECTION



④.Connecting input power for the welder, then switch on the power and current indicating light "2" is on .

⑤.Pay attention to rated welding current and rated duty cycle of the welder. Overload is not allowed.

⑥.After the welding operation is finished, let the welder be ventilated for a few minutes and then cut off the power switch.

7.ARGON TUNGSTEN DC ARC WELDING PROCESS (only for reference)

7.1 Current carrying capacity of tungsten electrode(A)

dia. of tungsten electroder (mm)	DC positive connecting			DC negative connecting
	pure tungsten	thorium tungsten	cerium tungsten	pure tungsten
1.0	20 - 60	15 - 80	20 - 80	
1.6	40 - 100	70 - 150	50 - 160	10 - 30
2.0	60 - 150	100 - 200	100 - 200	10 - 30

7.2 Relation between end form of tungsten electrode and arc stability

form	variety	current	application range	electrical arc
	cerium or thorium tungsten electrode	DC positive	narrow gap welding and sheet welding	stable
	tungsten cerium or thorium electrode	DC positive	dia. <1mm tungsten elec-trode continuous welding	good

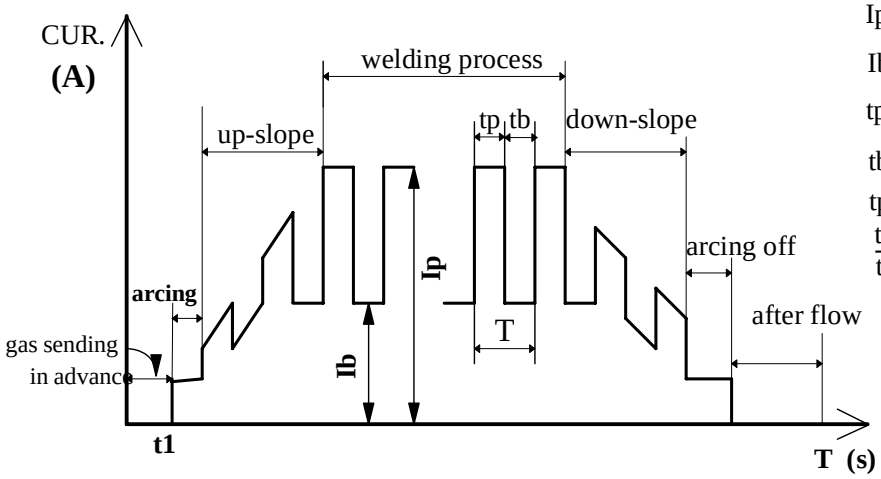
7.3 hand argon tungsten electrode welding specification for stainless steel

power polarity	thickness of sheet (mm)	curling butt connection		butt connection and filling welding wire		dia. of welding wire (mm)
		welding current(A)	Argon flow (L/min)	welding current	argon flow (L/min)	
DC positive connec-tion	0.5	10 - 30	4	15 - 35	4	1.0
	0.8	15 - 40	4	35 - 40	4	1.0
	1.0	35 - 60	4	40 - 70	4	1.6
	1.5	45 - 80	4 - 5	50 - 85	4 - 5	1.6
	2.0	75 -120	5 - 6	80 -130	5 - 6	2.0
	3.0	110-140	6 - 7	120-150	6 - 7	2.0

8.PULSE ARGON TUNGSTEN WELDING PROCESS(only for reference)

(1) Features and application scope of the process

The pulse type argon tungsten arc welding is different from the continuous(DC) argon arc welding. The welding current is pulsed. The wave form of the current is shown in the following sketch.



Ip--pulse current

Ib--base current

tp--width time of pulse current

tb--width time of base current

tp+tb=T

$\frac{tp}{tb}$ = D pulse width

Ip and Ib and their continuous time tp and tb can be regulated according to requirements of the process. The amplitude value of electric current changes periodically with certain frequency in case of the pulse current , molten bath will be formed in the workpiece and the molten bath will be solidified in case of base current. The welding seam is formed by reciprocal overlaps . Welding heat input can be controlled by regulating pulse frequency, pulse current amplitude, size of base current, continuous time of pulse current and base current and therefore the welding seam, size and quality of the zone influenced from heat can be controlled.

(2) Advantages and application scope of pulse argon gas tungsten arc welding

a. Precisely control the size of the bath inputting heat to workpiece to increase penetration resistance of molten seam and preservation of bath. It is easy to obtain even fusing deepness. This process is specially applicable to omni - bearing welding of sheet and formation to be done with both sides through one side welding.

b. Heating and cooling of each welding point is very fast . Therefore, the process is applicable for the workpiece with great difference of heat conductivity and thickness.

c. Pulse arc can obtain greater fusing deepness with lower heat input. Therefore, under the same condition, the zone influenced from welding heat and deformation from welding can be reduced. This is very important for sheet and ultra -thin sheet welding.

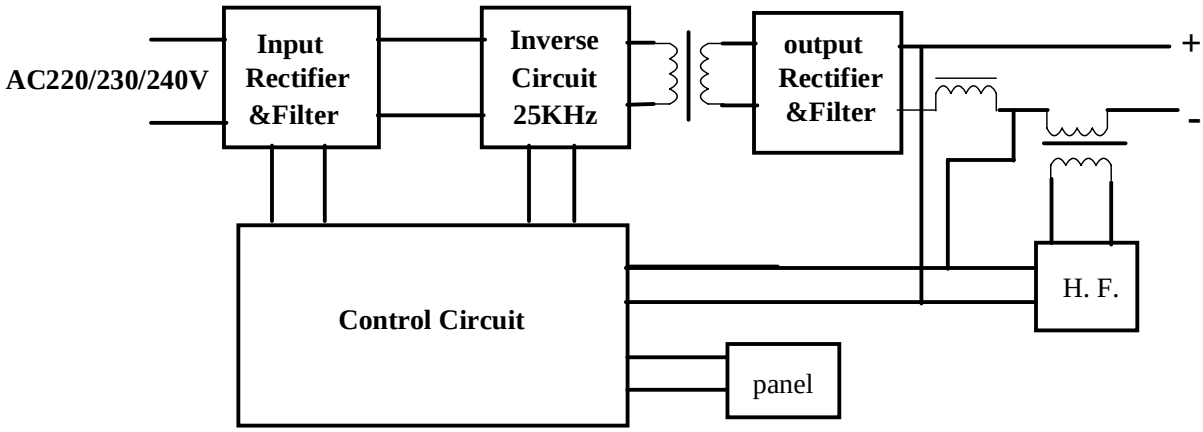
d. Fast cooling of the bath metal and short duration time of high temperature during welding can reduce cracks caused to the thermo-sensitive materials during welding.

(3) Selection of welding parameters

Except for pulse current and the width time(width ratio) as well as pulse frequency,welding parameters of pulse argon gas tungsten arc welding are same as general tungsten DC argon arc welding. Pulse current increasing means electric arc can obtain greater penetration ability. But too much current can cause local melting of tungsten electrode. Generally, welding

current required for DC tungsten argon arc welding or greater current is used. Arc holding current (ie base current) influences cooling and crystallizing of the metal in the bath. The range is determined by performance of the welding materials.When sheet is welding, smaller arc holding current (base current) is usually used in order to reduce welding through and deformation. When pulse width ratio (holding time of pulse current and base current) is selected, both the heat input and features of pulse welding should be considered. Usually, it can be selected between 30 -60%. Selection of pulse frequency(periodical change time of pulse current) mainly depends on thickness of sheet and welding speed and operation custom of the operator should be also considered.

9. SYSTEMATIC BLOCK DIAGRAM



10. TROUBLES AND PROBLEM SOLVING

Trouble	Causes	Problem Solving
Power lamp not light	1.No electricity input 2.Switch of welder fails.	1.Check incoming line 2.Replace the switch
Fan not rotating	1.Fan poer line is off. 2.Enclosure blocks the fan due to defor mation 3.The fan fails.	1.Reconnect the line 2.Reform the enclosure 3.Replace the fan
Warning lamp lights	1.Over heat(yellow lamp lights) 2.Oer current(Green lamp lights)	1.Welding after cooling. 2.Input voltage too low or the machine fails.
No output of welder	1.Over crrent protection 2. Welder fails	1. Over load using 2. Maintenance in manufacturer or service center
Welding stops, and w arning light is on	Self-protection has engaged 1.Display "801" 2.Display "802" 3.Display "804" 4.Display "805"	1.over-voltage, lower-voltage 2.over-temperature, 3.over-current, 4.torch switch always close

Output current decreased	1. Input Voltage is low 2. Input line is too thin	2. Power line is thickened
Current can not be regulated	1.Connecting line of the potentiometer is of f 2.Potentiometer for current regulation fails	1.Reconnecting the line 2.Replace potentiometer
High frequency are can not be generated	1.The switch fails 2.Interval of high frequency discharging is t oo big 3.Distance of the torch and workpieceis too far high frequency arc generator fails	1.Replace torch switch 2.Regulating discharging interval to 0.8-1.0mm 3.Put torch tungsten electrode close to work piece 4.Replace high frequency arc generator
Arc of argon welding is broken or tungsten electrode is burnt	1.Argon gas flow is not regulated well 2.Tungsten electrode fails 3.Value of current does not match with dia. of tungsten electrode 4.After flow time too short	1.Regulated well 2.Replace or sharpen 3.Select the electrode dia. and current correctly 4.Enlarge the time
Welding torch overheat	1.Not use the water cooling when the current is more than 160A 2.The argon flow is the low current	1.Use water cooling 2.Enlarge the argon flow

11.ACCESSORIES:SEE PACKING LIST,PLEASE

PACKING LIST

★★★★★★★★★★★★★★★★★★★★★★★★★★★

TIG180D Welding machine	1		
Welding Holder	1		
Ground clamp	1		
TIG welding torch	1		
gas inlet pipe	1		
Adjustable foot control	1	optional accessory	
Operation instructions	1		
Certificate of quality	1		

No.

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Certificate of quality

Name of product: PULSE TIG WELDING

Type of product: TIG180D

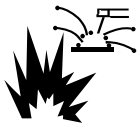
Packing No: _____

Test results of this welder fulfils_____

_____technical requirements and its release

from the works is granted.

Inspector_____ Date_____

			
WARNING	● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground.	● Keep flammable materials away.	● Wear eye, ear and body protection.
Spanish **AVISO DE PRECAUCION**	● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aislese del trabajo y de la tierra.	● Mantenga el material combustible fuera del área de trabajo.	● Protéjase los ojos, los oídos y el cuerpo.
French **ATTENTION**	● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. ● Isolez-vous du travail et de la terre.	● Gardez à l'écart de tout matériel inflammable.	● Protégez vos yeux, vos oreilles et votre corps.
German **WARNUNG**	● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden!	● Entfernen Sie brennbarres Material!	● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese **ATENÇÃO**	● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra.	● Mantenha inflamáveis bem guardados.	● Use proteção para a vista, ouvido e corpo.
Japanese **注意事項**	● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。	● 燃えやすいものの側での溶接作業は絶対にしてはなりません。	● 目、耳及び身体に保護具をして下さい。
Chinese **警 告**	● 皮肤或濕衣物切勿接觸帶電部件及銲條。 ● 使你自己與地面和工件絕緣。	● 把一切易燃物品移離工作場所。	● 佩戴眼、耳及身體勞動保護用具。
Korean **위 험**	● 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. ● 모재와 접지를 접촉치 마십시요.	● 인화성 물질을 접근 시키지 마시요.	● 눈, 귀와 몸에 보호장구를 착용하십시요.
Arabic **تحذير**	● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل.	● ضع المواد القابلة للاشتعال في مكان بعيد.	● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone.	● Turn power off before servicing.	● Do not operate with panel open or guards off.	**WARNING**
● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.	● No operar con panel abierto o guardas quitadas.	Spanish **AVISO DE PRECAUCION**
● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	● Débranchez le courant avant l'entretien.	● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	French **ATTENTION**
● Vermeiden Sie das Einatmen von Schweibrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)	● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	German **WARNUNG**
● Mantenha seu rosto da fumaça. ● Use ventilação e exhaustão para remover fumo da zona respiratória.	● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas.	● Mantenha-se afastado das partes moventes. ● Não opere com os paineis abertos ou guardas removidas.	Portuguese **ATENÇÃO**
● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。	● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。	● パネルやカバーを取り外したままで機械操作をしないで下さい。	Japanese **注意事項**
●頭部遠離煙霧。 ●在呼吸區使用通風或排風器除煙。	●維修前切斷電源。	●儀表板打開或沒有安全罩時不準作業。	Chinese **警 告**
● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	Korean **위 험**
● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	● اقطع التيار الكهربائي قبل القيام بأية صيانة.	● لا تشغل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.	Arabic **تحذير**

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀捍材料，並請遵守貴方的有関勞動保護規定。

이 제폼에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.