

THANKS FOR PURCHASING OUR PRODUCT

MicroTig185DA

DC INVERTER
AC /DC TIG/MMA
3 IN 1 MACHINE

OPERATION INSTRUCTIONS

(be suitable for 1x 230V)



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 DESIGNED. 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 overreach 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 part.
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 handling 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.

I. MAIN USAGE AND THE RANGE OF USAGE

MicroTig185DA Welder is triple functional machine used as STICK, AC TIG, DC TIG (PULSE TIG) Machine. All ferrous metals copper, Aluminium ,titanium and stainless steel material can be omnibearing welding in all position.The welding current is stable and stepless adjustable.The welding seam is nice. few spatter and low noise occurs during welding.The welder is small volume, light in weight and easy to move.It is particularly suitable for enterprise of pressure vessel,building, shipping and petrochemical works. It is the priority product to replace the NSA series welding machine.

. MAIN TECHNICAL SPECIFICATIONS

MODEL		MicroTig185DA
INPUT	Voltage	AC230V 50/60Hz
AC TIG	No-load Voltage	80V
	current Adjusting Range	20~185A
	AC balance	10%~90 %
	AC Square Wave Frequency	20~250Hz
	Rated Duty Cycle	35%
DC	Pulse Current Adjusting Range	5~185A
	Rated Duty Cycle	35%
	Current Up-slope Time	0S
	Current Down-slope Time	0~10S
TIG	Base Current	5A
	Pluse Time On	0.5
	Pluse Frequency	1Hz or 50Hz
	post Flow Time	0~25s
	Arc starting Mode	high frequency or lift arc striking
MMA	No-load Voltage	80V
	current Adjusting Range	5~150A(@DC) 20~150A(@AC)
	Rated Output Current	150A
	Rated Duty Cycle	35%
Efficiency		≥83%
Mass		25kg
Protection Class of enclosure		IP21S
Outline Dimensions mm ³		470x235x435

III. OPERATING CONDITION AND WORK SURROUNDING

1. Operating condition:

Voltage of power source: 1~AC230V \pm 10%。 Frequency: 50/60Hz

Reliable grounding protection

2. Work surrounding

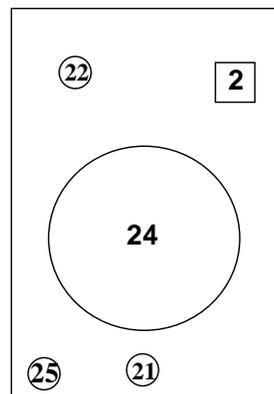
- ①. relative humidity: not more than 90 % (average monthly temperature not more than 20°C)
- ②. ambient temperature: -10°C ~ 40°C
- ③. The welding site should have no harmful gas, Chemicals, molds and inflammable matter, explosive and corrosive medium, no big vibration and bump to the welder.
- ④. Avoiding rain water. Operating in rain is not allowed.

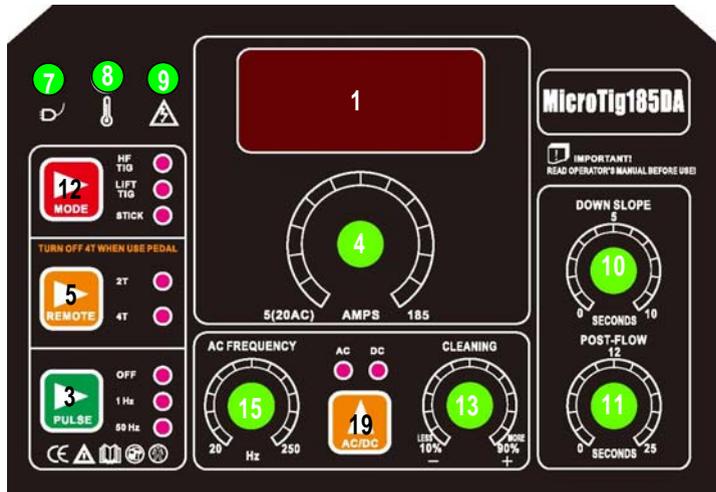
IV. DESCRIPTION OF THE ERECTION

1. Before welding, the operator should read the operation instructions.

2. Check the welder appearance for deformation and damage.
3. For the safety of the equipment and the persons, the customer must correctly make grounding or protection according to the power supply system: using 4mm² lead to connect the protection grounding of the welder
4. 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.
5. Checking the welder output connector for tightness.
6. The welder can not be moved and the cover can not be opened during the power is on and welding operation is carried out.
7. The welder should be cared, used and managed by specialized person.
8. Current of the distribution board: not less than 40A

.SKETCH SKETCH THE PANEL FUNCTION

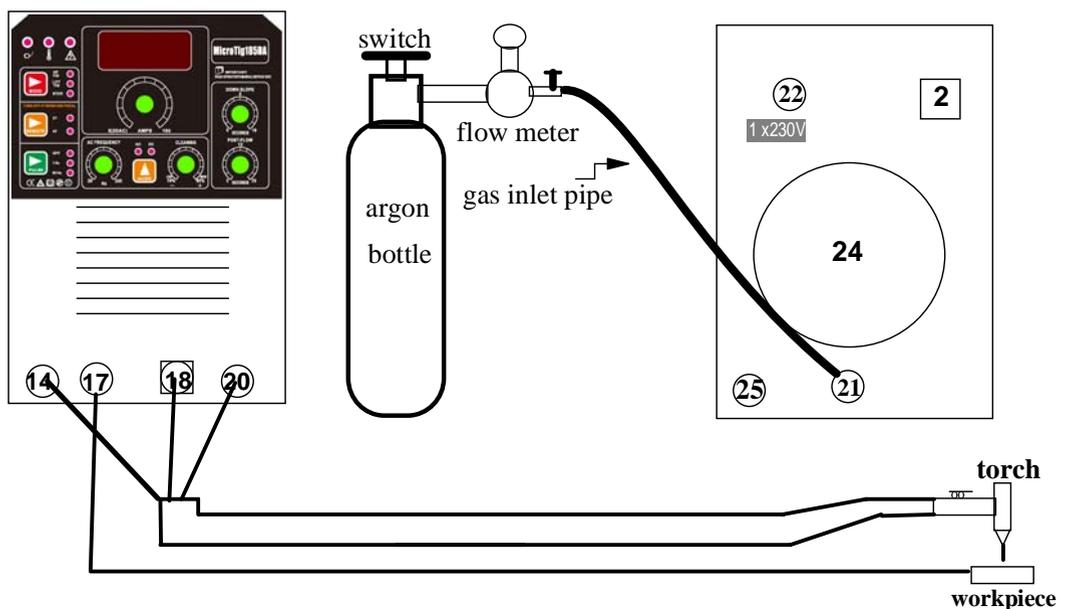




- 1.indication of welding current 2.power switch 3.Pulse On/Off.4.current regulator
 5.2 steps/ 4 steps switch 6.pulse Freq. regulator 7.indicating light of power 8.warning indicating light
 9. warning indicating light 10.current down-slope time regulator 11.post flow time regulator
 12.STICK/TIG switch 13.AC balance 14.output"+"15.AC square wave Frequency 16. pilotarc
 17.argon out 18.argon arc control (or remote control) 19. AC/DC TIG switch 20. output"-"
 21.argon inlet 22.power supply 23. nameplate 24.fan 25.safety earthing column

VI.METHOD OF THE OPERATION

1.ARGON ARC WELDING(TIG)



1.1 CLEARING BEFORE WELDING

Tungsten argon an 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. Put Switch "19"(AC/DC) onto the position " DC", Connecting the gas inlet pipe to inlet "21" of the welding. Put switch "12" (MMA/TIG switch) onto the position "TIG".

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 current knob "4"(Pulse switch on to "off") . Selecting suitable welding current according to thickness of the workpiece to be welded.. Selecting suitable current down slope time and post 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 base 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 " 5. 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 adjustable) 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

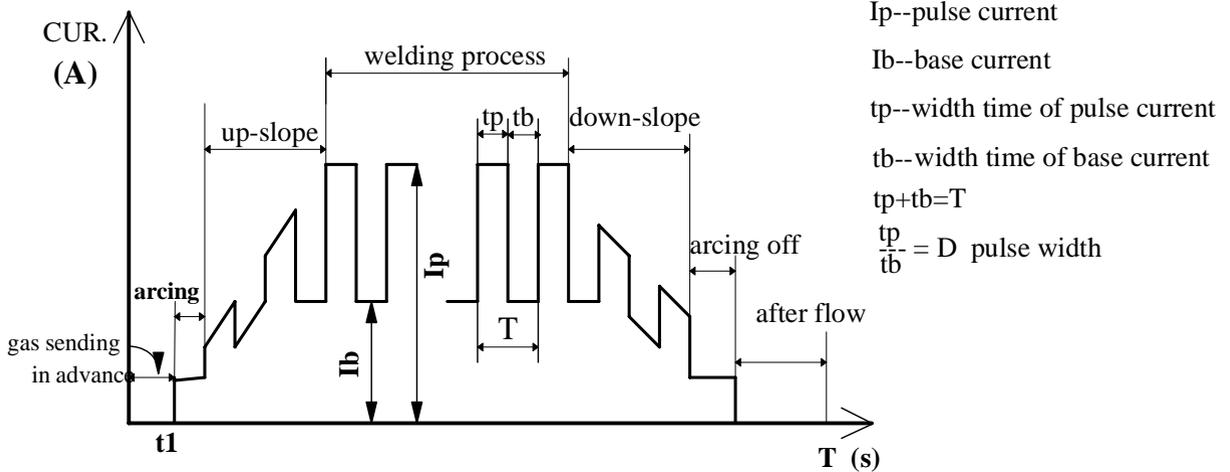
①. Selection of current and pulse switch :

Regulating the current knob "4"(Pulse switch on to "1Hz or 50Hz") . Selecting suitable welding current according to thickness of the workpiece to be welded.. Selecting suitable current down slope time and post flow time according to the current.

②. .Regulation of down-slope time:when the knob"10" is regulated clockwise, the time increase,conversely,it decrease.It can be selected between 0-10S.

③. Gas connecting and testing,are generating and are blowing off etc. are all the same as DC are welding.

1.4 PULSE ARGON TUNGSTEN WELDING PROCESS (only for reference)



①.Features and application scope of the process .

The pulse type argon tungsten are welding is different from the continuous(DC) argon are welding.The welding current is pulsed.The wave form of the current is shown in the following sketch. I_p and I_b and their continuous time t_p and t_b 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 base will be formed in the workpiece and the molten bath will be solidified in care 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 shot 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 as same as general tungsten DC argon are

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 and 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 10% - 90%. 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.

1.5 AC ARGON ARC WELDING

1. put switch "19" (AC/DC) onto the position "AC".
2. The method of the connection same as 1.1
3. Regulating "13" to select right "sp(AC balance)"

$$SP = \frac{t_p}{t_n} * 100\%$$

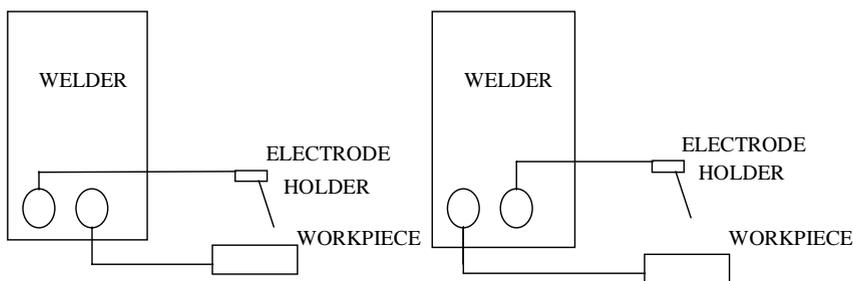
t_p: the time of I₂ at positive t_n: the time of I_n at Negative
4. Regulating "15" to select right AC square wave frequency.
5. The Method of the welding same as 1.1

2. Hand welding with electrode

- ①. Put switch "12" (MMA/TIG/CUT switch) onto the position "MMA".
 - ②. Regulating Current Knob "4" (current regulator) to select right welding current (Pulse switch to off)
- select empiric formula: $I = 40d$, d is dia. of the electrode.

- ③. Notice positive and negative connection during welding.

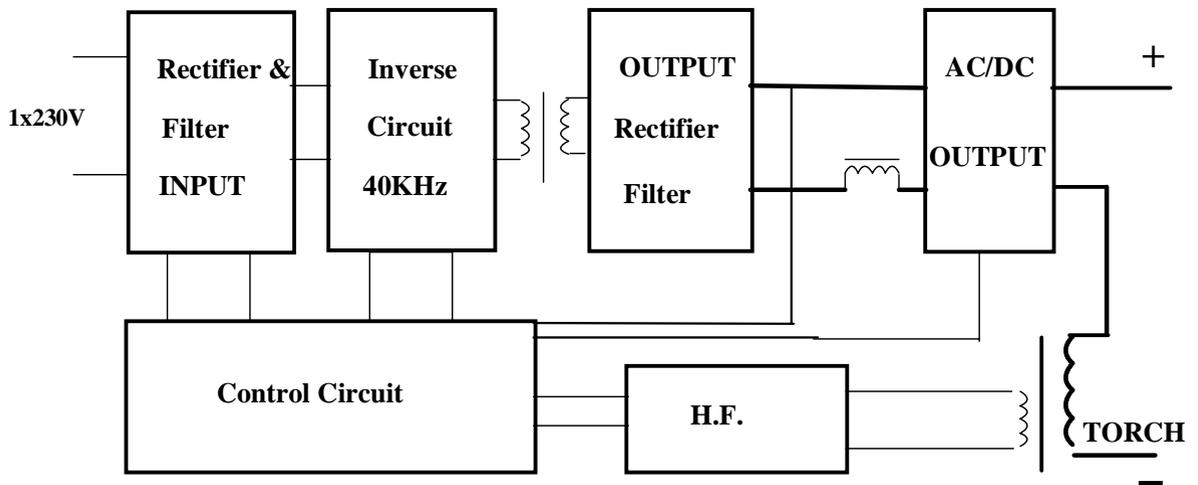
A. NEGATIVE CONNECTION B. POSITIVE CONNECTION



- ④. Connecting input power for the welder, then switch on the power and current indicating light "7" 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.

.SYSTEMATIC BLOCK DIAGRAM



VIII.This product is sold subject to the understanding that if any defect in manufacture or material shall appear within 12 months from date of consumer sale, the manufacturer will arrange for such defect to be rectified without charge on the sales invoice and warranty card (except for any personal trouble).

General 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 power line is off. 2.Enclosure blocks the fan due to deformation 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.Over current(Green lamp lights)	1.Welding after cooling. 2.Input voltage too low or the machine fails.
No output of welder	1.Over current protection 2. Welder fails	1. Over load using 2. Maintenance in manufacturer or service center

Output current decreased	<ol style="list-style-type: none"> 1. Input Voltage is low 2. Input line is too thin 	<ol style="list-style-type: none"> 2. Power line is thickened
Current can not be regulated	<ol style="list-style-type: none"> 1. Connecting line of the potentiometer is off 2. Potentiometer for current regulation fails 	<ol style="list-style-type: none"> 1. Reconnecting the line 2. Replace potentiometer
High frequency arc can not be generated	<ol style="list-style-type: none"> 1. The switch fails 2. Interval of high frequency discharging is too big 3. Distance of the torch and workpiece is too far 4. High frequency arc generator fails 	<ol style="list-style-type: none"> 1. Replace torch switch 2. Regulating discharging interval to 0.8-1.0mm 3. Put torch tungsten electrode close to workpiece 4. Replace high frequency arc generator
Arc of argon welding is broken or tungsten electrode is burn	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Regulated well 2. Replace or sharpen 3. Select the electrode dia. and current correctly 4. Enlarge the time
Welding torch overheat	<ol style="list-style-type: none"> 1. Not use the water cooling when the current is more than 160A 2. The argon flow is the low current 	<ol style="list-style-type: none"> 1. Use water cooling 2. Enlarge the argon flow
Welding stops, and warning light is on	<p>Self-protection has engaged</p> <ol style="list-style-type: none"> 1. Display "E01" 2. Display "E02" 3. Display "E05" or "E04" 	<ol style="list-style-type: none"> 1. over-temperature, 2. over-current, 3. torch switch always close

X.ACCESSORIES:SEE PACKING LIST,PLEASE

PACKING LIST



MicroTig185DA welding MACHINE	1		
Welding clamp+cable	1		
Ground pliers+cable	1		
TIG welding torch	1		
Adjustable foot control	1	optional accessory	
gas inlet pipe	1		
Operation instructions	1		
Certificate of quality	1		

No.

Certificate of quality

Name of product: ACTIG/DCTIG/MMA MACHINE

Type of product: MicroTig185DA

Packing No: _____

Test results of this welder fulfils_____

_____technical requirements and its release
from the works is granted.

Inspector_____ Date_____

WARNING	<ul style="list-style-type: none"> ● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground. 	<ul style="list-style-type: none"> ● Keep flammable materials away. 	<ul style="list-style-type: none"> ● Wear eye, ear and body protection.
Spanish AVISO DE PRECAUCION	<ul style="list-style-type: none"> ● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aíslese del trabajo y de la tierra. 	<ul style="list-style-type: none"> ● Mantenga el material combustible fuera del área de trabajo. 	<ul style="list-style-type: none"> ● Protéjase los ojos, los oídos y el cuerpo.
French ATTENTION	<ul style="list-style-type: none"> ● 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. 	<ul style="list-style-type: none"> ● Gardez à l'écart de tout matériel inflammable. 	<ul style="list-style-type: none"> ● Protégez vos yeux, vos oreilles et votre corps.
German WARNUNG	<ul style="list-style-type: none"> ● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden! 	<ul style="list-style-type: none"> ● Entfernen Sie brennbares Material! 	<ul style="list-style-type: none"> ● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese ATENÇÃO	<ul style="list-style-type: none"> ● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra. 	<ul style="list-style-type: none"> ● Mantenha inflamáveis bem guardados. 	<ul style="list-style-type: none"> ● Use proteção para a vista, ouvido e corpo.
Japanese 注意事項	<ul style="list-style-type: none"> ● 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。 	<ul style="list-style-type: none"> ● 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。 	<ul style="list-style-type: none"> ● 目、耳及び身体に保護具をして下さい。
Chinese 警告	<ul style="list-style-type: none"> ● 皮肤或湿衣物切勿接触带电部件及焊条。 ● 使你自已与地面和工件绝缘。 	<ul style="list-style-type: none"> ● 把一切易燃物品移离工作场所。 	<ul style="list-style-type: none"> ● 佩戴眼、耳及身体劳动保护用具。
Korean 위험	<ul style="list-style-type: none"> ● 전도체나 용접봉을 젖은 헝겍 또는 피부로 절대 접촉치 마십시오. ● 모재와 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> ● 인화성 물질을 접근시키지 마십시오. 	<ul style="list-style-type: none"> ● 눈, 귀와 몸에 보호장구를 착용하십시오.
Arabic تحذير	<ul style="list-style-type: none"> ● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجسد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل. 	<ul style="list-style-type: none"> ● ضع المواد القابلة للاشتعال في مكان بعيد. 	<ul style="list-style-type: none"> ● 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.

<ul style="list-style-type: none"> ● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone. 	<ul style="list-style-type: none"> ● Turn power off before servicing. 	<ul style="list-style-type: none"> ● Do not operate with panel open or guards off. 	WARNING
<ul style="list-style-type: none"> ● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases. 	<ul style="list-style-type: none"> ● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio. 	<ul style="list-style-type: none"> ● No operar con panel abierto o guardas quitadas. 	Spanish AVISO DE PRECAUCION
<ul style="list-style-type: none"> ● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail. 	<ul style="list-style-type: none"> ● Débranchez le courant avant l'entretien. 	<ul style="list-style-type: none"> ● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés. 	French ATTENTION
<ul style="list-style-type: none"> ● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes! 	<ul style="list-style-type: none"> ● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!) 	<ul style="list-style-type: none"> ● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen! 	German WARNUNG
<ul style="list-style-type: none"> ● Mantenha seu rosto da fumaça. ● Use ventilação e exaustão para remover fumo da zona respiratória. 	<ul style="list-style-type: none"> ● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas. 	<ul style="list-style-type: none"> ● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas. 	Portuguese ATENÇÃO
<ul style="list-style-type: none"> ● 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。 	<ul style="list-style-type: none"> ● 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ください。 	<ul style="list-style-type: none"> ● パネルやカバーを取り外したまま機械操作をしないで下さい。 	Japanese 注意事項
<ul style="list-style-type: none"> ● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。 	<ul style="list-style-type: none"> ● 維修前切斷電源。 	<ul style="list-style-type: none"> ● 儀表板打開或沒有安全罩時不準作業。 	Chinese 警告
<ul style="list-style-type: none"> ● 얼굴로부터 용접가스를 멀리하십시오. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오. 	<ul style="list-style-type: none"> ● 보수전에 전원을 차단하십시오. 	<ul style="list-style-type: none"> ● 판넬이 열린 상태로 작동치 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها. 	<ul style="list-style-type: none"> ● أقطع التيار الكهربائي قبل القيام بأية صيانة. 	<ul style="list-style-type: none"> ● لا تشغيل 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焊材料，並請遵守貴方的有閣勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

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