# SUPER TIG 200Di AC TIG/D DC MMA

DC INVERTER
AC TIG/DC TIG
DC MMA
WELDING MACHINE

# **OPERATION INSTRUCTIONS**

(BE SUITABLE FOR 1 x220~240V)



# 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 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 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.

# I. MAIN USAGE AND THE RANGE OF USAGE

SUPER TIG 200Di Welder is triple functional machine used as DC MMA, AC TIG, DC/PULSE TIG Welder. 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.

# II. MAIN TECHNICAL SPECIFICATIONS

MODEL		SUPER TIG 200Di		
INPUT	Voltage	1 xAC 220V~240V 50Hz		
	No-load Voltage	70V		
DC	current Adjusting Range	20~160A		
MMA	Rated Output Current	160A		
	Rated Duty Cycle	35%		
AC TIG	No-load Voltage	blunds reterene an 70V liter should		
	Current Adjusting Range	20~200A		
	Initial current/crater-fill current	20-200A		
	SP % (AC balance)	30~70		
	AC Square Wave Frequency	20~100Hz		
iong salt his	Rated Duty Cycle	35%		
7	Current Adjusting Range	5~200A		
DC	Initial current	5-200A		
TIG	crater-fill current	5-200A		
	Rated Duty Cycle	35%		
	PULSE peak Current	AC:20~200A DC:5~200A		
	BASE/PULSE peak Current	10%~95%		
No. of Contract of	Initial current	5A(DC)/20A(AC)~200A		
Standard	crater-fill current	5A(DC)/20A(AC)~200A		
PULSE	Rated Duty Cycle	35%		
TIG	Pulse time on	5%~95%		
	pulse Freq.	0.5~250Hz@DC 0.5~250Hz@AC ADV.SQUARE 0.5~250Hz@AC SOFT.SQUARE 0.5~250Hz@AC TRIANGULAR 0.5~250Hz@AC SINE WAVE		
C	urrent UP/Down-slope Time	0~10S		
	Pre gas Flow Time	0~10s		
	Post gas Flow Time	0~10s		
	Arc starting Mode	high frequency arc striking		
	Efficiency	≥80%		
	Mass	15kg		
Protection Class of enclosure		IP21S		

# III. OPERATING CONDITION AND WORK SURROUNDING

# 1. Operating condition:

Voltage of power source: 1xAC 220~240 V.

Frequency: 50/60Hz

Reliable grounding protection

# 2. Work surrounding

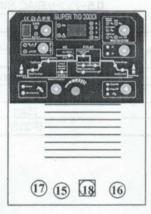
- ①. relative humidity: not more than 90 %( average monthly temperature not more than 20°C)
- ambient temperature:-10 °C ~ 40 °C
- ③. The welding site should have no harmful gas, Chemicals, molds and inflammable matter, explosive and corrosive medium, no big vibration and bump to the welder.
- 4. Avoiding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

# IV. DESCRIPTION OF THE ERECTION

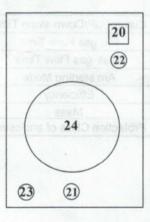
- 1. Before welding, the operator should read the operation instructions.
- 2. Check the welder appearance for deformation and damage.
- 3. For the safety of the equipment and the persons, the customer must correctly make grounding or protection according to the power supply system:using 4mm<sup>2</sup> 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

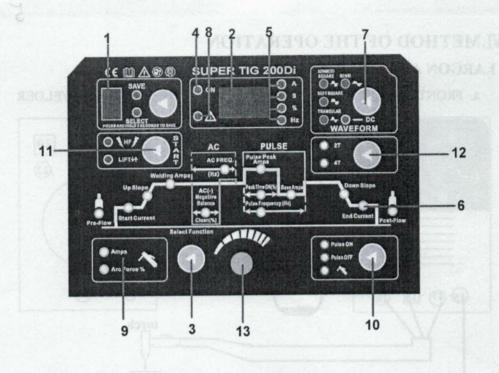
# V.SKETCH SKETCH THE PANEL FUNCTION

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 AC balance &peak time on

Hz-- unit of pulse freq.&AC freq.

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

#### 7.AC/DC slector

AC WAVE FORM: advanced square/soft square/triangular/ sine

8.warning indicating light

9.indicating light of MMA Parameter Select function

#### 10.TIG PULSE/MMA slector

11.HF TIG/LIFT TIG slector

12. 2 T/4 T slector

13. Data Display Adjustment Knob

15. output"+" (Welding holder)

16. output"-" (Ground clamp)

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

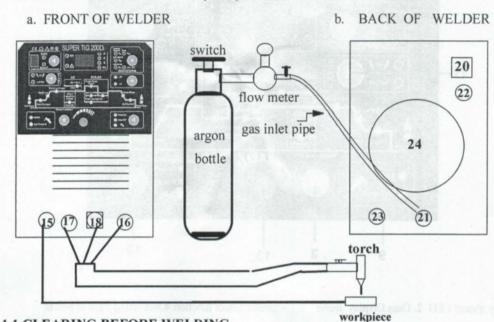
19.nameplate 20. power switch

21.argon inlet 22.power supply

23.safety earthing column 24.fan 24.fan 24.fan 24.fan 24.fan 24.fan 24.fan 24.fan 25.fan 25.fan 25.fan 26.fan 26.f

## 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.selector "11" onto the position " HF TIG "or "LIFT TIG", selector "10" onto the position " pulse off " and selector "7" onto the position " DC", 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 knob " 3 &13". 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 current with sole. selector "12" onto the position "2T "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.

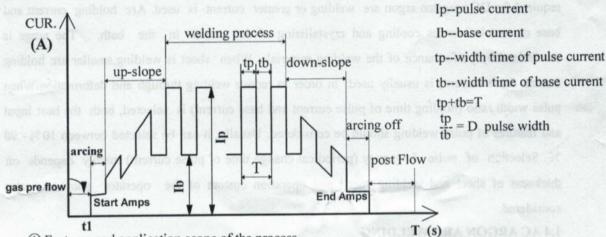
**Notice:** During welding, when the 12. 2T/4T switch on 2T, switch of the torch must be pressed and can not be released otherwise the arc will be broken.

- 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 " and selector "7" onto the position " DC",
- ③.select peak time on ratio: It can be selected between 10%-90%.
- 4).select up-slope&down slope time: It can be selected between 0-10S.
- ⑤.Gas connecting and testing, are generating and are blowing off etc. are all the same as DC are welding.

# 1.4 PULSE ARGON TUNGSTEN WEIDING 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. 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 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 are 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.

#### 1.4 AC ARGON ARC WELDING

- 1. selector "11" onto the position "HF TIG ",selector "7" onto the position "AC wave form", selector "10" onto the position "off", Connecting the gas inlet pipe to inlet "21" of the welding.
  - 2. The method of the connection same as 1.1
  - 3. select right "sp(AC Balance)"

$$SP = \frac{tp}{tn} *100\%$$

tp:the time of I<sub>2</sub> at positive tn: the

tn: the time of In at Negative

- 4. select right AC square wave frequency &AC balance.
  - 5. The Method of the welding same as 1.1

# 2. Hand welding with electrode

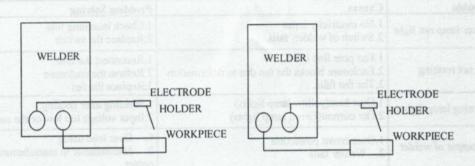
- ①.selector "10" onto the position " MMA "
- 2. select right welding current

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

3. Notice positive and negative connection during welding.

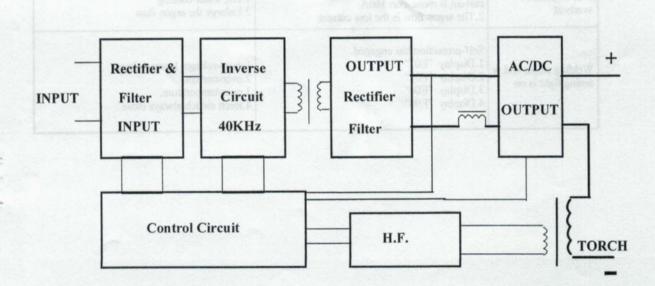
## A. NEGATIVE CONNECTION

### B. POSITIVE CONNECTION



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

# **WI.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	No electricity input     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 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.Oer current(Green lamp lights)	Welding after cooling.     Input voltage too low or the machine fail		
No output of welder	Over crrent protection     Welder fails	Over load using     Maintenance in manufacturer or servic center		
Output current decreased	Input Voltage is low     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 fail	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 are generator fails	1.Replace torch switch     2.Regulating discharging interval to 0.8-1.0mm     3.Put torch tungsten electrode close to wo kpiece     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		
Self-protection has engaged 1.Display "E01" 2.Display "E02" 3.Display "E04" 4.Display "E05"		1.over-voltage, lower-voltage 2.over-current, 3.over-temperature, 4.torch switch always close		

1	*		3/4/2
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.
AVISO DE PRECAUCION	No toque las parles o los electrodos bajo carga con la piel o ropa mojada. Alslese del trabajo y de la tierra.	<ul> <li>Mantenga el material combustible fuera del área de trabajo.</li> </ul>	<ul> <li>Protéjase los ojos, los oídos y el cuerpo.</li> </ul>
ATTENTION	Ne laissez ni la peau ni des vête- ments mouillés entrer en contact avec des pièces sous tension. Isotez-vous du travail et de la terre.	Gardez à l'écart de tout matériel inflammable.	Protégez vos yeux, vos oreilles et votre corps.
WARNUNG	Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung!     Isolieren Sie sich von den Elektroden und dem Erdboden!	Entlernen Sie brennbarres Material!	Tragen Sie Augen-, Ohren- und Kör- perschutz!
ATENÇÃO	Não toque partes elétricas e electrodos com a pele ou roupa molhada.     Isole-se da peça e terra.	<ul> <li>Mantenha inflamáveis bem guardados.</li> </ul>	<ul> <li>Use proteção para a vista, ouvido e corpo.</li> </ul>
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。	<ul><li>燃えやすいものの傷での溶接作業 は絶対にしてはなりません。</li></ul>	● 目、耳及び身体に保護具をして下 さい。
Chinese 警告	<ul><li>皮肤成濕衣物切勿按照帶電部件及 轉條。</li><li>使你自己與地面和工件絶緣。</li></ul>	●把一切易燃物品移離工作場所。	<ul><li>●係戴眼、耳及身體勞動保護用具。</li></ul>
<sup>Korean</sup> 위험	● 전도체나 용접봉을 젖은 형겁 또는 피부로 절대 집혹치 아십시요. ● 모재와 접지를 접촉치 마십시요.	●인화성 종질을 접근 시키지 마시요.	●눈, 귀와 몸에 보호장구를 착용하십시요.
تحذیر	<ul> <li>لا تلمس الإجزاء التي يسري فيها التيار</li> <li>الكهربائي أو الإكثرود يجلد الجسم أو بالملابس الهللة بالمائي</li> <li>منح عارلا على جسمك خلال العمل.</li> </ul>	<ul> <li>ضع الواد القابلة للإشتمال في مكان بعيد.</li> </ul>	، ضع أدوات وملابس واقية على عينيك وأننيك 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.

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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 res- piración.     Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	Desconectar el cable de ali- mentación de poder de la máquina antes de iniciar cualquier servicio.	No operar con panel abierto o guardas quitadas.	AVISO DE PRECAUCION
Gardez la tête à l'écart des tumées.     Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	Débranchez le courant avant l'entre- tien.	N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	ATTENTION
Vermeiden Sie das Einatmen von Schweibrauch!     Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öff- nen; Maschine anhalten!)	Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	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 atastado das partes moventes.     Não opere com os paineis abertos ou guardas removidas.	ATENÇÃO
<ul><li>セュームから頭を離すようにして下さい。</li><li>換気や排煙に十分留念して下さい。</li></ul>	● 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。	注意事項
● 頭部遠離煙露。 ●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
<ul> <li>얼굴로부터 용접가스를 멀리하십시요.</li> <li>호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 동풍기를 사용하십시요.</li> </ul>	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	<sup>Korean</sup> 위험
<ul> <li>إحد رأسك بعيداً عن الدخان.</li> <li>استعمل التهوية أو جهاز منخط الدخان للخارج</li> <li>تكي تهدد الدخان عن المنطقة التي تتنفس فيها.</li> </ul>	<ul> <li>اقطع التيار الكهربائي قبل القيام بأية صيائة.</li> </ul>	<ul> <li>♦ لا تشغل هذا الجهاز أذا كانت الإغطية الحديدية الواقية ليست عليه.</li> </ul>	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 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.

# IX .ACCESSORIES:SEE PACKING LIST, PLEASE

## PACKING LIST



model	quantity	remark	note
SUPER TIG 200Di Welding machine	1	1.00	PACKING 1
Welding Holder	1		PACKING 1
Ground clamp	1		PACKING 1
TIG welding torch	1		PACKING 1
Adjustable foot control	1	optional accessory	PACKING 1
gas inlet pipe	1		PACKING 1
Operation instructions	1		PACKING 1
Certificate of quality	1		PACKING 1


# Certificate of quality

Name of p	product:	AC/DC/	PULS	SE TIG V	WELDING
Type of p	roduct: 5	SUPER 7	rig 2	00Di	
Packing	No: _	017	902	726	
Test resu	lts of this	welder	fulfils		
	_technic	al requir	emen	ts and it	s release
from the v	works is	granted.			
Inspector		_ Date_	9	0 4	2016
T	NSP.	11			



model quantity, it seemest and			
Writing machine Weiding Holder  Weiding Holder  Ground clamp  TIG weiding torch			
Weiding Holder  Ground clamp  TIG welding torch			
Oronno clamp  TIC webting torch  T	PACKING		
TiG welding torch PACKING 1	PACKING		Welding Holder
	PACKING		
Appearate foot control	PACKING		
	PACKING		
gas Inlet pipe	PACKING 1		
Operation instructions PACKING 1	PACKING 1		
Certificate of quality	PACKING		

Facting No. 017902726

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