



www.r-techwelding.co.uk



MMA 160S ARC/MMA WELDER

OPERATION INSTRUCTIONS



Thank you for selecting the R-Tech MMA160S Inverter Arc Welder.

The MMA160S has many benefits over traditional Arc welders, including an industrial 60% duty cycle, Anti-stick hot start technology, portable and lightweight

We want you to take pride in operating our MMA160S as much pride as we have taken in making this product for you. Please read all information in this manual before operation

PLEASE EXAMINE THE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt from the courier. Consequently all claims for material damaged in shipment must be made by purchaser against the transportation company used.

Please record your equipment identification below for future reference. This information can be found on the data plate at rear of machine.

Product: MMA160S

Serial No. _____

Date of Purchase _____

Where Purchased _____

Whenever you request replacement parts or information on this equipment please always supply information you have recorded above.

This product is covered by a 2 year parts and labour warranty; we will cover the cost of collecting and returning the item to you. External items, (torch, earth lead etc...) are covered by a 3 month warranty. Any faults/damage found caused by a customer will be charged accordingly.

Pay particular attention to the safety instructions we have provided you for your protection
The level of seriousness to be applied to each section is explained below

WARNING

This statement appears where the information must be followed exactly to avoid serious personal injury.

CAUTION

This statement appears where the information must be following to avoid a minor personal injury or damage to this equipment.

Introduction

**The R-Tech MMA160S is a member of our field acclaimed family of welding products.
Premium features include:-**

1. Inverter power source – more efficient to operate, provides smoother weld characteristics.
2. Anti-stick hot start technology for easy arc starting
3. Digital amp meter
4. Industrial 60% Duty cycle at 180 Amps @ 40C
5. Portable and lightweight

Recommended Processes

The R-Tech MMA160S is recommended for the Arc (MMA) welding processes within its output capacity of 160 Amps

Equipment Limitations

The R-Tech MMA160S is protected from overloads beyond the output ratings and duty cycle as per machine specifications with thermostat protection of the output coils and rectifiers.

Welding Capability – Duty Cycle

The R-Tech MMA160S is rated at 160 Amps at 60% duty cycle on a ten minute basis. If the duty cycle is exceeded a thermal protector will shut machine off until the machine cools.

Technical Specifications

Model No.	R-Tech MMA160S	
Input	240V AC 50/60Hz	Fuse rating 26amp
MMA	No-load Voltage	60V – 80V
	Current Range	10A – 160A
	Rated Output Current	160A
	Duty Cycle	60%
Gross Weight		12 KG
Insulation		IP21S
Dimensions mm		425 x 195 x 310

Safety Precautions

Read entire section before starting installation



WARNING!

Electric Shock can kill – Only qualified personnel should perform this installation. Turn off input power at the fuse box before working on this equipment. Do not touch electrically live parts. Always connect the machine to an earthed mains supply as per national recommended standards.

Select suitable location

Place the welder where clean cooling air can freely circulate in and out of the front & rear louver vents. Dirt, dust or any foreign material that can be drawn through vents into welder must be kept to a minimum. Failure to observe these precautions can result in excessive operating temperatures which can lead to plant failure.

Grinding

Do not direct grinding particles towards the welder. An abundance of conductive material can cause plant failure.

Stacking

This machine cannot be stacked.

Transport – Unloading

Never underestimate the weight of equipment, never move or leave suspended in the air above people. Use recommended lifting equipment at all times.



WARNING!

Falling Equipment can cause injury. Never lift welder with gas bottle attached. Never lift above personnel.

Tilting

Machine must be placed on a secure level surface or on a recommended undercarriage/trolley. This machine may topple over if this procedure is not followed.

Environmental Rating

The welding power source carries the IP21S rating. It may be used in normal industrial and commercial environments. Avoid using in areas where water / rain is around.

Read and follow the 'Electric Shock Warnings' in the safety section if welding must be performed under electrically hazardous conditions such as welding in wet areas or water on the work piece.

Electrical Installation



ELECTRIC SHOCK CAN KILL

Machine grounding and High Frequency Interference Protection

This welder must be grounded to earth. See national electrical codes for proper grounding methods.

The high frequency generator being similar to a radio transmitter may cause interference to radio, TV and other electronic equipment. These problems may be the result of radiated interference. Proper grounding methods can reduce or eliminate this.

Radiated interference can develop in the following ways

1. Direct interference from welder power source
2. Direct interference from the welding leads
3. Direct interference radiated from feedback into power lines
4. Interference from re-radiation by un-grounded metallic objects.

Keeping these contributing factors in mind, installing equipment as per following instructions should minimize problems.

1. Keep the welder input power lines as short as possible and enclose as much of them as possible in metal conduit or equivalent shielding. There should be a good electrical contact between this conduit and ground (Earth).
2. Keep the work and electrode leads as short as possible. Tape the leads together where practical.
3. Be sure the torch and earth leads rubber coverings are free from cuts and cracks that allow welding power leakage
4. Keep earth lead connection to work in good condition – Clean area on workbench where earth clamp is situated on a regular basis.

Input Connections

Make sure the voltage, phase and frequency of input power is as specified on machine rating plate located at rear of machine.

Have a qualified electrician provide suitable input power as per national electrical codes. Make sure machine is earthed / grounded.

Make sure fuse or circuit breaker is correct rating for machine. Using fuses or circuit breakers smaller than recommended will result in 'nuisance' shut off from welder inrush currents even if welding at low amperages.

Failure to follow these instructions can cause immediate failure within the welder and void machines warranty.

Turn the input power OFF at the mains switch & fuse box before working on this equipment.

Have a qualified electrician install & service this equipment.

Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment. Do not touch electrically live parts

The MMA160S Inverter Arc Welder requires a 240V 50/60Hz supply. It requires a 32A supply for. It comes with a 3 metre mains cable attached.

Connect wires according to national coding.

Brown wire – Live

Blue wire – Neutral

Green/Yellow Wire – Earth (Ground)

Connecting to a mains electrical supply

**THIS MACHINE IS OF AN INDUSTRIAL SPECIFICATION AND MUST BE
FITTED TO A 32AMP 240V MAINS INPUT**

Connecting to an Engine Driven Generator

**If connecting this machine to an engine driven generator please ensure the
following**

Minimum Generator KVA Output – 9 KVA continuous

Generator to be fitted with AVR (automatic voltage regulation)

DO NOT USE ON A GENERATOR WITHOUT AVR

**Connecting to a generator without the above minimum requirements will in-
validate your warranty.**

Connections for MMA160S

Rear machine connections



Fig 1

1. On/Off Switch

Switches main on and off

2. Earth for chassis

If experiencing localized interference when using machine, connect workbench to this point using correct graded earth wire (not normally used)

3. Mains input cable

Fit required plug as per your electrical installation

Connections for STICK MMA (SMAW) Welding

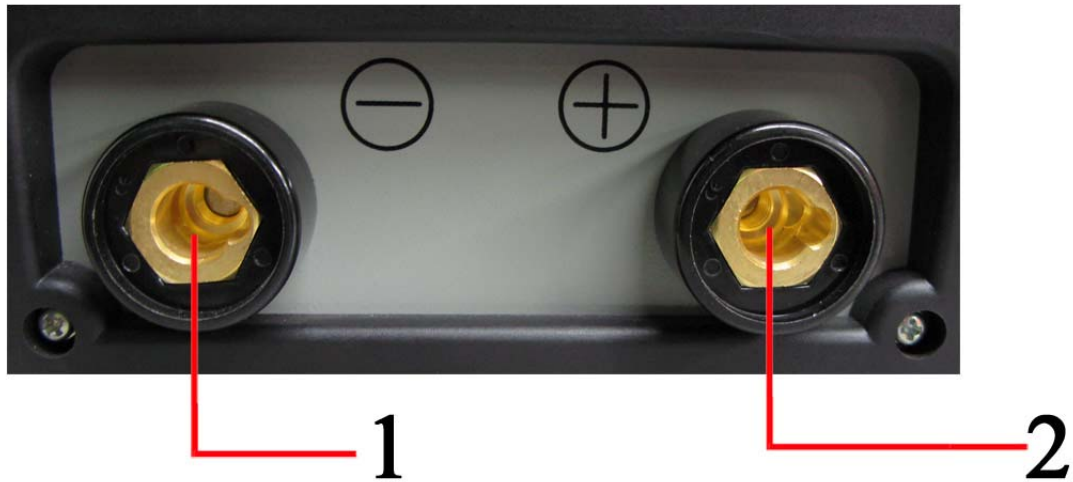


Fig 3

1. **Negative power connector -**

Connect the earth lead to by inserting and twisting until tight and the earth clamp to work/bench.

2. **Positive power connector +**

Connect the electrode holder by inserting and twisting until tight

Controls and Settings

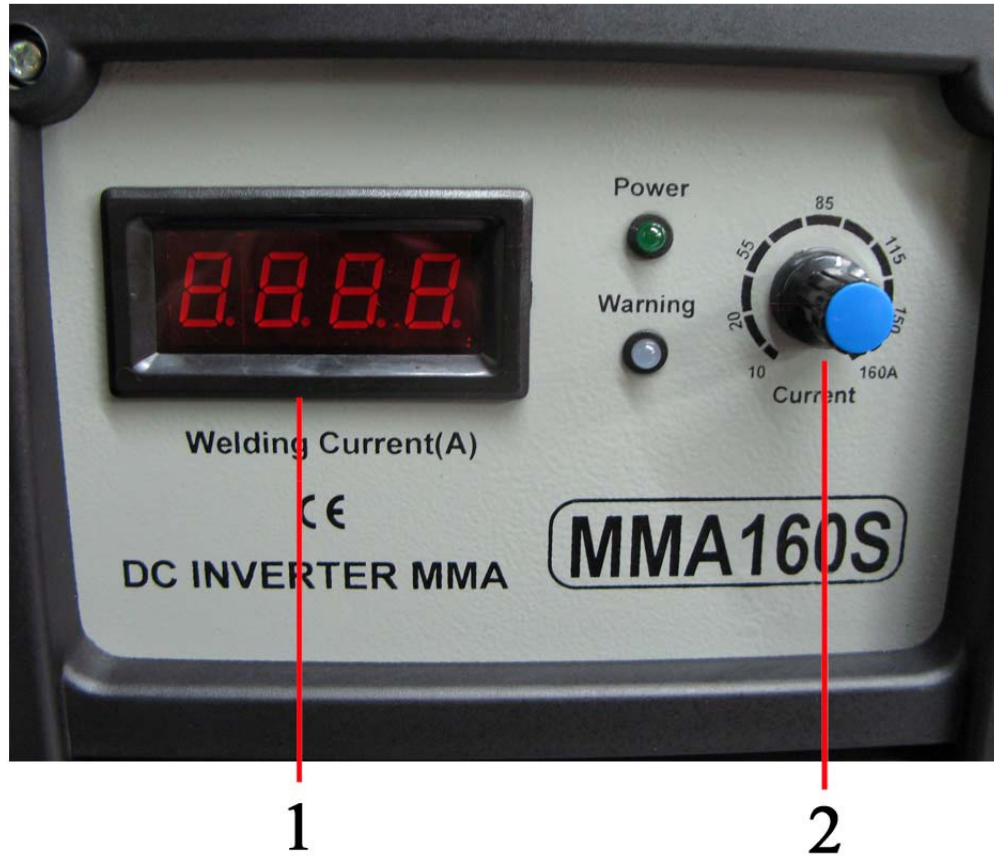


Fig 4

1. LED Display

3 digit LED meter is used to display the actual amperage (when welding).

2. Main current control

This adjusts the main welding current and is shown in L.E.D (Fig 4.1) when welding is in process.

Operating machine

SAFETY PRECAUTIONS



WARNING!

ELECTRIC SHOCK CAN KILL

Do not touch electrically live parts or electrode with skin or wet clothing.
 Insulate yourself from work and ground
 Always wear dry insulating gloves



WARNING!

FUMES AND GASES can be dangerous

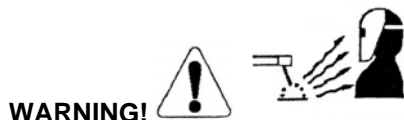
Keep your head out of fumes & gases produced from welding.
 Use ventilation or exhaust to remove fumes & gases from breathing zone and general area.



WARNING!

WELDING SPARKS can cause fire or explosion

Keep flammable material away from work area.
 Do not weld on containers that have held combustibles



WARNING!

ARC RAYS can burn

Wear eye, ear and body protection – Make sure work area is protected by proper shielding to avoid injury to passers by.

Welding in STICK MMA (SMAW) Mode

1. Fit MMA electrode holder to machine
2. Fit earth lead to machine and to work piece
3. Select MMA on MMA/TIG switch
4. Place electrode in holder
5. Select desired welding base current
6. Strike arc and weld

Notes: When machine is switched on, output terminals are always live, take care and do not touch electrode and earth by person at same time, otherwise electric shock will occur.

Maintenance

Routine and periodic maintenance



WARNING!

ELECTRIC SHOCK CAN KILL

Turn the input power OFF at the mains switch & fuse box before working on this equipment.

Have a qualified electrician install & service this equipment.

Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment.

Do not touch electrically live parts

1. Periodically remove the side/top panels of machine and clean out machine with a low pressure dry air line paying particular attention to PC Boards, Fan blades, HF points
2. Inspect input and output cables & hoses for fraying, cuts & bare spots
3. Keep tig torch and cables in good condition
4. Clean air vents to ensure proper air flow and cooling
5. The fan motor has sealed bearings which requires no maintenance

Troubleshooting

Service & repair should only be performed by R-Tech welding trained personnel. Unauthorised repairs performed on this welding equipment may result in danger or injury to the technician and machine operator and will invalidate your warranty.

For your safety and to avoid electric shock, please observe all safety notes and precautions detailed throughout this manual

The troubleshooting guide is provided to help you locate possible machine malfunctions

If fault / problem is not listed below check our [Arc Welder Support](#) page on our website

www.r-techwelding.co.uk/support.php

or contact R-Tech by phone. Contact details can be found on front of this manual and our website

Welding problems

- **No output - Power light is not lit**

Check machine on/off switch is in the 'on' position
Check Input power to machine
Check plug wiring
Check mains trip / fuses

- **No output - Fan runs - Power light is lit**

Check power cable connections and condition of earth clamp assy.

- **No output - Power light is lit - Warning light is lit**

Welding application may have exceeded recommended duty cycle, allow machine to cool down until the warning light goes out.

- **Machine keeps overheating - Warning light is lit on machine**

Check if fan is running – if not contact R-Tech for repair

Check the cooling vents for obstruction, blow out machine with clean dry low pressure air supply. Check for adequate ventilation around machine

- **Poor weld penetration**

Check condition of earth lead and clamp and ensure clamp is connection via a clean area on work piece

Check condition of tig torch, try other tig torch

MMA Stick welding problems

- **Stick electrode 'blasts off' when arc is struck**

Welding current set to high, reduce amperage or use thicker electrode

Contaminated electrodes or material

- **Electrode sticks in weld puddle**

Welding current is set too low

Arc is too short, keep electrode further away from work

- **Excessive splatter**

Too long an arc, keep electrode closer to work

- **Poor penetration**

Travel speed too fast

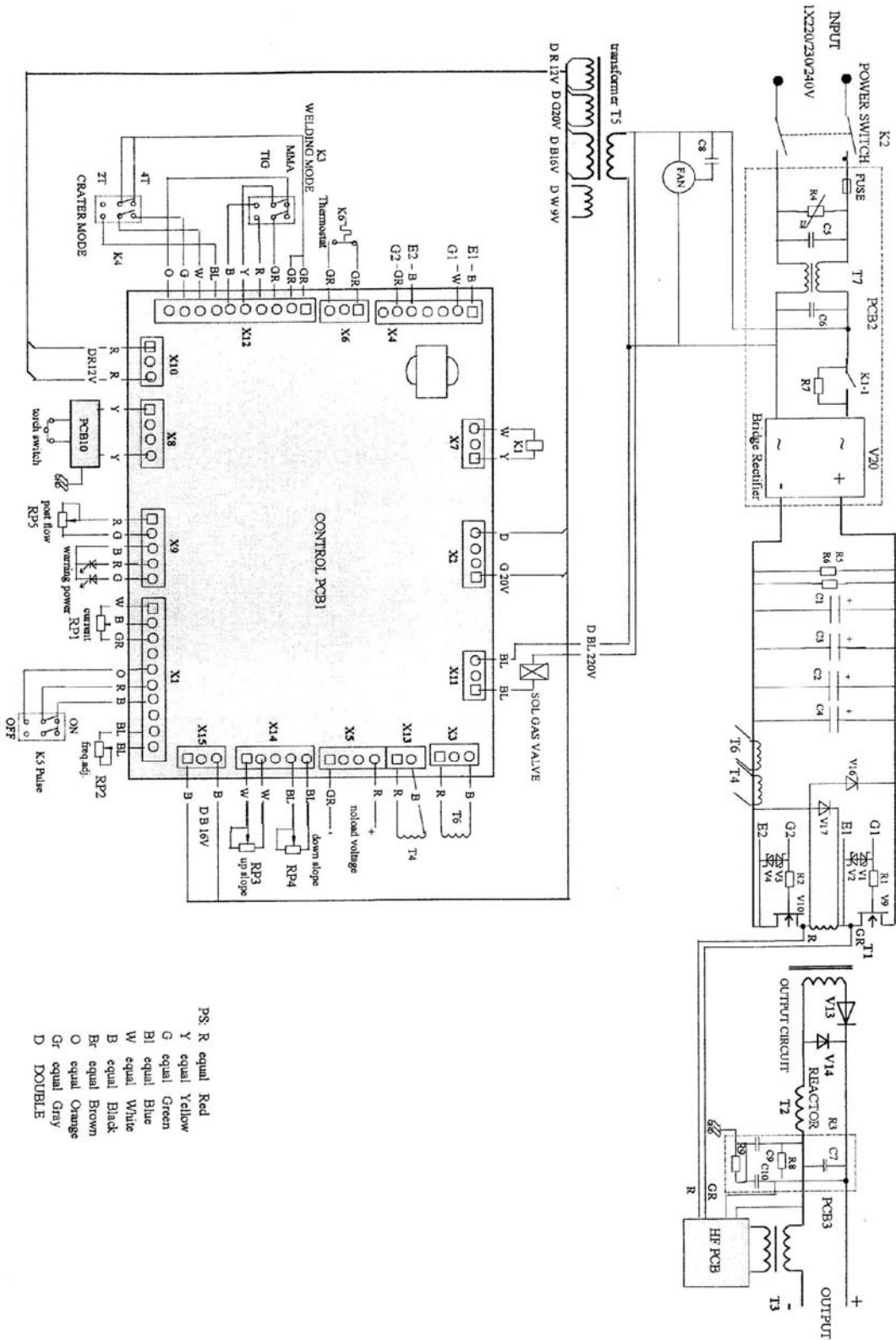
Too much welding current, reduce welding amperage

- **Porosity in weld**

Electrodes are damp

Arc too long, get electrode closer to work

DC INVERTER TIG MACHINE WIRING DIAGRAM



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. Aíselese 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、又は溶材にヒツ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缝。 使你自己与地面和工作件绝缘。 	<ul style="list-style-type: none"> 把一切易燃物品移开工作场所。 	<ul style="list-style-type: none"> 配戴眼、耳及身体劳动保护用具。
Korean 위험	<ul style="list-style-type: none"> 전도체나 용접봉을 젖은 행거 또는 피부부 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 الأجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجلد 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"> ● ヒュームから顔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"> ● 氣表板打開或沒有安全罩時不運作業。 	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"> ● أبعد 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 إذا كانت الإغطية 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，並請遵守貴方的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

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