



WELDING EQUIPMENT

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**PLASMA 30DV
INVERTER PLASMA CUTTER
OPERATION INSTRUCTIONS**



Version 2014-1

Thank you for selecting the R-Tech Plasma 30DV Inverter Plasma Cutter

The Plasma 30DV has many benefits over traditional transformer plasma cutters, including infinite power control, HF contact start and quick fitting cost effective torch, long life cost effective torch consumables and a 35% industrial duty cycle

We want you to take pride in operating our Plasma 30DV as much pride as we have taken in making this product for you. Please read all information in this manual before operation

PLEASE EXAMINE 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 data plate at rear of machine.

Product Plasma 30DV

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 our 2 year collect and return UK warranty, R-Tech will cover costs of collecting and returning item to you within UK mainland. External items, torch, earth lead etc are covered by 3 months warranty. Any faults/damage found caused by customer will be charged pro-rata.

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



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 Plasma 30DV 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. Infinite cutting power adjustment, allows fine tuning of cut characteristics
3. HF start – Enables easy arc starting
4. Digital amp meter
5. Quick fitting torch for easy torch fitment/replacement
6. Long life – Low cost torch consumables
7. 35% Duty cycle at 30 Amps 240V / 25Amps 110V @ 40°C

Recommended Processes

The R-Tech Plasma 30DV is recommended for the plasma cutting processes within its output capacity of 30 Amps DC

Equipment Limitations

The R-Tech Plasma 30DV is protected from overloads beyond the output ratings and duty cycle as per machine specifications with thermostat protection of the output coils and rectifiers.

Cutting Capability – Duty Cycle

The R-Tech Plasma 30DV is rated at 30 Amps at 35% 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	PLASMA 30DV
Power Voltage	110/240V 50/60Hz
Input Current 240V Fuse Rating	13 Amps
Input Current 110V Fuse Rating	32 Amps
Rated Output Current	30A @ 240V - 25A @ 110V
Current Adjusting Range	15-30A @ 240V (15-25A @110V)
No-load Voltage	200V
Rated Duty Cycle	35%
Working Mode	HF Contact Start
Air Pressure	50 PSI
Max. Cutting Thickness (Clean cut mild steel)	8mm
Max. Cutting Thickness (Severance cut mild steel)	12mm
After Flow Time	10 Seconds
Dimensions	390 X 190 X 290

Safety Precautions

Read entire section before starting installation



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 plasma cutter 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 plasma cutter 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 plasma cutter. 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.



Falling Equipment can cause injury. Never lift plasma cutter 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 plasma 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.

Electrical Installation



ELECTRIC SHOCK CAN KILL

Machine grounding and High Frequency Interference Protection

This plasma cutter 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 cutting 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 Plasma 30DV Plasma Cutters require a 110 or 240V 50/60Hz 1-Phase supply. It requires an 13A supply for 240V and 32A supply for 110V operation. It comes with a mains cable attached.

The P30DV features auto input voltage sensing, simply connect to either 110V or 240V supply and the machine will auto adjust itself. No switches or internal changes required.

Connect wires according to national coding.

Brown wire – Live

Blue wire – Neutral

Green/Yellow Wire – Earth (Ground)

Connecting to an Engine Driven Generator

If connecting this Plasma Cutter to an engine driven generator please ensure the following

Minimum Generator KVA Output – 5KVA 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 invalidate your warranty.

Connections for Plasma 30DV

Rear Machine connections

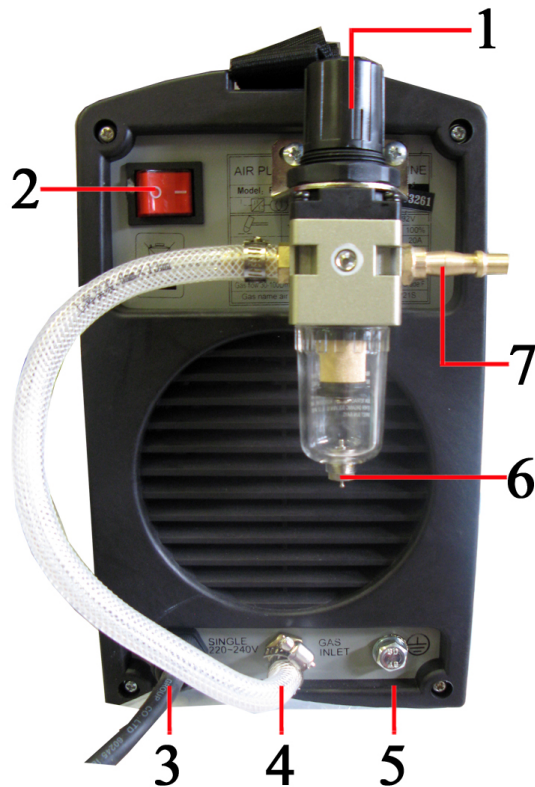


Fig 1

1. **Air pressure regulating knob**

This regulates the air pressure as displayed in gauge on front of machine.

To adjust pressure pull knob upwards and turn to adjust pressure, once correct pressure is obtained press down knob to secure - - Set air pressure to 50psi when test gas switch is pressed

2. **On/Off Switch**

Turns machine on and off, the switch illuminates when machine turned on

3. **Mains input cable**

Fit required plug as per your electrical installation

4. **Air inlet connector**

Connect output hose from air regulator to this air input into machine ensuring hose clip is secured tightly.

5. **2nd Earth connection**

This can be used to earth the machine to workbench if you are experiencing interference from

the HF – Sometimes required when using CNC automated machinery - Not normally used

6. **Air regulator water drain thumb screw**

If regulator fills with water, unscrew this thumbscrew slowly to drain of water, screw back tight once drained.

7. **Air pressure input**

Screw supplied PCL fitting into regulator ensuring no air leaks.
You can also fit other connectors to suit your needs

Front machine connections

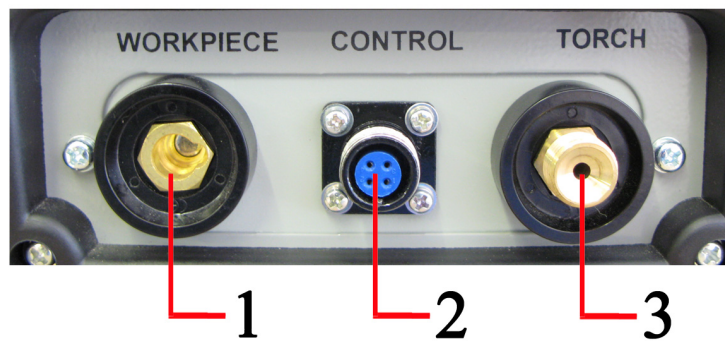


Fig 2

1. **Earth / Workpiece connector**

Connect the earth lead (negative -) to this connector.

Insert male connector into socket and twist clockwise until tight.

Secure other end of earth lead to Workpiece via the earth clamp.

2. **Torch switch socket**

Connect the torch switch plug (4 pin) and screw on retaining ring to secure

3. **Torch power connector**

Connect the main torch cable by screw clockwise until tight.

Controls and Settings

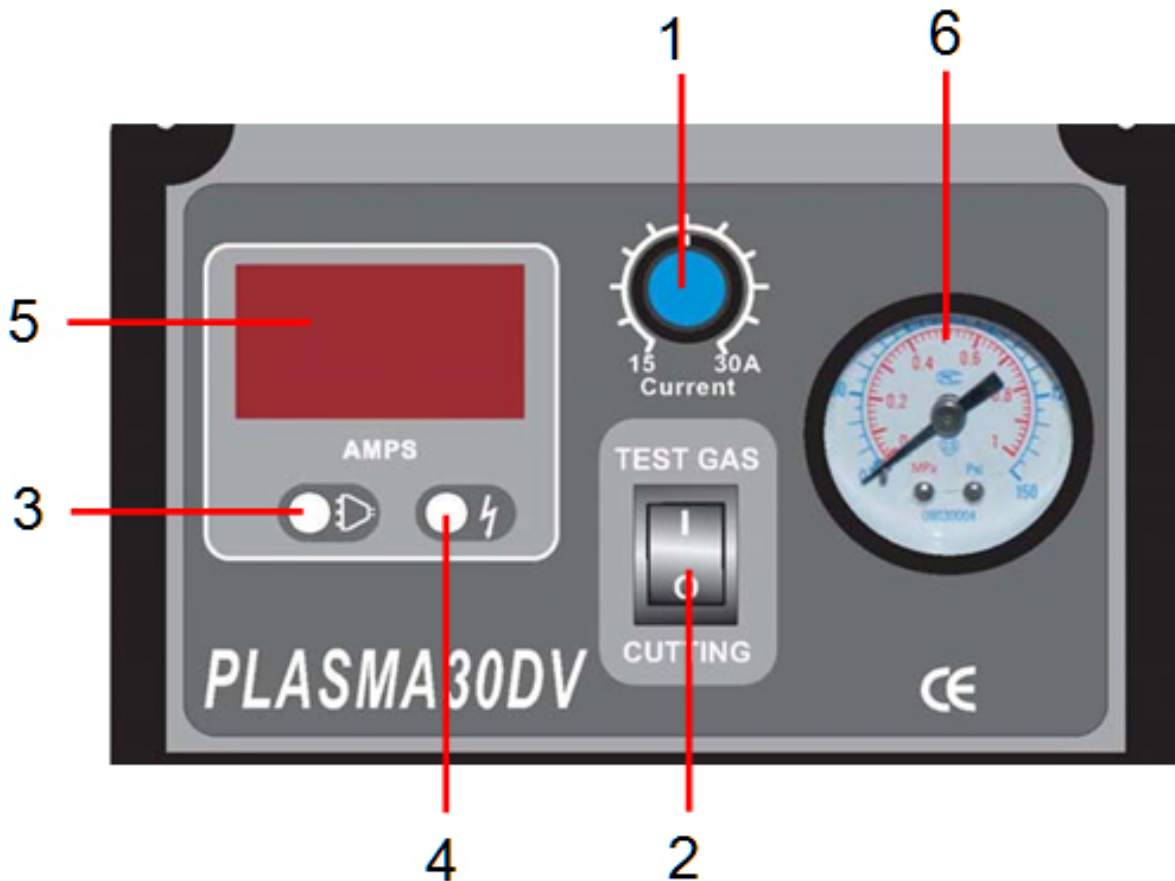
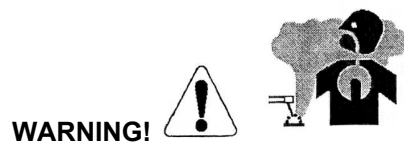


Fig 1

1. **Amperage control knob**
This adjusts the amperage (cutting power) from 15 to 30 amps
Note: LED display will show cutting amperage when you are cutting
2. **Test Gas / Cutting selector switch**
When in the up position this is test gas mode, when setting air pressure switch to test gas so you obtain actual air flow cutting pressure
3. **Power on light**
This lights when machine is switched on
4. **Warning light / overheat light**
This lights when machine has overheated – allow to cool and light to go out before using again – if problem persists see troubleshooting later in this manual
5. **L.E.D amperage display**
When cutting this shows the actual cutting amperage
6. **Air pressure gauge**
Displays in PSI

Operating machine**SAFETY PRECAUTIONS****ELECTRIC SHOCK CAN KILL**

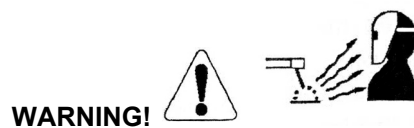
Do not touch electrically live parts or electrode with skin or wet clothing.
 Insulate yourself from work and ground
 Always wear dry insulating gloves

**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.

**WELDING SPARKS can cause fire or explosion**

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

**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.

Operating Machine

Please ensure all torch consumables are tight before use

1. Ensure machine has been setup as previously stated
2. Turn on the machine and the power light indicates and cooling fan is running
3. Set the function switch in the 'test gas' position, air will flow from torch head, now set the air pressure in gauge using adjuster on regulator on rear of machine to 50PSI

Once the correct air pressure has been set press down the adjuster on air regulator and set the function switch to the 'cutting' position

4. Ensure earth clamp is connected to workpiece or workbench ensuring a good clean point of contact
5. Select cutting amperage knob to desired cutting power (the following guide lines will vary in accordance to material grade, characteristics and user operation)

20 Amps for up to 6mm clean cut on mild steel

30 Amps for up to 8mm clean cut on mild steel

When cutting aluminium, alloys and stainless steel cutting thickness is reduced by approximately 20%

6. Hold torch in starting position on work and press torch switch and the high frequency will initiate contact with the workpiece and machine will automatically switch to main cutting power.

Once you come to the end of cut/workpiece the machine will sense this and turn off main cutting power, to start cutting again, release switch and press again.

7. Getting correct amperage / cutting speed for desired job.

The combination of correct cutting amperage and travel speed can change per user, here are some tips on obtaining optimum settings.

Blow back when cutting – If you experience blow back and the metal is not cut all the way through, you either are traveling too fast or you need to increase the cutting amperage

Cutting arc is erratic and work is being cut all way through. You are traveling too slow/fast or cutting with too high/low amperage for work.

It can take a while to get used to plasma cutting if never done before. Experiment with settings on some scrap material until you find the best amperage / cutting speed for user.

If you ever have any questions on settings call us and speak to one of our experienced technicians who will be happy to help you.

Replacing torch consumables



Please ensure machine is turned off before changing consumables

If cutting performance is poor you probably need to check / change the torch consumables.

To change the plasma cutting consumables carry out the following procedure

1. Switch off machine
2. Ensure torch has cooled down to avoid burns
3. Unscrew the white ceramic shield cup
4. Remove the cutting tip
5. Check the condition of cutting electrode, replace cutting electrode if tip is worn 1-2 mm and end is concave
6. Check condition of gas distributor insulator ring, replace if worn/cracked.
7. Fit new cutting tip if required –if cutting hole is distorted or an angled cut happens replace the cutting tip.
8. Refit white ceramic shield cup by screwing on hand tight
9. Turn machine back on and continue cutting

Maintenance

Routine and periodic maintenance



WARNING!

ELECTRIC SHOCK CAN KILL

Turn the input power OFF at the mains switch & fuse box and remove mains plug from socket before working on this equipment.

Have a qualified electrician install & service this Plasma cutting equipment.

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

Do not touch electrically live parts

1. Periodically (3-6 months depending on use / environment), 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 and switchgear

Failure to maintain plant can void manufacturer's warranty.

2. Inspect input and output cables & hoses for fraying and cuts, replace if damaged present
3. Keep cutting torch and earth 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

FAULT DIAGNOSTICS

1. Power light not lit

Check machine on/off switch is in the 'on' position

Check Input power to machine

Check plug wiring

Check mains trip / fuses

2. No output - Fan runs - Power light is lit

Check torch connections are secure and torch switch operation, try replacing plasma cutting torch

3. 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.

4. No output – Power light is lit – Air at torch tip – No cutting

Check condition of torch consumables and replace if worn

Check for water in water trap at rear of machine, if water is present, drain air compressor, clean water out of air lines, empty water trap by pressing water release button on bottom of air regulator water trap. Fit new consumables as per instructions earlier in this manual

HF PCB Failure – Contact R-Tech for repair

5. 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

6. Erratic cut – Torch spitting when cutting

Check torch consumables and replace if necessary as per instructions earlier in this manual

Check if correct amperage for thickness of metal, if travel speed is too fast or too slow

cutting power for job.

Water contamination in torch head, Check for water in water trap at rear of machine, if water is present, drain air compressor, clean water out of air lines, empty water trap by pressing water release button on bottom of air regulator water trap. Fit new consumables as per instructions earlier in this manual

Plasma Torch Consumables parts list

R-Tech Torch Spares

Plasma 30DV

	<u>Part No.</u>
Electrode	P30-EL
Cutting Tip	P30-CT
Ceramic Shield Cup	P30-SC
Gas distributor insulator ring	P30-GD
Torch Head –Hand Held	P30-THH
Torch Complete Hand Held 6M	P30-4.5MHHT

			
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. Aislese 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電部件及鋸條。 使你自己與地面和工件絕緣。 	<ul style="list-style-type: none"> 把一切易燃物品移離工作場所。 	<ul style="list-style-type: none"> 佩戴眼、耳及身體勞動保護用具。
Korean 위험	<ul style="list-style-type: none"> 전도체나 용접봉을 젖은 헝겍 또는 피부로 절대 접촉치 마십시오. 모재의 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> 인화성 물질을 접근 시키지 마십시오. 	<ul style="list-style-type: none"> 눈, 귀 및 등에 보호장구를 착용하십시오.
Arabic تحذير	<ul style="list-style-type: none"> لا تلمس الأجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجند الجسم أو بالملابس المبللة بالماء. منع عزلا 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 lampas 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して下さい。 	<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"> ● 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 وأفهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.