



www.r-techwelding.co.uk

Tel: 01452 733933 Fax 01452 733939



PLASMA 50HF INVERTER PLASMA CUTTER OPERATION INSTRUCTIONS



Version 2014-1

Thank you for selecting the R-Tech PLASMA 50HF Inverter Plasma Cutter

The PLASMA 50HF 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 60% industrial duty cycle

We want you to take pride in operating our PLASMA 50HF 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 50HF

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 2 years collect and return UK warranty, R-Tech will cover cost of collection, repair and return of item to UK mainland (other areas are RTB). 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

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 PLASMA 50HF 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 Pilot start - Enables easy arc start even on painted surfaces
4. HF pilot arc restart - ideal for cutting mesh etc
5. Digital amp meter
6. Quick fitting torch for easy torch fitment/replacement
7. Long life -Low cost torch consumables
8. 60% Duty cycle at 50 Amps @ 40°C

Recommended Processes

The R-Tech PLASMA 50HF is recommended for the plasma cutting processes within its output capacity of 50 Amps DC

Equipment Limitations

The R-Tech PLASMA 50HF is protected from overloads beyond the output ratings and duty cycle as per machine specifications with thermostat protection of the output coils and rectifiers and is rated at 50 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	PLASMA 50HF
Power Voltage	220/240V 50/60Hz
Fuse rating	32Amps
Rated Output Current	50A
Current Adjusting Range	20-50A
No-load Voltage	200V
Rated Duty Cycle	60%
Starting Mode	HF Pilot Arc Start
Air Pressure	50 PSI
Max. Cutting Thickness (Clean cut mild steel)	18mm
Max. Cutting Thickness (Severance cut mild steel)	24mm
After Flow Time	10 Seconds
Dimensions	390 X 190 X 290

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 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.

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 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

WARNING!



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 50HF Plasma Cutters require a 240V 50/60Hz 1-Phase supply. It requires an 32A fuse. It comes with a 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 BEFITTED TO A 32AMP 240V MAINS INPUT - DO NOT RUN ON 13AMP PLUG – FAILURE TO RUN ON CORRECT SUPPLY WILL IN-VALIDATE WARRANTY

Connecting to an Engine Driven Generator

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

Minimum Generator KVA Output 12KVA 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 50HF

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.

2. Air pressure input

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

3. 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

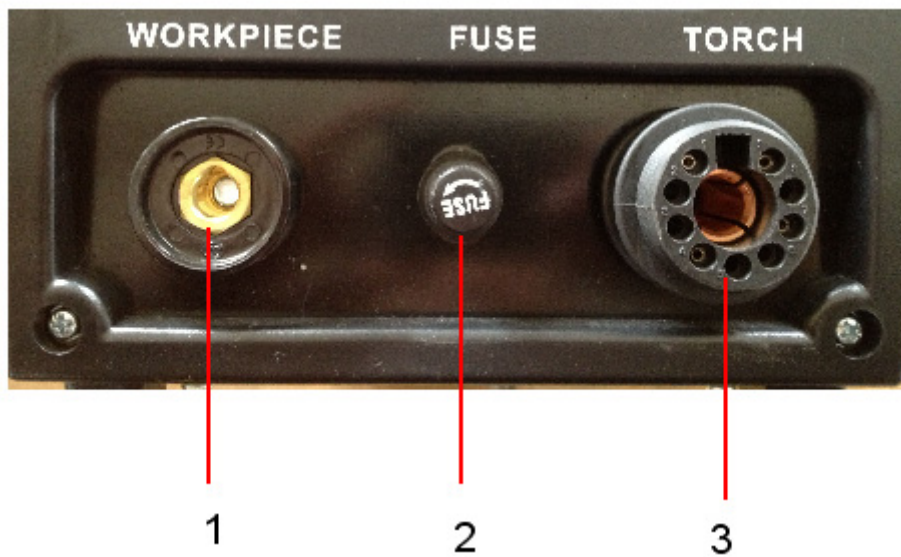
4. Mains input cable

Fit required plug as per your electrical installation

5. POWER On/Off Switch

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

Front machine connections



1. Earth / Work piece connector

Connect the earth lead to this connector. Insert male connector into socket and twist clockwise until tight. Secure other end of earth lead to work piece via the earth clamp.

2. FUSE

Pilot arc fuse

3. Torch power connector

Connect the main torch euro socket by locating and pushing in and the screw retainer clockwise until tight.

Note: The head of torch has a safety feature, the machine will not work if protective shroud is removed.

Controls and Settings

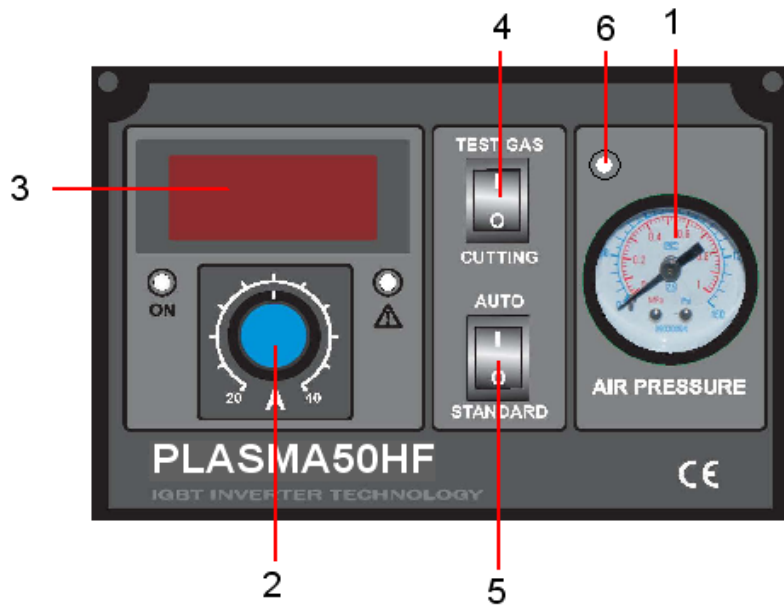


Fig 1

1. Air pressure gauge

This shows the air pressure as set by regulator at rear of machine. This should be set to 50PSI when the test gas button is activated.

2. Amperage control knob

This adjusts the amperage (cutting power) from 20 to 50 amps Note: LED display will show cutting amperage when you are cutting.

3. L.E.D amperage display

When cutting this shows the actual cutting amperage

4. 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 When in the down position this is cutting mode, you can now start cutting

5. Auto / Standard switch

When in the down position this is in standard cutting mode, this is the normal operating position for plasma cutting with a hand held and machine type torch, When in the up position this is in auto mode (4T) this is for special applications when using automated machinery.

6. Indication of too low air pressure

The led will be shown when the air pressure is less than 26psi and the machine will not work. Adjust pressure to correct 50psi, led will go out and you can resume cutting.

Operating machine

SAFETY PRECAUTIONS

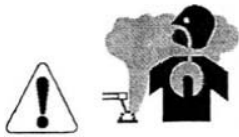
WARNING!



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.

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 work piece 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)
 - a. 20 Amps for up to 6mm clean cut on mild steel
 - b. 30 Amps for up to 9mm clean cut on mild steel
 - c. 50 Amps for up to 18mm 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 the pilot arc and contact with the work piece and machine will automatically switch to main cutting power. Once you come to the end of cut on work piece the machine will sense this and turn off main cutting power and pilot arc will re-engage, to stop cutting release switch.
7. Getting correct amperage / cutting speed for desired job.
8. The combination of correct cutting amperage and travel speed can change per user; here are some tips on obtaining optimum settings.
9. 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
10. Cutting arc is erratic and work is being cut all way through. You are traveling too slow or cutting with too high amperage for work.
11. 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.
12. 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

WARNING!



ELECTRIC SHOCK CAN KILL

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. Fit new cutting tip if required if cutting hole is distorted or an angled cut happens replace the cutting tip.
7. Refit white ceramic shield cup by screwing on hand tight
8. 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
2. Failure to maintain plant can void manufacturer's warranty.
3. Inspect input and output cables & hoses for fraying and cuts, replace if damaged present
4. Keep cutting torch and earth cables in good condition
5. Clean air vents to ensure proper air flow and cooling
6. 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 Pilot Arc

Check condition of torch consumables and replace if worn

Check pilot arc protecting fuse on front panel of machine and replace if blow – If fuse keeps blowing contact R-Tech for repair / replacement torch

Please ensure machine is switched off before checking fuses

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 cutting - Torch spitting when cutting

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

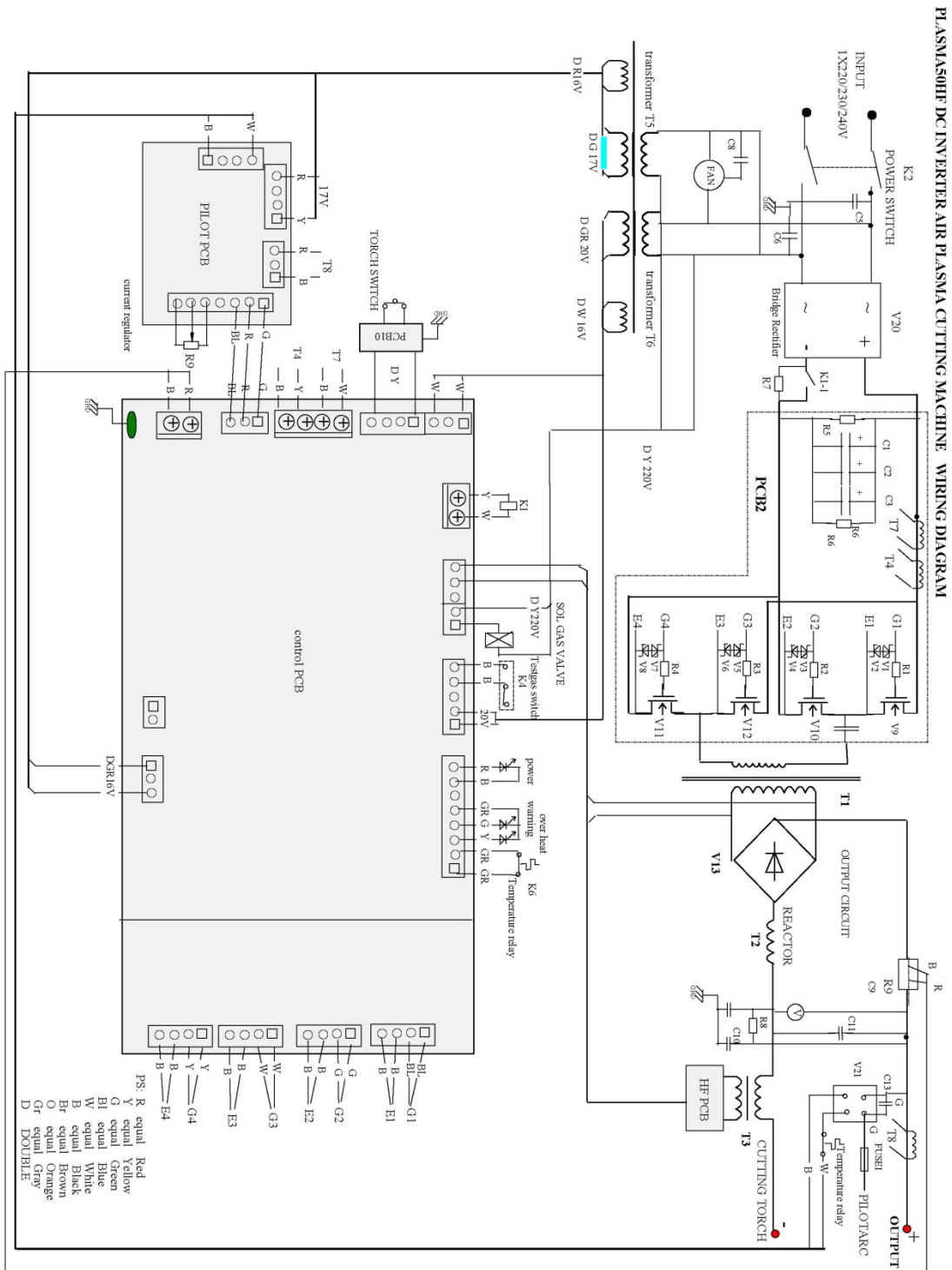
Check if correct amperage for thickness of metal, if too slow travel speed or too much cutting power, increase speed of cut or reduce cutting amperage. (When machine senses no metal left to cut it will switch off main cutting power and switch on HF pilot arc, this is the HF pilot arc restart)

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 torch consumables as per instructions earlier in this manual

Plasma Torch Consumables parts list

R-Tech Torch Spares	
Plasma 50HF	Part No.
Electrode	P40-EL
Cutting Tip	P40-CT
Ceramic Shield Cup	P50-SC
Stand Off Spring	P40-SS
Torch Head -Hand Held	P50-THH
Torch Complete Hand Held 6M	P50-6MHHT

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. 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觸帶電部件及焊條。 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"> 진도체나 용접봉을 젖은 형갑 또는 피부로 절대 접촉하지 마십시오. 모재의 접지를 접촉하지 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 بجلد الجسم أو بالمعالب 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"> ● 관널이 열린 상태로 작동치 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● ابتعد 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 المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.