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## PLASMA 50CNC INVERTER PLASMA CUTTER

# OPERATION INSTRUCTIONS



Version 2016-1



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

**The PLASMA 50CNC has many benefits over traditional transformer plasma cutters, including infinite power control, Pilot arc starting and quick fitting cost effective torch, long life cost effective torch consumables, 60% industrial duty cycle and CNC interface to connect to CNC Plasma System.**

**We want you to take pride in operating our PLASMA 50CNC 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 50CNC

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.



## 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.



The PLASMA 50CNC Plasma Cutters require a 240V 50/60Hz 1-Phase supply. It requires a 32A fused supply. 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 BE FITTED 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.**





## 5. POWER On/Off Switch

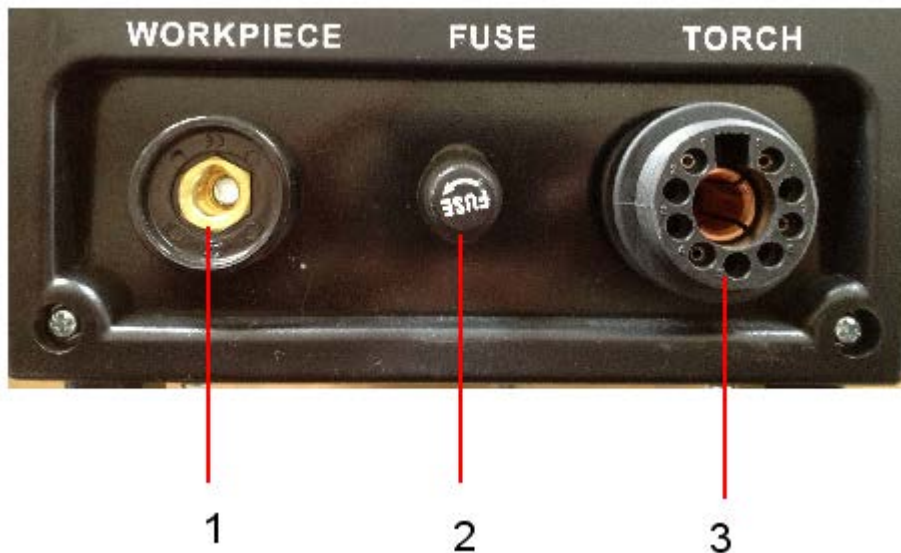
Turns machine on and off, the switch illuminates when machine turn on

## 6. CNC Interface

This is the socket where the CNC cable is connected. (Plug is supplied with machine)

CNC Interface connections	PINS
Start cut	1 & 2 – close circuit to start
OCV Positive (default 50/1 divided)	6
OCV Negative (default 50/1 divided)	4
Arc success – OK to move	9 & 10 – closed when arc OK

### 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

**30A** Pilot arc fuse – Protects in case of short circuit in torch head

#### 3. Torch power connector

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

When fitting CNC machine to holder, do not overtighten clamp onto torch housing as this can affect pilot arc starting

## Controls and Settings

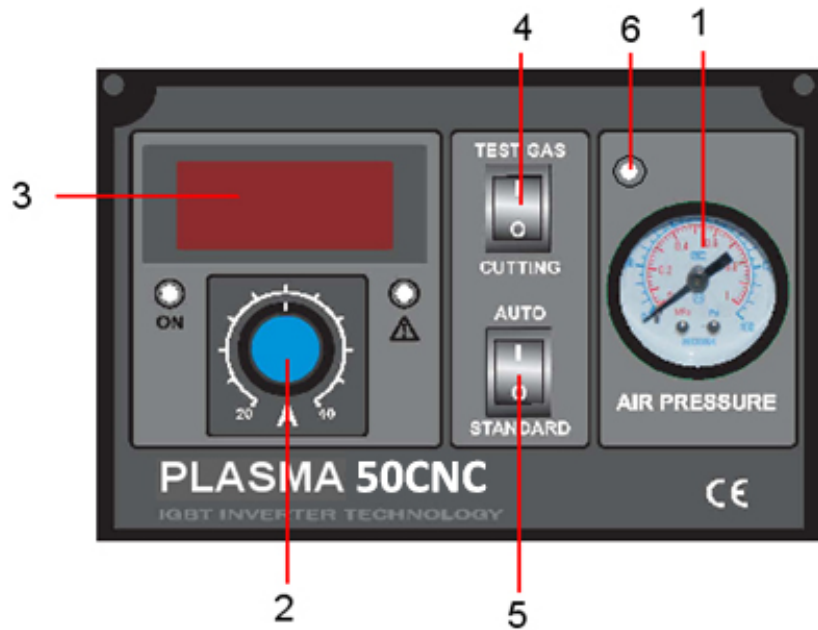


Fig 1

### **1. Air pressure gauge**

This shows the air pressure as set by regulator at rear of machine. This should be set to 70PSI when the test gas button is activated.

### **2. Amperage control knob**

This adjusts the amperage (cutting power) from 20 to 50 amps

### **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 not be shown when the air pressure is less than 26psi and the machine will not work. Adjust pressure to correct 70PSI, led will light and you can resume cutting.

## Operating machine

### SAFETY PRECAUTIONS

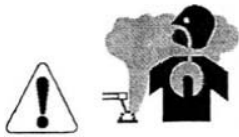
**WARNING!**



**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 – Hand Torch

### 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 70PSI, 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.

## Operating Machine – Machine Torch CNC

### 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 70PSI, 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)

Plasma Current (amps)	Material Thickness (mm)	AVHC10 Pierce Delay Seconds	Plasma Test Gas Air Pressure	Mach-3 THC Feed Rate	Pierce Height	SheetCam Pierce Delay	Cut Height	Best Feed Rate	Fastest Feed Rate
30	1	0.2	70 PSI	20%	3.5	0.0	1.7	1320	2430
	2	0.2	70 PSI	20%	3.5	0.0	1.7	1140	2070
40	3	0.2	70 PSI	20%	3.5	0.0	1.7	1760	3240
	4	0.3	70 PSI	30%	3.5	0.1	1.7	1310	1310
	5	0.3	70 PSI	30%	3.5	0.2	1.7	1120	1120
	6	0.3	70 PSI	30%	3.5	0.2	1.7	940	940
50	1	0.2	70 PSI	20%	3.5	0.0	1.7	2200	4050
	2	0.2	70 PSI	20%	3.5	0.0	1.7	1900	3450
	3	0.2	70 PSI	20%	3.5	0.0	1.7	1650	2850
	4	0.3	70 PSI	30%	3.5	0.1	1.7	1400	2350
	5	0.3	70 PSI	30%	3.5	0.2	1.7	1200	1900
	6	0.3	70 PSI	30%	3.5	0.2	1.7	980	1500
	7	0.4	70 PSI	30%	3.5	0.3	1.7	800	1150
	8	0.4	70 PSI	30%	3.5	0.4	1.7	650	870
	9	0.4	70 PSI	30%	3.5	0.5	1.7	520	640
	10	0.5	70 PSI	30%	3.5	0.6	1.7	410	470
	11	0.5	70 PSI	30%	3.5	0.7	1.7	320	365
	12	0.6	70 PSI	30%	3.5	0.8	1.7	255	310

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

Common question: Why is cut depth reduced when cutting with CNC when compared to hand cutting? Hand cutting you generally start from edge of work, when CNC cutting you normally start with a pierce so this is why maximum cut depth is reduced.

6. Once above amperage is set and parameters are set on CNC system you are ready to start cutting.
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.
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 on 01452 733933











			
<b>WARNING</b>	<ul style="list-style-type: none"> <li>Do not touch electrically live parts or electrode with skin or wet clothing.</li> <li>Insulate yourself from work and ground.</li> </ul>	<ul style="list-style-type: none"> <li>Keep flammable materials away.</li> </ul>	<ul style="list-style-type: none"> <li>Wear eye, ear and body protection.</li> </ul>
Spanish <b>AVISO DE PRECAUCION</b>	<ul style="list-style-type: none"> <li>No toque las partes o los electrodos bajo carga con la piel o ropa mojada.</li> <li>Aislese del trabajo y de la tierra.</li> </ul>	<ul style="list-style-type: none"> <li>Mantenga el material combustible fuera del área de trabajo.</li> </ul>	<ul style="list-style-type: none"> <li>Protéjase los ojos, los oídos y el cuerpo.</li> </ul>
French <b>ATTENTION</b>	<ul style="list-style-type: none"> <li>Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension.</li> <li>Isolez-vous du travail et de la terre.</li> </ul>	<ul style="list-style-type: none"> <li>Gardez à l'écart de tout matériel inflammable.</li> </ul>	<ul style="list-style-type: none"> <li>Protégez vos yeux, vos oreilles et votre corps.</li> </ul>
German <b>WARNUNG</b>	<ul style="list-style-type: none"> <li>Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung!</li> <li>Isolieren Sie sich von den Elektroden und dem Erdboden!</li> </ul>	<ul style="list-style-type: none"> <li>Entfernen Sie brennbares Material!</li> </ul>	<ul style="list-style-type: none"> <li>Tragen Sie Augen-, Ohren- und Körperschutz!</li> </ul>
Portuguese <b>ATENÇÃO</b>	<ul style="list-style-type: none"> <li>Não toque partes elétricas e electrodos com a pele ou roupa molhada.</li> <li>Isole-se da peça e terra.</li> </ul>	<ul style="list-style-type: none"> <li>Mantenha inflamáveis bem guardados.</li> </ul>	<ul style="list-style-type: none"> <li>Use proteção para a vista, ouvido e corpo.</li> </ul>
Japanese <b>注意事項</b>	<ul style="list-style-type: none"> <li>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。</li> <li>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。</li> </ul>	<ul style="list-style-type: none"> <li>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。</li> </ul>	<ul style="list-style-type: none"> <li>目、耳及び身体に保護具をして下さい。</li> </ul>
Chinese <b>警告</b>	<ul style="list-style-type: none"> <li>皮肤或湿衣物切勿接觸帶電部件及焊條。</li> <li>使你自己與地面和工件絕緣。</li> </ul>	<ul style="list-style-type: none"> <li>把一切易燃物品移離工作場所。</li> </ul>	<ul style="list-style-type: none"> <li>佩戴眼、耳及身體勞動保護用具。</li> </ul>
Korean <b>위험</b>	<ul style="list-style-type: none"> <li>진도체나 동접부를 젖은 청킹 또는 피부로 절대 접촉치 마십시오.</li> <li>모재의 접지를 접촉치 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>인화성 물질을 접근 시키지 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>눈, 귀와 몸에 보호장구를 착용하십시오.</li> </ul>
Arabic <b>تحذير</b>	<ul style="list-style-type: none"> <li>لا تلمس الأجزاء التي يمر بها التيار الكهربائي أو الأقطاب بجلد الجسم أو بالمعالب المبللة بالماء.</li> <li>ضع عازلًا عن جسمك خلال العمل.</li> </ul>	<ul style="list-style-type: none"> <li>ضع المواد القابلة للاشتعال في مكان بعيد.</li> </ul>	<ul style="list-style-type: none"> <li>ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.</li> </ul>

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

**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.