

Stealth

DIGI-TIG180PD

DC INVERTER • DC TIG • DC MMA • WELDING MACHINE

Part No. 9010



Suitable for
110V or 240V

OPERATING INSTRUCTIONS

SWP

SAFETY PRECAUTIONS

Follow these precautions carefully. Improper use of any welder can result in injury or death.

1. ONLY CONNECT MACHINE TO A POWER SOURCE FOR WHICH IT WAS DESIGNED. THE SPECIFICATION PLATE ON THE MACHINE LISTS THIS INFORMATION. WHEN WELDING OUTDOORS ONLY USE AN EXTENSION CORD INTENDED FOR SUCH USE.
2. ONLY OPERATE MACHINE IN DRY LOCATIONS AND ON CEMENT OR MASONRY FLOOR. KEEP AREA CLEAN AND UNCLUTTERED.
3. KEEP ALL COMBUSTIBLES AWAY FROM WORK SITE.
4. DO NOT WEAR CLOTHING THAT HAS BEEN CONTAMINATED WITH GREASE OR OIL.
5. KEEP CABLES DRY AND FREE FROM OIL AND GREASE AND NEVER COIL AROUND SHOULDERS.
6. SECURE WORK WITH CLAMPS OR OTHER MEANS – DON'T OVER-REACH WHEN WORKING.
7. NEVER STRIKE AN ARC OVER A COMPRESSED GAS CYLINDER.
8. DON'T ALLOW THE INSULATED PORTION OF THE ELECTRODE HOLDER TO TOUCH THE GROUND WHILE CURRENT IS FLOWING.
9. SHUT OFF POWER AND UNPLUG MACHINE WHEN REPAIRING OR ADJUSTING. INSPECT BEFORE EVERY USE. ONLY USE IDENTICAL REPLACEMENT PARTS.
10. FOLLOW ALL MANUFACTURER'S RULES ON OPERATING SWITCHES AND MAKING ADJUSTMENTS.
11. ALWAYS WEAR PROTECTIVE CLOTHING WHEN WELDING. THIS INCLUDES: LONG SLEEVED SHIRT (LEATHER SLEEVES), PROTECTIVE APRON WITHOUT POCKETS, LONG PROTECTIVE TROUSERS, BOOTS AND GLOVES WHEN HANDLING HOT MATERIALS.
12. ALWAYS WEAR A WELDER'S HELMET WITH PROTECTIVE EYE PIECE WHEN WELDING. WEAR A PROTECTIVE CAP UNDERNEATH THE HELMET.
13. WHEN WELDING OVERHEAD, BEWARE OF HOT METAL DROPPINGS. ALWAYS PROTECT THE HEAD, HAND, FEET AND BODY.
14. KEEP A FIRE EXTINGUISHER CLOSE BY AT ALL TIMES.
15. DO NOT EXCEED THE DUTY CYCLE OF THE MACHINE. THE RATED CYCLE OF A WELDING MACHINE IS THE PERCENTAGE OF A TEN MINUTE PERIOD THAT THE MACHINE CAN OPERATE SAFELY AT A GIVEN OUTPUT SETTING.
16. KEEP ALL CHILDREN AWAY FROM WORK AREA. WHEN STORING EQUIPMENT, MAKE SURE IT IS OUT OF REACH OF CHILDREN.
17. GUARD AGAINST ELECTRIC SHOCK. DO NOT WORK WHEN TIRED. DO NOT LET BODY COME IN CONTACT WITH GROUNDED SURFACES.

1 MAIN USE AND RANGE

STEALTH DIGI-TIG180PD welding machine has two functions and can be used as DC MMA, AC TIG, or DC/PULSE TIG welder.

All metals: copper, aluminium, titanium and stainless steel materials etc, can be welded in all positions. The welding current is stable with stepless adjustments. The machine is compact, lightweight and easily transported. It is particularly suited to pressure vessel, building, shipping and petrochemical works.

2 TECHNICAL SPECIFICATIONS

MODEL: DIGI-TIG180PD			
INPUT	Voltage	1 x AC110V~120V 50Hz	1 x AC220V~240V 50HZ
DC MMA	No-load Voltage	70V	
	Current Adjusting Range	5~95A	5~160A
	Rated Output Current	90A	160A
	Rated Duty Cycle	35%	
DC TIG	Current Adjusting Range	5~110A	5~180A
	Rated Duty Cycle	60%	
Standard PULSE TIG	Peak Current	5~110A	5~180A
	Base/Peak Current Ratio	5~95%	
	Rated Duty Cycle	60%	
	Pulse Width	5%~95%	
	Pulse Frequency	0.5~500Hz@DC	
Current UP / DOWN Slope Time		0~10S	
Initial Current / Welding Current		5~150%	
Crater-Fill Current / Welding Current		5~95%	
Pre Gas Flow Time		0~10s	
Post Gas Flow Time		0~25s	
Arc starting Mode		HF/LIFT TIG	
Efficiency		≥80%	
Weight		10kg	
Protection Class of Enclosure		IP21S	

3 OPERATING CONDITIONS AND WORK SURROUNDINGS

3.1 OPERATING CONDITIONS

- Voltage of power source: AC 110V or AC 240V
- Frequency: 50/60Hz
- Reliable grounding protection

3.2 WORK SURROUNDINGS

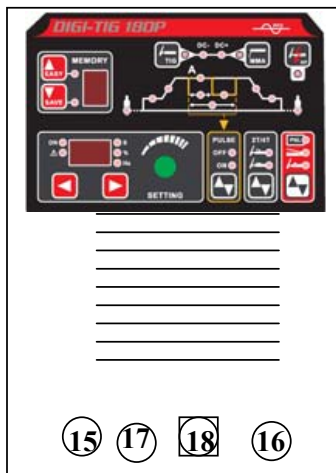
- 3.2.1 Relative humidity: not more than 90% (average monthly temperature not more than 20°C)
- 3.2.2 Ambient temperature: -10°C ~ 40°C
- 3.2.3 The welding site should have no harmful gas, chemicals, moulds and inflammable matter, explosive and corrosive medium.
- 3.2.4 Operating in rain is not permitted.

4 PRODUCT DESCRIPTION

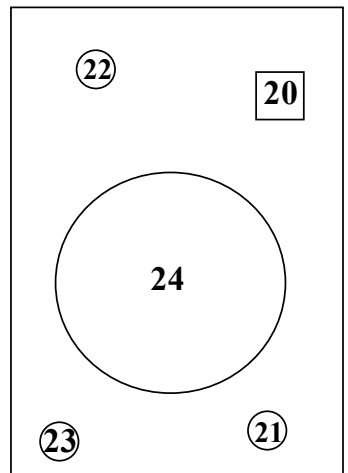
- Before welding, the operator should read the operating instructions.
- Check the machine appearance for deformation and damage.
- For the safety of the equipment the operator must make an appropriate earth according to the power supply system.
- The welding operation should be carried out in a dry and well ventilated area.
- Check the machine output connection.
- The machine should not be moved or the cover opened when the power is on and during the welding operation.
- The machine should be maintained, operated and managed by a qualified person.
- The current of the distribution board should be no less than 40A.

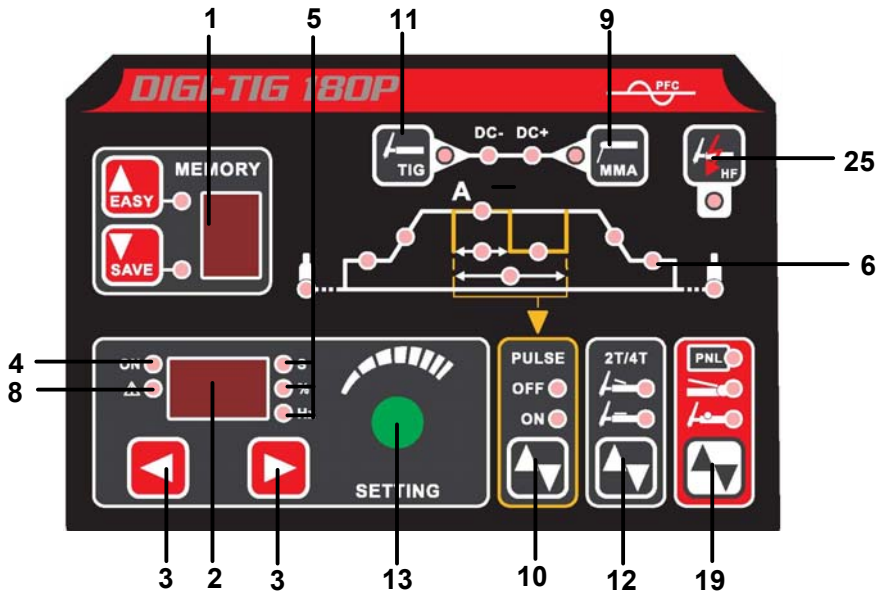
5 PANEL FUNCTION DIAGRAMS

FRONT PANEL



BACK PANEL

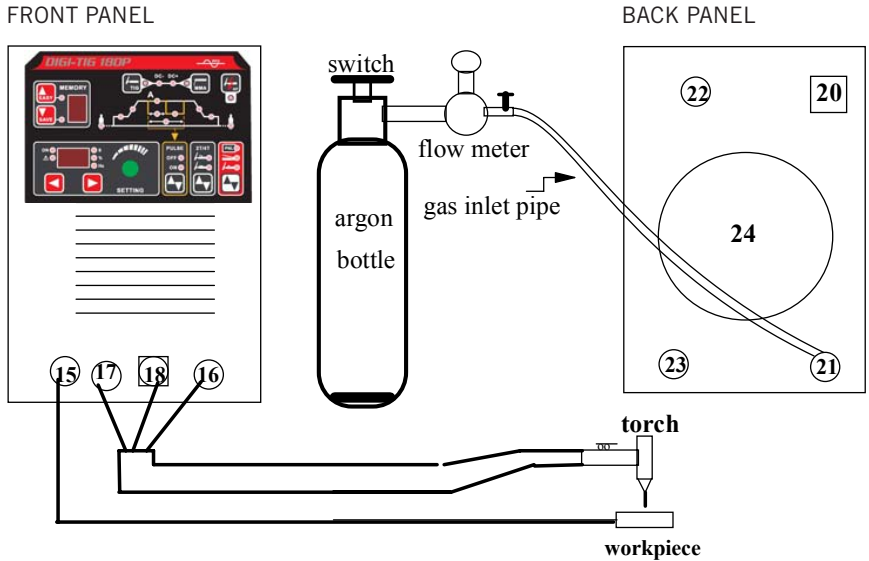




- | | |
|---|---|
| 1. Memory channel LED | 12. 2T / 4T Selector |
| 2. Data Display meter | 13. Data Display adjustment knob |
| 3. Parameter Select function | 15. Output Positive (welding holder) |
| 4. Power light indicator | 16. Output Negative (ground clamp) |
| 5. S = Unit of up and downslope time and pre and post flow time
% = unit of AC balance and peak time on
Hz = unit of pulse frequency | 17. Argon out |
| 6. Parameter Select function: Pre-Flow, Start Current, Up Slope, Welding Amps, Pulse Peak Amps, Peak Time on, Pulse Frequency, Base Amps, Down Slope, End Current, Post Flow, | 18. Argon arc control (or remote control) |
| 8. Warning indicating light | 19. Amp Adjustment selector (remote control): Panel, Pedal, Finger, Torch |
| 9. MMA selector: DC- / DC+ | 20. Power switch |
| 10. TIG PULSE selector | 21. Argon inlet |
| 11. TIG selector: DC TIG | 22. Power supply |
| | 23. Safety earthing column |
| | 24. Cooling fan |
| | 25. HF/Lift TIG selector |

6 MACHINE OPERATION

6.1 ARGON ARC WELDING (TIG)



6.2 CLEANING BEFORE WELDING

Tungsten argon welding is very sensitive to surface contamination. Therefore, before welding is carried out remove grease, paint, surface coatings, lubricants and oxidized film.

6.3 DC ARGON ARC WELDING (refer to diagram on page 5)

- 6.3.1 Select **11** to position **DC TIG**, select **10** to position **PULSE OFF**, connect gas inlet pipe to inlet **21**.
- 6.3.2 Connect welding torch gas inlet pipe to argon output **17**.
- 6.3.3 Connect the torch control plug to the argon arc control socket **18**.
- 6.3.4 Testing gas: Switch on the power **2**. Open the argon bottle. Press the torch switch and select suitable argon flow.
- 6.3.5 Regulating knobs **3 & 13**. Select suitable welding current according to thickness of the workpiece to be welded. Select suitable current down slope time and post flow time according to the current.

Note 1: The current indicating meter on the front panel is used to display the preset output current level before welding, and actual output level while welding: A lit display indicates input power is turned on.

Note 2: Select **12** to the position **PEDAL** and regulate welding current with the foot control.

Note 3: When using **ADJUSTABLE FINGER CONTROL**, select **19** to position **PANEL**, **PEDAL** or **FINGER TORCH** and commence welding.
- 6.3.6 Ensure tungsten electrode end is 2-3mm away from the workpiece. Press the torch switch, arc striking will occur. Note: During welding, when the 2T/4T switch **12** is on 2T the switch of the torch must be pressed and should not be released, otherwise the arc will be broken.

6.3.7 Release the switch of the torch and the welding current will reduce gradually (time is adjustable) until the arc extinguishes. The welding torch should not be removed as soon as the arc extinguishes to allow the gas to flow over the weld, in order to prevent oxidation.

6.4 PULSE ARGON ARC WELDING

6.4.1 Selection of peak current and base current:

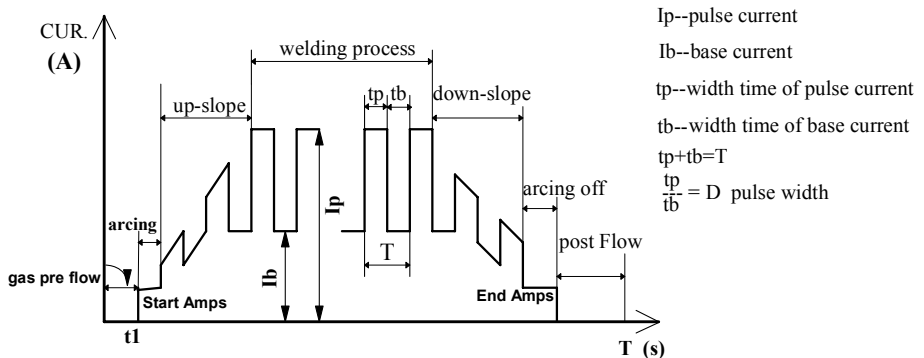
6.4.2 Select **11** to position **DC TIG** or **AC TIG** and selector **10** to the **ON** position.

6.4.3 Select peak time in ratio: It can be selected between 5%-95%.

6.4.4 Select **UP SLOPE** / **DOWN SLOPE** time: It can be selected between 0-10S.

6.4.5 When the welding operation is completed, turn off argon bottle switch and cut off input power.

6.5 PULSE ARGON TUNGSTEN WELDING PROCESS (for reference only)



Features and application scope of the process

The pulse type argon tungsten arc welding is different from the continuous (DC) argon arc welding. The welding current is pulsed. The wave form of the current is shown in the diagram above. Ip and Ib and their continuous time tp and tb can be regulated according to requirements of the process. The amplitude value of electric current changes periodically with certain frequency in case of the pulse current, molten base will be formed in the workpiece and the molten bath will be solidified in care of base current. The welding seam is formed by reciprocal overlaps. Welding heat input can be controlled by regulating pulse frequency, pulse current amplitude, size of base current, continuous time of pulse current and base current and therefore the welding seam, size and quality of the zone influenced from heat can be controlled.

Advantages and application scope of pulse argon gas tungsten arc welding

- Precisely control the size of the bath inputting heat to workpiece to increase penetration resistance of molten seam and preservation of bath. It is easy to obtain even fusing depth. This process is specially applicable to omni-bearing welding of sheet and formation with both sides through one side welding.
- Pulse arc can obtain greater fusing depth with lower heat input. Therefore under the same condition, the zone influenced from welding heat and deformation from welding can be reduced. This is very important for sheet and ultra-thin sheet welding.
- Fast cooling of the bath metal and short duration time of high temperature during welding can reduce cracks caused to the thermo-sensitive materials.

6.6 SELECTION OF WELDING PARAMETERS

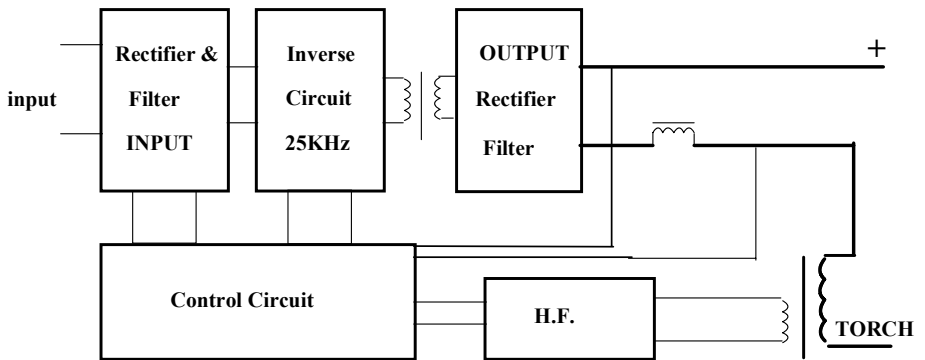
Except for pulse current and the width time (width ratio) as well as pulse frequency, welding parameters of pulse argon gas tungsten arc welding are the same as general tungsten DC argon arc welding. Pulse current increasing means electric arc can obtain greater penetration ability.

Too much current can cause local melting of tungsten electrode. Generally, welding current required for DC tungsten argon arc welding or greater current is used. Arc holding current and base current influences cooling and crystallizing of the metal in the bath. The range is determined by performance of the welding materials. When sheet is welded, smaller arc holding current (base current) is usually used in order to reduce welding through and deformation. When pulse width ratio (holding time of pulse current and base current) is selected, both the heat input and features of pulse welding should be considered. Usually, it can be selected between 10%-90%. Selection of pulse frequency (periodical change time of pulse current) mainly depends on thickness of sheet and welding speed and operation custom of the operator should be also considered

6.7 HAND WELDING WITH ELECTRODE

- 6.7.1 Select **9** to position **DC+** or **DC-**.
- 6.7.2 Select welding current and formula $I = 40d$ (d is diameter of the electrode)
- 6.7.3 Select correct AC square wave frequency and AC balance.
- 6.7.4 Connect input power. Switch on power – current indicator **4** is illuminated.
- 6.7.5 Observe the rated welding current and duty cycle. Do not overload.
- 6.7.6 After operation, allow the machine to cool down for a few minutes before switching it off.

7 SYSTEMATIC DIAGRAM



8 PRODUCT DESCRIPTION

This product is sold subject to the understanding that if any defect in manufacture or material shall appear within 24 months from date of consumer sale, the supplier will arrange for such defect to be rectified without charge (except for any damage due to misuse).

9 TROUBLESHOOTING

Problems	Causes	Solutions
Power lamp not lit	<ol style="list-style-type: none"> 1. No electricity input 2. Switch of welder fails 	<ol style="list-style-type: none"> 1. Check incoming line 2. Replace the switch
Fan not rotating	<ol style="list-style-type: none"> 1. Fan power line is off 2. Enclosure blocks the fan due to deformation 3. The fan fails 	<ol style="list-style-type: none"> 1. Reconnect the line 2. Reform the enclosure 3. Replace the fan
Warning lamp lights	<ol style="list-style-type: none"> 1. Over heat (yellow lamp lights) 2. Over current (Green lamp lights) 	<ol style="list-style-type: none"> 1. Welding after cooling 2. Input voltage too low or the machine fails
No output of welder	<ol style="list-style-type: none"> 1. Over current protection 2. Welder fails 	<ol style="list-style-type: none"> 1. Overload using 2. Maintain in service centre or return to manufacturer
Output current decreases	<ol style="list-style-type: none"> 1. Input Voltage is low 2. Input line is too thin 	<ol style="list-style-type: none"> 2. Power line is thickened
Current cannot be regulated	<ol style="list-style-type: none"> 1. Connecting line of the potentiometer is off 2. Potentiometer for current regulation fails 	<ol style="list-style-type: none"> 1. Reconnect the line 2. Replace potentiometer
High frequency arc cannot be generated	<ol style="list-style-type: none"> 1. The switch fails 2. Interval of high frequency discharging is too big 3. Distance of the torch and workpiece is too far high frequency arc generator fails 	<ol style="list-style-type: none"> 1. Replace torch switch 2. Regulating discharging interval to 0.8-1.0mm 3. Put torch tungsten electrode close to workpiece 4. Replace high frequency arc generator
Arc of argon welding is broken or tungsten electrode is burnt	<ol style="list-style-type: none"> 1. Argon gas flow not well regulated 2. Tungsten electrode fails 3. Value of current does not match with tungsten electrode diagram 4. After flow time too short 	<ol style="list-style-type: none"> 1. Regulate well 2. Replace or sharpen 3. Select the electrode diagram and current correctly 4. Increase the time
Welding torch overheats	<ol style="list-style-type: none"> 1. Not use the water cooling when current is more than 160A 2. The argon flow is the low current 	<ol style="list-style-type: none"> 1. Use water cooling 2. Enlarge the argon flow
Welding stops, and warning light is on	<p>Self-protection has engaged</p> <ol style="list-style-type: none"> 1. Display 801 2. Display 802 3. Display 804 4. Display 805 	<ol style="list-style-type: none"> 1. Over-voltage, lower-voltage 2. Over-current 3. Over-temperature 4. Torch switch always close

			
<p>WARNING</p>	<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.
<p>Spanish AVISO DE PRECAUCION</p>	<ul style="list-style-type: none"> ● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aíslese 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.
<p>French ATTENTION</p>	<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.
<p>German WARNUNG</p>	<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!
<p>Portuguese ATENÇÃO</p>	<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.
<p>Japanese 注意事項</p>	<ul style="list-style-type: none"> ● 通電中の電気部品、又は溶材にヒブ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。
<p>Chinese 警告</p>	<ul style="list-style-type: none"> ● 皮肤或湿衣物切勿接觸帶電部件及銲條。 ● 使你自已與地面和工件絕緣。 	<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。
<p>Korean 위험</p>	<ul style="list-style-type: none"> ● 전도체나 응접봉을 젖은 헝겍 또는 피부로 절대 접촉치 마십시오. ● 모재와 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> ● 인화성 물질을 접근 시키지 마십시오. 	<ul style="list-style-type: none"> ● 눈, 귀와 몸에 보호장구들 착용하십시오.
<p>Arabic تحذير</p>	<ul style="list-style-type: none"> ● لا تلمس الأجزاء التي يمرر فيها التيار الكهربائي أو الألكترود بجلد الجسم أو بالمعازل 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って下さい。 	<ul style="list-style-type: none"> ● パネルやカバーを取り外したままで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 움직이기를 멀리하십시오. ● 호흡지역으로부터 움직이기를 제거하기 위해 가스제거기나 통풍기를 사용하십시오. 	<ul style="list-style-type: none"> ● 보수전에 전원을 차단하십시오. 	<ul style="list-style-type: none"> ● 관 패널이 열린 상태로 작동하지 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● بعد 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揮材料，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.



Specialised Welding Products Ltd

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