



PULSEWAVE200

OWNER'S

MANUAL



PULSED TIG (GTAW)



STICK (SMAW)

Arc Welding Power Source

Manufactured at



Certified Facility

Machine Number: _____
Where Purchase: _____
Date of purchased: _____

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SECTION 1 SAFETY PRECAUTIONS

SECTION 1 CONSIGNES DE SÉCURITÉ

1-1. Symbol Usage Symboles utilisés



Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.

Symbole graphique d'avertissement ! Attention ! Cette procédure comporte des risques possibles ! Les dangers éventuels sont représentés par les symboles graphiques joints.

▲ **Marks a special safety message.**
Indique un message de sécurité particulier

☞ **Means "Note"; not safety related.**
Signifie NOTE ; n'est pas relatif à la sécurité.



This group of symbols means Warning! Watch Out possible ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards

Ce groupe de symboles signifie Avertissement! Attention! Risques d'ÉLECTROCUTION, ORGANES MOBILES et PARTIES CHAUDES. Consulter les symboles et les instructions afférents ci-dessous concernant les mesures à prendre pour supprimer les dangers.

1-2. Arc welding Hazards Dangers relatifs au soudage à l'arc

- ★ **The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard.**
- ★ **Only qualified persons should service, test, maintain, and re- pair this unit.**
- ★ **During servicing, keep everybody, especially children, away**
- ★ **Les symboles représentés ci-dessous sont utilisés dans ce manuel pour attirer l'attention et identifier les dangers possibles. En présence de l'un de ces symboles, prendre garde et suivre les instructions afférentes pour éviter tout risque. Les instructions en matière de sécurité indiquées ci-dessous ne constituent qu'un sommaire des instructions de sécurité plus complètes fournies dans les normes de sécurité énumérées dans la Section 2-5. Lire et observer toutes les normes de sécurité.**
- ★ **Seul un personnel qualifié est autorisé à installer, faire fonctionner, entretenir et réparer cet appareil.**
- ★ **Pendant le fonctionnement, maintenir à distance toutes les personnes, notamment les enfants de l'appareil.**



ELECTRIC SHOCK can kill.
UNE DÉCHARGE ÉLECTRIQUE entraîner la mort.

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.

- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, use the following equipment in order presented: 1) a semiautomatic DC constant voltage (wire) welder, 2) a DC manual (stick) welder, or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC, constant voltage wire welder is recommended. And, do not work alone!
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first – double-check connections.
- Frequently inspect input power cord for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or

- poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters.

Il reste une TENSION DC NON NÉGLIGEABLE dans les sources de soudage onduleur quand on a coupé l'alimentation.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.
- Ne pas toucher aux pièces électriques sous tension.
- Porter des gants isolants et des vêtements de protection secs et sans trous.
- S'isoler de la pièce à couper et du sol en utilisant des housses ou des tapis assez grands afin d'éviter tout contact physique avec la pièce à couper ou le sol.
- Ne pas se servir de source électrique à courant électrique dans les zones humides, dans les endroits confinés ou là où on risque de tomber.
- Se servir d'une source électrique à courant électrique UNIQUEMENT si le procédé de soudage le demande.
- Si l'utilisation d'une source électrique à courant électrique s'avère nécessaire, se servir de la fonction de télécommande si l'appareil en est équipé.
- D'autres consignes de sécurité sont nécessaires dans les conditions suivantes : risques électriques dans un environnement humide ou si l'on porte des vêtements mouillés ; sur des structures métalliques telles que sols, grilles ou échafaudages ; en position coincée comme assise, à genoux ou couchée ; ou s'il y a un risque élevé de contact inévitable ou accidentel avec la pièce à souder ou le sol. Dans ces conditions, utiliser les équipements suivants, dans l'ordre indiqué : 1) un poste à souder DC à tension constante (à fil), 2) un poste à souder DC manuel (électrode) ou 3) un poste à souder AC à tension à vide réduite. Dans la plupart des

situations, l'utilisation d'un poste à souder DC à fil à tension constante est recommandée. En outre, ne pas travailler seul !

- Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Déverrouiller l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir normes de sécurité).
- Installer le poste correctement et le mettre à la terre convenablement selon les consignes du manuel de l'opérateur et les normes nationales, provinciales et locales.
- Toujours vérifier la terre du cordon d'alimentation. Vérifier et s'assurer que le fil de terre du cordon d'alimentation est bien raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
- En effectuant les raccordements d'entrée, fixer d'abord le conducteur de mise à la terre approprié et contre-vérifier les connexions.
- Vérifier fréquemment le cordon d'alimentation afin de s'assurer qu'il n'est pas altéré ou à nu, le remplacer immédiatement s'il l'est. Un fil à nu peut entraîner la mort.
- L'équipement doit être hors tension lorsqu'il n'est pas utilisé.
- Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
- Ne pas enrouler les câbles autour du corps.
- Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct.
- Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une électrode provenant d'une autre machine.
- Ne pas toucher des porte électrodes connectés à deux machines en même temps à cause de la présence d'une tension à vide doublée.
- N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretien l'appareil conformément à ce manuel.
- Porter un harnais de sécurité si l'on doit travailler au-dessus du sol.
- S'assurer que tous les panneaux et couvercles sont correctement en place.
- Fixer le câble de retour de façon à obtenir un bon contact métal-métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.
- Isoler la pince de masse quand pas mis à la pièce pour éviter le contact avec tout objet métallique.
- Ne pas raccorder plus d'une électrode ou plus d'un câble de masse à une même borne de sortie de soudage.
- Arrêter les convertisseurs, débrancher le courant électrique et décharger les condensateurs d'alimentation selon les instructions indiquées dans la partie Entretien avant de toucher les pièces.



STATIC (ESD) can damage PC boards.
LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.
- Établir la connexion avec la arrette de terre avant de manipuler des cartes ou des pièces.
- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes PC.



FIRE OR EXPLOSION hazard.

Risque D'INCENDIE OU D'EXPLOSION.

- Do not place unit on, over, or near combustible surfaces.
- Do not service unit near flammables
- Do not overload building wiring – be sure power supply system is properly sized, rated, and protected to handle this unit.
- Ne pas placer l'appareil sur, au-dessus ou à proximité de surfaces inflammables.
- Ne pas installer l'appareil à proximité de produits inflammables.
- Ne pas surcharger l'installation électrique – s'assurer que l'alimentation est correctement dimensionnée et protégée avant de mettre l'appareil en service.



FLYING METAL can injure eyes.

DES PARTICULES VOLANTES peuvent blesser les yeux.

- Wear safety glasses with side shields or face shield during servicing.
- Be careful not to short metal tools, parts, or wires together during testing and servicing.
- Le soudage, l'écaillage, le passage de la pièce à la brosse en fil de fer, et le meulage génèrent des étincelles et des particules métalliques volantes. Pendant la période de refroidissement des soudures, elles risquent de projeter du laitier.
- Porter des lunettes de sécurité avec écrans latéraux ou un écran facial.



HOT PARTS can cause severe burns.

DES PIÈCES CHAUDES peuvent provoquer des brûlures graves.

- Do not touch hot parts bare handed.
- Allow cooling period before working on welding gun or torch
- Ne pas toucher des parties chaudes à mains nues.
- Prévoir une période de refroidissement avant d'utiliser le pistolet ou la torche.



MAGNETIC FIELDS can affect pacemakers.

LES CHAMPS MAGNÉTIQUES peuvent affecter les stimulateurs cardiaques.

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.
- Porteurs de stimulateur cardiaque, rester à distance.
- Les porteurs d'un stimulateur cardiaque doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de gougeage ou de soudage par points.



CYLINDERS can explode if damaged.

LES BOUTEILLES peuvent exploser si elles sont endommagées.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder – explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.

Des bouteilles de gaz protecteur contiennent du gaz sous haute pression. Si une bouteille est endommagée, elle peut exploser. Du fait que les bouteilles de gaz font normalement partie du procédé de soudage, les manipuler avec précaution.

- Protéger les bouteilles de gaz comprimé d'une chaleur excessive, des chocs mécaniques, des dommages physiques, du laitier, des flammes ouvertes, des étincelles et des arcs.

- Placer les bouteilles debout en les fixant dans un support stationnaire ou dans un porte-bouteilles pour les empêcher de tomber ou de se renverser.
- Tenir les bouteilles éloignées des circuits de soudage ou autres circuits électriques.
- Ne jamais placer une torche de soudage sur une bouteille à gaz.
- Une électrode de soudage ne doit jamais entrer en contact avec une bouteille.
- Ne jamais souder une bouteille pressurisée – risque d'explosion.
- Utiliser seulement des bouteilles de gaz protecteur, régulateurs, tuyaux et raccords convenables pour cette application spécifique ; les maintenir ainsi que les éléments associés en bon état.
- Détourner votre visage du détendeur-régulateur lorsque vous ouvrez la soupape de la bouteille.
- Le couvercle du détendeur doit toujours être en place, sauf lorsque la bouteille est utilisée ou qu'elle est reliée pour usage ultérieur.
- Utiliser les équipements corrects, les bonnes procédures et suffisamment de personnes pour soulever et déplacer les bouteilles.
- Lire et suivre les instructions sur les bouteilles de gaz comprimé, l'équipement connexe et le dépliant P-1 de la CGA (Compressed Gas Association) mentionné dans les principales normes de sécurité.



FALLING UNIT can cause injury.
LA CHUTE DE L'APPAREIL peut blesser.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit
- Utiliser l'anneau de levage uniquement pour soulever l'appareil, NON PAS les chariots, les bouteilles de gaz ou tout autre accessoire.
- Utiliser un équipement de levage de capacité suffisante pour lever l'appareil.
- En utilisant des fourches de levage pour déplacer l'unité, s'assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l'appareil.



MOVING PARTS can cause injury.
DES ORGANES MOBILES peuvent provoquer des blessures.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance as necessary.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before reconnecting input power.
- S'abstenir de toucher des organes mobiles tels

que des ventilateurs.

- Maintenir fermés et verrouillés les portes, panneaux, recouvrements et dispositifs de protection.
- Seules des personnes qualifiées sont autorisées à enlever les portes, panneaux, recouvrements ou dispositifs de protection pour l'entretien.
- Remettre les portes, panneaux, recouvrements ou dispositifs de protection quand l'entretien est terminé et avant de rebrancher l'alimentation électrique.



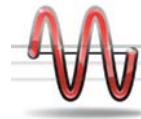
MOVING PARTS can cause injury.
DES ORGANES MOBILES peuvent provoquer des blessures.

- Keep away from moving parts
- Keep away from pinch points such as drive rolls
- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.



OVERUSE can cause OVERHEATING.
L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit
- Prévoir une période de refroidissement ; respecter le cycle opératoire nominal.
- Réduire le courant ou le facteur de marche avant de poursuivre le soudage.
- Ne pas obstruer les passages d'air du poste.



H.F. RADIATION can cause interference.
LE SOUDAGE À L'ARC risque de provoquer des interférences.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize

the possibility of interference.

- Le rayonnement haute fréquence (HF) peut provoquer des interférences avec les équipements de radio-navigation et de communication, les services de sécurité et les ordinateurs.
- Demander seulement à des personnes qualifiées familiarisées avec des équipements électroniques de faire fonctionner l'installation.
- L'utilisateur est tenu de faire corriger rapidement par un electricien qualifié les interférences résultant de l'installation.
- Si le FCC signale des interférences, arrêter immédiatement l'appareil.
- Effectuer régulièrement le contrôle et l'entretien de l'installation.
- Maintenir soigneusement fermés les portes et les panneaux des sources de haute fréquence, maintenir les éclateurs à une distance correcte

et utiliser une terre et un blindage pour réduire les interférences éventuelles.



**READ INSTRUCTIONS.
LIRE LES
INSTRUCTIONS.**

- Consult the Owner's Manual for welding safety precautions.
- Use only genuine replacement parts

- Lire le manuel d'utilisation avant d'utiliser ou d'intervenir sur l'appareil.
- Utiliser uniquement des pièces de rechange.

1-3. Safety Standards Normes de sécurité

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ih.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800-463-6727 or in Toronto 416-747-4044, website: www.csa-international.org).

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, de Global Engineering Documents (téléphone : 1-877-413-5184, site Internet : www.global.ih.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, de Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (téléphone : 800-463-6727 ou à Toronto 416-747-4044, site Internet : www.csa-international.org).

1-4. EMF Information EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electro- magnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: "The body of evidence, in the committee's judgment, has not demonstrated that exposure to power- frequency electric and magnetic fields is a human-health hazard." However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

Considérations sur le soudage et les effets de basse fréquence et des champs magnétiques et électriques.

Le courant de soudage, pendant son passage dans les câbles de soudage, causera des champs électromagnétiques. Il y a eu et il y a encore un certain souci à propos de tels champs. Cependant, après avoir examiné plus de 500 études qui ont été faites pendant une période de recherche de 17 ans, un comité spécial ruban bleu du National Research Council a conclu : « L'accumulation de preuves, suivant le jugement du comité, n'a pas démontré que l'exposition aux champs magnétiques et champs électriques à haute fréquence représente un risque à la santé humaine ». Toutefois, des études sont toujours en cours et les preuves continuent à être examinées. En attendant que les conclusions finales de la recherche soient établies, il vous serait souhaitable de réduire votre exposition aux champs électromagnétiques pendant le soudage ou le coupage.

Pour réduire les champs magnétiques sur le poste de travail, appliquer les procédures suivantes :

1. Maintenir les câbles ensemble en les tordant ou en les enveloppant.

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to work piece as close to the weld as possible.

About Pacemakers:

Pacemaker wearers consult your doctor first. If cleared by your doctor, then following the above procedures is recommended

2. Disposer les câbles d'un côté et à distance de l'opérateur.
3. Ne pas courber pas et ne pas entourer pas les câbles autour de votre corps.
4. Garder le poste de soudage et les câbles le plus loin possible de vous.
5. Connecter la pince sur la pièce aussi près que possible de la soudure.

En ce qui concerne les stimulateurs cardiaques

Les porteurs de stimulateur cardiaque doivent consulter leur médecin avant de souder ou d'approcher des opérations de soudage. Si le médecin approuve, il est recommandé de suivre les procédures précédentes

SECTION 2 PACKING LIST

PulseWave200 package (Part No: 07002500)		
Description	Part no	Quantity
PulseWave200 Power source come with 10 ft. (3 M) Power cord and NEMA 6-50P 230V AC Plug	n/a	1
WeldKing [®] PRO26 TIG gun 26 ft (8M) with on-off switch, 26ft	07002610	1
Torch accessories kit	n/a	1
Argon Regulator / Gauge	07000510	1
6.5 ft. (2M) gas hose with Male 5/8-18 gas connector on both end	n/a	1
300 Amp ground clamp with 16 ft (5 M) lead	07000462	1
Owner's Manual	07000417	1

Table 2.1

SECTION 3 INSTALLATIONS

3-1. Welding power source specifications

PulseWave200				
Welding Process	AC TIG	AC STICK	DC TIG	DC STICK
Power supply	160V-275V, 60Hz			
Phase	1			
Rated output current(A)	200@18V	200@28V	170@16.8V	170@26.8V
Input Amps @ rated output(A)	20A	31.5A	16.2A	25.7A
Rated input (KW)	4.5	7	3.6	5.7
Open circuit voltage(V)	66			
Amperage range(A)	5-200		5-170	
Duty cycle (%) @ 40°C	35%@200A /18V	35%@200A /28V	40% @170A /16.8V	40% @170A /26.8V
	60%@165A /16.6V	60%@165A /26.6V	60%@140A /15.6V	60%@140A /25.6V
	100%@120A /14.8V	100%@120A /24.8V	100%@110A /14V	100%@110A /24V
Power factor	0.68			
Protection class	IP23			
Insulation class	H			
Operating temperature (°C)	-20 to +40 (-4°F to 104°F)			
Storage temperature (°C)	-40 to +85 (-40°F to 185°F)			
Machine dimension (HxWxD) (CM)	48 x14 x24(19x5 ^{1/2} x9 ^{1/2} ;in)			
Power source weight (KG)	10.5(22.5lbs)			
Packing dimension (HxWxD)(CM)	56 x27 x28 (22x10 ^{1/2} x11 in)			
Packing weight(KG)	18(40lbs)			

Table 3.1



CAUTION!

WELDING LONGER THAN RATED DUTY CYCLE CAN DAMAGE GUN AND VOID WARRANTY.

3-2. TIG torch specifications

Model	PRO26 (Part no. 07002610)
Rated current(A)	200A/DC,150A/AC
Rated voltage(V)	<113
Rated duty cycle (%)	60
Cooling style	Air cooled
Air consumption (l/min)	4-15
Cable length(M)	8(26ft)
Electrode Range(mm)	0.5 – 4.0(0.020 –5/32 in)
Detailed gun specification please see separate torch manual.	

1 x Accessories Kit containing 1 x Short Back Cap, 1 x Collet Body 1/8" (3.2mm), 1 x Collet Body 3/32" (2.4mm), 1 x Collet Body 1/16" (1.6mm), 1 x Collet 1/8" (3.2mm), 1 x Collet 3/32" (2.4mm), 1 x Collet 1/16" (1.6mm), 1 x Nozzle Alumina No5, 1 x Nozzle Alumina No6, 1 x Nozzle Alumina No7, 1 x Tungsten Electrode 1/8" (3.2mm) Thoriated Type (red band), 1 x Tungsten Electrode 3/32" (2.4 mm) Thoriated Type (red band) and 1 x Tungsten Electrode 1/16" (1.6mm) Thoriated Type (red band).

Table 3.2

3-3. Process/Polarity Table

Process	Polarity	Cable Connections	
		Cable To torch/electrode holder	Cable To Work
STICK process	DCEP – Reverse polarity	Connect to positive(+) output terminal	Connect to negative(-)output terminal
TIG process both AC and DC	DCEN – Straight Polarity	Connect to negative(-) output terminal	Connect to positive(+)output terminal

Table 3.3

3-4. TIG(AC/DC) welding connection diagram

PulseWave200 (208/230v input)

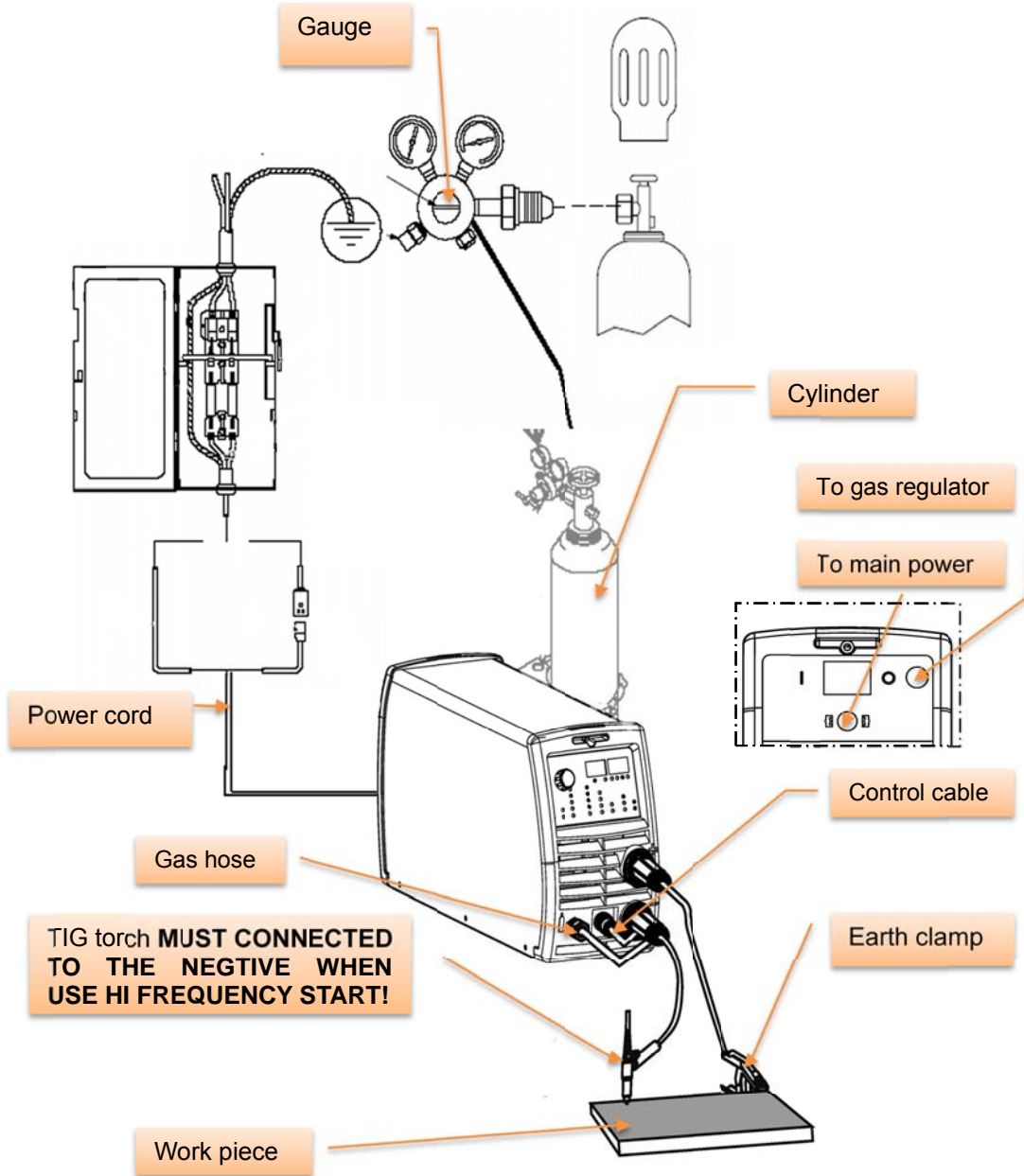


Figure 3.1

3-5. General installation procedure for TIG welding

- 3-5.1. Welding machine should be installed in a stable position and with good ventilation. Avoid direct sun outdoors. Avoid transport in invert or side position.
- 3-5.2. Switch the ON/OFF Switch (located on the rear panel) to OFF.
- 3-5.3. Connect the work lead cable to the positive output terminal, and the torch to the negative output terminal (**TIG torch must connected to negative output when use Hi Frequency arc strike!**) Refer to Figure 2.6. Insert torch/earth clamp quick connector into receptacle and turn 90° clockwise.
- 3-5.4. Connect the gas line/hose to the proper shielding gas source. Refer to Figure 3.1.
- 3-5.5. Slowly open the Argon Cylinder Valve to the fully open position.
- 3-5.6. Connect the work lead clamp to your work piece.

3-6. STICK welding connection diagram

PulseWave200 (208/230v input)

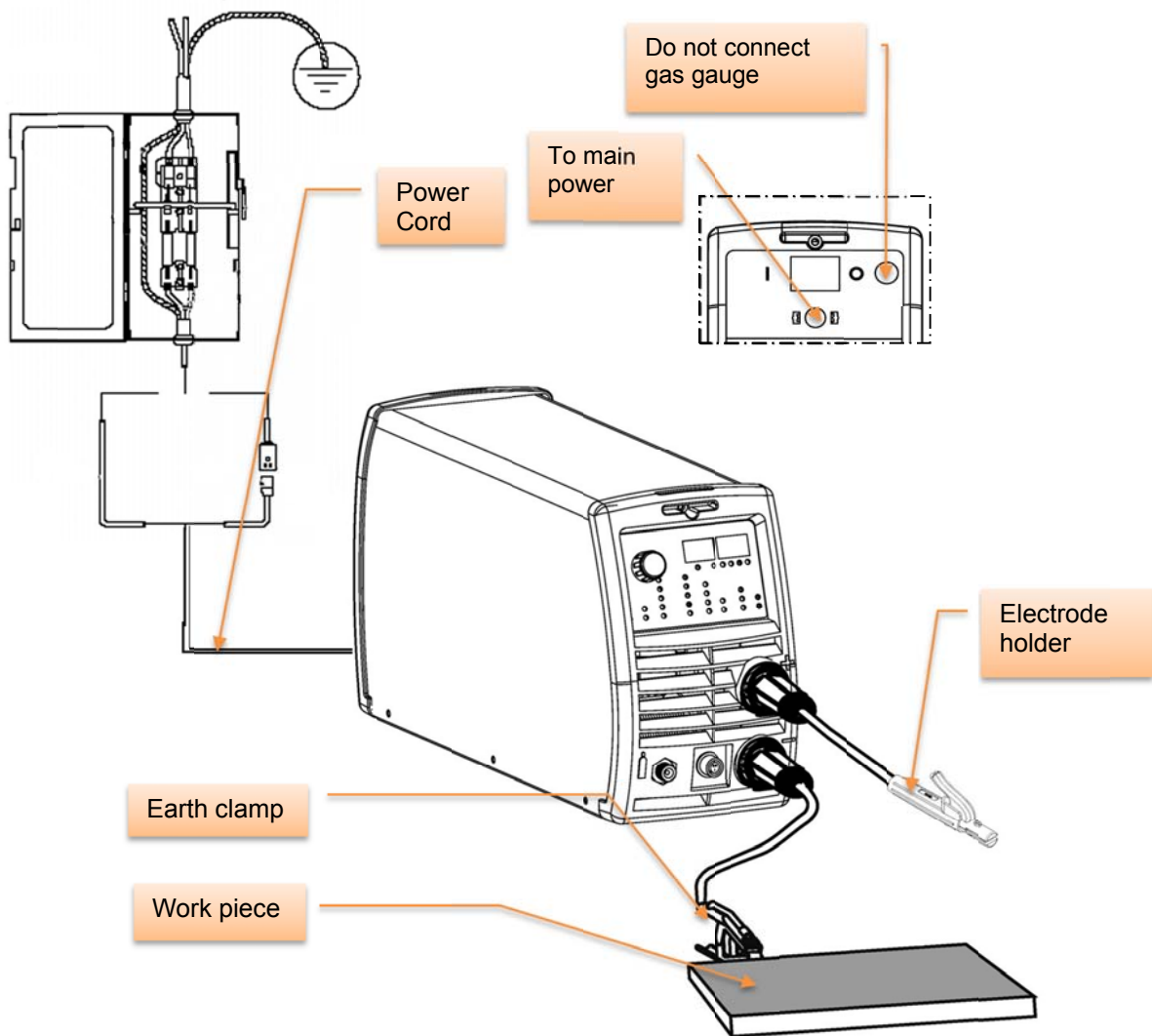


Figure 3.2

3-7. General installation procedure for STICK welding

- 3-7.1. Welding machine should be installed in a stable position and with good ventilation. Avoid direct sun outdoors. Avoid transport in invert or side position.
- 3-7.2. Switch the ON/OFF Switch (located on the rear panel) to OFF.
- 3-7.3. Connect electrode holder, earth cable, according to connection diagram (refer to Figure 3.2). Insert Electrode holder/earth clamp quick connector into receptacle and turn 90° clockwise.

3-8. Electric service guide



CAUTION!

WARNING: THIS WELDING MACHINE MUST BE CONNECTED TO POWER SOURCE IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODES

AVERTISSEMENT: LE RACCORDEMENT DE CETTE MACHINE DE SOUDAGE À L'ALIMENTATION DOIT ÊTRE CONFORME AUX CODES D'ÉLECTRICITÉ PERTINENTS

PulseWave200

Input voltage(V)	230			
Frequency(Hz)	60			
Input Amperes at rated output(A)	20	31.5	16.2	25.7
	AC/TIG	AC/STICK	DC/TIG	DC/STICK
Max recommended standard fuse Rating in Amp				
Circuit breaker, time delay	25	35	20	30
Normal operation	30	40	25	35
Min input conductor size in AWG	12	10	14	12
Max Recommended Input Conductor Length (ft)	70(21M)	45(14M)	91(28M)	58(18M)
Min Grounding conductor Size in AWG	12	10	14	12

Table 3.4

3-9. Extension Welding Cable Selection Chart



CAUTION! USE SHORTEST CABLE POSSIBLE

Welding Amperes (A)	100	150	200
Maximum Cable Length allowed in Weld Circuit* (Ft)	Cable Size (AWG)		
<=100 (30 m)	4 (20mm ²)	3 (30 mm ²)	3 (30 mm ²)
150 (45 m)	4 (20 mm ²)	2 (35 mm ²)	1 (50 mm ²)
200 (60 m)	3 (30 mm ²)	1 (50 mm ²)	1/0 (60 mm ²)

* The Cable Length in Weld Circuit is total of both weld cables and earth cables.

Table 3.5

SECTION 4 OPERATION

4-1. Panel layout and description

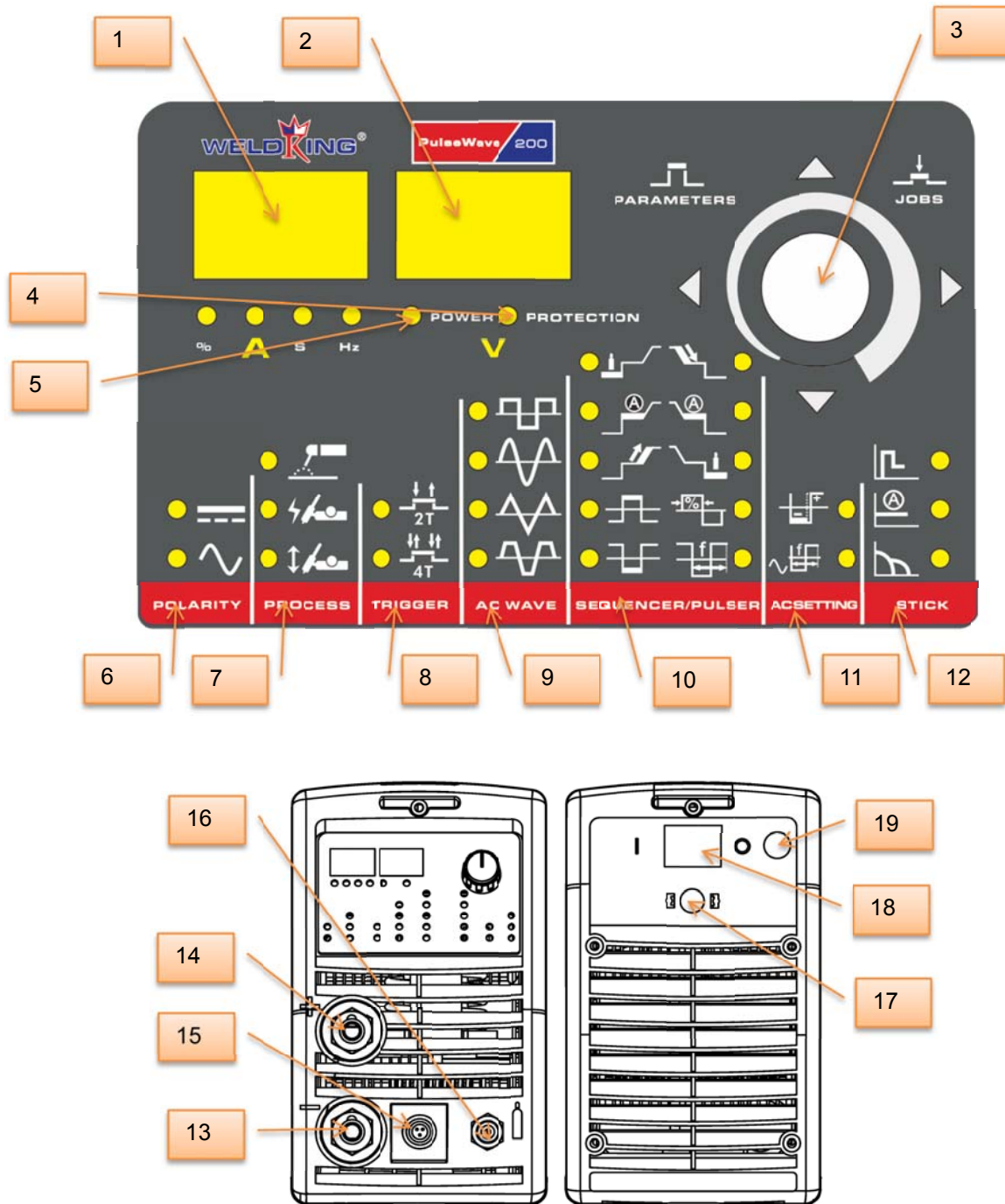


Figure 4.1

1. Welding current meter (digital) and parameter value display (TIG/STICK):

- Display actual welding current during welding.
- Displays preset parameters when they are active. Corresponding units of measure below the meter will illuminate in the same time: amperage, time, percentage or frequency.
- When the machine is not welding, the meter will jump back to display the preset current automatically after the 10s idle. Any time the four-way knob is turned, it will go back the last changed parameter.

2. Welding voltage meter (digital) (TIG/STICK)

- Displays actual welding voltage during welding.
- If output is off, the voltmeter will display “---”. Open circuit voltage (OCV) is displayed if power is on and output is available.

3. Parameter adjust four-way knob (TIG/STICK)

- Lean knob left-right-up-down to select the parameter. The corresponding LED will illuminate when the parameter is active to be adjusted or the mode is selected.
- Dial the knob to adjust the parameter. The parameter value will display in the welding current digital meter (left meter).
- Press down and release the knob to choose the current job number.

4. Protection indication light yellow (TIG/STICK)

- Yellow light will illuminate indicating thermal overload or input voltage is too high. The machine will not supply power at the output.
- If over-heating occurs, the yellow light will stay on until the machine has sufficiently cooled. Leave the power source on to allow the fan to cool the unit.


5. Power indication light red (TIG/STICK)

- Indicates input voltage is within acceptable range and machine is on.

6. Polarity selection (TIG/STICK)

Default selection is DC.

 Direct current output (DC). Apply to both TIG and STICK process.

 Alternate current output (AC). Apply to both TIG and STICK process.

7. Welding process selection (TIG/STICK)

Default selection is STICK.



STICK welding process, both AC and DC. System connections refer to section 3-6.



TIG welding process with HF arc strike. This method can be used with either AC or DC TIG welding. Make connections according to section 3-4



TIG welding process with lift-arc strike. This method can be used with either AC or DC TIG welding. Make connections according to section 3-4.

8. Trigger sequence selection (TIG)

Indicate torch trigger operating sequence when TIG welding. Default selection is 2T.



2 step operation:

When a foot or finger remote current control is connected to the welding power source, start current, slope-up time, slope-down time and finish current are controlled by the welding power source setting, not by the remote control. If you want to control the slope-up and slope-down current by remote control, set the value to 0.

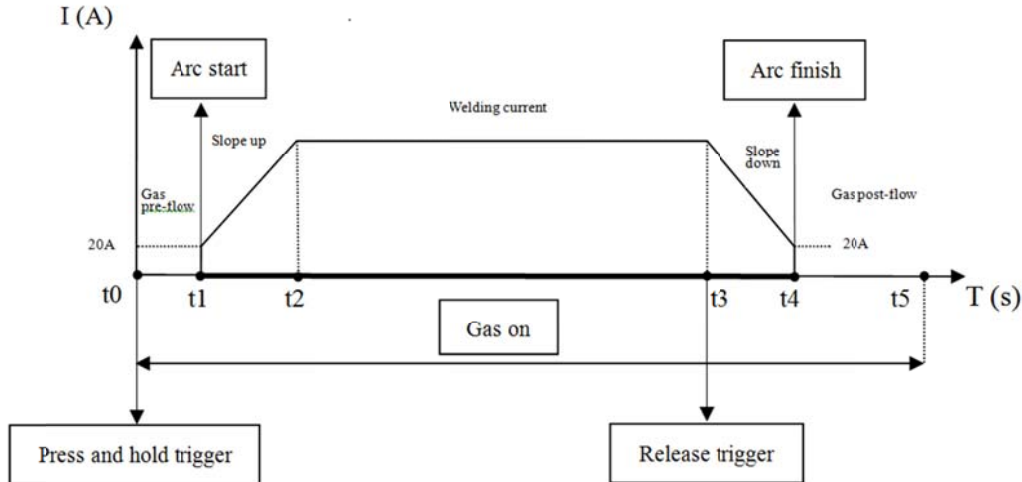


Figure 4.2

0: Press the trigger and hold, solenoid valve will open to start flow of shield gas.

0~t1: Preset gas pre-flow time (0.1~10s). After purge air from the torch hose, the output of the machine is turned on, and arc is started. The default gas pre-flow time is 0.2s.

t1~t2: Arc is ignited and the output current slope-up to the welding current from 20A within preset slope-up time. Default slope-up time is 0s.

t2~t3: Hold the trigger to maintain the welding current.

t3~t4: Release the gun trigger, the output will decrease with preset slope-down time to 20A. If trigger is pressed during slope-down period, current will increase back to welding current until trigger is released again. When current slope-down finished, arc will turn off. The default slope-down time is 0s.

t4~t5: After the arc is turned off, the gas valve will remain open to continue the flow of the shielding gas to the hot electrode and work piece according to the pre-set post-flow time. The default gas post-flow time is 5s.

t5: Solenoid valve close, the shield gas stops to flow and welding is finished.



4 step operation:

This mode of welding is mainly used for long welding runs to reduce operator fatigue.

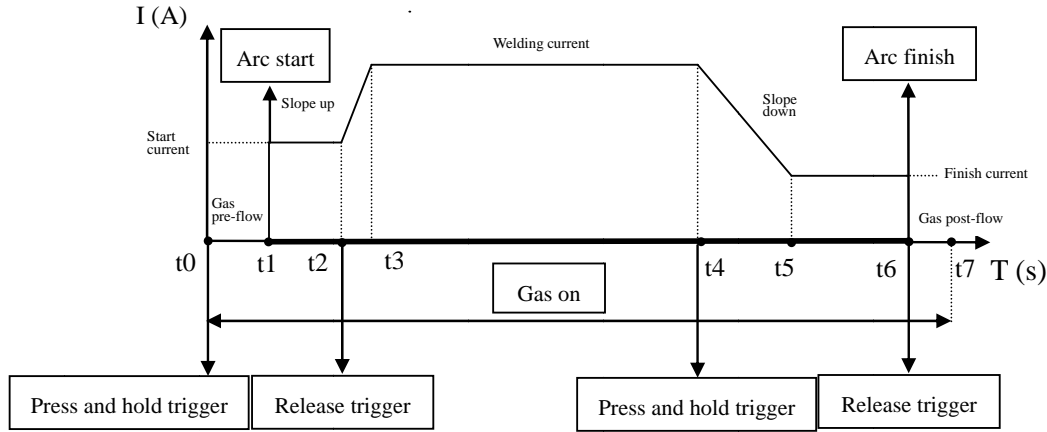


Figure 4.3

When a foot pedal is connected to the welding power source and 4T is selected in the same time, the foot pedal is functional as an on-off switch only and cannot adjust welding current. When an torch remote current control connected to power source and 4T is selected in the same time, it can adjust the welding current during welding.

0: Press the trigger and hold, solenoid valve will open to start flow of shield gas.

0~t1: Preset gas pre-flow time (0.1~10s). After purge air from the torch hose, the output of the machine will turn on, and arc is started. The default gas pre-flow time is 0.2s.

t1~t2: Arc will maintain at preset start current until the gun trigger is released. The default start current time is 20A.

t2~t3: Release the gun trigger, The output current will be increased from the start current to the welding current. The default slope-up time is 0s.

t3~t4: Welding process. During this period, the gun trigger is not pressed.

t4: Press the torch switch again, the welding current will drop in accordance with the selected down-slope time.

t4~t5: Press and hold the TIG torch trigger when the main part of the weld is complete. The output current will decrease to the preset finish current within preset slope-down time. The default finish current is 5A and default slope-down time is 0s.

t5~t6: Arc will maintain at preset finish current until the gun trigger is released. The default finish current time is 5A.

t6: Release the gun trigger, arc will turn off but the shield gas will keep flow.

t6~t7: After the arc is turned off, the gas valve will remain open to continue the flow of the shielding gas to the hot electrode and work piece according to the pre-set post-flow time. The default gas post-flow time is 5s.

t7: Solenoid valve close, the shield gas stops to flow and the welding is finished.

9. AC wave shape selection (TIG)

Default selection is square wave. These settings can be changed in real time during welding.



True square wave: most common used wave. Fast welding speed with more focused and dynamic arc and better puddle control.



Sine wave: softer arc simulate traditional AC power source and eliminate the frequent HF re-strike when phase switching. Lowest noise level in all wave shape.



Triangular wave: normally used in thin material welding at low amperages. Reduced heat input to control the distortion.



Trapezoidal wave: improved version of square wave. Delivers quieter arc with maximum puddle control and good wet action meanwhile keep all the advantages of true square wave.

10. Sequencer and pulser control (TIG)

Sequencer parameter:



Gas pre-flow time (0.1-10s, default 0.2s): purge air from the torch hose before start the arc.



Start current (5-200A for AC TIG, 5-170 for DC TIG, default 20A): preheat cold material prior to depositing filler material, or to ensure a soft arc strike. Only active in 2T mode



Slope-up time (0-10s, default 0s): amount of time that it takes to slope up from start current to weld current. To disable, set to 0.



Slope-down time (0-10s, default 0s): amount of time that it takes to slope down from welding current to finish current. To disable, set to 0.



Finish current (5-200A for AC TIG, 5-170 for DC TIG, default 5A): fill the crater at the end of welding.



Gas post-flow time (0-10s, default 5s): protect the welding pool and tungsten until it cool down.

Pulser parameter (following settings can be changed in real time during welding):



Peak current (5-200A for AC TIG, 5-170 for DC TIG, default 100A): When pulse is turned off, this control will adjust the welding current. When a remote current control (from both torch and foot pedal) is connected to the machine, this control is the maximum welding current the remote can reach.



Base current (5-200A for AC TIG, 5-170 for DC TIG, default 25A).



% Pulse time (5%-95%, default 40%): percentage of peak current time.



Pulse frequency (0.5-900Hz, default off): turn knob to far-left until "OFF" displayed in the left meter to turn the pulser off.

11. AC setting (TIG/STICK)

These settings can be changed in real time during welding.



AC balance (10-99%, default is 75%): percentage of time polarity is electrode negative. The electrode positive cycle insures that the aluminum oxide is thoroughly removed, allowing

the electrode negative cycle a thorough penetration of the base metal.



AC frequency (50Hz-250Hz, default 110Hz): AC frequency controls bead width, lower AC frequency gets wider weld bead/ puddle gets wider. As AC frequency increases, weld bead/puddle becomes narrower and the arc becomes more focused, which can allow travel faster.

12. STICK setting (STICK)

These settings can be changed in real time during welding.



Hot start (0-100%, default 70%): Percent above welding current for STICK only. Extra current added to the welding current when arc is initiated. It helps to improve the STICK arc strike at low welding current. Max 170A total current.



Stick welding current (5-170A, default 100A): Uses this setting to pre-set and adjust STICK welding current at real time. When a remote current control (from both torch and foot pedal) is connected to the machine, this control is the maximum welding current the remote can reach.



Arc force (0-100%, default 30%): Percent above welding current for STICK only. Also known as Dig or arc control, a setting kicks in when your rod is about to stick to workpiece. Increase the value will reduce the tendency of electrode sticking while welding. Max 170A total current.

13. Negative output connection (TIG/STICK)

14. Positive output connection (TIG/STICK)

15. Torch /Foot pedal control connection receptacle (12 pins) (TIG)

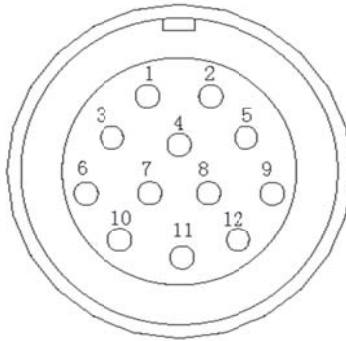


Figure 4.4

Socket	Foot pedal	On-off switch torch	Remote current torch	Up-down torch
1	Short with 2	-	-	-
2	Short with 1	-	-	-
3	Potentiometers +	-	Potentiometers +	-
4	Potentiometer Wiper	-	Potentiometer Wiper	-
5	Potentiometers -	-	Potentiometers -	-
6	-	-	-	up
7	-	-	-	down
8	Trigger switch	Trigger switch	Trigger switch	Trigger switch
9	Trigger switch	Trigger switch	Trigger switch	Trigger switch
10	-	-	Short with 11	-
11	-	-	Short with 10	-
12	-	-	-	-

- : Not used

Table 4.1

16. Torch shield gas connection (TIG)

17. Main power cable connection

18. Main power switch

19. Shield gas inlet (TIG): 5/8-18 right-hand threads female connection.

4-2. Parameter memory setting

The machine will automatically save current parameter setting to current job number every 3 seconds.

To change current job number, press down and release 4-way adjust knob at any time except during welding process. The current meter (left) will display "JOB" and voltage meter (right) will display current job number (default is job "0"), dial the knob to choose current job number from job 0-9. The machine is capable of memorizing up to 10 jobs. Press down the knob and release to finish job number choosing.

4-3. Parameter lockout

Before activating lockout, be sure that all procedures and parameters are established. Parameter adjustment is limited while lockout function is active.

Double-click the 4-way adjustment knob, the current meter (left) will display "LOC", voltage meter (right) will display "OFF". Dial the knob clockwise from 1 to 999 to select a password. Remember this number, as you will need it to turn the lockout function off. Dial the knob anti-clockwise until "OFF", and double click the knob to quit without parameters lock out.



IF YOU FORGET THE PASSWORD, THE MACHINE NEED BE SENT TO A WARRANTY DEPOT TO RESET AND IT IS NOT COVERED BY WELDKING® WARRANTY!

Double-click the knob to turn lockout on. The voltage meter (right) will display "LOC" and the 4-way adjustment knob will not respond to any operation except double-click. Anyway, you can still adjust the output current through torch or foot pedal remote control.

Double-click the 4-way adjustment knob again, the current meter (left) will display "LOC", voltage meter (right) will display "ON". Dial the knob until the voltage meter (right) display the same number that was used to turn on the lockout function. Double click the knob, if the password is correct, the lockout will be de-active and machine will resume the normal operation mode. If the password is not correct, the voltage meter (right) will display "LOC" and machine will stay in lockout mode.

4-4. Short circuit protection while welding

- TIG: After the welding arc has established, if the tungsten electrode touches the work the current will automatically drop to 20A at with lift arc mode and 0A at HF mode to prolong the life of tungsten and reduce the contamination to the work piece.
- STICK: If the electrode touches the work for more than two seconds the welding current will drop to 0A.

4-5. Operate with remote current control device connected

The machine can connect to foot pedal (part no. 07002510) or torch with remote current control (part no. 07002615) through 12pin control receptacle at the front panel. Machine will automatically sense and identify the devices when connected. All remote controls work at TIG mode only.

The maximum current remote control can adjust is limited to the current setting at machine. If you want to use panel to set the welding current while connecting to a remote current control torch, turn the current potentiometer in torch to max position, then you can adjust welding current by panel control.

The remote current control at torch can adjust main welding current (in case of pulsing, peak welding current) in both 2T and 4T mode. The foot pedal can adjust main welding current (in case of pulsing, peak welding current) in 2T mode, and will only act as an on/off switch only in 4T mode. Start current and finish current cannot be adjusted by remote control in 4T mode.

4-6. Operation(TIG)



USE SINGLE PHASE 208/230V POWER SUPPLY.

4-6.1. Always use DCEN (electrode connects to negative output) for both DC and AC, using pulse or not using pulse.

4-6.2. Connect up the shielding gas, foot pedal, torch and work lead to power source according to section 3-4, make sure connections are firm and reliable.

4-6.3. Switch on the power source. Select TIG mode (HF or lift arc) with the process selection control.

4-6.4. Set Welding parameters to desired value, refer to section 4-8: Welding parameter selection chart and section 4-1: front panel layout and description. Select use AC or DC and the pulse are on or off.

DC: used for steel or stainless steel welding.

AC: used for Tig welding aluminum (and its alloys) or magnesium. During the electrode positive half wave the oxide is broken. During the electrode negative half wave, the electrode cools, the workpiece melts and penetration occurs.

Pulse: usually used for thinner plate TIG welding which needs to carefully control the heat input and obtain "scale" type seam. Pulse frequency will influence the heat input, lower frequency have higher heat input in each pulse, so it is preferred for thicker plate. In the same time, lower frequency need high welding speed otherwise the interval between the melting nut will too large and deteriorate the seam strength.

4-6.5. The display value of digital current meter (left) will change when you turn the parameter adjust four-way knob to pre-set the parameters. And during welding, the amperage meter will reflect actual welding current output, and the voltage meter will reflect actual welding voltage.

4-6.6. Turn on the gas valve on the torch; adjust gas volume to 3-5L/MIN. check if there is gas leaking.

High frequency start: Hold the torch and keep tip of Tungsten electrode 2-3 mm above the work piece, and tilt 20-30 ° to vertical direction. Aim Tungsten electrode to the welding seam. Press torch trigger to strike arc.

Lift arc start: Touch tungsten electrode to workpiece at weld start point. **Hold electrode to Workpiece for 1-2 seconds**, and then slowly lift electrode. Arc is formed when electrode is lifted. Aim Tungsten electrode to the welding seam.

4-6.7. After arc is ignited, move the torch along seam evenly. Fine tune the welding parameter to obtain exquisite welding seam.

4-6.8. After finish operation, turn off the gas valve. At the end, turn off welding power source and wall switch.

4-7. Operation(STICK)



USE SINGLE PHASE 208/230V POWER SUPPLY.

4-7.1. DCEP (electrode connect to positive output) is most common used connection for STICK welding. In some case, DCEN or AC connection is required according to the specification of the electrode used.

4-7.2. Connect up the electrode holder, earth lead to power source according to section 3-6: STICK welding connection diagram, make sure connections are firm and reliable.

4-7.3. Switch on the power source. Select STICK mode with the process selection control.

4-7.4. Set Welding parameters to desired value, refer to section 4-8: Welding parameter selection chart and section 4-1: front panel layout and description. Select use AC or DC.

4-7.5. Drag electrode across workpiece like striking a match; lift electrode slightly after touching work. If arc goes out electrode was lifted too high. If electrode sticks to workpiece, use a quick twist to free it.

4-7.6. At the end, turn off welding power source and wall switch.

4-8. Welding Parameter selection chart

The setting listed below is just for initial commission of the machine. The parameter can be refined during welding.

4-8.1. TIG welding parameter



CAUTION!

GRINDING THE TUNGSTEN ELECTRODE PRODUCES DUST AND FLYING SPARKS WHICH CAN CAUSE INJURY AND START FIRES. USE LOCAL EXHAUST AT THE GRINDER OR WEAR AN APPROVED RESPIRATOR

Plate thickness (mm)	Tungsten electrode diameter(mm)	Taper of tungsten electrode (°)	Tungsten electrode end diameter (mm)	Welding current (A)	Max argon flow rate (L/min)	Weld layer
0.2	1.0~1.6	10	0.1	10-15	2	1
0.4	1.0~1.6	20	0.12	15-20	2.5	1
0.6	1.0~1.6	20	0.25	15-30	2.5	1
1.0	1.0~1.6	25	0.50	25-50	3	1
1.6	1.0~1.6	30	0.75	50-70	4	1
2.4	1.6~2.4	35	0.75	65-95	6	1
3.0	1.6~2.4	45	1.10	90-120	7	1-2

Table 4.2

4-8.2. STICK welding parameter

Electrode diameter (mm)	Welding current (A)	Welding voltage(V)
1.0	20~60	20~23
1.6	44~84	22~24
2.0	60~100	22~24

2.5	80~120	23~25
3.2	100~150	24~26
4.0	140~180	25~27

Table 4.3

SECTION 5 TROUBLE SHOOTING

5-1. General trouble shooting

No.	Problem		Cause	Solution
1	Power Indication lamp does not on after switch on the main switch		Loose contact at input lead	Check contact situation
			Lamp malfunction, poor contact	Check contact situation. Replace lamp pr7
			Main switch malfunction	Check switch, replace if necessary
2	Cooling fan stops to rotate after machine has worked a period	Power indication lamp on	Cooling fan circuit malfunction	Check fan circuit
			Cool fan failure	Check fan, replace if necessary
			The start capacitor of fan damaged	Change capacitor
	Power indication lamp off	See No. 1		
3	protection light on		Work excess the rate duty circle	Use under rate duty circle
			Input voltage is too high or too low	Use under rated input voltage

			Abnormal current in the main circuit	Check and repair the main circuit and drive PCB Pr6
4	No AC output while selecting “AC”		Faulty power supply PCB	Check, repair or replace
			Faulty secondary inverter drive PCB	Check, repair or replace
			Faulty secondary IGBT module	Check and replace
5	The digital meter do not display properly		The LED is broken	Change the LED
6	The preset current range does not meet the machine specification		Initial setting at PCB is not accurate	Adjust potentiometer Imin on the control PCB for min current and Imax for max current
7	No OCV		Problem main circuit	Check control PCB, Power PCB and IGBT module
8	No gas flow out after pull the gun trigger	Contactor closed	Input voltage is too low	Use rated input voltage
			Gas pressure not enough	Check gas pressure

			Poor gas hose connection	Check gas connection	
			Solenoid valve failure	Check and replace Solenoid valve	
			Gas passage problem	Check and repair the gas passage	
			Torch gas hose problem	Check and repair torch cable	
		Contactor did not close		Gun trigger failure	Check gun trigger
				Control circuit failure	Replace circuit board
				Loose contactor plug	Check contactor plug
				Contactor poor contact	Replace contactor
				Control transformer failure	Replace transformer
9	Wall breaker jump	Rectifier short circuit	Check and replace		
		Main transformer short circuit	Check and replace		

		Control transformer short circuit	Check and replace
		Solenoid valve short circuit	Check and replace
		Cooling fan short circuit	Check and replace

Table 5.1

5-2. TIG/STICK welding trouble shooting

No.	Problem	Cause	Solution
10	Erratic or improper weld output.	Wrong cable size	Choose the right cable size
11	Cable or receptacle too hot.	Wrong electrode holder size	Choose the right size electrode holder
		Poor contact between welding or earth cable and receptacle at machine	Clean and tighten all weld connections
		Poor connection between electrode hold and welding cable	Clean and tighten

12	Failure of arc to ignite or does not ignite properly	Spark on the HF igniting board when pull the trigger.	Gas hose not installed properly leaking happen in gas route, gas mixed by air	Connect the gas hose firmly and check possible leaking in gas route
			Welding cable broken or poor contact.	Check the cable and connection
			Earth cable broken or poor contact	Check the cable and connection
			Weldking cable too long	Use proper length welding cable
			Dirt or oil in the workpiece	Clean workpiece surface
			Tungsten tip too far away from workpiece	Reduce the distance to about 3mm
		No spark on the HF igniting board when pull the trigger.	HF ignition PCB broken	Change HF ignition PCB
			The distance between the HF discharger poles is too close.	Adjust distance to about 0.7mm
			Fuse melt or poor contact	Check and repair
			Control circuit board failure	Check and repair the circuit board
			AC Contactor failure	Check, repair, replace

			Gun trigger or control cable broken	Check, repair, replace
			Control transformer failure	Check, repair, replace
			Main transformer failure or poor contact	Check, repair, replace
13	Unstable or wandering arc		Gas not pure	Changes gas
			Gas pressure too high	Reduce pressure
			Control circuit failure	Check, repair, replace circuit board
			Welding cable size or type is not proper	See table 2.3
			Electrode selection is not proper	See Table 3.2
			the work piece surface contaminated by oil	Clean the workpiece surface
			Poor contact inside the gun	Check, repair, replace
			Rectifier failure	Check, replace
			Output reactor failure	Check, replace
			Output capacitor failure	Check, replace
			Remote control failure	Check resistance and connections for remote Amperage control potentiometer

14	Tungsten electrode oxidizing(not bright) after welding	Gas shield inadequate	check nozzle
		Gas not pure	Check if there is water in torch and repair. Check and tight all gas fitting
		Gas pressure inadequate	Increase gas pressure

Table 5.2

SECTION 6 MAINTENANCE

6-1. Maintenance

Periodic maintenance is necessary for keeping the machine work properly.



CAUTION!

DISCONNECT POWER INPUT AND SWITCH OFF THE MAIN POWER SWITCH BEFORE START OF MAINTENANCE.

Regular Check and Inspection	6 Month Routine Maintenance
<ul style="list-style-type: none"> • Replace unreadable labels. • Clean spatter inside the nozzle when continuously use the machine. • Check and change broken parts in the torch to avoid damage to the torch and machine. • Check the function of all switches. • Check if the fan rotates properly and if there is air venting out from back of the machine. • Pay Attention to the abnormal vibration, noise, smell and gas leakage during operation. • Check if the welding cables are over heated. • Check if the cable connections are over heated. • Check if the cable is connected firmly and properly, if it is broken and cause bad insulation. • Check the cover grounded properly. 	<ul style="list-style-type: none"> • Blow out with dry clean pressure air or vacuum inside machine, especially transformer coil and power component. • Check the electric connection of input/output bar to avoid bad contact caused by loose or rusted screw.

Table 6.1

6-2. Safety precaution

6-2.1. Welders must be equipped with welding mask, gloves and tie the sleeves and collar properly. Use Table 6.2 to choose proper glass shade, also can reference to ANSI Z49.1 listed in Safety Standards. There should be an arc shield around welding field to protect others from arc shock.

6-2.2. Do not weld near flammable, explosive materials or gases.

6-2.3. Gas cylinder must be located at a safe and steady place to avoid injury others.

6-2.4. Keep finger, hair and clothing away from the rotating fan.

6-2.5. The power source must be grounded when welding.

6-2.6. When yellow protection light is enlightened during welding, it is indicating that the welder is over current or over heat, and automatic protection will be triggered. Stop welding immediately and wait until welder cool down.

6-2.7. Welding machine should not work in a flammable and toxic environment, avoid moisture,

rain, and do not directly expose to sun.

6-2.8. Do not switch off the welder during welding!

6-2.9. Periodically maintain the machine and clean the dust inside.

Lens Shade Selector Guide

Operation /Process	Electrode Size (mm)	Arc Current (Amperes)	Minimum Protective Shade	Suggested* Shade No. (Comfort)
Shielded metal arc welding (SMAW)	Less than 3/32(2.5)	Less than 60	7	—
	3/32–5/32 (2.5–4)	60–160	8	10
	5/32–1/4 (4–6.4)	160–250	10	12
	More than 1/4 (6.4)	250–550	11	14
Gas tungsten arc welding (GTAW)		Less than 50	8	10
		50–150	8	12
		150–500	10	14
AWS F2.2:2001 (R2010), Adapted with permission of the American Welding Society (AWS), Miami, Florida				

Table 6.2

NOTES

WELDKING® PulseWave200

SECTION 7 PARTS LIST

7-1. Power Source

Item	Order No.	Description	Note	Qty
1	8.301RM.505	cover	TIG 200AC DC S.006RM.505	1
2	8.068.011-B	rear penal	WS-160 curved	1
3	8.232.738	toggle switch	LIGHT COUNTRY 25A/250V	1
4	8.462.641	gas inlet	GT-2000/Female 5/8-18	1
5	8.304RM.002-A	1225 fan frame	milling chamfer inside	1
6	7.720.010	Fan	AG12024XB257100 ADDA	1
7	8.123RM.922	support plate	AC/DC middle plate. Enhanced nylon	1
8	W.496RM.312	TIG200ACDC full function Control PCB	base board(B.067RM.312)	1
9	8.422RM.224	heat sink (2)		1
10	8.422RM.225	heat sink (3)		1
11	8.422RM.223	heat sink (1)	TIG 200AC DC section bar 7.800.013	1
12	7.425.555	primary invert IGBT module	STGW60V60DF	4
13	7.231.088-A	thermistor	CWF4B103J4250 length15cm	2
14	7.411.250	Rectifier bridge	BR6010 (32*32)	1
	8.212.020	Rectifier bridge positioning cap	φ13.5*7.3 DMC	1
15	W.496RM.283-B	AC/DC TIG200 primary invertor PCB AND POWER SUPPLY PCB WITH HF PCB	Base board(B.067RM.283-B)	1

16	W.496RM.284	AC/DC TIG display PCB	Base board(B.067RM.284)	1
17	7.458.505	knob	25*15 median size, black body/grey cap without needle	1
18	8.306RM.505	front penal	TIG 200AC DC S.006RM.505	1
19	8.069RM.935-A	front cover		1
20	8.462.010-E	front gas outlet	M12*1 5/8-18UNF	1
21	7.132.012	12pin Circular Connectors	WEIPU SP2112/S12 SERIES CE	1
22	7.152.313-A	quick connection socket(without plastic sleeve) (zhengyuan)	CX58 35-70MM hexagonal thickness 12MM	2
23	7.682.202	rubber pad(small, high)	20 small, high	4
24	7.321.351	Hull current sensor	BLY2-200IOV2L(BYD)	1
25	8.123RM.242	inductance insulation plate	plastic, induction insulation PCB with 6.271RM.004	1
26	6.271RM.133	inductance	TIG-250S UR22 hf inductance with (3.006RM.133)	1
27	L.185RM.505	transformer	TIG 200AC DC 40% duty cycle	1
28	8.123RM.248	support frame	TIG 200AC DC S.006RM.505	1
29	7.503.519-A	hexagonal separation bar	HTS-419 black	4
	7.927.104-A	plastic screw	PF-408 black	6
30	8.055RM.505	bottom plate	TIG 200AC DC S.006RM.505	1
31	7.421.180	quick restore diode	60APU04	8
32	8.422RM.228	heat sink(6)	TIG 200AC DC section bar7.800.014	1
33	8.422RM.229	heat sink(7)	TIG 200AC DC section bar7.800.014	1

34	8.422RM.227	heat sink(5)	TIG 200AC DC section bar7.800.014	1
35	W.496RM.285-D	AC/DCTIG200 secondary inverter PCB	Base board(B.067RM.285-D)	1
36	8.422RM.226	heat sink(4)	TIG 200AC DC section bar7.800.014	1
37	8.422RM.230	heat sink(8)	TIG 200AC DC section bar7.800.014	1
38	7.425.670	secondary invert IGBT module	FGA180N33ATD	8
39	8.123RM.923	solenoid valve box	enhanced nylon	1
40	7.253.013	solenoid valve	model:YG2T-2 work pressure:0~0.8MPa input:DC24V (gas inletφ6)	1
41	7.154.438-G	Power plug	US XN650P	1

Table 7.1

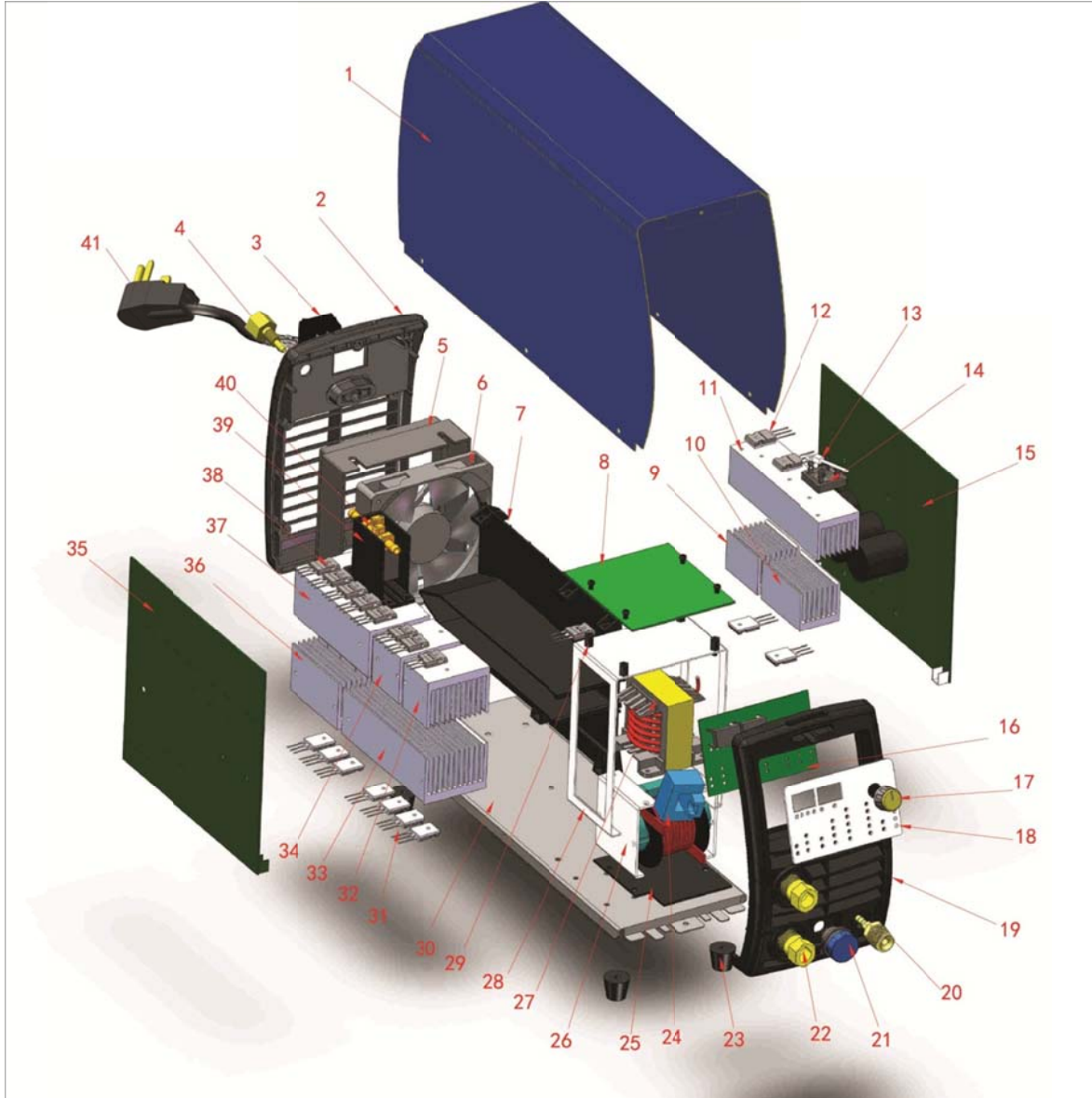


Figure 7.1

7-2. TIG torch

WeldKing® PRO26, Order No. 07002610

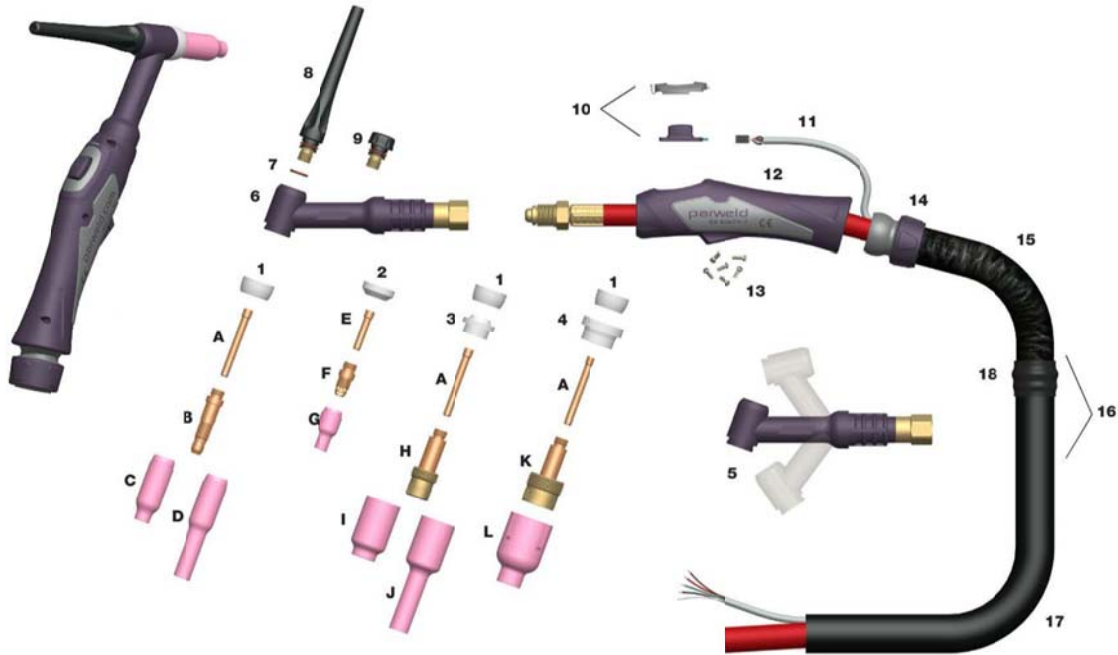


Figure 7.2

ITEM	DESCRIPTION	ORDER NO.
1	Cup gasket	18CG
2	Cup gasket for stubby collet body	18CG20
3	Gas lens insulator(use with 18CG)	54N01
4	Insulator large diameter gas lens(use with 18CG)	54N63
5	Torch head flexible	PRO26FX
6	Torch head include cup gasket	PRO26
7	Back cap O ring	98W18
8	Back cap long	PRO57Y02
9	Back cap short	PRO57Y04
10	Momentary switch kit(default)	PRO1MS

11	Connector+leadsx8m/26ft	PROSWL8
12	Pro-Grip TIG handle large	PROH200
13	Screw pack	PROSP
14	Knuckle joint c/w lock nut	PROKJ200
15	Leather cover x0.8m/2.6ft	PROLC200-08
16	Complete cover assembly x8m/26ft	PROCO200-80
17	Neoprene cover x7.2m/23.6ft	PRONCL-72
18	Sheath joint repair kit	PROJK200

Table 7.2

Consumables

ITEM	DESCRIPTION	ORDER NO.
Standard collet		
A	Collet 0.020", Φ 0.5mm bore	10N21
	Collet 0.040", Φ 1.0mm bore	10N22
	Collet 1/16", Φ 1.6mm bore	10N23
	Collet 3/32", Φ 2.4mm bore	10N24
	Collet 1/8", Φ 3.2mm bore	10N25
	Collet 5/32", Φ 4.0mm bore	54N20
Standard collet body		
B	Collet body 1/8", Φ 3.2mm bore	10N29
	Collet body 0.020", Φ 0.5mm bore	10N30
	Collet body 0.040", Φ 1.0mm bore	10N31
	Collet body 1/16", Φ 1.6mm bore	10N32
	Collet body 3/32", Φ 2.4mm bore	10N28
	Standard collet body 5/32", Φ 4mm bore	406488
Standard ceramic cup		
C	Standard ceramic cup 1/4", Φ 6mm bore	10N50

	Standard ceramic cup 5/16", Φ 8mm bore	10N49
	Standard ceramic cup 3/8", Φ 10mm bore	10N48
	Standard ceramic cup 1/2", Φ 13mm bore	10N47
	Standard ceramic cup 5/8", Φ 16mm bore	10N46
	Standard ceramic cup 3/4", Φ 19mm bore	10N45
	Standard ceramic cup 1/4", Φ 6mm bore	10N44
Standard long ceramic cup		
D	Long ceramic cup 5/16", Φ 8mm bore	10N49L
	Long ceramic cup 3/8", Φ 10mm bore	10N48L
	Long ceramic cup 7/16", Φ 11mm bore	10N47L
Stubby series collet		
E	Stubby Collet 0.020", Φ 0.5mm bore	10N21S
	Stubby Collet 0.040", Φ 1.0mm bore	10N22S
	Stubby Collet 1/16", Φ 1.6mm bore	10N23S
	Stubby Collet 3/32", Φ 2.4mm bore	10N24S
	Stubby Collet 1/8", Φ 3.2mm bore	10N25S
Stubby collet body		
F	Stubby Collet body 0.020"-1/8", Φ 0.5mm- 3.2 mm bore	17CB20
Stubby standard ceramic cup		
G	Standard ceramic cup 1/4", Φ 6mm bore	13N08
	Standard ceramic cup 5/16", Φ 8mm bore	13N09
	Standard ceramic cup 3/8", Φ 10mm bore	13N10
	Standard ceramic cup 7/16", Φ 11mm bore	13N11
	Standard ceramic cup 1/2", Φ 13mm bore	13N12
	Standard ceramic cup 5/8", Φ 16mm bore	13N13
Gas lens body		
H	gas lens body 0.020", Φ 0.5mm bore	45V29

	gas lens body 0.040", Φ 1.0mm bore	45V24
	gas lens body 1/16", Φ 1.6mm bore	45V25
	gas lens body 3/32", Φ 2.4mm bore	45V26
	gas lens body 1/8", Φ 3.2mm bore	45V27
Standard gas lens cup		
I	Standard gas lens cup 1/4", Φ 6mm bore	54N18
	Standard gas lens cup 5/16", Φ 8mm bore	54N17
	Standard gas lens cup 3/8", Φ 10mm bore	54N16
	Standard gas lens cup 7/16", Φ 11mm bore	54N15
	Standard gas lens cup 1/2", Φ 13mm bore	54N14
	Standard gas lens cup 11/16", Φ 17mm bore	54N19
Long gas lens cup		
J	Long gas lens cup 5/16", Φ 8mm bore	54N17L
	Long gas lens cup 3/8", Φ 10mm bore	54N16L
	Long gas lens cup 7/16", Φ 11mm bore	54N15L
Large diameter gas lens body		
K	Large dia gas lens body 1/16", Φ 1.6mm bore	45V116
	Large dia gas lens body 3/32", Φ 2.4mm bore	45V64
	Large dia gas lens body 1/8", Φ 3.2mm bore	995795
Large diameter gas lens cup		
	Large diameter gas lens cup 1/2", Φ 15mm Bore	57N74
L	Large diameter gas lens cup 3/8", Φ 10mm Bore	57N75
	Large diameter gas lens cup 3/4", Φ 19mm Bore	57N87
	Large diameter gas lens cup 5/8", Φ 16mm Bore	57N75

Table 7.3

NOTES

WELDKING® PulseWave200

SECTION 8 ELECTRIC DIAGRAM

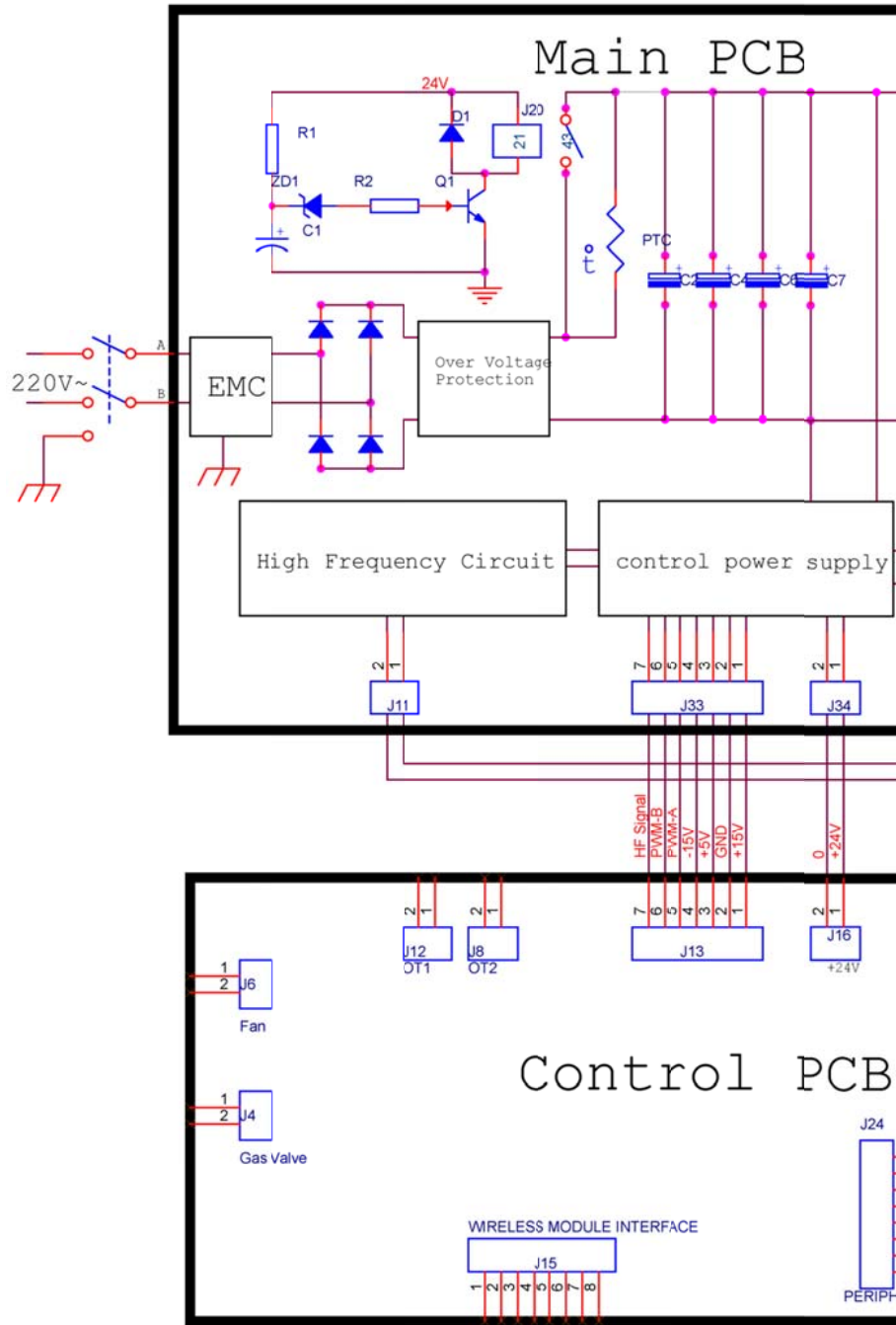


Figure 8.1

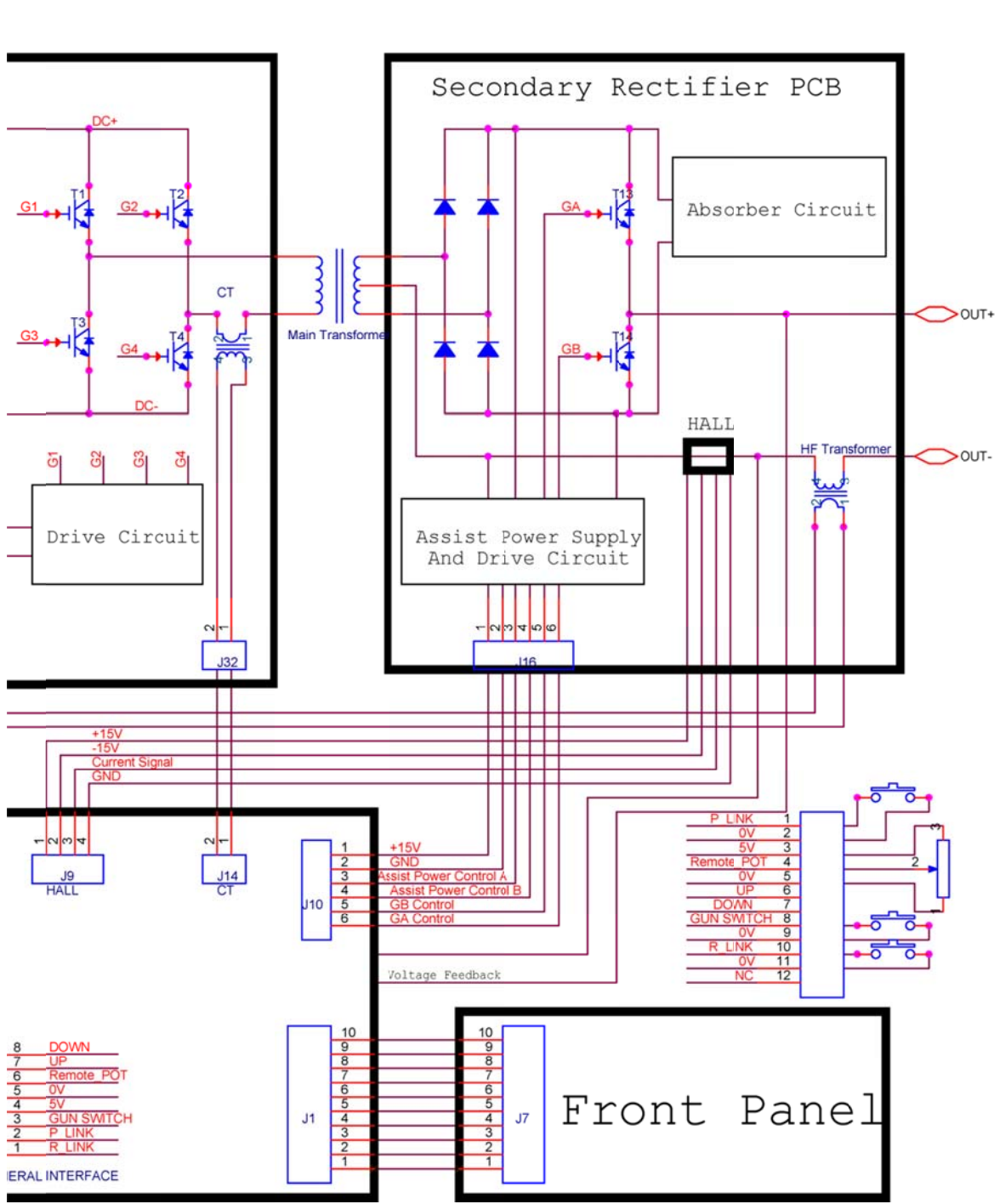


Figure 8.2

SECTION 9 WARRANTY POLICY

Malo Welding Products Ltd., Warranty Policy

Effective August 1st, 2004, revision at April 1st, 2011

LIMITED WARRANTY - Subject to the terms and conditions below, Malo Welding Products Ltd.(WELDKING®) endeavors to provide high quality products and product support to its customers and therefore backs up all of its new products purchased from Malo Welding Products Ltd.(WELDKING®) or any authorized Malo Welding Products Ltd.(WELDKING®) distributor/service center after the effective date of this limited warranty and is free of defects in material and workmanship at the time it is shipped. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE OF THE MALO WELDING PRODUCTS LTD.(WELDKING®) WARRANTY. MALO WELDING PRODUCTS LTD.(WELDKING®) DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, REGARDING THE PRODUCTS, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT. IN THE UNITED STATES, SOME STATES DO NOT ALLOW THE EXCLUSION OF THE IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.

Malo Welding Products Ltd.(WELDKING®) shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a North American distributor.

(1) 3 Years - Parts and Labor

Power Sources

Wire Feeders

(2) 90 Days - Parts (No Labor)

Guns

Remote Controls

Accessory Kits

Replacement Parts (No labor)

Malo Welding Products Ltd.(WELDKING®)'s limited Warranty shall not apply to:

(1) Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear.

(2) All limited warranties are void for, and Malo Welding Products Ltd.(WeldKing®) does not warrant in any way, any product that evidences misapplication, improper installation, abuse, lack of maintenance, negligence in use or care, abnormal use, alteration of design, use of incompatible or corrosive chemicals, and/or servicing, installation of parts, or repairs by anyone other than Malo Welding Products Ltd.(WELDKING®) or a Malo Welding Products Ltd.(WELDKING®) authorized distributor or service center. Malo Welding Products Ltd.(WELDKING®) may make changes in products it manufactures and markets at any time; these changes are made without obligation to change, retrofit, or upgrade any product previously sold or manufactured.

MALO WELDING PRODUCTS LTD.(WELDKING®) 'S PRODUCTS ARE FOR COMMERCIAL/INDUSTRIAL USE

AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING/PLASMA CUTTING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Malo Welding Products Ltd.(WELDKING®)'s option: (1) repair; or (2) replacement; or, where authorized in writing by Malo Welding Products Ltd.(WELDKING®), in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. No compensation or reimbursement for transportation costs of any kind will be allowed.

LIMITATION OF DAMAGES: THE REMEDY OF REPLACEMENT OR REPAIR OF ANY DEFECTIVE GOODS SHALL BE THE EXCLUSIVE REMEDY UNDER ANY WARRANTY MADE BY MALO WELDING PRODUCTS LTD.(WELDKING®), WHETHER EXPRESS OR IMPLIED. IN NO EVENT SHALL MALO WELDING PRODUCTS LTD.(WELDKING®) BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, PROPERTY DAMAGES, OR PERSONAL INJURIES.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MALO WELDING PRODUCTS LTD.(WELDKING®), IS EXCLUDED AND DISCLAIMED BY MALO WELDING PRODUCTS LTD.(WELDKING®).

If any provision or portion of this limited warranty policy is found to be unenforceable, then the remaining provisions and portions shall remain valid and enforceable. If any provision or portion of this limited warranty policy is found to be limited by law, then that provision or portion shall be construed to make it effective within the bounds of law.

To obtain warranty service you must active your product(s)'s warranty online at weldking.com or mail the product registration card included in the package to Malo Welding Products Ltd.(WELDKING®) right after the purchase. When there is a warranty issue, return the defective welding machine or plasma cutting machine along with proof of purchase to any WeldKing® Authorized Warranty Depot. For the location of the nearest WeldKing® Authorized Warranty depot or for service information in the United States or Canada, please telephone toll free: 1-866-686-5088 or visit www.weldking.com (USA & Canada).available, but may vary from province to province.

SECTION 10 AUTHORIZED SERVICE CENTER

Please go to our website www.weldking.com to fill the warranty registration form. Malo Welding Products Ltd. will not distribute or disclose customer's private information to any third party and will not send promotion material to the customer.

Find your nearest warranty center at:

<http://www.weldking.com/servicelocations.aspx>

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