



MULTISONIC220

OWNER'S

MANUAL



MIG (GMAW)
Flux cored (FCAW)



TIG (GTAW)



STICK (SMAW)

Arc Welding Power Source

Manufactured at



Certified Facility

Serial Number: _____

Where Purchase: _____


Date of purchased: _____




READ INSTRUCTIONS!

- ✓ Consult the Owner's Manual for welding safety precautions.
- ✓ Use only genuine replacement parts
- ✓ While the information contained in this Manual represents the Manufacturer's best judgment, the Manufacturer assumes no liability for its use.

Owner's Record


Register your product
Active your warranty

[Click Here ▶](#)



Model Name: _____

Date of purchased: _____

Serial Number: _____

Where Purchase: _____

- ✓ Proof of ownership
- ✓ Recall notifications
- ✓ Track repair history
- ✓ Efficient service

Fail to register May void

WeldKing™ hassle free warranty

visit www.weldking.com and log into Product registration page, only take a few minutes!
If you do not have access to internet, fill the form in the back of this card and mail to us.



NOTES

WELDKING® MultiSonic220 power source

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WELDKING® MultiSonic220 power source

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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 procedure 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 coupe 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.



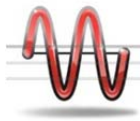
MOVING PARTS can cause injury.
DES ORGANES MOBILES peuvent provoquer des blessures.

- 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.ihc.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.ihc.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 recherché 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 recherché 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.
2. Disposer les câbles d'un côté et à distance de l'opérateur.

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

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 concer ne les sti mulateurs 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 précédente

SECTION 2 PACKING LIST

MultiSonic220 package (Part No: WMP02000)		
Description	Part no	Quantity
MultiSonic220 Power source come with 10 ft. (3 M) Power cord and molded NEMA 6-50P 230V AC Plug	n/a	1
WeldKing NT1-3E industrial Welding gun-Tweco style consumables, 10ft(3M)	KAM31003	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 10ft (3M) #4 lead and 50mm male Dinse plug.	07000462	1
200Amp electrode holder with 13ft(4M) #4 lead and 50mm male Dinse plug	07000463	1
Adapter Cable 1.5FT, NEMA 6-50R 230V to 5-20P 120V	07001825	1
Owner' manual	WDP90100	1

Table 2.1

SECTION 3 BASIC INFORMATION

3-1. Power source specifications

MultiSonic220 package (Part No: WMT05000)						
Power supply	AC 115V,60Hz,1 phase			AC (208)V/230V,60Hz, 1 phase		
Welding Process	MIG	STICK	TIG	MIG	STICK	TIG
Input Amps @ Maximum output(A)	22.4	17.5	18.4	15.9	15	11.8
Rated input (KW)	4.0	3.5	3.2	6.2	6.2	4.2
Amperage range(A)	40-180	10-110	10-150	40-240	10-200	10-200
Duty cycle (%) @ 40°C	140A/35%/21V 110A/60%/19.5V 85A/100%/18.3V	110A/30%/24.4V 80A/60%/3.2V 65A/100%/22.6V	150A/40%/16V 125A/60%/15V 95A/100%/13.8V	200A/30%/24V 145A/60%/21.3V 110A/100%/19.5V	200A/35%/28V 155A/60%/25.2V 120A/100%/24V	200A/25%/18V 130A/60%/16.2V 100A/100%/14.8V
OCV (V)	65					
Wire diameter(mm)	Steel: 0.6(023)-0.9(035), Flux cored: 0.9(035)-1.2(045), Aluminum: 0.9(035)-1.2(045)					
Power factor	0.99					
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)					
Power source dimension (HxWxD) (CM)	51x21x40(20x8.2x15.7in)					

Power source weight (KG)	15(33lbs)
Packing dimension (HxWxD)(CM)	63x38x52(24.8x15x20.4in)
Packing weight(KG)	23(50.7lbs)

Table 3.1

3-2. MIG torch specifications

Model	NT1-3E (Part no. KAM31003)
Rated current(A)	200A/CO2,180A/MIX
Rated duty cycle (%)	60%
Rated voltage(V)	<=113V
Cooling style	Air cooled
Air consumption (l/min)	10-18
Cable length(M)	3(10ft)
Connection	euro connection
Detailed gun specification please see separate torch manual.	

Table 3.2

3-3. Process/Polarity Table

Process	Polarity	Cable Connections	
		Cable To torch/electrode holder	Cable To Work
GMAW— Solid wire with shielding gas	DCEP – Reverse polarity	Connect to euro connection	Connect to negative(-)output terminal

FCAW – Self-shielding wire- no shielding gas	DCEN – Straight Polarity	Connect to euro connection	Connect to positive(+)output terminal
STICK process	DCEP – Reverse polarity	Connect to positive(+) output terminal	Connect to negative(-)output terminal
TIG process	DCEN – Straight Polarity	Connect to negative(-) output terminal	Connect to positive(+)output terminal

Table 3.3

SECTION 4 INSTALLATIONS

4-1. MIG welding connection diagram

MultiSonic220 (115v input)

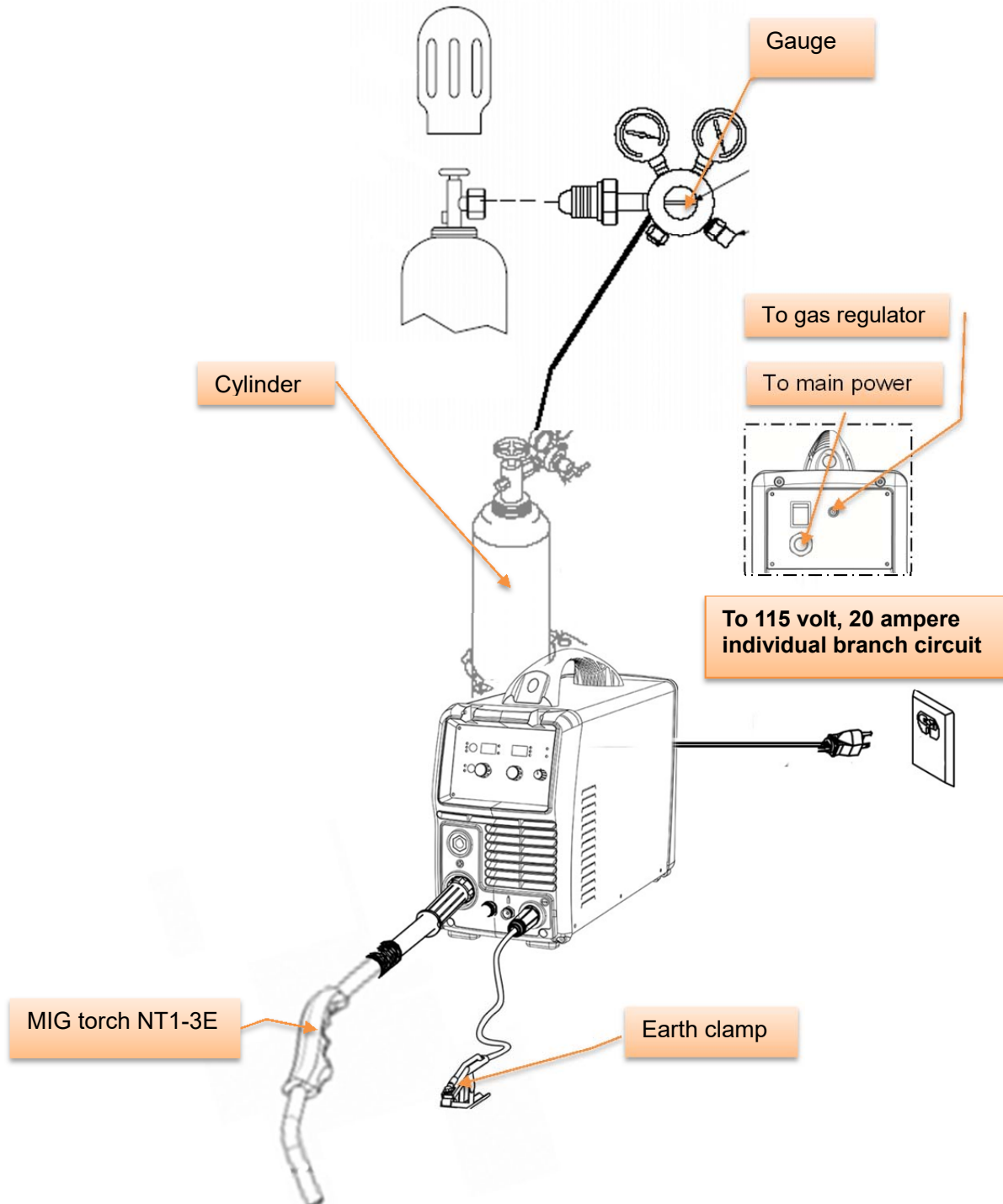


Figure 4.1

MultiSonic220 (208/230v input)

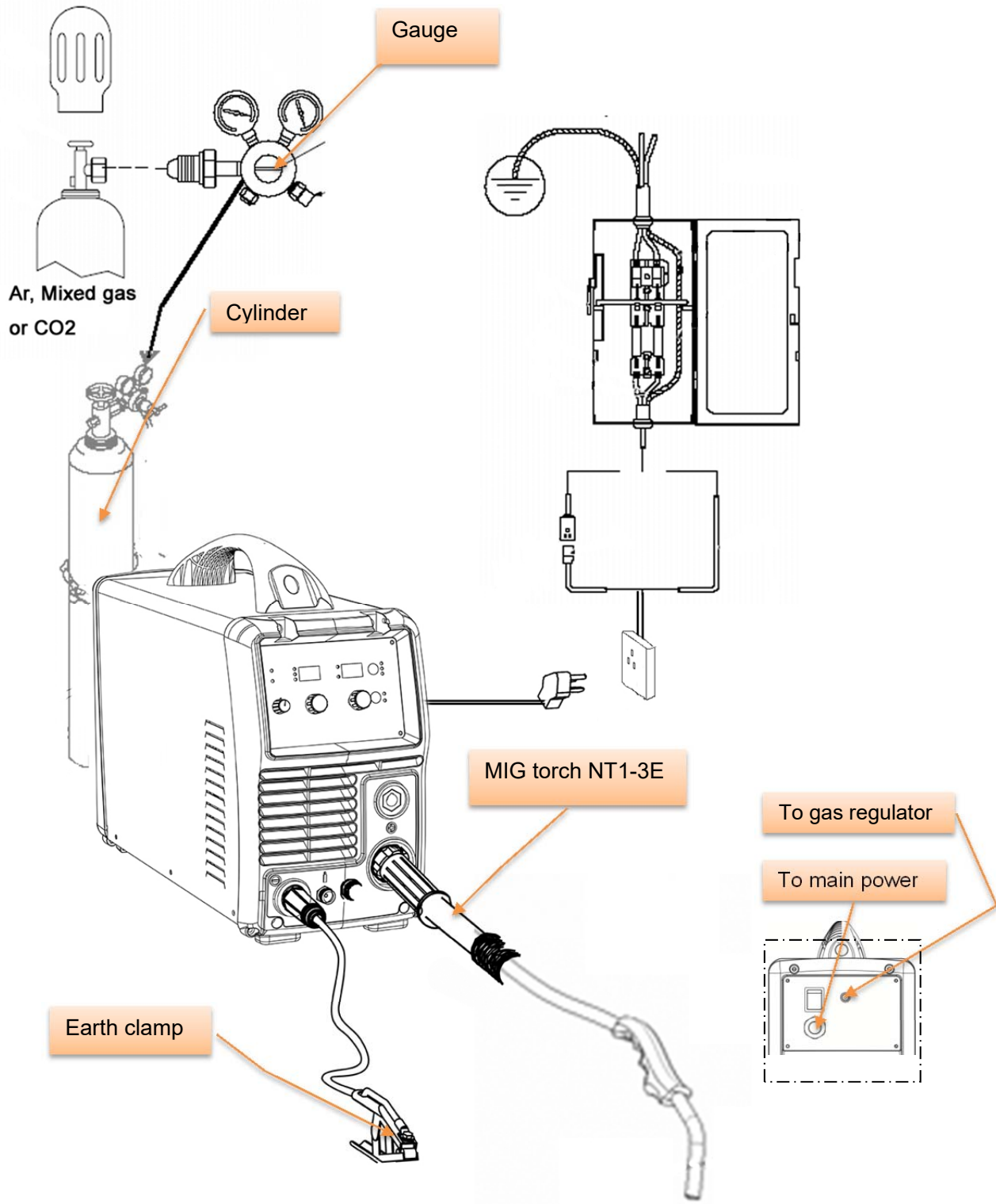



Figure 4.2

4-2. General installation procedure for MIG welding

4-2.1. Welding machine should be installed in a stable position and with good ventilation. Avoid direct sun outdoors or rain. Place at a distance of 12" (300mm) or more from walls or similar that could restrict natural air flow for cooling. Avoid transport in invert or side position.

4-2.2. Switch the ON/OFF Switch to OFF.

4-2.3. Connect MIG torch to the euro connection and connect the work lead cable to the negative output terminal, insert quick connector into receptacle and turn 90° clockwise. Refer to section 4-1. **Note: Connection hardware must be tightened with proper tools. Do not just hands tighten hardware! A loose electrical connection will cause poor weld performance and excessive heating at the terminal block.**

4-2.4.  Make sure the spool gun selection switch set to "off". If this switch is set to "on", the motor will not active when press the gun trigger.

4-2.5. Connect the gas line/hose to the proper shielding gas source. Refer to section 4-1

4-2.6. Slowly open the Argon Cylinder Valve to the fully open position.

4-2.7. Connect the work lead clamp to your work piece.

4-2.8. Connect machine with 115/208/230V single phase power supplies.

4-3. How to Install the wire spool

4-3.1. Unscrew spool nut from hub. Place wire spool on hub to rotate clockwise as wire is unwound; hub pin must engage hole in spool. Install spool nut.

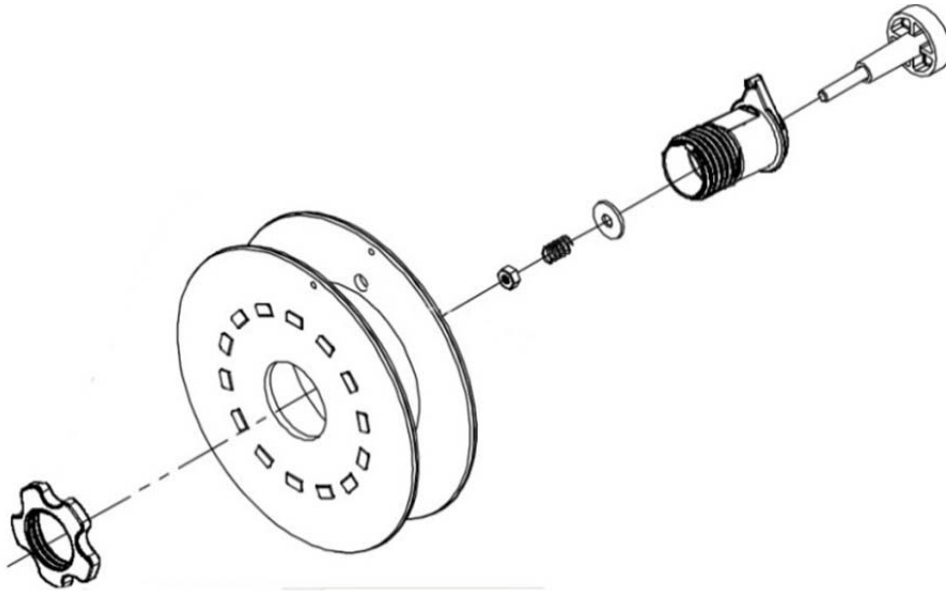


Figure 4.3 Installing 8" (200mm) Diameter Spool

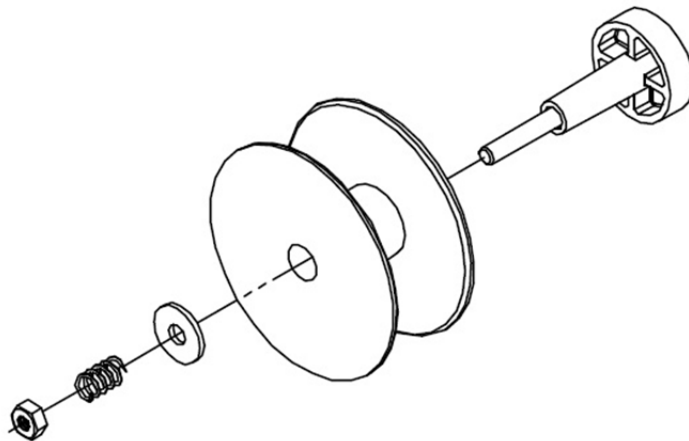


Figure 4.4 Installing 4" (100mm) Diameter Spool

4-3.2. The drive roll has two grooves; the small groove feeds 0.035 in. diameter wire, the large groove feeds 0.045 in. wire. The groove nearest the gear motor feeds the wire.

4-3.3. Release pressure drive roll assembly and lift upward. Check that proper wire diameter groove is in the inner position. Feed the wire from the spool through the inlet guide, across the drive roll groove and into gun outlet guide. Lower pressures roll assembly and secure. Check that the gears mesh. Feed wire through to torch tip by press the "JOG" switch inside the compartment.

4-4. How to Adjust wire feed pressure

Make sure that the wire moves smoothly through the wire guide. Then set the pressure of the wire feeder's pressure rollers. It is important that the pressure is not too high. Feed out the wire against an insulated object, e.g. a piece of wood. When you hold the gun approx. 5 mm from the object, the feed rollers should slip. When hold the gun approx. 50mm from the object, the wire should be fed out and band. Now the pressure is properly set. See Figure 4.5

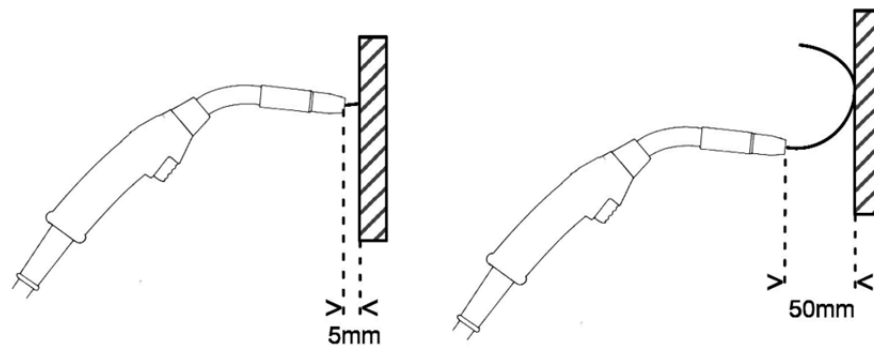


Figure 4.5

4-5. How to Install spool gun(optional)

MultiSonic220 use WeldKing® SpoolKing-24DL (Part no. 07NS1010) only. Use other model may not work properly.

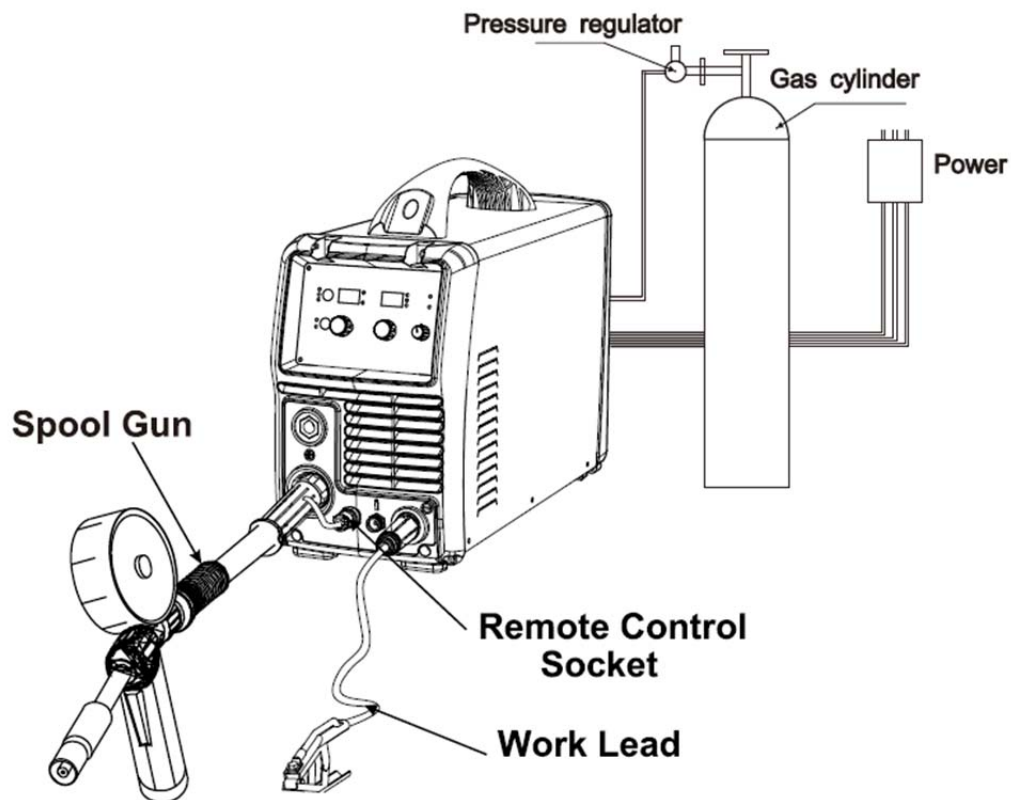


Figure 4.6

Connect spool gun to the euro receptacle. Connect 9 pin control cable to control receptacle located at front panel.



Toggle the spool gun selection switch (item 24 figure 5.2) to “on” .

Toggle the remote selection switch (item 25 figure 5.2). to “on” if want to use wire feeding control in spool gun to adjust wire feeding speed, toggle the remote selection switch to “off” if use machine panel control to adjust wire feeding speed.

Install wire and commission according to spool gun instruction manual.

4-6. TIG(DC) welding connection diagram

MultiSonic220 (115v input)

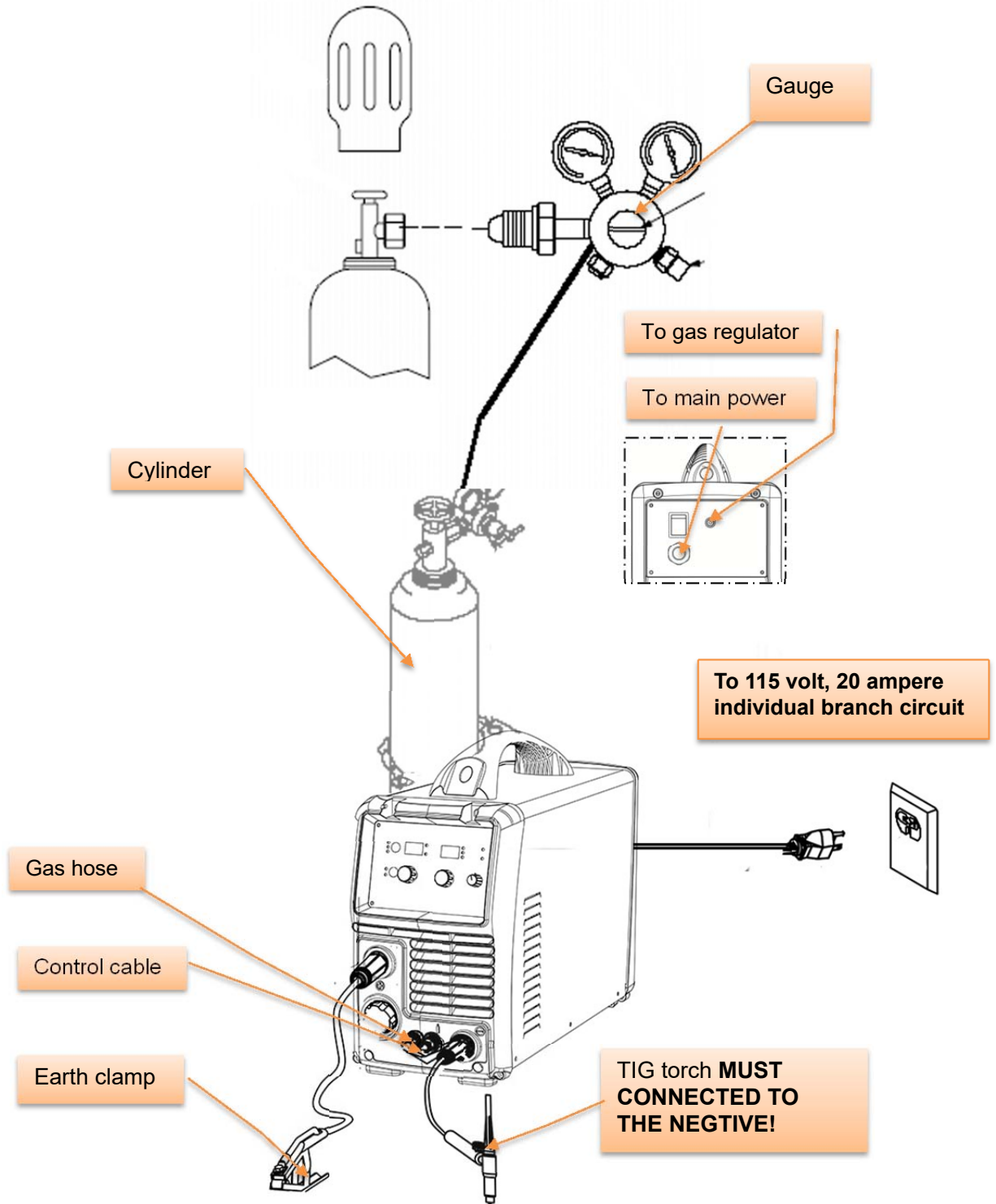


Figure 4.7

MultiSonic220 (208/230v input)

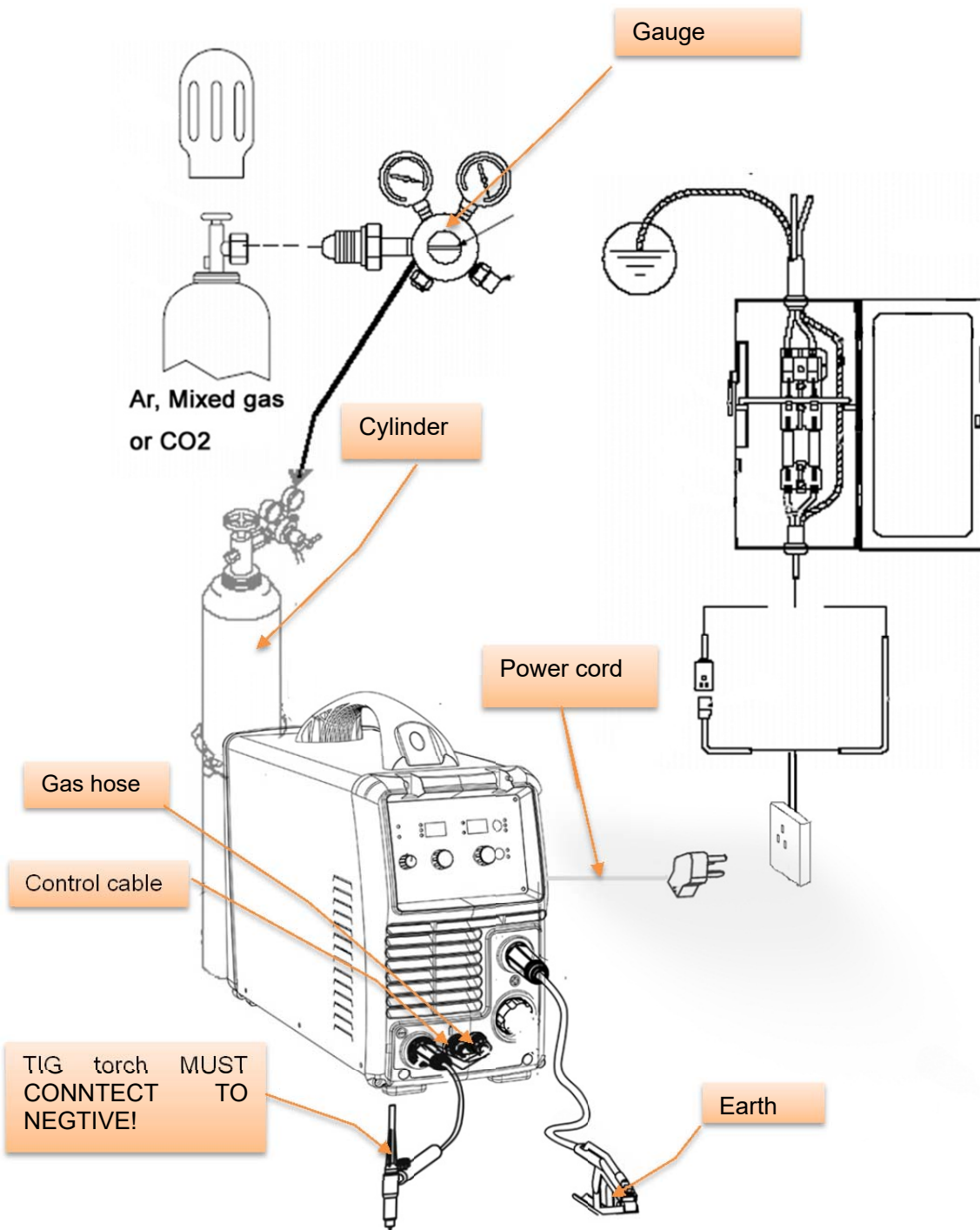


Figure 4.8

4-7. General installation procedure for TIG welding

- 7-2.1. Welding machine should be installed in a stable position and with good ventilation. Avoid direct sun outdoors or rain. Place at a distance of 12" (300mm) or more from walls or similar that could restrict natural air flow for cooling. Avoid transport in invert or side position.
- 7-2.2. Switch the ON/OFF Switch to OFF.
- 7-2.3. Connect the work lead cable to the positive output terminal, Insert earth clamp quick connector into receptacle and turn 90° clockwise. Refer to section 4-6. TIG torch must connected to negative output.
- 7-2.4. Connect the gas line/hose to the proper shielding gas source. Refer to section 4-6.
- 7-2.5. Slowly open the Argon Cylinder Valve to the fully open position.
- 7-2.6. Connect the work lead clamp to your work piece.
- 7-2.7. Connect machine with 115/208/230V single phase power supplies.

4-8. STICK welding connection diagram
MultiSonic220 (115v input)

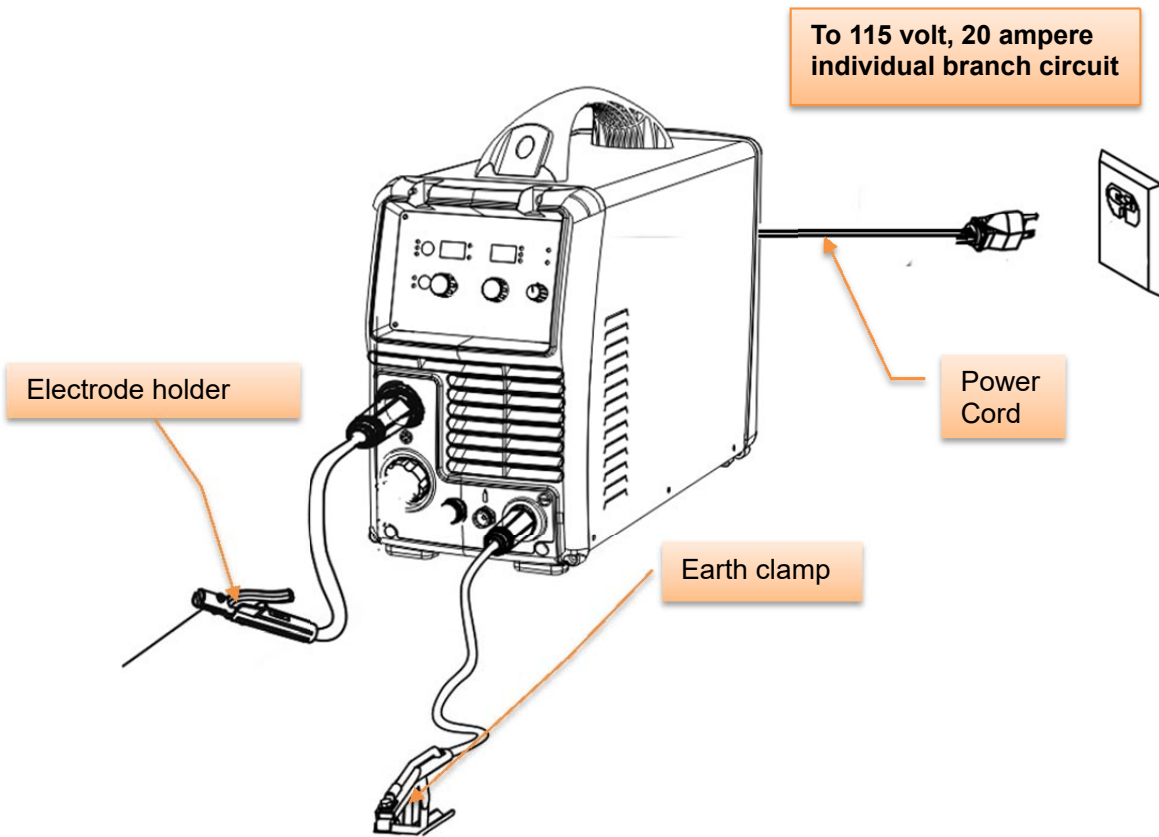


Figure 4.9

MultiSonic220 (208/230v input)

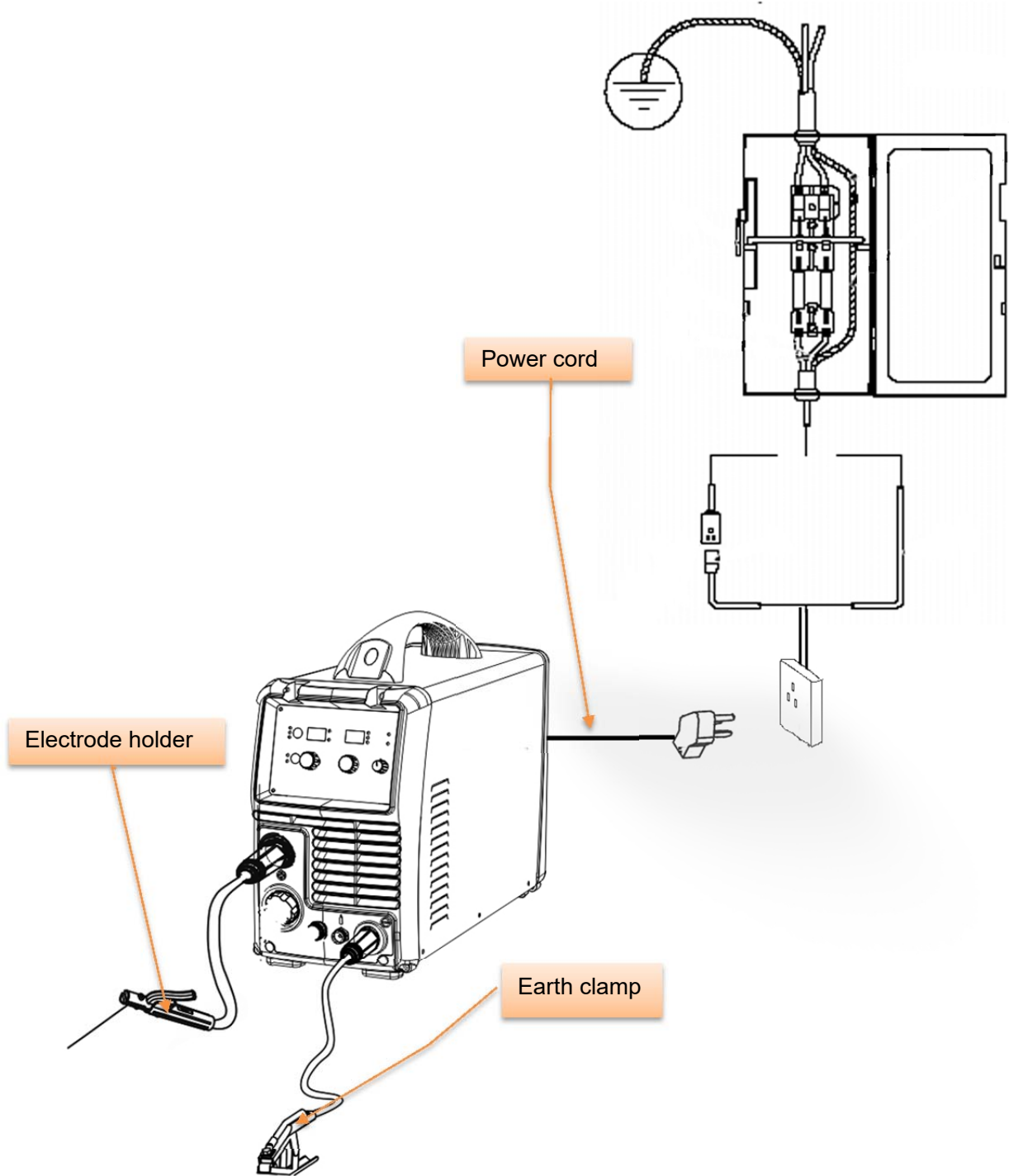


Figure 4.10

4-9. General installation procedure for STICK welding

7-4.1. Welding machine should be installed in a stable position and with good ventilation.

Avoid direct sun outdoors or rain. Place at a distance of 12" (300mm) or more from walls or similar that could restrict natural air flow for cooling. Avoid transport in invert or side position.

7-4.2. Switch the ON/OFF Switch (located on the rear panel) to OFF.

7-4.3. Connect electrode holder, earth cable, according to connection diagram (refer to section 4-8). Insert Electrode holder/earth clamp quick connector into receptacle and turn 90° clockwise.

4-10. 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 Á L'ALIMENTATION DOIT ÉTRE CONFORME AUX CODES D' ÉLECTRICITÉ PERTINENTS

Input voltage(V)	115	208/230
Frequency(Hz)	60	60
Input Amperes at rated output(A)	20	15.9
Max recommended standard fuse Rating in Amp		
Circuit breaker, time delay	25	30
Normal operation	30	35
Min input conductor size in AWG	12	12
Min Grounding conductor Size in AWG	12	12

Table 4.1

4-11.Extension Welding Cable Selection Chart

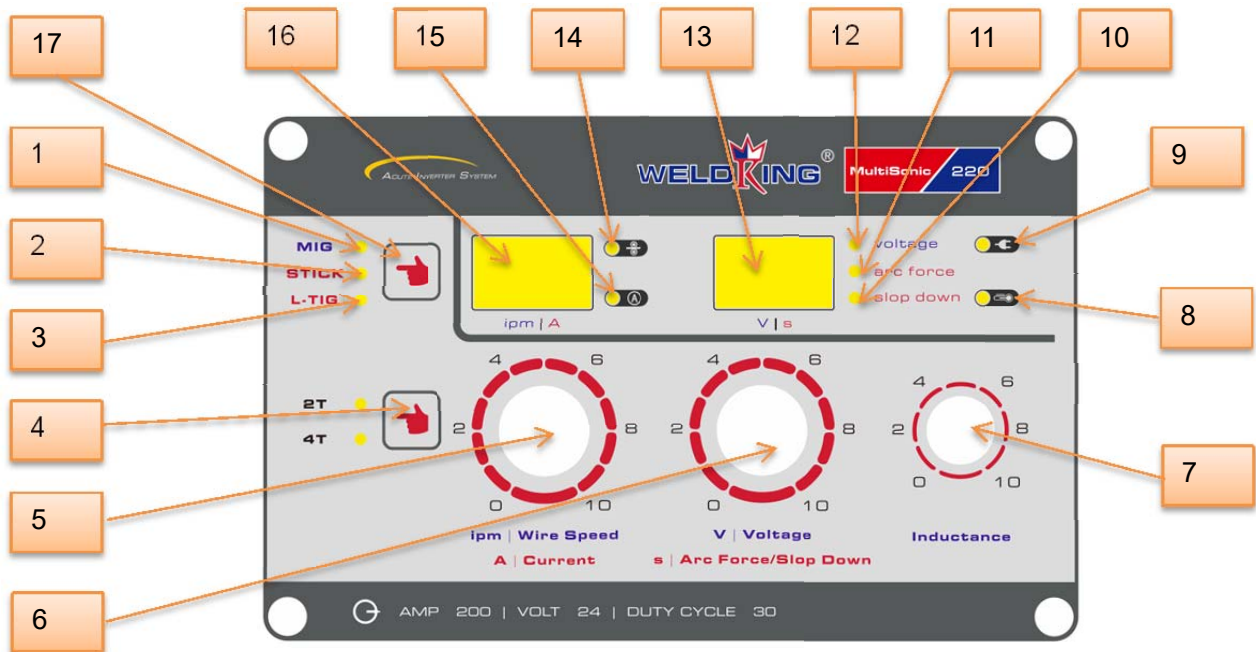
CAUTION! Use shortest cable possible. Turn off power before connecting to weld output terminals!

Welding cable size in AWG (mm ²)	Maximum total cable (Copper) length in weld circuit allowed in Ft(M)	
	100	200
Welding Amperes (A)		
6(13)	260(80)	130(40)
4(20)	330(100)	160(50)
3(30)	410(125)	200(60)

Table 4.2

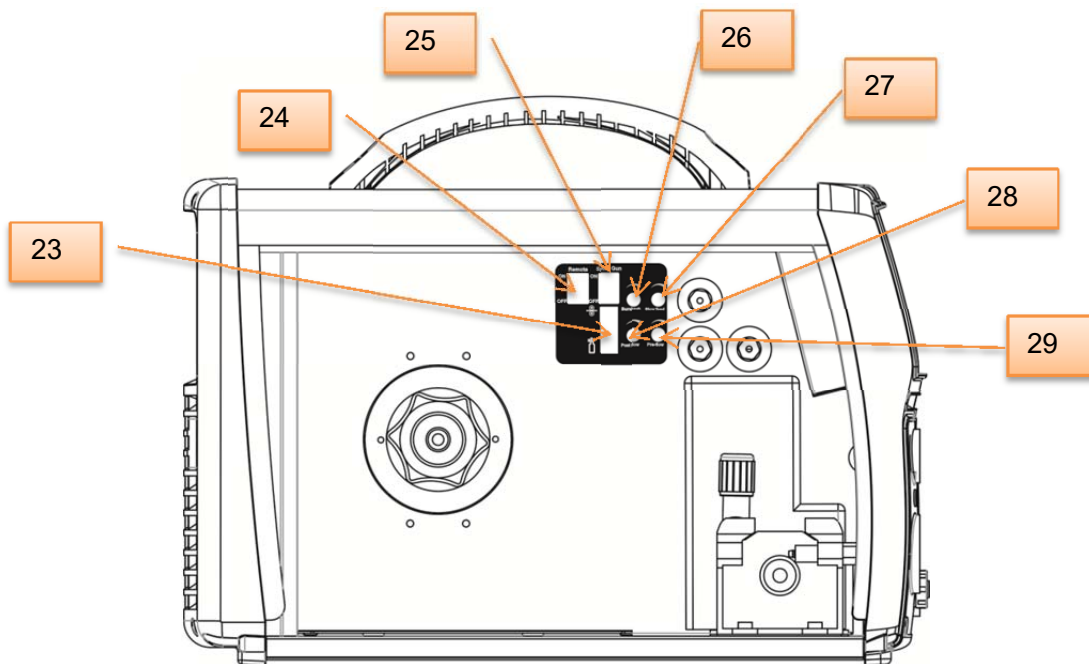
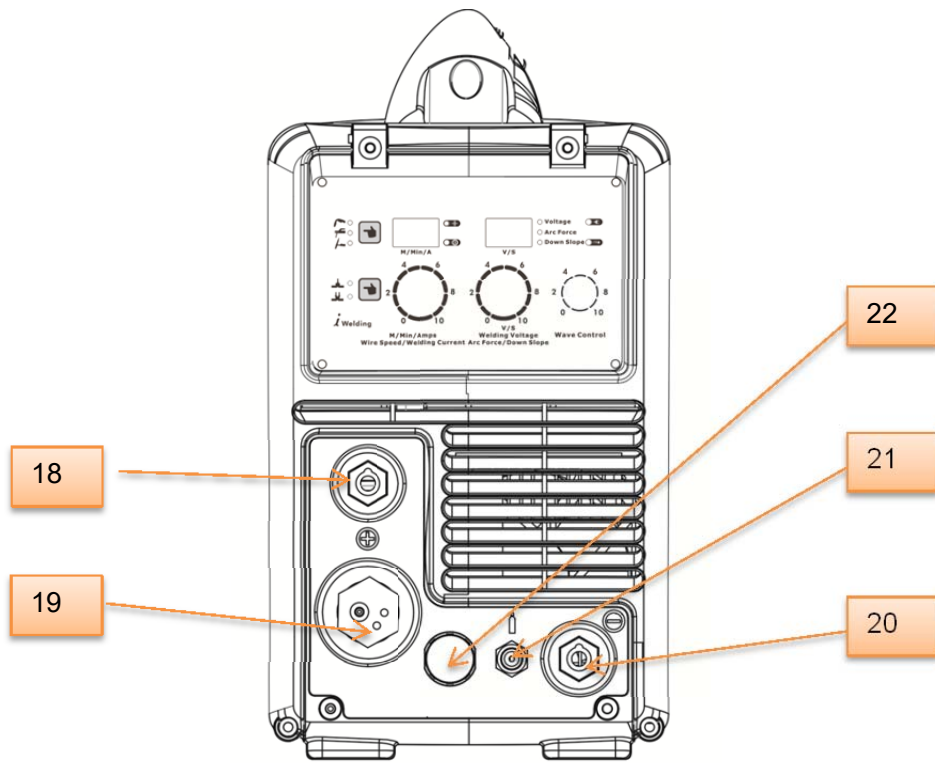
SECTION 5 OPERATION

5-1. Power source panel layout and description



- | | |
|---|--|
| 1. MIG process indication light | 10. Slope down display indication light |
| 2. STICK process indication light | 11. Arc force display indication light |
| 3. LIFT-TIG process indication light | 12. Voltage display indication light |
| 4. 2T/4T selection button | 13. Voltage/arc force/slope down digital meter |
| 5. Wire feed speed(MIG)/Amperage (STICK/TIG) adjustment knob | 14. Ipm display indication light |
| 6. Voltage (MIG)/Arc force (STICK)/Slope down (TIG) adjustment knob | 15. Amperage display indication light |
| 7. Inductance adjustment knob (MIG) | 16. Amperage/wire feed speed digital meter |
| 8. Protection indication light | 17. Welding process selection button |
| 9. Power indication light | |

Figure 5.1



- | | |
|-----------------------------------|------------------------------|
| 18. Positive output connect | 24. Remote on/off |
| 19. Euro MIG torch connection | 25. Spool gun on/off |
| 20. 9 pin control port | 26. Burn back control (0-1s) |
| 21. Negative output connect | 27. Run-in control (0-2s) |
| 22. Gas outlet to torch (MIG/TIG) | 28. Post flow control (0-2s) |
| 23. Jog/Purge | 29. Pre-flow control (0-1s) |

Figure 5.2

5-2. Operation(MIG)



USE SINGLE PHASE 115V/208V/230V POWER SUPPLY.

5-2.1. Switch on the power source


5-2.2. Connect up the shielding gas, torch and work lead to power source according to figure 4.1 and 4.2, make sure connections are firm and reliable.


5-2.3. Switch on the power source. Select MIG mode with the process selection button.


5-2.4. Set the welding voltage knob to proper position and wire feed speed knob to a start value and refine during welding.

5-2.5. The display value of digital voltage meter will change when you turn the voltage knob to pre-set the welding voltage. During welding, the voltage meter will reflect actual welding voltage. The display value of digital current meter will change when you turn the wire feed knob to pre-set the wire feed speed. The feeding speed light will illuminate indicating the meter is displaying wire feeding speed in inches per minute. The current light will illuminate and current meter will reflect actual welding current during welding. After arc is distinguished, the meter will hold the current value for 20s and then jump back to display the pre-set wire feeding speed.

5-2.6. Set the inductance knob to a start value according to the voltage/wire feeding speed selection chart you can adjust the knob during welding to obtain best result. Inductance is the rate of current response to a change in current. What this means is that when MIG welding with a short arc you can adjust how fast current is applied to the shorts. The less inductance you have the crisper the arc will appear and the wires will start easier. This will also make the bead taller and narrower. More inductance will make the arc appear "softer" with a flatter wider appearance and if too much is used, wires will stumble during starts. Typically when short arcing steel only a little inductance is used in order to get a crisp arc. Low thermal conductivity materials such as stainless need more inductance to get acceptable wetting when short arcing.

5-2.7.  Set the "Burn back" time use the knob inside console compartment.

5-2.8.  Set "Run-in" parameter use the knob inside the console compartment.

- 5-2.9.  Push up “jog” switch to momentarily feed welding wire at speed set on Wire Speed control without energizing welding circuit or shielding gas valve. Push up “purge” switch to momentarily energize gas valve to purge air from gun or adjust gas regulator.

5-2.10. Turn on the gas valve, adjust gas volume to 3-5L/MIN. Press the torch switch check if wire feed and gas is normal, check if there is gas leaking.

5-2.11. Hold the torch and keep nozzle 8-12mm above the work piece, and tilt 10-20 ° to vertical direction. Aim wire to the welding seam.

5-2.12. Hold the torch and keep nozzle 8-12mm above the work piece, and tilt 10-20 ° to vertical direction. Aim wire to the welding seam.

5-2.13. After finish operation, turn off the gas valve, loose the pressure handle at wire feeder, press torch switch to clear the residual gas in the regulator. At the end, turn off welding power source and wall switch.

5-3. Operation(TIG)

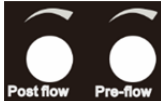
USE SINGLE PHASE 115V/208V/230V POWER SUPPLY.


5-3.1. Always use DCEN (electrode connects to negative output).

5-3.2. Connect up the shielding gas, foot pedal, torch and work lead to power source according to figure 4.7 and 4.8, make sure connections are firm and reliable.

5-3.3. Switch on the power source. Select L-TIG (lift TIG) mode with the process selection button.

5-3.4. Set the welding current knob to proper position and slope down knob to a start value and refine during welding.

- 5-3.5.  Set post flow time and pre-flow time use the control knob inside console compartment.

- 5-3.6.  Toggle the remote selection switch (item 25 in figure 5.2). to “on” if want to use foot pedal or remote current control at TIG torch to adjust welding current, toggle the remote selection switch to “off” if use machine penal control to adjust welding current.

5-3.7. Turn on the gas valve on the torch; adjust gas volume to 3-5L/MIN. check if there is gas leaking.

5-3.8. Press down TIG torch trigger, 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.

5-3.9. After arc is ignited, move the torch along seam evenly. Fine tune the welding parameter to obtain exquisite welding seam.

5-3.10. After finish operation, turn off the gas valve. At the end, turn off welding power source and wall switch.

5-4. Operation(STICK)




USE SINGLE PHASE 115V/208/230V POWER SUPPLY.

5-4.1. 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.

5-4.2. Connect up the electrode holder, earth lead to power source according to section 4.3: STICK welding connection diagram, make sure connections are firm and reliable.

5-4.3. Switch on the power source. Select STICK mode with the process selection control.

5-4.4. Set Welding parameters to desired value, refer to section 5-6: Welding parameter selection chart and section 5-1: front panel layout and description. Set arc force knob to a start value and refine during welding.

5-4.5.  Toggle the remote selection switch (item 25 in figure 5.2). to "on" if want to use foot pedal to adjust welding current, toggle the remote selection switch to "off" if use machine penal control to adjust welding current.

5-4.6. 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.

5-4.7. At the end, turn off welding power source and wall switch.

5-5. Operate with remote current control device connected



The machine can connect to foot pedal (part no. 07002510) or torch with remote current control through 9 pin control receptacle at the front panel.

Toggle the remote selection switch (item 25 in figure 5.2) to “on”.

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.

5-6. Welding Parameter selection chart

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

--: setting not recommended.
 The setting in the following chart is just for start only and can be fine tune during welding.
 Wire feed speed \varnothing \rightarrow 350/19 \leftarrow Voltage "V"

WELDING
MultiSonic 220

MIG/MAG WELDING				Polarity setting: DCRP(wire positive); Shield gas for steel 80% Ar, 20%CO2, Stainless steel and Al: 100% Ar.							
Material	Steel				Stainless steel				Aluminum		
Wire type	Solid ER70S-6			Flux core E71T-1			ER308,ER308L,ER 308LSi			ER4043	
Wire size (in) (mm)	0.023" 0.6	0.035" 0.9	0.045" 1.2	0.023" 0.6	0.030" 0.8	0.035" 0.9	0.023" 0.6	0.030" 0.8	0.035" 0.9	0.030" 0.8	0.035" 0.9
3/8" (9.5mm)	374/19.2	291/22	213/22.3	-	413/24.5	413/26	-	362/20.4	303/20.6	450/22	475/19
1/4" (6.4mm)	339/18.5	272/21.2	202/21.4	-	386/23.7	362/25.2	-	315/19.2	272/19.2	420/20	446/18.5
3/16" (4.8mm)	311/17.8	236/19.6	188/19.8	365/22.7	354/23	327/24.3	398/19.4	291/18.6	252/18.6	380/19	401/17.4
1/8" (3.2mm)	268/16.8	220/19.2	170/18.5	344/22	327/22.3	303/23.5	348/18.3	240/17.5	228/18.1	350/18.5	364/16.5
14ga. (2.0mm)	232/15.8	189/18.4	149/17.9	317/21	307/21.8	280/23	320/17.7	185/16.2	205/17.5	240/17.5	310/15.4
16ga. (1.6mm)	197/15	177/18	128/17.2	292/20.1	272/20.9	244/22	264/16.7	150/15.2	173/16.6	-	-
18ga. (1.2mm)	177/14.5	142/16.8	103/16.2	-	252/20.5	197/20.9	204/15.4	118/14.3	142/15.7	-	-
20ga. (0.9mm)	150/14	98/15.3	85/15.1	-	228/20.2	161/19.8	165/14.5	-	-	-	-
22ga. (0.8mm)	118/13.5	75/13	75/14.3	-	161/19.1	130/18.8	130/13.6	-	-	-	-

TIG WELDING			Polarity setting: DCRP; Shield gas 100% Ar							
Mild steel & Stainless steel	Tungsten Diameter	Filler Rod (if required)	Material Thickness							
			1/4" (6.4mm)	3/16" (4.8mm)	1/8" (3.2mm)	16ga. (1.6mm)	18ga. (1.2mm)	22ga. (0.8mm)	24ga. (0.6mm)	
Amperage(A)	0.040"(0.8mm)	1/16"(1.6mm)	-	-	-	-	30	30	25	
	1/16"(1.6mm)	1/16"(1.6mm)		1st layer:100 2nd layer:125	90	60	35	30	25	
	3/32"(2.4mm)	3/32"(2.4mm)	1st layer:125 2nd layer:150	1st layer:100 2nd layer:125	100	-	-	-	-	
	1/8"(3.2mm)	1/8"(4.0mm)	1st layer:140 2nd layer:180	1st layer:125 2nd layer:140	125	-	-	-	-	

STICK WELDING			Polarity setting: DCRP(Electrode positive); Shield gas: no			
Material	Electrode selection	Material thickness -->	1/4" (6.4mm)	3/16" (4.8mm)	1/8" (3.2mm)	16ga. (1.6mm)
Mild Steel	6103	Electrode dia (in)	5/32	1/8	1/8	1/16
		Amperage(A)	190	120	100	60
	7018	Electrode dia (in)	5/32	1/8	1/8	1/16
		Amperage(A)	200	130	110	60
Stainless steel	316	Electrode dia (in)	5/32	1/8	3/32	1/16
		Amperage(A)	160	100	60	40

Figure 5.3

Spool gun/TIG Torch /Foot pedal control connection pin definition

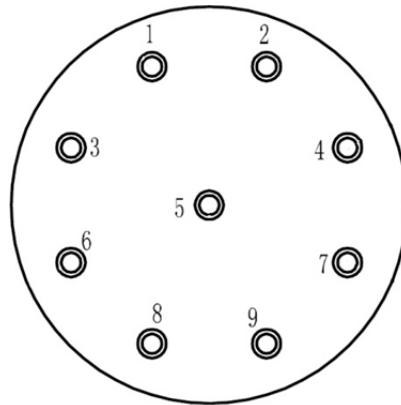


Figure 5.4

Socket pin	Function	Notes
1	Spool gun motor (-)	
2	Trigger switch	
3	Trigger switch	
4	Spool gun motor (+)	
5	C.C.W potentiometer(+) spool gun / TIG torch	
6	C.W potentiometer(-) spool gun / TIG torch	
7	TIG torch wiper potentiometer	current
8	MIG Spool gun wiper potentiometer	voltage
9	Not used	

Table 5.3

SECTION 6 TROUBLE SHOOTING

6-1. 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
			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
		Power indication lamp off	See No. 1	
11	Overheat light on		Work excess the rate duty circle	Use under rate duty circle

		Input voltage is too high	Use under rate input voltage
10	Power supply switch 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 6.1

6-2. GMAW/FCAW welding trouble shooting

No.	Problem	Cause	Solution
3	No gas flow out after pushing the gun trigger	Gas pressure not enough	Check gas pressure
		Poor gas hose connection	Check gas connection
		Gun trigger failure	Check gun trigger
		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
		Control circuit failure	Replace circuit board
		Control transformer failure	Replace transformer
4	Failure of arc ignition or does not ignite properly	Fuse melt or poor contact	Check and repair
		Main power switch failure	Check, repair, replace
		Control circuit board failure	Check and repair the circuit board

		Welding cable broken or poor contact	Check the connection
		Gun trigger wire broken	Replace cable
		Gun cable broken	Replace cable
		Voltage adjustment knob failure or poor contact	Check, repair, replace
		Control transformer failure	Check, repair, replace
		Main transformer failure or poor contact	Check, repair, replace
5	Unstable arc	Gas hose not installed properly, gas mixed by air	Connect the gas hose firmly
		Gas not pure	Changes gas
		Wire liner or gun cable broken and leak cause insufficient gas volume.	Check, repair, replace
		Wire pressure not setup properly	Adjust pressure
		Wire feed speed not stable	See No.9
		Control circuit failure	Check, repair, replace circuit board
		Gas heating failure	Check 20A Fuse,

			repair, replace
		the work piece surface contaminated by oil	Clean the workpiece surface
		Poor contact inside the gun	Check, repair, replace
6	Arc ignited but the wire does not melt	Rectifier tube failure	Check, replace
		Output reactor failure	Check, replace
		Output capacitor failure	Check, replace
7	Wire does not feed while the feed roller is rotating	Wire pressure not proper	Adjust pressure
		Wire liner or contact tip jammed	Check, repair, replace
		Used wrong groove at the feeding roller	Use the right groove
8	Cannot stop the gas	Solenoid valve contaminated	Check, repair, replace solenoid
		Contactora failure	Check, replace the contactora
		Control board failure	Check, repair, replace
9	Wire feeding not stable	Wire out of feeding roller groove	Put wire back
		Wire feed pressure not set properly	Adjust pressure
		Feeding roller deformed	Check and replace

		Pressure roller deformed	Check and replace
		Feeding motor failure	Check and replace
		Current adjust potential meter failure	Check and replace
		Circuit board plug socket not properly contacted	Check and repair or replace
		Control circuit failure	Check and repair or replace
		Welding hose deformed	Check and replace
		Input voltage fluctuated	Use under rated input voltage

Table 6.2

6-3. Stick/TIG welding trouble shooting

No.	Problem	Cause	Solution
4	Erratic or improper weld output.	Wrong cable size	Choose the right cable size
	Cable or receptacle too hot.	Wrong electrode holder size	Choose the right size electrode holder
		Poor contact between welding or earth cable and	Clean and tighten all weld

		receptacle at machine	connections
		Poor connection between electrode hold and welding cable	Clean and tighten
5	Failure of arc to ignite or does not ignite properly	Fuse melt or poor contact	Check and repair
		Main power switch failure	Check, repair, replace
		Control circuit board failure	Check and repair the circuit board
		AC Contactor failure	Check, repair, replace
		Welding cable broken or poor contact	Check the connection
		Gun cable broken	Replace cable
		Control transformer failure	Check, repair, replace
		Main transformer failure or poor contact	Check, repair, replace
6	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 tube 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
7	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 6.3

SECTION 7 MAINTENANCE

7-1. 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 for machine	6 Month Routine Maintenance for machine
<p>Check the function of all switches.</p> <p>Check if the fan rotates properly and if there is air venting out from back of the machine.</p> <p>Pay Attention to the abnormal vibration, noise, smell and gas leakage during operation.</p> <p>Check if the welding cables are over heated.</p> <p>Check if the cable connections are over heated?</p> <p>Check if the cable is connected firmly and properly, if it is broken and cause bad insulation?</p> <p>Check the cover grounded properly</p> <p>The pressure of the wire feeder's pressure rollers must be set properly.</p> <p>If metal chips or dust pile up between the</p>	<p>Blow out with dry clean pressure air or vacuum inside machine, especially transformer coil and power component.</p> <p>Check the electric connection of input/output bar to avoid bad contact caused by loose or rusted screw.</p> <p>Check the contactors and relays in the machine or on the PCB work properly.</p> <p>Check the lubrication of the gear box in the feeder, replace or fill lubricates oil if necessary.</p> <p>Check and clean the oil or other contamination in the feeding roller and feeding tube. If the V grooves have worn out change feeding roller immediately to avoid slipping or unstable feeding.</p>

<p>guide tube and feeding roller, clean and check if the feeding tube diameter is proper and is aligned with the center of the feeding roller. Also check if the feeding roller groove is same as the wire diameter and if there are objects inside groove.</p> <p>Check pressure roller rolls smoothly and if it has been worn out.</p> <p>Check if straightening roller it has been contaminated by oil, dust or metal chips.</p>	
---	--

Table 7.1

MIG torch	Cables
<p>Clean spatter inside the nozzle when continuously use the machine.</p> <p>Check liner frequently, change if it has been contaminated by oil, deformed or worn out.</p> <p>Check and change broken or deformed contact tip and nozzle to avoid damage to the torch and machine.</p>	<p>Check if the welding cables are over heated.</p> <p>Check if the cable connections are over heated?</p> <p>Check if the cable is connected firmly and properly, if it is broken and cause bad insulation?</p>

Table 7.2

7-2. Safety precaution

Refer to the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. **ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK**

MUST BE PERFORMED BY QUALIFIED PERSONAL.

- Welders must be equipped with welding mask, gloves and tie the sleeves and collar properly. Use Table 6.4 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.
- Do not perform welding near flammable, explosive materials or gases.
- Gas cylinder must be located at a safe and steady place to avoid injury others.
- Keep finger, hair and clothing away from the rotating fan.
- The power source must be grounded when welding.
- When yellow protection light is enlightened during welding, it is indicating that the welding machine is over current or over heat, and automatic protection will be triggered. Stop welding immediately and wait until welding machine cool down.
- Welding machine should not work in a flammable and toxic environment, avoid moisture, rain, and do not directly expose to sun.
- Do not switch off the welding machine during welding!
- Periodically maintain the machine and clean the dust inside.

7-3. Lens Shade Selector Guide

Operation/Process	Arc Current (Amperes)	Minimum Protective Shade	Suggested* Shade No. (Comfort)
Gas metal arc welding (GMAW) and flux cored arc welding (FCAW)	Less than 60	7	—
	60–160	10	11
	160–250	10	12
	250–550	10	14

Table 7.3

SECTION 8 PARTS LIST

Item	Order No.	Description	Note	Qty
1	8.253RM.003-B	Handle	Curve 301*90*66 black	1
2	8.051RM.719	Right side penal	use with S.004RM.719-K MIG180PFC MV	1
3	8.050RM.719	Left side penal	use with S.004RM.719-K MIG180PFC MV	1
4	7.686.300	Penal lock square	'MS725-2 chassis lock serial	1
5	8.068RM.932	'FLAMA MULTIMIG 200 rear penal	FLAMA rear penal	1
6	8.307RM.270-EI	Rear seal cover	Use with MULTIMIG 200 PFC SYN FLAMA penal	1
7	7.232.738	Toggle switch (red)	LIGHT COUNTRY 25A/250V	1
8	8.462.116	Quick connector	M12*1 thread(yinuo LS090505)(c/w M12*1 nut)	1
9	7.155.021	strain relief	M2012B6-12 beisit	1
10	8.122RM.270-EI	fan support	use with S.004RM.270-EI	1
11	8.304RM.002-A	1225 fan screen	Milling chamfering	1
12	7.720.010	fan	AG12024XB257100 ADDA 24V 0.46A	1
13	8.199.130	Spool holder	MIG-160	1
14	8.122RM.106-B	Spool holder installation set	MIG 141(5KG spool) use with S.004RM.219	1
15	8.123RM.066	Hinge pad	22*9 δ=0.6	1

16	7.686.080	Hinge	CL204-6 black, 2 hinge seat, 1 pin, seat size:20*8*14mm	2
17	8.055RM.734	bottom plate	Use with MULTIMIG 200 PFC SYN HZ	1
18	8.303RM.713	Middle plate	MULTIMIG 200 HZ penal, use with S.004RM.713-AO	1
19	7.710.076	Feeding system	Feeding system	1
20	8.713RM.185	Wire feeder insulation plate	98.8*40*98.3 enhanced nylon	1
21	8.123RM.924	Motor protection cover	Enhanced nylon	1
22	8.178RM.223-A	Guide tube	Use with MIG 200E S.004RM.223 length 53.7	1
23	8.177RM.245	Connection pole	MULTIMIG 160 use with (S.004RM.245)	1
24	7.231.082	Thermal switch(constant open)	TIG 210EP AC/DC PFC HZ front penal use with S.006RM.561-E	1
25	6.271RM.203	inductance	MIG-250 use with 3.004RM.023 3.004RM.204	1
26	8.069RM.995	HZ-MULTIMIG 200 front penal	345.2*217.7*88.5, enhance nylon	1
27	7.667RM.223-A	Central connection	Use with MIG 180 PFC MV S.004RM.719-K	1
28	8.462RM.203	Gas inlet	MIG-250 use with 3.004RM.203 3.004RM.204	1
29	7.132.009	9 pin Amphenol plug	WEIPU SP2112/S9 SERIES CE	1
30	8.462.028	Gas outlet	WTL99-J3	1
31	7.152.313-A	Quick connector female(no plastic sleeve zhengyuan)	CX58 35-70MM hexagon thickness 12MM	2
32	7.224.300-B1	Flop switch (minghan)	T2	2

33	7.458.430	Knob	Omter $\phi 21*6$, black cap/grey body,black needle	2
34	7.458.420	Knob	Omter $\phi 16.3*16.5$, black cap/grey body,black needle	1
35	8.306RM.713	Penal mount plate	MULTIMIG 200 HZ penal used with S.004RM.713-AO	1
36	W.496RM.183-D	MULTIMIG 200PFC front penal	Base board(B.067RM.183-D)	1
37	8.123RM.363	Seal box	MIG 180PFC MV used with S.004RM.719-K	1
38	W.496RM.215	MULTIMIG200 side adjustment plate	Base board (B.067RM.215)	1
39	7.253.013	solenoid valve 2/2 way	Model:YG2T-2 work pressure:0~0.8MPa power:DC24V(gas inlet $\phi 6$)	2
40	L.185RM.251	Transformer	MULTIMIG 200PFC	1
41	8.123RM.207	Solenoid valve mounting plate	MULTIMIG 160 used with (S.004RM.245)	1
42	8.123RM.909	160 2 hole support bar	136*15*19 enhance nylon	1
43	W.496RM.221-A-3	MULTIMIG 200PFC control PCB	Base board(B.067RM.221-A) built-in VRD	1
44	8.123RM.902	Support bar	nylon	1
45	7.231.061	Thermal switch(constant open	BH-B2D75°-K(metal pressure included)(SY)	1
46	8.212.020	rectifier position stopper	$\phi 13.5*7.3$ DMC	1
47	7.411.250	rectifier	BR6010(32*32)	1
48	L.271RM.631	PFC inductance	Same to L.271RM.630 tap 120MM and 165MM used with ARC 160LT PFC	1

49	7.624.281	Y connection	ODΦ8, IDΦ5	1
50	W.496RM.205-D	MULTIMIG200 power pcb	Base board(B.067RM.205-D)	1
51	7.227.022	Toggle switch(no mark)	16A/250V used with 3.004RM.203 3.004RM.204	1
52	7.227.017	Toggle switch(no mark)	R9-32B/2A250V 1×2	1
53	7.227RM.001-A	Toggle switch(no mark)	R13 12A 125VAC 6A 250VAC 2*2	1
54	8.462.181	Adapter connector	MIG-160	3
55	8.754RM.001	Adapter connector seat up	MIG-160R	3
56	8.754RM.002	Adapter connector seat down	MIG-160R	3
57	8.511RM.006	Connection brass bar	MULTIMIG 160 used with (S.004RM.245)	1
58	8.123RM.907	160 new support bar	nylon	1
59	7.321.130	Hull amp sensor	270mm length 0.3mm ² 200round	1
A-1	W.496RM.214-A	MULTIMIG 200PFC main PCB	Base boardB.067RM.214-A	1
A-2	8.713.182	insulation block(2hole)	polycarbonate 2 holes 10mm	2
A-3	7.421.541	Quick restore diode	IDP45E60(D45E60)	2
A-4	8.422RM.204	IGBT heat sink(1)	Used with S.004RM.251-E,section plate 7.800.136	1
A-5	8.422RM.205	IGBT heat sink(2)	Used with S.004RM.251-E,section plate 7.800.136	1
A-6	8.423RM.045	MUR heat sink	section plate 7.800.136	1

A-7	7.401.079	Quick restore diode	STTH60W03CW	6
A-8	8.713.184	insulation block(4)	polycarbonate 3 holes 12.5mm	12
A-9	8.422RM.206	IGBT heat sink(3)	Used with S.004RM.251-E,section plate 7.800.136	1
A-10	8.422RM.207	IGBT heat sink(4)	Used with S.004RM.251-E,section plate 7.800.136	1
A-11	8.123RM.005	Support pole	Cold rolling plate 0.8 size 13*10*10	3
A-12	7.425.555	single transistor IGBT module	STGW60V60DF	6

Table 8.1

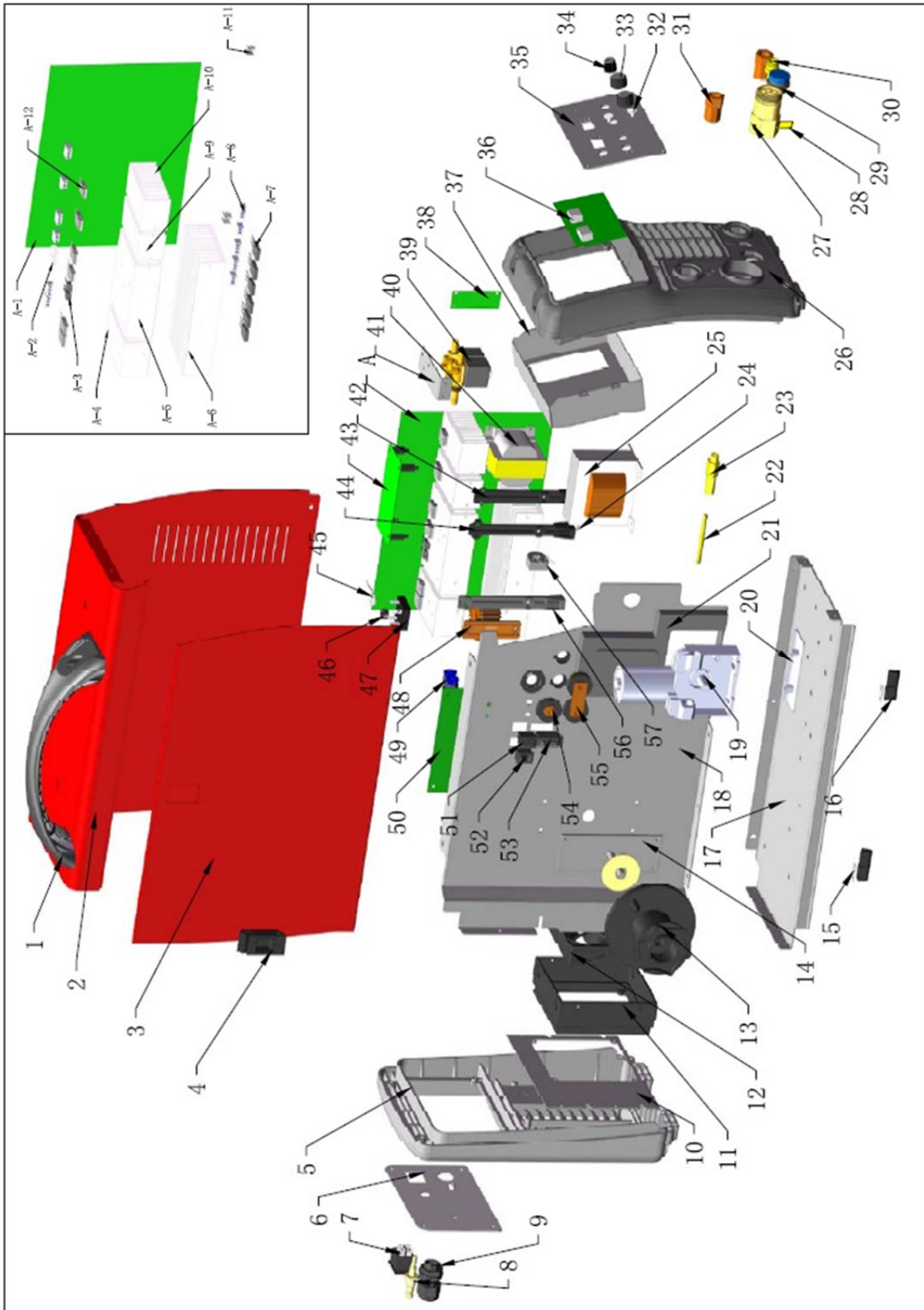


Figure 8.1

Wire driving system

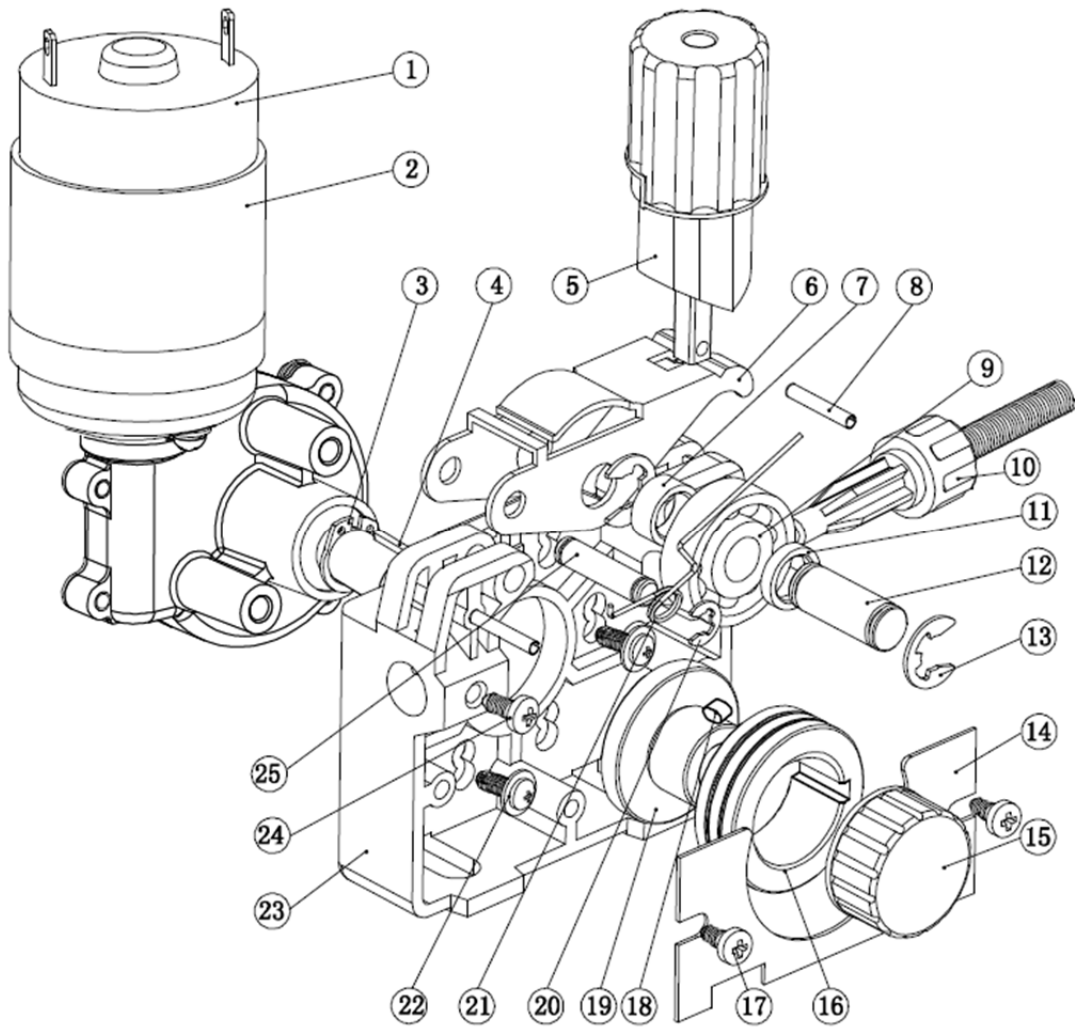


Figure 8.2

Item	Description	Order No.
1	Motor	#301
2	Name plate	
3	Spring washer type A10	GB/T894, 1-1986
4	Semi-circular key 3x3.7x10	GB/T1099-1979

5	Pressure adjustment knob	816D.2
6	Pressure roll support	816.2-1
7	Pressure roller support sleeve 1	816.2-3
8	Round spring pin	GB/T879, 2-2000
9	Rolling bearings 62002z	GB/T246, 2-1994
10	Wire feeding tube component	805.3
11	Pressure roller support sleeve 2	816.2-4
12	Pressure roller support axle	816.2-2
13	Washer with notch8	GB/T896-1986
14	Protection screen	816-5
15	Feeding roller pressure knob	816.1-3
16	Feeding roller	817.2-1V
17	Phillips flat head screw M5X8	GB/T818-2000
18	Pin type A 4X6	GB/T1096-1979
19	Feeding roller axle sleeve	816.1-2
20	Notch washer 5	GB/T896-1986
21	Spring	816-2
22	Phillips flat head screw set M6X16	GB/T9074.4-1986
23	Bracket	816-3
24	Phillips flat head screw M5X8	GB/T818-2000
25	Bracket axle	816-1

Table 8.2

MIG torch

WeldKing® NT1-3E, Order No. KAM31003

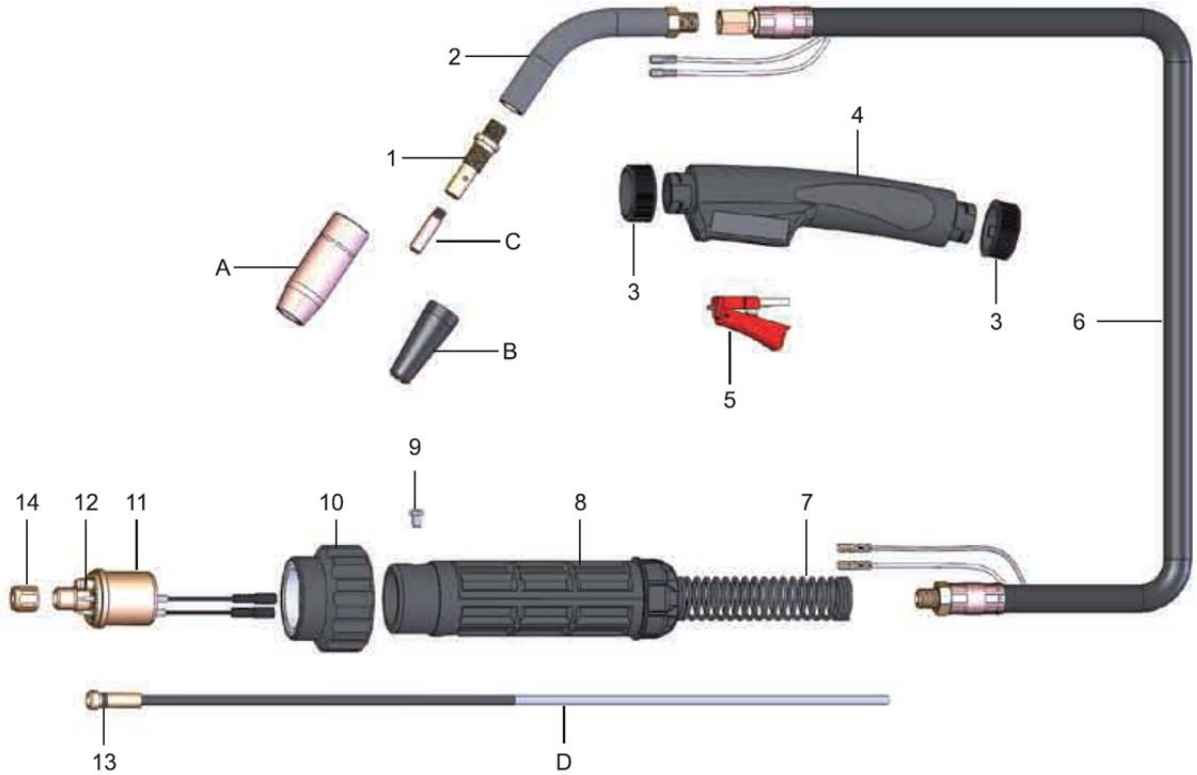


Figure 8.3

Nozzles

ITEM	DESCRIPTION	ORDER NO.	
1	Nozzle Self Insulated	21-37	A
2	Nozzle Self Insulated	21-50*	A
3	Nozzle Self Insulated	21-62	A
4	Nozzle Self Insulated	21-37F	A
5	Nozzle Self Insulated	21-50F	A

6	Nozzle Self Insulated	21-62F	A
7	Nozzle Self Shielding	LA8201	B

Table 8.3

Contact Tips

ITEM	DESCRIPTION	ORDER NO.	
1	Contact Tip 0.023"/0.6mm Ecu	11-23	C
2	Contact Tip 0.030"/0.8mm Ecu	11-30	C
3	Contact Tip 0.035"/0.9mm Ecu	11-35*	C
4	Contact Tip 0.040"/1.0mm Ecu	11-40	C
5	Contact Tip 0.045"/1.2mm Ecu	11-45	C

Table 8.4

Liners

ITEM	DESCRIPTION	ORDER NO.	
1	Steel Liner 0.030"-0.035"/0.8-0.9mm X15ft	42-3035-15*	D
2	Teflon Liner 0.035"-0.045"/0.9-1.2mm X15ft	42T-3545-15	D

Table 8.5

* Default

Component

ITEM	DESCRIPTION	PART No.
1	Gas Diffuser	51
2	Goose neck(45°)	61-45
	Goose neck(55°)	61-55

3	Handle locking Nut	EH1111
4	Gun Handle (Front)	EH1101
5	Trigger Assembly	EJ0003
6	Gun &Cable Assembly 3M	TEL1030
7	Rear spring cable support	ES2201
8	Gun plug housing	EH2201
9	Screw(M4X6)	EH2211
10	Rear lock nut	EP2001
11	Euro connector(Tweco)	ETU001
12	O ring 4x1	Q504010
13	O ring 4x8	Q504018
14	Nut M11X1	TEU1011

Table 8.6

NOTES

WELDKING® MultiSonic220 power source

SECTION 9 ELECTRIC DIAGRAM

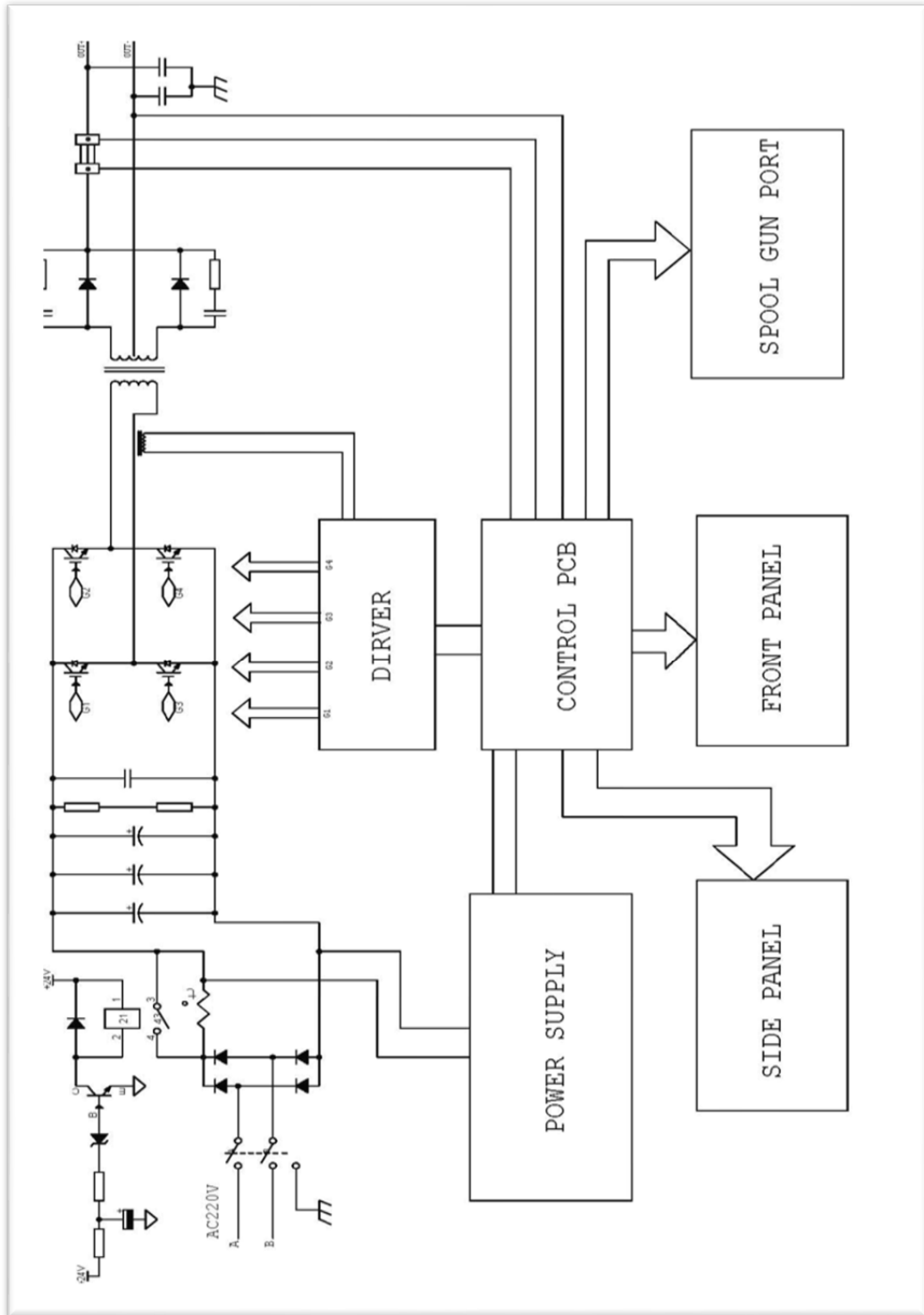


Figure 9.1

SECTION 10 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 11 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:

www.weldking.com/servicelocations.aspx

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