



Raider 10,000 Pro

DC CC/CV Welding Generator

STICK
MIG
AUXILIARY POWER

Owners Manual

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Proposition 65

WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (*California Health & Safety Code Sec.25249.5 et seq.*)

Statement of Warranty

LIMITED WARRANTY: Thermal Arc[®], Inc., A Thermadyne Company, hereafter, "Thermal Arc" warrants to customers of its authorized distributors hereafter "Thermal; Arc" that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the Thermal Arc products as stated below, Thermal Arc shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Thermal Arc's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at Thermal Arc's sole option, of any components or parts of the product determined by Thermal Arc to be defective.

THERMAL ARC MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: Thermal Arc shall not under any circumstances be liable for special, indirect or consequential damages, such as, but not limited to, lost profits and business interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of Thermal Arc with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Thermal Arc whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of Thermal Arc is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN THERMAL ARC'S SOLE JUDGEMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY THERMAL ARC PRODUCT.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS.

The warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date Thermal Arc delivered the product to the authorized distributor.

<u>POWER SUPPLIES</u>	<u>POWER SUPPLIES & WIRE FEEDERS</u>	<u>LABOR</u>
MAIN POWER MAGNETICS (STATIC & ROTATING)	3 YEAR	3 YEAR
ORIGINAL MAIN POWER RECTIFIER	3 YEAR	3 YEAR
POWER SWITCHING SEMI-CONDUCTORS & CONTROL PC BOARD	3 YEAR	3 YEAR
ALL OTHER CIRCUITS AND COMPONENTS INCLUDING BUT NOT LIMITED TO, CONTACTORS, RELAYS, SOLENOIDS, PUMPS, SWITCHES, MOTORS	1 YEAR	1 YEAR

ENGINES: ENGINES ARE NOT WARRANTED BY THERMAL ARC, ALTHOUGH MOST ARE WARRANTED BY THE ENGINE MANUFACTURER, SEE THE ENGINE MANUFACTURES WARRANTY FOR DETAILS.

<u>CONSOLES, CONTROL EQUIPMENT, HEAT EXCHANGES, AND ACCESSORY EQUIPMENT</u>	1 YEAR	1 YEAR
<u>PLASMA TORCH AND LEADS, AND REMOTE CONTROLS</u>	180 DAYS	180 DAYS
<u>REPAIR/REPLACEMENT PARTS</u>	90 DAYS	90 DAYS

NOTE: Dragster[™] 80 excluded from this policy. Refer to Dragster[™] 80 warranty in Dragster[™] 80 Owner's Manual.

Warranty repairs or replacement claims under this limited warranty must be submitted to Thermal Arc by an authorized Thermal Arc repair facility within thirty (30) days of purchaser's notice of any Warranty Claim. No transportation costs of any kind will be paid under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the Purchaser. All returned goods shall be at the Purchaser's risk and expense. This warranty supersedes all previous Thermal Arc warranties.

Thermal Arc[®] is a Registered Trademark of Thermadyne Industries Inc.

Effective April 1, 2002

SECTION 1: GENERAL INFORMATION

1.01 Notes, Cautions and Warnings

Throughout this manual, notes, cautions, and warnings are used to highlight important information. These highlights are categorized as follows:

NOTE

An operation, procedure, or background information which requires additional emphasis or is helpful in efficient operation of the system.

CAUTION

A procedure which, if not properly followed, may cause damage to the equipment.



WARNING

A procedure which, if not properly followed, may cause injury to the operator or others in the operating area.

1.02 Important Safety Precautions



WARNING

OPERATION AND MAINTENANCE OF ARC WELDING EQUIPMENT CAN BE DANGEROUS AND HAZARDOUS TO YOUR HEALTH.

To prevent possible injury, read, understand and follow all warnings, safety precautions and instructions before using the equipment. Call 1-603-298-5711 or your local distributor if you have any questions.



GASES AND FUMES

Gases and fumes produced during the Arc welding/cutting process can be dangerous and hazardous to your health.

- Keep all fumes and gases from the breathing area. Keep your head out of the welding fume plume.
- Use an air-supplied respirator if ventilation is not adequate to remove all fumes and gases.
- The kinds of fumes and gases from the arc welding/cutting depend on the kind of metal being used, coatings on the metal, and the different processes. You must be very careful when cutting or welding any metals which may contain one or more of the following:

Antimony	Chromium	Mercury
Arsenic	Cobalt	Nickel
Barium	Copper	Selenium
Beryllium	Lead	Silver
Cadmium	Manganese	Vanadium

- Always read the Material Safety Data Sheets (MSDS) that should be supplied with the material you are using. These MSDSs will give you the information regarding the kind and amount of fumes and gases that may be dangerous to your health.
- For information on how to test for fumes and gases in your workplace, refer to item 1 in Subsection 1.03, Publications in this manual.
- Use special equipment, such as water or down draft welding/cutting tables, to capture fumes and gases.
- Do not use the welding torch in an area where combustible or explosive gases or materials are located.
- Phosgene, a toxic gas, is generated from the vapors of chlorinated solvents and cleansers. Remove all sources of these vapors.



ELECTRIC SHOCK

Electric Shock can injure or kill. The arc welding process uses and produces high voltage electrical energy. This electric energy can cause severe or fatal shock to the operator or others in the workplace.

- Never touch any parts that are electrically “live” or “hot.”
- Wear dry gloves and clothing. Insulate yourself from the work piece or other parts of the welding circuit.
- Repair or replace all worn or damaged parts.
- Extra care must be taken when the workplace is moist or damp.

- Install and maintain equipment according to NEC code, refer to item 4 in Subsection 1.03, Publications.
- Disconnect power source before performing any service or repairs.
- Read and follow all the instructions in the Operating Manual.



FIRE AND EXPLOSION

Fire and explosion can be caused by hot slag, sparks, or the arc weld.

- Be sure there is no combustible or flammable material in the workplace. Any material that cannot be removed must be protected.
- Ventilate all flammable or explosive vapors from the workplace.
- Do not cut or weld on containers that may have held combustibles.
- Provide a fire watch when working in an area where fire hazards may exist.
- Hydrogen gas may be formed and trapped under aluminum workpieces when they are cut underwater or while using a water table. **DO NOT** cut aluminum alloys underwater or on a water table unless the hydrogen gas can be eliminated or dissipated. Trapped hydrogen gas that is ignited will cause an explosion.



NOISE

Noise can cause permanent hearing loss. Arc welding/cutting processes can cause noise levels to exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.

- To protect your hearing from loud noise, wear protective ear plugs and/or ear muffs. Protect others in the workplace.
- Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.
- For information on how to test for noise, see item 1 in Subsection 1.03, Publications, in this manual.



ARC WELDING RAYS

Arc Welding/Cutting Rays can injure your eyes and burn your skin. The arc welding/cutting process produces very bright ultra violet and infra red light. These arc rays will damage your eyes and burn your skin if you are not properly protected.

- To protect your eyes, always wear a welding helmet or shield. Also always wear safety glasses with side shields, goggles or other protective eye wear.
- Wear welding gloves and suitable clothing to protect your skin from the arc rays and sparks.
- Keep helmet and safety glasses in good condition. Replace lenses when cracked, chipped or dirty.
- Protect others in the work area from the arc rays. Use protective booths, screens or shields.
- Use the shade of lens as recommended in Subsection 1.03, item 4.

1.03 Publications

Refer to the following standards or their latest revisions for more information:

1. OSHA, SAFETY AND HEALTH STANDARDS, 29CFR 1910, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
2. ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING, obtainable from the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
3. NIOSH, SAFETY AND HEALTH IN ARC WELDING AND GAS WELDING AND CUTTING, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
4. ANSI Standard Z87.1, SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018
5. ANSI Standard Z41.1, STANDARD FOR MEN'S SAFETY-TOE FOOTWEAR, obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018
6. ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018

7. AWS Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES, obtainable from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
8. NFPA Standard 51, OXYGEN-FUEL GAS SYSTEMS FOR WELDING, CUTTING AND ALLIED PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
9. NFPA Standard 70, NATIONAL ELECTRICAL CODE, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
10. NFPA Standard 51B, CUTTING AND WELDING PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
11. CGA Pamphlet P-1, SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS, obtainable from the Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202
12. CSA Standard W117.2, CODE FOR SAFETY IN WELDING AND CUTTING, obtainable from the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3
13. NWSA booklet, WELDING SAFETY BIBLIOGRAPHY obtainable from the National Welding Supply Association, 1900 Arch Street, Philadelphia, PA 19103
14. American Welding Society Standard AWSF4.1, RECOMMENDED SAFE PRACTICES FOR THE PREPARATION FOR WELDING AND CUTTING OF CONTAINERS AND PIPING THAT HAVE HELD HAZARDOUS SUBSTANCES, obtainable from the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
15. ANSI Standard Z88.2, PRACTICE FOR RESPIRATORY PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018

1.04 Note, Attention et Avertissement

Dans ce manuel, les mots “note,” “attention,” et “avertissement” sont utilisés pour mettre en relief des informations à caractère important. Ces mises en relief sont classifiées comme suit :

NOTE

Toute opération, procédure ou renseignement général sur lequel il importe d'insister davantage ou qui contribue à l'efficacité de fonctionnement du système.

ATTENTION

Toute procédure pouvant résulter l'endommagement du matériel en cas de non-respect de la procédure en question.



AVERTISSEMENT

Toute procédure pouvant provoquer des blessures de l'opérateur ou des autres personnes se trouvant dans la zone de travail en cas de non-respect de la procédure en question.

1.05 Precautions De Securite Importantes



AVERTISSEMENT

L'OPÉRATION ET LA MAINTENANCE DU MATÉRIEL DE SOUDAGE À L'ARC AU JET DE PLASMA PEUVENT PRÉSENTER DES RISQUES ET DES DANGERS DE SANTÉ.

Il faut communiquer aux opérateurs et au personnel TOUS les dangers possibles. Afin d'éviter les blessures possibles, lisez, comprenez et suivez tous les avertissements, toutes les précautions de sécurité et toutes les consignes avant d'utiliser le matériel. Composez le + 603-298-5711 ou votre distributeur local si vous avez des questions.



FUMÉE et GAZ

La fumée et les gaz produits par le procédé de jet de plasma peuvent présenter des risques et des dangers de santé.

- Eloignez toute fumée et gaz de votre zone de respiration. Gardez votre tête hors de la plume de fumée provenant du chalumeau.

- Utilisez un appareil respiratoire à alimentation en air si l'aération fournie ne permet pas d'éliminer la fumée et les gaz.
- Les sortes de gaz et de fumée provenant de l'arc de plasma dépendent du genre de métal utilisé, des revêtements se trouvant sur le métal et des différents procédés. Vous devez prendre soin lorsque vous coupez ou soudez tout métal pouvant contenir un ou plusieurs des éléments suivants:

antimoine	cadmium	mercure
argent	chrome	nickel
arsenic	cobalt	plomb
baryum	civre	sélénium
béryllium	manganèse	vanadium

- Lisez toujours les fiches de données sur la sécurité des matières (sigle américain "MSDS"); celles-ci devraient être fournies avec le matériel que vous utilisez. Les MSDS contiennent des renseignements quant à la quantité et la nature de la fumée et des gaz pouvant poser des dangers de santé.
- Pour des informations sur la manière de tester la fumée et les gaz de votre lieu de travail, consultez l'article 1 et les documents cités à la page 5.
- Utilisez un équipement spécial tel que des tables de coupe à débit d'eau ou à courant descendant pour capter la fumée et les gaz.
- N'utilisez pas le chalumeau au jet de plasma dans une zone où se trouvent des matières ou des gaz combustibles ou explosifs.
- Le phosgène, un gaz toxique, est généré par la fumée provenant des solvants et des produits de nettoyage chlorés. Éliminez toute source de telle fumée.



CHOC ELECTRIQUE

Les chocs électriques peuvent blesser ou même tuer. Le procédé au jet de plasma requiert et produit de l'énergie électrique haute tension. Cette énergie électrique peut produire des chocs graves, voire mortels, pour l'opérateur et les autres personnes sur le lieu de travail.

- Ne touchez jamais une pièce "sous tension" ou "vive"; portez des gants et des vêtements secs. Isolez-vous de la pièce de travail ou des autres parties du circuit de soudage.
- Réparez ou remplacez toute pièce usée ou endommagée.

- Prenez des soins particuliers lorsque la zone de travail est humide ou moite.
- Montez et maintenez le matériel conformément au Code électrique national des Etats-Unis. (Voir la page 5, article 9.)
- Débranchez l'alimentation électrique avant tout travail d'entretien ou de réparation.
- Lisez et respectez toutes les consignes du Manuel de consignes.



INCENDIE ET EXPLOSION

Les incendies et les explosions peuvent résulter des scories chaudes, des étincelles ou de l'arc de plasma. Le procédé à l'arc de plasma produit du métal, des étincelles, des scories chaudes pouvant mettre le feu aux matières combustibles ou provoquer l'explosion de fumées inflammables.

- Soyez certain qu'aucune matière combustible ou inflammable ne se trouve sur le lieu de travail. Protégez toute telle matière qu'il est impossible de retirer de la zone de travail.
- Procurez une bonne aération de toutes les fumées inflammables ou explosives.
- Ne coupez pas et ne soudez pas les conteneurs ayant pu renfermer des matières combustibles.
- Prévoyez une veille d'incendie lors de tout travail dans une zone présentant des dangers d'incendie.
- Le gas hydrogène peut se former ou s'accumuler sous les pièces de travail en aluminium lorsqu'elles sont coupées sous l'eau ou sur une table d'eau. NE PAS couper les alliages en aluminium sous l'eau ou sur une table d'eau à moins que le gas hydrogène peut s'échapper ou se dissiper. Le gas hydrogène accumulé explosera si enflammé.



RAYONS D'ARC DE PLASMA

Les rayons provenant de l'arc de plasma peuvent blesser vos yeux et brûler votre peau. Le procédé à l'arc de plasma produit une lumière infra-rouge et des rayons ultra-violetts très forts. Ces rayons d'arc nuiront à vos yeux et brûleront votre peau si vous ne vous protégez pas correctement.

- Pour protéger vos yeux, portez toujours un casque ou un écran de soudeur. Portez toujours des lunettes de sécurité munies de

parois latérales ou des lunettes de protection ou une autre sorte de protection oculaire.

- Portez des gants de soudeur et un vêtement protecteur approprié pour protéger votre peau contre les étincelles et les rayons de l'arc.
- Maintenez votre casque et vos lunettes de protection en bon état. Remplacez toute lentille sale ou comportant fissure ou rognure.
- Protégez les autres personnes se trouvant sur la zone de travail contre les rayons de l'arc en fournissant des cabines ou des écrans de protection.
- Respectez le teint de lentille recommandé dans le article 4, page 5.
- Hydrogen gas may be present under aluminum workpieces during the cutting process when being cut underwater or using a water table. DO NOT cut aluminum underwater or on a water table unless the hydrogen gas can be eliminated as the hydrogen gas may detonate.



BRUIT

Le bruit peut provoquer une perte permanente de l'ouïe. Les procédés de soudage à l'arc de plasma peuvent provoquer des niveaux sonores supérieurs aux limites normalement acceptables. Vous devez vous protéger les oreilles contre les bruits forts afin d'éviter une perte permanente de l'ouïe.

- Pour protéger votre ouïe contre les bruits forts, portez des tampons protecteurs et/ou des protections auriculaires. Protégez également les autres personnes se trouvant sur le lieu de travail.
- Il faut mesurer les niveaux sonores afin d'assurer que les décibels (le bruit) ne dépassent pas les niveaux sûrs.
- Pour des renseignements sur la manière de tester le bruit, consultez l'article 1, page 5.

1.06 Documents De Reference

Consultez les normes suivantes ou les révisions les plus récentes ayant été faites à celles-ci pour de plus amples renseignements :

1. OSHA, NORMES DE SÉCURITÉ DU TRAVAIL ET DE PROTECTION DE LA SANTÉ, 29CFR 1910, disponible auprès du Superintendent of

Documents, U.S. Government Printing Office, Washington, D.C. 20402

2. Norme ANSI Z49.1, LA SÉCURITÉ DES OPÉRATIONS DE COUPE ET DE SOUDAGE, disponible auprès de la Société Américaine de Soudage (American Welding Society), 550 N.W. LeJeune Rd., Miami, FL 33126
3. NIOSH, LA SÉCURITÉ ET LA SANTÉ LORS DES OPÉRATIONS DE COUPE ET DE SOUDAGE À L'ARC ET AU GAZ, disponible auprès du Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
4. Norme ANSI Z87.1, PRATIQUES SURES POUR LA PROTECTION DES YEUX ET DU VISAGE AU TRAVAIL ET DANS LES ECOLES, disponible de l'Institut Américain des Normes Nationales (American National Standards Institute), 1430 Broadway, New York, NY 10018
5. Norme ANSI Z41.1, NORMES POUR LES CHAUSSURES PROTECTRICES, disponible auprès de l'American National Standards Institute, 1430 Broadway, New York, NY 10018
6. Norme ANSI Z49.2, PRÉVENTION DES INCENDIES LORS DE L'EMPLOI DE PROCÉDÉS DE COUPE ET DE SOUDAGE, disponible auprès de l'American National Standards Institute, 1430 Broadway, New York, NY 10018
7. Norme A6.0 de l'Association Américaine du Soudage (AWS), LE SOUDAGE ET LA COUPE DE CONTENEURS AYANT RENFERMÉ DES PRODUITS COMBUSTIBLES, disponible auprès de la American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126
8. Norme 51 de l'Association Américaine pour la Protection contre les Incendies (NFPA), LES SYSTEMES À GAZ AVEC ALIMENTATION EN OXYGENE POUR LE SOUDAGE, LA COUPE ET LES PROCÉDÉS ASSOCIÉS, disponible auprès de la National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
9. Norme 70 de la NFPA, CODE ELECTRIQUE NATIONAL, disponible auprès de la National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
10. Norme 51B de la NFPA, LES PROCÉDÉS DE COUPE ET DE SOUDAGE, disponible auprès de la National Fire Protection Association, Batterymarch Park, Quincy, MA 02269

11. Brochure GCA P-1, LA MANIPULATION SANS RISQUE DES GAZ COMPRIMÉS EN CYLINDRES, disponible auprès de l'Association des Gaz Comprimés (Compressed Gas Association), 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202
12. Norme CSA W117.2, CODE DE SÉCURITÉ POUR LE SOUDAGE ET LA COUPE, disponible auprès de l'Association des Normes Canadiennes, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada, M9W 1R3
13. ivret NWSA, BIBLIOGRAPHIE SUR LA SÉCURITÉ DU SOUDAGE, disponible auprès de l'Association Nationale de Fournitures de Soudage (National Welding Supply Association), 1900 Arch Street, Philadelphia, PA 19103
14. Norme AWSF4.1 de l'Association Américaine de Soudage, RECOMMANDATIONS DE PRATIQUES SURES POUR LA PRÉPARATION À LA COUPE ET AU SOUDAGE DE CONTENEURS ET TUYAUX AYANT RENFERMÉ DES PRODUITS DANGEREUX , disponible auprès de la American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126
15. Norme ANSI Z88.2, PRATIQUES DE PROTECTION RESPIRATOIRE, disponible auprès de l'American National Standards Institute, 1430 Broadway, New York, NY 10018

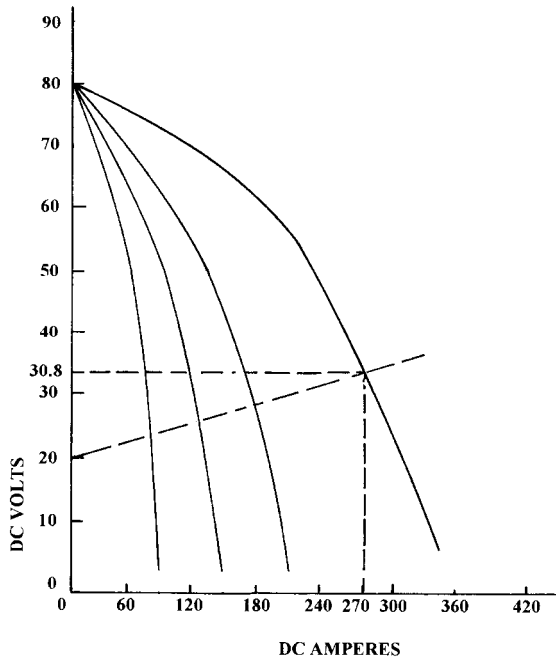
SECTION 2: TECHNICAL SPECIFICATIONS

2.01 Specifications

The Thermal Arc Raider 10,000 Pro is a gasoline engine driven DC welding generator with selectable Constant Current (CC) and Constant Voltage (CV) output characteristics. This unit is designed for use with Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), and GAS Tungsten Arc Welding - (GTAW) processes.

Specifications		
		DC
Amperage Range		15 – 270
Duty Cycle		270 @ 60%
AC/DC welding current		250 @ 100%
Volt Range CV Mode		16 – 30
OCV CC Mode		70 VDC
Auxiliary Power		
Single Phase	115	2ea GFCI Duplex Receptacles 3.5Kva
Single Phase	115/240	8.5Kva
Three Phase	460	10Kva
Engine		
Make/Type		HONDA
Model series		GX 620K1
Number of cylinders		2
Displacement		614 cc.
Power		20 HP
Engine Speed		3750 rpm no load
Engine speed		2600 rpm Idle
Cooling system		Air
Oil capacity		1.5 l. - 0,42 gl.
Fuel capacity		37.5 l. - 10 gl.
Fuel consumption		5.2 l/h – 1.4 gl./Hr
Battery		12V 340A

2.02 Volt-Amp Curve



NOTE

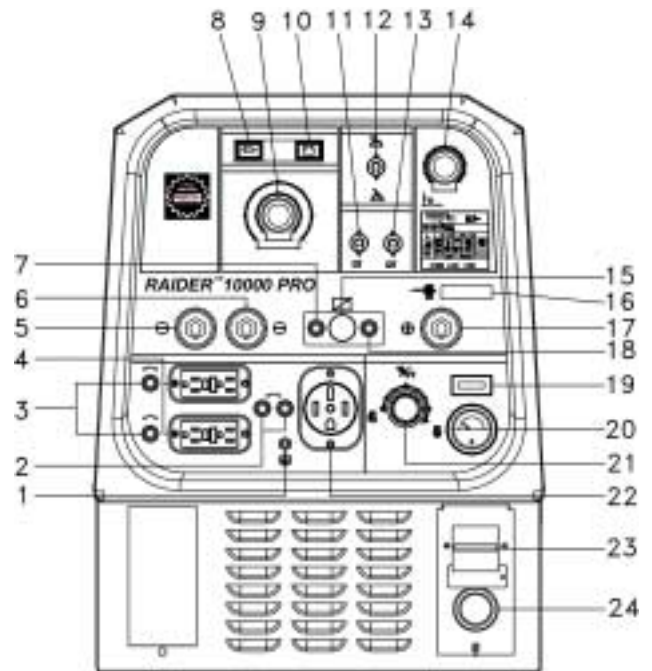
Volt-ampere curves show the voltage and amperage output capabilities of the welding power source. Curves of other settings will fall between the curves shown.

2.03 Duty Cycle

The duty cycle of a welding generator is the percentage of a ten-minute period that a welding generator can be operated at a given output without causing overheating and damage of the unit. This unit is rated at 60 percent duty cycle when operated at 270 amperes. The unit can be operated at 270 amperes for six consecutive minutes, but it must operate at no load for the remaining four minutes to allow proper cooling. If the welding amperes decrease, the duty cycle increases. If the welding amperes are increased beyond rated output, the duty cycle will decrease.

CAUTION: CONTINUAL OPERATION EXCEEDING THE DUTY CYCLE RATINGS CAN CAUSE DAMAGE TO THE WELDING POWER SOURCE.

2.04 Front Panel Descriptions



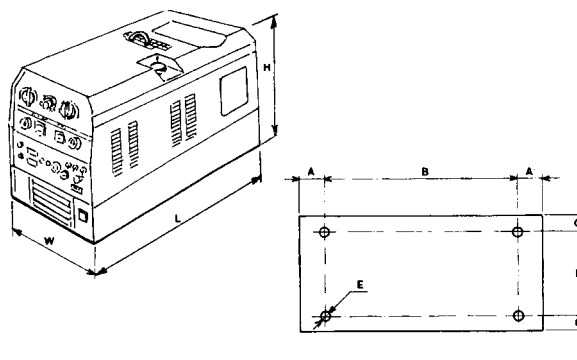
Front Panel

- 1 Earth connection - used to earth ground the generator for auxiliary power.
- 2 230/115V 50A Circuit Breakers - Push to reset. Controls 230/115V power source for the 230/115V receptacle (4).
- 3 115V 20A Circuit Breakers - Push to reset. Controls 115V power source for the 115V duplex GFCI receptacles
- 4 115V Single Phase GFCI Receptacle - Supplies 60 Hz single-phase power at weld/power speed.
- 5 Welding Receptacle Work: Negative output welding connection for CC (Constant current) STICK
- 6 Welding receptacle Work : Negative output welding connection for CV (Constant voltage) MIG.
- 7 115V 3A Circuit breaker - Push to reset. Controls 115V power source for wire feeders Controlled through the 14 pin receptacle.
- 8 Oil level Lamp - When the RUN/STOP Switch is turned on the Oil level Lamp will Not Glow. Should the oil sensor in the engine detect a low oil condition the Oil level Lamp will turn-on and the engine will shut off.
- 9 Amperage/Voltage Control - detects the desired Amperage or Voltage (depending on mode) within the entire range of the welding generator. The scale surrounding the control represents approximate actual values.

- 10 Battery Charge Lamp - When the RUN/STOP Switch is turned on the Battery Charge Lamp will Glow. For normal operation when the engine is running the Battery Charge Lamp will be off. Should the Charging circuit or Battery fail the Battery Warning Lamp will Turn-on and the engine will shut off.
- 11 Remote Amperage/Voltage switch – Allows remote amperage/Voltage device operation through the 14 pin receptacle.
- 12 Process Selector switch : CC/CV - Allows the operator to select the CC (Constant Current) Process or CV (Constant voltage) process.
- 13 Remote Contactor switch – Allows for the output contactor to be controlled through the 14 pin receptacle. When in the Panel position welding output is present at the output terminals when the engine is running. When in Remote position output is controlled through a 14pin remote device.
- 14 Arc Control - The Arc Control is use in the SMAW mode only. Rotate the control clockwise to increase the short circuit current available to control the welding arc.
- 15 14 Pin receptacle - Used for remote Contactor, amperage control, and wire feeder control.
- 16 Serial number
- 17 Welding Receptacle: Electrode - Positive output welding connection for CC (Constant Current) and CV (Constant Voltage).
- 18 24V AC 10 A Circuit breaker - Push to reset. Controls 24V power source for wire feeders Controlled through the 14 pin receptacle.
- 19 Hour meter – Monitors Time in hours when the engine is on.
- 20 Fuel Gauge – Monitors fuel level
- 21 Engine RUN/STOP Switch - Place in the RUN position to operate generator. Use the START button to start the engine. To shut off engine place switch in stop position.
- 22 230/115V Single Phase Receptacle - Supplies 60 Hz single-phase power at weld/power speed.
- 23 13A Circuit breaker - 3 poles circuit breaker controls 460V three phase power source.
- 24 460V Output - Access for three phase 460V 60 Hz connections. Connect Line1, 2 and 3 to the output side of the circuit breaker and the ground to the bolt mounted beside the circuit breaker.

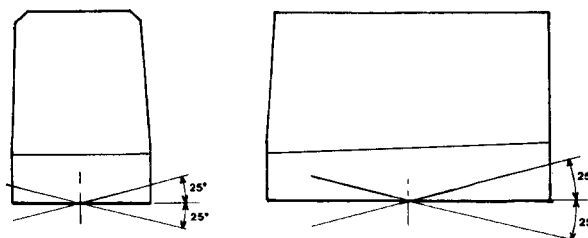
2.05 Dimensions and Weight

Height	710mm	27.9"
Width	530mm	20.86"
Length	1080mm	42.52"
A	15mm	.59"
B	1050mm	41.34"
C	34.5mm	1.36"
D	424mm	16.69"
E	10.5mm Dia.	.41" Dia.
Weight	248 Kg	546.5 lb



2.06 Maximum Welding Generator Operating Angles

Do not exceed operating angles while running or engine damage will occur.

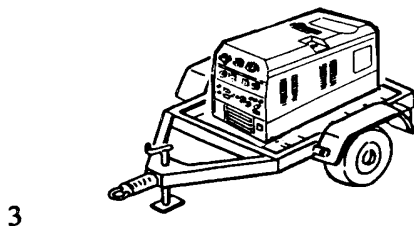
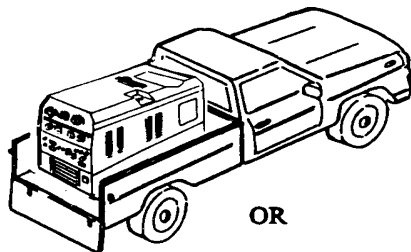
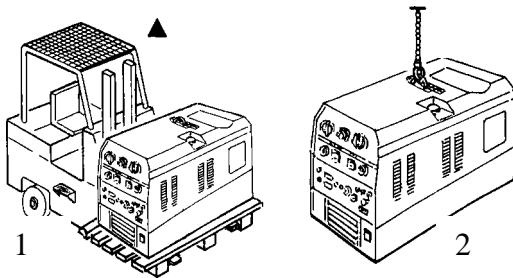


The operating angle is a maximum of 25 degrees.

2.07 Installing Welding Generator

1. Lifting forks.
2. Lifting Eye. Use lifting eye or lifting forks to move unit. If using lifting forks, extend forks beyond opposite side of unit.
3. Trailer - Install unit on trailer according to trailer manufacturing.

Movement - Do not lift unit from end.

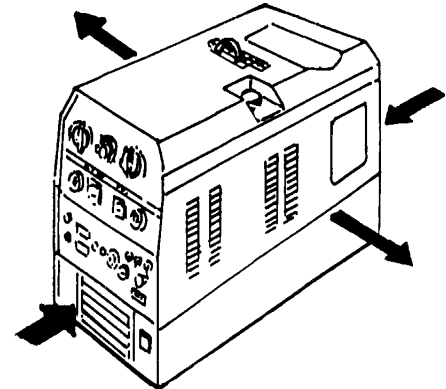


2.08 Location

A proper installation site should be selected for the welding generator if the unit is to provide dependable service and remain relatively maintenance free.

CAUTION: OPERATE IN OPEN, WELL-VENTILATED AREAS, OR IF OPERATED INDOORS, VENT ENGINE EXHAUST OUTSIDE THE BUILDING. KEEP ENGINE EXHAUST OUTLET AWAY FROM BUILDING EXTERIER, INTERIER WALLS & AIR INTAKES.

2.09 Air Flow Clearance

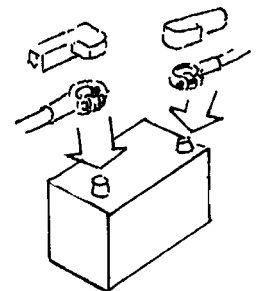


Maintain at least 19.7 inch (500mm) of unrestricted space on all sides of the unit, and keep underside free of obstructions. Do not place any filtering device over the intake air passages of this welding generator. Warranty is void if any type of filtering device is used.

The service life and operating efficiency of this unit is reduced when the unit is subjected to high levels of dust, dirt, moisture, and corrosive vapors.

WARNING: SPARKS CAN CAUSE BATTERY GASES TO EXPLODE BATTERY ACID CAN BURN EYES AND SKIN.

- Stop engine before disconnecting or connecting battery cables.
- Always wear a faceshield and proper protective clothing when working on battery.
- Do not allow tools to cause sparks when working on a battery.
- Place the engine control switch in the STOP position.
- Remove bolts and pull out tray.
- Connect the cables
- Reinstall battery tray.



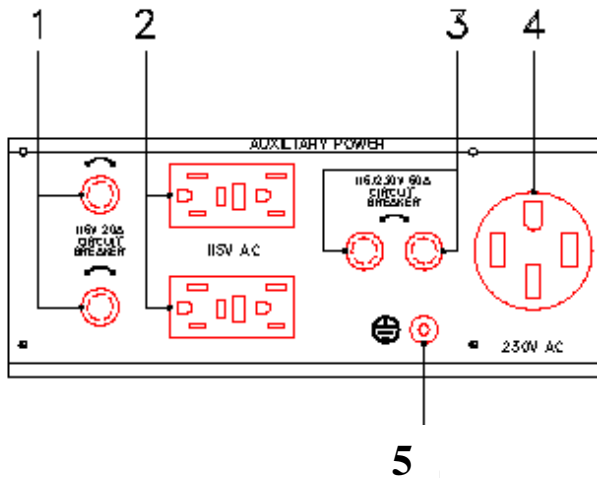
WARNING: ENGINE FUEL CAN CAUSE FIRE OR EXPLOSION.

- Stop engine before fueling.
- Do not fuel while smoking or near sparks or flames.
- Do not overfill tank-clean up any spilled fuel. REMOVE FUEL CAP SLOWLY-FUEL SPRAY MAY CAUSE INJURY. FUEL MY BE UNDER PRESSURE. Rotate fuel cap slowly and wait until hissing stops before removing cap. Engine must be cold and on a level surface.

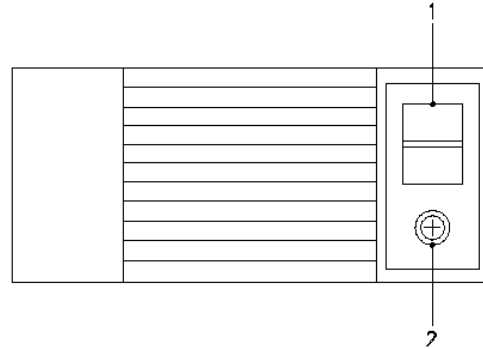
2.10 Generator Auxiliary Power System

Standard Receptacles

- (1) Circuit breakers to protect (2) GFCI receptacles from overload.
- (2) 120 V 15 A AC Duplex GFCI receptacle. Supplies 60 Hz single-phase power at maximum speed (3600 rpm). Maximum output each receptacle is 1.8 kVA/kW.
- (3) Circuit breakers to protect (4) 240 V receptacle from overload.
- (4) 240 V 50 A AC receptacle. Supplies 60 Hz single-phase power at maximum speed (3600 rpm). Maximum output is 8.5 kVA/kW.
- (5) Earth ground connection.



(1) 460 V 13 A AC three phase Circuit Breaker connection. Supplies 60 Hz three-phase power at maximum speed (3600 rpm). Maximum output is 10 kVA/kW.

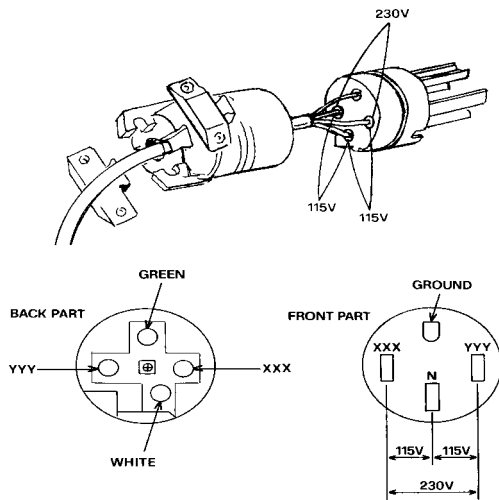


To connect load remove the two retaining knobs holding the access panel. After opening the panel connect a cable to be used to supply the 460V three phase load to the three phase circuit breaker mounted to the access panel. Connected the ground cable to the bolt mounted next to the circuit breaker. Route the cable through the cable clamp (2) and secure cable. Re-secure the access panel with the two retaining knobs to the front panel.

2.11 Wiring Optional 230 Volt Plug

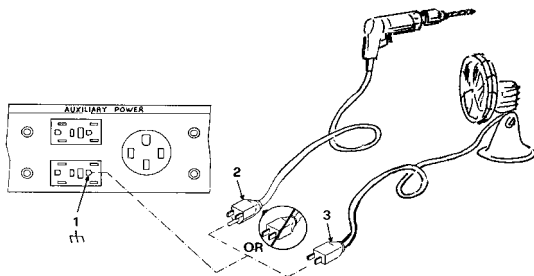
The plug can be wired for a 230V, 2-wire load or a 115/230V, 3-wire load. See diagram below

White - Neutral terminal.
 YYY - Load 1 terminal.
 XXX - Load 2 terminal.
 Green - Ground terminal.



Select proper insulated and grounded equipment.

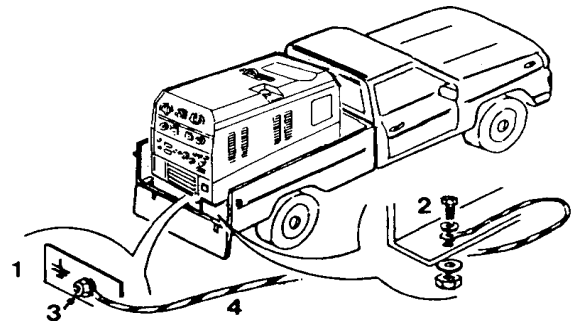
- 1) Auxiliary power receptacles are Neutral bonded to frame.
- 2) 3-Prong plug for case Grounded equipment
- 3) 2-Prong plug for double insulated equipment.



2.12 Grounding The Generator

TO A TRUCK OR TRAILER FRAME

1. Generator base.
2. Metal vehicle frame.
3. Equipment grounding terminal.
4. Grounding cable. Use # 10 AGW or larger insulated copper wire.

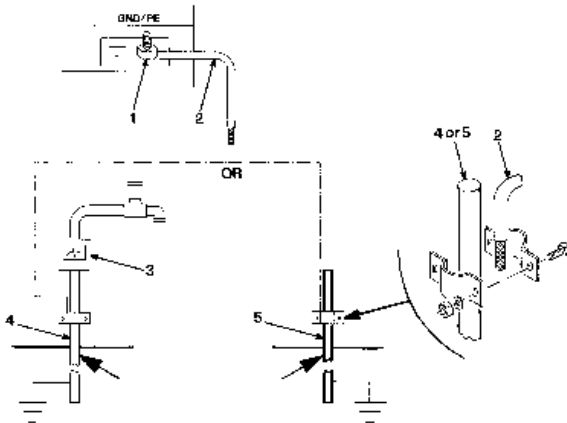


NOTE: FOR THE GFCI RECEPTACLES TO PERFORM PROPER PROTECTION THE WELDING GENERATOR MUST BE EARTH GROUNDED.

2.13 When Connecting To Home, Shop, or Farm Wiring

NOTE: THIS UNIT SHOULD NEVER BE USED AS THE MAIN SOURCE OF POWER.

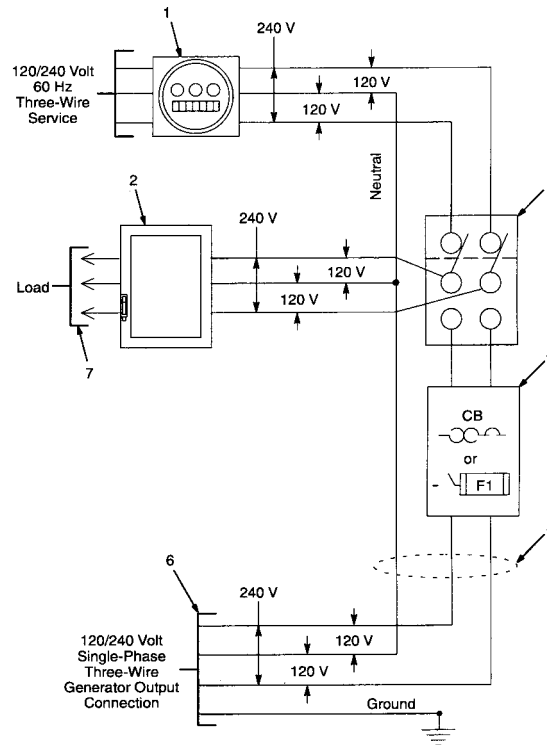
1. Equipment grounding terminal.
2. Grounding cable. Use # 10 AGW or larger insulated copper wire.
3. Water meter.
4. Metal water pipe
5. Driven ground rod.



Typical connection to supply emergency or standby power.

1. Power Company Service Meter.
2. Main and Branch Over-current Protection.
3. Double-Pole, Double-Throw Transfer Switch. Obtain and install correct switch. Switch rating must be same as or greater than the branch over-current protection.
4. Circuit Breaker or Fused Disconnect Switch. Obtain and install correct switch.
5. Extension Cord. Generator Connections. Connect terminals or plug of adequate amperage capacity to cord. Follow all applicable codes and safety practices. Turn off or unplug all equipment connected to generator before starting or stopping engine. When starting or stopping, the engine has low speed which causes low voltage and frequency.
6. Load connections.

NOTE: It is the installer's responsibility to follow the applicable rules from the National Electrical Code (NEC), state, local, and OSHA codes for the installation and use of auxiliary power generators.



Customer-supplied equipment is required if generator is to supply standby power during emergencies or power outages.

2.14 Auxiliary Power Requirements

The following section provides some general guidelines for the installation and operation of an auxiliary power generator. Not all the guidelines may be applicable to this specific unit.

The auxiliary power supplied from the generator is most commonly used in industrial, small business and residential applications. For industrial applications, a portable unit can be moved to the job site to power portable tools, lights, compressors, etc. For small business and residential applications, the generator supplies standby power during a power outage.

It is the installer's responsibility to follow all applicable codes when installing an auxiliary power generator. It is also the installer's responsibility to determine if the generator is capable of supplying adequate power for a specific application. When installing consult qualified

local personnel and follow all applicable codes for safe and proper installation.

Before the generator may be used to supply power, the installer must first become familiar with and meet all codes applicable to the installation of an auxiliary generator. It is the installer's responsibility to follow the applicable rules from the National Electrical Code (NEC), state, local, and OSHA codes for the installation and use of auxiliary power generators.

LOAD EVALUATION

Before connecting or operating the auxiliary power generator, the installer must determine if the generator is capable of supplying adequate power for a specific application. Load and generator evaluation is essential for satisfactory generator and equipment operation.

TYPES OF LOAD

Load requirements depend on the type of load connected to the generator. There are two types of loads, resistive and non-resistive. A resistive load, such as a light bulb, requires a constant amount of power from the generator. A non-resistive load, such as a portable grinder, requires variable amounts of power from the generator. Because a grinder requires more power for motor starting and is rarely used with a constant, even pressure, the load requirements can change greater than the operator anticipates.

RUNNING LOAD REQUIREMENTS

The total running load applied to the generator is calculated by adding up all the individual loads. Some requirements are rated in amperes, others in watts. The requirements for most equipment is provided on its nameplate.

Example 1: If a drill requires 5 amperes at 115 volts, calculate its running power requirements in watts.

$$\text{VOLTS} \times \text{AMPERES} = \text{WATTS}$$

$$115\text{V} \times 5\text{A} = 575\text{W}$$

Therefore, the individual load applied by the drill is 575 watts.

Example 2: If a light bulb is rated at 200 watts, the individual load applied the light bulb is 200 watts. If three 200 watt light bulbs are used with the drill from example 1 add the individual loads to calculate total load. $(200\text{W} + 200\text{W} + 200\text{W}) + 575\text{W} = 1175\text{W}$

Therefore the total load applied by the three light bulbs and drill is 1175 watts.

Motor-starting Requirements

Starting amperage requirements are many times the running amperage of the motor. Starting requirements must be determined to assure that the generator is capable of starting the motor without damaging it. This can be done by examining the motor nameplate and identifying the code letter specifying the starting kVA/HP required.

Motor Start Code Letter	KVA/HP
G	6.3
H	7.1
J	8.0
K	9.0
L	10.0
M	11.2
N	12.5
P	14.0

If the kVA/HP requirement, motor horsepower, and voltage rating are known, the starting amperage can be calculated.

Example: Calculate the starting amperage required for a 230V, ¼ HP motor with a motor start code of G.

Equation

$$\frac{\text{KVA/HP} \times \text{HP} \times 1000}{\text{VOLTS}} = \text{STARTING AMPERAGE}$$

$$\text{Volts} = 230$$

$$\text{HP} = \frac{1}{4}$$

$$\text{Code G results in kVA/HP} = 6.3$$

$$\frac{6.3 \times \frac{1}{4} \times 1000}{230} = 6.85\text{A}$$

Therefore, starting the motor requires 6.85 amperes.

If a code letter is not present on the motor nameplate, approximate starting amperage is equal to six times running amperage. This is a reasonable approximation for all applications where the generator rated amperage is at least twice the motor requirement. If the generator-to-motor-size ratio is less than 2:1 acquire the needed information to properly determine the motor-starting requirement.

2.15 Simultaneous Welding and Power

(single or three phase)

Weld Current	Total Power in Watts	120 volt GFCI Recept.	240 volt Recept. 8500 max.	460 volt Three phase
270A	1,200	10A	5A	1.5A
220A	3,660	15A x 2	15.25A	4.6A
170A	4,500	15A x 2	18.75A	5.65A
120A	7,000	15A x 2	29A	8.8A
70A	8,500	15A x 2	35.4A	10.68A
0A	10,000	15A x 2	35.4A	12.5A

Combined output of all receptacles limited to rating of the generator.

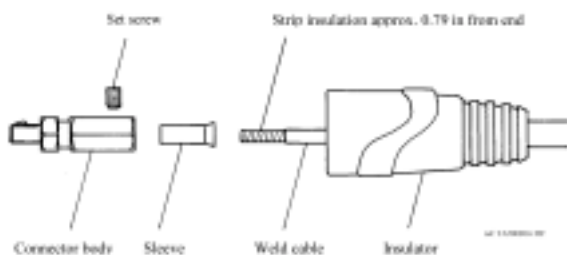
Example: If welding at 120A and 15A is drawn from the 120V GFCI duplex receptacle, 10A is drawn from the 240V receptacle, only 3.5A is available of 460V three-phase.

2.16 Selecting and Preparing Weld Output Cables

CONNECTOR INSTALLATION

Install the supplied male connectors onto proper cables.

1. Obtain cable of desired length and proper size for installation.
2. If the installation requires cable large than 3/0 AWG, prepare one end of 3/0 AWG pigtail no longer than 2 ft (0,61 m) for connector installation. The remaining end of the pigtail is connected to the main run of 3/0 AWG or larger weld cable.
3. Push weld cable through insulator.
4. Remove 0.79 in (20 mm) of insulation from end of cable.
5. Install supplied sleeve on stripped end of cable.
6. Insert cable with sleeve into connector body so that cable is snug and against bottom of connector body.
7. Install and tighten set screw with supplied hex wrench to secure connector body onto cable.
8. Push insulator onto connector body to cover set screw.



WELD CABLE CONNECTIONS

1. Do not touch live electrical parts.
2. Shut down unit before making any weld output connections.
3. Do not change position of the welding cable connectors while welding
4. Be sure that the connectors are secure in receptacle before welding.

TYPICAL PROCESS CONNECTIONS

SEQUENCE OF OPERATION

WARNING: Read and follow all safety precaution before proceeding with operation.

SHIELDED METAL ARC WELDING (SMAW)

1. Install and connect unit according to the installation section.
2. Wear gloves, Welding Helmet and protective clothing.
3. Connect work clamp at workplace.
4. Select proper electrode.
5. Place the selector switch in STICK position.
6. Place the OUTPUT CONTACTOR switch in ON position.
7. If remote amperage control is not used, place the Amperage/Voltage switch in panel position.
8. Rotate the Amperage/Voltage control to desired position.
9. Insert electrode into electrode holder.

GAS TUNGSTEN ARC WELDING (GTAW) Lift Start only

1. Install and connect unit according to the Installation section.
2. Select proper tungsten electrode.
3. Prepare tungsten electrode and connect the torch to the negative output terminal.
4. Wear gloves, welding helmet and protective clothing.
5. Connect work clamp to positive output terminal and work place.
6. Place the process selector switch in Lift Tig position.
7. For remote contactor and/or amperage control connect a remote device to the 14 pin receptacle.
8. For remote amperage control place the Amperage/Voltage switch in the panel position.
9. For remote contactor control place the contactor switch in the panel position.
10. Rotate Amperage/Voltage control to desired position.
11. Turn on shielding gas and water supplies as applicable.
12. Touch electrode to work and lift to start arc.
13. Begin welding.

GAS METAL ARC WELDING (GMAW)

1. Install and connect unit according to the Installation section.
2. Install and connect wire feed system according to wire feeder installation guide.
3. Wear gloves, welding helmet and protective clothing.
4. Connect work lead to the negative CV terminal.
5. Place the process selector switch in CV position.
6. If remote voltage control is not used, place the Amperage/Voltage switch in panel position.
7. Rotate Amperage/Voltage control to desired position.
8. Turn on shielding gas supply and set desired flow rate.
9. Begin welding.

SELECTING WELD CABLE SIZES

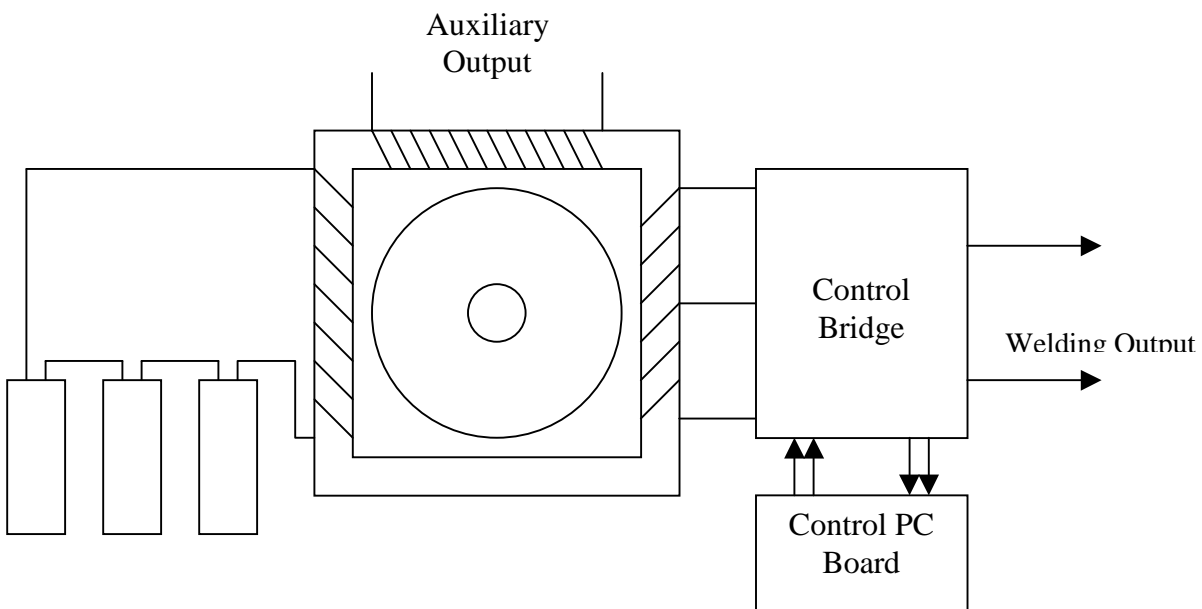
Weld cable size (AWG) is based on either a 4 volts or less drop or a current density of more than 300 circular mils per ampere.

	100ft (30 m)	150ft. (45 m)	200ft. (60 m)	250ft. (70 m)
Welding Amperage	60-100% Duty Cycle	10-100% Duty Cycle		
100	4	4	3	2
150	3	2	1	1/0
200	2	1	1/0	2/0
250	1	1/0	2/0	3/0
300	1/0	2/0	3/0	4/0

SECTION 3: TROUBLE SHOOTING GUIDE

The Raider 10,000 Pro is an asynchronous (brush-less) style generator. The basic theory of this style generator is as follows:

A permanent magnet (rotor) is rotating at a high speed inside a winding wrapped around a laminated steel core (stator). This produces a small voltage at a very low intensity, 1 to 2 volts at 1 amp in the exciter windings. This low voltage charges the excitation capacitors connected in series and directly connected to both ends of the exciter windings. This produces a charge-discharge situation that augments to the point at which it stabilizes itself in proportion to the magnetic force of the rotor winding wire's size and length, capacity of the capacitors, and engine speed (3600 rpm) at about 60 times per second. The Charge-discharge effect produces a collapsing of magnetic field in the laminated steel, thus creating a current all of its own. This current produced is proportional to the main winding characteristics, size, length, etc.



3.01 There is No Auxiliary Voltage and/or Welding Current

In examining this particular fault it must be remembered that an asynchronous generator with excitation by capacitors has the characteristic of becoming automatically de-energized while it is functioning (no longer supplies current). Also an asynchronous generator will not self-excite when it is started up if there is a short-circuit whether outside of the generator (in the user circuit) or inside it (in the windings and in the control equipment).

TROUBLE	POSSIBLE CAUSE	REMEDY
The GFCI is open or when actuated in the closed position suddenly trips open.	The reset of the G.F.C.I. must be in the closed position. Check that the user circuit does not have a phase to earth.	Close the GFCI and disconnect the plugs from the current sockets. If the GFCI does not remain closed even if the reset is slowly closed, this means that the GFCI is faulty and that it must be replaced.
The generator is connected to the maximum load, in particular induction motors.	When starting, the current plugs should not be connected directly with the load, but with a switch interposed that will allow the set to be started with the load disconnected.	Remove the load in the starting phase. If necessary, disconnect the plugs from the current sockets. If generator still does not generate welding current refer to test section for exciter capacitors & Stator.
The + and - welding cables are in short-circuit through electric contact between them.	The electrode & Work lead are connected in short circuit condition.	Disconnect electrode & Work leads. If generator still does not generate welding current refer to test section for exciter capacitors & Stator.
Excitation Capacitors are shorted.	Disconnect the capacitors from the generator and from the equipment. Refer to test section for excitation capacitors.	If necessary, replace the capacitors.
Output welding receptacles loose or shorted.	Check the cable connections to the receptacles. Check for burnt or loose receptacle insulation.	Replace the receptacle parts necessary.
Output Welding Rectifier is shorted.	Have Rectifier checked by authorized service agent.	
Faulty winding in stator.	Have stator checked by authorized service agent.	

3.02 The Generator Is De-Energized when Load is connected

PROBABLE CAUSE	CONTROLS	REMEDIES
There is a short-circuit on the user circuit.	Check the load for shorts	Repair load circuit.
Excessive overload; induction motors (especially 2-pole) connected of higher power than the Generators specifications.	See that the induction motors are not of higher power than the specification of the generator.	Reduce load to within the specifications of the generator.

3.03 Excessive Fall of Voltage When The Load is Connected

PROBABLE CAUSE	CONTROLS	REMEDIES
The engine does not maintain the nominal speed.	Check whether the fine current control is functioning.	Replace or repair Fine Current control assembly.
	Check engine fuel system.	Refer to Engine manual for testing fuel system.
	Check with an ammeter whether the load is greater than the rated load of the generator.	Reduce load to within generator specifications.

3.04 Single Phase Receptacle Out Of Balance While at Idling

PROBABLE CAUSE	CONTROLS	REMEDIES
A capacitor of one phase is disconnected or is no longer working properly.	Check the connections at the terminals of the capacitors. See capacitor testing in the the Troubleshooting Guide.	Repair the faulty capacitor connections. Replace any capacitor that may be found to be defective.

3.05 Insufficient Welding Current

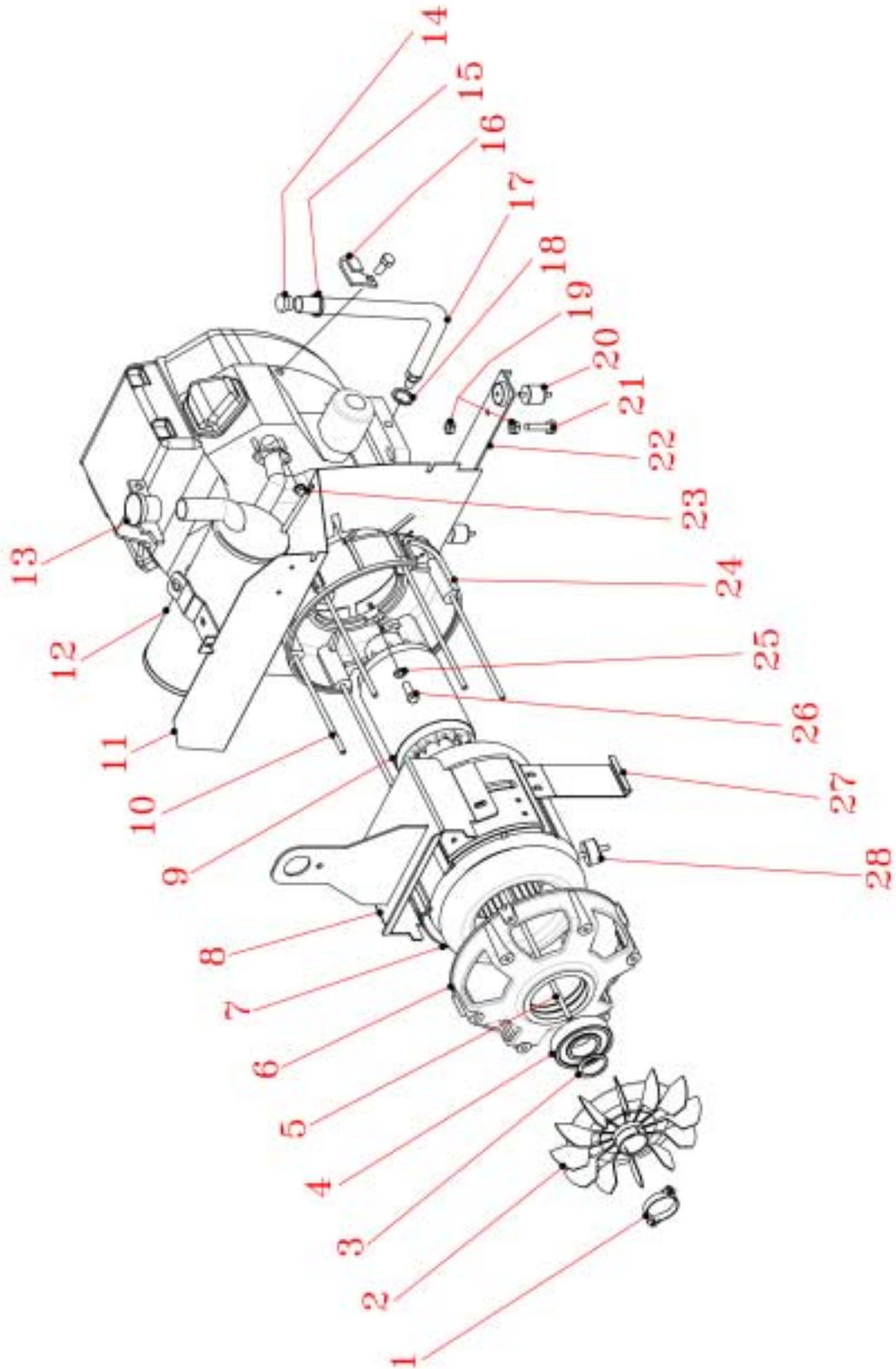
PROBABLE CAUSE	CONTROLS	REMEDIES
The engine does not obtain maximum speed.	Check the Fine Current Control function.	Repair or replace the Fine Current Control.
	Check engine throttle linkage, Fuel and electrical systems.	Refer to engine manual.
One phase on the capacitors or on the rectifiers is disconnected.	Check that all the internal connections have a sound electrical connection.	Fix any connections that may have worked loose.

3.06 The Battery Runs down Frequently

PROBABLE CAUSE	CONTROLS	REMEDIES
Battery defective: does not maintain the load.	Check for shorted battery cell.	Replace battery.
Engine charge circuit defective	Test charge circuit according to engine manual.	

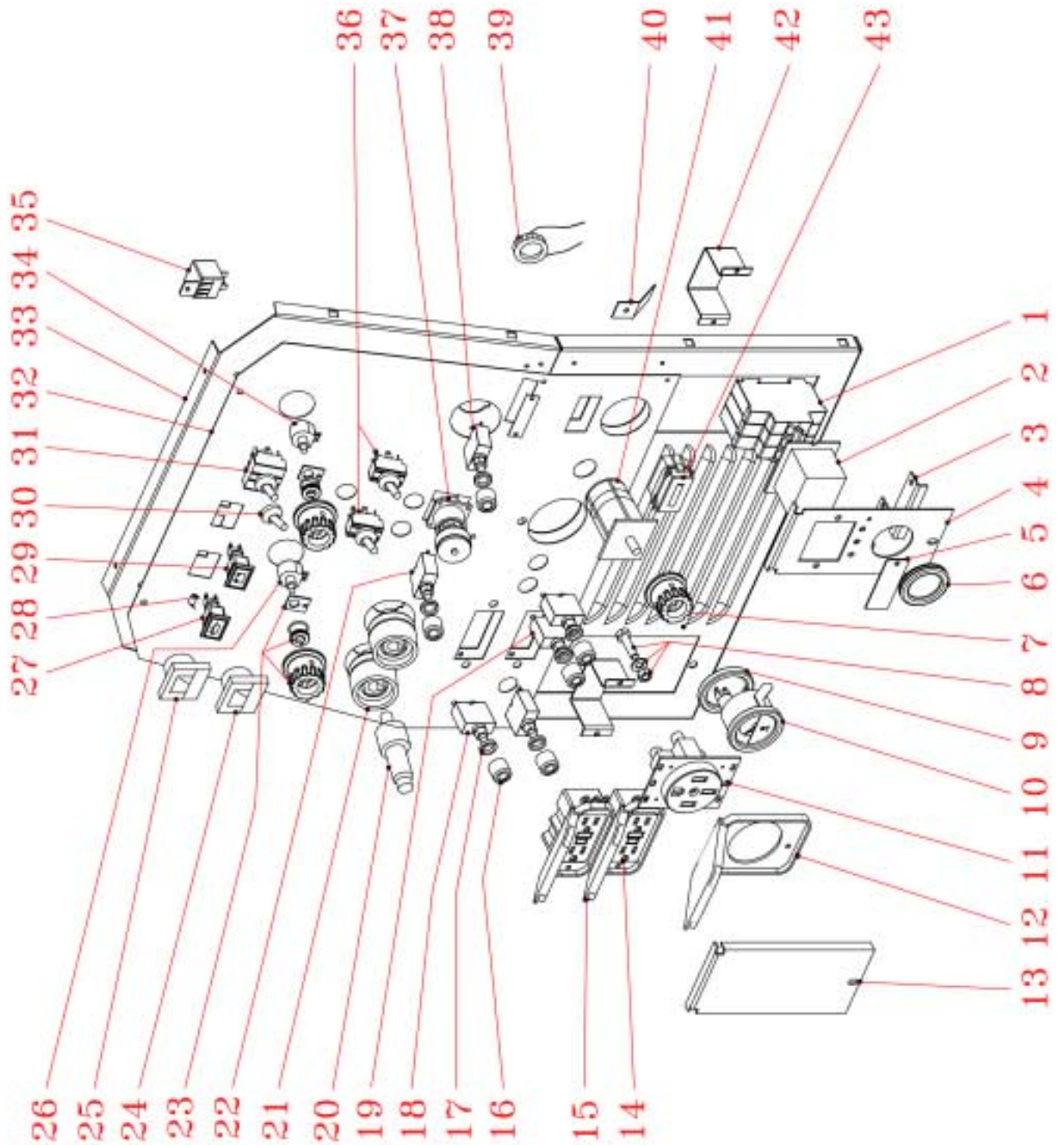
Section 5 Parts List

5.01 Stator Parts



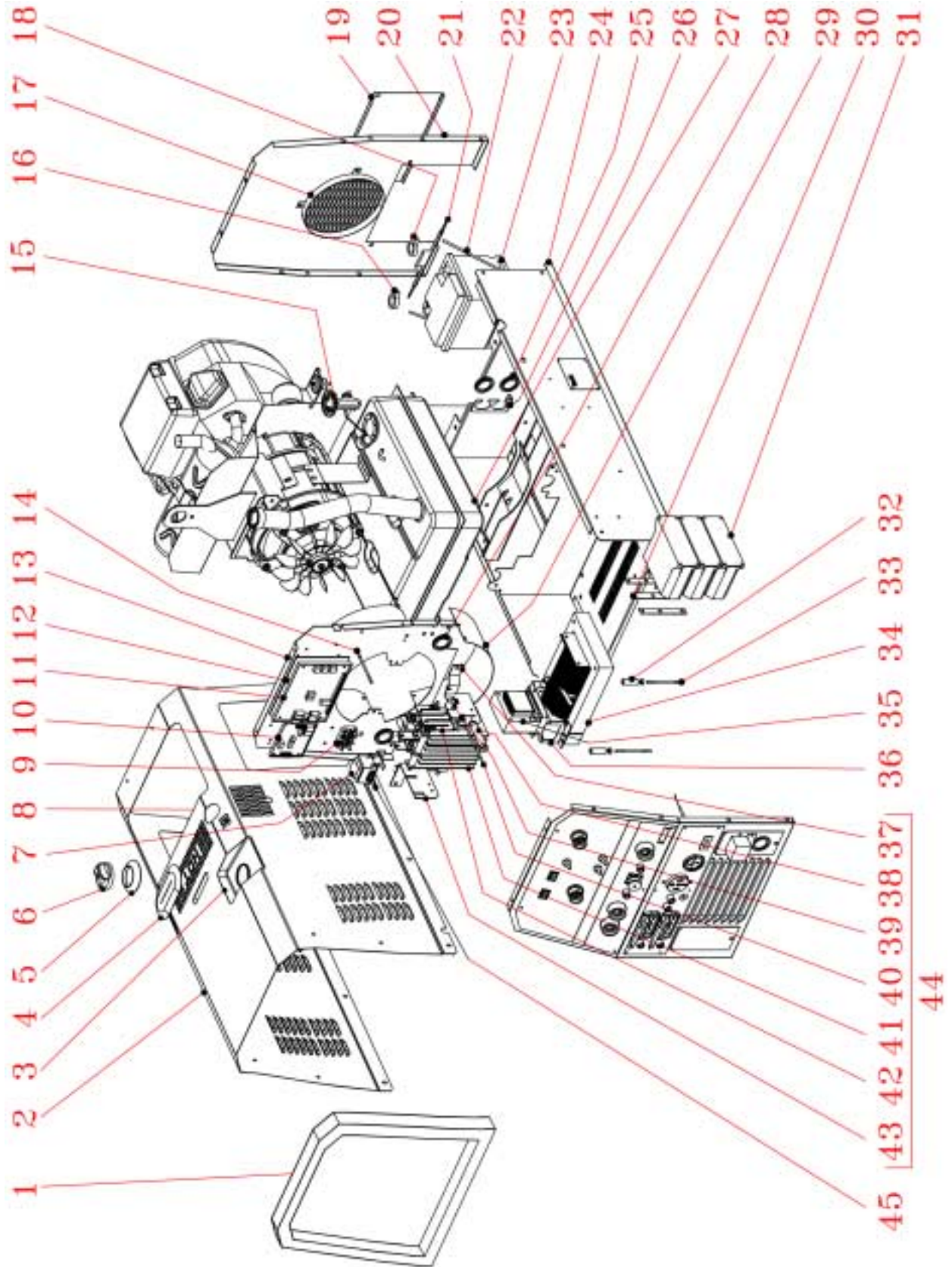
Item	Part Number	Description
1	11-3284	Washer
2	11-3283	Fan
3	11-3077	Seeger ring
4	11-3078	Bearing
5	11-3633	Rotor tie-rod
6	11-3308	Flange with bearing seat
7	11-3954	Stator
8	11-3597	Hook
9	11-3281	Rotor
10	11-3307	Tie rod
11	11-3873	Engine bulkhead
12	11-3869	Silencer
13	11-3499	Flap
14	11-3721	Oil drain cap
15	11-3722	Hose clamp
16	11-3868	Clamp
17	11-3720	Oil drain pipe
18	11-3533	Washer
19	11-3851	Nut M8 mm
20	11-3017	Engine shock absorber 30x30 mm
21	11-3896	Screw M8x25 mm
22	11-3795	Engine holder
23	11-3871	Flange nut M5x16 mm
24	11-3659	Engine connection flange
25	11-3872	Washer M10 mm
26	11-3870	Screw M3/8'x1 ¼ mm
27	11-3664	Stator plate
28	11-3660	Stator shock absorber 40x25 mm

5.02 Front Panel Parts



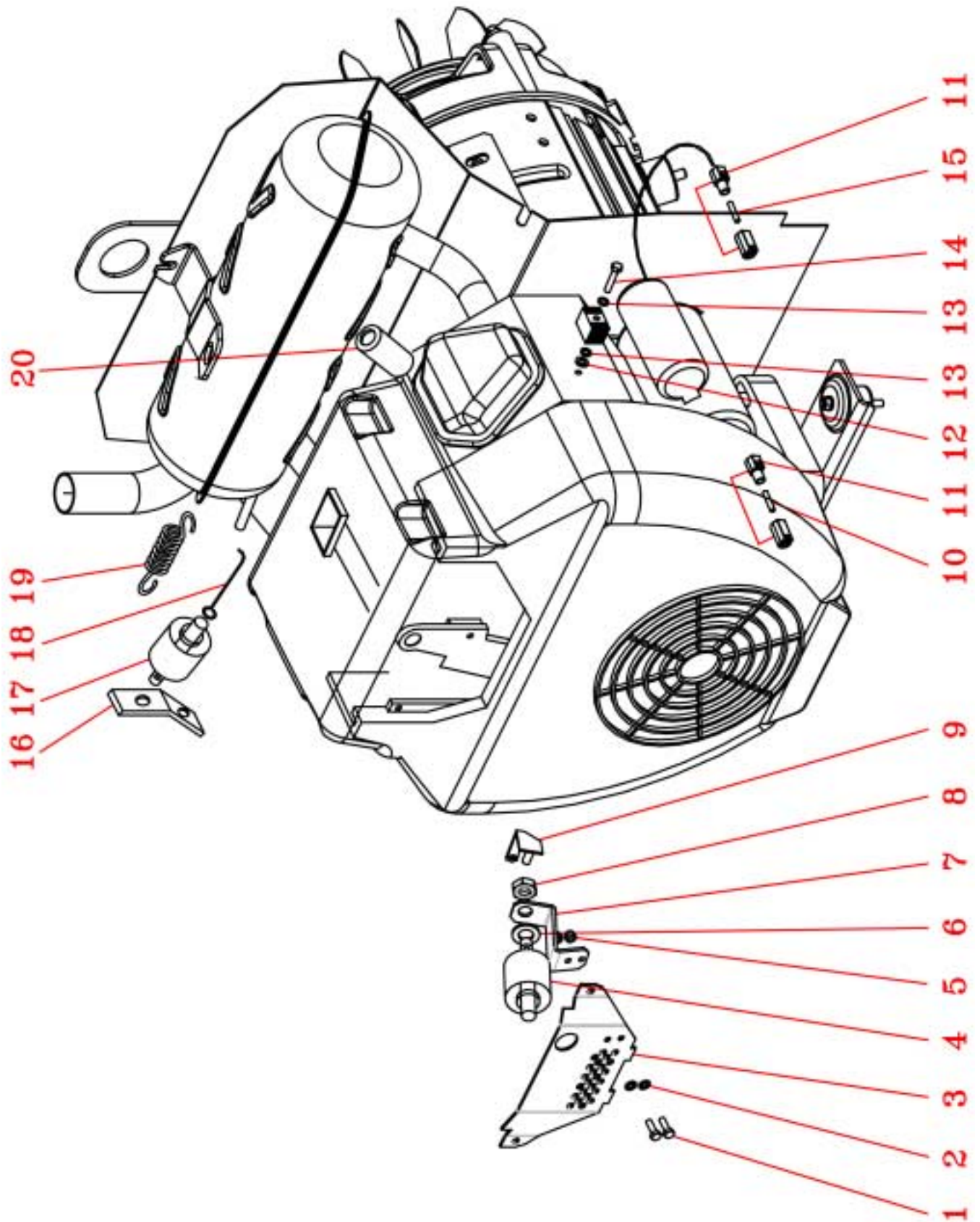
Item	Part Number	Description
1	11-3779	13A 3 poles circuit breaker
2	11-3143	3 poles circuit breaker cover
3	11-3138	Cable holder
4	11-3245	Circuit breaker support
5	11-3510	Protection cover
6	11-3140	Rubber wire holder
7	11-4081	Knob
8	11-3936	Earth clamp
9	11-3810	O-ring
10	11-3150	Fuel gauge – Monitor fuel level
11	11-4133	230V 50A 14-50 single phase outlet
12	11-3789	230V 50A 14-50 single phase cover
13	11-3244	Door
14	11-3050	115V 2x15A GFCI 5-15R single phase outlet
15	11-3375	115V 2x15A GFCI 5-15R single phase outlet cover
16	11-3049	Circuit breaker cover
17	11-3048	Ring
18	11-3148	20A circuit breaker
19	11-3149	50A circuit breaker
20	11-3232	Male Texas plug
21	11-3231	Welding outlet
22	11-3146	3A circuit breaker
23	11-4096	Potentiometer knob assembly
24	11-3374	F.S. 300A Ammeter (*)
25	11-3125	F.S. 100V Voltmeter (*)
26	11-4043	1K potentiometer
27	11-3876	Oil pressure signal lamp
28	11-3875	15 ohm ½ W resistor
29	11-3227	Battery charge signal lamp
30	11-3723	Switch cover
31	11-3809	CC/CV switch assembly
32	11-4077	Aluminum front plate
33	11-4078	Front plate sheet
34	11-4038	10K potentiometer
35	11-3316	12V relay
36	11-3792	Switch (1 pole)
37	11-3145	14 poles wire feeder connector
38	11-3147	10A circuit breaker
39	11-3318	Amperometric transformer
40	11-3801	Plate for earth clamp
41	11-4079	Selector
42	11-3137	Circuit breaker support
43	11-3151	Hour meter

5.03 Sheet Metal Parts



Item	Part Number	Description
1	11-4082	Frame
2	11-4083	Canopy
3	11-4139	Fuel tank cap support
4	11-3610	Hook gasket
5	11-3611	Fuel tank cap gasket
6	11-3612	Fuel tank cap
7	11-3675	10VA Transformer
8	11-4140	Rear panel
9	11-3614	3 poles terminal board
10	11-3332	GS9705 electronic panel
11	11-3331	GS95031 electronic panel
12	11-4126	Electronic panel support
13	11-4084	Panel
14	11-3262	Tie rod
15	11-3615	Fuel level gauge
16	11-3949	Positive battery charging clip
17	11-4138	Engine ring
18	11-3948	Negative battery charging clip
19	11-4137	Battery cover
20	11-4093	Rear panel
21	11-3895	Battery clamp
22	11-3544	Battery tie rod
23	11-3543	12V 44Ah battery
24	11-3616	Frame
25	11-3878	Rubber wire holdert
26	11-3790	Support
27	11-3677	Fuel tank
28	11-3087	Rubber wire holdert
29	11-3619	Lower conveyer
30	11-3618	Bridge for capacitor
31	11-3942	3x50 μ F capacitor
32	11-3662	Spacer
33	11-3329	Tie rod
34	11-3674	Reactor
35	11-4026	200 VA Transformer
36	11-4027	Transformer support
37	11-3578	Rectifier bridge right support
38	11-3104	100 ohm - 75W resistor
39	11-3478	Insulator
40	11-3299	Rectifier bridge tie rod
41	11-3679	Rectifier bridge
42	11-3107	Shunt
43	11-3577	Rectifier bridge left support
44	11-3682	Rectifier bridge assembly
45	11-3676	Transformer support

5.04 Engine Related Parts



Item	Part Number	Description
1	11-3901	Screw M5x12 mm
2	11-3886	Washer M5 mm
3	11-3898	Solenoid protection
4	11-3235	Solenoid
5	11-3902	Nut M5 mm
6	11-3904	Washer M12 mm
7	11-3897	Solenoid support
8	11-3903	Low nut M12 mm
9	11-4123	Throttle plate
10	11-3894	Fuse 5A
11	11-3118	Fuse holder
12	11-3891	Washer M8x18 mm
13	11-3892	Washer M6 mm
14	11-3893	Screw M6x40 mm
15	11-3274	Fuse 25A
16	11-4089	Solenoid support
17	11-4090	Solenoid
18	11-4091	Tie rod
19	11-3900	Throttle spring
20	11-4143	Oil load extension

5.05 Common Engine Part Numbers

Engine Type	GX620K1VXE8
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Item	Honda Part Number
Oil Filter	15400-PR3-014
Air Filter Element	17210-ZJ1-841
Fuel Filter	16910-ZE8-015
Fuel Pump	16700-ZJ8-003
Fuel Solenoid	16200-ZJ1-003
Spark Plug	98079-5585V
Starter Solenoid	31204-ZJ1-HO1
Starter Motor	31210-ZJ1-811
Voltage Regulator	31710-ZJ1-811

Honda suggested replacement Engine type GX620K1VXE2 with the following differences.

Key type Starting box
Generator style choke
Generator Style Throttle assembly
Red blower housing

Model number Identification	
G	General Purpose Engine
X	Over Head Valve
620	20hp
V	Tapered PTO Shaft
X	Oil Alert (shut-down)
E	3A Charge Circuit

Miscellaneous Parts	
Catalog Number	Description
NA	Battery 12V/340A Style DT50
11-4033	Engine Fuel Warning label
11-4041	Predator Label
11-4037	Oil Drain Label
11-4035	General Warning Label
11-4039	Battery Warning label
11-4034	Lift Warning Label

5.07 14 pin Receptacle Signals

Socket Pin	Function
A	24VAC auxiliary high side.
B	Input to energize solid state contactor (Contact closure between pin A and pin B)
C	5k ohm (maximum) connection to 5k ohm remote control potentiometer
D	Zero ohm (minimum) connection to 5k ohm remote control potentiometer
E	Wiper arm connection to 5k ohm remote control potentiometer
F	Not Used
G	24/115 VAC circuit common, also connected to chassis
H	Not Used
I	115 VAC auxiliary high side
J	115 VAC input to energize solid state contactor (Contact closure between pin I and pin J)
K	Chassis ground