OM-184 227K
2006–05

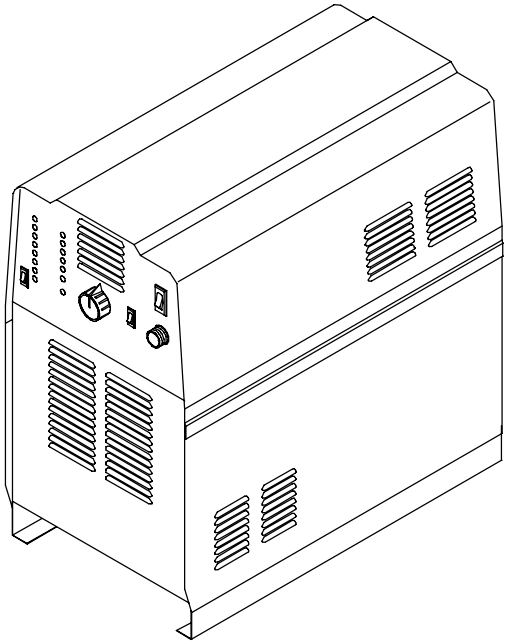
Processes

Induction Heating

Description

Induction Heating Power Source

Intellifire 250



OWNER'S MANUAL

File: Induction Heating

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Thank you and *congratulations* on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

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This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite.

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TABLE OF CONTENTS

SECTION 1 – SAFETY PRECAUTIONS – READ BEFORE USING

▲ **Warning: Protect yourself and others from injury — read and follow these precautions.**

1-1. Symbol Usage

safety_ihom 5/05

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

▲ **Marks a special safety message.**

☞ *Means "Note"; not safety related.*

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.

1-2. Induction Heating Hazards

▲ **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. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.**

▲ **Only qualified persons should install, operate, maintain, and repair this unit.**

▲ **During operation, keep everybody, especially children, away.**

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The power circuit and output bus bars or connections are electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Enclose any connecting bus bars and coolant fittings to prevent unintentional contact.
- 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.
- 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, see ANSI Z49.1 listed in Safety Standards. And, do not work alone!
- Disconnect input power before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Use only nonconductive coolant hoses with a minimum length of 18 inches (457 mm) to provide isolation.
- 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.
- Do not touch power circuit if you are in contact with the work, ground, or another power circuit from a different machine.
- 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.

SIGNIFICANT DC VOLTAGE exists in inverter-type power sources after removal of input power.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any internal parts.

FUMES AND GASES can be hazardous.

Induction Heating of certain materials, adhesives, and fluxes can produce fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation to remove fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for adhesives, fluxes, metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Fumes and gases from heating can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not heat in locations near degreasing, cleaning, or spraying operations. The heat can react with vapors to form highly toxic and irritating gases.
- Do not overheat coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the heated area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if overheated. See coating MSDS for temperature information.

FIRE OR EXPLOSION hazard.

- Do not overheat parts and adhesive.
- Watch for fire; keep extinguisher nearby.
- Keep flammables away from work area.
- Do not locate unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not operate unit in explosive atmosphere.

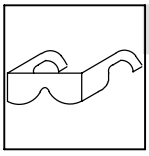
INDUCTION HEATING can cause burns.

- Hot parts and equipment can injure.
- Do not touch or handle induction head/coil during operation.
- Do not touch hot parts bare-handed.
- Allow cooling period before handling parts or equipment.
- Keep metal jewelry and other metal personal items away from head/coil during operation.

1-3. Additional Symbols for Installation, Operation, and Maintenance

FALLING UNIT can cause injury.

- Use handle and have person of adequate physical strength lift unit.
- Move unit with hand cart or similar device.
- For units without a handle, use equipment of adequate capacity to lift unit.
- When using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.

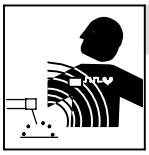


FLYING METAL OR ADHESIVE can injure eyes.

- Wear approved safety glasses with side shields or wear face shield.

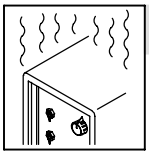
MOVING PARTS can cause injury.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.



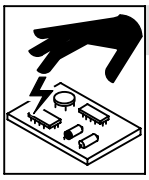
MAGNETIC FIELDS can affect pacemakers.

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near induction heating operations.



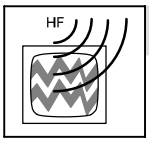
OVERUSE can cause OVERHEATING

- Allow cooling period.
- Reduce output or reduce duty cycle before starting to heat again.
- Follow rated duty cycle.



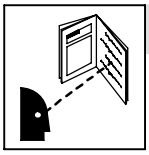
STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.



H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified person 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.



READ INSTRUCTIONS.

- Read Owner's Manual before using or servicing unit.
- Use only genuine Miller/Hobart replacement parts.

1-4. California Proposition 65 Warnings

▲ **Welding or cutting equipment 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 Section 25249.5 et seq.)**

▲ **Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.**

For Gasoline Engines:

▲ **Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.**

For Diesel Engines:

▲ **Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.**

1-5. Principal Safety Standards

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

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Canadian Electrical Code Part 1, CSA Standard C22.1, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard,Rexdale, Ontario, Canada M9W 1R3.

Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 11 West 42nd Street, New York, NY 10036–8002 (phone: 212–642–4900, website: www.ansi.org).

1-6. EMF Information

Considerations About Induction Heating And The Effects Of Low Frequency Electric And Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, *Biological Effects of Power Frequency Electric & Magnetic Fields – Background Paper*, OTA-BP-E-53 (Washington, DC: U.S. Government Printing Office, May 1989): ". . . there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

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

1. Arrange output cable to one side and away from the operator.
2. Do not coil or drape output cable around the body.
3. Keep power source and cable as far away from the operator as practical.

About Pacemakers:
Pacemaker wearers consult your doctor before welding or going near welding or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – MESURES DE SECURITE POUR LE CHAUFFAGE PAR INDUCTION

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⚠ AVERTISSEMENT

LE CHAUFFAGE PAR INDUCTION peut être dangereux.

PRENDRE LES MESURES NECESSAIRES POUR EVITER LES RISQUES DE BLESSURES GRAVES, VOIRE MORTELLES. TENIR LES ENFANTS A DISTANCE. LES PORTEURS D'UN STIMULATEUR CARDIAQUE DOIVENT PREALABLEMENT CONSULTER LEUR MEDECIN.

Pendant les opérations de chauffage, comme dans la plupart des activités, l'opérateur s'expose à certains dangers. Le chauffage n'est pas dangereux à condition de prendre certaines mesures. Les consignes de sécurité indiquées ci-après ne sont qu'un résumé des informations plus détaillées se trouvant dans les normes de sécurité énumérées à la page suivante. Lire et respecter toutes les normes de sécurité.

LES OPERATIONS D'INSTALLATION, DE FONCTIONNEMENT, DE MAINTENANCE ET DE REPARATION NE DOIVENT ETRE CONFIEES QU'A DU PERSONNEL QUALIFIE.

Danger de mort PAR ELECTROCUTION.

Le contact de composants électriques peut provoquer des accidents mortels ou des brûlures graves. Le circuit de puissance et les connexions de sortie sont sous tension lorsqu'on active la sortie. Le circuit d'alimentation et les circuits internes de la machine sont également sous tension lorsque l'alimentation est sur marche. Des équipements installés ou reliés à la borne de terre de manière incorrecte sont dangereux.

1. Ne pas toucher des composants électriques sous tension.
2. Envelopper les connexions et raccords de refroidissement pour éviter tout contact accidentel.
3. Porter des gants d'isolation secs, sans trous, et une protection corporelle.
4. Isolez-vous de la pièce et du sol avec des tapis ou des couvertures d'isolation suffisamment grands pour prévenir tout contact physique avec la pièce ou la terre.
5. Déconnecter l'alimentation avant d'installer l'appareil ou d'en effectuer l'entretien. Verrouiller ou étiqueter la sortie d'alimentation selon la norme OSHA 29 CFR 1910.147 (se reporter aux Principales normes de sécurité).
6. Utiliser seulement des tuyaux non conducteurs avec une longueur minimale de 460 mm pour assurer l'isolement.
7. Installer et mettre cet équipement correctement à la terre conformément au manuel utilisateur et aux codes nationaux, gouvernementaux et locaux.
8. Vérifier souvent la terre de l'alimentation – contrôler et s'assurer que le conducteur de terre du câble d'alimentation est correctement relié à la borne de terre dans le boîtier de déconnexion ou que le connecteur est branché à une sortie de boîtier correctement mise à la terre.
9. En réalisant des connexions d'entrée brancher d'abord le conducteur de terre approprié – contrôler deux fois les connexions.
10. Vérifier souvent le bon état du câble d'alimentation ou l'isolation des fils – remplacer le câble immédiatement s'il est endommagé – des fils dénudés peuvent provoquer des accidents mortels.
11. Arrêter tous les équipements lorsqu'ils ne sont pas utilisés.
12. Ne pas utiliser des câbles usés, endommagés, sous dimensionnés ou mal épissés.
13. Ne pas porter les câbles autour de votre corps.
14. Ne pas toucher le circuit électrique si vous êtes en contact avec la pièce, la terre ou le circuit électrique d'une autre machine.
15. Utiliser seulement des équipements bien entretenus. Réparer ou remplacer immédiatement des composants endommagés. Effectuer des travaux d'entretien sur l'appareil selon le manuel.
16. Porter un harnais de sécurité pour effectuer des travaux au-dessus du sol.
17. Maintenir solidement en place tous les panneaux et couvercles.

LE CHAUFFAGE PAR INDUCTION peut provoquer des blessures ou des brûlures au contact de PIECES CHAUDES OU DE L'EQUIPEMENT.

1. Ne pas toucher ou manipuler la tête/l'enroulement à induction pendant le fonctionnement.
2. Tenir les bijoux et autres objets personnels en métal éloignés de la tête/de l'enroulement pendant le fonctionnement.
3. Laisser refroidir les composants ou équipements avant de les manipuler.

LE CHAUFFAGE PAR INDUCTION peut provoquer un incendie.

1. Ne pas surchauffer les composants ni les adhésifs.
2. Attention aux risques d'incendie: tenir un extincteur à proximité.
3. Stocker des produits inflammables hors de la zone de travail.

La mise en place de l'appareil sur, au-dessus ou à proximité de surfaces inflammables peut être source d'INCENDIES OU d'EXPLOSION.

1. Ne pas placer l'appareil sur, au-dessus ou à proximité de surfaces infllammables.
2. Ne pas installer l'appareil à proximité de produits inflammables
3. Ne pas faire fonctionner l'appareil en atmosphère explosive.

DES FUMEES ET DES GAZ peuvent être dangereux pour votre santé.

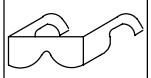
Le chauffage à induction génère des fumées et des gaz. Leur inhalation peut être dangereuse pour votre santé.

1. Eloigner la tête des fumées. Ne pas respirer les fumées.
2. A l'interieur, ventiler la zone et/ou utiliser un extracteur pour l'évacuation des fumées et des gaz.
3. Si la ventilation est insuffisante, utiliser un respirateur à alimentation d'air homologué.
4. Lire les spécifications de sécurité des matériaux (MSDSs) et les instructions du fabricant concernant les adhésifs, les métaux, les consommables, les revêtements, les nettoyants et les dégraisseurs.
5. Travailler dans un espace fermé seulement s'il est bien ventilé ou en portant un respirateur. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz provenant du chauffage peuvent déplacer l'air, abaisser le niveau d'oxygène, et provoquer des lésions ou des accidents mortels. S'assurer que l'air ambiant ne présente aucun danger.
6. Ne pas chauffer dans des endroits se trouvant à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur peut réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
7. Ne pas chauffer des métaux munis d'un revêtement tels que l'acier galvanisé, plaqué au plomb ou au cadmium, à moins que le revêtement ne soit enlevé de la zone chauffée, que la zone soit bien ventilée et, si nécessaire, en portant un respirateur. Les revêtements et tous les métaux contenant ces éléments peuvent dégager des fumées toxiques s'ils sont chauffés.

2-1. Dangers supplémentaires de mise en route, de fonctionnement et d'entretien

LA CHUTE DE MATERIEL peut provoquer des blessures personnelles graves et endommager les équipements.

1. Utiliser la poignée et demander à une personne ayant la force physique nécessaire pour soulever l'appareil.
2. Déplacer l'appareil à l'aide d'un charriot ou d'un engin similaire.
3. Pour les appareils sans poignée utiliser un équipement d'une capacité appropriée pour soulever l'appareil.
4. 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.



LA PROJECTION DE PIECES DE METAL ou DE COLLE peut provoquer des blessures aux yeux.

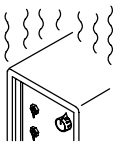
1. Porter des lunettes de protection avec des protections latérales.

DES ORGANES MOBILES peuvent provoquer des blessures.

1. S'abstenir de toucher des organes mobiles tels que des ventilateurs.
2. Maintenir fermés et fixement en place les portes, panneaux, recouvrements et dispositifs de protection.

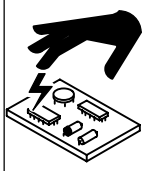
DES CHAMPS MAGNETIQUES CREES PAR DES COURANTS ELEVES peuvent affecter le fonctionnement du stimulateur cardiaque.

1. Porteurs de stimulateur cardiaque, restez à distance.
2. Les porteurs d'un stimulateur cardiaque doivent d'abord consulter leur médecin avant de s'approcher des opérations de chauffage à induction.



UNE UTILISATION INTENSIVE peut provoquer un SURCHAUFFEMENT DU MATERIEL.

1. Prévoir une période de refroidissement
2. Réduire le courant de sortie ou le facteur de marche avant de recommencer le chauffage.
3. Respecter le facteur de marche nominal.

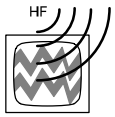


L'ELECTRICITE STATIQUE peut endommager les composants des tableaux électriques.

1. Etablir la connexion avec la barrette de terre avant de manipuler des cartes ou des pièces.
2. Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes PC.

Il subsiste DU COURANT CONTINU IMPORTANT après la mise hors tension de l'alimentation électrique.

1. Avant de toucher des organes internes, arrêter la source électrique, débrancher l'alimentation, et décharger les condensateurs d'alimentation conformément aux instructions indiquées dans la partie maintenance.



LE RAYONNEMENT HAUTE FREQUENCE 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 électricien 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.

2-2. Informations concernant les champs électro-magnétiques (Information EMF)

Considérations relatives au chauffage à induction et aux effets des champs électriques et magnétiques basse fréquence.

Le texte suivant est extrait des conclusions générales Département du Congrès U.S., Office of Technology Assessment, *Effets biologiques des champs magnétiques et électriques basse fréquence – Background Paper*, OTA-BP-E-53 (Washington, DC: U.S. Government Printing Office, May 1989): ". . . on dispose maintenant d'importantes découvertes scientifiques reposant sur des expériences effectuées dans le domaine cellulaire et des études réalisées sur des animaux et des personnes qui démontrent clairement que des champs magnétiques basse fréquence peuvent avoir une interaction et produire des changements dans les systèmes biologiques. Alors que la plus grande partie de cet ouvrage est d'une très grande qualité, les résultats sont complexes. La compréhension scientifique courante ne nous permet pas encore d'interpréter la preuve fournie dans un seul ouvrage cohérent. Il est encore plus frustrant de ne pas pouvoir tirer des conclusions définitives en ce qui concerne les problèmes de risque possible ou de proposer des recommandations scientifiques claires pour des stratégies à suivre en vue de minimiser ou de prévenir des risques potentiels."

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

4. Disposer le câble de sortie d'un côté à distance de l'opérateur
5. Ne pas enrouler ou draper le câble électrique autour du corps.
6. Placer la source de courant et le câble le plus loin possible de l'opérateur.

En ce qui concerne les stimulateurs cardiaques

Les procédures ci-dessus concernent également les porteurs de stimulateur cardiaque. Consulter votre médecin pour un complément d'information.

2-3. PRINCIPALES NORMES DE SÉCURITÉ

Normes de sécurité et de santé, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Code électrique national, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Code électrique du Canada, partie 1, CSA Standard C22.1, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard,Rexdale, Ontario, Canada M9W 1R3.

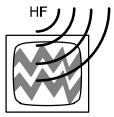
Safe Practices For Occupation And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

SECTION 3 – INSTALLATION

3-1. Specifications

Output Frequency	Rated Output	Required Reflective Inductance	Amperes Input at Rated Load Output 50 or 60 Hz, Three-Phase			Overall Dimensions	Weight
			460 V	KVA	KW		
10 To 50 kHz	25 kW At 100% Duty Cycle – Max 750 A (RMS), 700 V (RMS)	2.5 To 50 µh	39 0.29*	30.8	27.19	Length: 31 in (787 mm) Width: 16 in (406 mm) Height: 27 in (686 mm)	165 lb (75 kg)
*While idling							

⚠ WARNING



HIGH-FREQUENCY RADIATION can interfere with radio navigation, safety services, computers, and communications equipment.

- Have only qualified person 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.

3-2. Connecting Head/Coil to Power Source

1 Rear Panel
2 Connecting Block

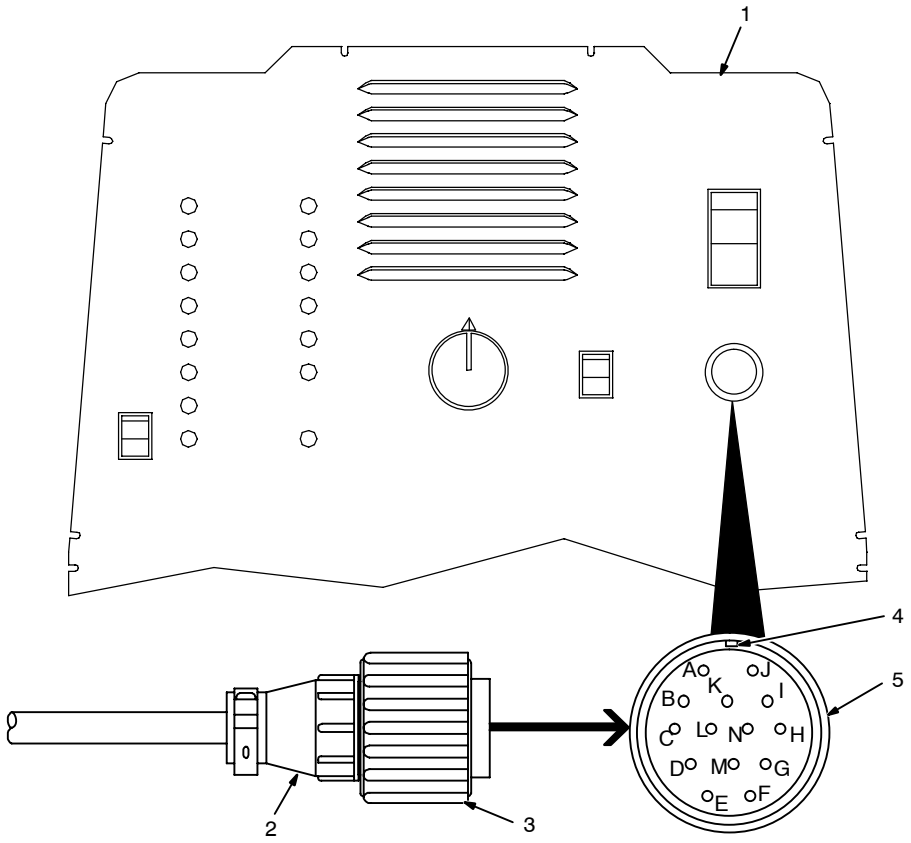
☞ *Do Not Exceed 58 in lb (6.6 N·m) of torque when making connections.*

Tools Needed:

7/16 in

Ref. ST-801 826-C

3-3. Remote 14 Receptacle RC14 Information and Connections



1 Front Panel
2 Plug
3 Threaded Collar
4 Keyway
5 Remote 14 Receptacle RC14 (See Section 3-4)

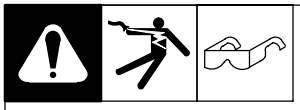
To connect to receptacle, align keyway, insert plug, and tighten threaded collar.

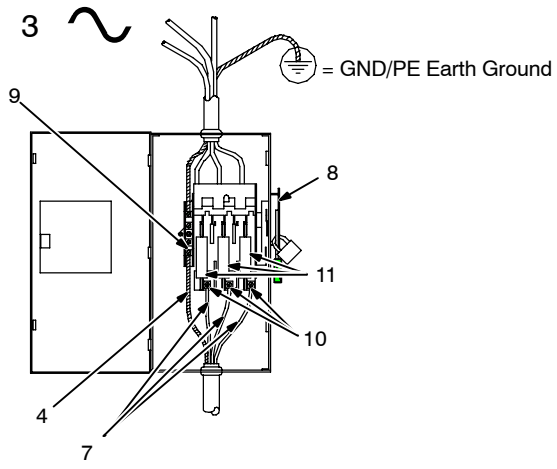
sb7.1* 3/93 - Ref. S-0004-A / Ref. S-0750 / Ref. ST-801 826-C

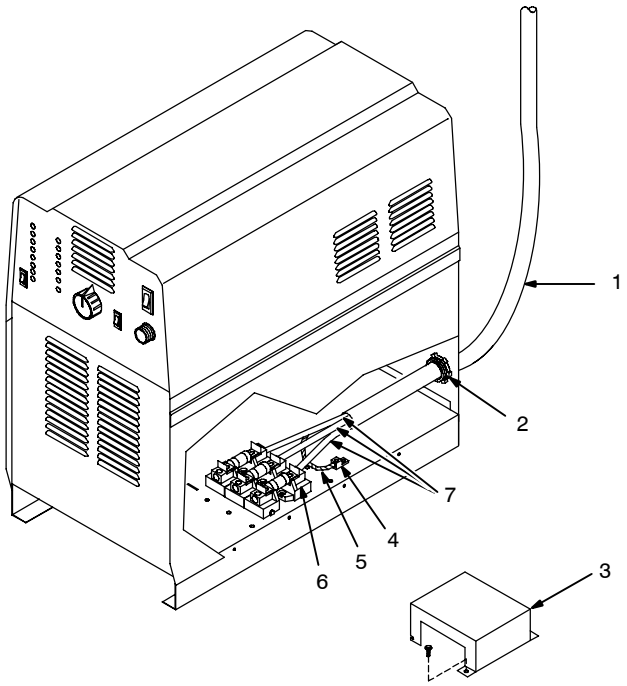
3-4. Remote 14 Socket Information

REMOTE 14	Socket	Socket Information
Remote Contactor	A	+24 volts dc.
	B	Contact closure to A completes 24 volts dc contactor control circuit.
Remote Output Control	C	Command reference; +10 volts dc.
	D	Control circuit common.
	E	Input command signal (potentiometer wiper or 0 to +10 volts dc).
	G	Not used.
Power Source Limit	F, J	Absence of internal contact closure between F and J signals power source failure to remote control device.
Remote Metering	H	Coil loss compensation value.
	I	Actual frequency output signal (1 volt/10 kHz).
	L	Average power output signal (1 volt/5 kW).
	M	Voltage output signal RMS (1 volt/100 volts).
	N	Current output signal RMS (1 volt/100 amperes).
	K	Chassis common.

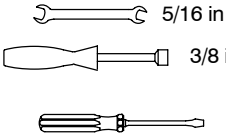
3-5. Connecting 3-Phase Input Power For Models With Customer Supplied Cord







Tools Needed:



- ▲ **Installation must meet all National and Local Codes – have only qualified persons make this installation.**
- ▲ **Disconnect and lockout/tagout input power before connecting input conductors from unit.**
- ▲ **Make input power connections to the welding power source first.**
- ▲ **Always connect green or green/yellow conductor to supply grounding terminal first, and never to a line terminal.**

See rating label on unit and check input voltage available at site.

1 Input Power Conductors (Customer Supplied Cord)

Select size and length of conductors using Section 3-6. Conductors must comply with national, state, and local electrical codes. If applicable, use lugs of proper amperage capacity and correct hole size.

Welding Power Source Input Power Connections

2 Strain Relief

Route conductors (cord) through strain relief and tighten screws.

3 Fuse Block Cover

Remove fuse block cover.

4 Machine Grounding Terminal

5 Green Or Green/Yellow Grounding Conductor

Connect green or green/yellow grounding conductor to welding power source grounding terminal first.

6 Welding Power Source Line Terminals

7 Input Conductors L1 (U), L2 (V) And L3 (W)

Connect input conductors L1 (U), L2 (V) and L3 (W) to welding power source line terminals.

Install fuse block cover. Install welding power source wrapper.

Disconnect Device Input Power Connections

8 Disconnect Device (switch shown in OFF position)

9 Disconnect Device (Supply) Grounding Terminal

Connect green or green/yellow grounding conductor to disconnect device grounding terminal first.

10 Disconnect Device Line Terminals

Connect input conductors L1 (U), L2 (V) And L3 (W) to disconnect device line terminals.

11 Over-Current Protection

Select type and size of over-current protection using Section 3-6 (fused disconnect switch shown).

Close and secure door on line disconnect device. Remove lockout/tagout device, and place switch in the On position.

803 766-A / Ref. ST-801 825-C

3-6. Electrical Service Guide

	60 Hz Three Phase
Input Voltage	460
Input Amperes At Rated Output	39
Max Recommended Standard Fuse Rating In Amperes [1]	
Time-Delay [2]	45
Normal Operating [3]	60
Min Input Conductor Size In AWG [4]	8
Max Recommended Input Conductor Length In Feet (Meters)	287 (87)
Min Grounding Conductor Size In AWG [4]	10

Reference: 2005 National Electrical Code (NEC) (including article 630)

1 Consult factory for circuit breaker applications.

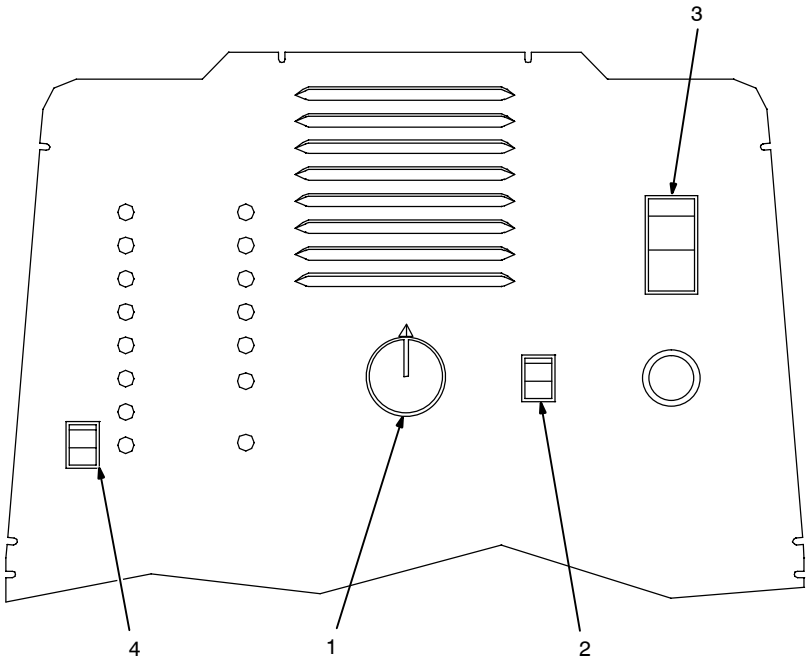
2 “Time-Delay” fuses are UL class “RK5” .

3 “Normal Operating” (general purpose - no intentional delay) fuses are UL class “K5” (up to and including 60 amp), and UL class “H” (65 amp and above).

4 Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.16. If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

SECTION 4 – OPERATION

4-1. Controls



Ref. ST-801 826-C

1 Power Adjust Control

Use control to select power between the minimum and maximum output of the power source. The numbers around the control are in kilowatts (kW).

2 Remote Power Control Switch

Use switch to select way of controlling unit output.

For front panel control, place switch in Panel position.

For remote control, place switch in Remote 14 position. Connect controller or pendant control to Remote 14 receptacle (see Section 3-3).

The remote control functions as a slave to the front panel Power Adjust control. For example, if the front panel control is set to 12.5 kW and the remote control is set to maximum, output will be 12.5 kW. To obtain maximum output from the unit using a remote control, the front panel control must be set to maximum.

3 Power Switch With Indicator Light

Use switch to turn unit, fan motor, and indicator light On and Off.

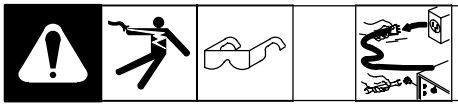
Unit is ready to heat 10 seconds after Power switch is placed in On position.

4 Ground Fault Test Switch

Use switch to test ground fault circuitry.

SECTION 5 – MAINTENANCE & TROUBLESHOOTING

5-1. Routine Maintenance

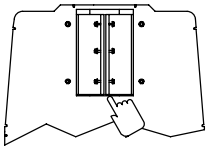


▲ **Disconnect power before maintaining.**

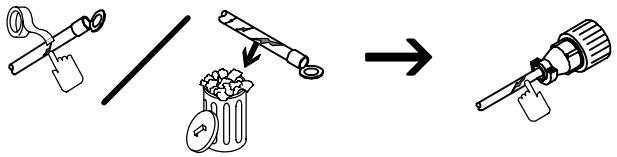
☞ *Maintain more often during severe conditions.*

3 Months

Clean and tighten output connections.



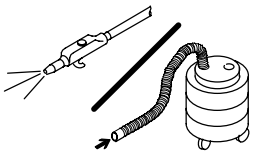
Repair or replace cracked cables and cords.



6 Months

Replace damaged or unreadable labels.

Blow out or vacuum inside.



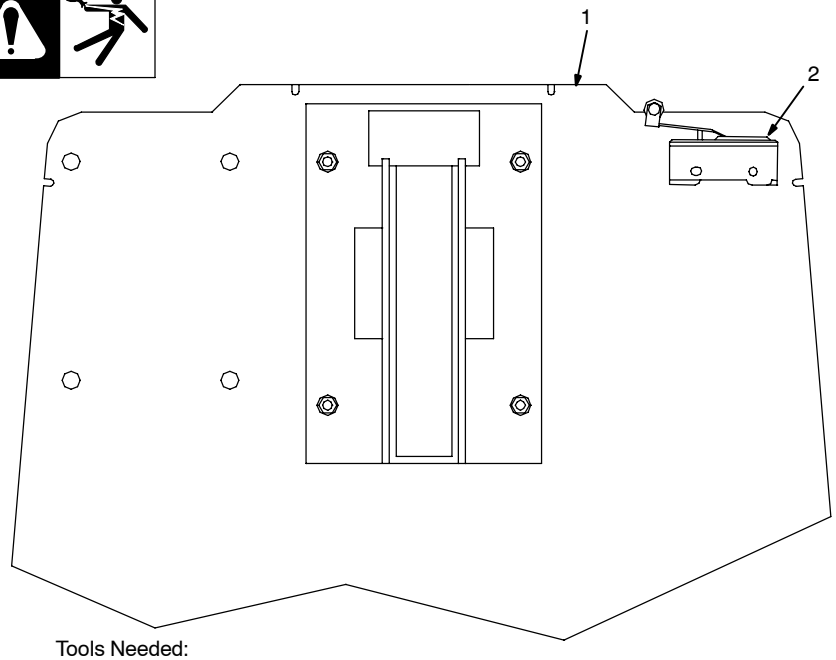
5-2. Overheating

Thermostats TP1, TP2, and TP3 protect the unit from damage due to overheating. If one or more of the heat sinks get too hot, TP1, TP2, and/or TP3 opens and output stops. The fan keeps running to cool the heat sink(s). Wait several minutes before trying to heat.

5-3. Automatic Shutdown Protection

This unit automatically shuts down upon sensing certain fault conditions, such as an out-of-range frequency condition, short circuit load condition, or an open circuit (no load) condition. The unit also has automatic voltage limiting and power ratio limiting, which limits the output power based on improper load impedance.

5-4. Safety Interlock Switch

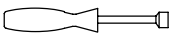


1 Rear Panel

2 Safety Interlock Switch

The safety interlock switch prevents the contactor from energizing with the wrapper off the unit.

Tools Needed:

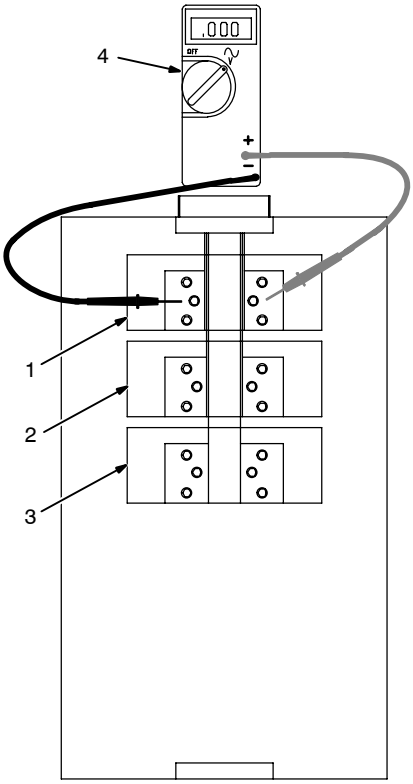


3/8 in

Ref. ST-801 826-C

5-5. Measuring Tuning Capacitor Voltage

▲ **Significant AC voltage can remain on capacitors after unit is Off. Always check ALL capacitors as shown to be sure they have discharged before working on unit.**



Top View

Turn Off power source and disconnect input power.

Remove wrapper.

1 Tuning Capacitor C1

2 Tuning Capacitor C2

3 Tuning Capacitor C3

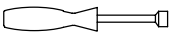
4 Voltmeter

Check tuning capacitors.

Measure the ac voltage across the terminals on capacitors every 30 seconds until voltage is near 0 (zero) volts.

Proceed with job inside unit. Reinstall wrapper when finished.

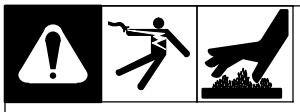
Tools Needed:

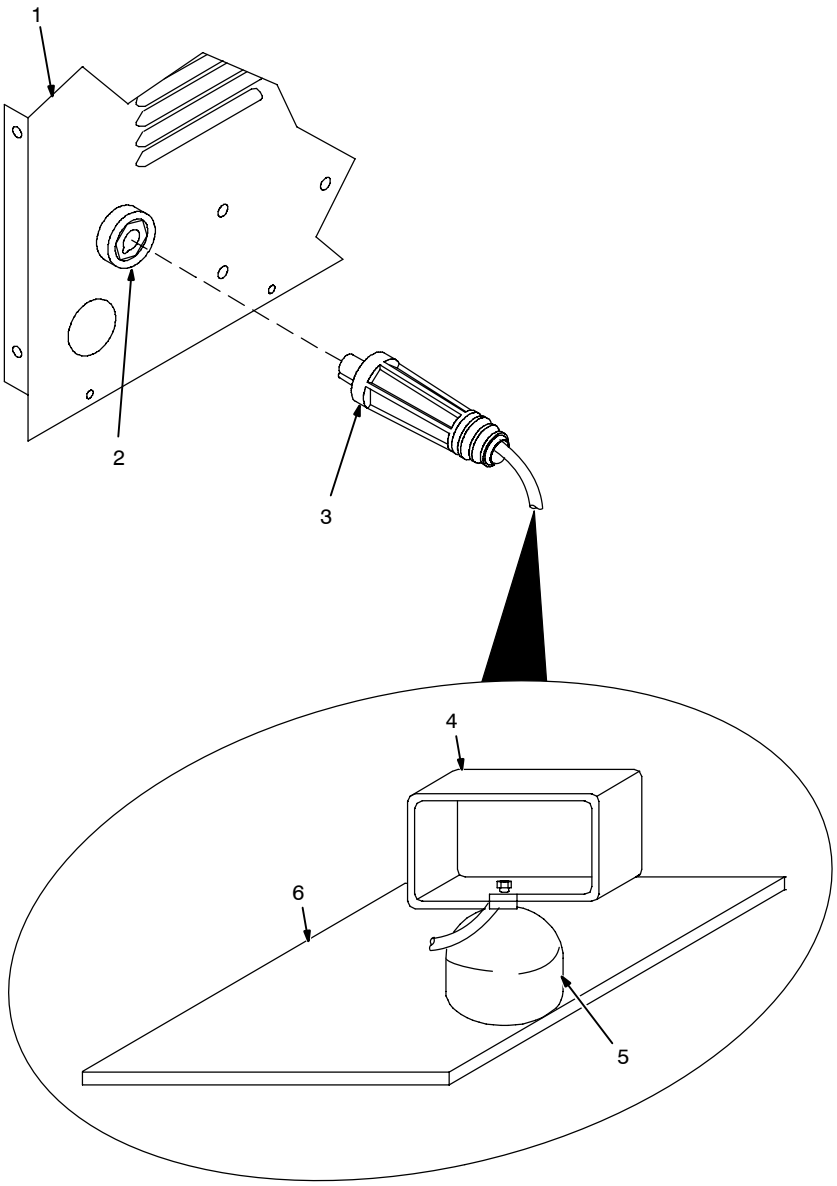


3/8 in

Ref. ST-801 826-A

5-6. Ground Fault Protection





Ground fault protection circuitry automatically shuts down the power source output if a potentially hazardous condition exists at the heating device connected to the power source (e.g. insulation has broken down on a heating blanket causing the conductor to come into contact with the workpiece or a heating coil touches the workpiece causing a short in the output circuit).

The supplied ground lead must be connected between the workpiece and power source to provide proper ground fault protection from a short in the output circuit.

1 Power Source

2 Receptacle

3 Plug

To connect plug, align key with keyway, insert end into receptacle, and rotate plug until tight.

4 Handle

5 Magnet

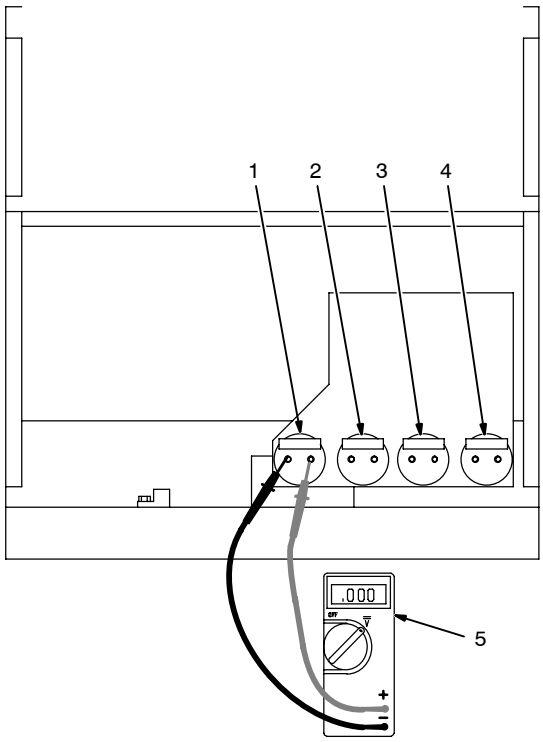
6 Workpiece

Use handle to place magnet on the workpiece.

Ref. ST-801 826-C / Ref. 801 828-C

5-7. Measuring Input Capacitor Voltage

▲ **Significant DC voltage can remain on capacitors after unit is Off. Always check ALL capacitors as shown to be sure they have discharged before working on unit.**



Turn Off power source and disconnect input power.

Remove wrapper.

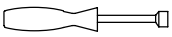
1 Input Capacitor C2
2 Input Capacitor C1
3 Input Capacitor C4
4 Input Capacitor C3
5 Voltmeter

Check input capacitors.

Measure the dc voltage across the positive (+) and negative (–) terminals every 30 seconds until voltage is near 0 (zero) volts.

Proceed with job inside unit. Reinstall wrapper when finished.

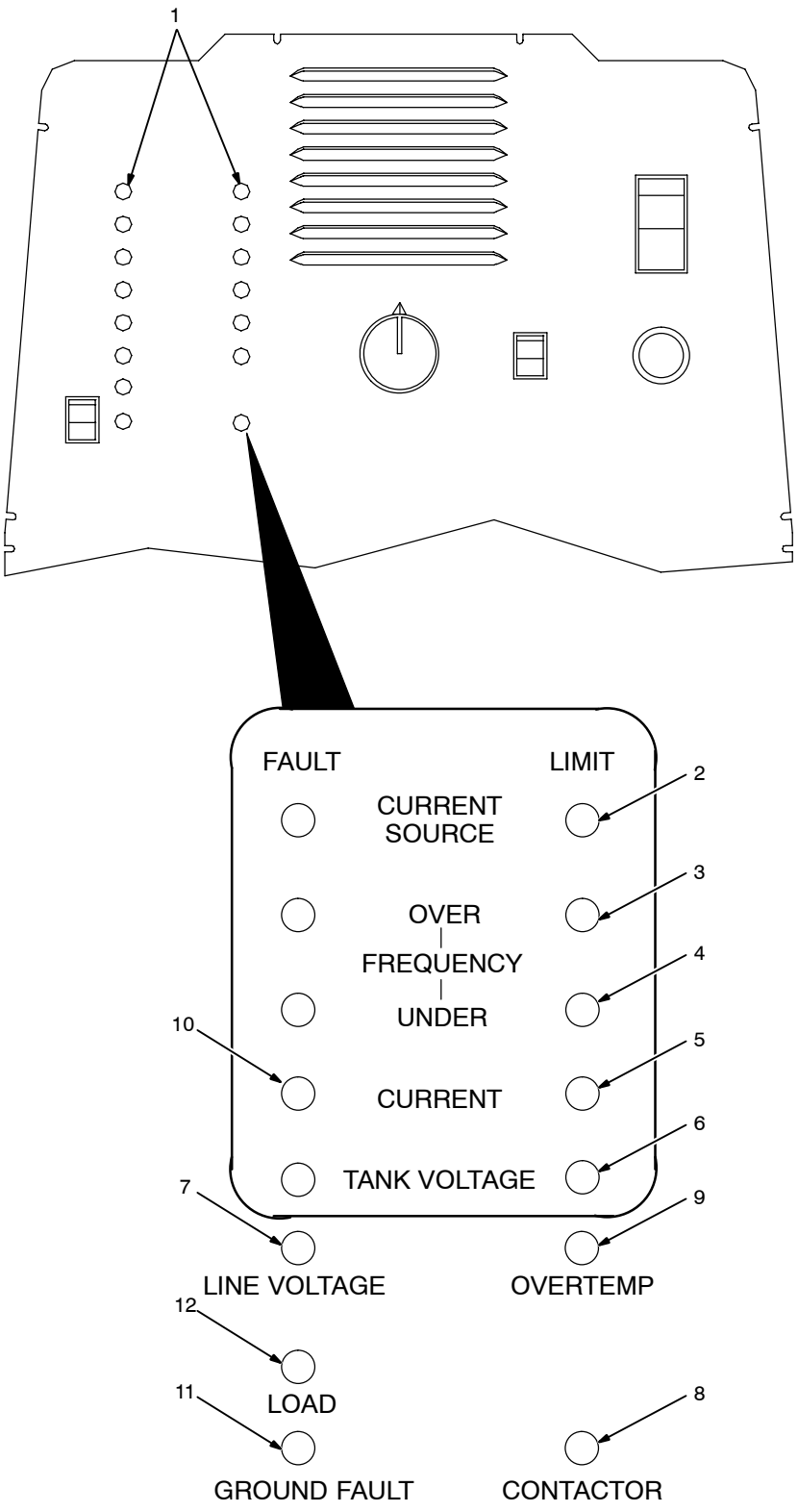
Tools Needed:



3/8 in

Ref. ST-801 826-A

5-8. Diagnostic LED's



1 Diagnostic LED's

Use diagnostic LED's to determine operating condition of power source.

2 Current Source

Limit: 110 A

Fault: 115 A

3 Over Frequency

Limit: 50 kHz

Fault: 55 kHz

4 Under Frequency

Limit: 10 kHz

Fault: 5 kHz

5 Current

Reactive Limit: 700 A

6 Tank Voltage

Limit: 670 V

Fault: 1100 V Peak

7 Line Voltage

Fault: ±20 %

8 Contactor

Lights when contactor is energized.

9 Over Temp

Lights when contactor is energized and over temperature condition is present. Also indicates top cover is removed from unit.

10 Tank Current

Fault Value Preset At Factory

11 Ground Fault

Lights when the ground fault circuitry detects a short in the output circuit between the workpiece and power source, or when test switch is pressed to test ground fault circuitry.

12 Load

Lights when no load or insufficient load is present to couple with the coil or blanket.

Ref. ST-801 826-B

5-9. Troubleshooting

Trouble	Remedy
No heat output.	Replace building line fuse or reset circuit breaker.
	Secure head/coil connecting plate to power source connecting block (see Section 3-2).
	Check and replace Power switch if necessary.
	Connect power source to proper input voltage or check for low line voltage.
No heat output; fan motor continues to run.	Safety interlock switch open. Reinstall wrapper (see Section 5-4).
	Thermostat(s) TP1, TP2, and/or TP3 open (overheating). Allow fan to run; the thermostat(s) will close when the unit has cooled (see Section 5-2).
Low heat output.	Check tuning of induction heating output system.
Current Source Fault LED (red) on.	Turn power off and back on again to power source one time. If fault does not clear, contact authorized Factory Service Agent.
Over Frequency Fault LED (red) on.	Check for shorted coil or blanket.
Under Frequency Fault LED (red) on.	Check for open circuit coil or blanket.
Current Fault LED (red) on.	Check for shorted turn(s) in coil or blanket.
Tank Voltage Fault LED (red) on.	Check for unloaded (empty) coil.
	Check for arcing between turns.
Line Voltage Fault LED (red) on.	Check input line voltage.
Ground Fault LED (red) on.	Check for output path to ground.
	Check for human path to ground.
Load Fault LED (red) on.	Check for loose coupling between coil or blanket and workpiece or pipe.
Over Temperature Fault LED (yellow) on.	Check door switch.
	Check for fan operation.
	Clean unit.
Current Source Limit LED (yellow) on.	Check coupling between coil and load.
Over Frequency Limit LED (yellow) on.	Check for correct tank capacitance.
	Check for shorted turns.
Under Frequency Limit LED (yellow) on.	Check for correct tank capacitance.
Current Limit LED (yellow) on.	Check tank capacitance.
Tank Voltage LED (yellow) on.	Check tuning of system (see Section 5-10).

5-10. Tuning Chart

▲ **Energizing contactor without at least 1 tuning capacitor in output circuit will damage power source.**
DO NOT operate power source without at least 1 tuning capacitor in output circuit.

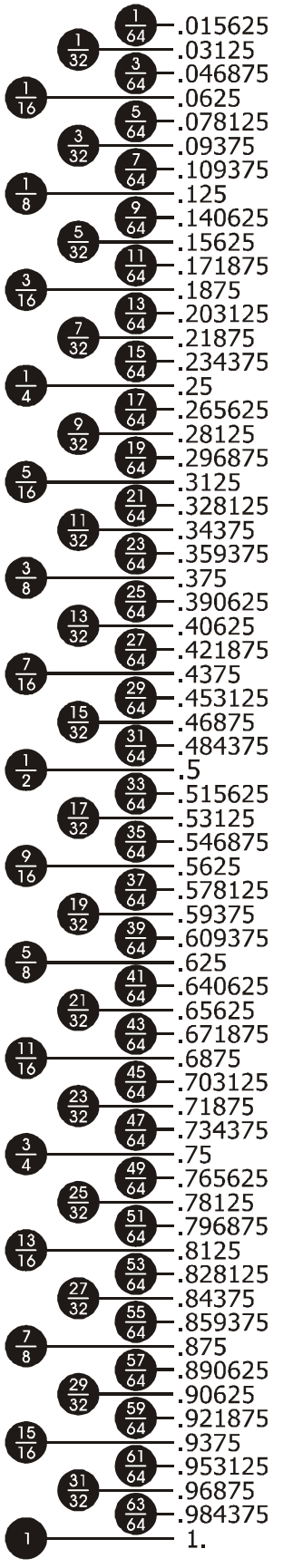
Voltage*	Current (Amperage)*	Frequency (KHz)	Corrective Action
High	Low	Low	Lower inductance or decrease matching transformer turns ratio
High	Low	High	Add capacitance
High	Low	Mid-Range	Decrease matching transformer turns ratio and add capacitance
Low	High	Low	Lower capacitance
Low	High	High	Increase matching transformer turns ratio, or lower capacitance and increase inductance
Low	High	Mid-Range	Increase matching transformer turns ratio and lower capacitance

*High voltage > 650 V rms; Low voltage < 450 V rms; Operating current range: 0 to 750 A rms

The power source is factory set for 4.5 mfd, but is capable of being set for 6 mfd. If a certain application requires the higher capacitance setting, remove insulator from front capacitor and connect with supplied hardware.

Notes

DECIMAL EQUIVALENTS



SECTION 6 – ELECTRICAL DIAGRAM

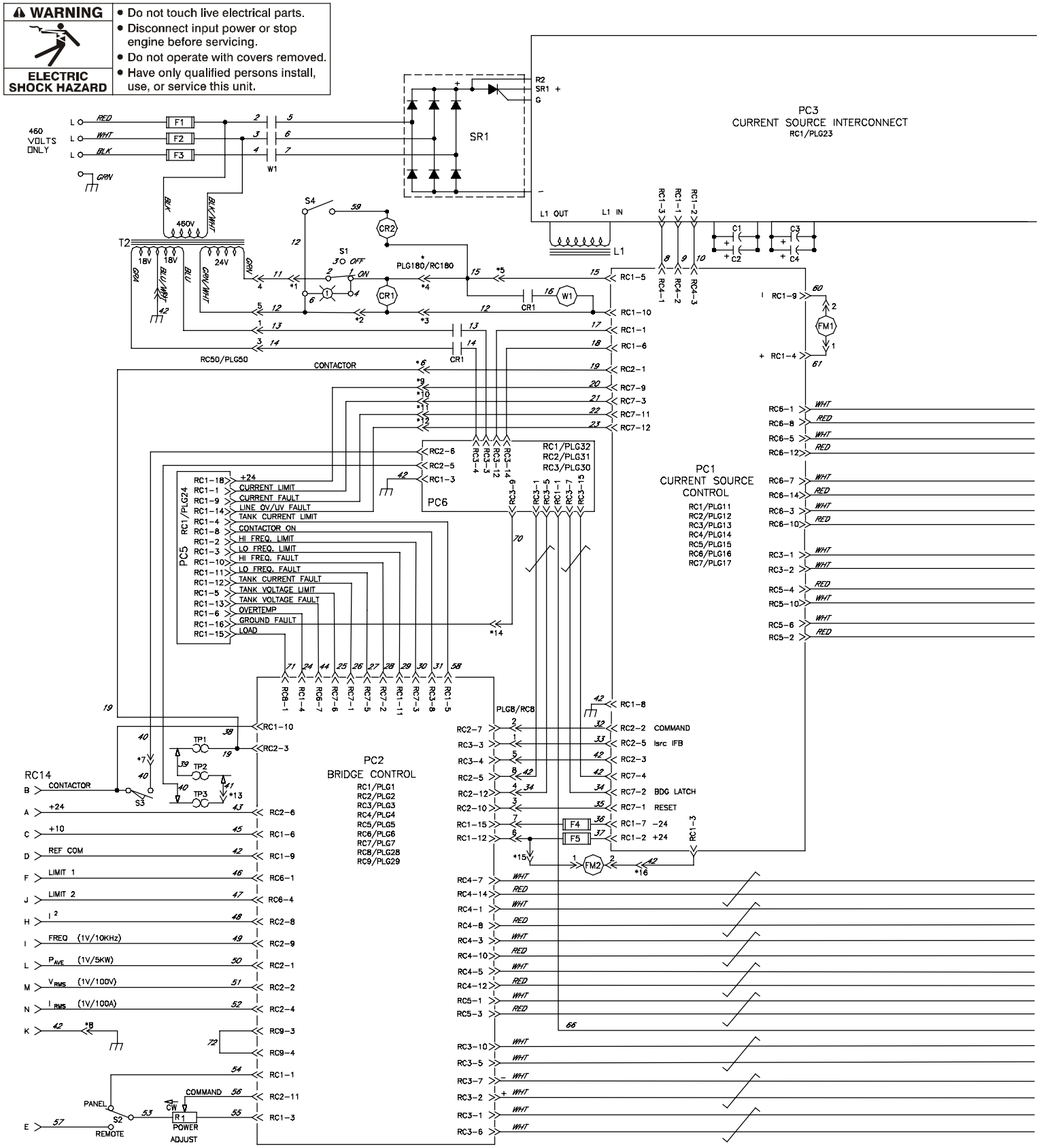
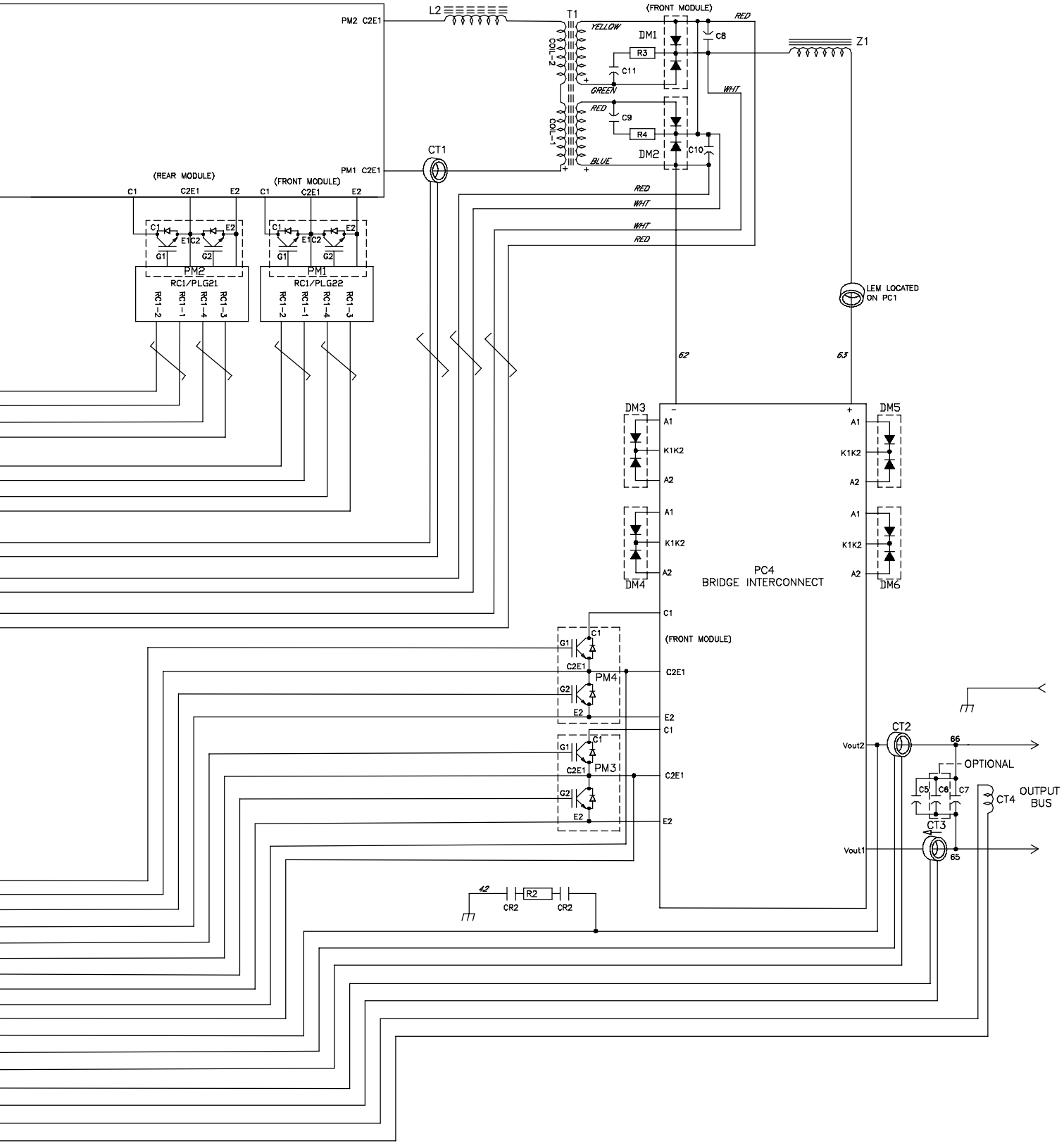


Figure 6-1. Circuit Diagram


PM2 C2E1
L2
T1
(FRONT MODULE)
YELLOW
DM1
R3
C11
GREEN
RED
C9
R4
DM2
C10
BLUE
RED
C8
Z1
WHT
CT1
PM1 C2E1
(REAR MODULE)
(FRONT MODULE)
C1
C2E1
E2
G1
G2
PM2
RC1/PLG21
PM1
RC1/PLG22
RC1-2
RC1-1
RC1-4
RC1-3
RED
WHT
WHT
RED
LEM LOCATED ON PC1
62
63
DM3
DM5
A1
K1K2
A2
DM4
DM6
PC4
BRIDGE INTERCONNECT
(FRONT MODULE)
PM4
PM3
CT2
Vout2
66
OPTIONAL
C5
C6
C7
CT4
OUTPUT BUS
CT3
Vout1
65
42
R2
CR2

SECTION 7 – PARTS LIST

☞ *Hardware is common and not available unless listed.*

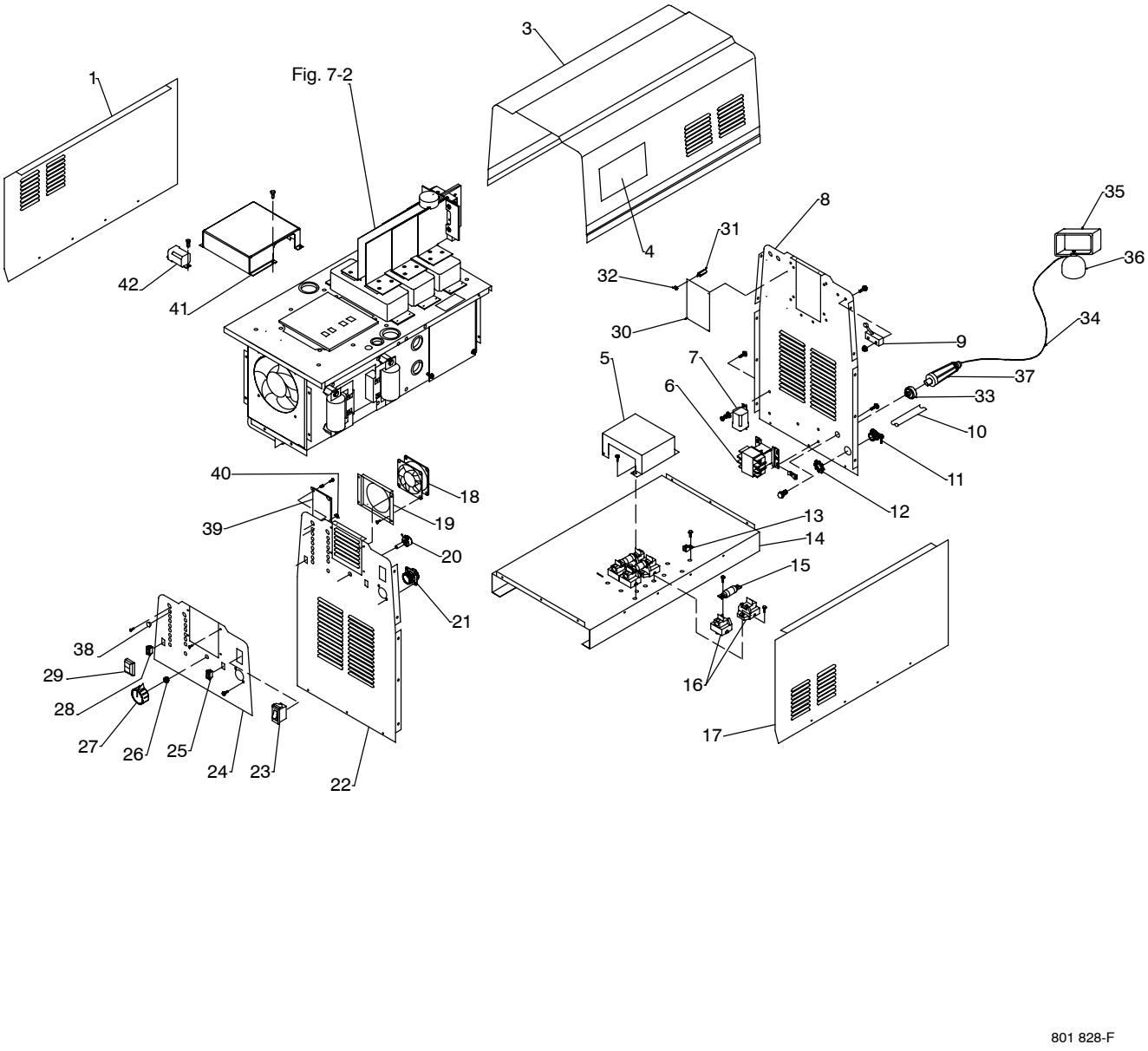


Figure 7-1. Main Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 7-1. Main Assembly

1		179 245	PANEL, side LH	1
2		Figure 7-2	CENTER BAFFLE ASSEMBLY	1
3		+179 246	WRAPPER	1
4		147 876	LABEL, warning general precautionary	2
5		195 830	COVER, fuse block	1
6	W1	124 886	CONTACTOR, def purpose 60A 3P 24V	1
7	CR1	000 174	RELAY, encl 24VAC 3PDT	1
8		179 231	PANEL, rear	1
9	S3	011 628	SWITCH, lim 15A 125/250VAC SPDT	1
10		184 698	CABLE, pwr 12ft 8ga 4/c	1
11		186 441	BUSHING, strain relief	1
12		178 563	NUT, nylon	1
13		145 743	LUG, univ w/scr 600V	1
14		179 235	BASE	1
15	F1-3	*184 700	FUSE, semiconductor 50A 500V	1
16		184 696	BLOCK, fuse semiconductor modular	3
17		184 701	PANEL, side RH	1
18	FM2	184 702	MOTOR, fan 24VDC	1
	PLG26	135 635	HOUSING PLUG & PINS	1
19		184 845	BRACKET, fan mtg small	1
20	R1	073 562	POTENTIOMETER, cp std slot 1/T 2W 10K ohm	1
21	RC14	143 976	RCPT W/SKTS	1
22		199 543	PANEL, front	1
23	S1	159 039	SWITCH, rocker SPDT 15A 125VAC	1
24			NAMEPLATE, (order by model and serial number)	1
25	S2	120 376	SWITCH, rocker SPDT 4A 250VAC	1
26		135 299	LOCK, shaft pot	1
27		171 007	KNOB	1
28	S4	199 672	SWITCH, rocker	1
29		194 022	BOOT, switch rocker	1
30	PC6	196 854	CIRCUIT CARD ASSY, ground fault control	1
31		115 443	STAND-OFF, no 6-32 x .750 lg .250 hex	4
32		106 702	NUT, 006-32 .31 hex .20h stl pld	4
33		127 837	RECEPTACLE, tw lk insul fem	1
34		197 900	CABLE, work ground	1
35		198 035	HANDLE	1
36		197 931	MAGNET, permanent	1
37		127 836	PLUG, tw lk insul male	1
38		159 036	LENS, LED clear	12
39	PC5	199 533	CIRCUIT CARD, diagnostic display	1
40		159 035	CLIP, retainer lens	12
41		199 165	COVER, pc card	1
42		110 386	RELAY, encl 24VAC DPDT 5A/120VAC	1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
*Recommended Spare Parts.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 7-2. Center Baffle Assembly (Fig 6-1 Item 2)

1	PM1,2	223 949	KIT, transistor IGBT module 75A 1200V 94 X 35.6MM	2
	PLG21,22	115 094	HOUSING PLUG & SKTS	2
2	TP1-3	006 334	THERMOSTAT,NC	1
3	SR1	223 950	KIT, diode power module/scr 75A 1600V	1
4	PC3	181 170	CIRCUIT CARD, current source interconnecting	1
	PLG23	131 204	HOUSING PLUG & SKTS	1
5	F4,5	*012 658	FUSE, mintr gl slo-blo 2A 250V	2
6		098 376	HOLDER, fuse mintr	1
7	CT1	184 840	TRANSFORMER, current primary	1
	PLG13	135 635	HOUSING PLUG & PINS	1
		155 748	BUS BAR, lem	1
8	PC1	229 245	CIRCUIT CARD, current source control	1
	PLG11,15	115 091	HOUSING PLUG & SKTS	1
	PLG12	115 092	HOUSING PLUG & SKTS	1
	PLG14	131 204	HOUSING PLUG & SKTS	1
	PLG16	131 056	HOUSING RCPT & SKTS	1
	PLG17	130 203	HOUSING PLUG & SKTS	1

☞ *Hardware is common and not available unless listed.*

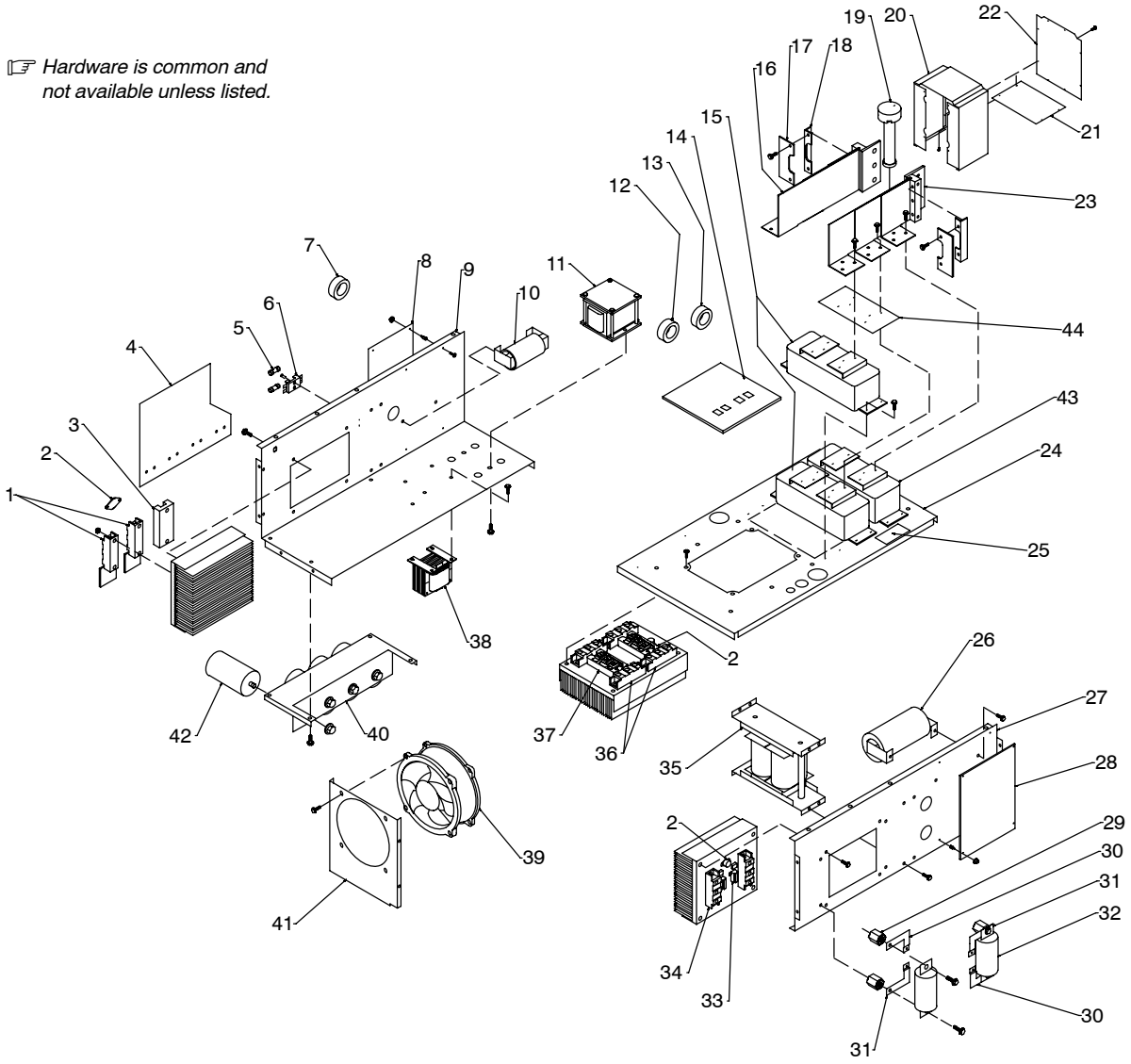


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Figure 7-2. Center Baffle Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 7-2. Center Baffle Assembly (Fig 6-1 Item 2)(Continued)

9		179 233	WINDTUNNEL LH	1
10	L1	180 114	INDUCTOR, input	1
11	L2	182 563	INDUCTOR, series	1
12	CT2	184 842	TRANSFORMER, current bridge	1
13	CT3	184 841	TRANSFORMER, current power feedback	1
14	PC4	181 175	CIRCUIT CARD, bridge interconnecting	1
15	C5-6	179 220	CAPACITOR, polyp met film 1.5uf 1000VDC	3
16		179 239	BUS BAR, laminated output LH	1
17		186 523	STRIP, mtg output	2
18		192 515	BRACKET, mtg output block	2
19	CT4	185 935	SENSOR, tank current	1
20		196 245	ENCLOSURE, output	1
21		196 247	TOPPLATE, output enclosure	1
22		196 246	ENDPLATE, output enclosure	1
23		179 238	BUS BAR, laminated output RH	1
24		+179 236	MIDPLANE	1
25		126 026	LABEL, warning electric shock	2
26	Z1	180 115	STABILIZER	1
27		179 234	WINDTUNNEL RH	1
28	PC2	205 627	CIRCUIT CARD ASSY w/PLUG (service kit) bridge control	1
	PLG1	131 052	HOUSING RCPT & SKTS	1
	PLG2	130 203	HOUSING PLUG & SKTS	1
	PLG3	115 091	HOUSING PLUG & SKTS	1
	PLG4	131 056	HOUSING RCPT & SKTS	1
	PLG5	131 204	HOUSING PLUG & SKTS	1
	PLG6	115 092	HOUSING PLUG & SKTS	1
	PLG7	115 093	HOUSING PLUG & SKTS	1
	PLG28	131 054	HOUSING RCPT & SKTS	1
	PLG29	115 094	HOUSING PLUG & SKTS	1
29		025 248	STAND-OFF, insul .250-20 x 1.250	4
30		179 875	BUS BAR, diode RH	2
31		179 876	BUS BAR, diode LH	2
32	C8,10	170 867	CAPACITOR. polyp film 1.5uf 1000VDC	2
33	C9R4/C11R3	180 711	SNUBBER	2
34	DM1,2	223 948	KIT, diode ultra fast recovery 100A 1200V	2
35	T1	182 564	TRANSFORMER, HF	1
36	DM3-6	223 948	KIT, diode ultra fast recovery 100A 1200V	4
37	PM3,4	223 944	KIT, transistor (2 pc) IGBT module 150A 1200V	1
38	T2	179 870	TRANSFORMER, control	1
	PLG50	131 055	HOUSING RCPT & SKTS	1
39	FM1	229 514	MOTOR, fan 48VDC	1
	PLG25	135 635	HOUSING PLUG & PINS	1
40		179 872	BRACKET, mtg capacitor	1
41		184 844	BRACKET, fan mtg	1
42	C1-4	174 980	CAPACITOR, elect 2700ufd 420VDC	4
	PLG8	115 092	HOUSING PLUG & SKTS	1
	RC8	135 409	HOUSING PLUG & PINS	1
	PLG108	203 800	HOUSING RCPT & SKTS	1
	RC108	203 799	HOUSING RCPT & PINS	1
43	C7	197 276	CAPACITOR, polyp met film 3.00uf 700VAC	1
44		199 234	INSULATOR, tank cap	1
		200 286	SCREW, 250-20 x 0.50 hex hd nyl	6

*Recommended Spare Parts.

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Notes

Notes

Notes

Warranty Questions?

Call
1-800-4-A-MILLER
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Your distributor also gives you ...

Service
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Miller

TRUE BLUE® WARRANTY

Effective January 1, 2006
(Equipment with a serial number preface of "LG" or newer)

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LIMITED WARRANTY – Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller 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 or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts — 3 Years Labor
   * Original main power rectifiers
2. 3 Years — Parts and Labor
   * Transformer/Rectifier Power Sources
   * Plasma Arc Cutting Power Sources
   * Process Controllers
   * Semi-Automatic and Automatic Wire Feeders
   * Inverter Power Sources (Unless Otherwise Stated)
   * Water Coolant Systems (Integrated)
   * Intellitig
   * Engine Driven Welding Generators **(NOTE: Engines are warranted separately by the engine manufacturer.)**
3. 1 Year — Parts and Labor Unless Specified
   * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
   * Positioners and Controllers
   * Automatic Motion Devices
   * RFCS Foot Controls
   * Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
   * Water Coolant Systems (Non-Integrated)
   * Flowgauge and Flowmeter Regulators (No Labor)
   * HF Units
   * Grids
   * Spot Welders
   * Load Banks
   * Arc Stud Power Sources & Arc Stud Guns
   * Racks
   * Running Gear/Trailers
   * Plasma Cutting Torches (except APT & SAF Models)
   * Field Options (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
   * Bernard-Branded Mig Guns (No Labor)
   * Weldcraft-Branded TIG Torches (No Labor)
   * Subarc Wire Drive Assemblies
4. 6 Months — Batteries
5. 90 Days — Parts
   * MIG Guns/TIG Torches and Subarc (SAW) Guns
   * Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
   * APT & SAF Model Plasma Cutting Torches
   * Remote Controls
   * Accessory (Kits)
   * Replacement Parts (No labor)
   * Spoolmate Spoolguns
   * Canvas Covers

Miller's True Blue® 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. (Exception: brushes, slip rings, and relays are covered on Bobcat, Trailblazer, and Legend models.)**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

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TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

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Owner's Record

Please complete and retain with your personal records.

Model Name	Serial/Style Number
Purchase Date	(Date which equipment was delivered to original customer.)
Distributor	
Address	
City	
State	Zip

For Service

Contact a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:	Welding Supplies and Consumables Options and Accessories Personal Safety Equipment Service and Repair Replacement Parts Training (Schools, Videos, Books) Technical Manuals (Servicing Information and Parts) Circuit Diagrams Welding Process Handbooks To locate a Distributor or Service Agency visit www.millerwelds.com or call 1-800-4-A-Miller
Contact the Delivering Carrier to:	File a claim for loss or damage during shipment. For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

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