Instruction Manual

HANDY PLASMA 125

PLASMA ARC CUTTING PACKAGE - P/N 37884 115V 60HZ

F15-568-C December, 2004

F15-568-C

CAUTION **Be sure this information reaches the operator. You can get extra copies through your supplier.**

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for arc welding and cutting equipment, we urge you to read our booklet, "Precautions and Safe Practices for Arc Welding, Cutting and Gouging", Form 52-529. Do NOT permit untrained persons to install, operate, or maintain this equipment. Do NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these instructions, contact your supplier for further information. Be sure to read the Safety Precautions before installing or operating this equipment.

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SAFETY PRECAUTIONS

WARNING: These Safety Precautions are for your protection. They summarize precautionary information from the references listed in Additional Safety Information section. Before performing any installation or operating procedures, be sure to read and follow the safety precautions listed below as well as all other manuals, material safety data sheets, labels, etc. Failure to observe Safety Precautions can result in injury or death.

PROTECT YOURSELF AND OTHERS -- Some welding, cutting, and gouging processes are noisy and require ear protection. The arc, like the sun, emits ultraviolet (UV) and other radiation and can injure skin and eyes. Hot metal can cause burns. Training in the proper use of the processes and equipment is essential to prevent accidents. Therefore:

1. Always wear safety glasses with side shields in any work area, even if welding helmets, face shields, and goggles are also required.
2. Use a face shield fitted with the correct filter and cover plates to protect your eyes, face, neck, and ears from sparks and rays of the arc when operating or observing operations. Warn bystanders not to watch the arc and not to expose themselves to the rays of the electric-arc or hot metal.
3. Wear flameproof gauntlet type gloves, heavy long-sleeve shirt, cuffless trousers, high-topped shoes, and a welding helmet or cap for hair protection, to protect against arc rays and hot sparks or hot metal. A flameproof apron may also be desirable as protection against radiated heat and sparks.
4. Hot sparks or metal can lodge in rolled up sleeves, trouser cuffs, or pockets. Sleeves and collars should be kept buttoned, and open pockets eliminated from the front of clothing
5. Protect other personnel from arc rays and hot sparks with a suitable non-flammable partition or curtains.
6. Use goggles over safety glasses when chipping slag or grinding. Chipped slag may be hot and can fly far. Bystanders should also wear goggles over safety glasses.

FIRES AND EXPLOSIONS -- Heat from flames and arcs can start fires. Hot slag or sparks can also cause fires and explosions. Therefore:

1. Remove all combustible materials well away from the work area or cover the materials with a protective non-flammable covering. Combustible materials include wood, cloth, sawdust, liquid and gas fuels, solvents, paints and coatings, paper, etc.
2. Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire or fires on the floor below. Make certain that such openings are protected from hot sparks and metal.“
3. Do not weld, cut or perform other hot work until the workpiece has been completely cleaned so that there are no substances on the workpiece which might produce flammable or toxic vapors. Do not do hot work on closed containers. They may explode.
4. Have fire extinguishing equipment handy for instant use, such as a garden hose, water pail, sand bucket, or portable fire extinguisher. Be sure you are trained in its use.
5. Do not use equipment beyond its ratings. For example, overloaded welding cable can overheat and create a fire hazard.
6. After completing operations, inspect the work area to make certain there are no hot sparks or hot metal which could cause a later fire. Use fire watchers when necessary.
7. For additional information, refer to NFPA Standard 51B, "Fire Prevention in Use of Cutting and Welding Processes", available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

ELECTRICAL SHOCK -- Contact with live electrical parts and ground can cause severe injury or death. DO NOT use AC welding current in damp areas, if movement is confined, or if there is danger of falling.

1. Be sure the power source frame (chassis) is connected to the ground system of the input power.
2. Connect the workpiece to a good electrical ground.
3. Connect the work cable to the workpiece. A poor or missing connection can expose you or others to a fatal shock.
4. Use well-maintained equipment. Replace worn or damaged cables.
5. Keep everything dry, including clothing, work area, cables, torch/electrode holder, and power source.
6. Make sure that all parts of your body are insulated from work and from ground.
7. Do not stand directly on metal or the earth while working in tight quarters or a damp area; stand on dry boards or an insulating platform and wear rubber-soled shoes.
8. Put on dry, hole-free gloves before turning on the power.
9. Turn off the power before removing your gloves.
10. Refer to ANSI/ASC Standard Z49.1 (listed on next page) for specific grounding recommendations. Do not mistake the work lead for a ground cable.

ELECTRIC AND MAGNETIC FIELDS — May be dangerous. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding and cutting current creates EMF around welding cables and welding machines. Therefore:

1. Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
2. Exposure to EMF may have other health effects which are unknown.
3. Welders should use the following procedures to minimize exposure to EMF:
   A. Route the electrode and work cables together. Secure them with tape when possible.
   B. Never coil the torch or work cable around your body.
   C. Do not place your body between the torch and work cables. Route cables on the same side of your body.
   D. Connect the work cable to the workpiece as close as possible to the area being welded.
   E. Keep welding power source and cables as far away from your body as possible.

FUMES AND GASES -- Fumes and gases, can cause discomfort or harm, particularly in confined spaces. Do not breathe fumes and gases. Shielding gases can cause asphyxiation. Therefore:

1. Always provide adequate ventilation in the work area by natural or mechanical means. Do not weld, cut, or gouge on materials such as galvanized steel, stainless steel, copper, zinc, lead, beryllium, or cadmium unless positive mechanical ventilation is provided. Do not breathe fumes from these materials.
2. Do not operate near degreasing and spraying operations. The heat or arc rays can react with chlorinated hydrocarbon vapors to form phosgene, a highly toxic gas, and other irritant gases.
3. If you develop momentary eye, nose, or throat irritation while operating, this is an indication that ventilation is not adequate. Stop work and take necessary steps to improve ventilation in the work area. Do not continue to operate if physical discomfort persists.
4. Refer to ANSI/ASC Standard Z49.1 (see listing below) for specific ventilation recommendations.
5. **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 §25249.5 et seq.)**

CYLINDER HANDLING -- Cylinders, if mishandled, can rupture and violently release gas. Sudden rupture of cylinder, valve, or relief device can injure or kill. Therefore:

1. Use the proper gas for the process and use the proper pressure reducing regulator designed to operate from the compressed gas cylinder. Do not use adaptors. Maintain hoses and fittings in good condition. Follow manufacturer's operating instructions for mounting regulator to a compressed gas cylinder.
2. Always secure cylinders in an upright position by chain or strap to suitable hand trucks, undercarriages, benches, walls, post, or racks. Never secure cylinders to work tables or fixtures where they may become part of an electrical circuit.
3. When not in use, keep cylinder valves closed. Have valve protection cap in place if regulator is not connected. Secure and move cylinders by using suitable hand trucks. Avoid rough handling of cylinders.
4. Locate cylinders away from heat, sparks, and flames. Never strike an arc on a cylinder.
5. For additional information, refer to CGA Standard P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders", which is available from Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202.

EQUIPMENT MAINTENANCE -- Faulty or improperly maintained equipment can cause injury or death. Therefore:

1. Always have qualified personnel perform the installation, troubleshooting, and maintenance work. Do not perform any electrical work unless you are qualified to perform such work.
2. Before performing any maintenance work inside a power source, disconnect the power source from the incoming electrical power.
3. Maintain cables, grounding wire, connections, power cord, and power supply in safe working order. Do not operate any equipment in faulty condition.
4. Do not abuse any equipment or accessories. Keep equipment away from heat sources such as furnaces, wet conditions such as water puddles, oil or grease, corrosive atmospheres and inclement weather.
5. Keep all safety devices and cabinet covers in position and in good repair.
6. Use equipment only for its intended purpose. Do not modify it in any manner.

ADDITIONAL SAFETY INFORMATION -- For more information on safe practices for electric arc welding and cutting equipment, ask your supplier for a copy of "Precautions and Safe Practices for Arc Welding, Cutting and Gouging", Form 52-529.

The following publications, which are available from the American Welding Society, 550 N.W. LeJuene Road, Miami, FL 33126, are recommended to you:

1. ANSI/ASC Z49.1 - "Safety in Welding and Cutting"
2. AWS C5.1 - "Recommended Practices for Plasma Arc Welding"
3. AWS C5.2 - "Recommended Practices for Plasma Arc Cutting"
4. AWS C5.3 - "Recommended Practices for Air Carbon Arc Gouging and Cutting"
5. AWS C5.5 - "Recommended Practices for Gas Tungsten Arc Welding“
6. AWS C5.6 - "Recommended Practices for Gas Metal Arc Welding"“
7. AWS SP - "Safe Practices" - Reprint, Welding Handbook.
8. ANSI/AWS F4.1, "Recommended Safe Practices for Welding and Cutting of Containers That Have Held Hazardous Substances."

MEANING OF SYMBOLS - As used throughout this manual: Means Attention! Be Alert! Your safety is involved.

DANGER **Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.**

WARNING **Means potential hazards which could result in personal injury or loss of life.**

CAUTION **Means hazards which could result in minor personal injury.**

PRÉCAUTIONS DE SÉCURITÉ

AVERTISSEMENT: Ces règles de sécurité ont pour objet d' assurer votre protection. Veillez à lire et à observer les précautions énoncées ci-dessous avant de monter l' équipement ou de commercer à l'utiliser. Tout défaut d'observation de ces précautions risque d'entraîner des blessures graves ou mortelles.

1. PROTECTION INDIVIDUELLE-- Les brûlures de la peau et des yeux dues au rayonnement de l'arc électrique ou du métal incandescent, lors du soudage au plasma ou à l'électrode ou lors du gougeage à l'arc, peuvent s'avérer plus graves que celles résultant d'une exposition prolongée au soleil. Aussi convient-il d'observer les précautions suivantes:

a. Portez un écran facial adéquat muni des plaques protectrices et des verres filtrants appropriés afin de vous protéger les yeux, le visage, le cou et les oreilles des étincelles et du rayonnement de l'arc électrique lorsque vous effectuez des soudures ou des coupes ou lorsque vous en observez l'exécution. AVERTISSEZ les personnes se trouvant à proximité de façon à ce qu'elles ne regardent pas l'arc et à ce qu'elles ne s'exposent pas à son rayonnement, ni à celui du métal incandescent.

b. Portez des gants ignifugés à crispins, une tunique épaisse à manches longues, des pantalons sans rebord, des chaussures à embout d'acier et un casque de soudage ou une calotte de protection, afin d'éviter d'exposer la peau au rayonnement de l'arc électrique ou du métal incandescent. Il est également souhaitable d'utiliser un tablier ininflammable de façon à se protéger des étincelles et du rayonnement thermique.

c. Les étincelles ou les projections de métal incandescent risquent de se loger dans des manches retroussées, des bords relevés de pantalons ou dans des poches. Aussi convient-il de garder boutonnés le col et les manches et de porter des vêtements sans poches à l'avant.

d. Protégez des étincelles et du rayonnement de l'arc électrique les autres personnes travaillant à proximité à l'aide d'un écran ininflammable adéquat.

e. Ne jamais omettre de porter des lunettes de sécurité lorsque vous vous trouvez dans un secteur où l'on effectue des opérations de soudage ou de coupage à l'arc. Utilisez des lunettes de sécurité à écrans ou verres latéraux pour piquer ou meûler le laitier. Les piquetures incandescentes de laitier peuvent être projetées à des distances considérables. Les personnes se trouvant à proximité doivent également porter des lunettes de protection.

f. Le gougeage à l'arc et le soudage à l'arc au plasma produisent un niveau de bruit extrêmement élevé (de 100 à 114 dB) et exigent par conséquent l'emploi de dispositifs appropriés de protection auditive.

2. PRÉVENTION DES INCENDES-- Les projections de laitier incandescent ou d'étincelles peuvent provoquer de graves incendies au contact de matériaux combustibles solides, liquides ou gazeux. Aussi faut-il observer les précautions suivantes:

a. Éloigner suffisamment tous les matériaux combustibles du secteur où l'on exécute des soudures ou des coupes à l'arc, à moins de les recouvrir complètement d'une bâche non-inflammable. Ce type de matériaux comprend notamment le bois, les vêtements, la sciure, l'essence, le kérosène, les peintures, les solvants, le gaz naturel, l'acétylène, le propane et autres substances combustibles semblables.

b. Les étincelles ou les projections de métal incandescent peuvent tomber dans des fissures du plancher ou dans des ouvertures des murs et y déclencher une ignition lente cachée. Veiller à protéger ces ouvertures des étincelles et des projections de métal.

c. N'exécutez pas de soudures, de coupes, d'opérations de gougeage ou autres travaux à chaud à la surface de barils, bidons, réservoirs ou autres contenants usagés, avant de les avoir nettoyés de toute trace de substance susceptible de produire des vapeurs inflammables ou toxiques.

d. En vue d'assurer la prévention des incendies, il convient de disposer d'un matériel d'extinction prêt à servir immédiatement, tel qu'un tuyau d'arrosage, un seau à eau, un seau de sable ou un extincteur portatif.

e. Une fois le travail à l'arc terminé, inspectez le secteur de façon à vous assurer qu'aucune étincelle ou projection de métal incandescent ne risque de provoquer ultérieurement un feu.

3. CHOC ÉLECTRIQUE-- Le gougeage à l'arc et à l'arc au plasma exige l'emploi de tensions à vide relativement importantes; or, celles-ci risquent de causer des dommages corporels graves et même mortels en cas d'utilisation inadéquate. La gravité du choc électrique reçu dépend du chemin suivi par le courant à travers le corps humain et de son intensité.

a. Ne laissez jamais de surfaces métalliques sous tension venir au contact direct de la peau ou de vêtements humides. Veillez à porter des gants bien secs.

b. Si vous devez effectuer un travail sur une surface métallique ou dans un secteur humide, veillez à assu-rer votre isolation corporelle en portant des gants secs et des chaussures à semelles de ca-outchouc et en vous tenant sur une planche ou une plate-forme sèche.

c. Mettez toujours à la terre le poste de soudage/coupage en le reliant par un câble à une bonne prise de terre.

d. N'utilisez jamais de câbles usés ou endommagés. Ne surchargez jamais le câble. Utilisez toujours un équipement correctement entretenu.

e. Mettez l'équipement hors tension lorsqu'il n'est pas en service. une mise à la masse accidentelle peut en effet provoquer une surchauffe de l'équipement et un danger d'incendie. Ne pas enrouler ou passer le câble autour d'une partie quelconque du corps.

f. Vérifiez si le câble de masse est bien relié à la pièce en un point aussi proche que possible de la zone de travail. Le branchement des câbles de masse à l'ossature du bâtiment ou en un point éloigné de la zone de travail augmente en effet le risque de passage d'un courant de sortie par des chaînes de

levage, des câbles de grue ou divers chemins électriques.

g. Empêchez l'apparition de toute humidité, notamment sur vos vêtements, à la surface de l'emplacement de travail, des câbles, du porte-électrode et du poste de soudage/coupage. Réparez immédiatement toute fuite d'eau.

4. VENTILATION-- La respiration prolongée des fumées résultant des opérations de soudage/ coupage, à l'intérieur, d'un local clos, peut provoquer des malaises et des dommages corporels. Aussi convient-il d'observer les précautions suivantes:

a. Assurez en permanence une aération adéquate de l'emplacement de travail en maintenant une ventilation naturelle ou à l'aide de moyens mécaniques. N'effectuez jamais de travaux de soudage ou de coupage sur des matériaux de zinc, de plomb, de beryllium ou de cadmium en l'absence de moyens mécaniques de ventilation capables d'empêcher l'inhalation des fumées dégagées par ces matériaux.

b. N'effectuez jamais de travaux de soudage ou de coupage à proximité de vapeurs d'hydrocarbure chloré résultant d'opérations voisines de dégraissage ou de pulvérisation. La chaleur dégagée ou le rayonnement de l'arc peut déclencher la formation de phosgène -- gaz particulièrement toxique -- et d'autres gaz irritants, à partir des vapeurs de solvant.

c. Une irritation momentanée des yeux, du nez ou de la gorge constatée au cours de l'utilisation de l'équipement dénote un défaut de ventilation. Arrêtez-vous de travailler afin de prendre les mesures néces- saires à l'amélioration de la ventilation. Ne poursuivez pas l'opération entreprise si le malaise persiste.

d. Certaines commandes comportent des canalisations où circule de l'hydrogène. L'armoire de commande est munie d'un ventilateur destiné à empêcher la formation de poches d'hydrogène, lesquelles présentent un danger d'explosion; ce ventilateur ne fonctionne que si l'interrupteur correspondant du panneau avant se trouve placé en position ON (Marche). Veillez à manœuvrer cette commande en vérifiant si le couvercle est bien en place, de façon à assurer l'efficacité de la ventilation ainsi réalisée. Ne jamais débrancher le ventilateur.

e. Les fumées produites par l'opération de soudage ou de coupage peuvent s'avérer toxiques. Aussi est-il nécessaire de disposer en permanence d'un dispositif adéquat de ventilation de type aspirant, afin d'élimi-ner du voisinage de l'opérateur tout dégagement de fumée visible.

f. Consultez les recommandations particulières en matière de ventilation indiquées à l'alinéa 6 de la norme Z49.1 de l'AWS.

5. ENTRETIEN DE L'ÉQUIPEMENT-- Un équipement entretenu de façon défectueuse ou inadéquate risque non seulement de réaliser un travail de mauvaise qualité mais, chose plus grave encore, d'entraîner des dommages corporels graves, voire mortels en déclenchant des incendies ou des chocs électriques. Observez par conséquent les précautions suivantes:

a. Efforcez-vous de toujours confier à un personnel qualifié l'installation, le dépannage et l'entretien du poste de soudage et de coupage. N'effectuez aucune réparation électrique sur l'équipement à moins d'être qua-lifié à cet effet.

b. Ne procédez jamais à une tâche d'entretien quelconque à l'intérieur du poste de soudage/ coupage, avant d'avoir débranché l'alimentation électrique.

c. Maintenez en bon état de fonctionnement les câbles, le câble de masse, les branchements, le cordon d'alimentation et le poste de soudage/coupage. N'utilisez jamais le poste ou l'équipement s'il présente une défectuosité quelconque.

d. Prenez soin du poste de soudage et de coupage et des équipements accessoires. Gardez-les à l'écart des sources de charleur, notamment des fours, de l'humidité, des flaques d'eau maintenez-les à l'abri des traces d'huile ou de graisse, des atmosphères corrosives et des intempéries.

e. Laissez en place tous les dispositifs de sécurité et tous les panneaux de l'armoire de commande en veillant à les garder en bon état.

f. Utilisez le poste de soudage/coupage conformément à son usage prévu et n'effectuez aucune modification.

6. INFORMATIONS COMPLÉMENTAIRES RELATIVES À LA SÉCURITÉ--

Pour obtenir des informations complémentaires sur les règles de sécurité à observer pour le montage et l'utilisation d'équipements de soudage et de coupage électriques et sur les méthodes de travail recommandées, demandez un exemplaire du livret N° 52529 "Precautions and Safe Practices for Arc Welding, Cutting and Gouging" publié par ESAB. Nous conseillons également de consulter les publications sui-vantes, tenues à votre disposition par l'American Welding Society, 550 N.W. LeJuene Road, Miami, FL 32126:

a. "Safety in Welding and Cutting" AWS Z49.1

b. "Recommended Safe Practices for Gas-Shielded Arc Welding "AWS A6. 1.

c. "Safe Practices for Welding and Cutting Containers That Have Held Combustibles" AWS-A6.0.

d. "Recommended Safe Practices for Plasma Arc Cutting" AWS-A6. 3.

e. "Recommended Safe Practices for Plasma Arc Welding" AWS-C5. 1.

f. "Recommended Safe Practices for Air Carbon Arc Gouging and Cutting" AWS-C5. 3.

g. "Code For Safety in Welding and Cutting" CSA-Standard W117. 2.

SECTION 1 DESCRIPTION

Description

- plugs into standard 115 V outlet
- portable - 60 lbs (27 kg)
- cuts practically any sheet metal up to 1/8” (3mm) thick
- low ripple for finer cuts
- proven patented PT-34 torch - 15 feet (3.8m)
- spare parts kit
- 1 year warranty
- 30% duty cycle at rated output - fan cooled
- overtemperature light

SPECIFICATIONS

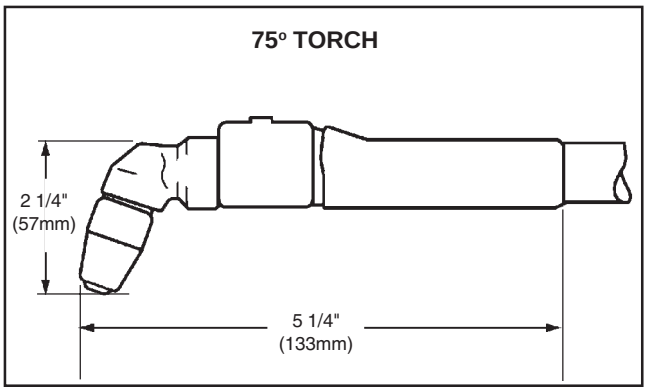
HANDY PLASMA 125

Input Voltage ..... 115 V, 60 Hz, 1 Phase
Input Current @ rated load ..... 20 A @ 115 V
Output Rating ..... 11 amps - 100 volts
Open Circuit Voltage ..... 290 V DC max.

Dimensions:
Weight ..... 60 lbs (27 kg)

PT-34 Torch

Shipping Wgt. ..... 2 lbs (1 kg)
Length of Service Lines ..... 15’ (3.8 m)
Dimensions:



WARNING

Note the high open-circuit voltage. Use only plasma cutting torches designed for this equipment. Do NOT attempt to use this equipment with any process other than plasma arc cutting.

SECTION 2 EQUIPMENT

EQUIPMENT SUPPLIED

PACKAGES AVAILABLE

Each Package includes:
PT-34, 75° Torch w/ 15-ft. lines 37886
Torch Start-Up Kit .....
Work Cable, 12-1/2-ft 680950

OPTIONAL ACCESSORIES AVAILABLE

Optional Torch Spare Parts Kit P/N 37918

Contains:	1- O-Ring Lube P/N 17672
2- Heat Shield, P/N 20282	2- Electrode, P/N 37888
4- Nozzle Tip, P/N 37887	1- Swirl Baffle, P/N 18785

Torch Guide Kit - This complete kit, in a rugged plastic carrying case, includes attachments for circle and streight line cutting on ferrous and nonferrous metals.

Optional Wheel Cart Kit - Roll the Handy Plasma around the job site with ease.

Torch Guide Kit 604609
Wheel Cart Kit Kit 0558001444

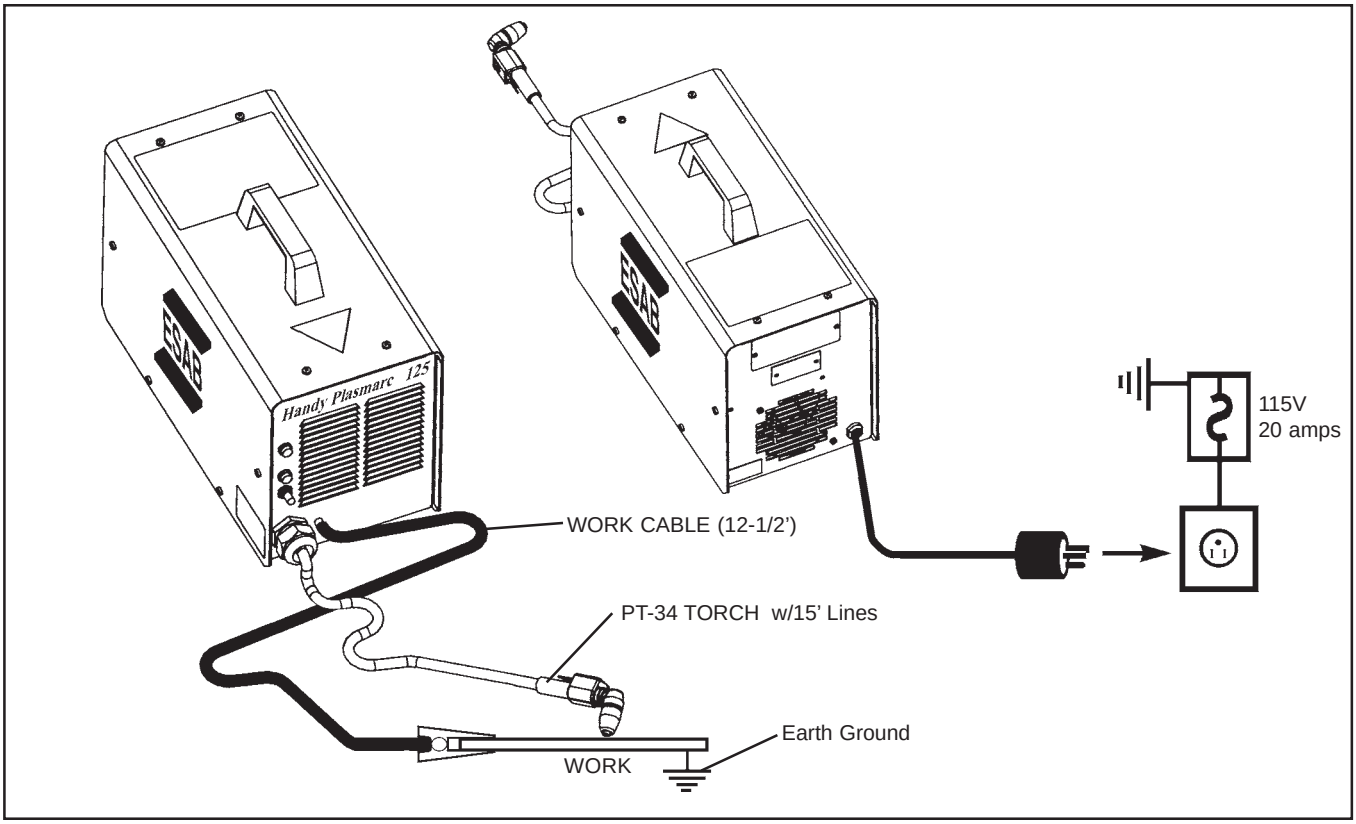


Fig. 3.1 - Handy Plasma 125 Interconnection Diagram

INSTALLATION

Proper installation can contribute materially to satisfactory and troublefree operation of the cutting package. It is suggested that each step in this section be studied carefully and followed as closely as possible.

A. INSPECTION AND PLACEMENT

1. Having removed the shipping container inspect for evidence of concealed damage which may not have been apparent upon receipt of the unit. Notify the carrier of any defects or damage at once.

2. Check the container for any loose parts. Check air louvers on all panels of cabinet and holes through the base are free of any packing materials that may obstruct air flow through the power supply.

3. The components in the HANDY PLASMA 125 console are: maintained at proper operating temperatures by fan cooling. Air is drawn in through the rear panel and then out the louvers in the front panel. Locate the power supply in an open area where air can circulate freely through the openings. Allow at least one foot of clearance between the power supply and wall or any other obstruction. **The area around the power supply should be relatively free of dust, fumes, and excessive heat.**

B. PRIMARY INPUT ELECTRICAL CONNECTION

⚠ WARNING

Precautionary measures should be taken to provide maximum protection against electrical shock. Be sure that all power is off by opening the line (wall) disconnect switch and by unplugging the power cord to the unit when connections are made inside the power supply.

1. The HANDY PLASMA 125 is equipped with a 10-ft., 3-conductor input power cable with a 115V plug. Plug into standard 115 volt outlet.

2. Extension cables may result in excessive voltage drop. Use only industrial grade 16 to 10 awg. extension cables.

   The following sizes should be acceptable:
   25 ft. extension - 16 awg. minimum
   50 ft. extension - 14 awg. minimum
   100 ft. extension - 12 awg. minumum
   150 ft. extension - 10 awg. minimum
   Greater than 150 ft. not recommended!

   Input voltage to machine must be a minimum of 95 volts while operating.

C. SECONDARY (OUTPUT) CONNECTIONS (Refer to Figure 3.1)

⚠ WARNING

Before making any connections to the power supply output terminals, make sure that all primary input power to the machine is deenergized (off) and that input power cable is unplugged.

Clamp the work cable to the workpiece. Be sure the workpiece is connected to an approved earth ground with a properly sized ground cable. *(See figure 3.1.)*

D. ADJUSTMENTS & OPERATIONS

CAUTION: Never, under any circumstances, operate the power supply with the cover removed. In addition to the safety hazard, improper cooling may cause damage to internal components. Keep side panels closed when unit is energized. Also make sure you are adequately protected before you start cutting - protective helmet and gloves should always be worn. Refer to page 2 for additional operating precautions.

A. TORCH ADJUSTMENTS

⚠ WARNING

Make sure power switch on console is in OFF position and unplug the input power cable.

With the torch front end facing up, assemble electrode, swirl baffle, tip, and heat shield (supplied with Torch Spare Parts Kit) in that order as shown in Figure 3.2. (Electrode is reversible and the swirl baffle is symmetrical. They can be assembled either way.) Apply silicone grease to 0-ring.(See Figure 3.2)

Tighten heat shield snugly to hold the parts in firm contact with each other and to the torch head. Do not overtighten the heat shield.

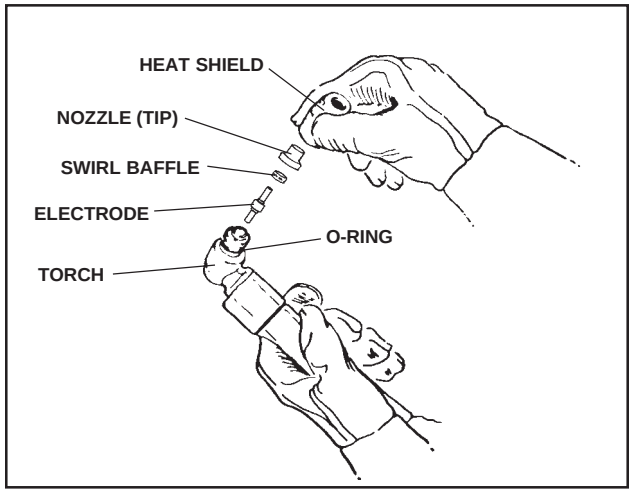


Fig. 3.2 - Assembly of PT-34 Torch Front End Parts

The front end of the torch contains a gas flow check valve that acts in conjunction with the circuitry provided in the power supply. This patented system provides a safety interlock preventing the torch from being accidentally energized with high voltage when the heat shield is removed and the torch switch is accidentally closed.

B. HANDY PLASMA 125 CONTROLS & ADJUSTMENTS (See Fig. 3.3)

1. **Power Switch** - When placed in ON position, the cooling fan will run.

2. **Power Light** - Will glow white to indicate that electrical current has energized the system.

3. **Overtemperature Light** - Will glow amber under the following conditions and contactor will be deenergized, when Duty Cycle has been exceeded.

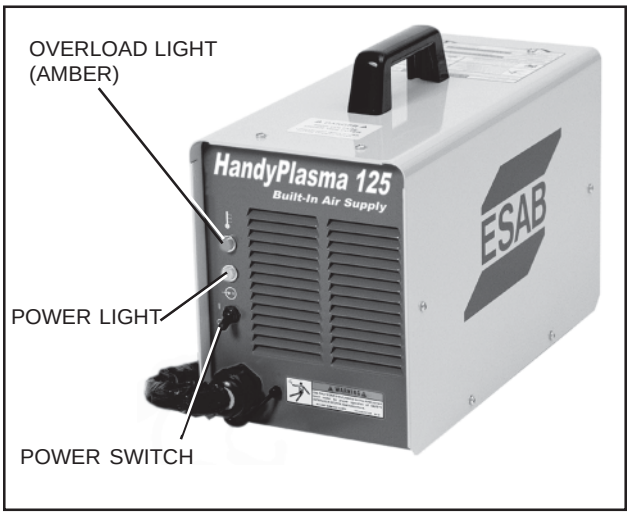


Fig. 3.3 - Controls on Handy Plasma 125 Console

a. The duty cycle of this unit is 30% at rated output current. Duty cycle is based on a 10 minute cycle; therefore, the unit can operate for a total of 3 minutes and shut off for cooling a total of 7 minutes in a 10 minute period.

OPERATION

⚠ WARNING

Wear the usual protective gloves, clothing and helmet. Helmet with filter lens shade No. 6 to 8 should provide adequate protection.

Never touch any parts forward of the torch handle (tip, heat shield, electrode, etc.) unless the power switch is in the OFF position.

Do not depress the torch switch unless the torch tip is touching or within 0.020-in. (less than 1/32-in.) of the workpiece.

CAUTION: Locate the console at least 10-ft. from the cutting work area. Chips and hot slag, from the cutting operation, can damage the console.

After plugging in the input power cable, and turning the power swithc on:

1. Touch the tip of the torch to the workpiece (or within 0.020 in. of the workpiece) holding the torch at about 15- 30° angle to avoid damaging the tip.

2. Depress the torch switch. (Air should begin flowing and H.F. should come on.)

3. Two seconds after depressing torch switch, the plasma arc will start cutting.

4. After starting the cut, the tip can be dragged along the workpiece.

D. OPERATING TECHNIQUES

1. **Piercing** - Thin materials may be pierced with the torch touching the work. When piercing thicker materials (up to 1/8-in.) immediately raise the torch to 1/16 in. standoff after initiating the cutting arc. This will reduce the chance of spatter entering the torch and prevent the possibility of welding the tip to the plate. The torch should be angled at about 30° when starting to pierce, and then straightened after accomplishing the pierce.

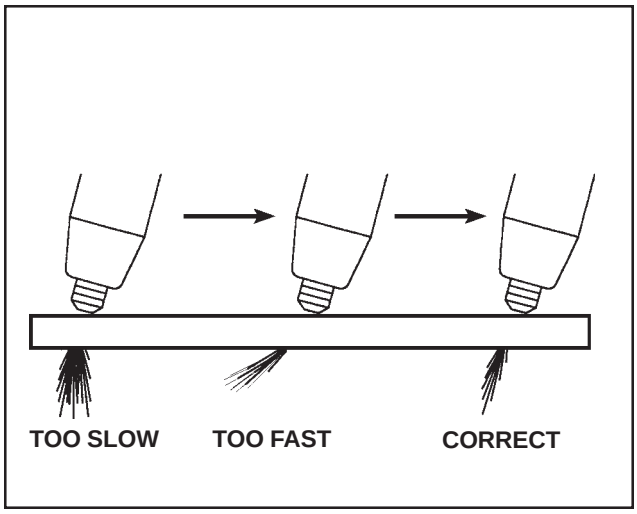


Fig. 4.1 - Effect of Cutting Speed

2. **Grate Cutting** - For rapid restarts, such as grate or heavy mesh cutting, keep torch switch depressed until entire cutting operation is completed. This avoids the 2 second preflow portion of the cutting cycle.

E. COMMON CUTTING FAULTS

Listed below are common cutting problems followed by probable cause of each. If problems are determined to be caused by the HANDY PLASMA 125, see your ESAB representative.

1. **Insufficient Penetration.**

   a. Cutting speed too fast.
   b. Damaged cutting tip.
   c. Improper air pressure.

2. **Main Arc Extinguishes.**

   a. Cutting speed too slow.

3. **Dross Formation. (In some materials and thicknesses, it may be impossible to get dross-free cuts.)**

   a. Cutting speed too fast or too slow.
   b. Improper air pressure.
   c. Faulty tip or electrode.

4. **Double Arcing. (Damaged Tip Orifice.)**

   a. Low air pressure.
   b. Damaged cutting tip.

c. Loose cutting tip.
d. Heavy spatter.

5. Uneven Arc.

a. Damaged cutting tip.
b. Electrode worn or damaged.

6. Unstable Cutting Conditions.

a. Incorrect cutting speed.
b. Loose cable or hose connections.
c. Electrode and/or cutting tip in poor condition.

7. Main Arc Does Not Strike.

a. Loose connections.

8. Poor Consumable Life.

a. Improper gas pressure.

If this equipment does not operate properly, stop work immediately and investigate the cause of the malfunction. Maintenance work must be performed by an experienced person, and electrical work by a trained electrician. Do not permit untrained persons to inspect, clean, or repair this equipment. Use only recommended replacement parts.

A. INSPECTION AND CLEANING

Frequent inspection and cleaning of the HANDY PLASMA 125 console is recommended. Some Suggestions for inspecting and cleaning are as follows:

WARNING

Make sure the power is shut off.

1. Check heat shield on torch. It should be replaced if damaged.

2. Check the torch electrode and cutting tip for wear every 1 or 2 hours of operation.

3. Make sure cable and hoses are not damaged or kinked.

4. Make sure all plugs, fittings, and ground connections are tight.

5. With all input power disconnected, and wearing proper eye and face protection, blow out the inside of the cutting power supply using low-pressure dry compressed air.

B. TROUBLESHOOTING

WARNING

Be sure that all primary power to the machine has been externally disconnected. Unplug before attempting inspection or working inside of the power supply.

Check the problem against the symptoms in the following troubleshooting guide. The remedy may be quite simple. If the cause cannot be quickly located, shut off the input power, open up the unit, and perform a simple visual inspection of all the components and wiring. Check for secure terminal connections, loose or burned wiring or components, bulging or leaking capacitors, or any other sign of damage or discoloration.

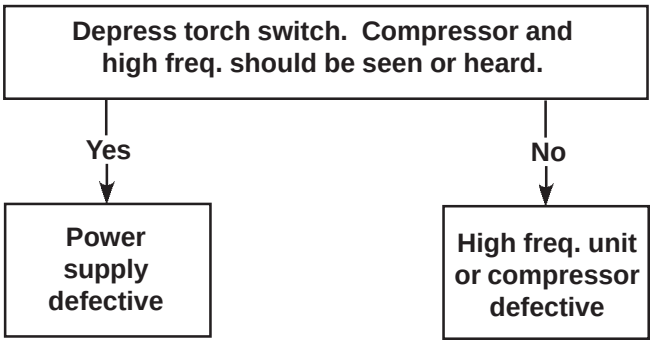
WARNING

Voltages in plasma cutting equipment are high enough to cause serious injury or possibly death. Be particularly careful around equipment when the covers are removed.

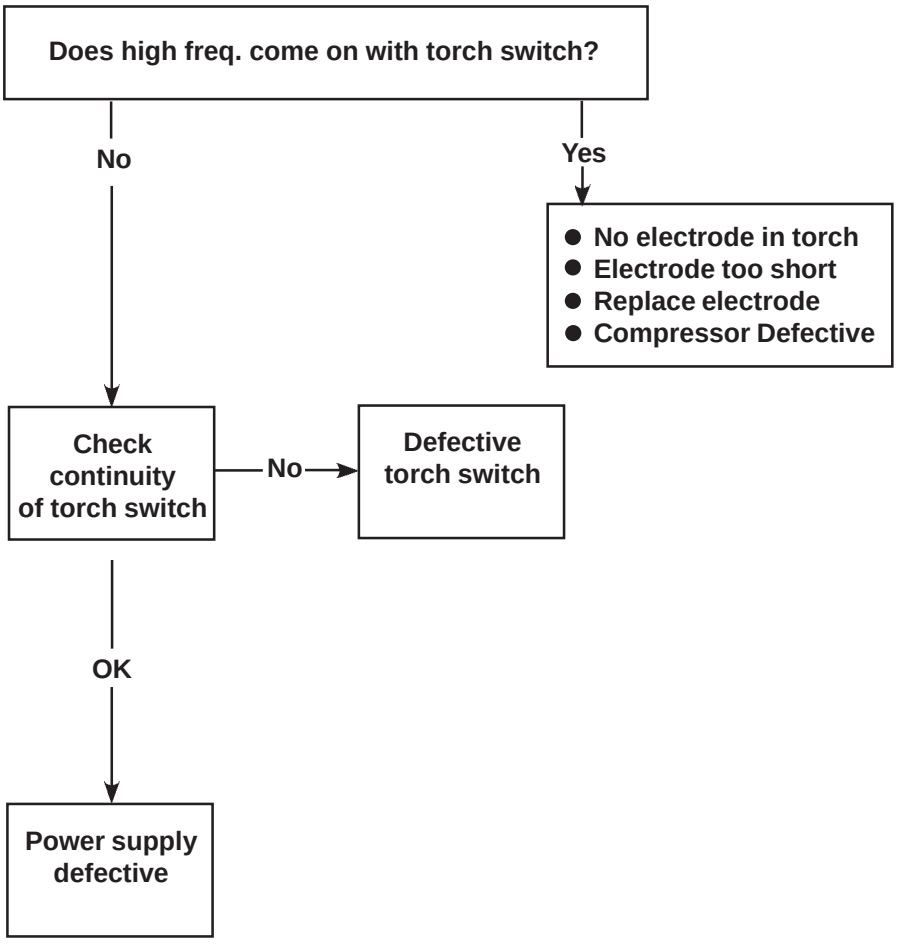
C. TROUBLESHOOTING GUIDE

1. Difficult Starting

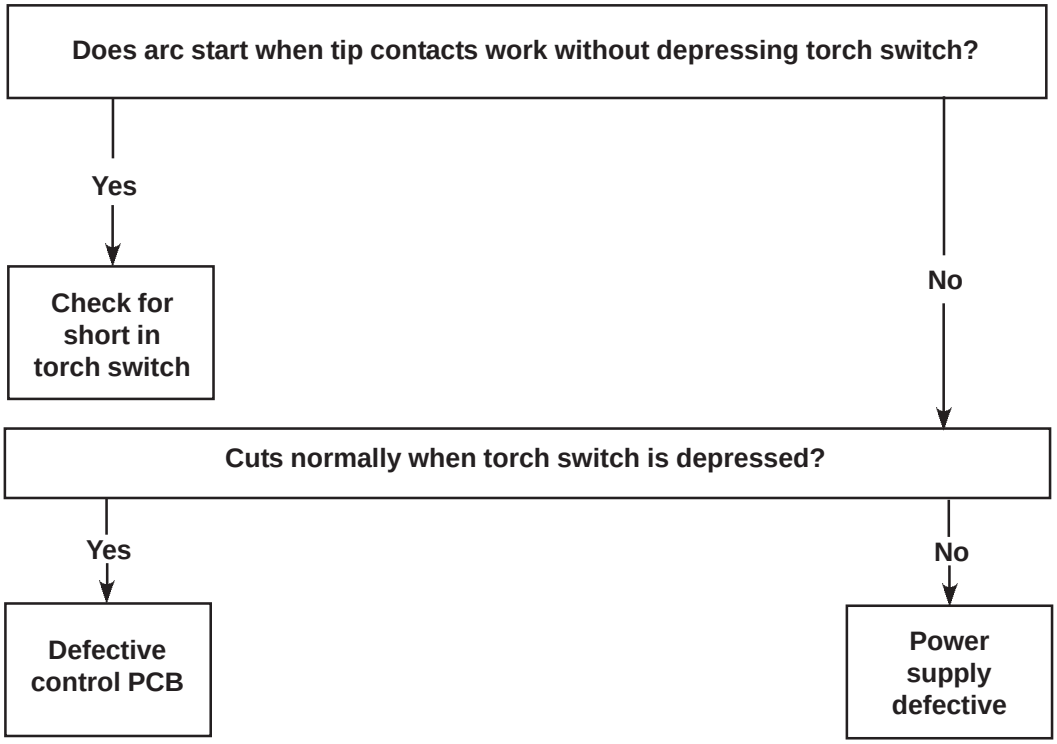
- Change electrode
- Change Tip
- Check for clean ground connection
- Check air flow
- Check torch power cable for continuity



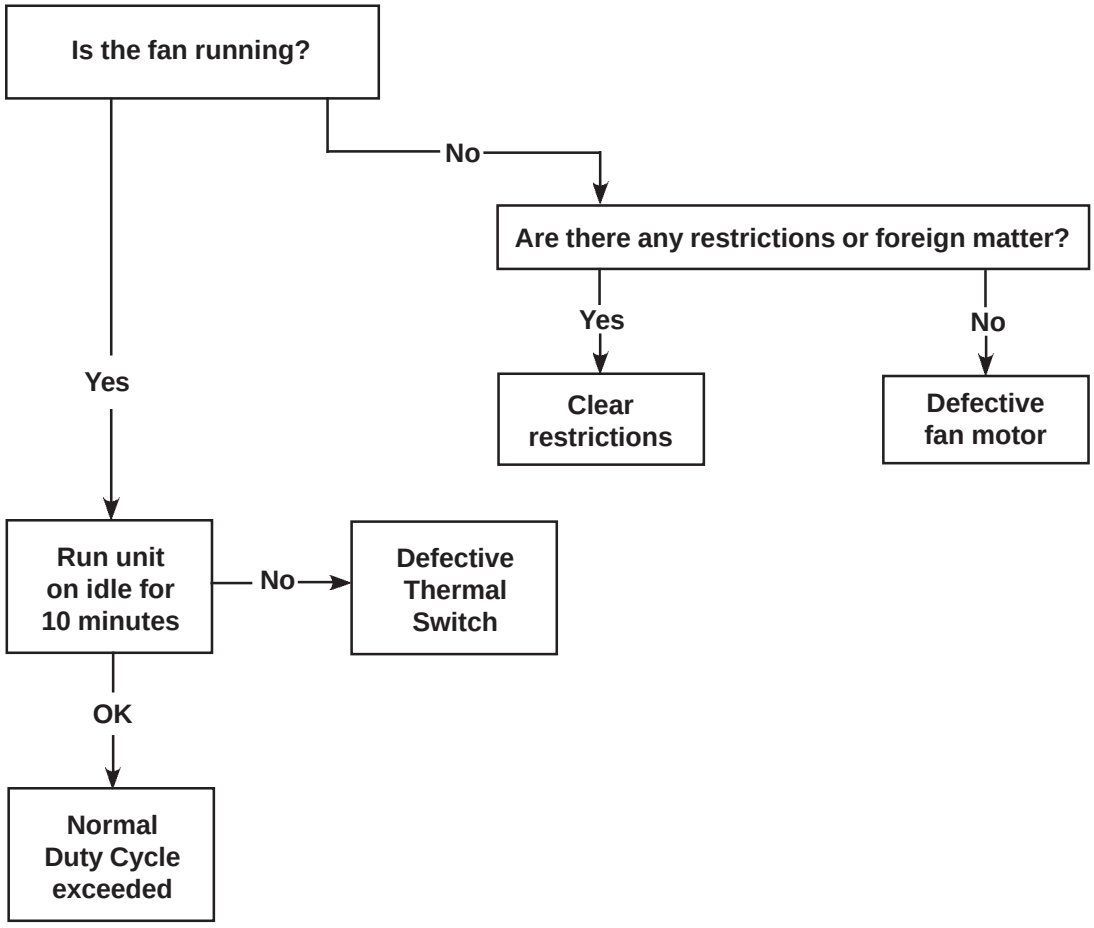
2. No Air



3. Air does not shut off.



4. Amber overtemperature light turns ON while cutting.



SECTION 6 INSTALLATION, OPERATION AND MAINTENANCE OF PT-34 TORCH

INTRODUCTION

The patented PT-34is a manual torch with a 75° head designed for use with several Plasma Arc Cutting Packages using clean, dry air as the plasma gas. The service lines are 15 feet long and the torch is rated to operate up to 50 amperes at 100% duty cycle for cutting most metals.

⚠ WARNING ELECTRIC SHOCK CAN KILL.

- **Plasma cutting uses high voltage. Skin contact with the torch, the power source, the workpiece or any grounded object MUST BE AVOIDED whenever the power source is ON.**
- **Using the torch on any power source not equipped with a flow switch safety interlock may expose operator to unexpected high voltage.**

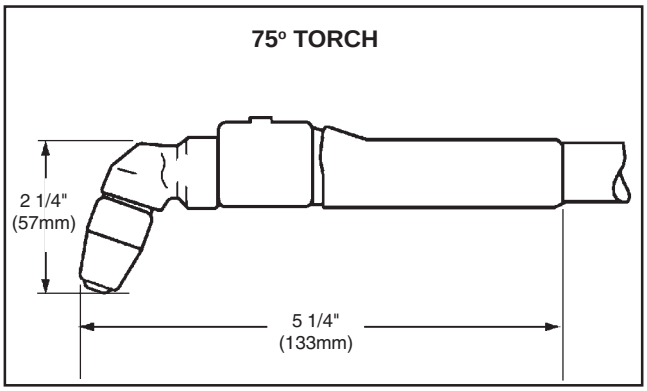


Fig. 6.1 - Dimensional Data PT-34 Torch

A. INSTALLATION & OPERATION

⚠ WARNING

Make sure power switch on the power source is in the OFF position and PRIMARY INPUT POWER is DEENERGIZED.

The seat comes assembled to the front end of the torch. Make sure seat is tightened firmly with a wrench but do NOT overtighten.

With the torch front end facing up, assemble electrode, swirl baffle, tip and heat shield in that order as shown in Figure 6.2 (Standard electrode is reversible and the swirl baffle is symmetrical. They can be assembled either way.)

Tighten heat shield snugly to hold the parts in firm contact with each other and the torch head. Do not overtighten the heat shield.

⚠ WARNING

BE SURE to install the swirl baffle in the torch. Failure to do so would allow the nozzle (tip) to contact the electrode. This contact would permit high voltage to be applied to the nozzle. Your contact with the nozzle or workpiece could then result in serious injury or death by electric shock.

Follow all instructions in the appropriate booklet packed with your Handy Plasma package. DO NOT install or attempt to operate this torch without following these instructions.

⚠ WARNING

The PT-34 torch head contains a gas flow check valve that acts in conjunction with the switch and circuitry within the power source. This system prevents the torch from being energized with high voltage if the torch switch is accidentally closed when the shield is removed. ALWAYS REPLACE TORCH WITH THE PROPER TORCH MANUFACTURED BY ESAB SINCE IT ALONE CONTAINS ESAB'S PATENTED SAFETY INTERLOCK.

B. MAINTENANCE

⚠ WARNING

Before any maintenance is attempted on this torch, make sure the POWER SWITCH on the power source is in the OFF position and the PRIMARY INPUT POWER is DEENERGIZED.

1. To disassemble the front end, hold the torch with the shield in an upright position as shown in Figure 6.2 This will prevent the nozzle, electrode, and swirl baffle from falling free when the shield is removed. To replace any of these parts, assemble as directed in Section III.

   The gas flow check valve is part of the safety interlock and is permanently assembled in the torch head. The head must be replaced if this valve malfunctions. The light spring force used to close the ball check can be felt by pushing on the electrode when assembling the front end components.

2. Periodically check the heat shield, electrode, nozzle, and swirl baffle. Replace if worn or damaged.

3. NOTE - THE ELECTRODE IS REVERSIBLE. When one end is worn, the electrode can be reversed.

Do not continue to use one end allowing it to erode to a length shorter than 3/8-in. as shown in Figure 6.3. The electrode opens the gas flow check valve. If one end is continually used, it will be too short to open the valve when reversed.

4. Apply a small amount of lubricant P/N 17672 to the heat shield as shown in Figure 6.3 or to the O-ring. Check O-ring for damage whenever the shield is removed. Replace if necessary. (O-ring P/N 950790 is also supplied in spare parts kit.)

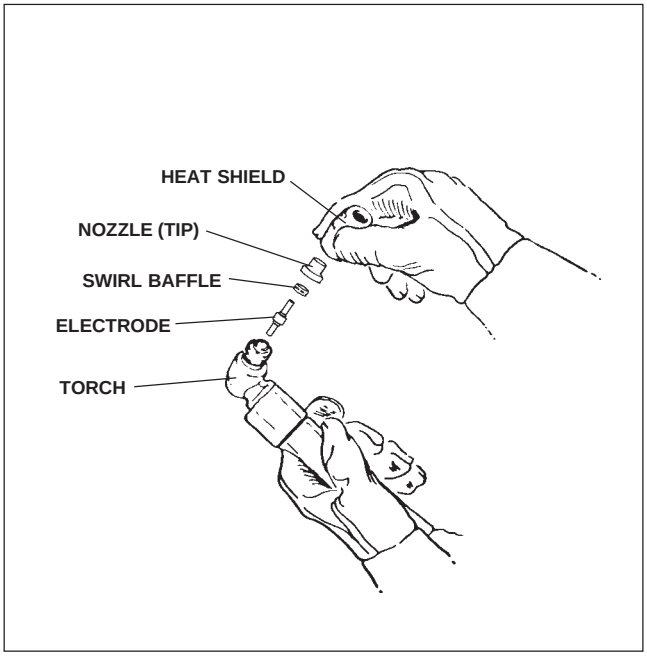


Fig6. 2 - Front End Assembly

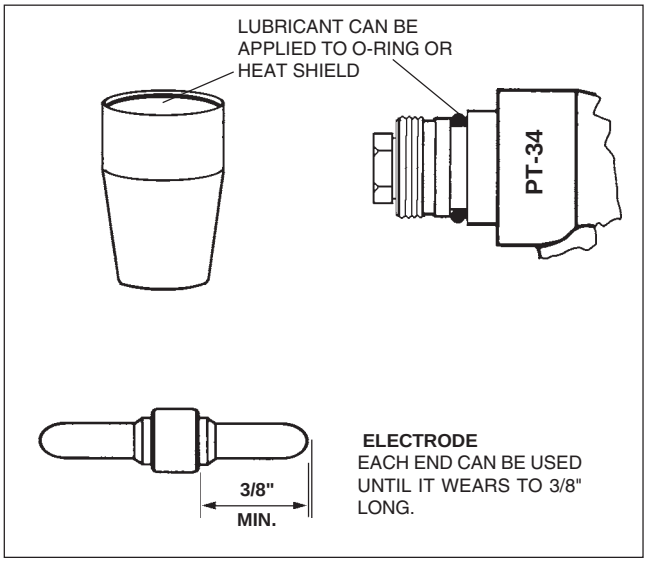


Fig. 6.3 - O-ring and Electrode Maintenance

5. The power cable and switch leads in the service line should be inspected periodically. If there are any cuts through the protective sheath or if gas leaks are noted, replace the damaged component.

By following steps 1, 2, and 3 in Figure 6.5 the service line can be removed from the torch. To disassemble the service line, lay the line out straight, remove the tape from around the switch lead splices, and free the switch by cutting the leads close to the splices. (Replacement switches have extra long leads to make up for any loss due to cutting.) Remove the rubber boot from the inlet end of the cable and remove the tape that secures the sheath at each end. Pull the sheath off the cable (over small fitting at torch end). Note that the switch leads wrapped around the power cable are secured with tape several places along the cable. The leads, switch cord plug, and strain relief can now be removed. DO NOT remove the white tape that forms a band around the power cable at each end. The sheath is taped to the cable in front of the band which acts as a shoulder to prevent the sheath from sliding back on the cable. (Replacement cables have this tape in place.) If the switch leads are to be replaced, replace with 16 AWG STRANDED COPPER, 600- VOLT, 90^{m} C INSULATED WIRE. Reassemble in reverse order.

6. To reposition the switch on the torch, slide the flex support back, remove the tape securing the spliced leads to the power cable, reposition switch, retape the leads, and pull the flex support back in place.

NOTE: A thin film of silicone lubricant P/N 17672 applied inside of the flex support will ease the assembly of this part.

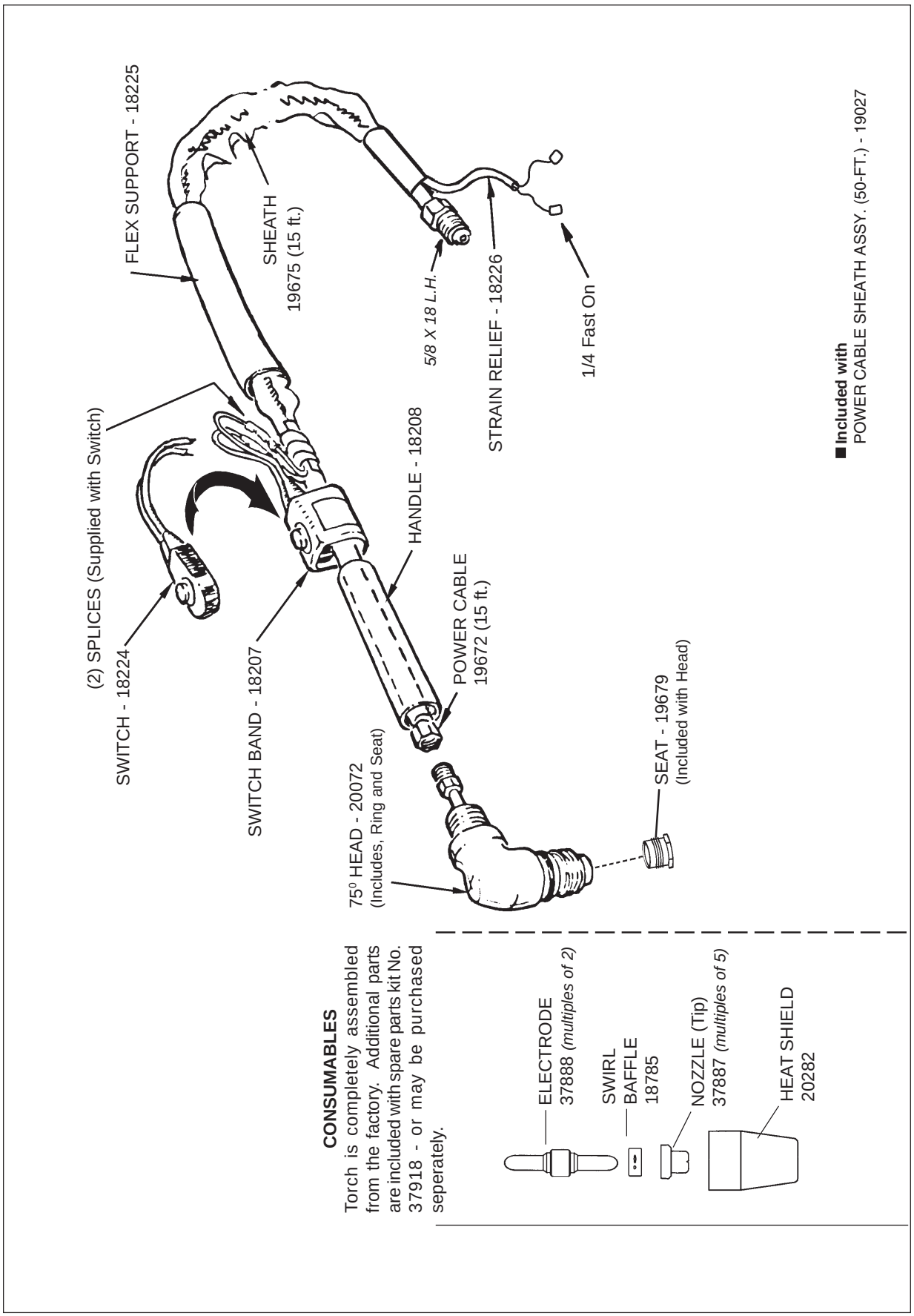


Fig 6.4 - PT-34 Torch Assembly, P/N 37886 (15 ft. lines)

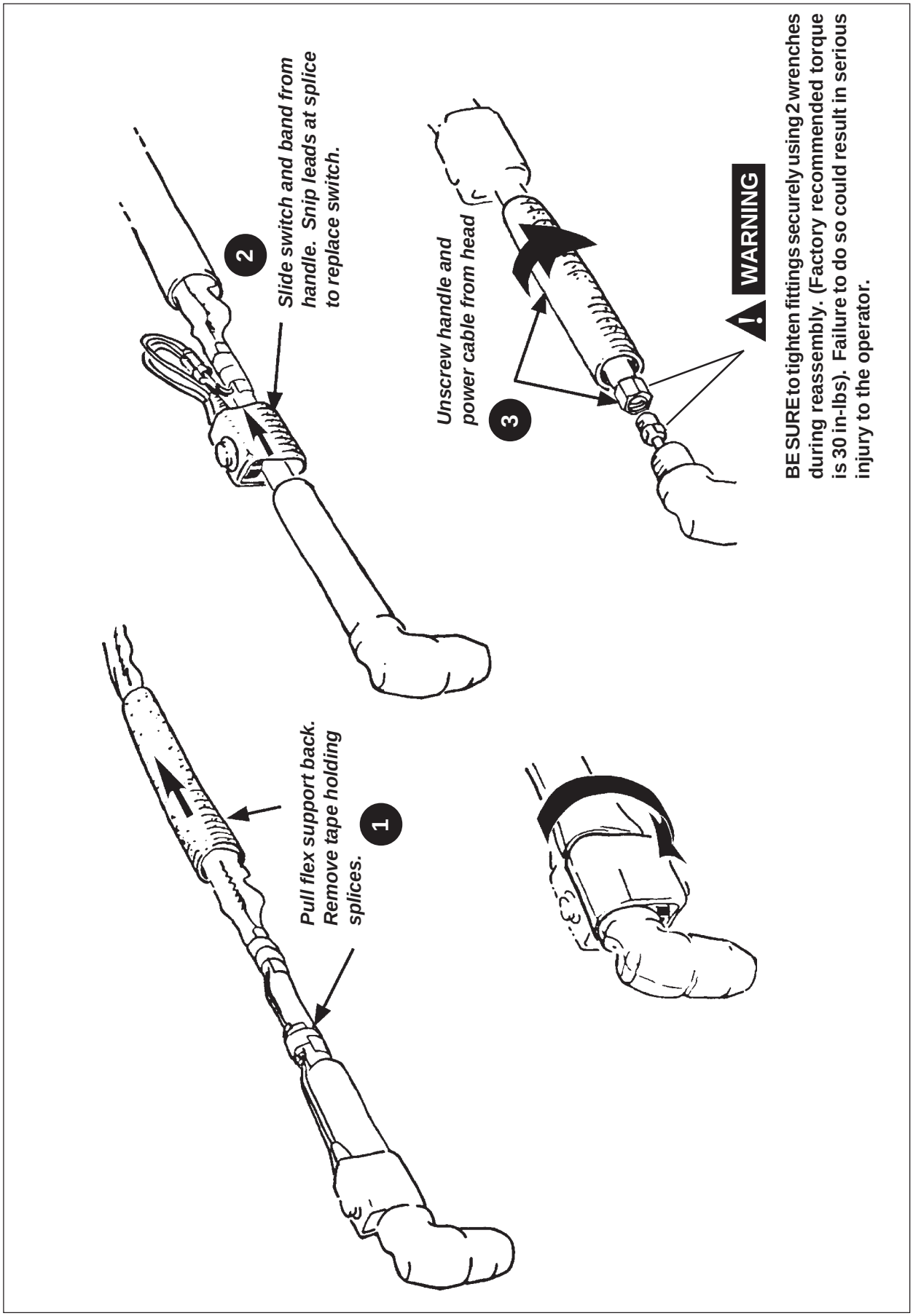


Fig. 6.5 - Power Cable and Switch Disassembly Sequence

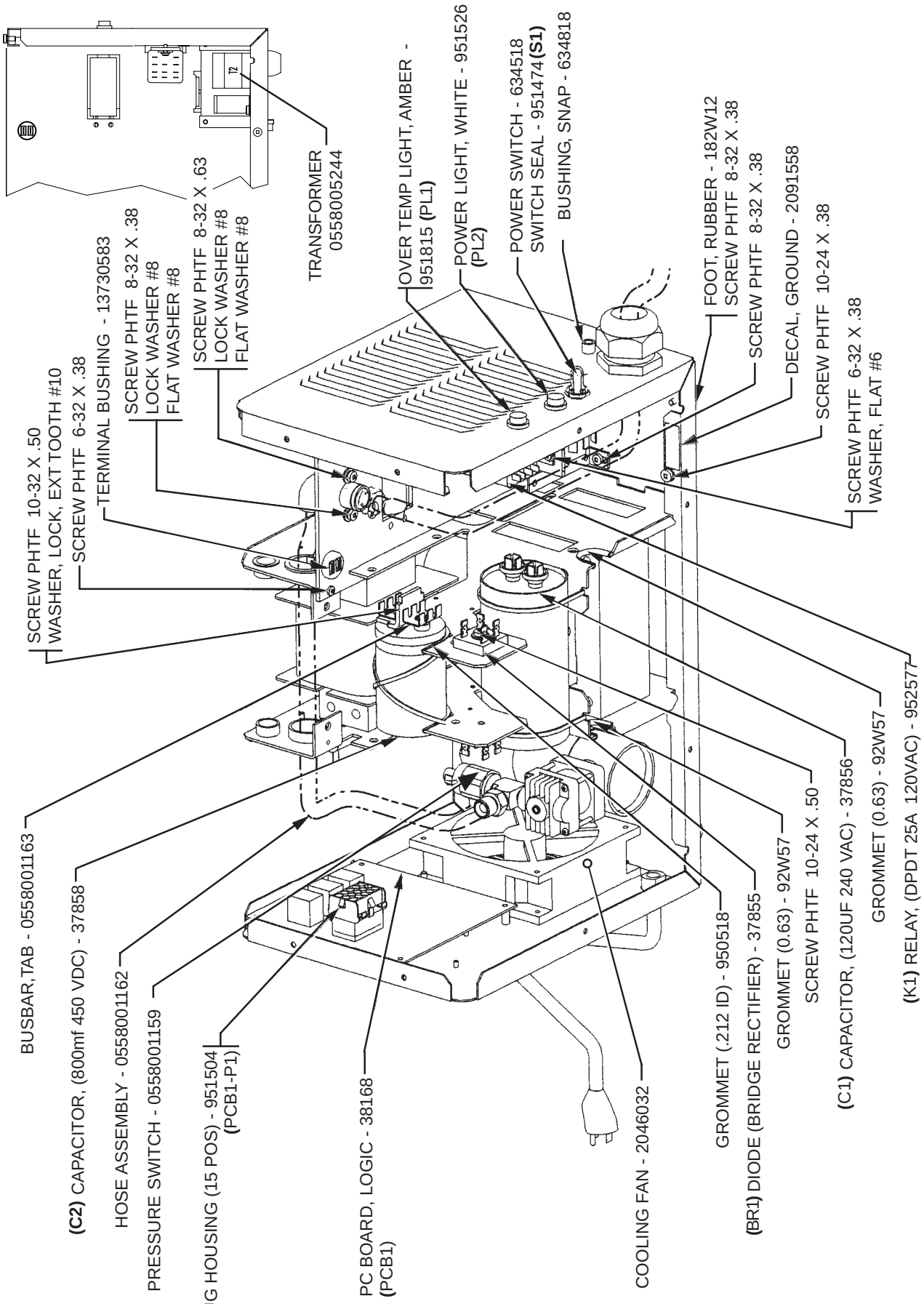


Figure 7.1 - Handy Plasma 125 (Internal Right Side View)

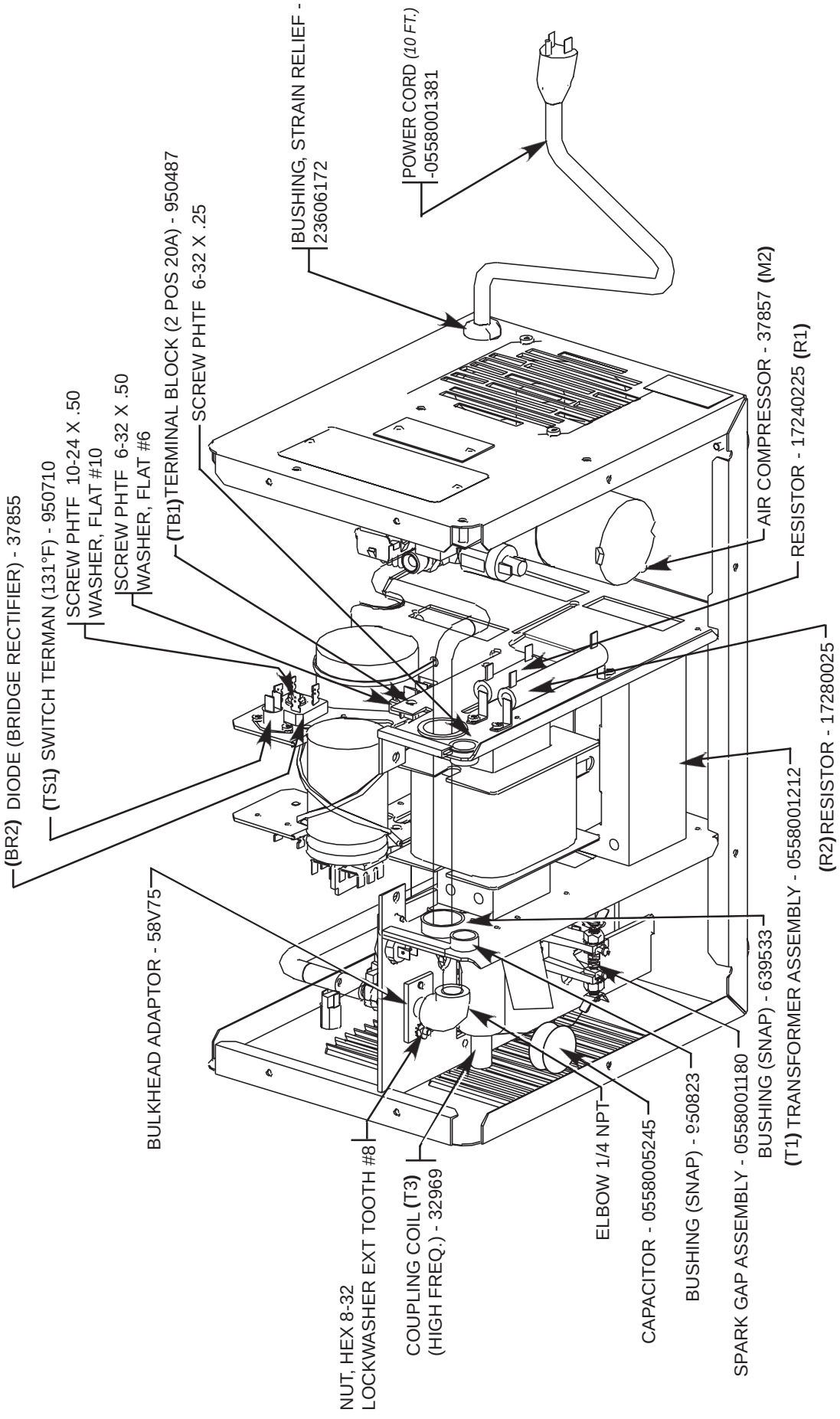


Figure 7.2 - Handy Plasma 125 (Internal Left Side View)

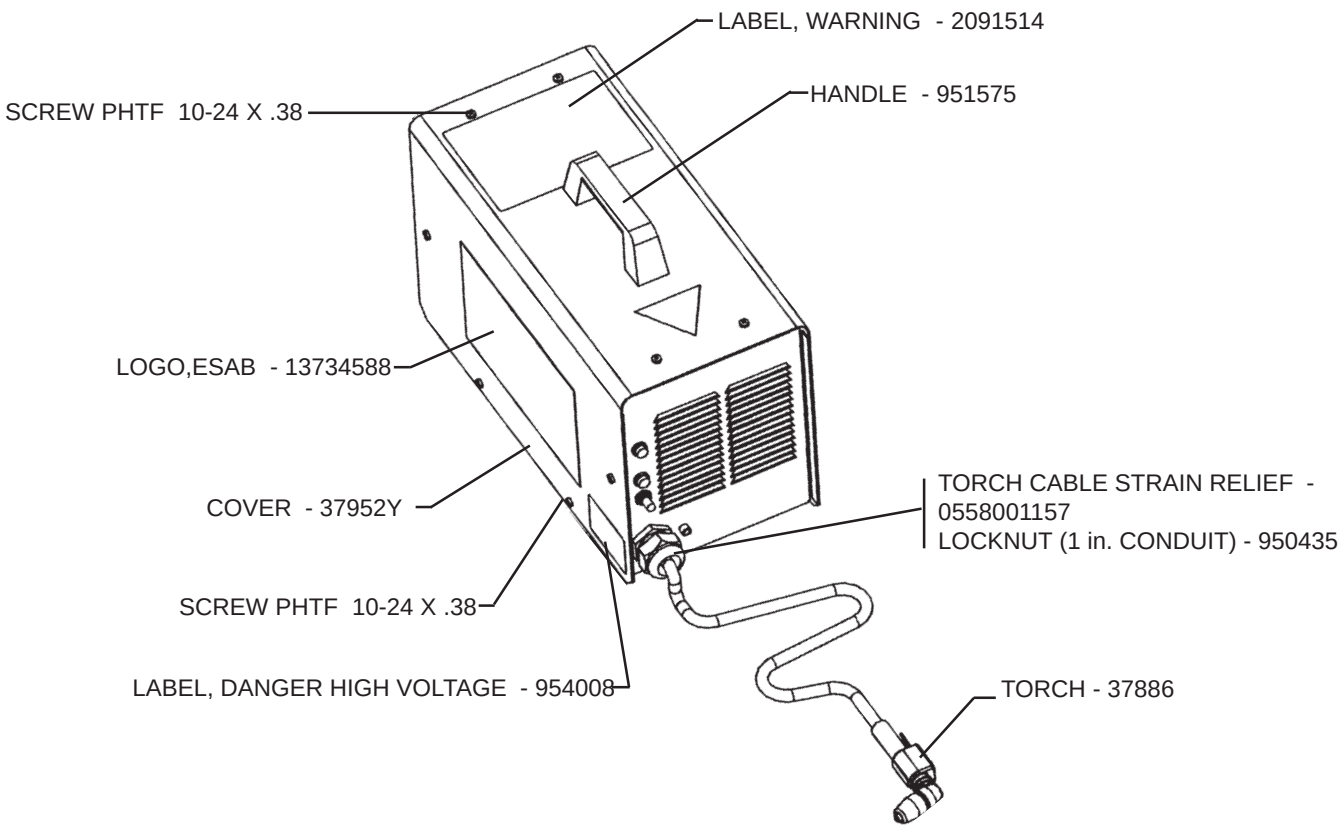
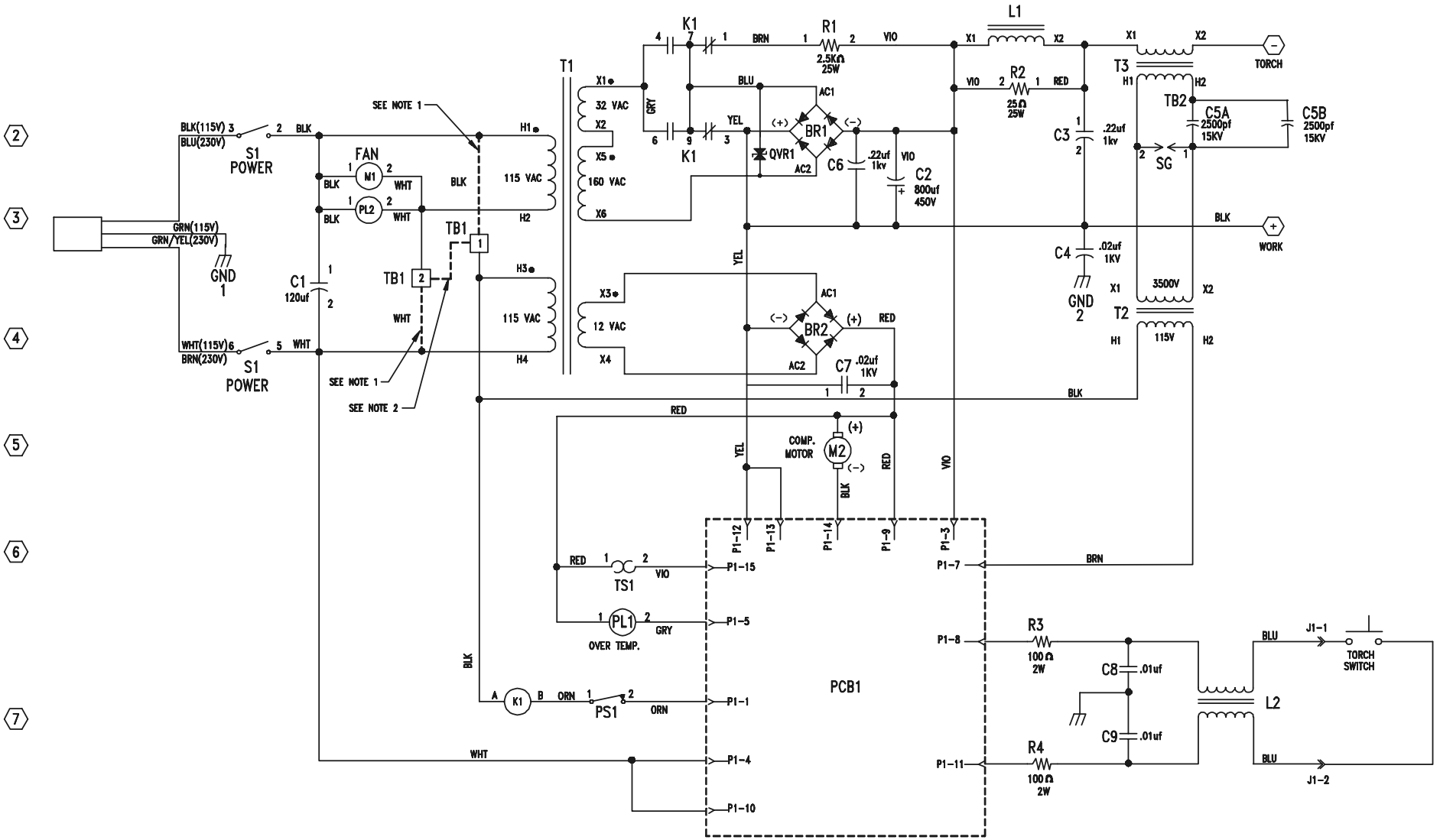


Figure 7.3 - Handy Plasma 125 (External View)



NOTES:

1. Connections for 115v Operation.
2. Connections for 230V Operation.

Figure 8.1 - Handy Plasma 125 Schematic Diagram for: 115V 60HZ Domestic and 230V Export Models

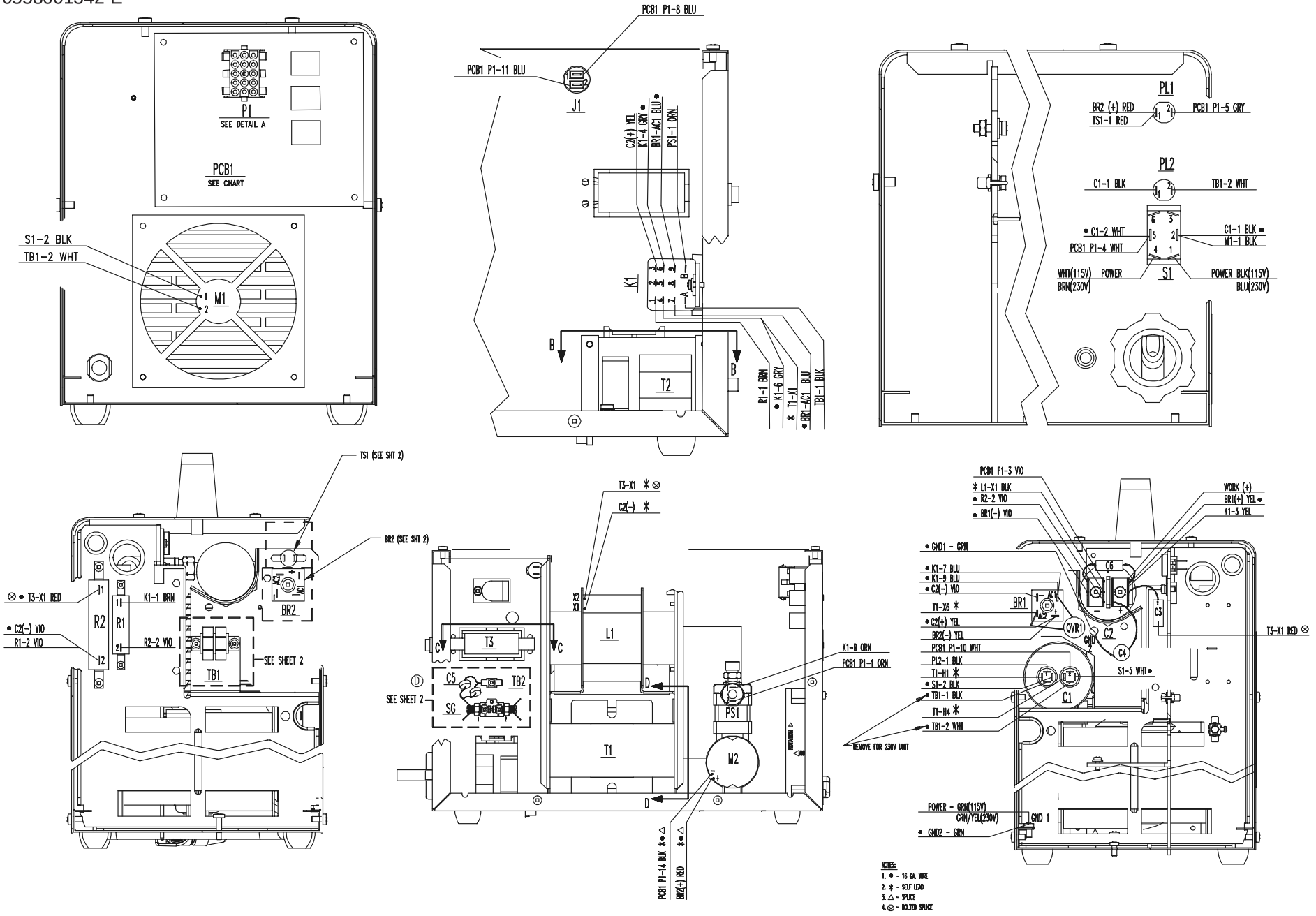


Figure 8.2a - Handy Plasma 125 Wiring Diagram for: 115V 60HZ Domestic and 230V Export Models

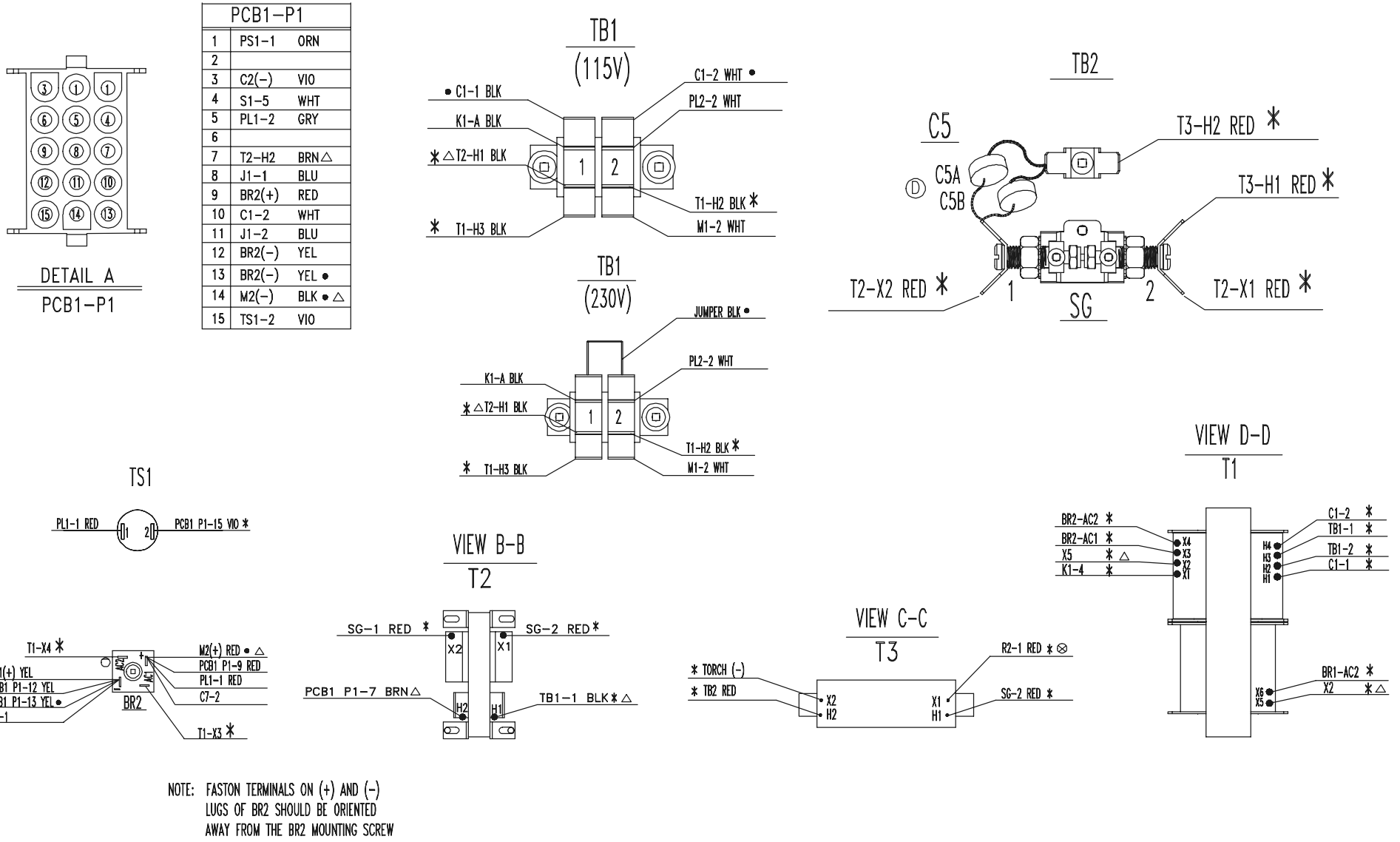


Figure 8.2b - Handy Plasma 125 Wiring Diagram for: 115V 60HZ Domestic and 230V Export Models

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