

# **THERMAL DYNAMICS<sup>®</sup>**



***A THERMADYNE<sup>®</sup> Company***

## ***Plasma Cutting System***

***Model Drag-Gun Plus  
With Built-In Air Compressor***



Art # A-04718

## **Operating Manual**

December 13, 2005

Manual 0-4750





## WARNINGS

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*Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment.*

*While the information contained in this Manual represents the Manufacturer's best judgement, the Manufacturer assumes no liability for its use.*

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Plasma Cutting Power Supply  
Drag-Gun Plus  
PCH 42 Torch  
Operating Manual Number 0-4750

Covered under U.S. Patents.

Published by:  
Thermadyne Corporation  
82 Benning Street  
West Lebanon, New Hampshire, USA 03784  
(603) 298-5711

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Printed in the United States of America

Publication Date: December 13, 2005

**Record the following information for Warranty purposes:**

Where Purchased: \_\_\_\_\_

Purchase Date: \_\_\_\_\_

Power Supply Serial #: \_\_\_\_\_

Torch Serial #: \_\_\_\_\_

# TABLE OF CONTENTS

SECTION 1:	
GENERAL INFORMATION .....	1-1
1.01 Notes, Cautions and Warnings .....	1-1
1.02 Important Safety Precautions .....	1-1
1.03 Publications .....	1-2
1.04 Declaration of Conformity .....	1-4
1.05 Statement of Warranty .....	1-5
SECTION 2:	
INTRODUCTION .....	2-1
2.01 INTRODUCTION .....	2-1
2.02 GENERAL SPECIFICATION .....	2-1
2.03 Features .....	2-1
2.04 Torch Specifications .....	2-2
2.05 System Contents .....	2-2
2.06 Transporting Methods .....	2-2
SECTION 3:	
INSTALLATION .....	3-1
3.01 Site Selection .....	3-1
3.02 Electrical Input Connections .....	3-1
3.03 Torch .....	3-1
SECTION 4:	
OPERATION .....	4-1
4.01 Front Control Panel .....	4-1
4.02 Preparations For Operating .....	4-2
SECTION 5:	
SERVICE .....	5-1
5.01 Basic Troubleshooting Guide .....	5-1
Appendix 1: Operating Sequence, Block Diagram .....	5-1
Appendix 2: Torch Connection .....	5-2
Appendix 3: System Schematic 230V Non CE .....	5-3
Appendix 4: System Schematic 230V CE .....	5-4

# SECTION 1: GENERAL INFORMATION

## 1.01 Notes, Cautions and Warnings

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

### NOTE

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

### CAUTION

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



### WARNING

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

## 1.02 Important Safety Precautions



### WARNINGS

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

*Plasma arc cutting produces intense electric and magnetic emissions that may interfere with the proper function of cardiac pacemakers, hearing aids, or other electronic health equipment. Persons who work near plasma arc cutting applications should consult their medical health professional and the manufacturer of the health equipment to determine whether a hazard exists.*

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



### GASES AND FUMES

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

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

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

- Always read the Material Safety Data Sheets (MSDS) that should be supplied with the material you are using. These MSDSs will give you the information regarding the kind and amount of fumes and gases that may be dangerous to your health.
- For information on how to test for fumes and gases in your workplace, refer to item 1 in Subsection 1.03, Publications in this manual.
- Use special equipment, such as water or down draft cutting tables, to capture fumes and gases.
- Do not use the plasma torch in an area where combustible or explosive gases or materials are located.
- Phosgene, a toxic gas, is generated from the vapors of chlorinated solvents and cleansers. Remove all sources of these vapors.
- This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Sec. 25249.5 et seq.)



### ELECTRIC SHOCK

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

- Never touch any parts that are electrically "live" or "hot."

- Wear dry gloves and clothing. Insulate yourself from the work piece or other parts of the welding circuit.
- Repair or replace all worn or damaged parts.
- Extra care must be taken when the workplace is moist or damp.
- Install and maintain equipment according to NEC code, refer to item 9 in Subsection 1.03, Publications.
- Disconnect power source before performing any service or repairs.
- Read and follow all the instructions in the Operating Manual.



### FIRE AND EXPLOSION

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

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



### NOISE

Noise can cause permanent hearing loss. Plasma arc processes can cause noise levels to exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.

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



### PLASMA ARC RAYS

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

- To protect your eyes, always wear a welding helmet or shield. Also always wear safety glasses with side shields, goggles or other protective eye wear.
- Wear welding gloves and suitable clothing to protect your skin from the arc rays and sparks.
- Keep helmet and safety glasses in good condition. Replace lenses when cracked, chipped or dirty.
- Protect others in the work area from the arc rays. Use protective booths, screens or shields.
- Use the shade of lens as suggested in the following per ANSI/ASC Z49.1:

Arc Current	Minimum Protective Shade No.	Suggested Shade No.
Less Than 300*	8	9
300 - 400*	9	12
400 - 800*	10	14

\* These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.

## 1.03 Publications

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

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

6. ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018
7. AWS Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES, obtainable from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
8. NFPA Standard 51, OXYGEN-FUEL GAS SYSTEMS FOR WELDING, CUTTING AND ALLIED PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
9. NFPA Standard 70, NATIONAL ELECTRICAL CODE, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
10. NFPA Standard 51B, CUTTING AND WELDING PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
11. CGA Pamphlet P-1, SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS, obtainable from the Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202
12. CSA Standard W117.2, CODE FOR SAFETY IN WELDING AND CUTTING, obtainable from the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3
13. NWSA booklet, WELDING SAFETY BIBLIOGRAPHY obtainable from the National Welding Supply Association, 1900 Arch Street, Philadelphia, PA 19103
14. American Welding Society Standard AWSF4.1, RECOMMENDED SAFE PRACTICES FOR THE PREPARATION FOR WELDING AND CUTTING OF CONTAINERS AND PIPING THAT HAVE HELD HAZARDOUS SUBSTANCES, obtainable from the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
15. ANSI Standard Z88.2, PRACTICE FOR RESPIRATORY PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018

## 1.04 Declaration of Conformity

Manufacturer: Thermal Dynamics Corporation  
Address: 82 Benning Street  
West Lebanon, New Hampshire 03784  
USA


The equipment described in this manual conforms to all applicable aspects and regulations of the 'Low Voltage Directive' (European Council Directive 73/23/EEC as amended by Council Directive 93/68/EEC) and to the National legislation for the enforcement of this Directive.

The equipment described in this manual conforms to all applicable aspects and regulations of the "EMC Directive" (European Council Directive 89/336/EEC) and to the National legislation for the enforcement of this Directive.

Serial numbers are unique with each individual piece of equipment and details description, parts used to manufacture a unit and date of manufacture.

### National Standard and Technical Specifications

The product is designed and manufactured to a number of standards and technical requirements. Among them are:

- \* CSA (Canadian Standards Association) standard C22.2 number 60 for Arc welding equipment.
- \* UL (Underwriters Laboratory) rating 94VO flammability testing for all printed-circuit boards used.
- \* CENELEC EN50199 EMC Product Standard for Arc Welding Equipment.
- \* ISO/IEC 60974-1 (BS 638-PT10) (EN 60 974-1) (EN50192) (EN50078) applicable to plasma cutting equipment and associated accessories.
- \* For environments with increased hazard of electrical shock, Power Supplies bearing the  mark conform to EN50192 when used in conjunction with hand torches with exposed cutting tips, if equipped with properly installed standoff guides.
- \* Extensive product design verification is conducted at the manufacturing facility as part of the routine design and manufacturing process. This is to ensure the product is safe, when used according to instructions in this manual and related industry standards, and performs as specified. Rigorous testing is incorporated into the manufacturing process to ensure the manufactured product meets or exceeds all design specifications.

Thermal Dynamics has been manufacturing products for more than 30 years, and will continue to achieve excellence in our area of manufacture.

Manufacturers responsible representative: Steve Ward  
Operations Director  
Thermadyne Europe  
Europa Building  
Chorley N Industrial Park  
Chorley, Lancashire,  
England PR6 7BX



## 1.05 Statement of Warranty

**LIMITED WARRANTY:** Subject to the terms and conditions established below, Thermadyne® Corporation warrants to the original retail purchaser that new Thermadyne CutSkill Series plasma cutting systems sold after the effective date of this warranty are free of defects in material and workmanship. Should any failure to conform to this warranty appear within the applicable period stated below, Thermadyne Corporation shall, upon notification thereof and substantiation that the product has been stored operated and maintained in accordance with Thermadyne's specifications, instructions, recommendations and recognized industry practice, correct such defects by suitable repair or replacement.

**This warranty is exclusive and in lieu of any warranty of merchantability or fitness for a particular purpose.**

Thermadyne will repair or replace, at its discretion, any warranted parts or components that fail due to defects in material or workmanship within the time periods set out below. Thermadyne Corporation must be notified within 30 days of any failure, at which time Thermadyne Corporation will provide instructions on the warranty procedures to be implemented.

Thermadyne Corporation will honor warranty claims submitted within the warranty periods listed below. All warranty periods begin on the date of sale of the product to the original retail customer or 1 year after sale to an authorized Thermadyne Distributor.

### LIMITED WARRANTY PERIOD

Product	Power Supply Components (Parts and Labor)	Torch and Leads (Parts and Labor)
Drag-Gun Plus	2 Year	1 Year

This warranty does not apply to:

1. Consumable Parts, such as tips, electrodes, shield cups, o - rings, starter cartridges, gas distributors, fuses, filters.
2. Equipment that has been modified by an unauthorized party, improperly installed, improperly operated or misused based upon industry standards.

In the event of a claim under this warranty, the remedies shall be, at the discretion of Thermadyne Corporation:

1. Repair of the defective product.
2. Replacement of the defective product.
3. Reimbursement of reasonable costs of repair when authorized in advance by Thermadyne.
4. Payment of credit up to the purchase price less reasonable depreciation based on actual use.

These remedies may be authorized by Thermadyne and are FOB West Lebanon, NH or an authorized Thermadyne service station. Product returned for service is at the owner's expense and no reimbursement of travel or transportation is authorized.

**LIMITATION OF LIABILITY:** Thermadyne Corporation shall not under any circumstances be liable for special or consequential damages such as, but not limited to, damage or loss of purchased or replacement goods or claims of customer or distributors (hereinafter "Purchaser") for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of Thermadyne with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of the goods covered by or furnished by Thermadyne whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which liability is based.

**This warranty becomes invalid if replacement parts or accessories are used which may impair the safety or performance of any Thermadyne product.**

**This warranty is invalid if the Thermadyne product is sold by non - authorized persons.**

Effective August 28, 2005



# SECTION 2: INTRODUCTION

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## 2.01 INTRODUCTION

Plasma is a gas which has been heated to an extremely high temperature and ionized so that it becomes electrically conductive. The plasma arc cutting process uses this plasma to transfer an electrical arc to the workpiece. The metal to be cut is melted by the heat of the arc and then blown away.

## 2.02 GENERAL SPECIFICATION

Model Description	Drag-Gun Plus
Maximum output	35 Amps
Input Voltage & Phase	230V, Single Phase
Frequency	50/60Hz
Input power	8.3 kVA
Current Input fuse	U.S. / Canada 40 Amps All others 16A Slow Blow Fuse
No Load Voltage	330V
Load Voltage	94V
Output Current	10 - 35 Amps
Post flow time	15 Seconds
Duty cycle @ 104°F / 40° C Ambient	35% @ 35A @ 94vdc
	60% @ 27A @ 91vdc
	100% @ 20A @ 88 vdc
Genuine Cutting Capacity	3/8" (9 mm)
Maximum Cutting Capacity	1/2" (12mm)
Dimension (W * D * H)	10.5"x15.5"x11" (267 mm x 394 mm x 279 mm )

**NOTE:**

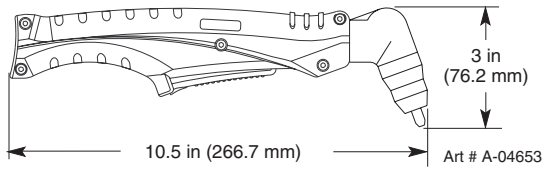
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*Refer to Local and National Codes or local authority having jurisdiction for proper wiring requirements.*

## 2.03 Features

- COMPACT and LIGHT - Designed for easy transportation.
- ENERGY EFFICIENCY - Advanced technology reduces power consumption.
- HIGH SPEED GENUINE CUTTING - The constricted plasma arc provides high speed cutting as well as a good quality genuine, narrow cut.
- LOW COST WITH COMPRESSED AIR - The Drag-Gun Plus operates on compressed air.
- ALL KINDS OF METALS - Useful for most metals such as stainless steel, aluminum, mild steel, copper and their alloys.
- PILOT ARC IGNITION FROM TORCH - The Pilot Arc ignites the cutting arc.
- POWERFUL CUTTING PERFORMANCE - Genuine cutting capacity is 3/8" (9 mm).
- ABLE TO CUT PAINTED MATERIALS - Pilot Arc ignition allows the Drag-Gun Plus to cut painted materials.
- EXTENDED PARTS LIFE - Consumable parts life is longer.

## 2.04 Torch Specifications



PCH-42 Torch Ratings	
Torch Configuration	Torch Head at 70° to Torch Handle
Torch Leads Length	20 feet / 6.1 m
Ambient Temperature	104° F 40° C
Duty Cycle	100% @ 40 Amps @ 200 scfh
Maximum Current	40 Amps, DC, Straight Polarity
Voltage (V <sub>peak</sub> )	500V
Arc Striking Voltage	12kV
Type of Cooling	Ambient air and gas stream through torch
Parts-in-Place:	Built-in Switch in Torch Head
Gas Requirement:	Single Gas, Compressed Air Only
Input Gas Pressure	65 psi (4.5 bar) (.45MPa)- 125 psi (8.6 bar) (.86MPa)
Minimum Gas Flow	200 SCFH (142 lpm)
Direct Contact Hazard	For operation with exposed tip the recommended standoff height is 1/8 - 3/8" (3-9 mm).
Plasma Power Supply Used With:	Drag-Gun Plus

## 2.05 System Contents

Description	ITEMS	Q'ty
Power source	Model Drag-Gun Plus	1
Torch Set	PCH-42, with 20' (6.1 m) leads	1
Accessories & Consumables	Work Cable	1
	Manual	1
	Torch Electrodes	2
	Torch Tips	3
Input Power Cable U.S. / CAN.	3 Meter NEMA 10 AWG / 4.8 mm <sup>2</sup> with 6 - 50 P molded plug	1
Input Power Cable Outside of U.S. / CAN.	3 Meter 3x2.5 sq mm rubber wire	1

## 2.06 Transporting Methods

Lift unit with handle on top of case. Use handcart or similar device of adequate capacity for transporting.



### WARNINGS

*ELECTRIC SHOCK can kill. DO NOT TOUCH live electrical parts. Disconnect input power from supply before moving the power source.*

*FALLING EQUIPMENT can cause serious personal injury and equipment damage.*

## SECTION 3: INSTALLATION

---

### 3.01 Site Selection

- Place in a clean and dry area.
- Provide adequate ventilation and fresh air supply.
- Ideal ambient temperature should not exceed 40°C / 104°F. Temperatures exceeding that may diminish cutting capacity or quality.
- The cutting machine must be placed on an even, firm surface so that it stands firmly.



#### WARNING

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*This equipment must be electrically connected by a qualified electrician.*

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### 3.02 Electrical Input Connections

- Input voltage is 230V ± 10%, 50/60 Hz single phase.



#### CAUTION

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*Check your power source for correct voltage before plugging in or connecting the unit. The primary power source, fuse, and any extension cords used must conform to local electrical code and the recommended circuit protection and wiring requirements as specified in Section 2.*

### 3.03 Torch

- Make sure that the torch cable and torch switch terminals are connected to front panel.
- Make sure the Work Cable is connected properly to front panel.
- Before activating, turn torch away from yourself and others.



#### DANGER

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*Do not cut in humid or wet surroundings.*

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- Before you maintain or replace torch parts, wait for the post flow air cycle to stop, then turn the machine off.
- Always use original manufacturers parts. The use of aftermarket parts could result in lower parts life and in unsatisfactory cutting results. Any warranty claims would be waived.
- Recycle worn parts according to local requirements.

#### NOTE

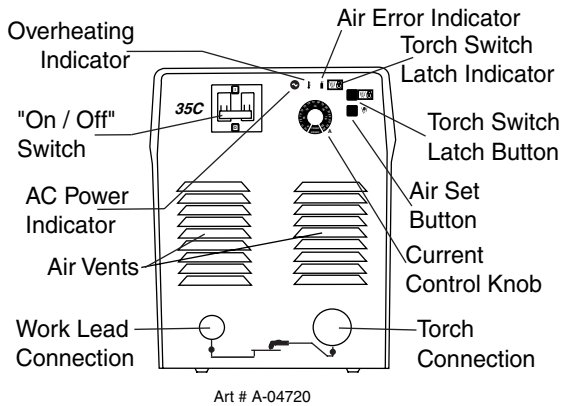
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*Repairs must be done by skilled and qualified personnel only.*






# SECTION 4: OPERATION

## 4.01 Front Control Panel




Roll bars not shown for clarity

### A. INDICATOR LAMP


- Power Indicator  - Lights when primary power switch is turned on.
- TEMPERATURE Indicator  - Indicator is normally OFF. Indicator is ON when internal temperature exceeds normal limits. Shut unit OFF; let the unit cool before continuing operation.
- Air Error Indicator  - This indicator lights and is accompanied by an intermittent audible tone when there is not enough air pressure to operate the power supply.


#### NOTE

*It is possible to have enough air pressure to operate the power supply but not enough air flow to operate the torch.*

- Torch Switch Latch Indicator  - This indicator lights when the Torch Switch Latch Button has been pressed for continuous cutting.

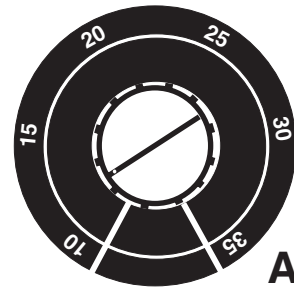
### B. BUTTONS

- Torch Switch Latch Button  - For continuous cutting performance. Depress this button ( turn "On" ) while cutting with the torch. Release the torch trigger and the torch will continue to cut without depressing the torch trigger.

- Air Set Button  - To check for proper air setting and to cool down heated torch.

### C. MAIN CURRENT CONTROL KNOB

To adjust cutting current. Turning clockwise increases the cutting current and counter clockwise decreases the cutting current.



Art # A-04387

### D. PRIMARY POWER SWITCH, ON / OFF

The power switch is located on the front panel. Placing the primary power switch to the "ON" position energizes the power source.



**WARNING**

*When the power source is overloaded, the switch turns to the OFF position automatically. DO NOT TURN ON BY FORCE.*

## 4.02 Preparations For Operating

At the start of each operating session:

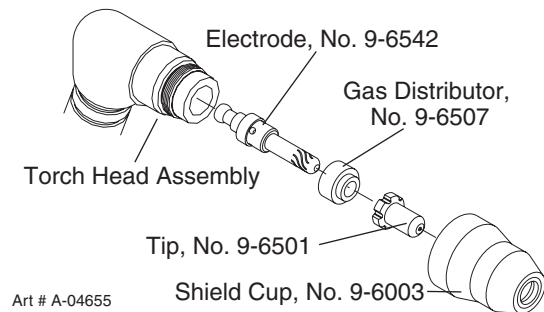


**WARNING**

*Disconnect primary power at the source before assembling or disassembling power supply, torch parts, or torch and leads assemblies.*

### A. Torch Parts Selection

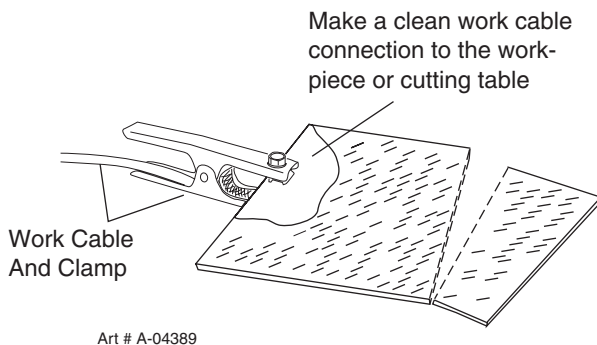
Check the torch for proper assembly and appropriate torch parts. The torch parts must correspond with the type of operation, and with the amperage output of this Power Supply (35 amps maximum). Use only genuine manufacturer's parts with this torch.



### B. Torch Connection

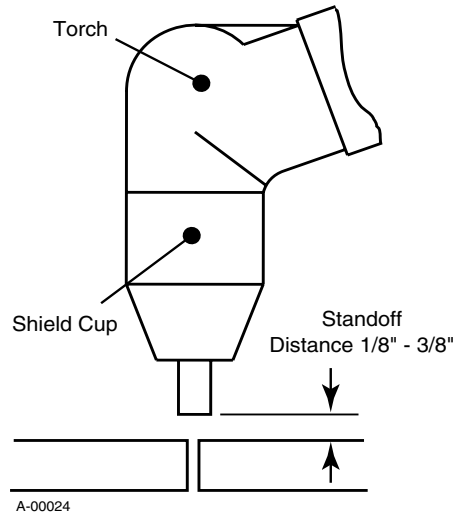
Check that the torch is properly connected.

### C. Connect Work Cable



### D. Torch Operation

- Wear gloves and protective goggles.
  - Do not place bare hand on work piece.
1. For **drag cutting**, keep the torch in contact with the workpiece.
  2. For **standoff cutting**, hold the torch 1/8 - 3/8 in (3-9 mm) from the workpiece as shown below.



3. With the torch in starting position, press and hold the Torch Trigger. After an initial two second pre-flow, the pilot arc will come on and remain on until the cutting arc starts.
4. Once on, the cutting arc remains on as long as the Torch Trigger is held down, unless the torch is withdrawn from the work or torch motion is too slow.
5. To shut off the torch simply release the Torch Trigger. When the trigger is released a gas post-flow will occur. If the Torch Trigger is pushed during the post-flow, the cutting arc will restart immediately when the torch is brought within range of the workpiece.

## E. Typical Cutting Speeds

Cutting speeds vary according to torch output, the type of material being cut, and operator skill. Speeds shown are typical for this cutting system using air plasma to cut mild steel, with output current at the highest setting and torch held at the indicated standoff height.

Unit	Standoff	Material Thickness	Maximum Travel Speed		Recommended Travel Speed	
			ipm	mm/m	ipm	mm/m
Drag-Gun Plus	Drag	(10 ga) 0.135" - (3mm)	95.0	2375	76.0	1900
Drag-Gun Plus	Drag	(7 ga) 0.179" - (4.5mm)	57.0	1425	46.0	1150
Drag-Gun Plus	1/8" - (3mm)	1/4" - (6mm)	36.0	900	29.0	725
Drag-Gun Plus	1/8" - (3mm)	3/8" - (9.5mm)	15.0	375	12.0	300
Drag-Gun Plus	1/8" - (3mm)	7/16" - (11mm)	10.0	250	8.0	200
Drag-Gun Plus	1/8" - (3mm)	1/2" - (12mm)	8	200	7	175

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**NOTE:**

*Drag or Drag mode refers to the torch tip being in contact with the work piece at all times.*

# SECTION 5: SERVICE

## 5.01 Basic Troubleshooting Guide



**WARNING**

*There are extremely dangerous voltage and power levels present inside this unit. Do not attempt to diagnose or repair unless you have had training in power electronics measurement and troubleshooting techniques.*

### A. Basic Troubleshooting, Overview

This guide covers basic troubleshooting. It is helpful for solving many of the common problems that can arise with this system. If major complex subassemblies are faulty, the unit must be returned to an authorized service center for repair.

Follow all instructions as listed and complete each section in the order presented.

### B. Common Symptoms

#### A. Primary power switch is ON, but power indicator doesn't light.

1. *Improper electrical connection.*
  - a. Check the input cable line & connection.
  - b. Check that input power is turned on.
  - c. Check the input power fuse.
2. *System was overloaded.*
  - a. Turn Primary Power Switch Off and then On again.
3. *Switch may be faulty.*
  - a. Return to an authorized service center for repair.

#### B. Primary power switch is on, but the cooling fan does not work.

1. *No power / incorrect power to fan or failed fan.*
  - a. Return to an authorized service center for repair.

#### C. No air flow at torch when air check switch is turned on.

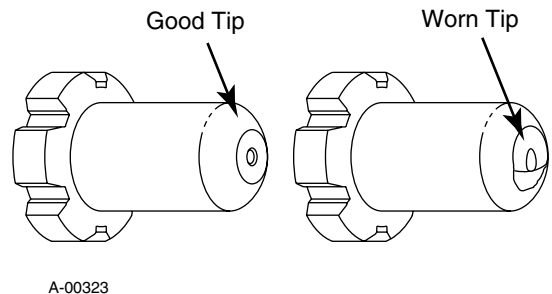
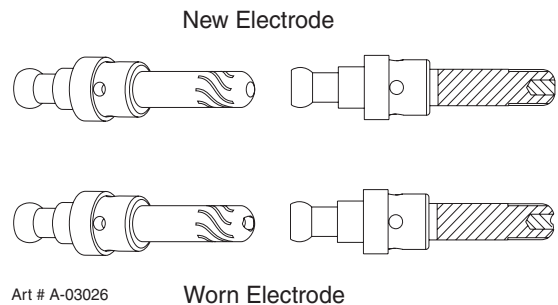
1. *Internal connection is disconnected or loose.*
  - a. Check all air line connections and fittings.
2. *Internal air supply / compressor not working.*
  - a. Return to an authorized service center for repair.
3. *Control PCB faulty.*
  - a. Return to an authorized service center for repair.

#### D. Torch will not pilot when torch switch is activated.

1. *Gas pressure too high or too low.*
  - a. There is no adjustment. Return to authorized service center for repair.
2. *Torch tip, gas distributor, or electrode missing.*
  - a. Turn off power supply. Remove shield cup. Install missing parts.
3. *Worn or faulty torch parts*
  - a. Inspect torch consumable parts. Replace if necessary.

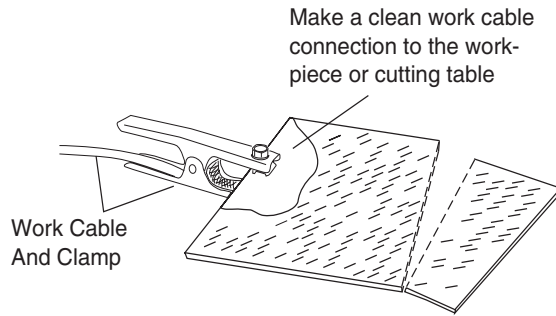
#### E. Cut performance is diminished.

1. *Worn torch parts.*
  - a. Check current setting. Check the Electrode and Tip for excess wear.



2. *Poor Work Lead connection.*

- a. Check the connection of the Work Lead to the work piece.



3. *Current sensor or PWM PCB faulty.*

- a. Return to an authorized service center for repair.

**F. Air flows continuously and torch switch latch button doesn't work properly.**

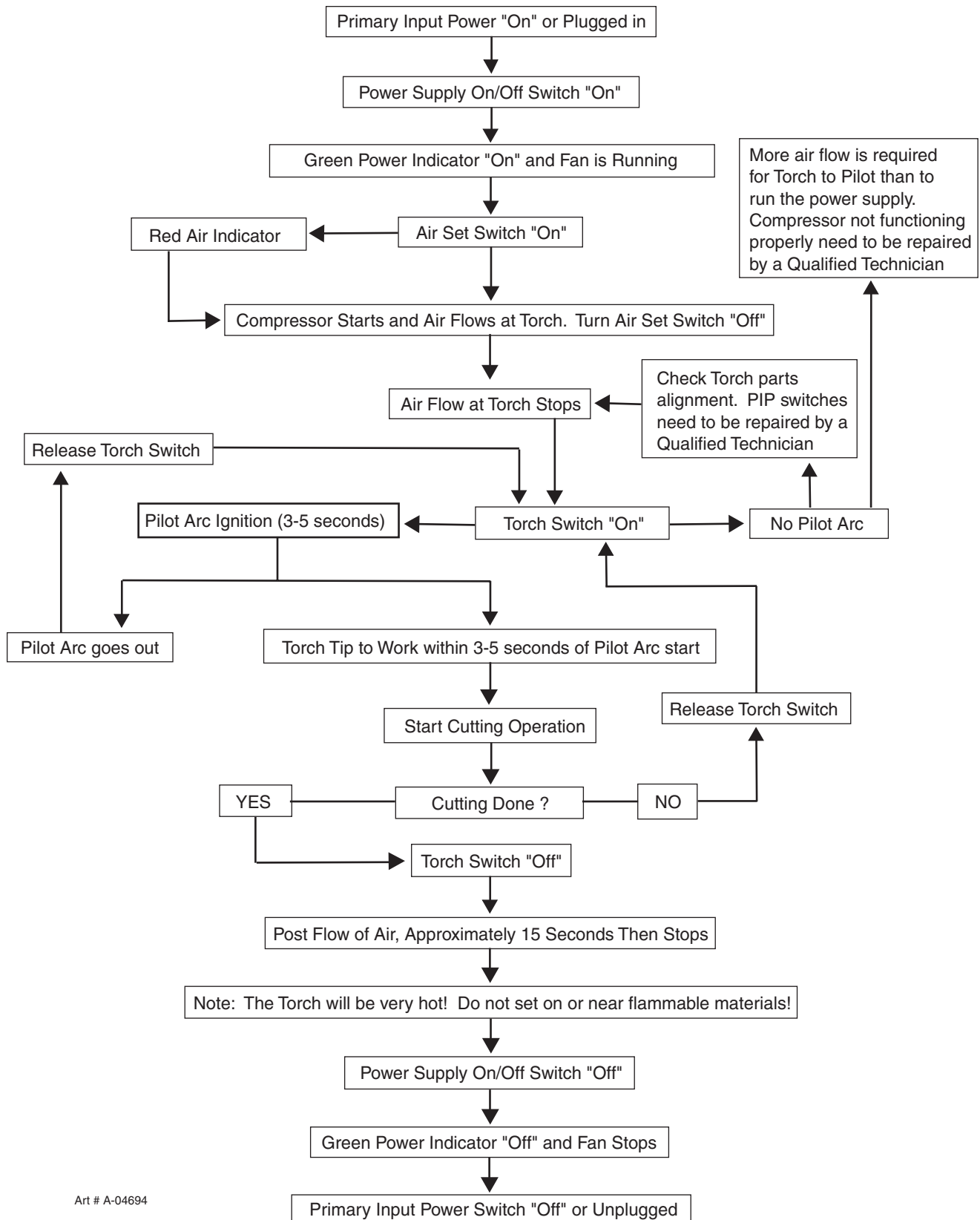
1. *Torch Switch Latch button on front panel faulty.*

- a. Return to an authorized service center for repair.

2. *Control PCB faulty.*

- a. Return to an authorized service center for repair.

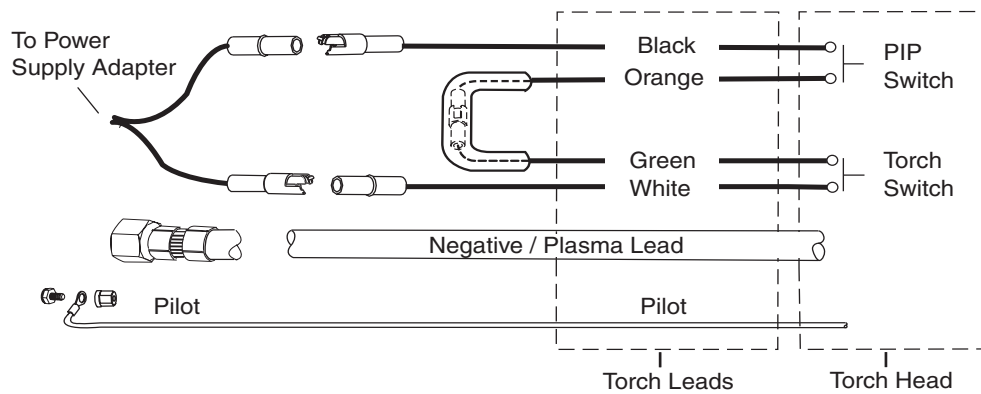
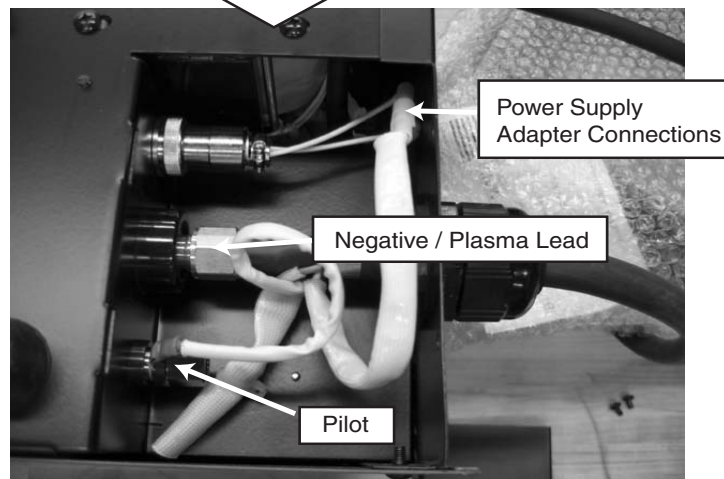
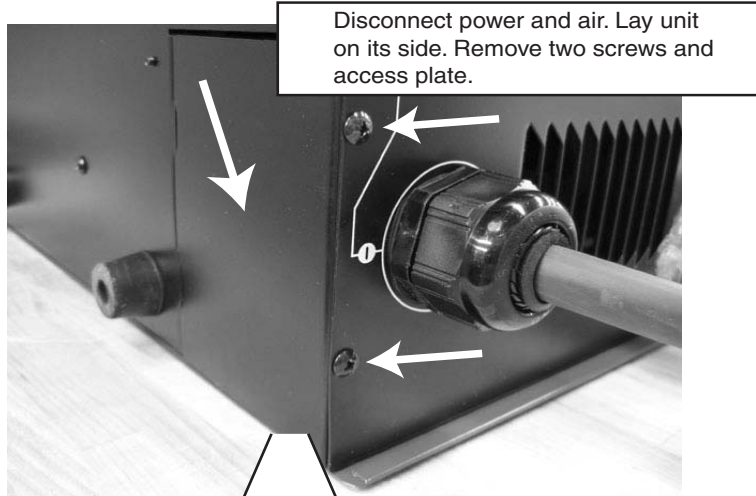
# Appendix 1: Operating Sequence, Block Diagram



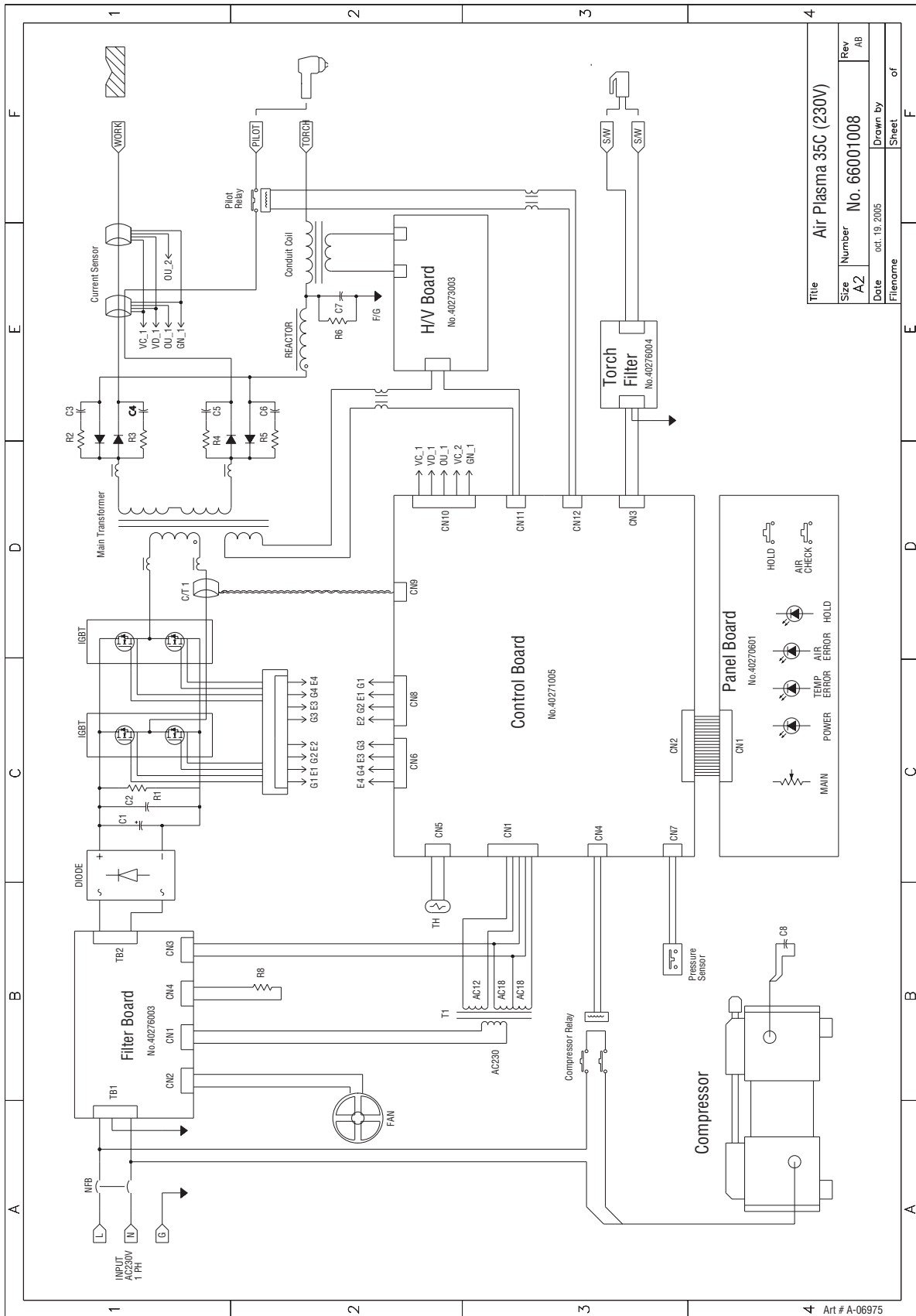
Art # A-04694

# Appendix 2: Torch Connection

Art # A-04695

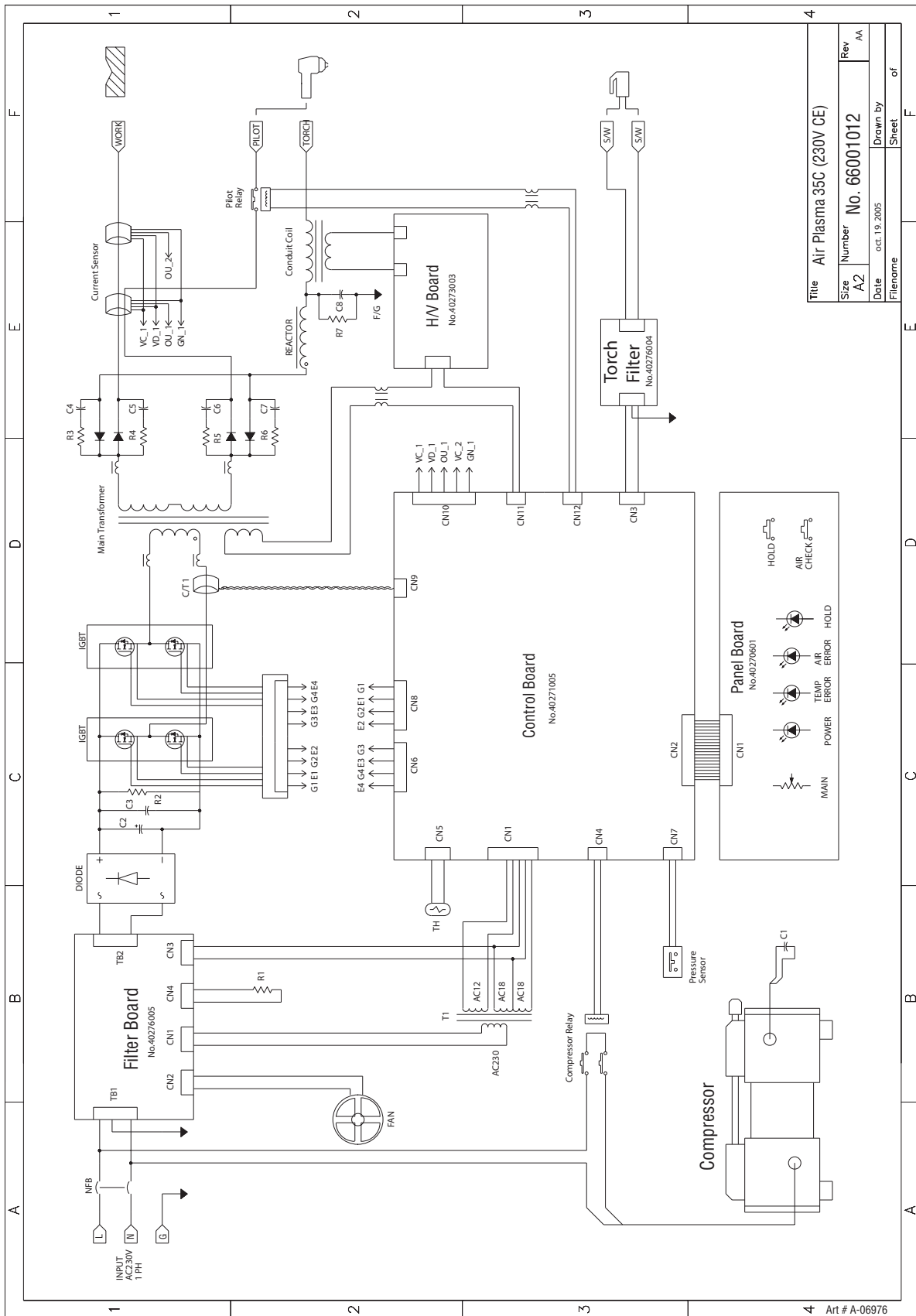


# Appendix 3: System Schematic 230V Non CE



Title		Air Plasma 35C (230V)	
Size	Number	Rev	AB
A2	No. 66001008		
Date	Drawn by	Sheet	
oct. 19. 2005		of	
Filename	F		

# Appendix 4: System Schematic 230V CE



Title		Air Plasma 35C (230V CE)	
Size	Number	Rev	AA
A2	No. 66001012		
Date	oct. 19. 2005	Drawn by	
Filename		Sheet	of