F-15-753
November, 2002

CE

Installation, Operation and Maintenance Manual for the

PCM-875A Plasmarc Mechanized Cutting System

ESAB®

Cutting Systems

411 South Ebenezer Road
Florence, South Carolina, U.S.A.

The equipment described in this manual is potentially hazardous. Use caution when installing, operating and maintaining this equipment.

Purchaser is solely responsible for the safe operation and use of all products purchased, including compliance with OSHA and other government standards. ESAB Cutting Systems has no liability for personal injury or other damage arising out of the use of any product manufactured or sold be ESAB. See standard ESAB terms and conditions of sale for a specific statement of ESAB's responsibilities and limitations on its liability.

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This manual is ESAB Part Number F15753

This manual is for the convenience and use of the cutting machine purchaser. It is not a contract or other obligation on the part of ESAB Cutting Systems.

Printed in U.S.A.

1.1 Introduction

The process of cutting metals with plasma equipment provides industry with a valuable and versatile tool. ESAB cutting machines are designed to provide both operation safety and efficiency. However, as with any machine tool, sensible attention to operating procedures, precautions, and safe practices is necessary to achieve a full measure of usefulness. Whether an individual is involved with operation, servicing, or as an observer, compliance with established precautions and safe practices must be accomplished. Failure to observe certain precautions could result in serious personnel injury or severe equipment damage. The following precautions are general guidelines applicable when working with cutting machines. More explicit precautions pertaining to the basic machine and accessories are found in the instruction literature. For a wide scope of safety information on the field of cutting and welding apparatus, obtain and read the publications listed in the Recommended References.

1.2 Safety Notations And Symbols

The following words and symbols are used throughout this manual. They indicate different levels of required safety involvement.

	**ALERT or ATTENTION. Your safety is involved or potential equipment failure exists. Used with other symbols and information.**
DANGER	**Used to call attention to immediate hazards which, if not avoided, will result in serious personal injury or loss of life.**
WARNING	**Used to call attention to potential hazards that could result in personal injury or loss of life.**
CAUTION	**Used to call attention to hazards that could result in minor personal injury or equipment damage.**
CAUTION	**Used to call attention to minor hazards to equipment.**
NOTICE	**Used to call attention to important installation, operation or maintenance information not directly related to safety hazards.**

1.3 General Safety Information

NOTICE

Some subjects listed are not related specifically to the type of equipment covered in this manual. However, the safety principles still apply. They are offered as a reminder that this equipment or related apparatus should be operated with alertness and understanding. Safety of operators, technicians, maintenance workers and observers should not be taken for granted.

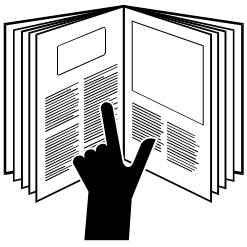
⚠ WARNING

Machinery may start automatically.

Equipment positioning mechanized plasma torch moves in various directions and speeds.

- Moving machinery can crush.
- Only qualified personnel should operate or service this power source.
- Keep all personnel, materials, and equipment not involved in production process clear of entire system area.
- Fence off entire work cell to prevent personnel from passing through area or standing in the working envelope of the equipment.
- Post appropriate WARNING signs at every work cell entrance.
- Follow lockout procedure before servicing any equipment.

⚠ WARNING

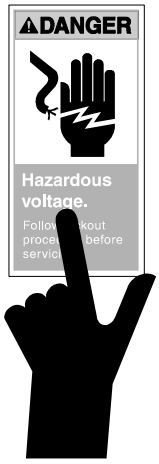


Failure to follow operating instructions could result in death or serious injury.

Read and understand this operator's manual before using machine.

- Read entire procedure before operating or performing any system maintenance.
- Special attention must be given to all hazard warnings that provide essential information regarding personnel safety and/or possible equipment damage.
- All safety precautions relevant to electrical equipment and process operations must be strictly observed by all having system responsibility or access.
- Read all safety publications made available by your company.

⚠ WARNING



Failure to follow safety warning label instructions could result in death or serious injury.

Read and understand all safety warning labels on machine.

Refer to operator's manual for additional safety information.

1.4 Installation Precautions

⚠ WARNING

Improperly Installed Equipment Can Cause Injury Or Death.

Follow these guidelines while installing machine:

- Contact your ESAB representative before installation. He can suggest certain precautions regarding piping installation and machine lifting, etc. to ensure maximum security.
- Never attempt any machine modifications or apparatus additions without first consulting a qualified ESAB representative.
- Observe machine clearance requirements for proper operation and personnel safety.
- Always have qualified personnel perform installation, troubleshooting and maintenance of this equipment.
- Provide a wall mounted disconnect switch with proper fuse sizes close to the power supply.

1.5 Electrical Grounding

Electrical grounding is imperative for proper machine operation and SAFETY. Refer to this manual's Installation section for detailed grounding instructions.

⚠ WARNING

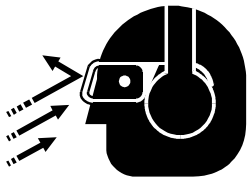
Electric shock hazard.

Improper grounding can cause severe injury or death.

Machine must be properly grounded before put into service.

1.6 Operating A Plasma Cutting Machine

⚠ WARNING



Flying debris and loud noise hazards.

- Hot spatter can burn and injure eyes. Wear goggles to protect eyes from burns and flying debris generated during operation.
- Chipped slag may be hot and fly far. Bystanders should also wear goggles and safety glasses.
- Noise from plasma arc can damage hearing. Wear correct ear protection when cutting above water.

⚠ WARNING

Burn hazard.

Hot metal can burn.

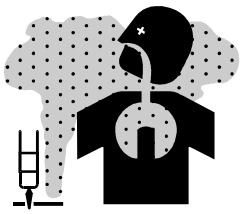
- Do not touch metal plate or parts immediately after cutting. Allow metal time to cool, or douse with water.
- Do not touch plasma torch immediately after cutting. Allow torch time to cool.

⚠ WARNING

Hazardous voltages. Electric shock can kill.

- Do NOT touch plasma torch, cutting table or cable connections during plasma cutting process.
- Always turn power off to plasma power supplies before touching or servicing plasma torch.
- Always turn power off to plasma power supplies before servicing any system component.
- Do not touch live electrical parts.
- Keep all panels and covers in place when machine is connected to power source.
- Wear insulating gloves, shoes and clothing to insulate yourself from workpiece and electrical ground.
- Keep gloves, shoes, clothing, work area, and equipment dry.
- Replace worn or damaged cables.

⚠ WARNING

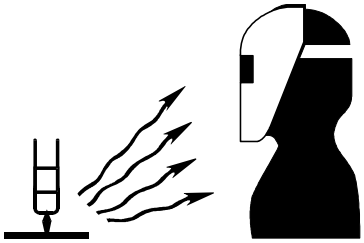


Fume hazard.

Fumes and gases generated by the plasma cutting process can be hazardous to your health.

- Do NOT breathe fumes.
- Do not operate plasma torch without fume removal system operating properly.
- Use additional ventilation to remove fumes if necessary.
- Use approved respirator if ventilation is not adequate.
- Provide positive mechanical ventilation when cutting galvanized steel, stainless steel, copper, zinc, beryllium, or cadmium. Do not breathe these fumes.
- Do not operate near degreasing and spraying operations. Heat or arc rays can react with chlorinated hydrocarbon vapors to form phosgene, a highly toxic gas and other irritant gases.

⚠ WARNING



Radiation hazard.

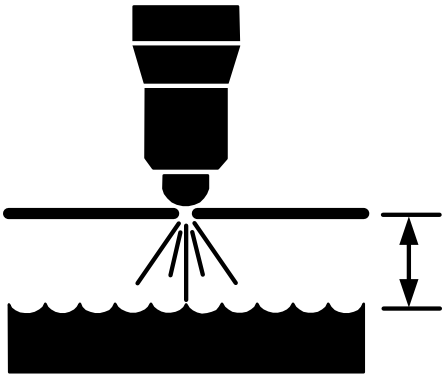
Arc rays can injure eyes and burn skin.

- Wear correct eye and body protection.
- Wear dark safety glasses or goggles with side shields. Refer to following chart for recommended lens shades for plasma cutting:

Arc Current	Lens Shade
Up to 100 Amps	Shade No. 8
100-200 Amps	Shade No. 10
200-400 Amps	Shade No. 12
Over 400 Amps	Shade No. 14

- Replace glasses/goggles when lenses are pitted or broken
- Warn others in area not to look directly at the arc unless wearing appropriate safety glasses.
- Prepare cutting area to reduce reflection and transmission of ultraviolet light.
  - Use special paint on walls to absorb UV light.
  - Install protective screens or curtains to reduce ultraviolet transmission.

CAUTION



Do Not Use this Torch Under Water.

The PT-20AMX is designed to be a dry cutting process.

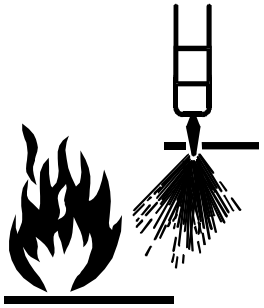
Cutting under water may result in:

- reduced consumable life
- degradation of cut quality
- possible damaged torch

Cutting under water may result in poor cutting performance. Water vapor created when hot material or sparks contact liquid may cause arcing inside torch.

When cutting on a water table, reduce the water level to provide maximum clearance between water and material.

⚠ WARNING

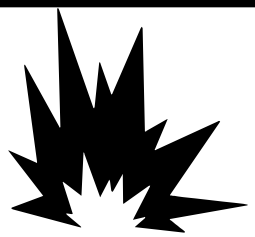


Burn Hazard.

Heat, spatter, and sparks cause fire and burns.

- Do not cut near combustible material.
- Do not have on your person any combustibles (e.g. butane lighter).
- Pilot arc can cause burns. Keep torch nozzle away from yourself and others when activating plasma process.
- Wear correct eye and body protection.
- Wear gauntlet gloves, safety shoes and hat.
- Wear flame-retardant clothing covering all exposed areas.
- Wear cuffless trousers to prevent entry of sparks and slag.
- Have fire extinguishing equipment available for use.

⚠ WARNING



Explosion hazard.

- Certain molten aluminum-lithium (Al-Li) alloys can cause explosions when plasma cut OVER water.
  - These alloys should only be dry cut on a dry table.
  - DO NOT dry cut over water.
  - Contact your aluminum supplier for additional safety information regarding hazards associated with these alloys.
- Do not cut in atmospheres containing explosive dust or vapors.
- Do not carry any combustibles on your person (e.g. butane lighter)
- Do not cut containers that have held combustibles.

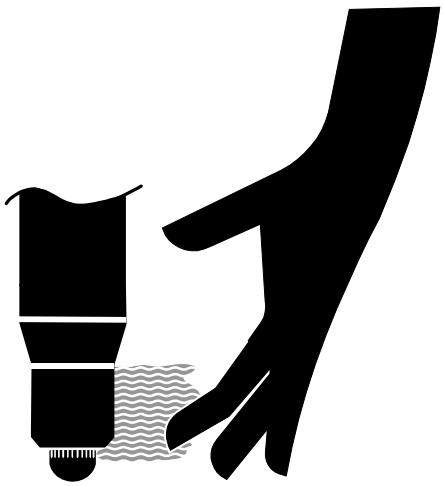
1.7 Service Precautions

⚠ WARNING

Hazardous voltages. Electric shock can kill.

- Do NOT touch plasma torch, cutting table or cable connections during plasma cutting process.
- Always turn power off to plasma power supplies before touching or servicing plasma torch.
- Always turn power off to plasma power supplies before removing covers or panels to service any system component.
- Do not touch live electrical parts.
- Keep all panels and covers in place when machine is connected to power source.
- Keep gloves, shoes, clothing, work area, and equipment dry.
- Inspect power and ground leads cables for wear or cracking. Replace worn or damaged cables. Do not use if damaged.
- Never bypass safety interlocks.
- Follow lock-out procedures.

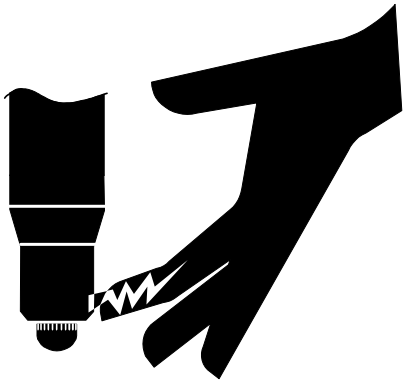
⚠ WARNING



Hot Torch can cause skin burns.

Allow torch to cool before servicing.

⚠ DANGER



Danger of Electric Shock.

Torch may be electrically active.

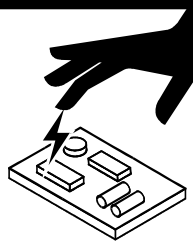
Turn off Plasma Power Console before servicing torch.

CAUTION

Establish and adhere to preventive maintenance. A composite program can be established from recommended schedules.

Avoid leaving test equipment or hand tools on machine. Severe electrical or mechanical damage could occur to equipment or machine.

⚠ CAUTION



Extreme caution should be used when probing circuitry with an oscilloscope or voltmeter. Integrated circuits are susceptible to over voltage damage. Power off before using test probes to prevent accidental shorting of components.

All circuit boards securely seated in sockets, all cables properly connected, all cabinets closed and locked, all guards and covers replaced before power is turned on.

1.8 Safety References -- Regulations, Standards, Guidelines

The following recognized publications on safety in welding and cutting operations are recommended. These publications have been prepared to protect persons from injury or illness and to protect property from damage, which could result from unsafe practices. Although some of these publications are not related specifically to this type of industrial cutting apparatus, the principles of safety apply equally.

1.8.1 USA

- *"Precautions and Safe Practices in Welding and Cutting with Oxygen-Fuel Gas Equipment," Form 2035.* ESAB Cutting Systems.
- *"Precautions and Safe Practices for Electric Welding and Cutting," Form 52-529.* ESAB Cutting Systems.
- *"Safety in Welding and Cutting" - ANSI Z 49.1*, American Welding Society, 2501 NW 7th Street, Miami, Florida, 33125.
- *"Recommended Safe Practices for Shielded Gases for Welding and Plasma Arc Cutting" - AWS C5.10-94*, American Welding Society.
- *"Recommended Practices for Plasma Arc Welding" - AWS C5.1,* American Welding Society.
- *"Recommended Practices for Arc Cutting" - AWS C5.2*, American Welding Society.
- *"Safe Practices" - AWS SP*, American Welding Society.
- *"Standard for Fire Protection in Use of Cutting and Welding Procedures" - NFPA 51B*, National Fire Protection Association, 60 Batterymarch Street, Boston, Massachusetts, 02110.
- *"Standard for Installation and Operation of Oxygen - Fuel Gas Systems for Welding and Cutting" - NFPA 51*, National Fire Protection Association.
- *"Safety Precautions for Oxygen, Nitrogen, Argon, Helium, Carbon Dioxide, Hydrogen, and Acetylene," Form 3499*. ESAB Cutting Systems. Obtainable through your ESAB representative or local distributor.
- "*Design and Installation of Oxygen Piping Systems,*" *Form 5110*. ESAB Cutting Systems.
- "*Precautions for Safe Handling of Compressed Gases in Cylinders*", CGA Standard P-1, Compressed Gas Association.

Literature applicable to safe practices in welding and cutting with gaseous materials is also available from the Compressed Gas Association, Inc., 500 Fifth Ave., New York, NY 10036.

1.8.2 International

Accident Prevention
VBG- Unfallverhütungsvorshriften

VBG 1	General Provisions Allgemeine Unfallverhütungsvorshriften
VBG 4	Electrical Equipment and operating Equipment Elektrische Anlagen
VBG 15	Welding, Cutting and related working methods Schweißen un Schneiden un verwandte Verfahren
VBG 48	Shot Blasting Works Strahlarbeiten
VBG 61	Gases Gase
VBG 62	Oxygen Sauerstoff
VBG 87	Operating liquid jet cutting machines Arbeiten mit Flüssigkeitsstrahlem
VBG 93	Laser beams, accident prevention and Electro-technology Laserstrahlung, Unfallverhütungs-vorschriften für Feinmechnik und Elektrotechnik
VBG 121	Noise Lärm

VDE Regulations
VDE - Vorschriften

VDE 0100	Erection of power installations with normal voltages up to 1000 volts Bestimmungen für das Errichten von Stakstromanlagen mit Nennspannungen bis 1000 Volt
VDE0113	Electrical equipment of industrial machines Elektrishe Ausrüstung von Industriemaschinen
VDE 0837	Radiation safety of laser products; users guide (DIN EN 60825) Strahlungssicherheit von Lasereinrichtungen und Benutzungsrichtlinen (DIN EN 60825)
VDE 0837-50	Specification for laser guards Anforderung an Lasershcutzwänden

TRAC Technical Rules for Acetylene and Carbide Stores
TRAC- Techische Regein für Azetylenanlagen und Calciumcargidlager

TRAC-204	Acetylene lines Azetylenleitungen
TRAC-206	Acetylene cylinder battery systems Azetylenflaschenbatterieanlagen
TRAC-207	Safety devices Sicherheitseinrichtungen

TRG Technical Rules for Pressure gases
TRG – Technische Regein für Druckgase

TRG 100	General regulations for pressure gases Allgemeine Bestimmungen für Druckgase
TRG 101	Pressure gases Druckgase
TRG 102	Technical gas mixtures Technishe Gasgemische
TRG 104	Pressure gases; alterative use of compressed gas tanks Druckgase, wahlweise Verwendung von Druckgasbehältem

TRGS – Technische Richtlinien für Gefahrstoffe

TRGS-102	Techn. Richtkonzentration (TRK) für gefährliche Stoffe
TRGS-402	Ermittlung u. Beurteilung der Konzentration gefährlicher Stoffe in der Luft im Arbeitsbereich
TRGS-900	Grenzwerte in der Luft am Arbeitsplatz (Luftgrenzwerte)
TA	TA-Luft un TA-Lärm (BLm SchV)

DIN Standards
DIN-Normen

DIN 2310 Part 1	Thermal cutting; terminology and nomenclature
Teil 1	Thermsiches Schneiden, Allgemeine Begriffe und Bennungen
DIN 2310 Part 2	Thermal cutting; determination of quality of cut faces
Teil 2	Thermsiches Schneiden, Ermittein der Güte von Schnittflächen
DIN 2310 Part 4	Thermal cutting; arc plasma cutting; process principles, quality, dimensional tolerances
Teil 4	Thermsiches Schneiden, Plasmaschneiden, Verfahrensgrundlagen, Güte, Maßtoleranzen
DIN 2310 Part 5	Thermal cutting; laser beam cutting of metallic materials; process principles
Teil 5	Laserstrahlschneiden von metallischen Werkstoffen, Verfahrensgrundlagen, Güte, Maßtoleranzen
DIN 2310 Part 6	Thermal cutting; Classification, processes
Teil 6	Einführung, Verfahren
DIN 4844 Part 1	Safety markings (DIN EN 7287)
Teil 1	Sicherheitskennzeichen (Siehe EN 7287)

DIN EN ISO Harmonized Standards
DIN EN ISO-Harmonisierte Normen

DIN EN 292/1 and 2	Safety of machinery Sicherheit von Maschinen, Geräten und Anlagen
DIN EN 559	Hoses for welding, cutting and allied processes Schläuche für Schweißen, Schneiden und verwandte Verfahren
DIN EN 560	Hose connections and hose couplings for equipment for welding, cutting and allied processes Schlauchanschlüsse und Schlauchverbindungen für Geräte zum Schweißen, Schneiden und verwandte Verfahren
DIN EN 561	Gas welding equipment hose couplings Gasschweißgeräte, Kupplungen
DIN EN 626-1	Safety of machines, reduction of risks to health Sichereit von Maschinen, Reduzierung des Gesundheitsrisikos
DIN EN 848-1	Single spindle vertical milling machines Fräsmaschine für einseitige Bearbeitung mit drehendem Werkzeug
DIN EN 1829	High pressure water jet machines Hochdruckwasserstrahlschneidmaschine
DIN EN 9013	Thermal cutting, oxygen cutting, process principles, dimensional tolerances Thermisches Schneiden, Autogenes Brennschneiden, Verfahrensgrundlagen, Güte, Maßtoleranzen
DIN EN 12584	Imperfections in oxy/fuel flame cuts, laser beam cuts and plasma Unregeimäßigkeiten an Brennschnitten, Laserstrahl- und Plasmaschnitten
DIN EN 12626	Laser processing machines Laserbearbeitungsmaschinen
DIN EN 28206	Acceptance testing for oxygen cutting machines Abnahmeprüfung für Brennschneidmaschinen
DIN EN 31252	Laser Equipment Lasergeräte

DIN EN 31553	Laser and laser related equipment Laser und Laseranlagen
DIN EN 60204-1	Electrical equipment of machines Elekrische Ausrüstung von Maschinen
DIN EN 60825	Radiation safety of laser products Strahlensicherheit von Laseranlagen
DIN EN 999	Arrangement of protection devices Anordnung von Schutzeinrichtungen

VDI Guidelines

VDI 2906	Quality of cut faces on metallic workpieces; abrasive water jet cutting and arc plasma cutting Schnittflächenqualität beim Schneiden von Werkstücken aus Metall, Abrasiv- Wasserstrahischneiden und Plasmastrahischneiden
VDI 2084	Room air; Technical systems for welding workshops Raumluft techn. Anlagen für Schweißwerkstätten

2.1 General

The PCM-875A Mechanized Plasma Cutting System is a compact 60 ampere package consisting of plasma power console, remote arc starter, and PT-20AMX plasma torch. Simple bulkhead connections allow easy system assembly. Connect to input power and a source of clean, dry, compressed air (5,18 to 5,87 bar) and you can begin cutting up to 13 mm thick material.

2.2 PCM-875A Power Console

There are 2 power console options available:

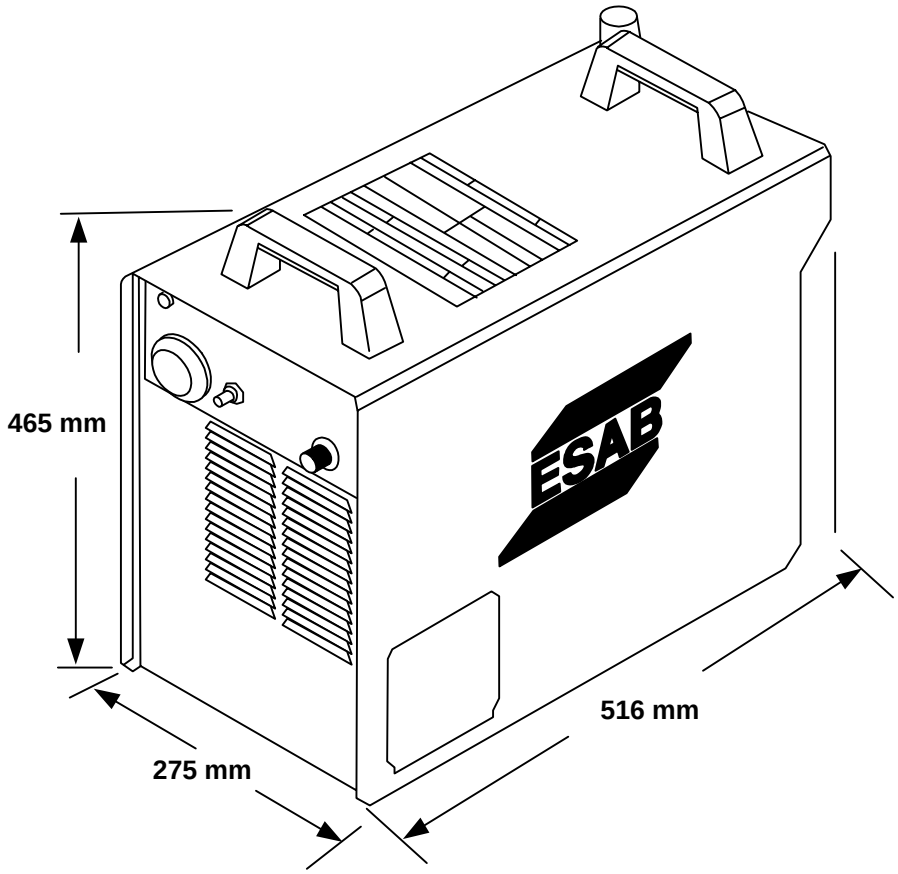
230 V 50 Hz, 1 or 3 phase P/N 0558003356

400 V 50 Hz, 3 phase P/N 0558003357

2.2.1 Technical Specifications: PCM-875A

Options		230V 50Hz, 3 Phase P/N 0558003356		400V 50Hz, 3 phase P/N 0558003357
		1 phase	3 phase	
Rated Output	60% Duty Cycle	60 A at 120 VDC		
	100 % Duty Cycle	50 A at 120 VDC		
Output Current Range		10 to 60 A/phase		
Open Circuit Voltage		275 VDC		
Rated Primary Input at 7,2 kW Maximum Output Power, 60 A at 120 VDC		55/49 A (230V, 1 phase)	26/24 A per phase (230V, 3 phase)	13 A/phase
Power Factor at 60 Amperes Output		74% (230 V, 1 phase)	90% (230 V, 3 phase)	92% (400 V, 3 phase)
Efficiency at 60 Amperes Output		90% typical		
Current Capacity		60 A DCSP		
Air Requirements		153,4 l/minute at 5,2 bars		
Power Cord Length Provided		1,8m		3,1m

2.2.2 Dimensions and Weight: PCM-875A Power Console



Weight = 39,5 kg

2.3 Remote Arc Starter (RAS-2)

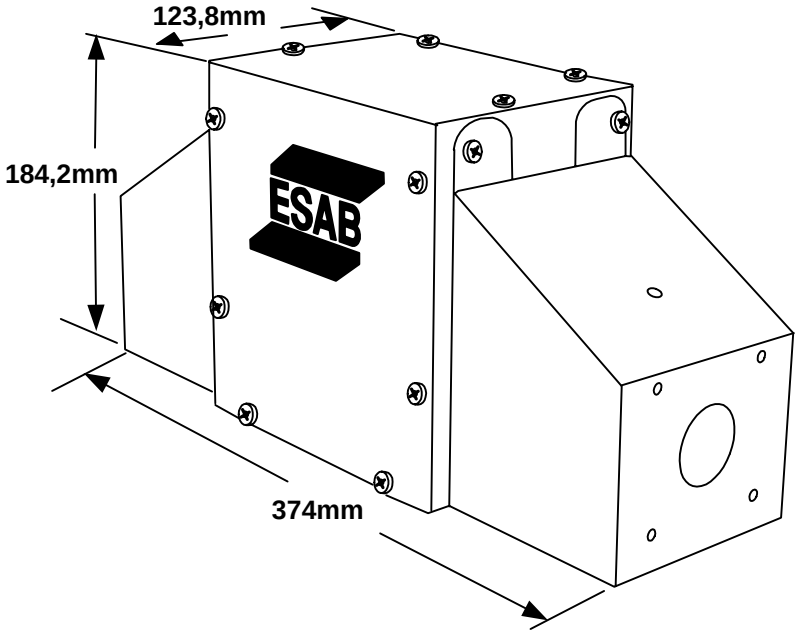
The remote arc starter (RAS-2) is placed inline between power console and torch. The RAS is the source of high frequency energy used to start the plasma cutting process.

RAS-2 with 15,2 m leads	P/N 0558003601
RAS-2 with 30,4 m leads	P/N 0558003602

Technical Specifications

Input:	110 VAC, 50/60 Hz. Control power provided by PCM-875A console.
Spark Gap:	1mm

Dimensions and Weight



Weight = 3,4kg

2.4 PT-20AMX

The patented PT-20AMX is a 100 amp capacity, pilot-arc mechanized torch available in 3 different torch lead length packages.

The torch uses clean, dry air as the cut gas for cutting carbon steel, aluminum, or stainless steel.

PT-20AMX Torch with 1,2 m lead	**P/N 0558002632**
PT-20AMX Torch with 5,7 m lead	**P/N 0558002633**
PT-20AMX Torch with 7,6 m lead	**P/N 0558003381**

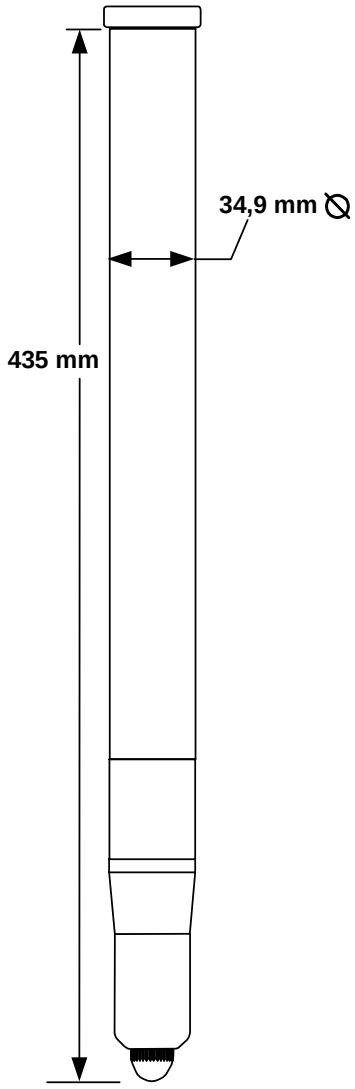
⚠ WARNING

DO NOT use oxygen with this torch!
A hazardous fire may result.

2.4.1 Technical Specifications

Type:	Air Cooled, single gas at 9,9 kl/hr
Rating:	100 Amperes at 100% Duty Cycle
Gas Purity:	Air: Needs to be clean, dry and free of all particulate matter. Nitrogen: 99.995% clean
Gs Type:	Air, nitrogen

2.4.2 Dimensions



2.4.3 Torch Spare Part Kit

PT-20AMX Torch Spare Parts Kit is available for maintaining the PT-20AMX torch with minimum downtime.

P/N 0558002319

Description	P/Number	Quantity
Heat Shield (70/100 A)*	**21326**	**3**
Cutting Nozzle (50 A)**	**21330**	**5**
Cutting Nozzle (70 A)**	**23129**	**5**
Electrode 50Hz	**0558001617**	**5**
Electrode Insulator	**21373**	**1**
Electrode Holder Assembly	**21332**	**1**
Baffle Tube	**21374**	**1**
Pilot Arc Adaptor	**19497**	**1**
O-ring	**488157**	**5**
Lubricant (1 oz.)	**17672**	**1**
Seat/Baffle Wrench	**21375**	**1**
1/16: Hex-Key Wrench	**93750006**	**1**

NOTICE

*****

The description of the heat shield (P/N 21326) listed above indicates a range of 70 to 100 amperes. Testing has proven satisfactory results when used at 60 amps and lower.

NOTICE

******

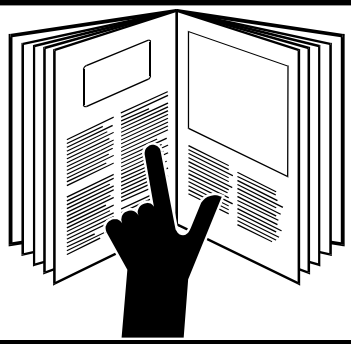
The 50A cutting nozzle can be used at 50 amperes and lower.

The 70A cutting nozzle can be used at 50 to 70 cutting amperes.

3.1 General

Proper installation is important for satisfactory and trouble free operation. Follow these instructions carefully.

⚠ WARNING



Failure to follow these directions carefully may lead to injury or death.

Read this entire manual before proceeding.

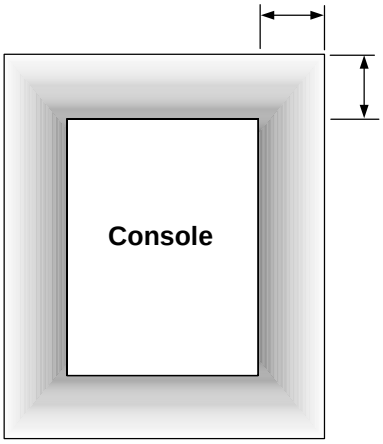
Damage to property or equipment may occur.

3.2 Installation of the PCM-875A Power Console

3.2.1 Equipment Required

A source of clean dry air at 153,4 liters/minute at 5,2 to 5,9 bar. The maximum inlet pressure of the air filter-regulator is 10,4 bar and should not be exceeded.

3.2.2 Location



Adequate ventilation is necessary to provide proper cooling of the PCM-875A.

Exposure to dirt, dust and excessive heat should be minimized.

There should be a minimum of 305 mm clearance between the power console and any wall or other obstruction for free air movement.

CAUTION	Restricting airflow into the power console through the louvers will cause overheating. Do not install any type of air filtering device on to the power console cooling air passages. Warranty will be voided if such a device is used.

3.2.3 Inspection of Power Console Before installation

A. Remove equipment from the shipping containers.

B. Remove all packing material and inspect for evidence of concealed damage, which may not have been initially apparent. Notify the shipping carrier of any damage at once.

C. Check container for any loose parts prior to disposing of shipping materials.

D. Check air louvers and all other openings to ensure that any obstruction is removed.

3.2.4 Primary electrical Input Connections

⚠ WARNING

Electric Shock Can Kill!
Ensure all power is off by opening the line (wall) disconnect switch and power cord is disconnected before attempting to make any connections inside the power console.

⚠ CAUTION

Ensure that the power source is properly configured for your input power supply. DO NOT connect a power console configured for 230V to a 460V input power. Damage to machine will occur.

The PCM-875A Power Console is equipped with a 3 m 4 conductor power cable for 3- phase connection. If single-phase 230V is required, tape back red wire on the input power cable.

A line (wall) disconnect switch with fuses or circuit breakers should be provided at the main power panel.

Input Requirements			Input and Ground Conductor (mm^2)	Fuse Size (A)
Volts	Phase	Amps		
230	1	49	16	80
230	3	24	16	50
400	3	13	6	25

⚠ WARNING

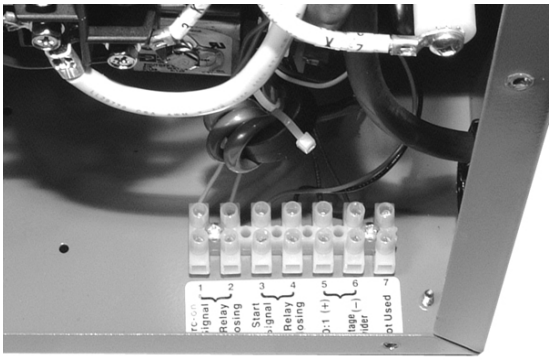
Failure to connect chassis to an approved electrical ground may result in electrical shock, severe burns or death.

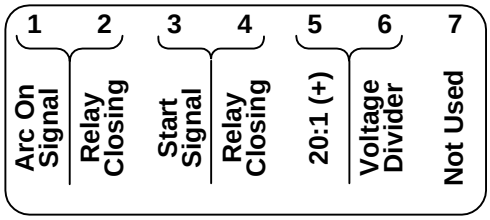
The chassis must be connected to an approved electrical ground.

Console Power Lead

The PCM-875A power console is internally wired for connecting to an external power source.

3.2.5 Connection of Plasma Console To CNC Interface





The CNC interface (TB4) is mounted on the front left corner of the console base.

- Arc On Signal – This signal originates in the plasma console. It is a normally open contact, which closes on main arc transfer. Used to activate machine motion and arc voltage control.

- Start Signal – Signal is derived from CNC machine. It is a normally open contact, which closes starting the plasma sequence. The system is off when this contact closure is removed.

- 20:1 (+) Voltage Divider – The voltage divider provides a signal ouput, which is proportional to the cutting voltage. Signal reduction is 20 to 1 and controls whether the torch is raised or lowered in reference to the work piece. This is referred to torch to work distance. This distance is adjustable by varying arc voltage reference voltage.

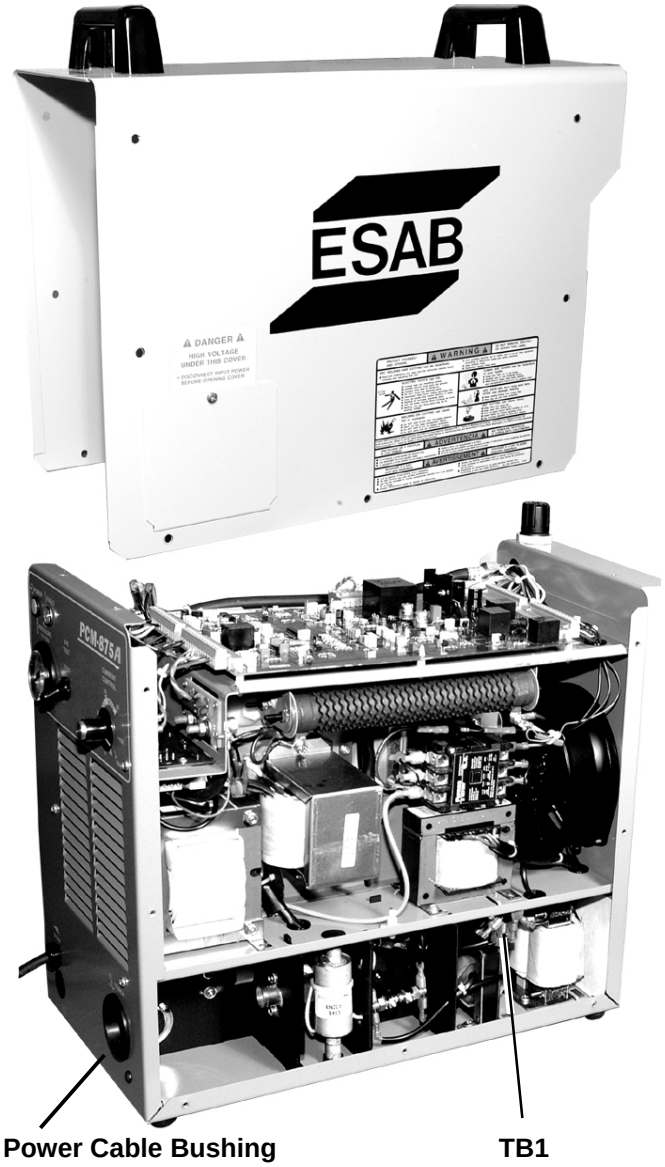
- Not Used

3.2.6 Secondary (Output) Connections to Power Console

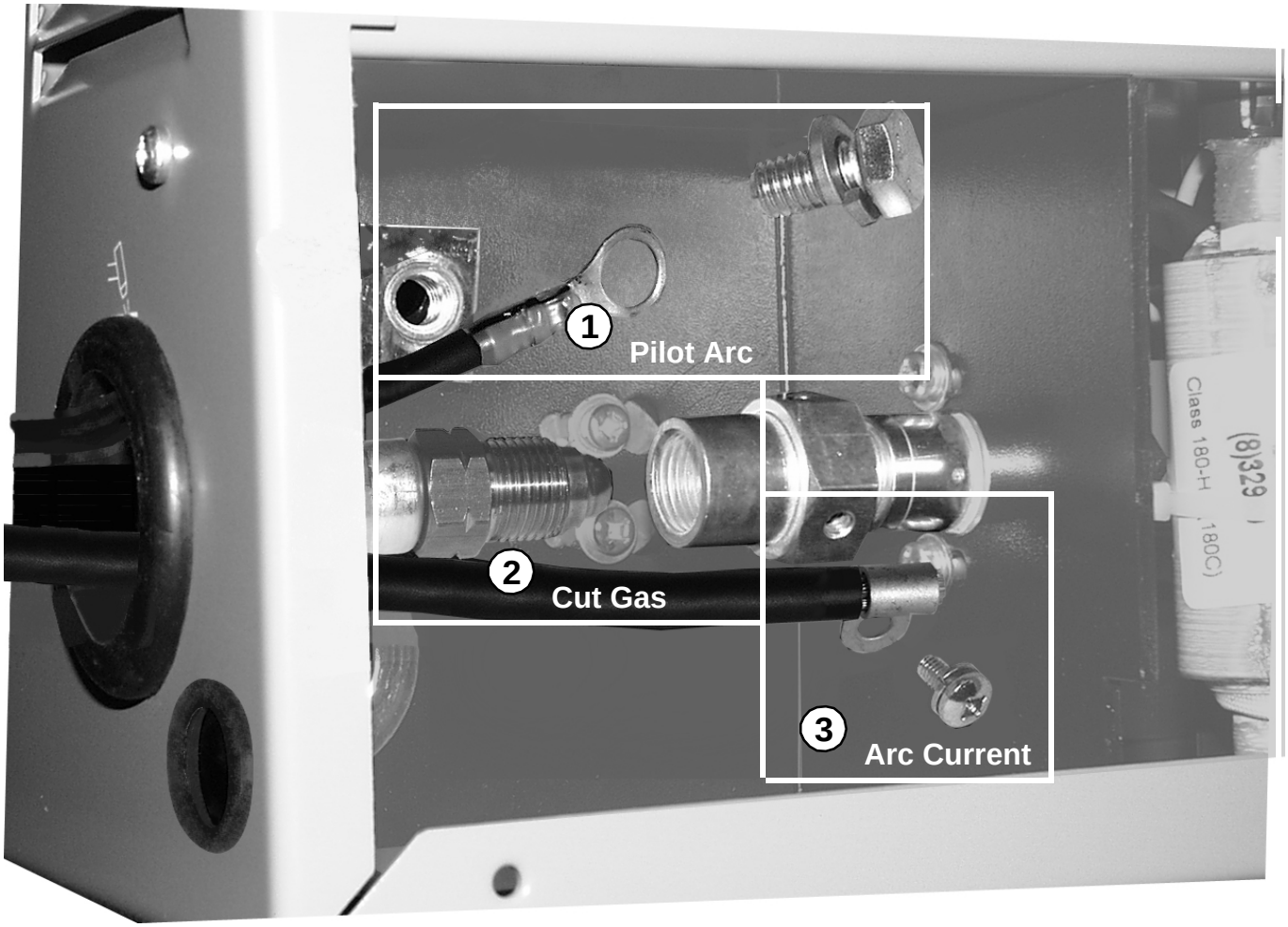
⚠ WARNING

Electric Shock Can Kill!

Ensure all power is off by opening the line (wall) disconnect switch and power cord is disconnected before attempting to make any connections inside the power console.

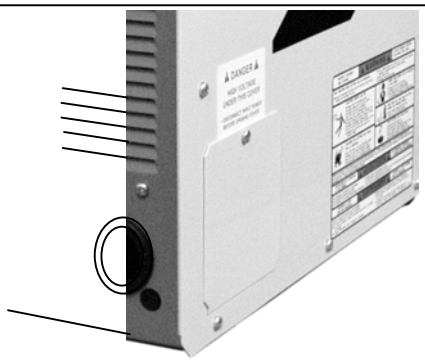


Remove outside cover
Insert power cable, pilot arc, and air hose through power cable bushing.

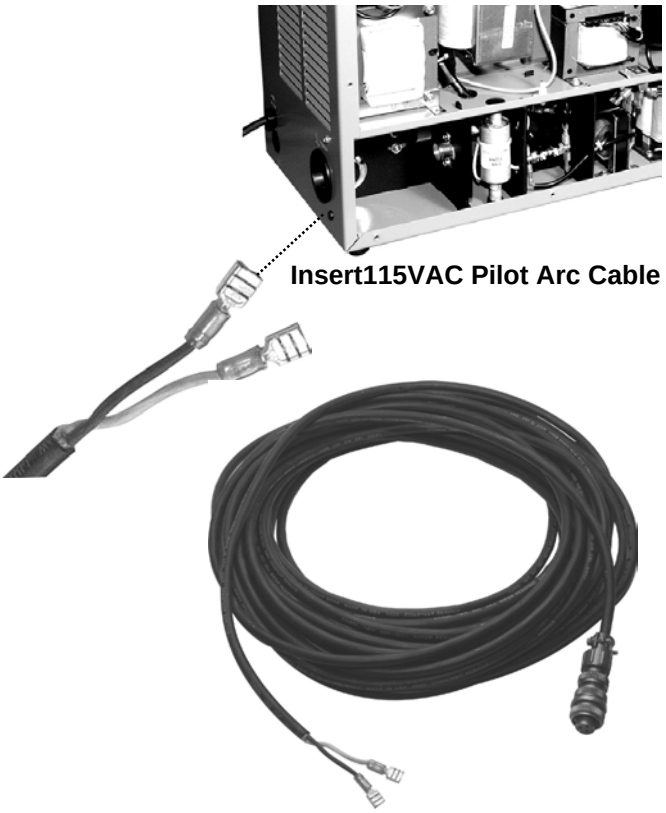


1. Bolt pilot arc cable ring connection to the copper terminal.
2. Connect air hose to air/power connector (left hand threads).
3. Connect power cable to air/power connector using #10 screw

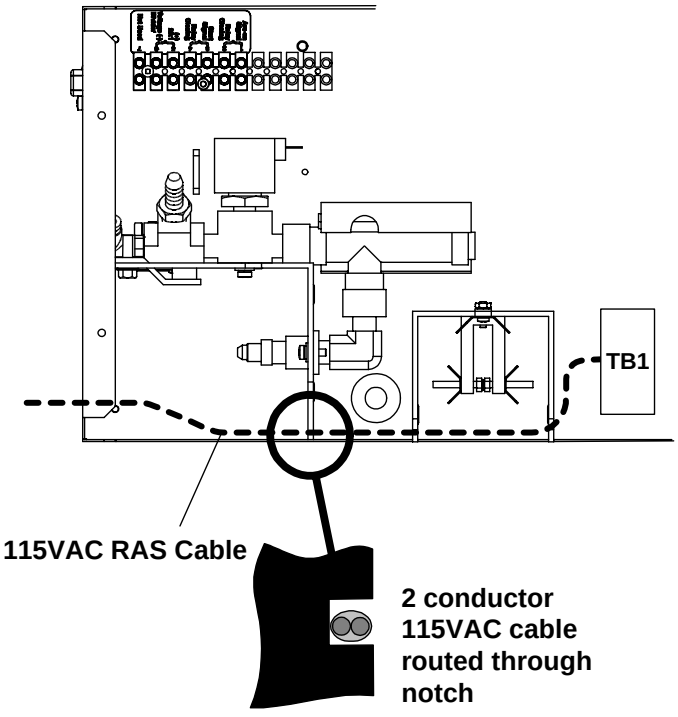
NOTICE



The console cover does not have to be removed to make the three connections above. Remove access panel if replacing cables or checking connections.



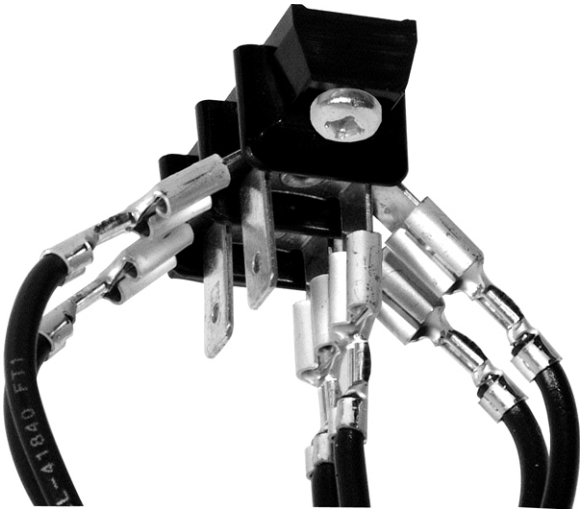
Insert 115VAC RAS cable through strain relief located in the lower right corner of the front panel.



Rout 115VAC RAS cable along inside edge in notches in insulating material to TB1.

Remove connection for internal arc start from TB1

TB1



Plug terminal connectors into 2 available lugs on TB1.

⚠ CAUTION

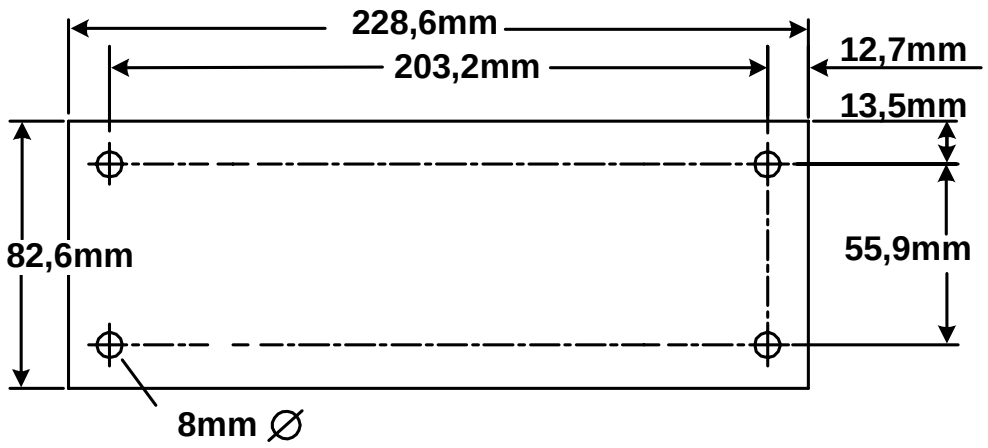
Cable Terminals to TB1 should be insulated to prevent possible damage due to internal arcing in the power console. The above illustration shows the terminals un-insulated for clarity of wire positions.

Replace cover if next step is not required.

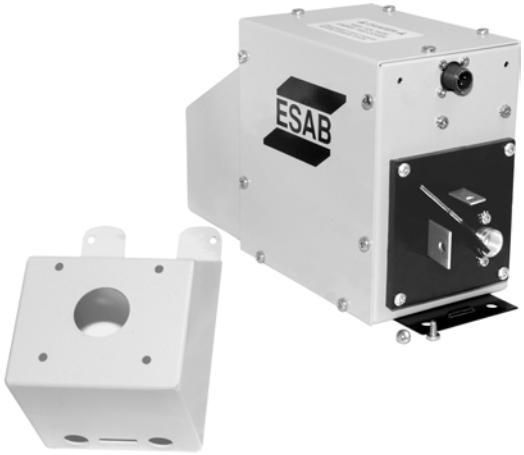
3.3 Connecting the Remote Arc Starter

3.3.1 Mounting RAS2

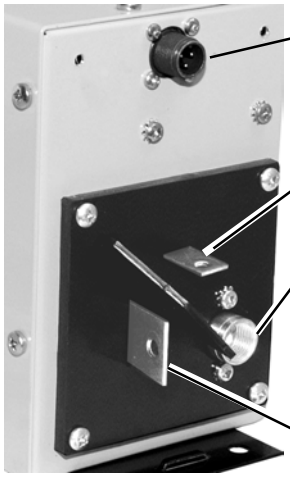
Mounting location of RAS unit is restricted by the length of torch leads, 1,2 m -- 5,4 m or 7,6 m.



3.3.2 Connecting Service Lines to Remote Arc Starter 2



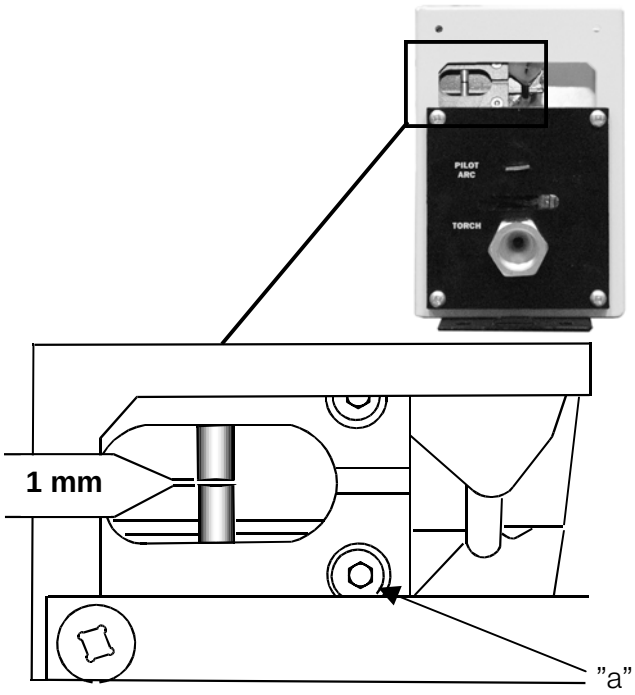
Remove end covers on RAS2 box.



Arc Start Cable | Pilot Arc Cable | Power Cable | Air Hose

- Connect arc start cable to RAS2 box.
- Connect pilot arc cable to pilot arc lug using #10 screw and nut with lock washers.
- Connect power cable to power cable lug using ¼" screw with washers and nut.
- Connect air hose fitting (left hand threads). Note that this hose has the same fittings on both ends and orientation does not matter.

3.3.3 Setting the Spark Gap in the RAS2



Factory set to 1mm.

Adjustment procedure:

1. Loosen screw “a” using a 1/8” (0.125”) internal hex wrench.
2. Insert 1mm feeler gage between the tungsten electrodes.
3. Slide electrodes till slight pressure is felt on the gage.
4. Tighten locking screws on spark gap assembly.

3.3.4 RAS2 Output Connections to Torch

Torch Lead Pilot Arc Connector

Torch Lead Voltage/Gas Hose

- Pilot Arc – Connect pilot arc cable in torch bundle to pilot arc output lug using #10 screw, lock washers and nut.
- Torch – left hand threads connect the torch gas (air) and plasma arc current. (Cable inside gas hose conducts the plasma cutting current)

3.3.5 Terminating Shield Braid at RAS2

Insert bundle

1. Insert Braid and hose bundle through RAS cover hole.

Flair Braid

2. Flare braid by bending it back at 90 degrees about 25 mm from the end.

Insert Ground Plate

3. Insert ground plate over torch leads.

Fasten Ground Plate

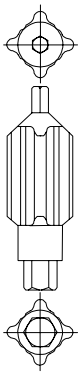
4. Fasten ground plate with 4 screws inserted from the outside. Trim braid strands if desired.

3.4.1 Installing Torch Front End Parts

⚠ WARNING

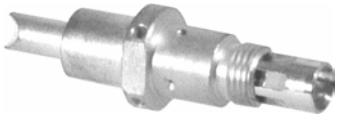
Make sure power switch on console is in OFF position and primary input power is de-energized.

1. The seat comes assembled to the front end of the torch. IF the seat becomes damaged, the torch body must be replaced. DO NOT attempt to remove the seat from torch body.



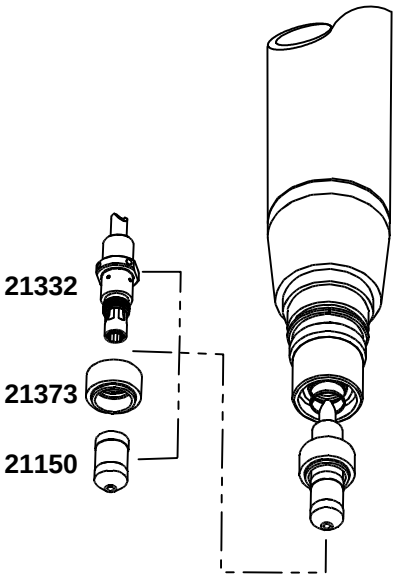
Wrench 21375

Electrode Holder Assembly

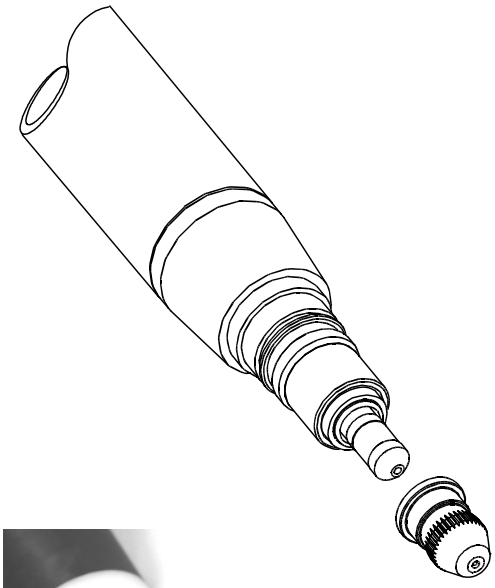


2. Electrode holder assembly (21332) includes the baffle tube (21374). If baffle tube becomes damaged, it can be replaced by un-threading the damaged tube out of the holder. Use small hex end of the wrench (21375) in hex broach on the tube. Tighten tube securely but do not over-tighten.

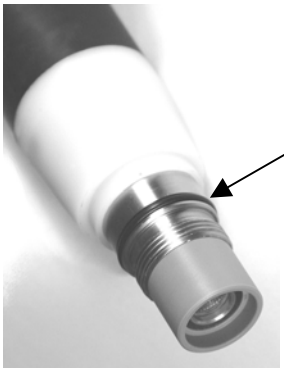
Baffle Tube



3. Install the electrode insulator (21373) onto electrode holder assembly (21332) and then thread electrode (21150) onto the electrode holder assembly. Assemble electrode firmly by hand. Do not use wrenches or pliers. These three parts combined are the electrode assembly.



4. Install nozzle onto the electrode assembly by inserting small shoulder on electrode insulator into nozzle's rear opening. Place nozzle and electrode assembly into the heat shield as shown in page 6. If front end of the torch is facing down as normal in a setup, the nozzle and electrode assembly can be stacked in the heat shield and then assembled to the torch. Be sure to use proper heat shield and nozzle combination as noted in page 18.



17672

5. Apply a thin film of lubricant (17672) to O-ring (488157).

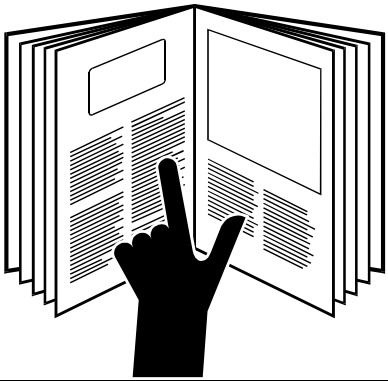
6.Tighten heat shield fully to hold the parts in firm contact with each other and to the torch head. “Fully” means at least 5mm rotation after electrode seat contacts electrode holder.

7. After retainer/heat shield is tightened, try to rotate the nozzle with your finger tips. If it rotates, the sealing of components is not tight enough and will likely leak gas.

NOTICE

See “Section 6 – Maintenance” for torch lead installation or replacement.

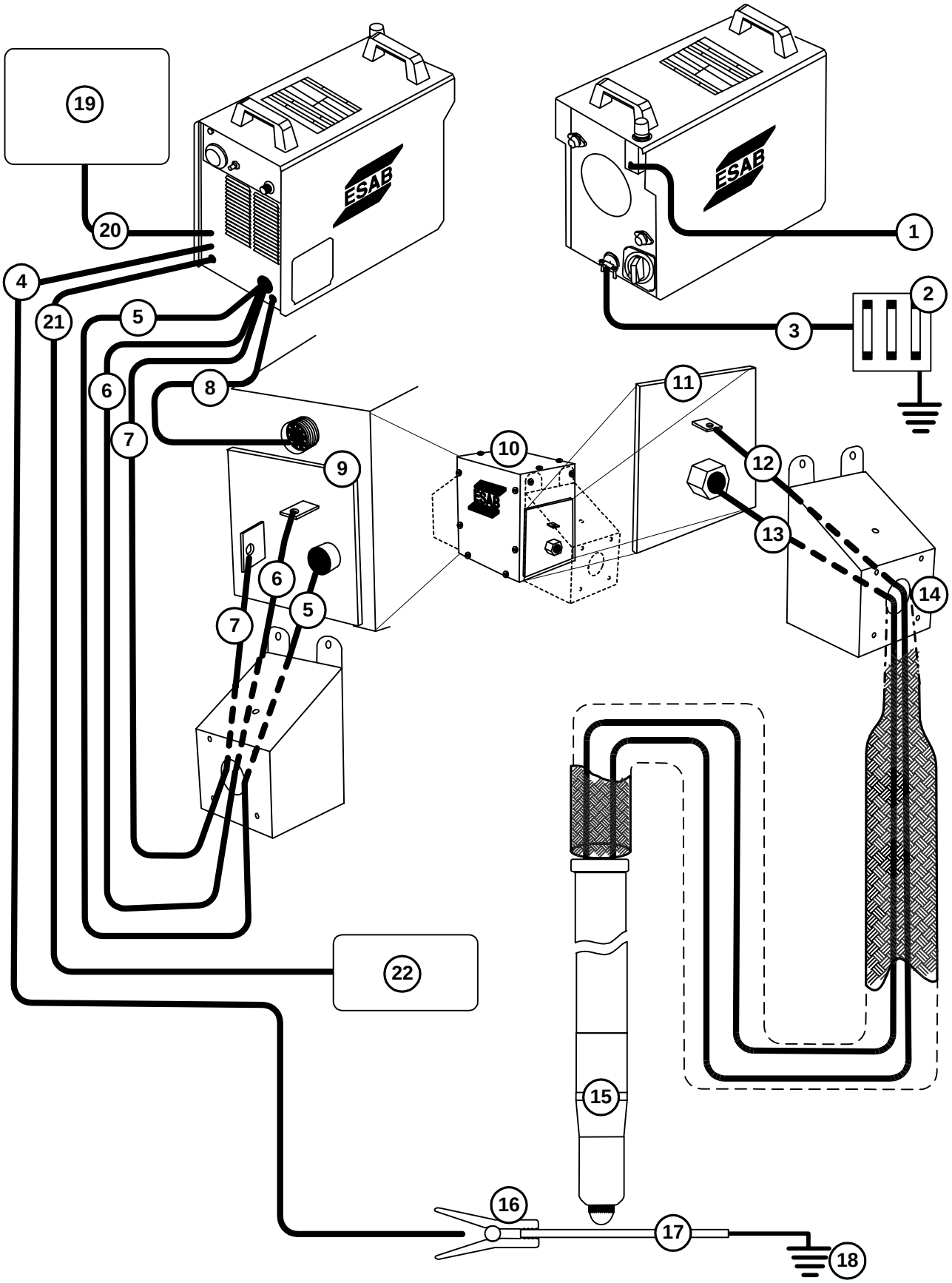
⚠ CAUTION



IMPORTANT: See Maintenance section.

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

3.5 Interconnecting Diagram



1	Air Supply
2	Wall Disconnect Switch (Grounded)
3	PCM-875A Power Supply Cable
4	Work Cable (Negative)
5	Pilot Arc Cable
6	Gas Connection
7	Power Supply Cable
8	115 V High Frequency Start Cable
9	RAS Input Bulkhead
10	Remote Arc Starter
11	RAS Output Bulkhead
12	Pilot Arc Cable
13	Power/Gas Hose
14	Torch Lead Bundle Shield Ground
15	PT-20 AMX Plasmarc Torch
16	Work Cable Clamp
17	Work Piece
18	Earth Ground
19	ATAS Start/Stop CSR
20	CSR Cable
21	Height Control Cable (Voltage Divider)
22	Voltage Divider (Height Control)

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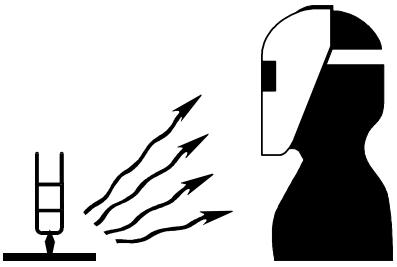
4.1 PCM-875A Console Operation -- General

⚠ WARNING

Electric Shock Can Kill!

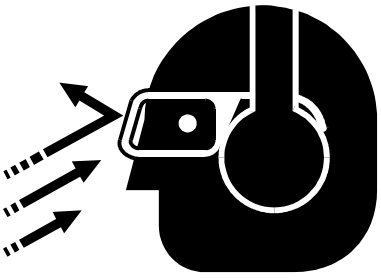
- **Do not operate the console with the cover removed.**
- **Do not apply power to the unit while holding or carrying the console.**
- **Do not touch the torch while console power switch is on.**

⚠ WARNING



- **Plasma Arc Emits Hazardous UV and Visible Radiation.**
- **Damage to skin and eyes is possible.**
- **Do not ever look directly at a plasma arc. Blindness could result.**
- **Wear Safety Approved eye protection.**
- **Comply to all local and national regulations for safety equipment.**

⚠ WARNING



Noise Levels May Exceed Safe Limits.

Sparks and Slag May Be Hazardous.

- **Wear Safety Approved Hearing Protection.**
- **Wear Safety Approved Eye Protection.**

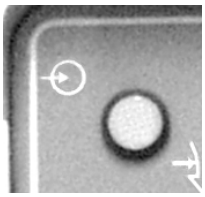
CAUTION

Possible Damage to Console from Sparks and Slag.

Position PCM-875A at least 3 meters form the Cutting Area.

4.2 PCM-875A Plasma Console Controls

Power Switch



White Pilot Light

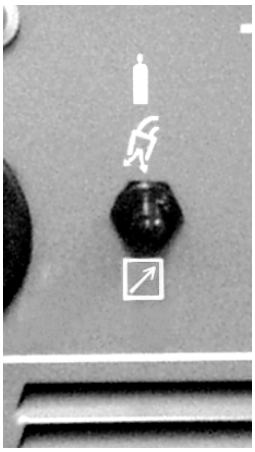
Power Switch -- Rear Panel

- Located on the rear panel.
- On Position – Front panel green pilot light will glow indication control circuit is energized and cooling fan will run.
- Off Position – No Power to the control circuit.

Current Output Control

Output Current Control – Front Panel

- Adjustable from 10 to 60 Amperes



Air Test Switch

Air Test Switch – Front Panel

- Test Position

Air filter-regulator can be adjusted to desired pressure 4,6 to 5,3 kgf/cm^2 (65 to 75 PSI). Allow a few minutes for air to flow to remove an accumulated condensation.

- Operate Position

Place the toggle switch in this position for normal operation.

Fault Light

Fault Light – Operations are stopped.

Will illuminate amber under the following conditions:

- Light mostly ON but will blink off 1/10 of a second every second. Indicates airflow is low.
- Light is mostly Off but will blink on for 1/10 of a second every second. Indicates over temperature and duty cycle has been exceeded. Allow power console to cool before returning to operation.
- Light will blink off and on 5 times a second. Indicates the input voltage is outside the plus or minus 15% range of input rating.
- Light will be on continuously. Indicates input current has been exceeded. Over Current.

NOTICE	**All fault lights will remain on for a minimum of 10 seconds. If fault is resolved, all will reset automatically except for over current. To clear over current, power must be shut off for 5 seconds and turned back on.**

4.3 RAS Operation

The RAS is a self-contained unit and requires no operator intervention to function.

4.4 PT-20AMX Plasma Torch.

⚠ WARNING

Electric Shock Can Kill!

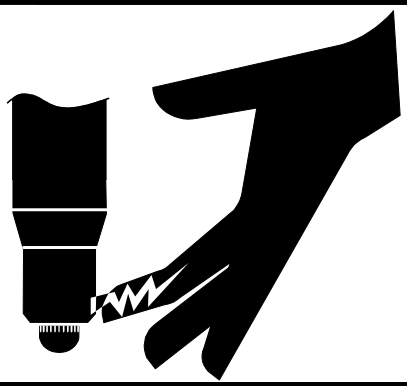
Plasma incorporates high voltages at dangerous amperage.

Do not touch the;

- **Plasma torch**
- **Torch lead**
- **RAS**
- **RAS supply lines**
- **Console**

while power is applied to console.

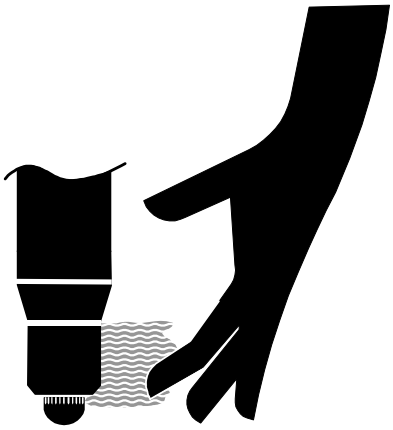
⚠ WARNING



Electric shock Can Kill!

Do not service torch or otherwise touch the plasma torch unless the power source has been disconnected or turned off.

⚠ CAUTION



Hot Torch May Burn Skin.

Allow torch to cool before servicing.

4.5 Cut Quality

4.5.1 Introduction

Causes affecting cut quality are interdependent. Changing one variable affects all others. Determining a solution may be difficult. The following guide offers possible solutions to undesirable cutting results. To begin select the most prominent condition:

- 4.5.2 Cut angle, negative or positive
- 4.5.3 Cut not flat, rounded or undercut
- 4.5.4 Surface roughness
- 4.5.5 Dross
- 4.5.6 Dimensional Accuracy
- Process Data

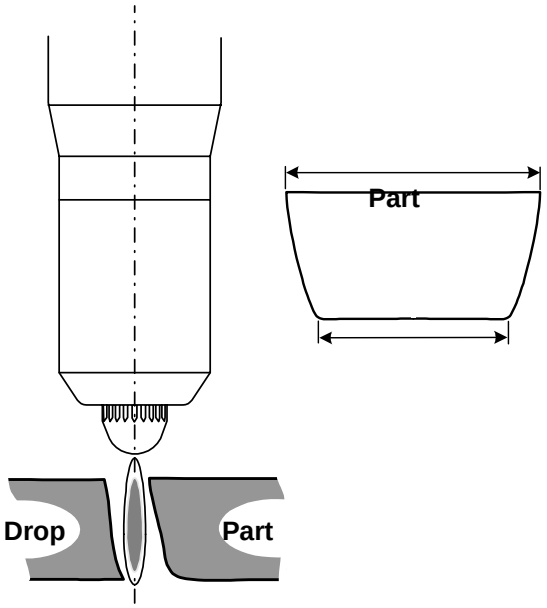
Usually the recommended cutting parameters will give optimal cut quality. Occasionally conditions may vary and slight adjustments will be required. If so:

- **Make small incremental adjustments when making corrections.**
- **Adjust arc voltage in one volt increments, up or down as required.**

Adjust cutting speed 5% or less as required, until conditions improve.

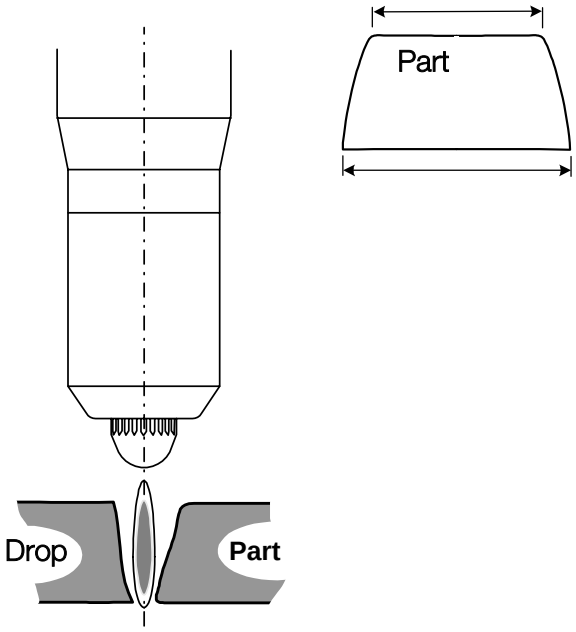
NOTICE	**Before attempting ANY corrections, check cutting variables with the factory recommended settings/consumable part numbers listed in Process Data.**

4.5.2 Cut Angle



Negative Cut Angle
Top dimension is greater than the bottom.

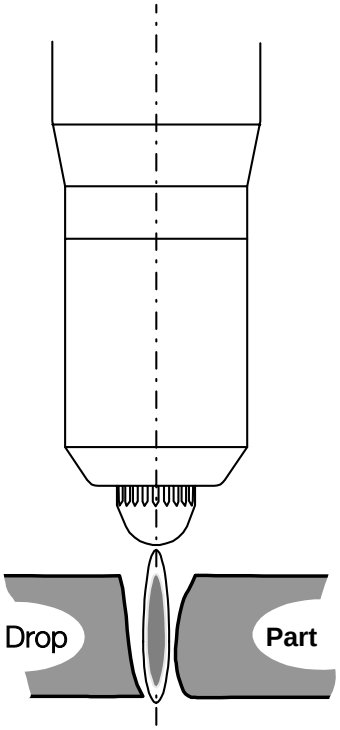
- Misaligned torch
- Bent or warped material
- Worn or damaged consumables
- Standoff low (arc voltage)
- Cutting speed slow (machine travel rate)



Positive Cut Angle
Top dimension is less than the bottom dimension.

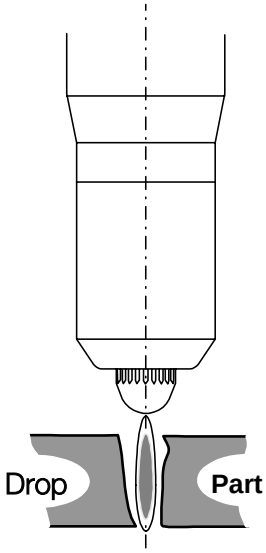
- Misaligned torch
- Bent or warped material
- Worn or damaged consumables
- High standoff high (arc voltage)
- Cutting speed fast
- Current high or low. (See process data for recommended current level for specific nozzles).
- Wrong secondary gas flow.

4.5.3 Cut Flatness



Top And Bottom Rounded
Condition usually occurs when material is 0.25" thick (6,4mm) or less.

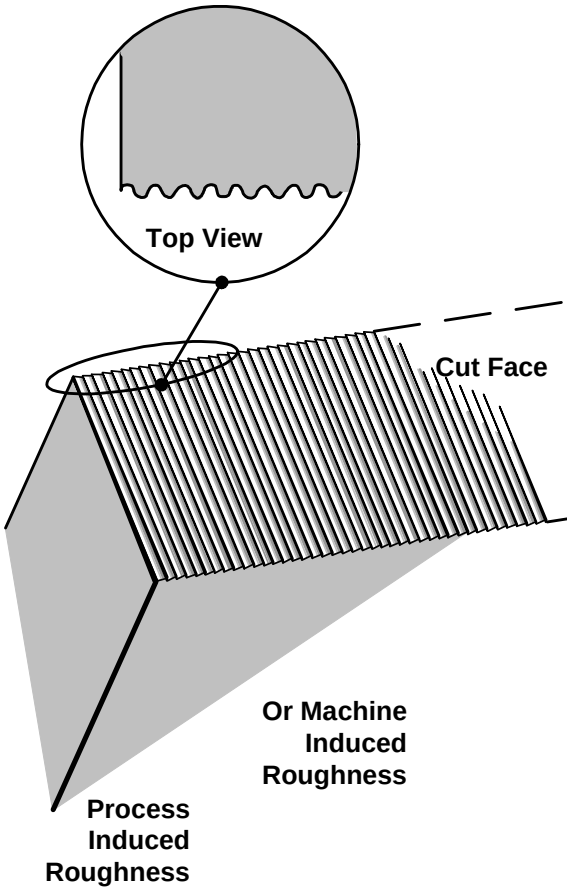
- High current for given material thickness (See process data for proper settings).



Top Edge Undercut

Standoff low (arc voltage)

4.5.4 Surface Finish



Process Induced Roughness
Cut face is consistently rough and may be confined to one axis.

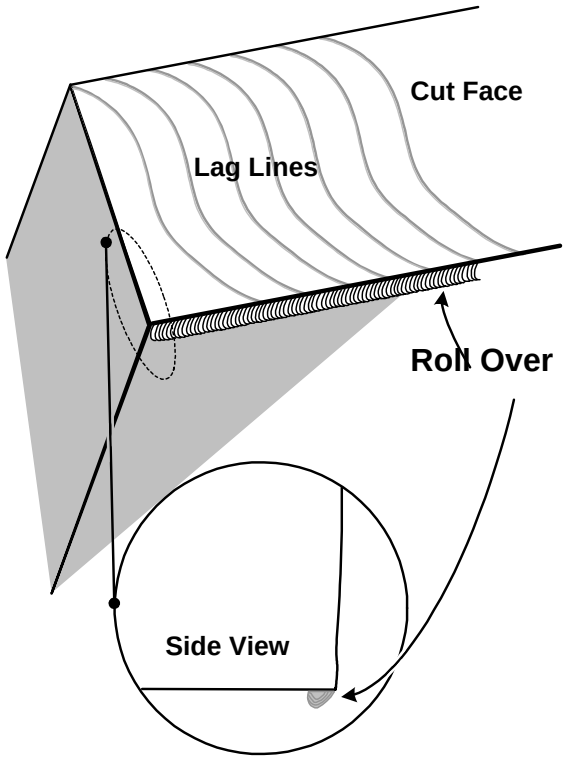
- Worn or damaged consumables

Machine Induced Roughness
Can be difficult to distinguish from process induced roughness and is often confined to one axis. Roughness is inconsistent.

- Dirty rails, wheels and/or drive rack/pinion. (Refer to maintenance section in machine owner's manual).
- Carriage wheel adjustment

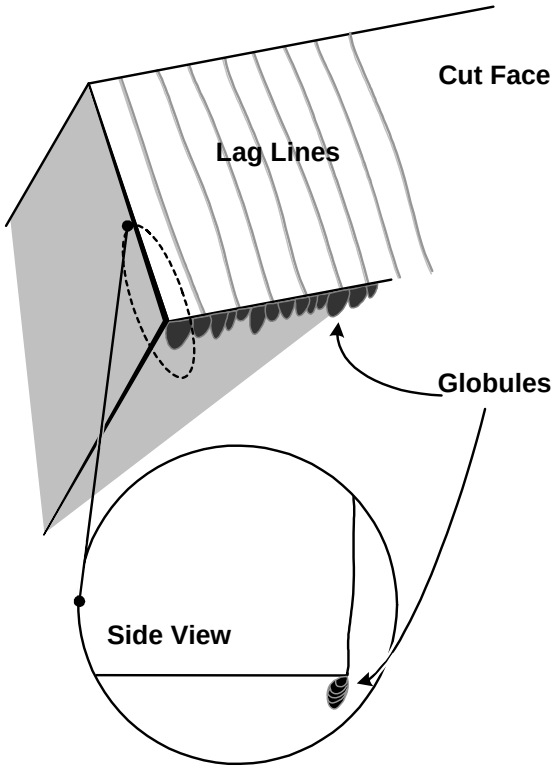
4.5.5 Dross

Dross is a by-product of the cutting process. It is the undesirable material that remains attached to the part. In most cases, dross can be reduced or eliminated with proper torch and cutting parameter setup. Refer to Process Data.



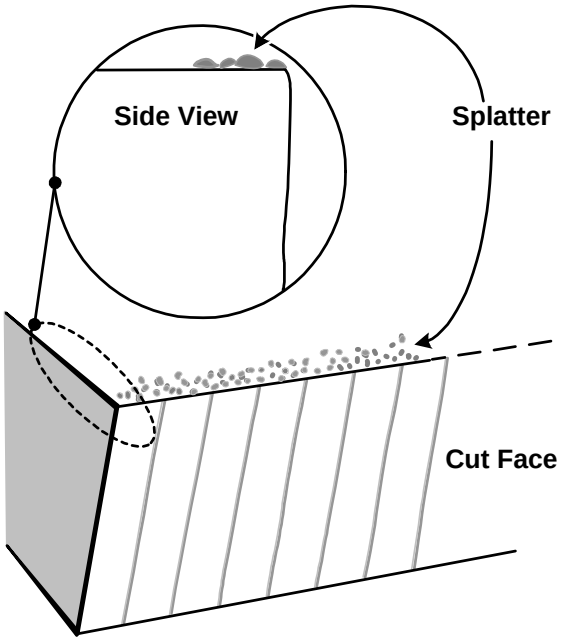
High Speed Dross
Material weld or rollover on bottom surface along kerf. Difficult to remove. May require grinding or chipping. "S" shaped lag lines.

- Standoff high (arc voltage)
- Cutting speed fast



Slow Speed Dross
Forms as globules on bottom along kerf. Removes easily.

- Cutting speed slow



Top Dross
Appears as splatter on top of material. Usually removes easily.

- Cutting speed fast
- Standoff high (arc voltage).

Intermittent Dross
Appears on top or bottom along kerf.
Non-continuous. Can appear as any kind of dross

- Possible worn consumables

Other Factors Affecting Dross:

- Material temperature
- Heavy mill scale or rust
- High carbon alloys
- Gas Purity

4.5.6 Dimensional Accuracy

Generally, using the slowest possible speed (within approved levels) will optimize part accuracy. Most material thickness overlap for different voltages. Select consumables to allow a lower arc voltage and slower cutting speed.

4.6 Process Data

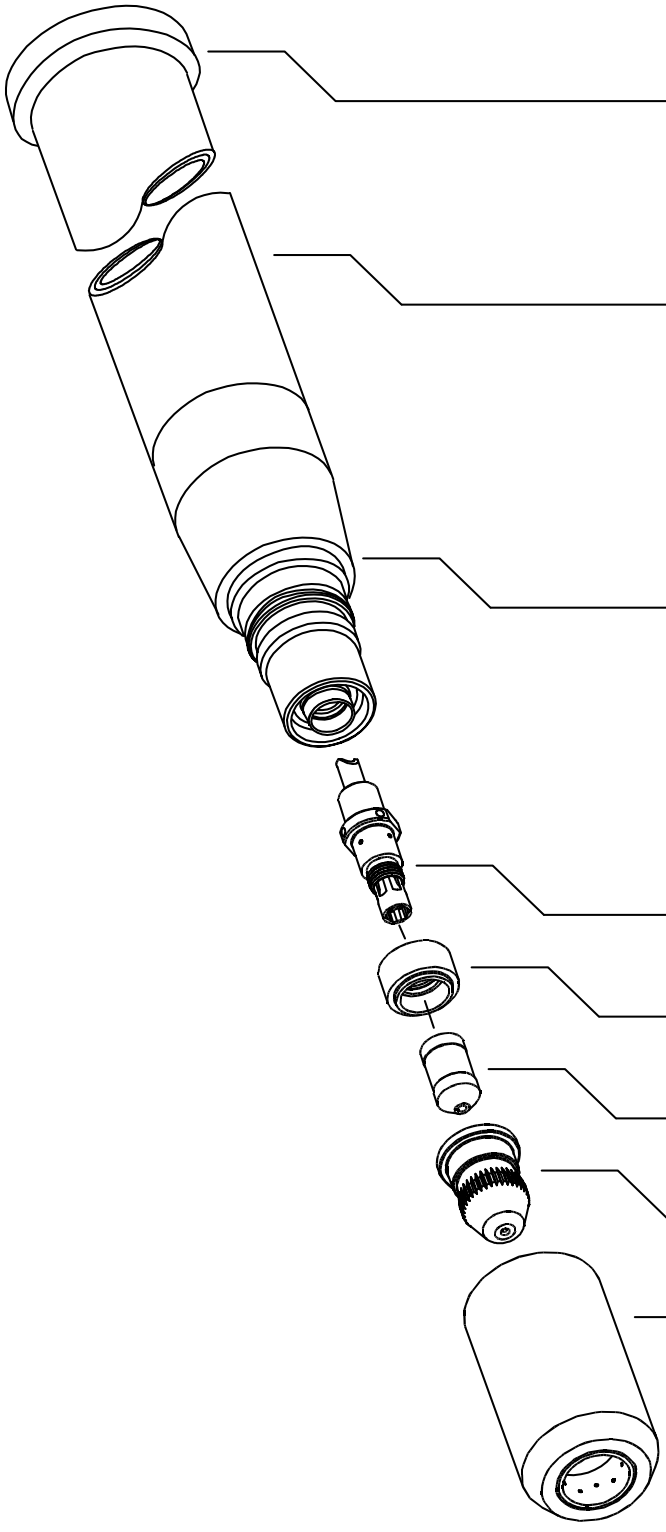
NOTICE

Recommended cutting speed and arc voltage will give optimal cutting performance.

Small incremental adjustments may be needed due to material quality, material temperature and specific alloy. The operator should remember that all cutting variables are interdependent. Changing one setting affects all others and cut quality could deteriorate. Always start at the recommended settings.
Before attempting ANY corrections, check cutting variables with the factory recommended settings/ consumable part numbers listed in the process data.

PT-20AMX
Plasmarc Torch

Material: Mild Steel
Amperes: 40
Gas: Air



Lock Ring	P/N 57N70
Handle with Sleeve	P/N 05508003419
Torch Body	P/N 21359
Electrode Holder Assembly	P/N 21332
Electrode Insulator	P/N 21373
Electrode 50Hz	P/N 0558001617
Nozzle 50A	P/N 21330
Heat Shield – Blue	P/N 21326

Note: Heat shield rated at 70 to 100A is used for this application

PT-20AMX 40 Amperes

Process Data Mild Steel

Material Thickness

mm	2,0	3,0

Air Pressure

Bar	5	5

Height Readings

Initial Height mm	3,0	3,0
Arc Voltage (Stand-off)	110	110

Travel Speed

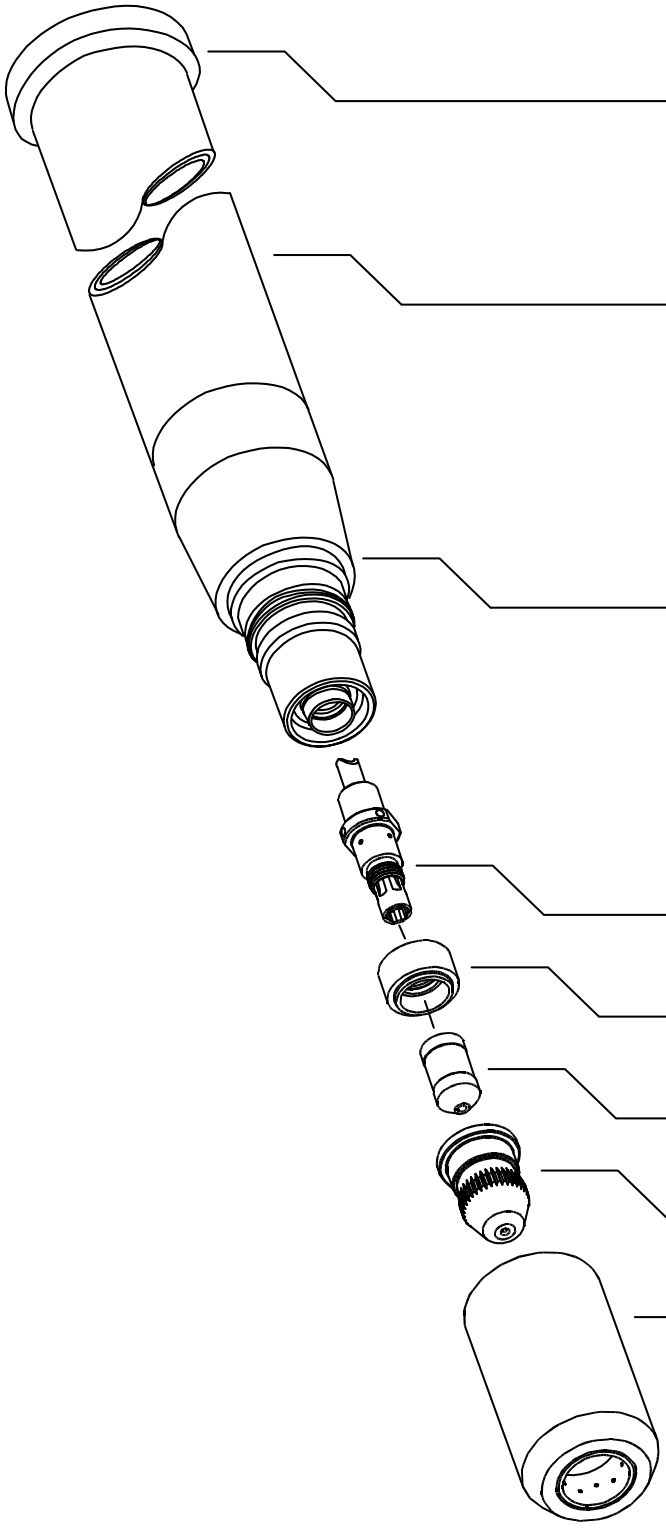
mm per minute	3810	2540

Kerf Width

Millimeters	1,1	1,1

PT-20AMX
Plasmarc Torch

Material: Mild Steel
Amperes: 50
Gas: Air



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Electrode Insulator	P/N 21373
Electrode 50Hz	P/N 0558001617
Nozzle 50A	P/N 21330
Heat Shield – Blue	P/N 21326

Note: Heat shield rated at 70 to 100A is used for this application

PT-20AMX 50 Amperes

Process Data Mild Steel

Material Thickness

mm	5,0	6,0	10,0	13,0

Air Pressure

Bar	6,0	6,0	6,0	6,0

Height Readings

Initial Height mm	3,0	5,0	6,0	8,0
Arc Voltage (Stand-off)	110	120	130	150

Travel Speed

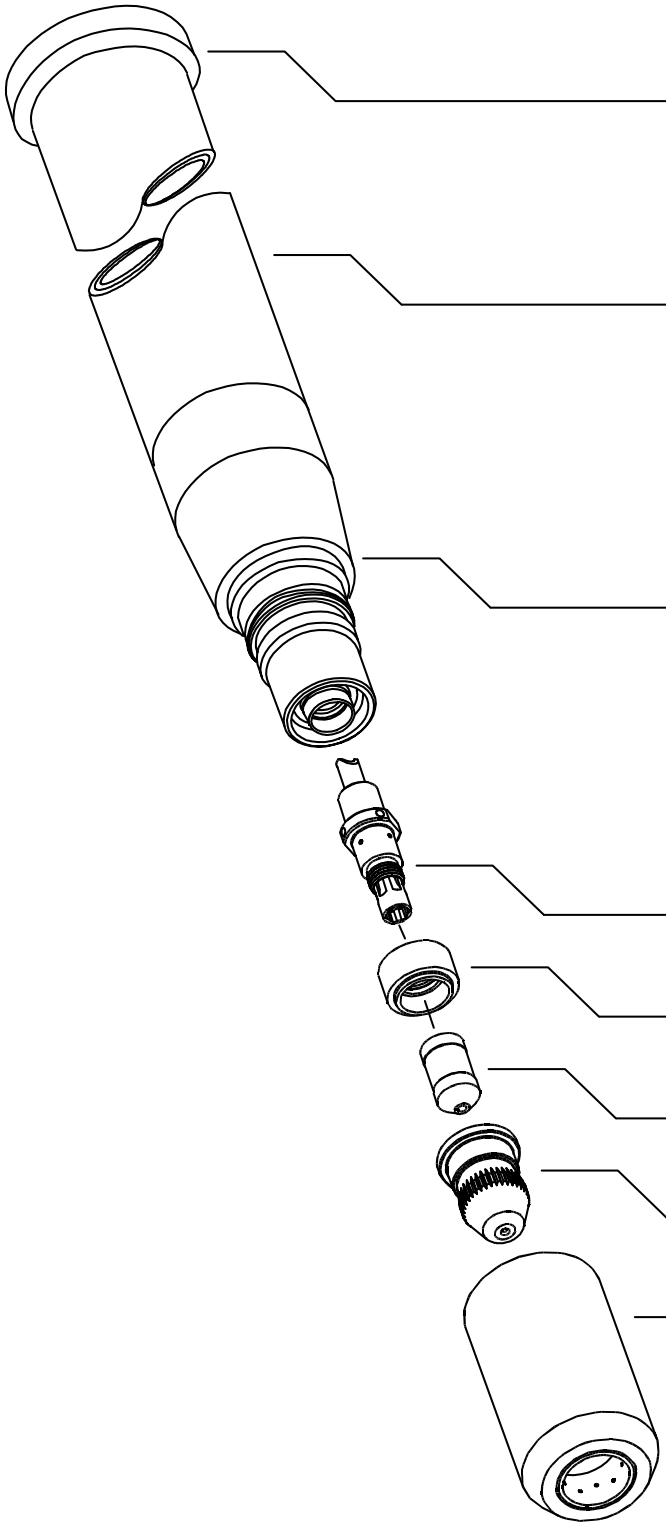
mm per minute	2540	1651	1016	457

Kerf Width

Millimeters	1,6	1,9	3,2	4,0

PT-20AMX
Plasmarc Torch

Material: Aluminum
Amperes: 40
Gas: Air



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Electrode Holder Assembly	P/N 21332
Electrode Insulator	P/N 21373
Electrode 50Hz	P/N 0558001617
Nozzle 50A	P/N 21330
Heat Shield – Blue	P/N 21326

Note: Heat shield rated at 70 to 100A is used for this application

PT-20AMX 40 Amperes

Process Data Aluminum

Material Thickness

mm	2,0	3,0

Air Pressure

Bar	5	5

Height Readings

Initial Height mm	3,0	3,0
Arc Voltage (Stand-off)	110	110

Travel Speed

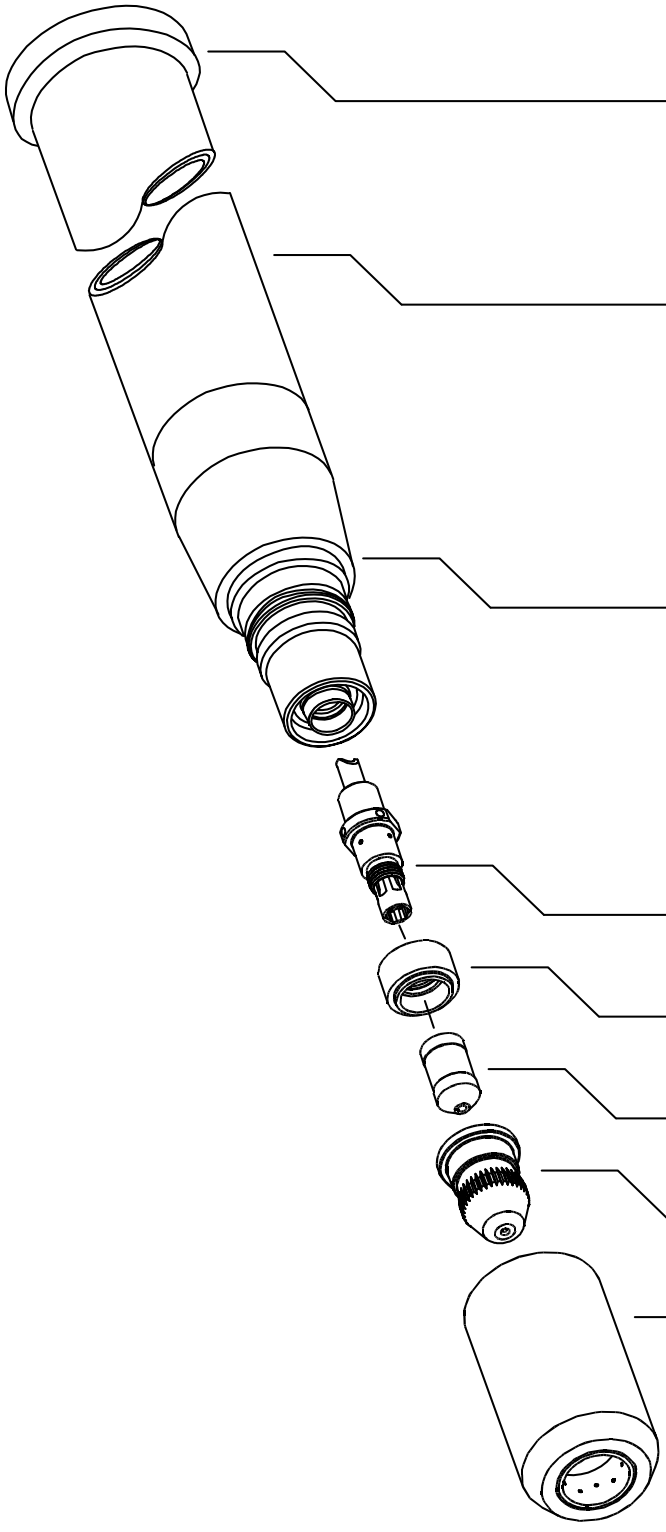
mm per minute	3810	2667

Kerf Width

Millimeters	1,57	1,57

PT-20AMX
Plasmarc Torch

Material: Aluminum
Amperes: 50
Gas: Air



Lock Ring	P/N 57N70
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Torch Body	P/N 21359
Electrode Holder Assembly	P/N 21332
Electrode Insulator	P/N 21373
Electrode 50Hz	P/N 0558001617
Nozzle 50A	P/N 21330
Heat Shield – Blue	P/N 21326

Note: Heat shield rated at 70 to 100A is used for this application

PT-20AMX 50 Amperes

Process Data Aluminum

Material Thickness

mm	5,0	6,0	10,0	13,0

Air Pressure

Bar	6,0	6,0	6,0	6,0

Height Readings

Initial Height mm	3,0	5,0	6,0	8,0
Arc Voltage (Stand-off)	110	120	130	150

Travel Speed

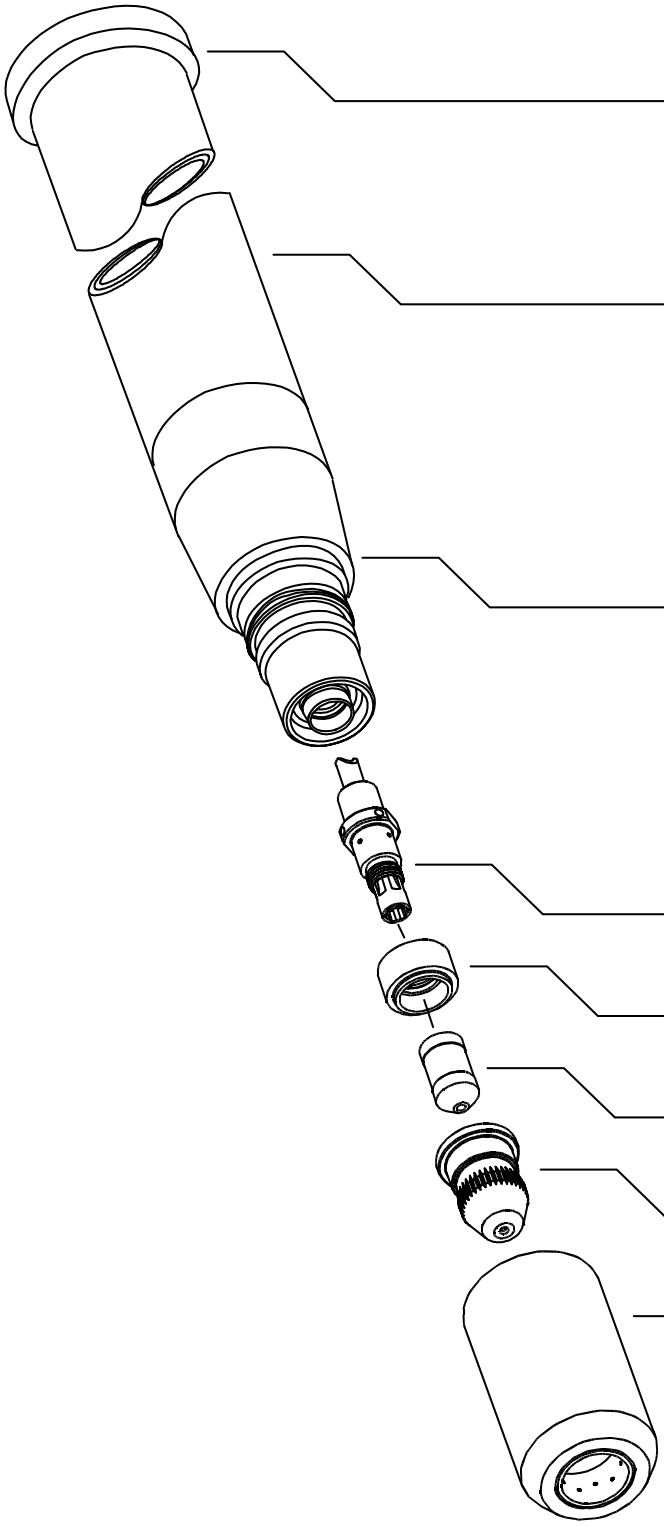
mm per minute	2286	1905	762	203

Kerf Width

Millimeters	Not Available	3,2	4,7	4,7

PT-20AMX
Plasmarc Torch

Material: Stainless Steel
Amperes: 40
Gas: Air



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Nozzle 50A	P/N 21330
Heat Shield – Blue	P/N 21326

Note: Heat shield rated at 70 to 100A is used for this application

PT-20AMX 40 Amperes

Process Data Stainless Steel

Material Thickness

mm	2,0	3,0

Air Pressure

Bar	5	5

Height Readings

Initial Height mm	3,0	3,0
Arc Voltage (Stand-off)	110	110

Travel Speed

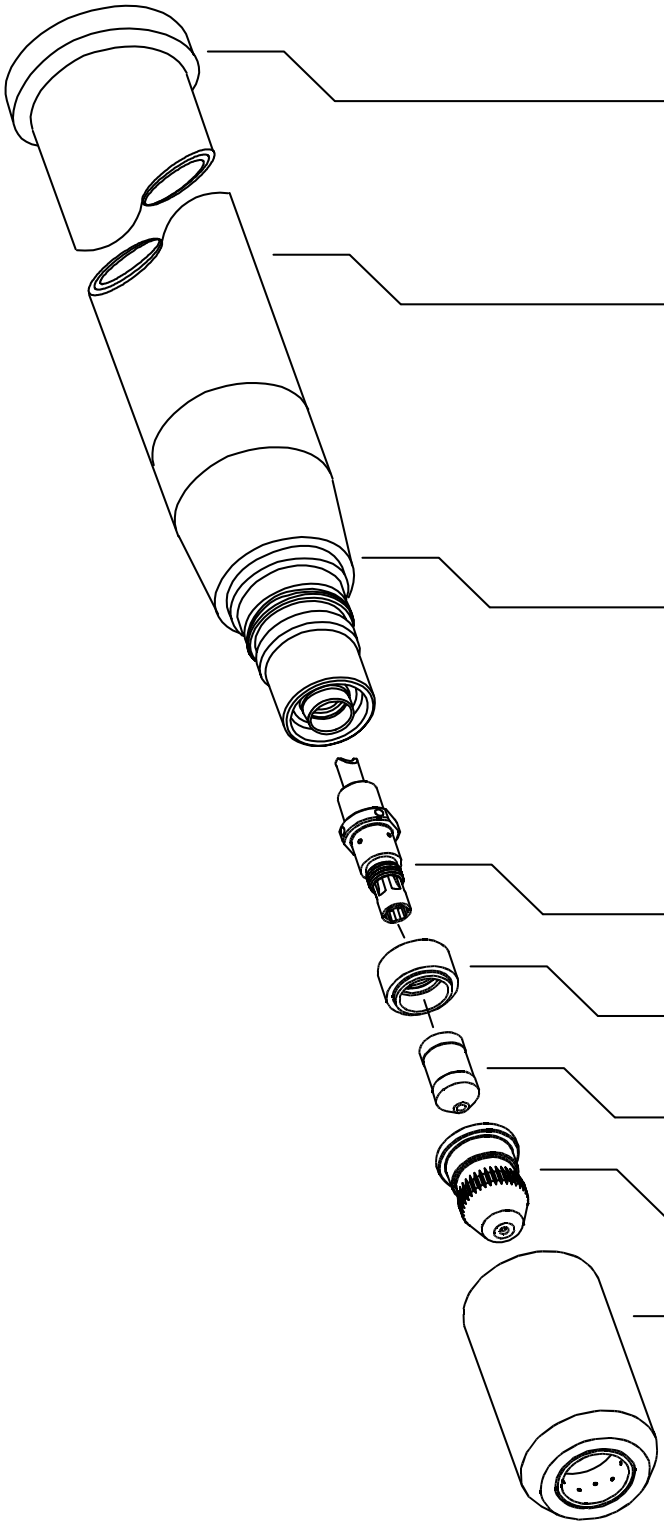
mm per minute	3302	1905

Kerf Width

Millimeters	Not Available	1,6

PT-20AMX
Plasmarc Torch

Material: Stainless Steel
Amperes: 50
Gas: Air



Lock Ring	P/N 57N70
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Electrode 50Hz	P/N 0558001617
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Heat Shield – Blue	P/N 21326

Note: Heat shield rated at 70 to 100A is used for this application

PT-20AMX 50 Amperes

Process Data Stainless Steel

Material Thickness

mm	5,0	6,0	10,0	13,0

Air Pressure

Bar	6,0	6,0	6,0	6,0

Height Readings

Initial Height mm	3,0	5,0	6,0	8,0
Arc Voltage (Stand-off)	110	120	130	150

Travel Speed

mm per minute	1270	762	203	152

Kerf Width

Millimeters	Not available	3,2	4,7	4,7

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5.1 PCM-875A Console

5.1.1 General

⚠ CAUTION

Stop work immediately if this equipment does not operate properly. Equipment damage or personal injury may result.

⚠ CAUTION

Do not permit untrained persons to inspect, clean, or repair this equipment. Maintenance must be performed by specially trained personnel.

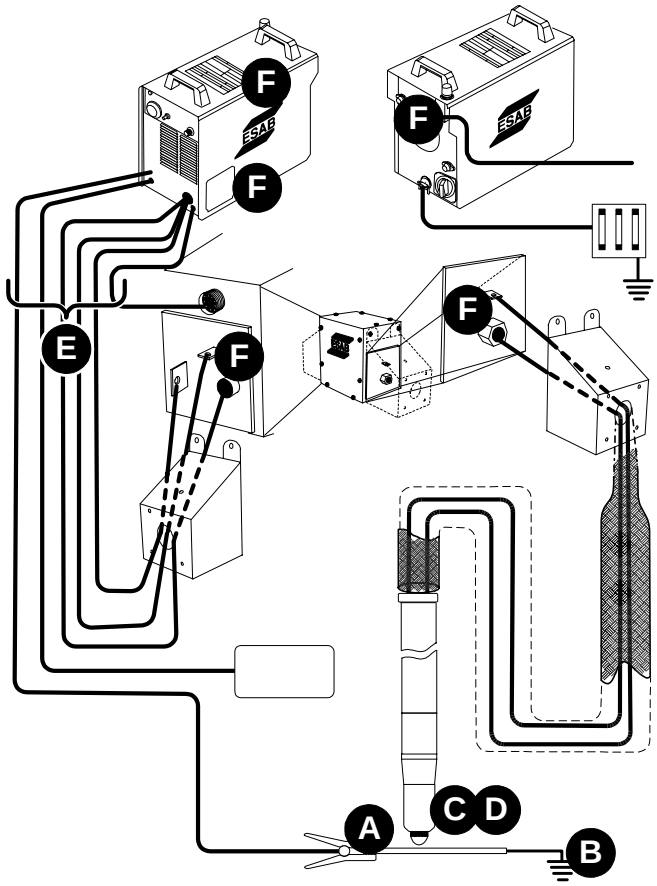
NOTICE

Use of replacement parts other than ESAB replacement parts may void warranty.

⚠ WARNING

Electric Shock Can Kill!
Disconnect wall switch before inspection and maintenance of the power console.

5.1.2 Inspection and Cleaning



Frequent inspection and cleaning of the PCM 875A system is recommended for safe and proper operation.

A. Check work cable for secure connection to workpiece.

B. Check safety earth ground at workpiece and at power console chassis.

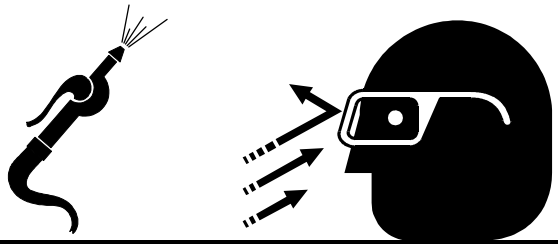
C. Check heat torch heat shield. Replace if damaged.

D. Check torch electrode and cutting nozzle for wear at least once per 8 hours operation.

E. Ensure cable and hoses are not damaged or kinked.

F. Ensure all plugs, fittings and ground connections are tight.

⚠ WARNING



Wear safety eye protection when using compressed air.
Serious eye injury may result.

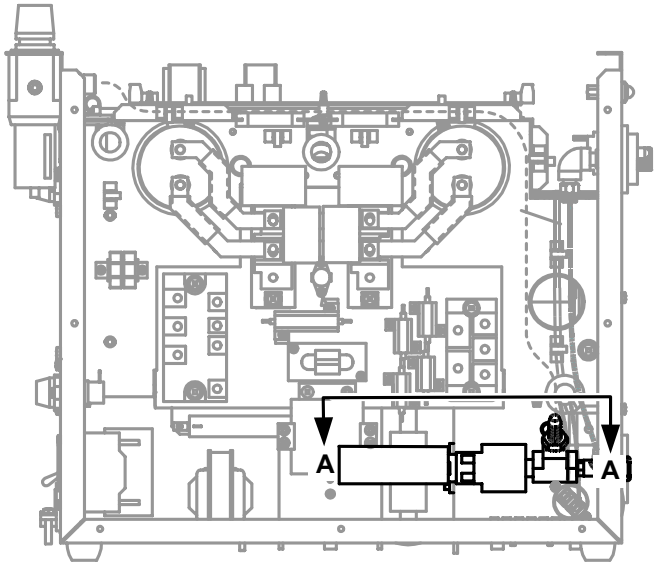
CAUTION

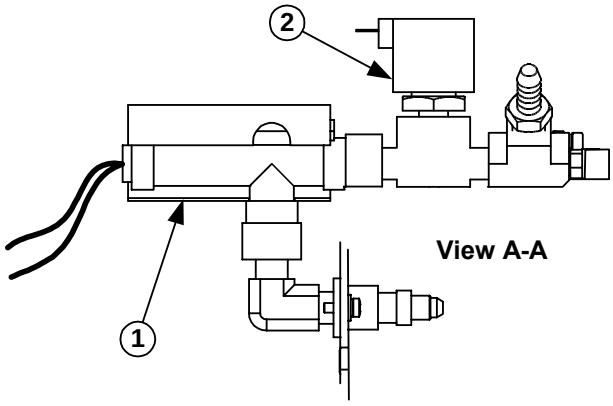
Water and oil may accumulate in compressed air lines. Direct the first air blast away from equipment to avoid possible damage.

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

H. Periodically drain water from the filter beneath the air-filter regulator.

5.1.3 Flow Switch



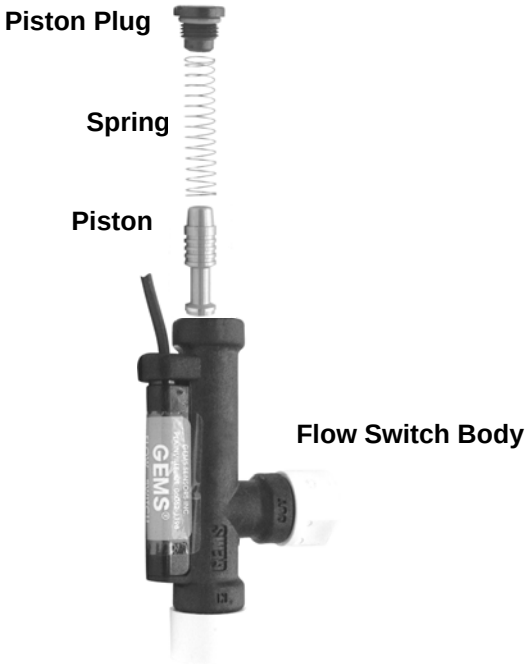


The Flow Switch (P/N 951202) may need to be cleaned if excessive contamination is found in the air supply.

① **Flow Switch Location**

② **Solenoid Location**

Note: The flow switch can be disassembled and cleaned without extraction from the power supply.



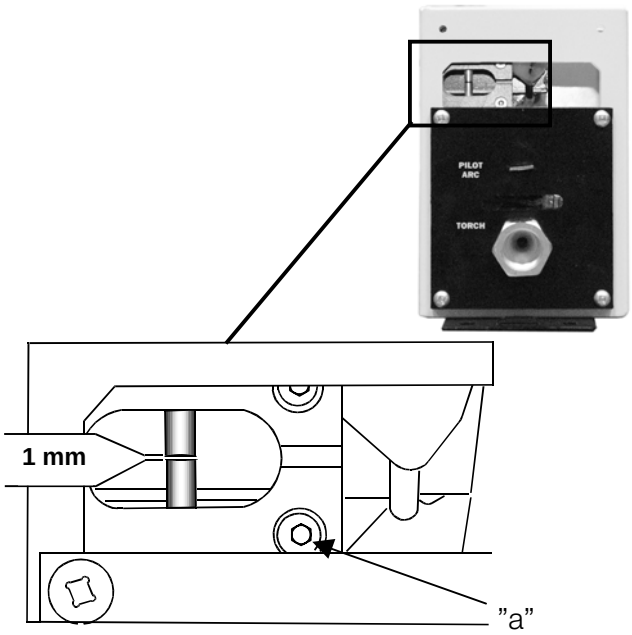
1) Turn Off power supply
2) Remove piston plug
3) Remove the spring. Use care when handling spring to prevent distortion.
4) Remove the piston.
5) Clean all parts with warm water and a mild detergent. Allow parts to dry thoroughly before reassembly.
6) Reassemble switch in reverse order.

5.2. Remote Arc Starter

5.2.1 General

Check input and output bulkhead connections for tightness.

5.2.2 Spark Gap



Factory set to 1mm.

Adjustment procedure:

1. Loosen screw "a" using a 1/8" (0.125") internal hex wrench.
2. Insert 1mm feeler gage between the tungsten electrodes.
3. Slide electrodes till slight pressure is felt on the gage.
4. Tighten locking screws on spark gap assembly.

5.3 PT-20AMX Plasmarc Torch

⚠ WARNING

Before any maintenance is attempted on this torch, make sure the POWER SWITCH on the console is in the OFF position and the PRIMARY INPUT POWER is DE-ENERGIZED.

5.3.1 General

1. Periodically check heat shield, electrode holder assembly, electrode nozzle seat, and electrode insulator. Replace if worn or damaged.

2. Apply a thin film of lubricant 17672 (supplied in spare parts kit) to O-ring. Check O-ring for damage whenever shield is removed. Replace if necessary.

3. Power and pilot arc cables should be inspected periodically. If cuts through protective sheath or if gas leaks are noted, replace damaged component.

5.3.2 Dirt or Contamination

Dirt or other contamination in the torch and loose consumable parts can cause premature failure of the PT-20AM Torch through internal arcing. To avoid this, users are instructed to do the following:

1. Ensure that clean, dry, or oil-free air is being used.
2. Avoid excessive use of the silicone o-ring grease used to lubricate the torch o-ring. A thin film is sufficient.
3. Wipe the torch body insulator clean with a cloth before installing each fresh set of consumables. The ability of the insulator to resist arc tracking over its surface is reduced when dirt or other contamination is allowed to collect there.

5.3.3 Loose Consumables

Tests have shown that with proper use of the torch within rated operating conditions (especially arc current and gas flow rate), the torch consumable parts do not become loose if they are firmly installed in the first place.

1. Tighten heat shield fully at each consumable change or inspection. “Fully” means at least 5 mm of rotation after electrode seat contacts electrode holder.

NOTE: trying to rotate the portion of the nozzle extending outside heat shield can check consumable tightness.

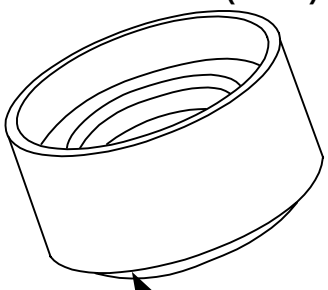
2. Check consumable tightness at beginning of each work shift, even if everything was working normally at the end of the previous shift.
3. Ensure that the torch electrode seat and electrode holder are clean and free of dust or dirt Debris may prevent mating surfaces from having solid contact.

CAUTION

The torch requires good electrical contact between the electrode seat and electrode holder. If good contact is not maintained, then the resulting potential difference causes internal arcing and possible torch damage.

5.3.4 Damage Caused by Loose Parts and Torch Overheating.

Electrode Insulator (21373)



Deformation at this edge indicates torch overheating. Check gas pressure, gas flow rate and current setting. Deformation leads to loose parts and internal arcing. Do not operate torch with a deformed insulator.

Arc tracking indicates loose parts. Make sure heat shield is tightened fully, at least 5mm of rotation after electrode seat contacts electrode holder. Check tightness again after a few minutes of use. Parts damaged by arcing will cause destruction of torch. Parts damaged by arcing must be replaced.

5.3.5 Consumables- Remove and Replace

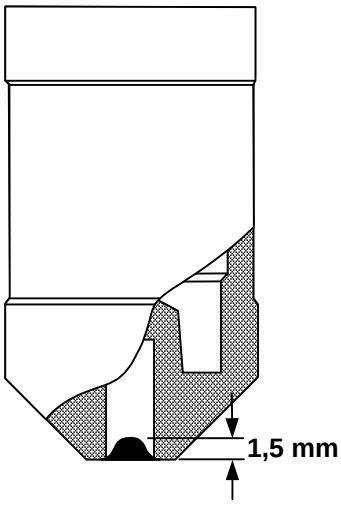
1. Bring torch to a position where it is easily accessed by machine operator, in its normal vertical position and at least 6 inches above the workpiece or the edge of the water table.

⚠ WARNING

Make sure that the power source has been turned off and that the power cable has been unplugged at the wall receptacle before proceeding.

2. Unscrew the heat shield and lower it away from the torch, allowing nozzle and electrode assembly to remain with shield.

3. Remove the nozzle and electrode assembly from the shield and inspect for wear. The nozzle orifice should be round at both the entrance and the exit. If the nozzle orifice is worn in an oval shape or shows other signs of damage at either end, it should be replaced. The inside of the nozzle may have light gray deposits from the electrode. These may be removed with steel wool but care must be taken to remove all traces of the steel wool afterward.



If the electrode has a pit that is more than 1.5mm deep at its center, replace it. Grasp the electrode holder with the fingers using the two flats and grasp the electrode between the thumb and finger of the other hand and twist.

Inspect electrode insulator and electrode holder assembly for signs of damage such as arc tracking or cracking and replace them if any are found. Insure that the baffle tube is securely threaded into the electrode holder, but do not over tighten. Use the small hex end of the plastic wrench in the spare parts kit.

After installing the electrode insulator onto the electrode holder assembly, install electrode by reversing the procedure used to remove it. Note that firm tightening of the electrode by hand is sufficient. The use of tools such as wrenches or pliers is not required or recommended.

4. Inspect heat shield for signs of damage or wear. The gas holes inside shield should not be blocked by debris, and there should be no signs of arcing anywhere inside the shield. The outer insulating jacket of the shield should not be severely charred or eroded. Replace the heat shield if any of the above damage is found.

.

5. Inspect the o-ring on the torch. If it shows signs of wear or damage, replace it. If it is dry, lubricate it with a thin film of lubricant supplied with spare parts kit

6. Install the nozzle and the electrode assembly into heat shield and thread heat shield onto torch. The shield should be tightened fully to insure good electrical contact for electrode and nozzle. "Fully" means at least 3/16 inch of rotation after electrode seat contacts electrode holder.

5.3.6 Measuring Torch Gas Flows

Flow Measuring Kit -- P/N 19765

Check gas flow if suspected of causing poor cutting performance. Use Plasma Torch Flow Measuring Kit. (P/N 19765)The kit includes a hand held rotameter (flowmeter) that indicates the gas flow rate exiting the torch. The kit also includes a set of instructions that should be followed exactly to insure safe and accurate use of the rotameter.

Total air flow rate in the PT-20AMX should be 325cfh minimum with any nozzle at 75 psi.

5.3.7 Removal and Replacement of the Torch Body

⚠ WARNING

Make sure that the power source has been turned off and that the power cable has been unplugged at the wall receptacle before proceeding.

PT-20AMX Torch

1. Cut and remove the shrink wrap at the back end of the torch handle. Unscrew the handle from the torch body and slide it back onto the torch cable assembly in order to expose the torch connections.

2. Remove the electrical tape that secures the short piece of vinyl tubing on the pilot arc cable. Slide the tubing away from the torch and onto the pilot arc cable to expose the pilot arc connector.

3. Use the 1/16" Allen Wrench supplied in the spare parts kit to loosen the pilot arc connector set screw closest to the torch body, being careful not to totally remove the screw. Slip the torch's pilot arc lead out of the connector.

4. Unscrew the power cable fitting from the torch's power lead using a 7/16" open-end wrench and remove the torch body.

5. Connect the pilot arc cable and the power cable to the new torch body's pilot arc lead and power lead by reversing the steps taken to disconnect them. Tighten the pilot arc connector set screw fitting firmly but do not overtighten. Torque the power fitting to 20 lb. in.

6. Slide the vinyl tubing forward to cover the pilot arc connector and secure in place with electrical tape.

7. Slide the handle forward and thread it firmly onto the torch body.

8. Slide the new piece of shrink tube over the torch handle and shrink in place over the handle's end and the cable sheath.

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6.1 Troubleshooting PCM-875A Plasmarc System

⚠ WARNING

Electric Shock Can Kill!

Ensure that all primary power to the machine has been externally disconnected.

Open the line disconnect switch or circuit breaker before inspection, maintenance or repair inside power console.

Match the problem with the conditions below.

If problem is not listed,

- shut off input power,
- open unit by removing cover
- Visual inspection of all components and wiring
- Check for loose terminal connections
- Burned wiring or other components
- Bulged or leaking capacitors
- Any other signs of damage or discoloration.

6.2 Troubleshooting guide for PCM-875A Plasmarc System

6.2.1 Power Light (PL1) does not come on

- Visually inspect the machine for damage.
- Check if the cooling fan is running. If not running, check the following:
  - Check if machine input power is still connected.
  - Measure input power at the receptacle. If not present, then check the wall disconnect switch and it's fuses.
  - Check fuse (F1). If it is:
  - Check input circuit breaker (CB1).
  - If cooling fan is running, measure voltage between pins P2-11 and P2-14 of control board (should be 115VAC). If no voltage, replace transformer T2.
  - If voltage is present, power light may be burned out.

The problem is internal if above items are ok. Send unit to Authorized Repair Station.

6.2.2 No air flow

- Check air inlet supply. Unit requires 9,2 ^{3}m/h at 4,48 bar.
- Check air hose and connections. Tighten if leaking.
- Does air flow when "Air Test" switch is in test position?
  - If not, check torch consumables, replace if necessary.

If above items are OK, the problem is internal. Return to authorized repair station for service.

6.2.3 The Power light is on, but nothing happens when the torch is signaled to fire. Fault light does not activate.

NOTE: Unplug high frequency connection before attempting to work on this problem.

- Check the Pilot Arc fuse (F2) located on the rear panel. An open fuse will indicate a short in the torch. If the fuse is all right, then check the following:
  - With the machine power on, depress the torch switch. On the control board the LED 1 should be lit as long as the switch is depressed. If not then check:
  - Turn power off to the machine. Unplug Control board. Put an ohmmeter across P5-1 and P5-2 to take resistance reading. Depress torch switch. Meter should read a short. If not, then one of the following is not working properly:
  - Torch switch or the leads. Unplug the torch switch leads at the machine. Put a meter across the two plug pins. Should read a short when the torch switch is depressed. If not, then either broken switch leads or malfunctioning switch.
  - Check T2 transformer secondary voltages at the plugs P1 and P2. Refer to system schematic. Replace the transformer if the correct secondary voltages are not present.

If everything above checks out all right, then the PCB1 Control Board should be replaced.

6.2.4 Fault light activates when torch is signaled to fire

The Fault circuit is used to monitor conditions necessary for the safe operation of the PCM-875. The fault light will glow amber under the following conditions and operations will come to a complete stop:

- High/Low line voltage. The Fault Light will rapidly blink on and off (5 times per second). This indicates that the input voltage is outside the "+" or "-" 15% safe operating range rating.

- Flow fault - The fault light will be mostly on but will blink off for 1/10th of a second every second. This indicates that the air flow is low.

  - Check the air pressure at the machine regulator. It should be adjusted to 65 psig. If no air pressure, check the air at the supply point. Also, check for any obstructions in the air hose.
  - Air flow may be blocked at the torch tip. Check the torch consumables. Also check for any obstructions in the torch leads.
  - *NOTE: If above items check OK , the problem is internal. send unit to an Authorized Repair Station for repair.*
  - Put the 'Air Check' switch to On position. Air should flow through torch. If not, then the flow switch may be stuck due to oil in the air. Clean air flow switch per supplier's instructions or replace switch. To check if the flow switch is open, put voltmeter leads between P1-12 and P1-1. It should read about 12 VDC. When the flow switch closes, the voltage will drop to zero volts.
  - Air Check switch may also be malfunctioning if the air is flowing continuously or putting in the On position does not turn air on.

Fault light activates (continued)

- Over Temperature. The fault light will be mostly off but will blink on for 1/10 of a second, every second. This generally indicates that the duty cycle has been exceeded. Allow the power source to cool before returning to operate.
  - Thermal switch may be open. It will open if the temperature at the IGBT base reaches 94oC. With the machine power off, check the continuity between P1-1 and P1-2 of the control board. If the switch is OK, then the ohmmeter should read a direct short. If not then it should read open.
  - If the switch is malfunctioning, replace it. Clean the surface of the heat sink before installing the switch.
- Over Current. The fault light will be on continuously. This indicates that the input current to the main transformer has exceeded preset limits.
  - To check if the output is shorted, measure the resistance by putting the ohmmeter leads (make sure to disconnect HI Frequency leads):"+" of the meter to Torch "+" output terminal and Work "-" lead of the meter to the "-" output terminal. Reading should be about 2 K Ohms. Reverse the voltmeter leads, the resistance reading should be less than 1.5 K Ohms.

If the resistance reading is different than above, check the torch, the output bridge and Filter Board (PCB-5).

6.2.5 Air is On but nothing happens when torch is signaled to fire.

- Check pilot arc fuse located on rear panel. If it is open, nothing will happen when torch switch is depressed.
- Check torch. Make sure heat shield is very tight.
- Check to assure high frequency is present at torch. If not, then listen for high frequency at high frequency generator. It is located on bottom/right side of the unit. High frequency gap is set to .040". Disconnect HI FREQUENCY leads. Check for 115 volt supply to high frequency unit between P2-12 & P2-13 of control board with torch switch closed.
- With HI FREQUENCY leads disconnected, measure open circuit voltage. It should be 275 VDC between “Work” and “Torch” terminals. If it is not present then any one of the following may not be working properly:
  - Check the operation of the Thermal Switch. See D.3.a. above.
  - Check Air Check switch operation. It might be stuck in On position. Pilot arc will not initiate if this switch is in the ON position. (safety reasons)
  - Check air flow switch. There may be internal short. See D.2.c above.
  - Measure voltage across C1 or C2 capacitor. It should be as follows:
    - approx. 325 VDC for the 208/230 volt unit.
    - approx. 280 VDC to 325 VDC for 400 volt unit

  If not, one of following could be malfunctioning:
  - Check the capacitors C1 and C2 for any damage.
  - Check input bridge/SCR Module (IBR) This can be checked without taking it out of the circuit using an volt/ohmeter. Replace it if found malfunctioning. Follow bridge installation instructions.
  - Check Inrush current resistor, R10 and SCR1. Both are located on the input bridge heat sink. Replace it if malfunctioning.
  - IGBTs (2 on 230 V, and 1 on the 400 V units) may be blown. See IGBT installation procedure. Before replacing IGBTs, make sure to check the zener diodes and pico fuses on the IGBT driver boards.

6.2.6 High Frequency and Pilot Arc are on but Main Arc does not transfer.

- Make sure work clamp is connected to work material.
- Check the torch. Replace consumables if necessary.
- Make sure the current setting potentiometer is set above 10 amps. If it is, set below 10 amps, then HI FREQUENCY will go on and off at 5 sec intervals.

6.2.7 Poor Cutting Performance.

- Check air supply regulator . It should be adjusted to 65-75 psig.
- The air supplied to the torch should be free of oil and water.
- Make sure the consumables in the torch are acceptable.
- Check open circuit voltage.
- Check the output. Use a calibrated current probe capable of measuring 100 amps in the presence of high frequency.

6.2.8 Air does not shut off.

- Check air test, the gas solenoid valve is energized when the switch is in the “on” position.
- Does air flow stop when the torch switch is unplugged? If yes, check and repair the torch. If not, send unit to an Authorized Repair Station for repair.
- Check voltage to solenoid coil, if present when torch switch is unplugged, replace PCB1. If voltage is “0”, replace solenoid valve.

6.2.9 Main arc is difficult to start.

- The most common reason is worn or missing consumables. Check and replace if necessary.
- Input air must be clean and dry.
- Input air pressure must be between 65 - 75 psig.
- Torch connections must be tight.
- Work cable and clamp must be in good condition and must make a good electrical connection to the material to be cut.
- If above items check OK , the problem is internal. Send unit to an Authorized Repair Station for repair.
- Missing or weak pilot arc. Check pilot arc fuse, open circuit voltage, pilot arc resistors and pilot arc wiring.
- Inoperative starter board (PCB-5).
- Check Spark gap in RAS unit. 1mm is desired gap. If gap is to large, spark will be weak or non-existent.

6.3 Reference Voltage Checks

A. Control Board Assembly (PCB1)

LED's

LED-1 - Torch Switch
LED-2 - High Frequency
LED-3 - Gas Solenoid Valve

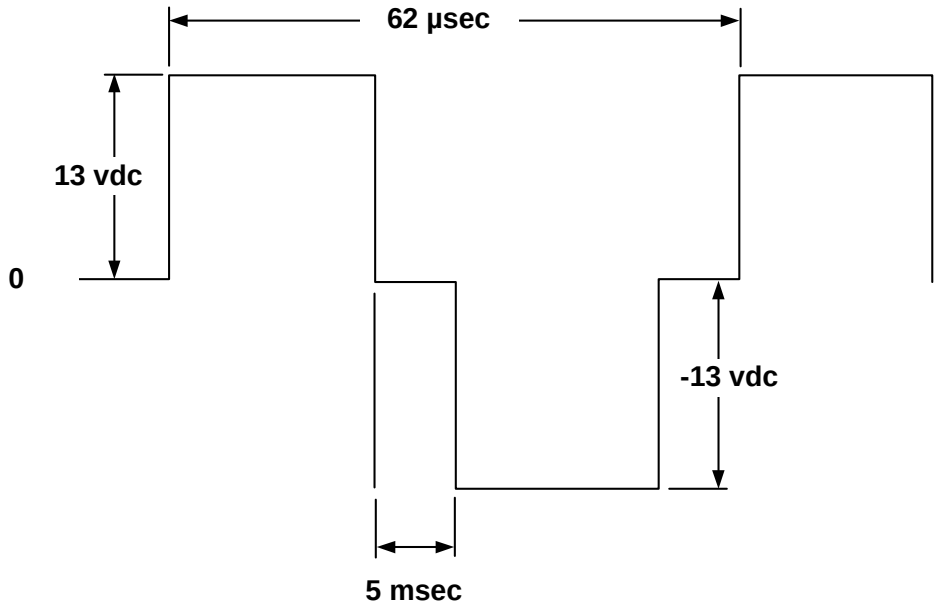
Voltage Test Points

Tests are made with power on - no arc.

Disable High Frequency by disconnecting blue wire with black sleeve

TP-0 - Ground
TP-1 - +15 vdc
TP-2 - +12 vdc
TP-3 - -12 vdc
TP-4 - +5 vdc

TP-9 - IGBT's driving signal - switching frequency = 16 KHz
TP-10 - IGBT's driving signal - switching frequency = 16 KHz



IGBT Gating Signal

For 208/230 VAC input, the IGBT off time is 3msec.
For 400/460/575 VAC input, the IGBT off time is 6msec.

6.4 PT-20AMX Torch Troubleshooting

Common Cutting Problems

Listed below are common cutting problems followed by the probable cause of each. If problems are determined to be caused by the PCM-875, refer to the maintenance section of this manual. If the problem is not corrected after referring to the maintenance section, contact your ESAB distributor.

6.4.1 Insufficient Penetration

- Current too low.
- Cutting speed too fast.
- Damaged cutting nozzle.
- Improper air pressure.
- Low air flow rate.

6.4.2 Main Arc Extinguishes

- Cutting speed too slow.
- Worn electrode.

6.4.3 Dross Formation.

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

- Current too low.
- Cutting speed too fast or too slow.
- Improper air pressure.
- Faulty nozzle or electrode.
- Low air flow rate.

6.4.4 Double Arcing

- .Damaged Nozzle Orifice.
- Low air pressure.
- Damaged cutting nozzle.
- Loose cutting nozzle.
- Heavy spatter accumulation on nozzle.

6.4.5 Uneven Arc.

- Damaged cutting nozzle or worn electrode.

6.4.6 Unstable Cutting Conditions.

- Incorrect cutting speed.
- Loose cable or hose connections.
- Electrode and/or cutting nozzle in poor condition.

6.4.7 Main Arc Does Not Strike

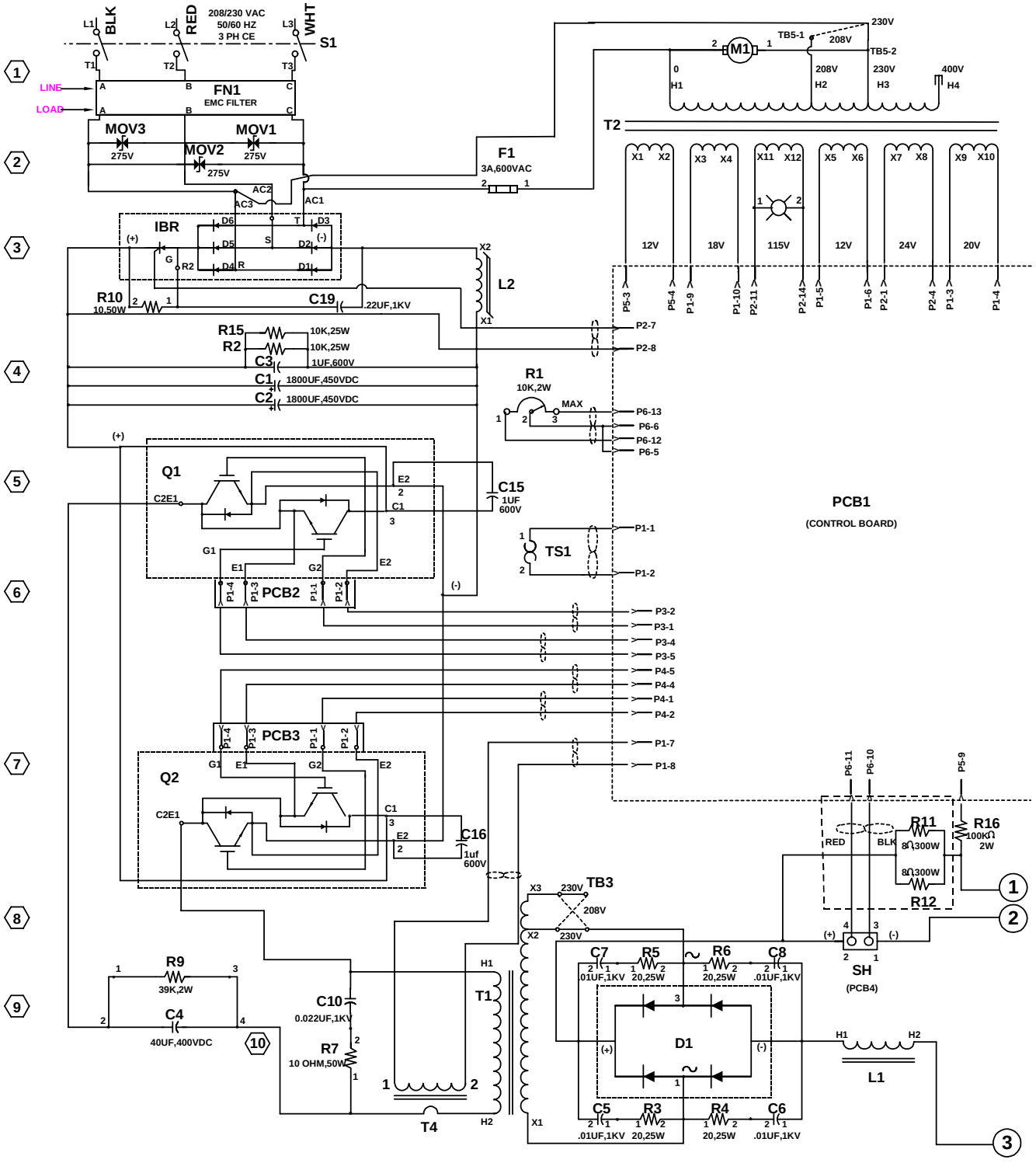
- Worn electrode.
- Loose connections.
- Worn cable not attached

6.4.8 Poor Consumable Life

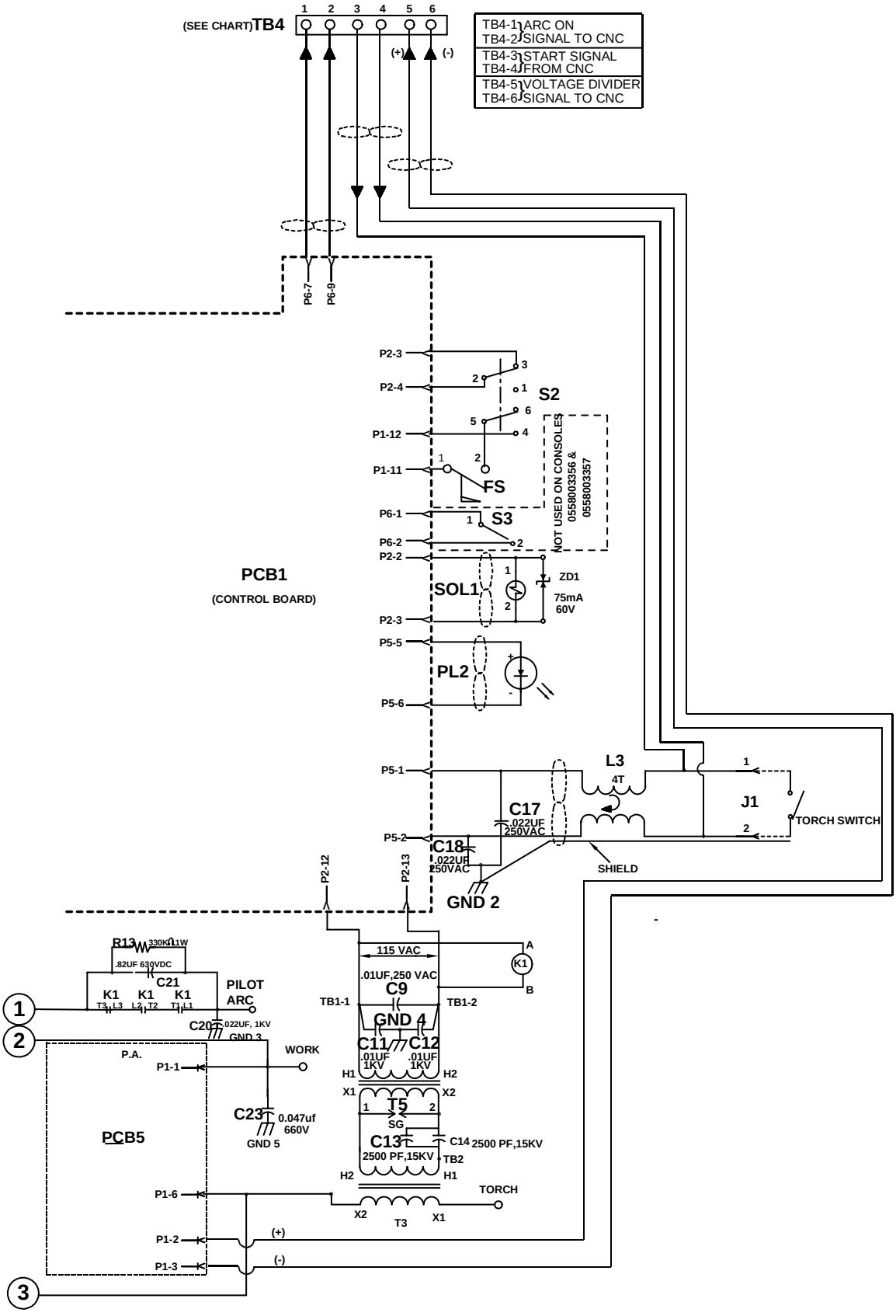
- Improper gas pressure.
- Contaminated air supply.
- Low air flow rate

6.5 230V Power Console Electrical Drawings

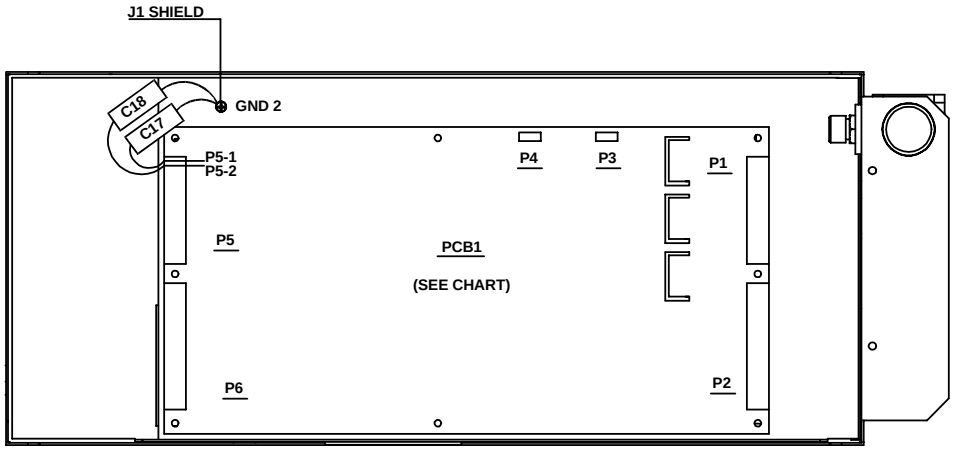
6.5.1 230V Console Schematic Part 1

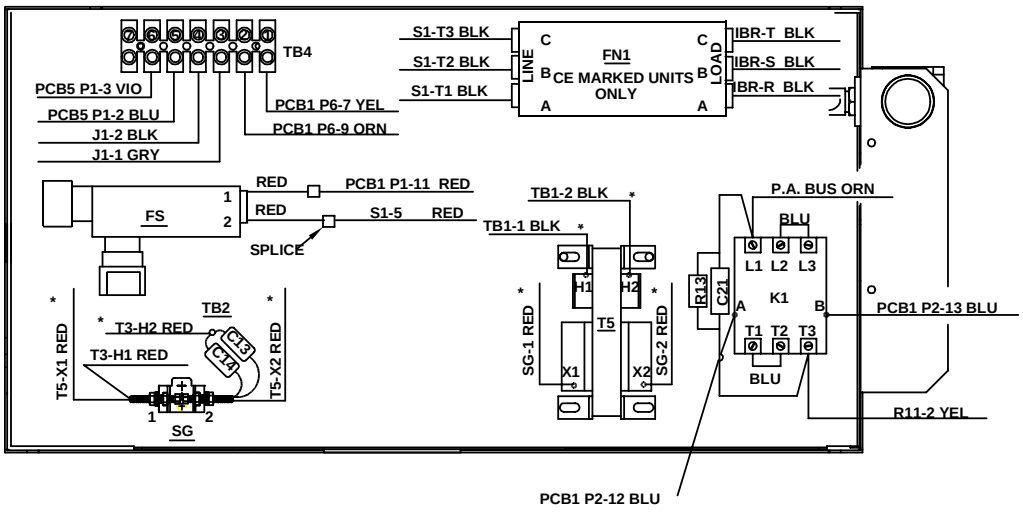


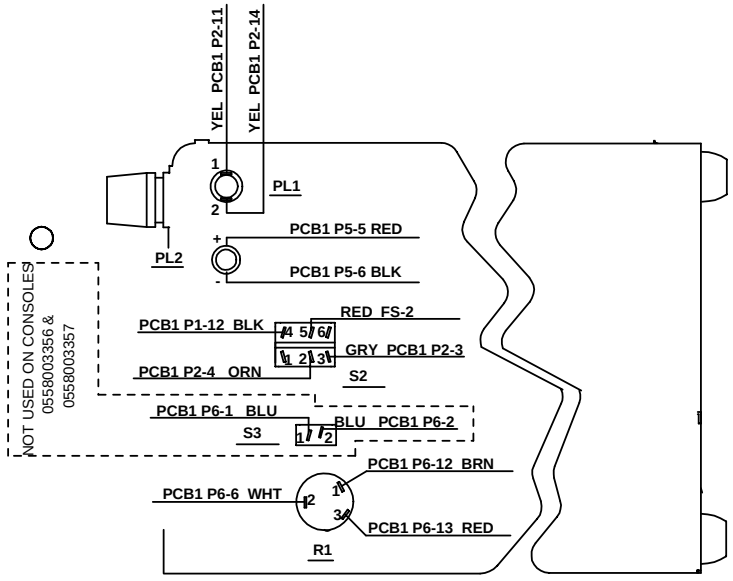
230V Schematic Part 2



6.5.2 230V Power Console Wiring Diagrams Part 1



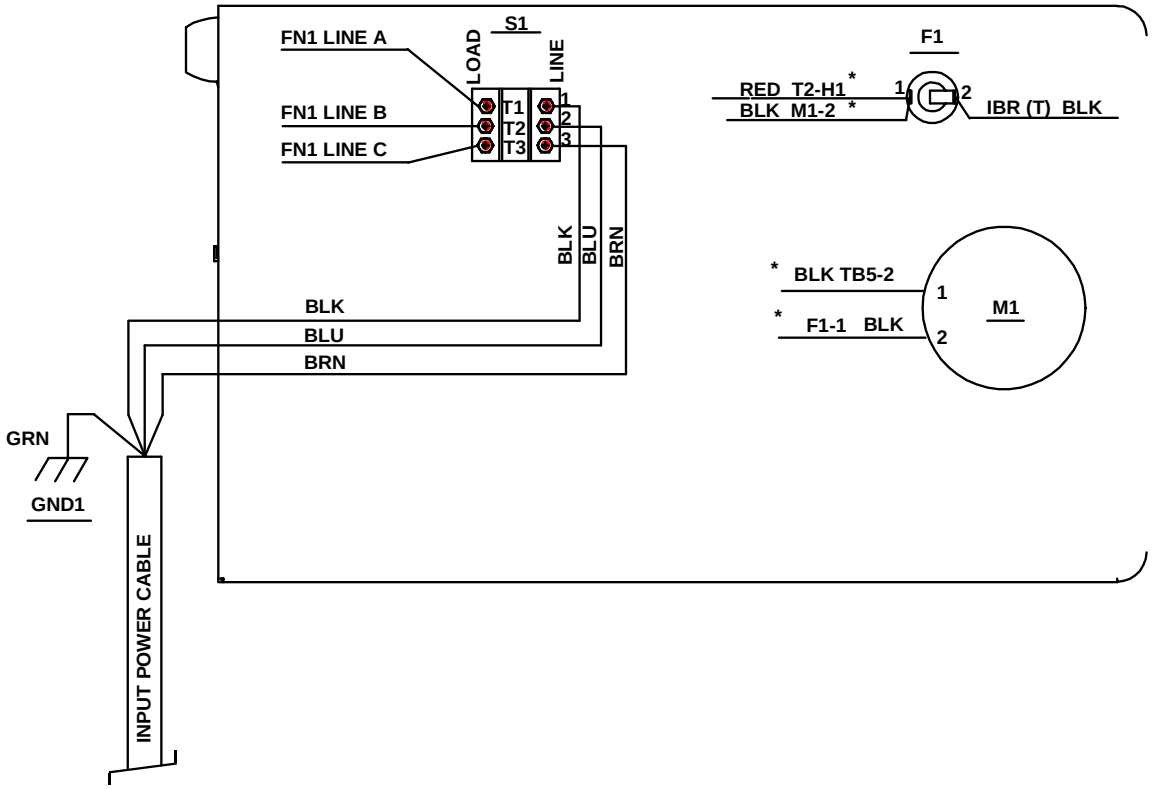




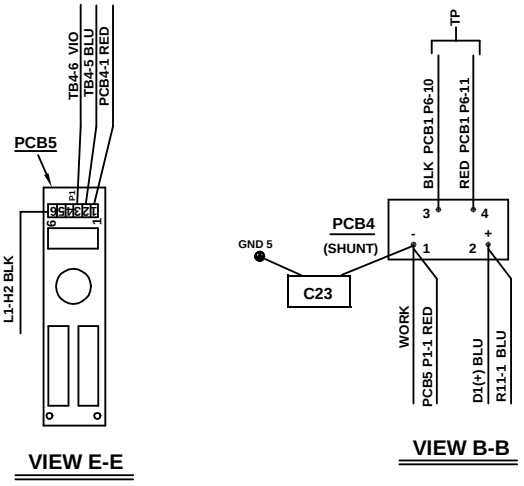
230V Power Console Wiring Diagrams Part 2

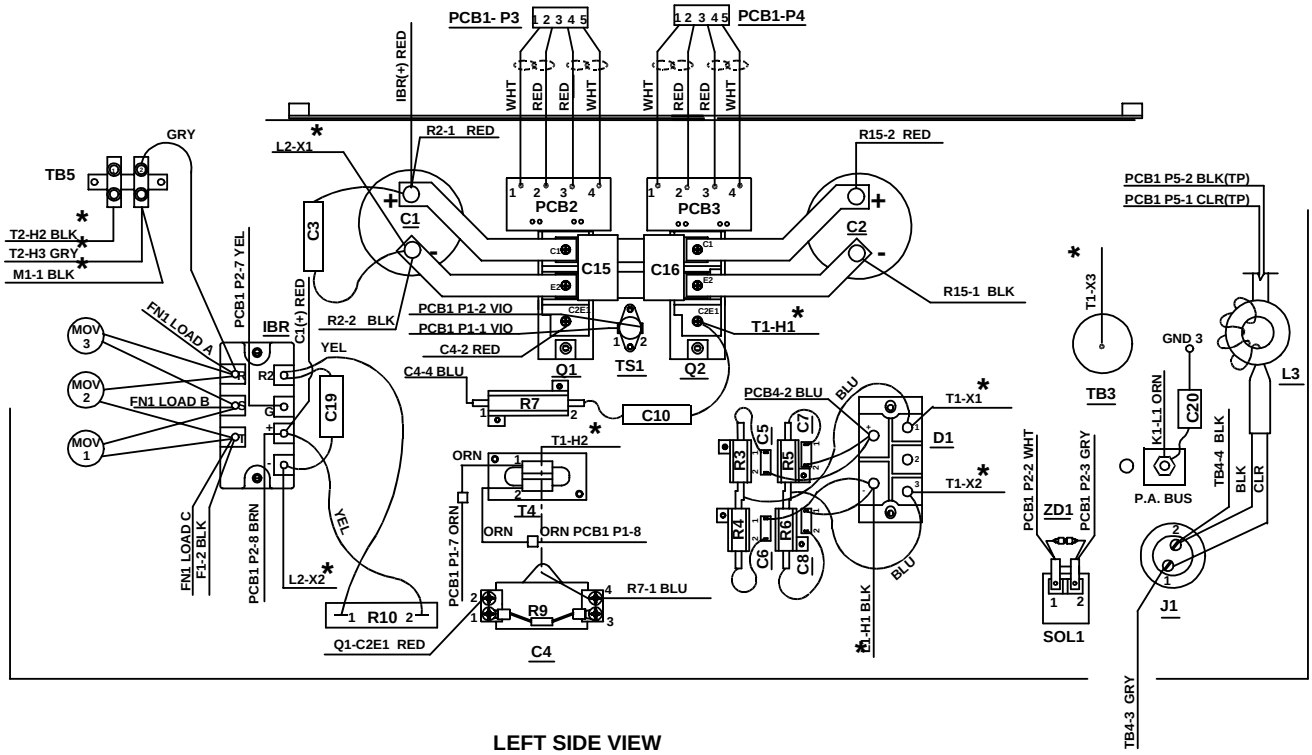
DETAIL "A" (PCB1)

P1			P2			P5			P6		
1	TS1-1	VIO	1	T2-X7	ORN	1	J1-1	CLR (TP)	1	S2-1	BLU
2	TS1-2	VIO	2	SOL1-1	WHT	2	J1-2	BLK (TP)	2	S2-2	BLU
3	T2-X9	BRN	3	SOL1-2	GRY	3	T2-X1	YEL	3	———	——
4	T2-X10	BRN	3	S1-3	GRY	4	T2-X2	YEL	4	———	——
5	T2-X5	BLU	4	T2-X8	ORN	5	PL2-(+)	RED	5	PCB1 P6-6	WHT
6	T2-X6	BLU	4	S1-2	ORN	6	PL2-(-)	BLK	6	R1-2	WHT
7	T4-1	ORN	5	———	——					PCB1 P6-5	WHT
8	T4-2	ORN	6	———	——	7	———	——	7	TB4-1	YEL
9	T2-X3	WHT	7	IBR-G	YEL	8	———	——	8	———	——
10	T2-X4	WHT	8	IBR(+)	BRN	9	R16-1	GRY	8	———	——
11	FS-1	RED	9	———	——	10	———	——	9	TB4-2	ORN
12	S1-4	BLK	10	———	——	11	———	——	10	PCB4-3	BLK (TP)
			11	T2-X11	VIO	12	———	——			
			11	PL1-1	YEL				11	PCB4-4	RED (TP)
			12	TB1-1	BLU				12	R1-1	BRN
			12	K1-A	BLU				13	R1-3	RED
			13	TB1-2	BLU						
			13	K1-B	BLU						
			14	PL1-2	YEL						
			14	T2-X12	VIO						

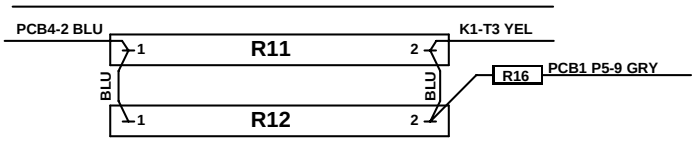


230V Power Console Wiring Diagrams Part 3

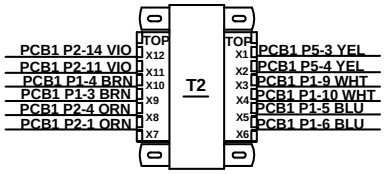


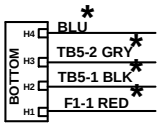


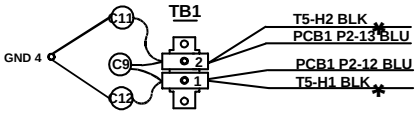
230V Power Console Wiring Diagrams Part 4



VIEW F-F



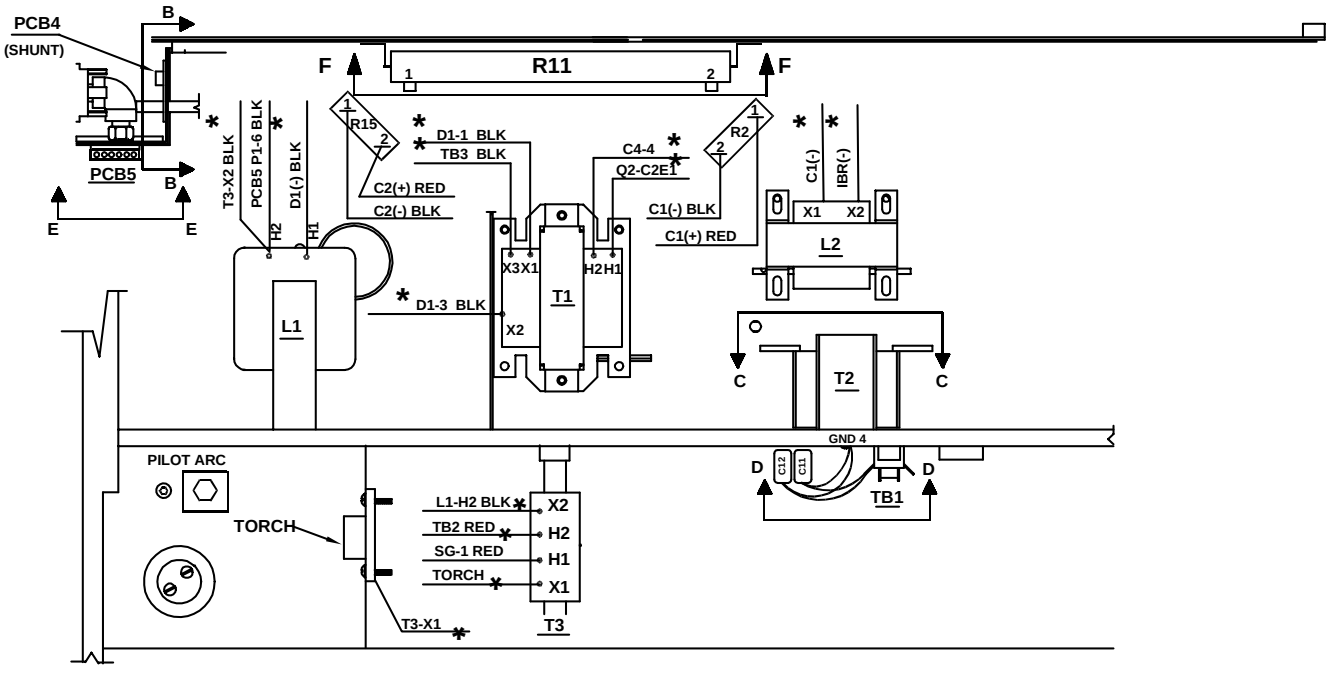




VIEW D-D

VIEW C-C

TOP AND BOTTOM

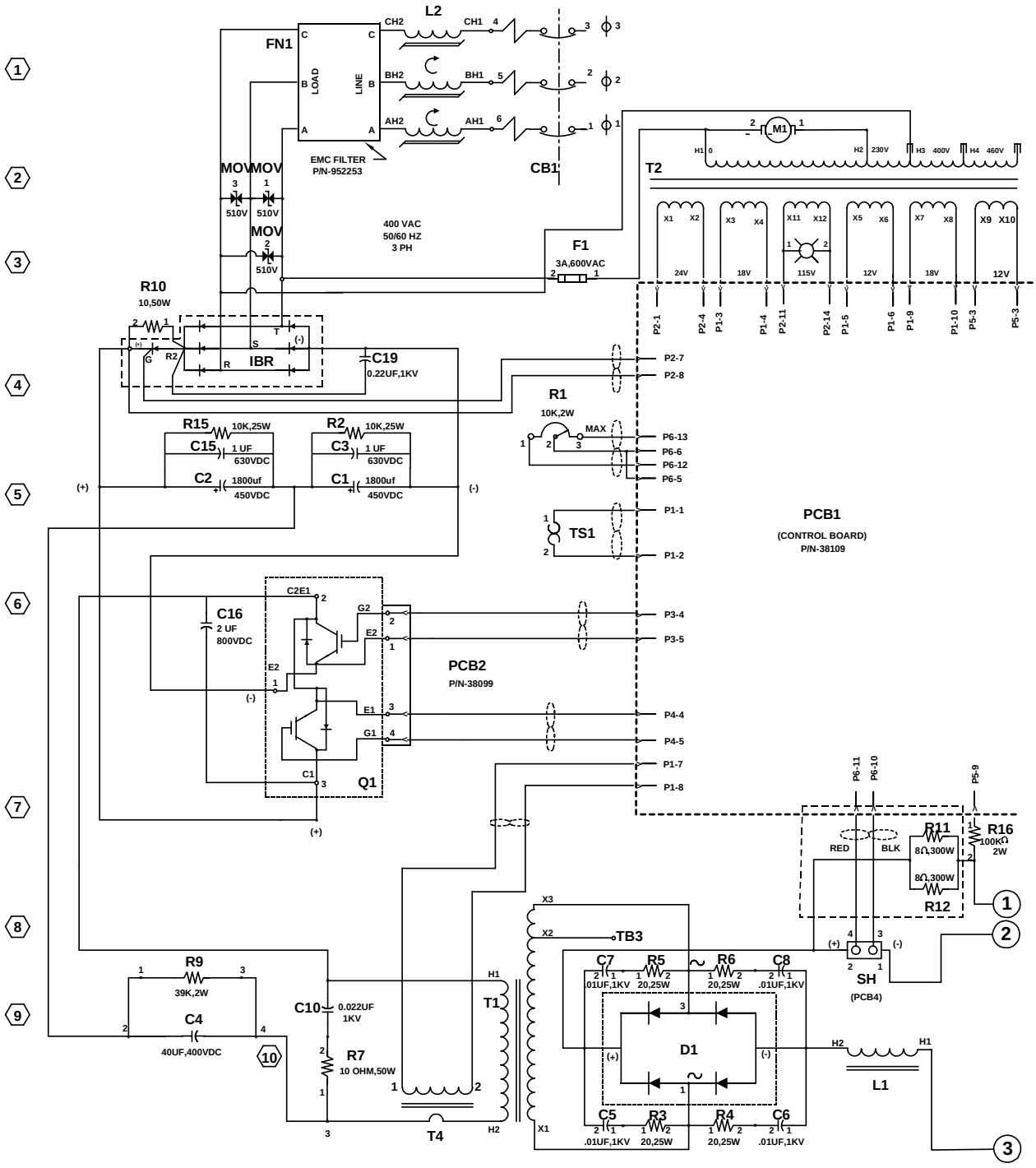


RIGHT SIDE VIEW

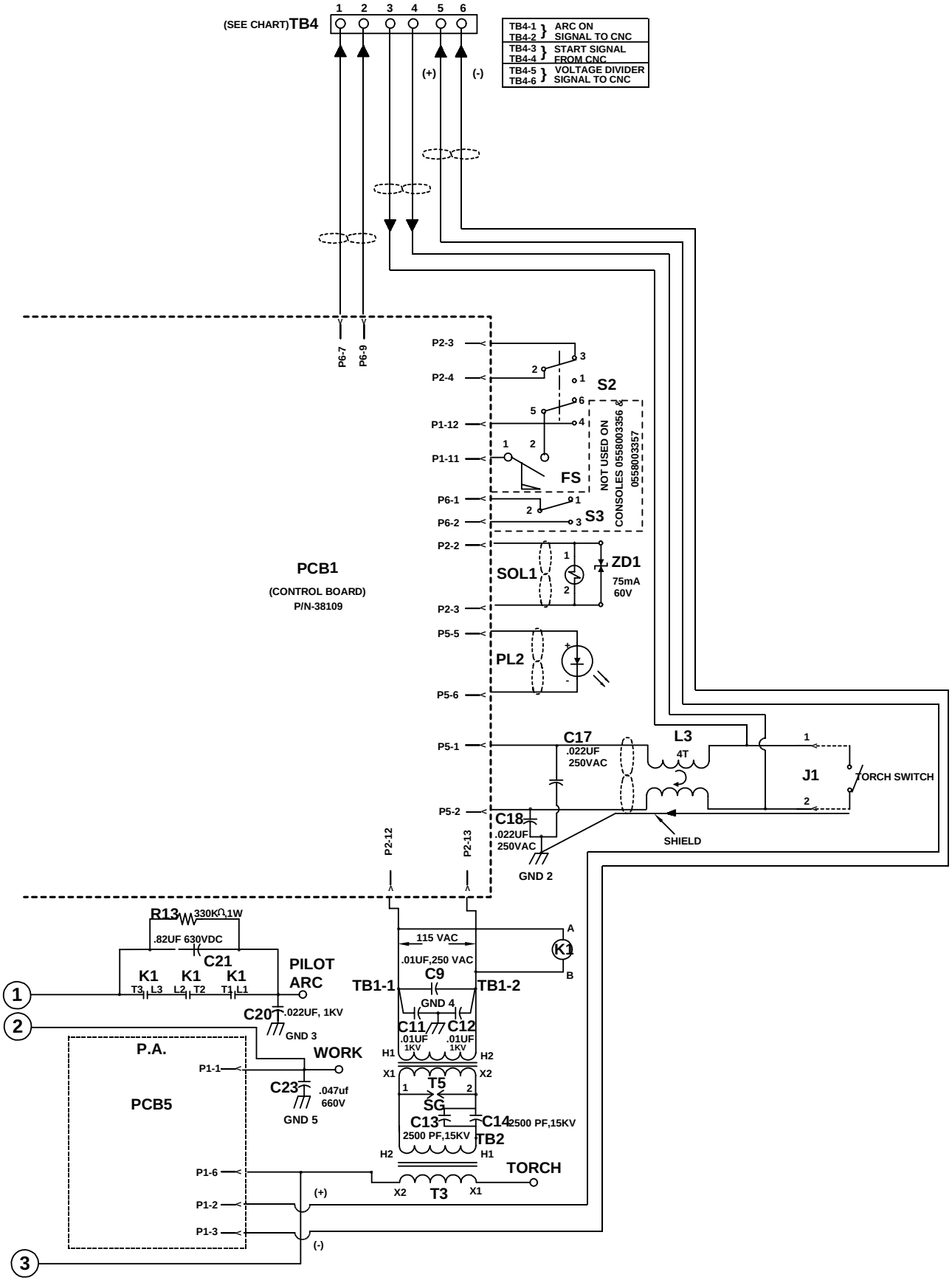
SHEET 2 OF 2

6.6 400V Power Console Electrical Drawings

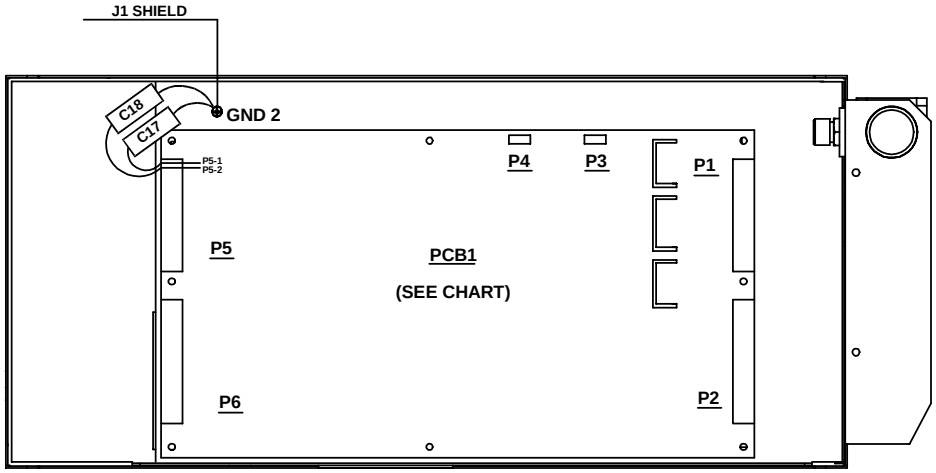
6.6.1 400V Console Schematic Part 1

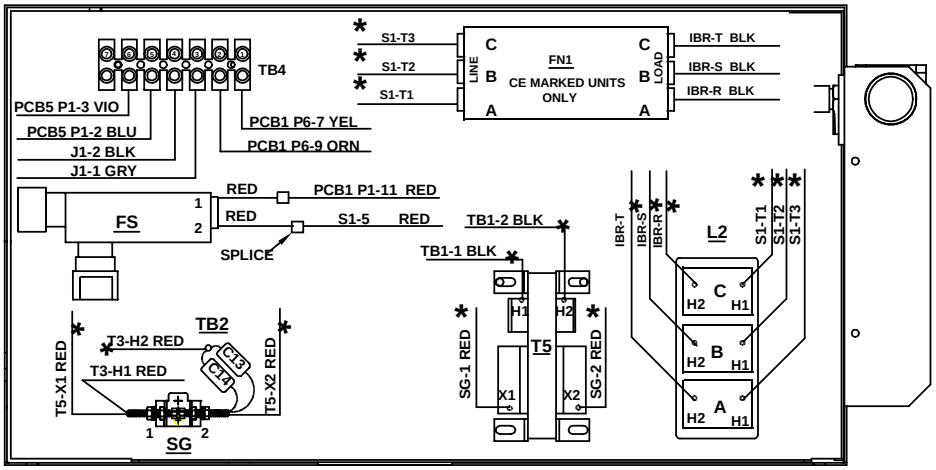


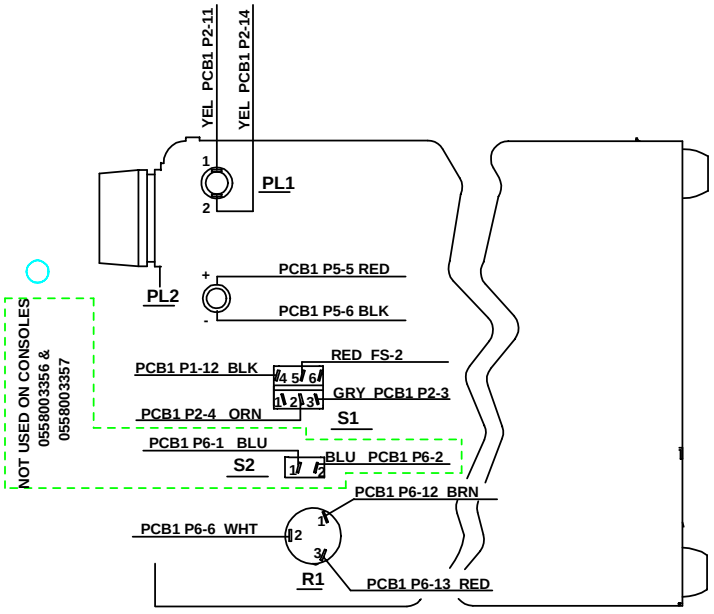
400V Console Schematic Part 2



6.6.2 400V Console Wiring Diagrams Part 1



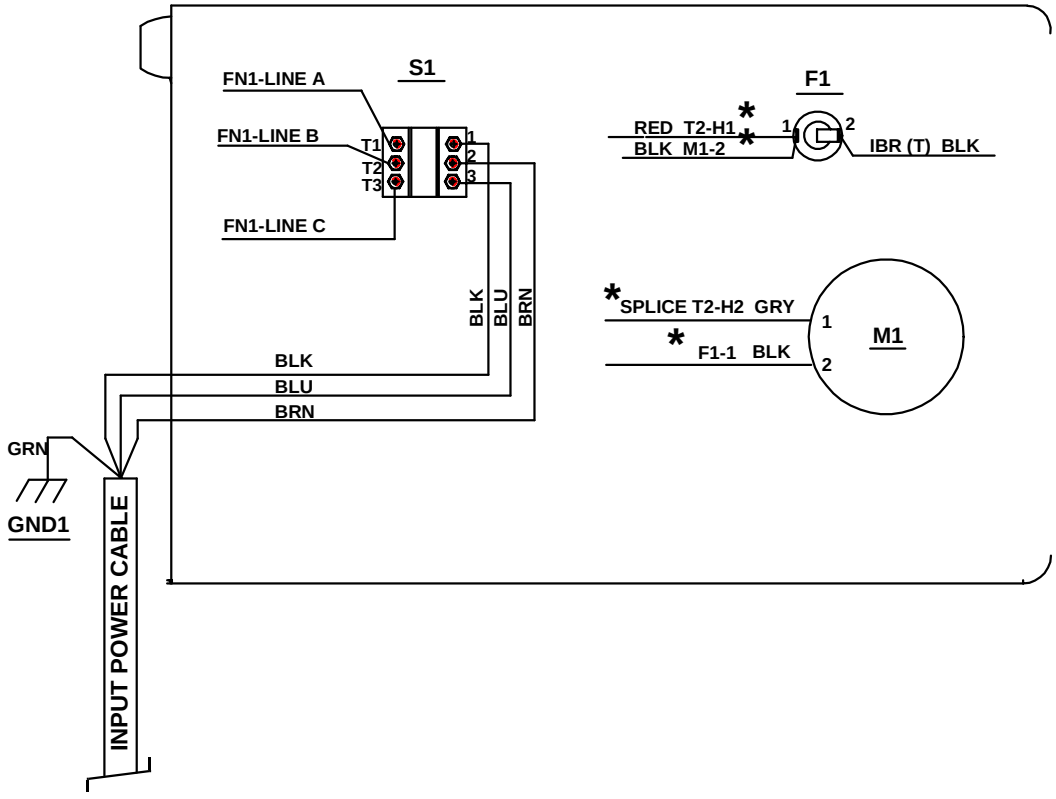




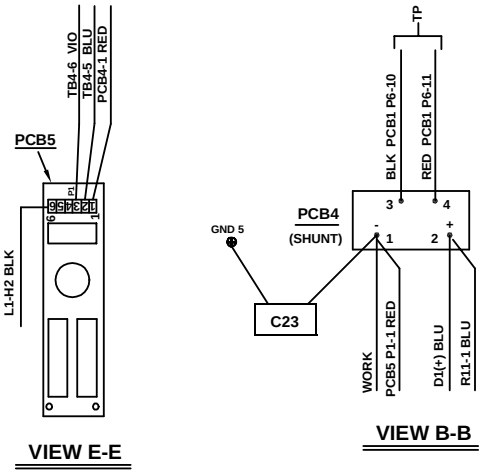
400V Console Wiring Diagrams Part 2

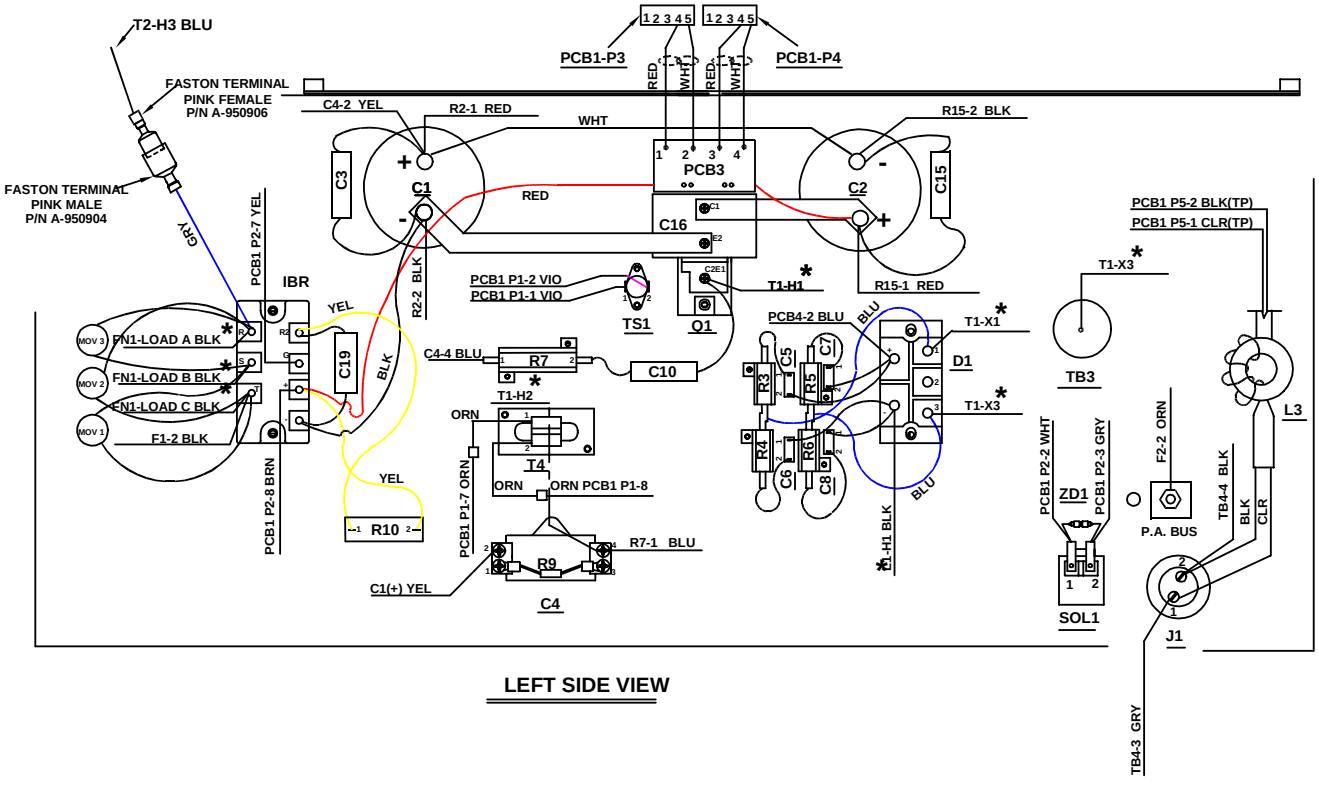
DETAIL "A" (PCB1)

P1			P2			P5			P6		
1	TS1-1	VIO	1	T2-X1	ORN *	1	J1-1	CLR (TP)	1	S2-1	BLU
2	TS1-2	VIO	2	SOL1-1	WHT	2	J1-2	BLK (TP)	2	S2-2	BLU
3	T2-X3	BRN *	3	SOL1-2	GRY	3	T2-X9	YEL *	3	———	—
4	T2-X4	BRN *	3	S1-3	GRY	4	T2-X10	YEL *	4	———	—
5	T2-X5	BLU *	4	T2-X2	ORN *	5	PL2-(+)	RED	5	PCB1 P6-6	WHT
6	T2-X6	BLU *	4	S1-2	ORN	6	PL2-(-)	BLK	6	R1-2	WHT
7	T4-1	ORN	5	———	—					PCB1 P6-5	WHT
8	T4-2	ORN	6	———	—	7	———	—	7	TB4-1	YEL
9	T2-X7	WHT *	7	IBR-G	YEL	8	———	—	8	———	—
10	T2-X8	WHT *	8	IBR(+)	BRN	9	R16-1	GRY	8	———	—
11	FS-1	RED	9			10	———	—	9	TB4-2	ORN
12	S1-4	BLK	10	———	—	11	———	—	10	PCB4-3	BLK (TP)
			11	T2-X11	VIO *	12	———	—			
			11	PL1-1	YEL				11	PCB4-4	RED (TP)
			12	TB1-1	BLU				12	R1-1	BRN
			12	K1-A	BLU				13	R1-3	RED
			13	TB1-2	BLU						
			13	K1-B	BLU						
			14	PL1-2	YEL						
			14	T2-X12	VIO *						

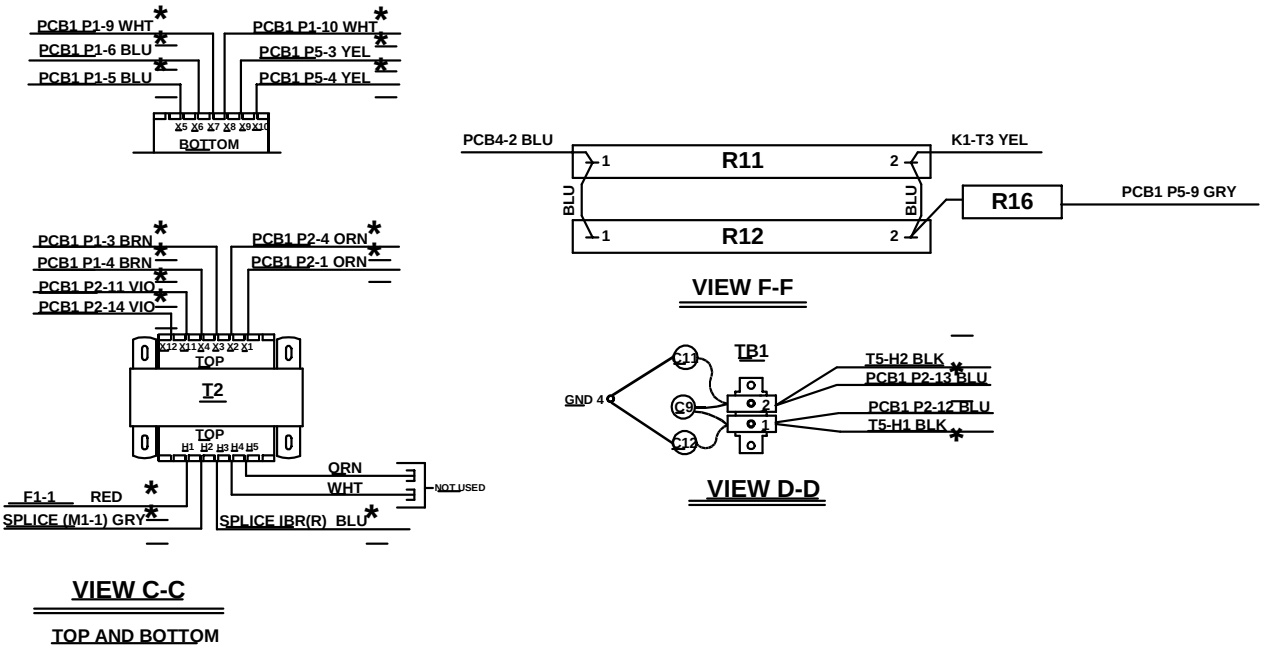


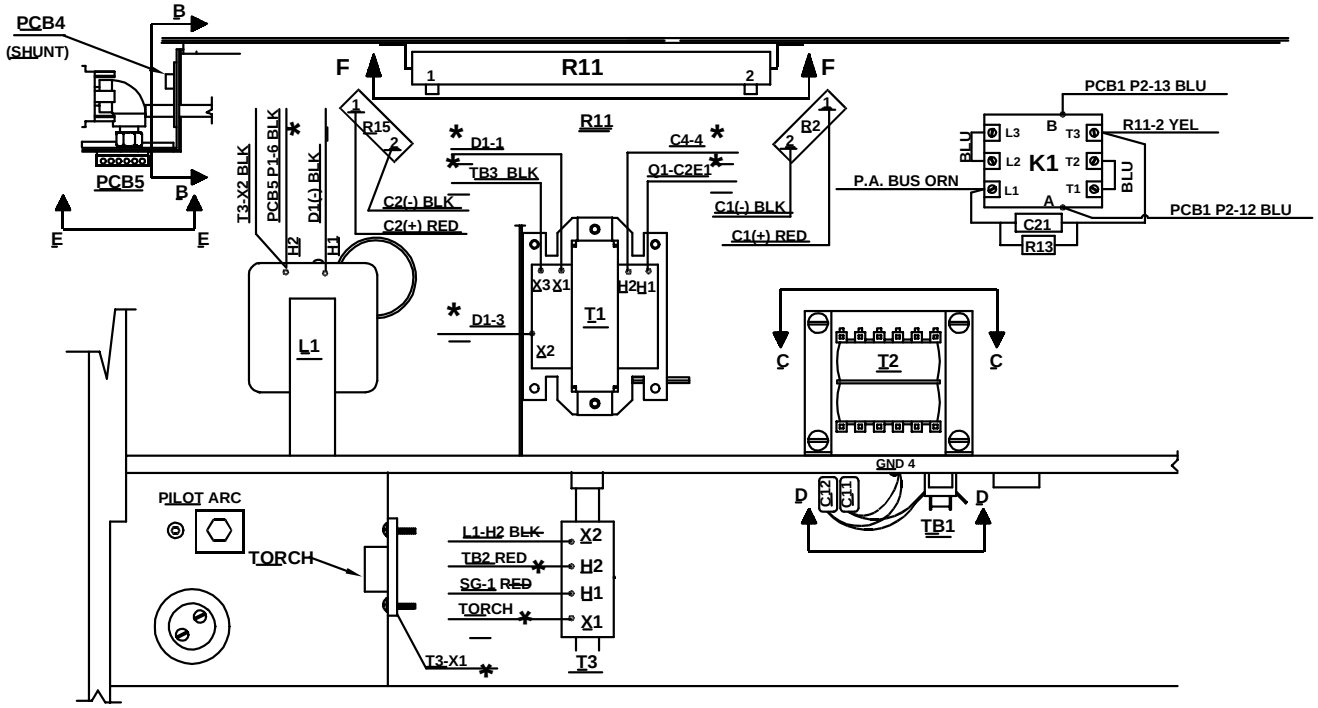
400V Console Wiring Diagrams Part 3



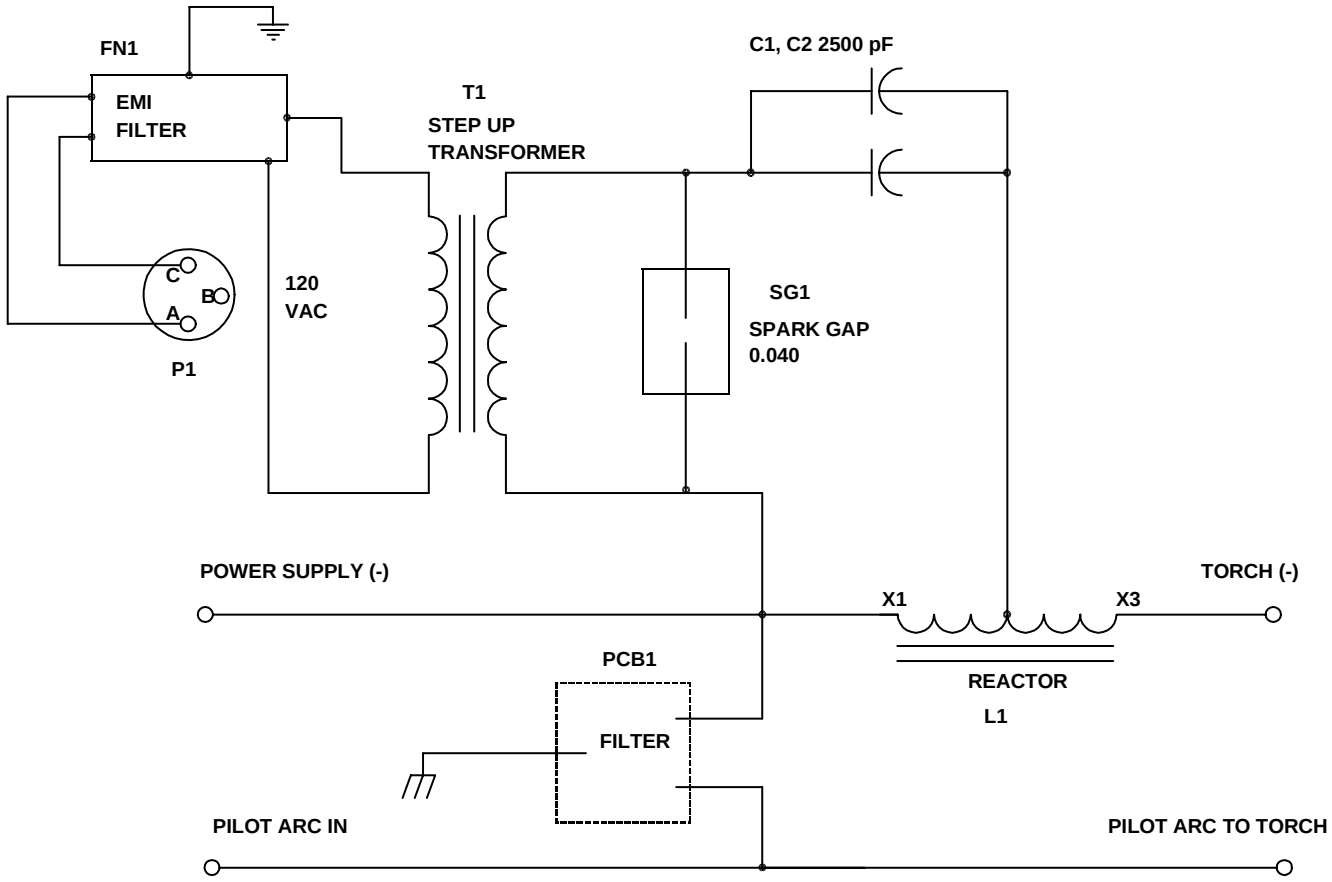


400V Console Wiring Diagrams Part 4





6.7 Remote Arc Starter (RAS-2) Schematic



7.1 General

Always provide the serial number of the unit on which the parts will be used. The serial number is stamped on the unit nameplate.

7.2 Ordering

To ensure proper operation, it is recommended that only genuine ESAB parts and products be used with this equipment. The use of non-ESAB parts may void your warranty.

Replacement parts may be ordered from your ESAB Distributor or from:

ESAB Cutting Systems GmbH
Robert-Bosch-Strasse 20
P.O. Box 1128
D-61184 Karben
Phone +011 49 60 39 400
Fax +011 49 60 39 40301 02
http://www.esab.de

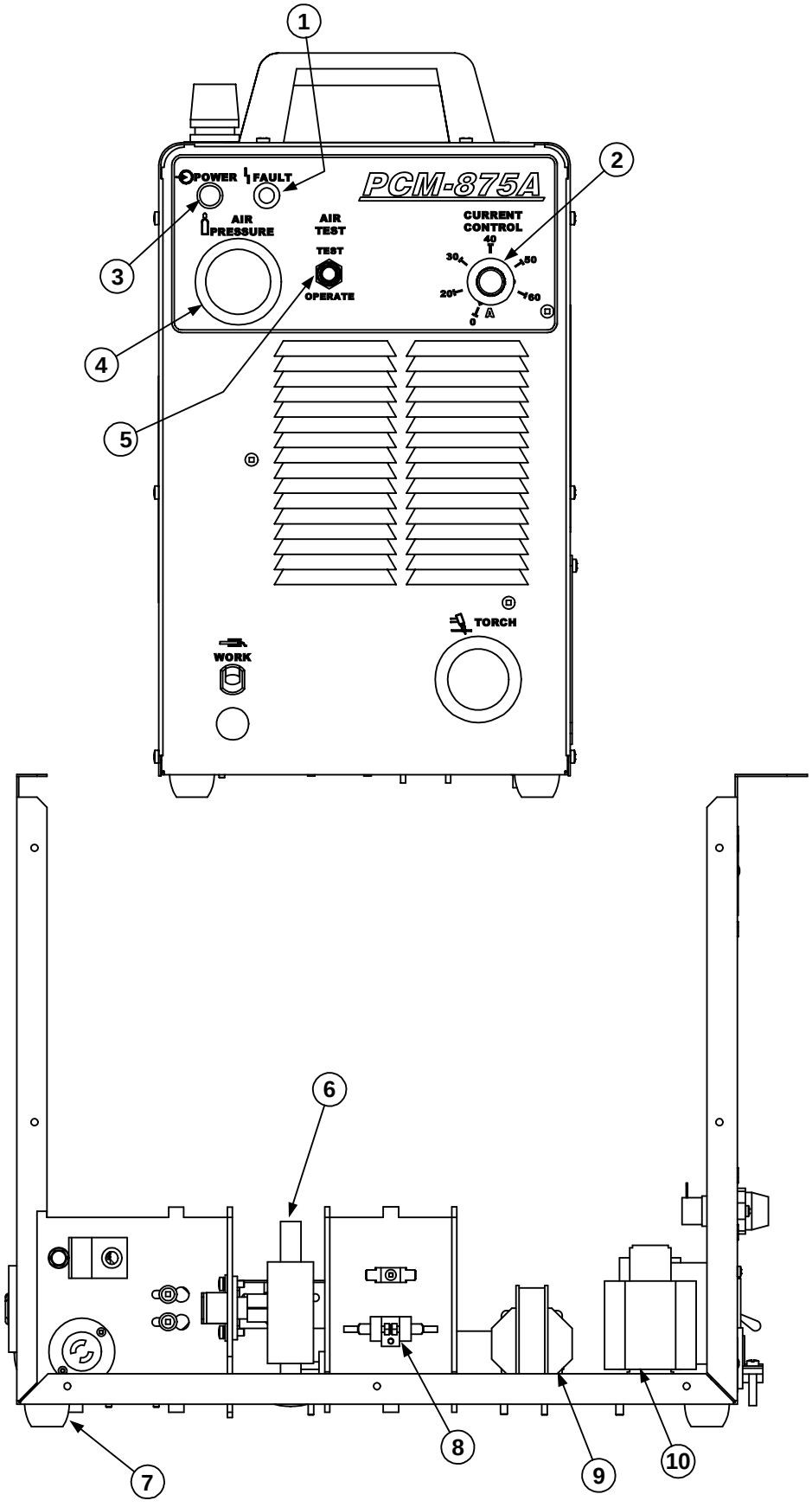
ESAB Welding and Cutting Products
ATTN: Customer Service Department
PO Box 100545 Ebenezer Road
Florence, SC USA 29501-0545
Phone (843) 664-4405
(800) ESAB-123 (372-3123)

ESAB Cutting Systems - Canada
6010 Tomken Road
Mississauga, Ontario, Canada L5T 1X9
Phone (905) 670-0220
Fax (905) 670-4879

Be sure to indicate any special shipping instructions when ordering replacement parts.

Refer to the Communications Guide located on the last page of this manual for a list of customer service phone numbers.

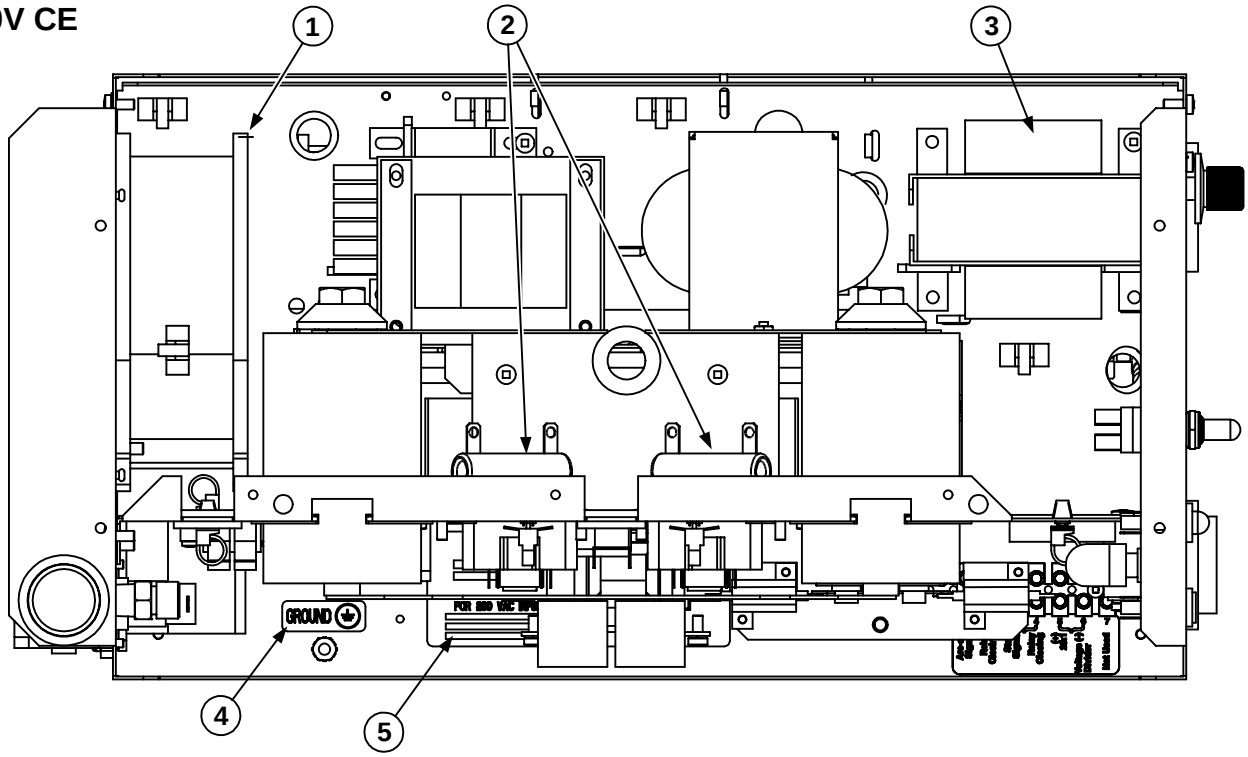
7.3 PCM-875A Power Console – 230V- (P/N 0558003356)

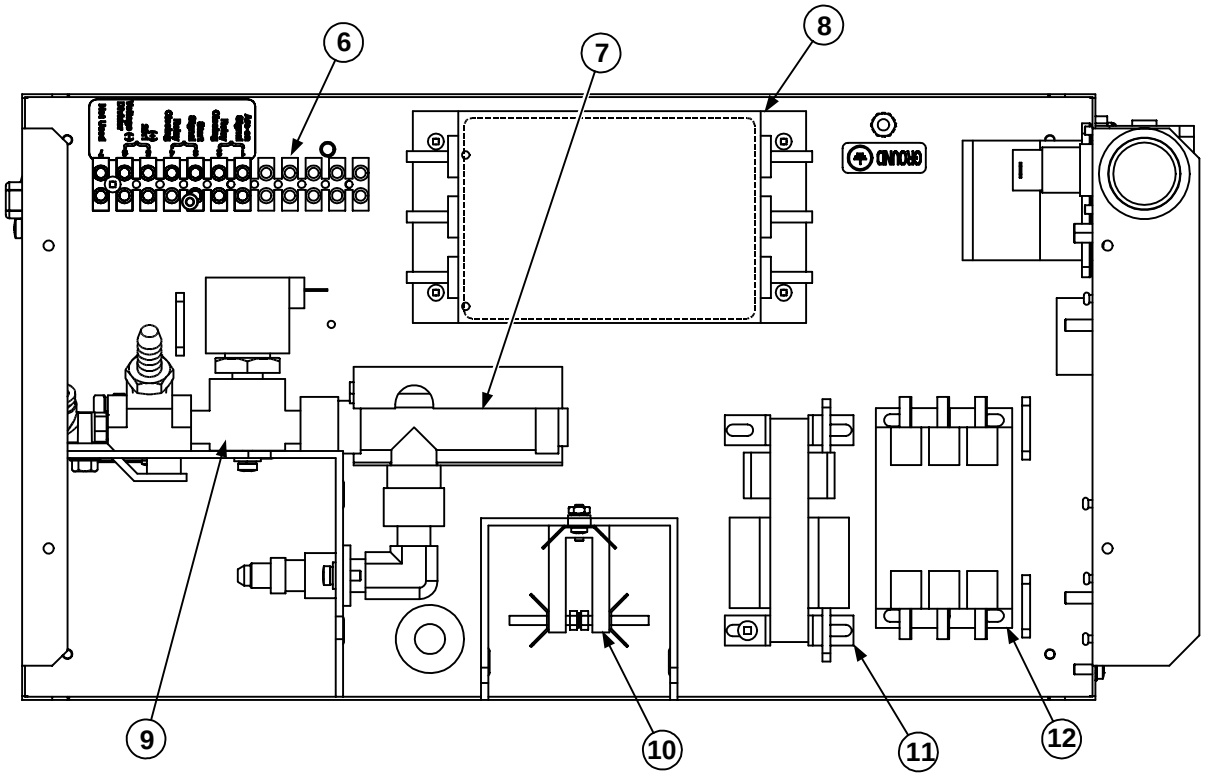


Ref.	Part Number	Quantity	Description	Elect.
1	951754	1	Lamp, LED Yellow, 12V	PL2
2	0558001176	1	POT, 10K, 30W	R1
3	951526	1	Lamp, Neon, White	PL1
4	21711	1	Gauge, 1.5 160 PSI WHT CDM STL	
5	634518	1	Toggle Switch, 2 pos, 15A, 125V	S2
6	Not Required when RAS-2 is used	1	Reactor Assembly Reference Only	
7	182W12	4	Rubber Foot	
8	Not Required when RAS-2 is used		Spark Gap Assembly	
9	0558003618	1	Wire Kit	
10	673458	1	Contactor, 3 pole, 110VAC, 40A	K1

PCM-875A Power Console – 230V- (P/N 0558003356)

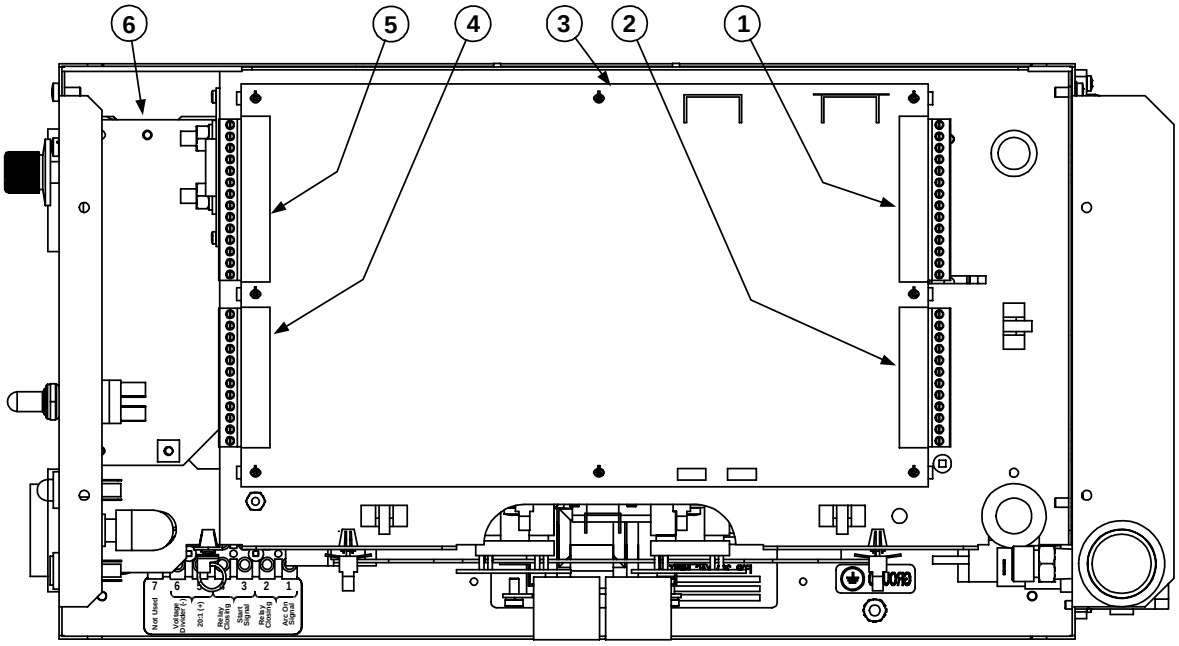
230V CE

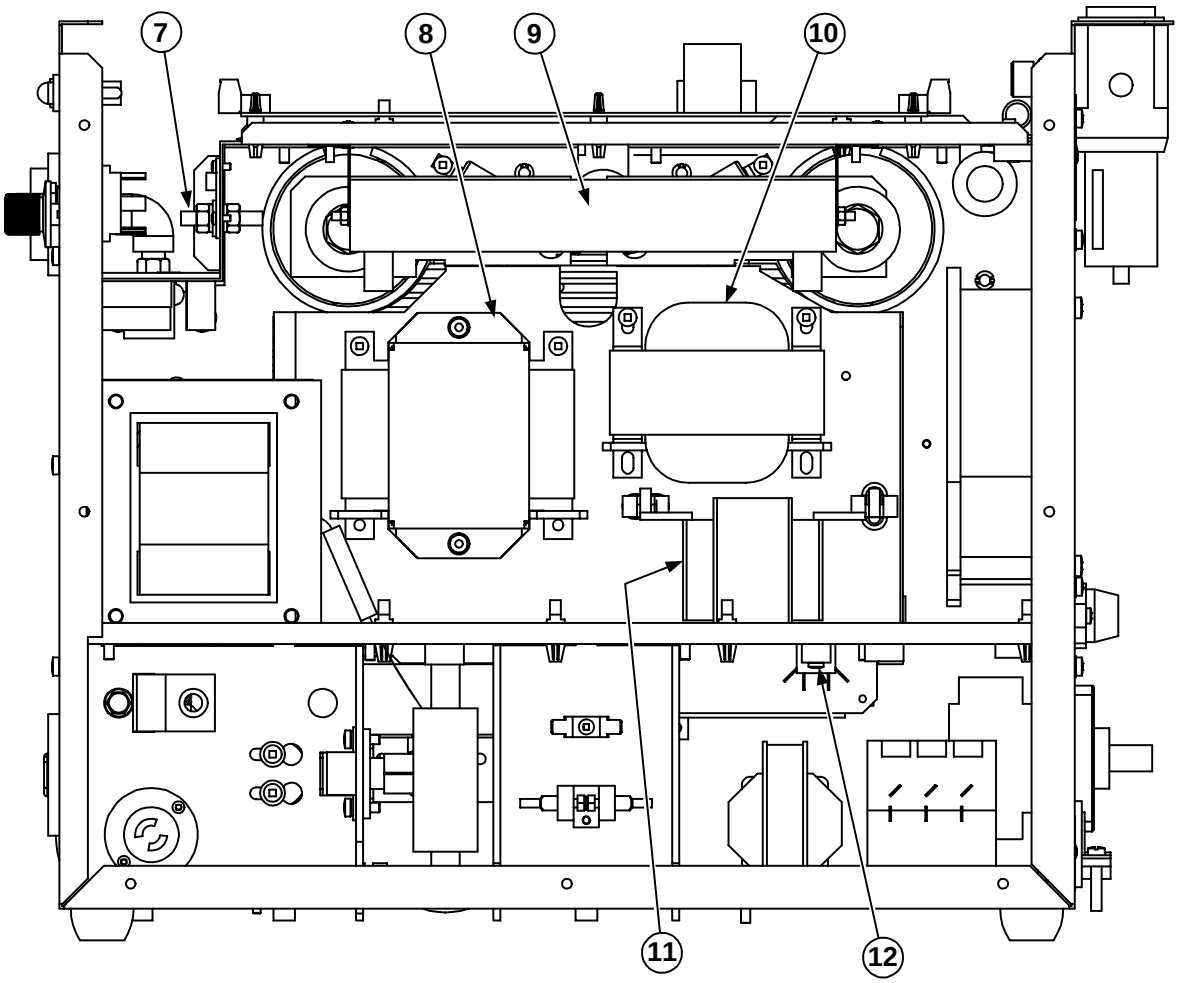




Ref.	Part Number	Quantity	Description	Elect.
1	951182	1	Axial Fan, AC	M1
2	17240310	2	Resistor, 10K, 25W	R2,15
3	952233	1	Output Inductor	L1
4	2091558	1	Label	
5			Label	
6	952026	1	Term block, 7 pos, 25A, 12-18AWG	TB4
7	951202	1	Switch, Flow, .25 GPN, SPST	FS
8	952597		Filter EMC, 250.440V 3ph	FN1
9	950249	1	Valve, Solenoid, ¼ NPT, 165 PSI, 24VAC	SOL1
10	Not used in conjunction with RAS-2		Spark Gap	
11	0558003618		Wire Kit	
12	673458		Contactor, 3 pole, 110VAC, 40A	

PCM-875A Power Console – 230V- (P/N 0558003356) Top View-and Right Side

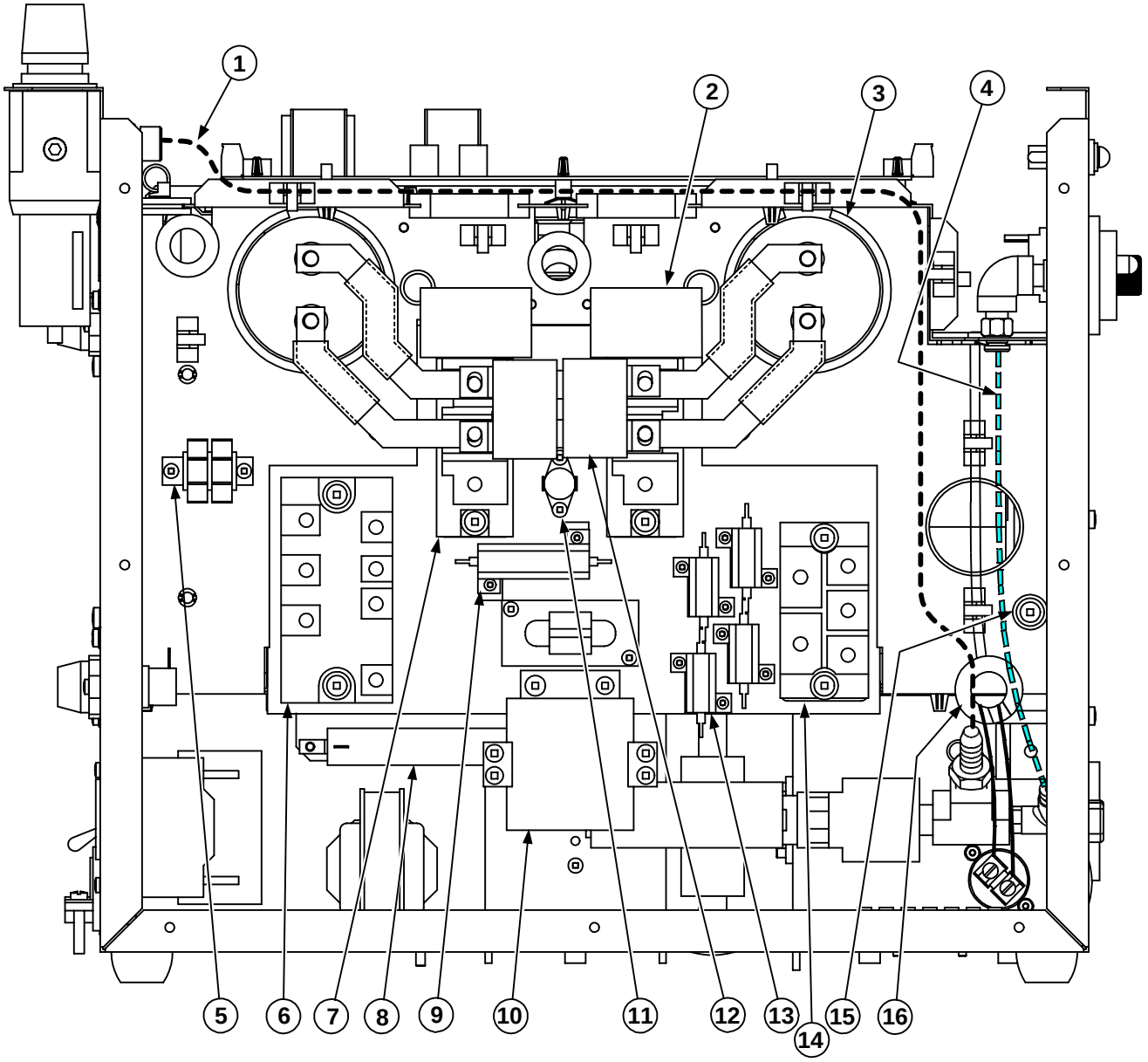




Ref.	Part Number	Quantity	Description	Elect.
1	951340	1	Plug Female, 14 pos, PCB1	P6
2	951339	1	Plug Female, 12 pos, PCB1	P5
3	38214	1	PCB Control	PCB1
4	951339	1	Plug Female, 12 pos, PCB1	P1
5	951340	1	Plug Female, 14 pos, PCB1	P2
6	38131	1	PCB Startup	PCB5
7	31488	1	PCB Ay, Shunt Board	PCB4
8	36586	1	XFMR Assy, Main	T1
9	17300012	2	Resistor, 300W, 12 ohm	R11,12
10	952232	1	Inductor, PFC (used on 230V unit only)	L2
11	32914	1	XFMR Assy Control	T2
12	950487		Terminal Block, 2 pos, 20A	TB1

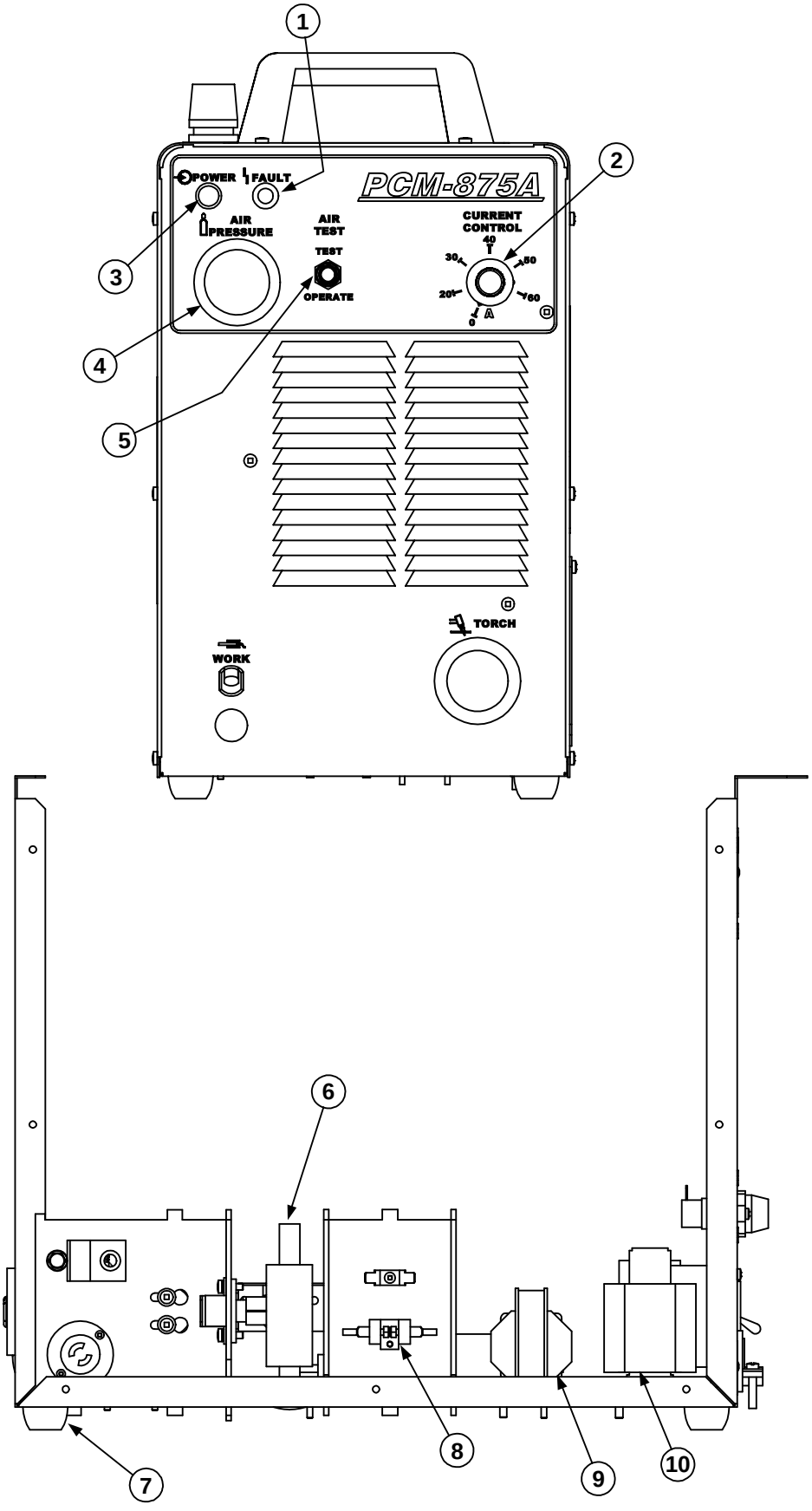
PCM-875A Power Console – 230V- (P/N 0558003356) Left Side

230V CE Detail



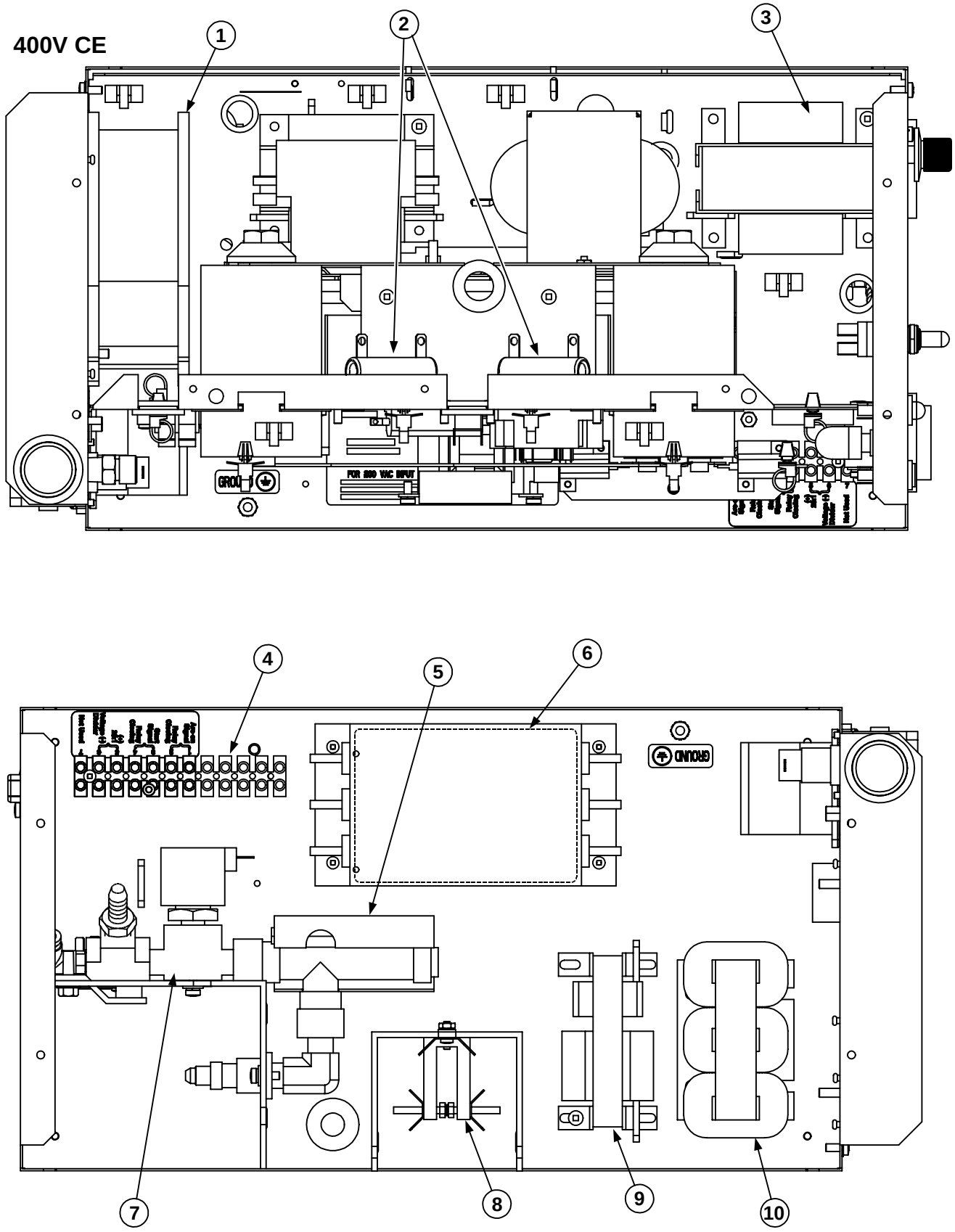
Ref.	Part Number	Quantity	Description	Elect.
1	36822	1	Hose, Assy, B/A-WX1/4NPT Rub	
2	0558001177	2	PCB Assy, Mosfet/IGBT Driver Bd	PCB2,3
3	952237	2	Capacitor, 1800uf, 400VDC, W/nut	C1,2
4	90858003	.75FT	Tubing, Plas, .25 od X .04 W BLK	
5	950487	1	Terminal Block, 2 pos, 20A	TB5
6	952235	1	Module, Input bridge/scr	IBR
7	951205	2	IGBT 600V, 100A, Ser H	Q1,2
8	17250010	1	Resistor, WW, Fixed, 50W, 10 ohm	R10
9	17750010	1	Resistor, WW, 50W, 3%, 10 ohm	R7
10	952255	1	Capacitor, 40 uf, 400VDC	C4
11	950711	1	Thermal Switch, 194 deg.	TS1
12	951940	2	Capacitor, 1uf, 630W VDC	C15,16
13	17721020	4	Resistor, WWFAHT, 25W, 1%, 20 ohm Nl	R3,4,5,6
14	952150	1	Bridge, 60ADC, 100NS, 600V	D1
15	952208	1	Standoff, insulating	TB3
16	952002	1	Core, Saturable	L3

7.4 PCM-875A Power Console – 400V- (P/N 0558003357)



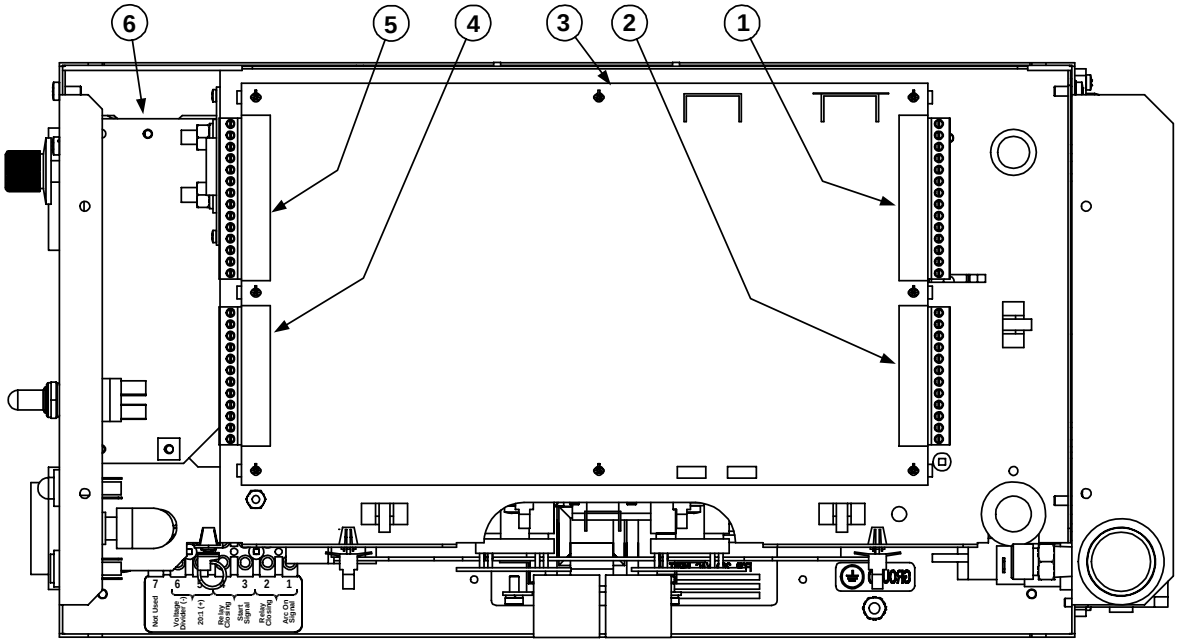
Ref.	Part Number	Quantity	Description	Elect.
1	951754	1	Lamp, LED Yellow, 12V	PL2
2	0558001176	1	POT, 10K, 30W	R1
3	951526	1	Lamp, Neon, White	PL1
4	21711	1	Gauge, 1.5 160 PSI WHT CDM STL	
5	634518	1	Toggle Switch, 2 pos, 15A, 125V	S2
6	Not Required when RAS-2 is used	1	Reactor Assembly Reference Only	
7	182W12	4	Rubber Foot	
8	Not Required when RAS-2 is used		Spark Gap Assembly	
9	0558003618	1	Wire Kit	
			See next illustration	

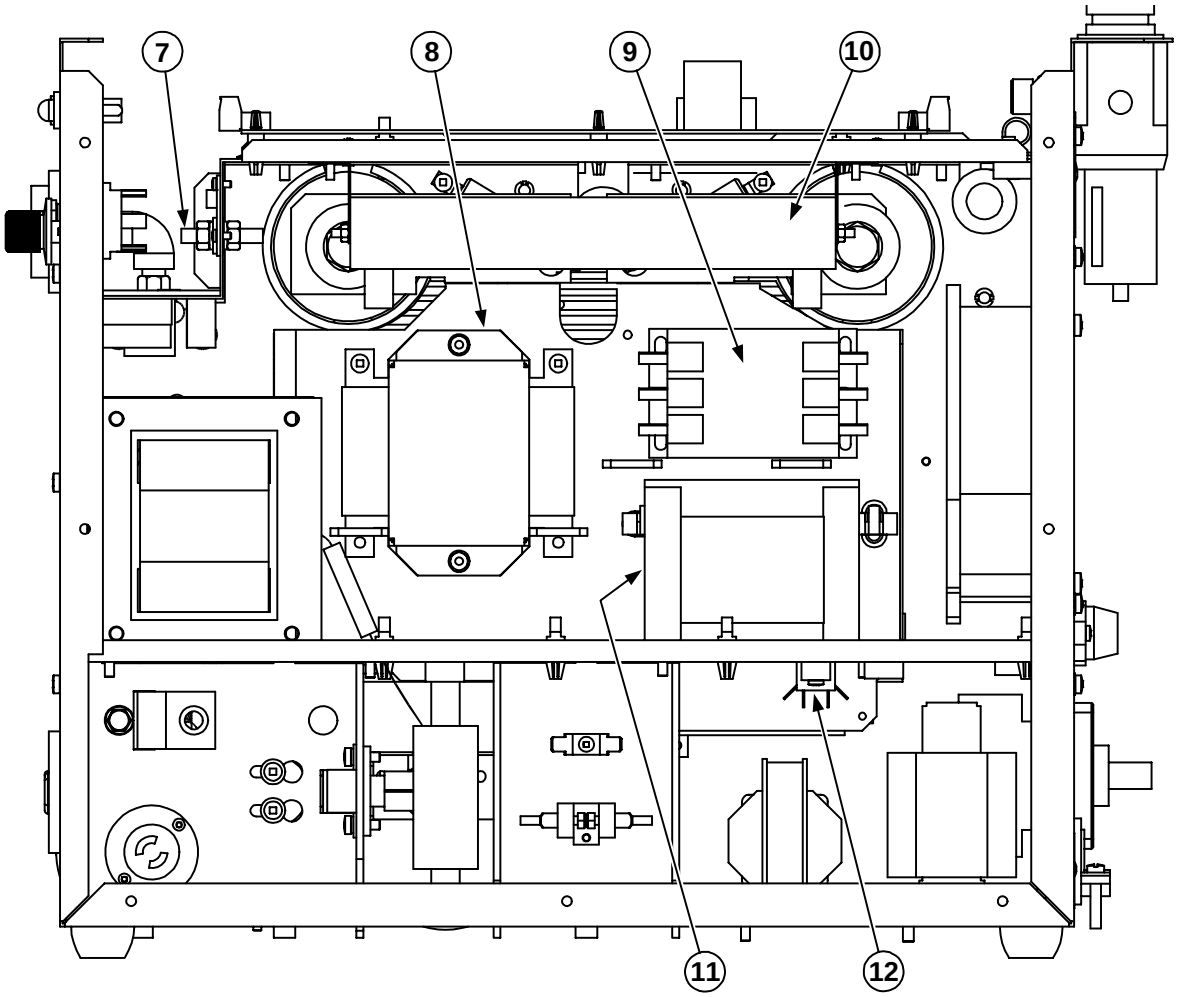
PCM-875A Power Console – 400V- (P/N 0558003357)



Ref.	Part Number	Quantity	Description	Elect.
1	951182	1	Axial Fan, AC	M1
2	17240310	2	Resistor, 10K, 25W	R2,15
3	952233	1	Output Inductor	L1
4	952026	1	Term block, 7 pos, 25A, 12-18AWG	TB4
5	951202	1	Switch, Flow, .25 GPN, SPST	FS
6	952253		Filter, EMC, 400V	FN1
7	950249	1	Valve, Solenoid, ¼ NPT, 165 PSI, 24VAC	SOL1
8	Not used in conjunction with RAS-2		Spark Gap	
9	0558003618		Wire Kit	
10	0558001193		Wire Kit, 400V CE	L2

PCM-875A Power Console – 400V- (P/N 0558003357)

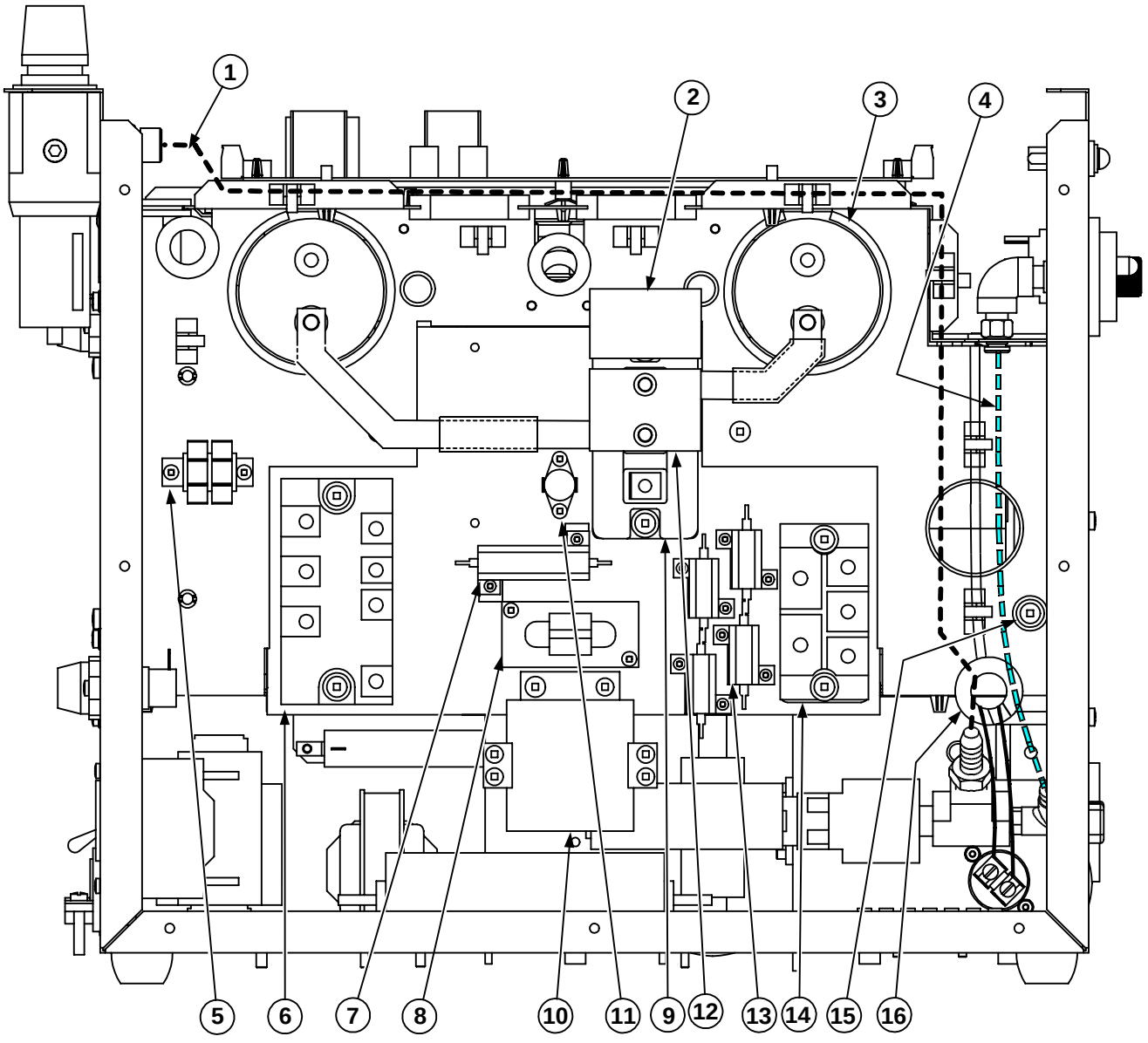




Ref.	Part Number	Quantity	Description	Elect.
1	951340	1	Plug Female, 14 pos, PCB1	P6
2	951339	1	Plug Female, 12 pos, PCB1	P5
3	38214	1	PCB Control	PCB1
4	951339	1	Plug Female, 12 pos, PCB1	P1
5	951340	1	Plug Female, 14 pos, PCB1	P2
6	38131	1	PCB Startup	PCB5
7	31488	1	PCB Ay, Shunt Board	PCB4
8	36586	1	XFMR Assy, Main	T1
9	673458	1	Contactor, 3 pole, 110VAC, 40A	K1
10	17300012	2	Resistor, 300W, 12 ohm	R11,12
11	32914	1	XFMR Assy Control	T2
12	950487		Terminal Block, 2 pos, 20A	TB1

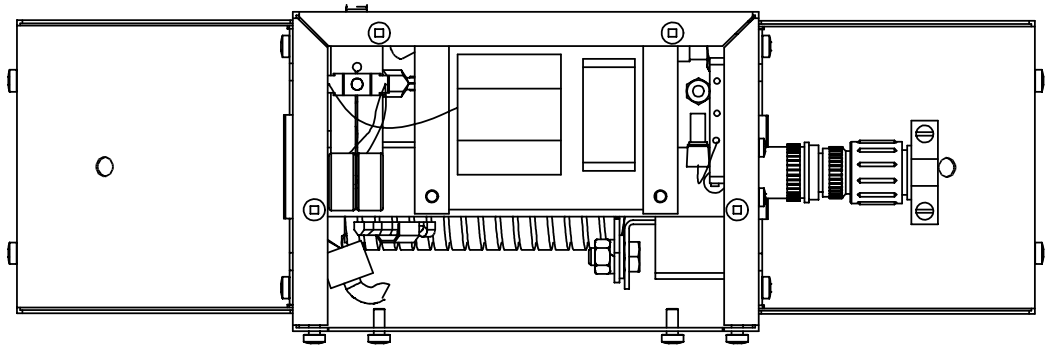
PCM-875A Power Console – 400V- (P/N 0558003357)

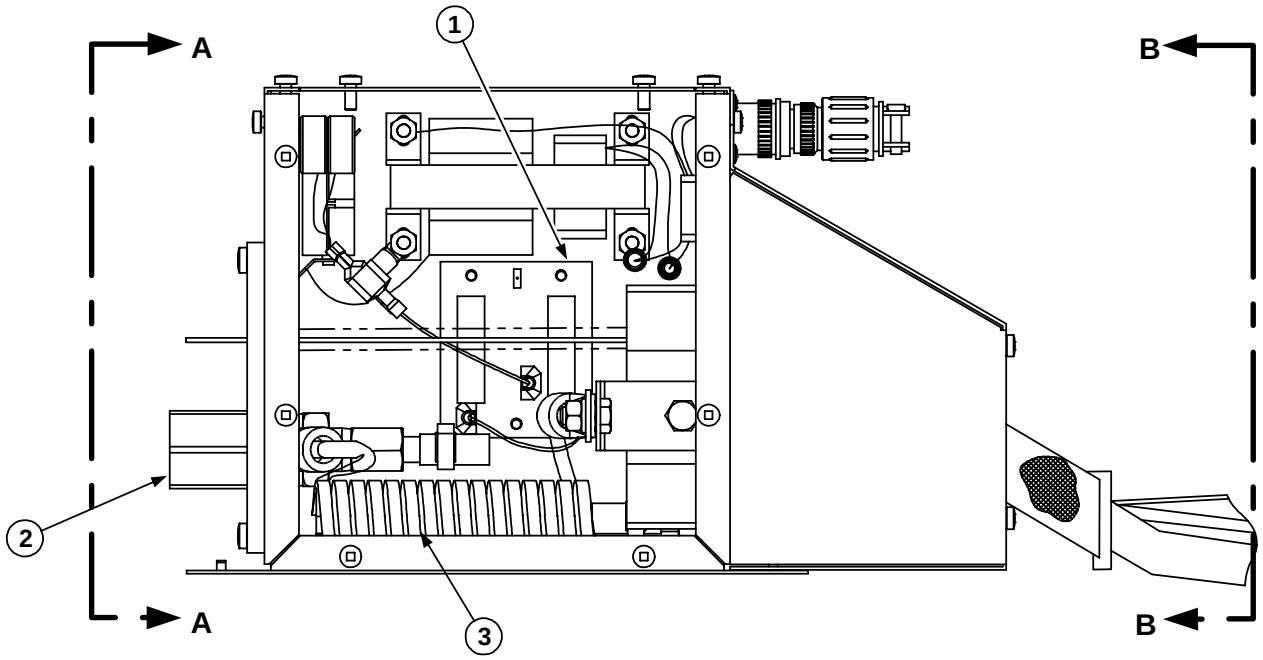
400V CE

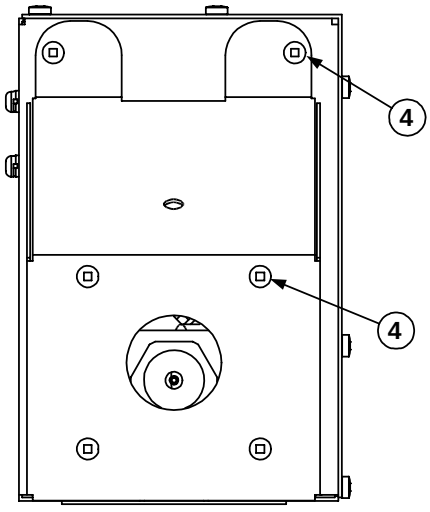


Ref.	Part Number	Quantity	Description	Elect.
1	36822	1	Hose, Assy, B/A-WX1/4NPT Rub	
2	0558001178	1	PCB Assy, IGBT Driver Bd	PCB2
3	952237	2	Capacitor, 1800uf, 400VDC, W/nut	C1,2
4	90858003	.75FT	Tubing, Plas, .25 od X .04 W BLK	
5	950487	1	Terminal Block, 2 pos, 20A	TB5
6	952235	1	Module, Input bridge/scr	IBR
7	17750010	1	Resistor, WW, 50W, 3%, 10 ohm	R7
8	Not used with RAS-2	1	Spark Gap	SG
9	951800	1	Module Dual IGBT 150V 1200A	Q1
10	952255	1	Capacitor, 40 uf, 400VDC	C4
11	950711	1	Thermal Switch, 194 deg.	TS1
12	951964	1	Capacitor, 2uf, 800VDC	C16
13	17721020	4	Resistor, WWFAHT, 25W, 1%, 20 ohm Nl	R3,4,5,6
14	952150	1	Bridge, 60ADC, 100NS, 600V	D1
15	952208	1	Standoff, insulating	TB3
16	952002	1	Core, Saturable	L3

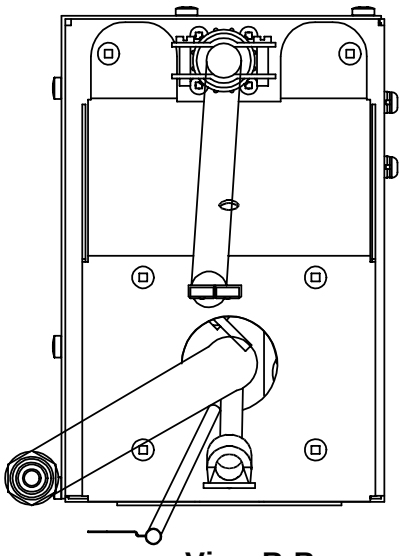
7.5 Remote Arc Starter (RAS-2) (P/N 0558003670)







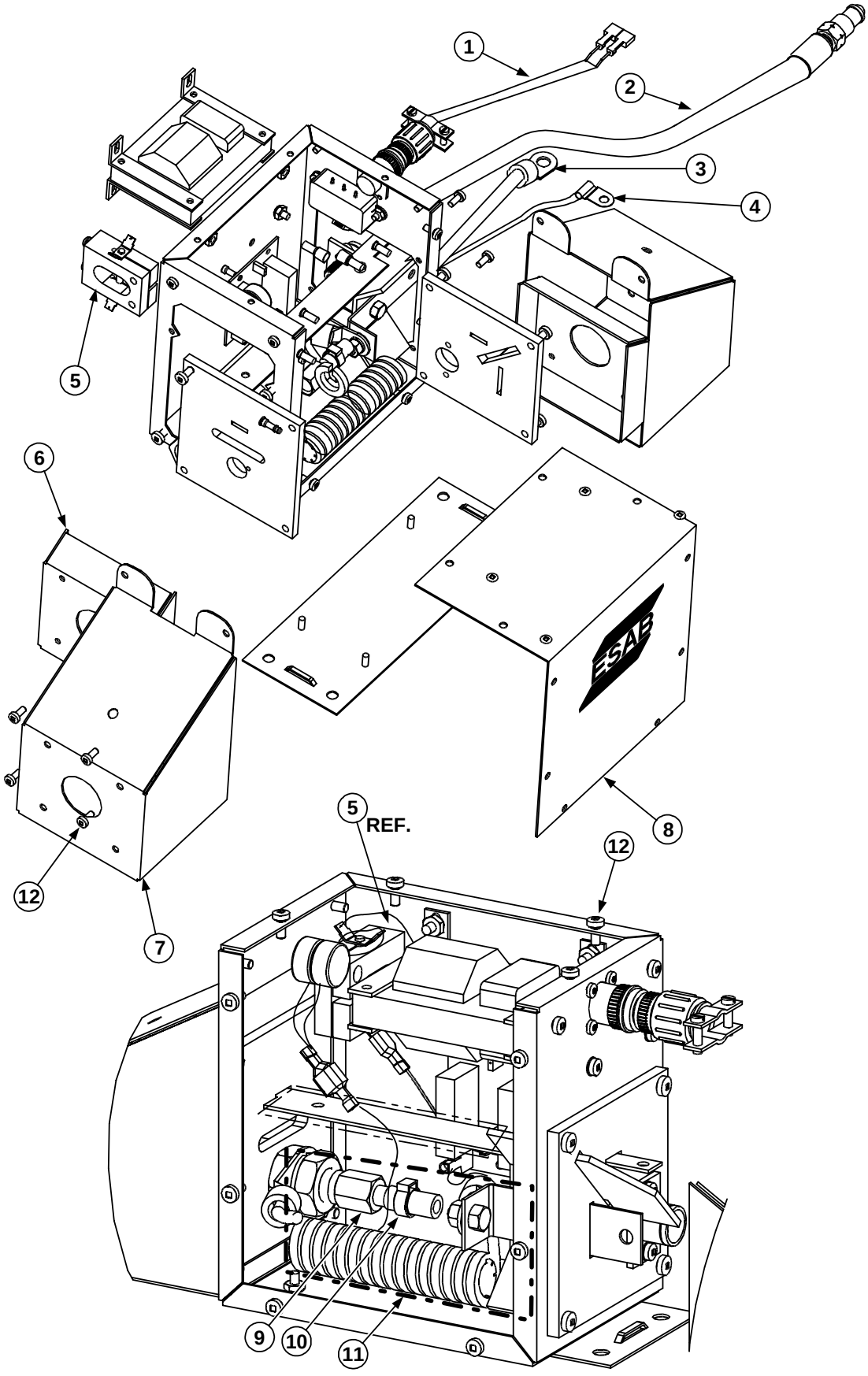
View A-A



View B-B

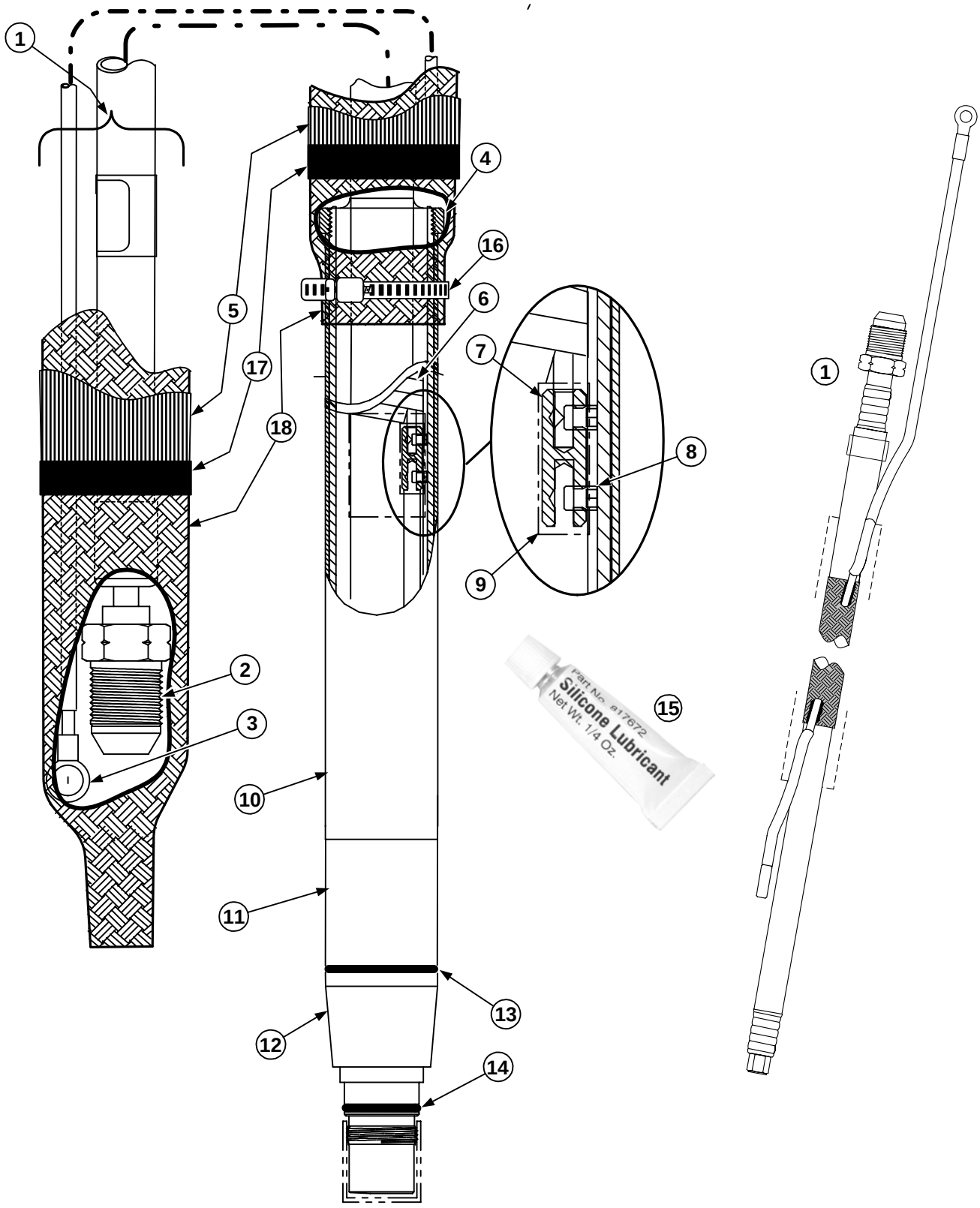
Ref.	Part Number	Quantity	Description	Elect.
1	674969	1	PC Board Filter	PCB1
2	634090	1	Adapt ¼ NPTM C/A W*F Cable	
3	0558003679	1	Reactor Assembly H.F.	
4	Reference		Screw, PHTF #10-32 X .38 inch	

Remote Arc Starter (RAS-2) (P/N 0558003670)



Ref.	Part Number	Quantity	Description	Elect.
1	37410		Cable Assembly, Arc Starter, 15,2m	
	37411		Cable Assembly, Arc Starter, 30,4m	
2	0558003692		Hose Air/Oxy ¼ NPTF RAS2, 15,4m	
	0558003693		Hose Air/Oxy ¼ NPTF RAS2, 30,4m	
3	0558003686		Cable, Pilot Arc, RAS2, 15,2m	
	0558003687		Cable, Pilot Arc, RAS2, 30,4m	
4	37341		Cable, Power RAS, 15,2m	
	37342		Cable, Power RAS, 30,4m	
5	0558002818		Spark Gap Electrode Holder Assembly	SG1
6	0558003675	2	Grounding Plate	
7	0558003672	2	Cover, Torch Connect, RAS2/PT20AMX	
8	0558003671	1	Cover, Box Side	
9	950853	2	Fitting, 1/4 NPT to 3/8 id Hose	
10	952860	2	Clamp, 1-ear w/insert 12.8 GER	
11	4600030		30mil Nomex	
12	Reference		Screw, PHTF #10-32 X .38 inch	

7.6 PT-20AMX Plasmarc Cutting Torch

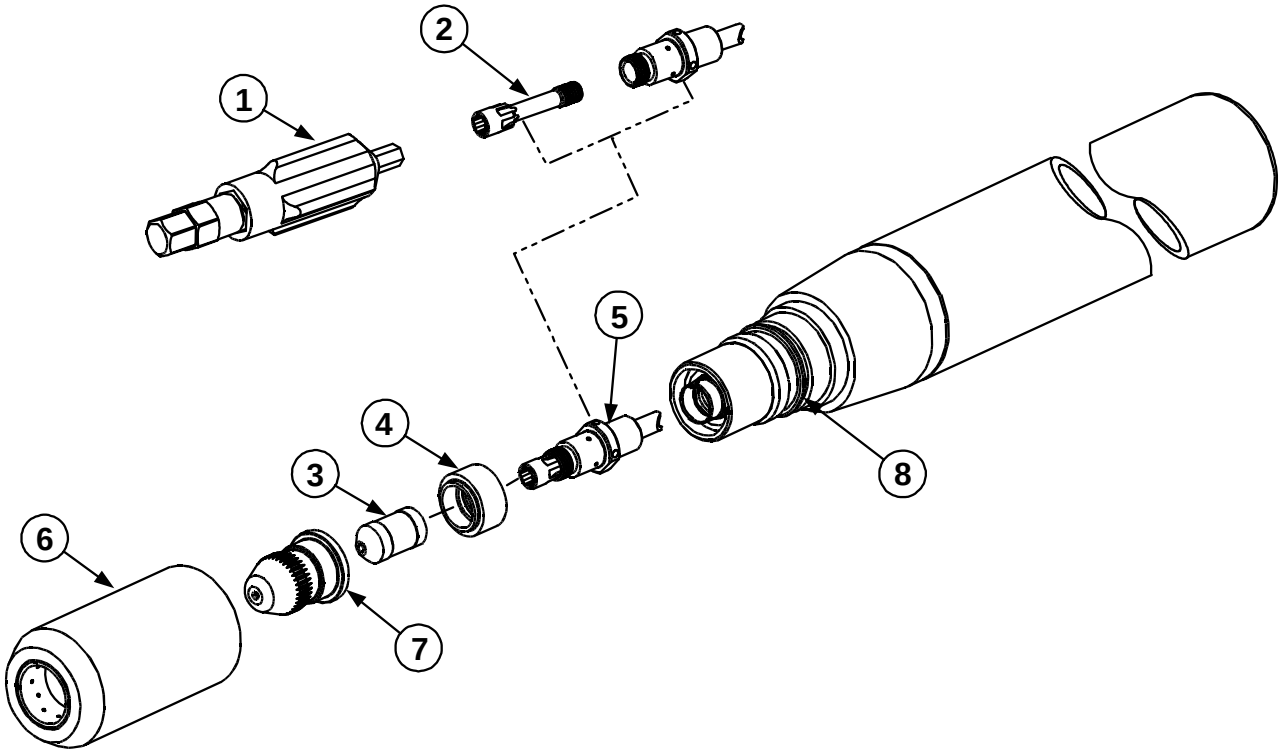


PT-20 AMX Plasma Torch with Coaxial Pilot Arc Cable

With 4 ft. torch leads, without handle rack	P/N 0558002632
With 17 ft. torch leads, without handle rack	P/N 0558002633
With 25 ft. torch leads, without handle rack	P/N 0558003381

Ref.	Description	Part Number
1	Torch Lead Assembly – 4 ft.	0558002638
	Torch Lead Assembly – 17 ft.	0558002639
	Torch Lead Assembly – 25 ft.	0558003383
4	Lock Ring	57N70
5	Rubber Boot	0558001157
6	Wrap with electrical tape as shown	Reference
7	H.F. Connector	17974
8	Set screw 6-32 X 3/16	Reference
9	Insulate with vinyl tubing and secure with electrical tape	Reference
10	Handle and sleeve without rack	22329
11	Handle	Reference
12	Basic Torch Body Assembly	21359
13	O-ring supplied with torch body	5W92
14	O-ring supplied with torch body	488157
15	Shield Shroud – 25 ft.	72020003
16	Lubricant	17672

PT-20 AMX Front End and Spare Parts Kit



9

Ref.	Description	Part Number
1	**Wrench Seat/Baffle**	**21375**
2	**Baffle Tube**	**21374**
3	**Electrode 50Hz**	**0558001617**
4	**Electrode Insulator**	**21373**
5	**Electrode Holder Assembly**	**21332**
6	**Heat Shield (70 and 100 Amp – Blue)**	**21326**
7	**Nozzle (70 Amp)** **Nozzle (50 Amp)**	**21329** **21330**
8	**O-Ring**	**488157**
9	**PT-20AMX Spare Parts Kit**	**0558002319**

Contents Description		Quantity
Heat Shield (70/100 A)*	21326	3
Cutting Nozzle (50 A)	21330	5
Cutting Nozzle (70 A)	23129	5
Electrode 50Hz	0558001617	5
Electrode Insulator	21373	1
Electrode Holder Assembly	21332	1
Baffle Tube	21374	1
Pilot Arc Adaptor	19497	1
O-ring	488157	5
Lubricant (1 oz.)	17672	1
Seat/Baffle Wrench	21375	1
1/16: Hex-Key Wrench	93750006	1

NOTICE

The description of the heat shield (P/N 21326) listed above indicates a range of 70 to 100 amperes. The PCM-875A is capable of a maximum of 60 amperes (60% duty cycle). Testing has proven satisfactory results when using this heat shield at 60 amps and lower.

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See back of Title Page for revision list.

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