

BRUKSANVISNING
INSTRUKTIONSBOG
INSTUKSJONSHÅNDBOK
KÄYTTÖOHJEET
INSTRUCTION MANUAL
BEDIENUNGSANLEITUNG

MANUEL D'INSTRUCTIONS
HANDLEIDING
MANUAL DE INSTRUCCIONES
MANUALE DI ISTRUZIONI
MANUAL DE INSTRUÇÕES
ΕΓΧΕΙΡΙΔΙΟ ΟΔΗΓΙΩΝ



F-15-418

ESAB Welding &
Cutting Products



PCM-875

SYSTEM FÖR LJUSBÅGSKÄRNING
PLASMASVEJSE- OG SKÆREAPPARATER
PLASMABUEKUTTER
PLASMAKAARISULATUSLEIKKAUSPAKETIT
PLASMA ARC CUTTING PACKAGES
PLASMA-SCHNEIDBRENNERSATZ
EQUIPEMENTS DE DECOUPE A L'ARC AU PLASMA
VLAMBOOGSNIJTOESTEL
CORTADORAS DE ARCO CON SISTEMA PLASMA
APPARECCHI DA TAGLIO AD ARCOPLASMA
MÁQUINAS DE CORTE POR ARCO DE PLASMA
ΠΑΚΕΤΤΑ ΚΟΠΗΣ ΜΕ ΤΟΞΟ ΠΛΑΣΜΑΤΟΣ

0558 000 880

DECLARATION OF CONFORMITY

acc. to the EC Low Voltage Directive 73/23/EEC, acc. to the EC EMC Directive 89/336/EEC

FÖRSÄKRAN OM ÖVERENSSTÄMMELSE

enligt lågspänningsdirektivet 73/23/EEG, enligt EMC-direktivet 89/336/EEC

Fill in and put a cross in appropriate boxes Fyll i och kryssa tillämpliga rutor

Type of equipment Materialslag

Plasma Cutting System

Brand name or trade mark Fabrikatnamn eller varumärke

ESAB

Type designation etc. Typbeteckning etc.

PCM-875 36582 (36591), 36882 (36883), 36728 (36729)

Manufacturer's name, address, telephone No, telefax No: Tillverkarens namn, adress, telefon, telefax:

ESAB Welding & Cutting Products

411 South Ebenezer Road, Florence, South Carolina 29501

Phone: +1 803 669 4411, Fax: +1 803 664 4258

Manufacturer's authorised representative established within the EEA; Name, address, telephone No, telefax No:

Tillverkarens representant inom EES; Namn, adress, telefon, telefax:

Esab Welding Equipment AB

Walter Edströms väg, 695 81 LAXÅ, SWEDEN

Phone: +46 584 81 000, Fax: +46 584 411 924

The following harmonised standards or technical specifications (designations) which comply with good engineering practice in safety matters in force within the EEA have been used in the design:

Följande harmoniserande standarder eller tekniska specifikationer (beteckningar) som uppfyller god säkerhetsteknisk praxis inom EES har använts i konstruktionen:

EN 50 192	Arc Welding Equipment
	Plasma Cutting Systems
EN 50 199	Electromagnetic compatibility (EMC)
	Product Standard for arc welding equipment

1. The equipment conforms completely with the above stated harmonised standards or technical specifications.

Materielen överensstämmer helt med ovan angivna harmoniserade standarder eller tekniska specifikationer.

OR ELLER

2. The equipment conforms only partially with the above stated harmonised standards or technical specifications but complies with good engineering practice in safety matters in force within the EEA. Materielen överensstämmer endast delvis med ovan angivna harmoniserade standarder eller tekniska specifikationer men uppfyller god säkerhetsteknisk praxis inom EES.

Additional information Övriga uppgifter**By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorised representative established within the EEA, that the equipment in question complies with the safety requirements stated above.**

Genom att underteckna detta dokument försäkras undertecknad såsom tillverkare, eller tillverkarens representant inom EES, att angiven materiel uppfyller säkerhetskraven angivna ovan.

 Manufacturer
Tillverkareor
eller **Manufacturer's authorised representative**
Tillverkarens representant**Date** Datum
Laxå 97.08.12**Signature/Underskrift****Position** Befattning

Managing Director

Clarification namnförtydligande

Paul Karlsson

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DANSK	14
NORSK	24
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ENGLISH	44
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FRANÇAIS	64
NEDERLANDS	74
ESPAÑOL	84
ITALIANO	94
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 Διατηρείται το δικαίωμα τροποποίησης προδιαγραφών Χωρίς προειδοποίηση.



WARNING



ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.

ELECTRIC SHOCK - Can kill

- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from earth and the workpiece.
- Ensure your working stance is safe.

FUMES AND GASES - Can be dangerous to health

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to keep fumes and gases from your breathing zone and the general area.

ARC RAYS - Can injure eyes and burn skin.

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

FIRE HAZARD

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby.

NOISE - Excessive noise can damage hearing

- Protect your ears. Use ear defenders or other hearing protection.
- Warn bystanders of the risk.

MALFUNCTION - Call for expert assistance in the event of malfunction.

READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING.

PROTECT YOURSELF AND OTHERS!

1 DESCRIPTION

1.1 GENERAL

The PCM-875 is a compact, completely self-contained plasma cutting system. As shipped, the system is fully assembled and ready to cut after being connected to input power and a source of compressed air (6 to 10 bars). The PCM-875 package uses the heavy-duty PT-27 torch to deliver cutting power for severing materials up to 32 mm thick. Refer to the following paragraphs for descriptions of the PCM-875 packages available as well as performance specifications.



WARNING

Use only ESAB Plasmarc torches that are designed for use with this console. Use of torches not designed for use with this console could create an **ELECTRIC SHOCK HAZARD**. Do NOT use or modify the PT-23, PCT-80 or any other torch for use on this console.

1.2 SCOPE

The purpose of this manual is to provide the operator with all the information required to install and operate the PCM-875 plasma arc cutting package. Technical reference material is also provided to assist in troubleshooting the cutting package.

1.3 PACKAGES AVAILABLE

PCM-875 packages are available with the choice of the following input power:

- 220 V, 50/60 Hz, 3-phase, CE 558000-688
- 400 V, 50/60 Hz, 3-phase, CE 558000-687

Each PCM-875 package includes the following components:

- PT-27 Torch, 75° head, 7.6 m 558000-487
- PT-27 Spare Parts Kit
- (See Table 1-1) 558000-488
- PCM-875 Console/Power Source,
220 or 400 V input

Table 1-1. PT-27 Spare Parts Kit, 558000-488, Contents

Description	Part Number	Quantity
50 - 60 A Nozzle	558000-363	4
Electrode	558000-364	3
Swirl Baffle	558000-365	1
Heat Shield	558000-366	2
Standoff Guide	558000-367	1
Valve Pin	558000-479	1
Fuse, 15 A, 600 VDC, Fast Acting	558000-517	1



1.4 SPECIFICATIONS

Table 1-2: PCM-875 Specifications

Rated Output	60% Duty Cycle*	60 A @ 120 V dc
	100% Duty Cycle*	50 A @ 120 V dc
Output Current Range		10 to 60 Amperes
Open Circuit Voltage		275 V dc
Rated Primary Input @ 7.2 kW Max. Output Power 60 A @ 120 Vdc	3-phase	24 A/phase
	3-phase	13 A/phase
Power Factor @ 60 Amperes Output		90% (220 V, 3-phase) 92% (400 V, 3-phase)
Efficiency @ 60 Amperes Output		90% Typical
Current Capacity	PT-27	80 A DCSP
Air Requirements	PT-27	150 l/min @ 4.5 - 5.2 bars
Dimensions	Length	516 mm
	Height	409 mm
	w/handles	465 mm
	Width	
	w/o opt. storage	275 mm
	w/ opt. torch storage	333 mm
Weight of PCM-875 System		39.5 kg
Shipping Weight		45.4 kg

*Duty cycle is based on a 10-minute period; therefore, a 60-percent duty cycle means the power source may operate for 6 minutes with a cool down period of 4 minutes and a 100-percent duty cycle means the power source may operate continuously.



Table 1-3. PT-27 Torch Specifications

Current Capacity (100% duty)	80 A DCSP
Length of Service Lines	7.6 or 15.2 m
Weight	
7.6 m	2.4 kg
15.2 m	4.4 kg

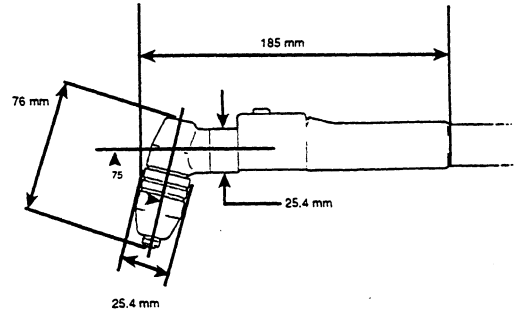


Figure 1-1. PT-27 Dimensions

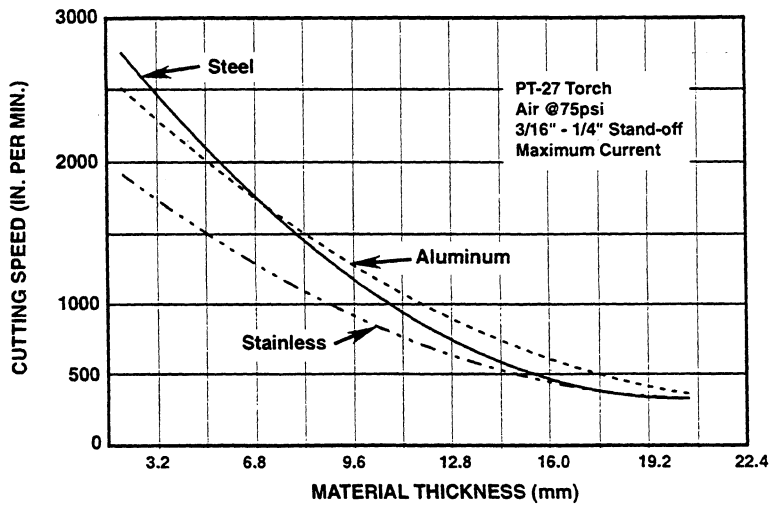


Figure 1-2. PT-27/PCM-875 Cutting Performance

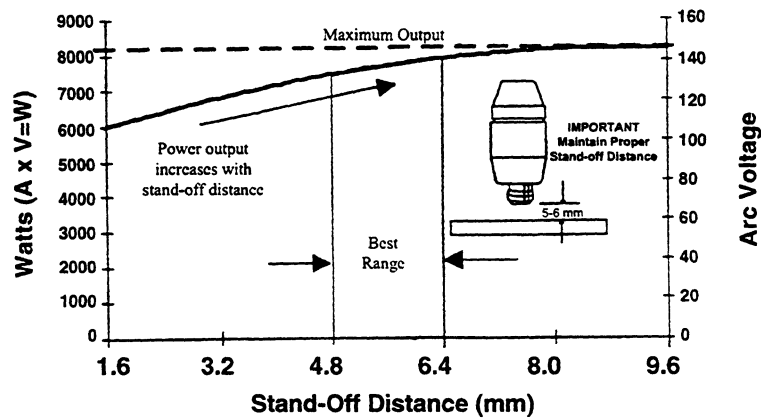


Figure 1-3. Standoff vs. Power Output

1.5 OPTIONAL ACCESSORIES

1. **Torch Wrap/Spare Parts Kit Holder, 558000-420.** Units have 4 mounting holes on left side for mounting this accessory holder.
2. **Wheel Cart, 558000-789.** This 150 mm high cart has front swivel casters and rear casters to make it easier to roll the PCM-875 around the job site.



2 INSTALLATION

2.1 GENERAL

Proper installation is important for satisfactory and trouble-free operation of the PCM-875 cutting package. It is suggested that each step in this section be studied carefully and followed closely.

2.2 EQUIPMENT REQUIRED

A source of clean, dry air that supplies 150 l/min at 4.5-5.2 bars is required for the cutting operation. The air supply should not exceed 10 bars (the maximum inlet pressure rating of the air filter-regulator supplied with the package).

2.3 LOCATION

Adequate ventilation is necessary to provide proper cooling of the PCM-875. The amount of dirt, dust, and excessive heat to which the equipment is exposed, should be minimized. There should be at least 300 mm of clearance between the PCM-875 power source and wall or any other obstruction to allow freedom of air movement through the power source.

CAUTION

Installing or placing any type of filtering device will restrict the volume of intake air, thereby subjecting the power source internal components to overheating. The warranty is void if any type of filter device is used.

2.4 INSPECTION

- A. Remove the shipping container and all packing material and inspect for evidence of concealed damage which may not have been apparent upon receipt of the PCM-875. Notify the carrier of any defects or damage at once.
- B. Check container for any loose parts prior to disposing of shipping materials.
- C. Check air louvers and any other openings to ensure that any obstruction is removed.

2.5 PRIMARY ELECTRICAL INPUT CONNECTIONS (FIGURE 2-1)

WARNING

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

CAUTION

Be sure that the power source is properly configured for your input power supply. **DO NOT** connect a power source configured for 220 V to a 400 V input power supply. Damage to the machine may occur.

The PCM-875 consoles are equipped with a 10-ft, 4-conductor input power cable for 3-phase connection. If single-phase connection is desired, tape back the 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 (see Fig. 2-1 and Table 2-1 for fuse sizes). The input power cable of the console may be connected directly to the disconnect switch or you may purchase a proper plug and receptacle from a local electrical supplier. If using plug/receptacle combination, see Table 2-1 for recommended input conductors for connecting receptacle to line disconnect switch.

WARNING

The chassis must be connected to an approved electrical ground. Failure to do so may result in electrical shock, severe burns or death.



Table 2-1. Recommended Sizes For Input Conductors and Line Fuses

Input Requirements			Input & Gnd Conductor mm ²	Fuse Size Amps
Volts	Phase	Amps		
220	3	24A/Ph.	16	50
400	3	13 A/Ph.	6	25

2.6 SECONDARY (OUTPUT) CONNECTIONS (REFER TO FIG. 2-1)

WARNING

Before making any connections to the power source output terminals, make sure that all primary input power to the power source is deenergized (off) at the main disconnect switch and that the input power cable is unplugged.

1. For operator safety, the torch connections are located on the output terminal board behind the lower portion of the front panel. Remove access door to output terminal board from right panel of power source.
2. Thread the power cable, pilot arc cable and switch lead of the PT-27 through the right open bushing of the front panel. Connect power cable to the torch fitting (left-hand threads); bolt the pilot arc cable ring connection to the copper terminal; and plug in the switch lead to the torch switch receptacle on the output terminal board. Make sure the power and pilot arc cable connections are wrench-tight. Make sure plug of switch lead is firmly locked in place.
3. Reassemble the access door to the power source.
4. Connect your air supply to the inlet connection of the filter-regulator.
5. Clamp the work cable to the workpiece. Be sure the workpiece is connected to an approved earth ground with a properly sized ground cable.

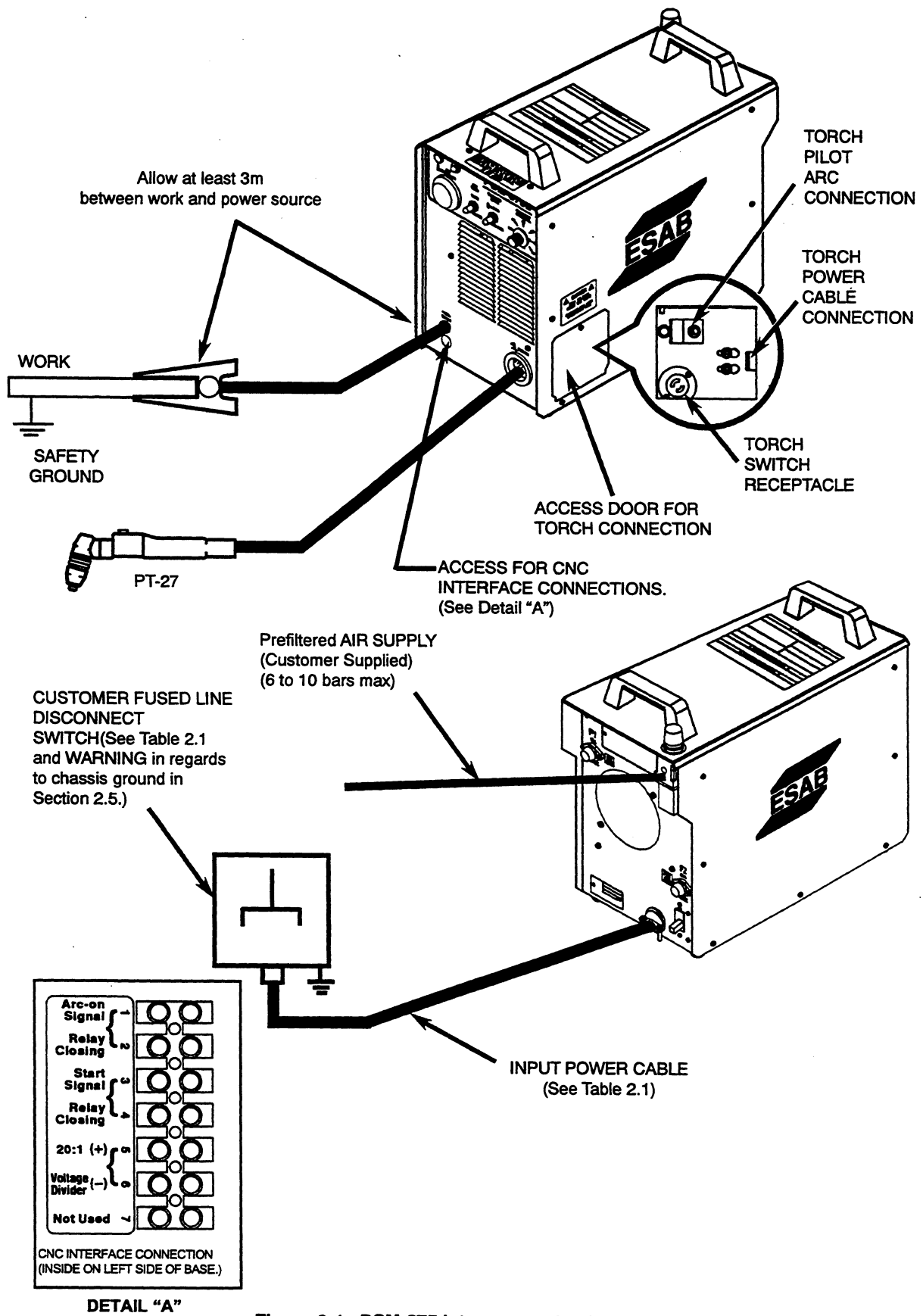


Figure 2-1. PCM-875 Interconnection Diagram

3 OPERATION

3.1 OPERATION



ELECTRIC SHOCK can kill.

- Do NOT operate the unit with the cover removed.
- Do NOT apply power to the unit while holding or carrying the unit.
- Do NOT touch any torch parts forward of the torch handle (nozzle, heat shield, electrode, etc.) with power switch on.



**ARC RAYS can burn eyes and skin;
NOISE can damage hearing.**

- Wear welding helmet with No. 6 or 7 lens shade.
- Wear eye, ear, and body protection.

CAUTION

Position the PCM-875 at least 3 meters from the cutting area. Sparks and hot slag from the cutting operation can damage the unit.

3.2 PCM-875 CONTROLS (FIGURE 3-1)

- A. **Power Switch (located on rear panel).** When placed in ON position, the green pilot light will glow indicating control circuit is energized and the cooling fan will run.
- B. **Output Current Control.** Adjustable from 10 to 60 amperes.
- C. **Air Test Switch.** When placed in Test position, air filter-regulator can be adjusted to desired pressure (4.5-6.2 bars) before cutting operations. Allow air to flow for a few minutes. This should remove any condensation that may have accumulated during shut-down period. Be sure to place switch in OPERATE position before starting cutting operations.
- D. **Trigger Lock Switch.** When placed in LOCK position, this permits releasing torch switch button after cutting arc has been initiated. To extinguish arc at end of cut, press and release torch switch button again or pull torch away from work. When placed in UNLOCK position, torch switch must be held closed by the operator during the entire cutting operation and then released at the end of cut.

E. **Fault Light.** Will glow amber under the following conditions and operations will come to a complete stop.

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

Over Temperature: The fault light will be mostly off but will flick on for about 1/10th of a second every second. This indicates that the duty cycle has been exceeded. Allow the power source to cool down before returning to operate.

High/Low Line Voltage: The fault light will rapidly blink on and off (five times per second). This indicates that the input voltage is outside the "+ or -" 15% range of the input rating.

Over-Current: The fault light will be on continuously. This indicates that input current has been exceeded.

All fault signals will remain on for a minimum of 10 seconds. If fault clears, all will reset automatically except for over-current. To clear over-current, the power must be shut off for 5 seconds and then turned back on.

3.3 CUTTING WITH THE PT-27

Use the following procedures to cut with the PT-27 torch (Figure 3-4).

- A. Hold the torch nozzle approximately 3 to 5 mm above the work and tilted at about 15 - 30°. This reduces the chance of spatter entering the nozzle. If the PT-27's standoff tool is being used, set the standoff between 5 and 6 mm.
- B. Depress the torch switch. Air should flow from the torch nozzle.
- C. Two seconds after depressing the torch switch, the pilot arc should start. The main arc should immediately follow, allowing the cut to begin. (If using the trigger LOCK mode, torch switch may be released after establishing the cutting arc.)
- D. After starting the cut, the torch should be maintained at a 5-15° forward angle (Figure 3-2). This angle is especially useful in helping to create a "drop" cut. When not using the standoff guide, the nozzle should be held approximately 6 mm from the work.

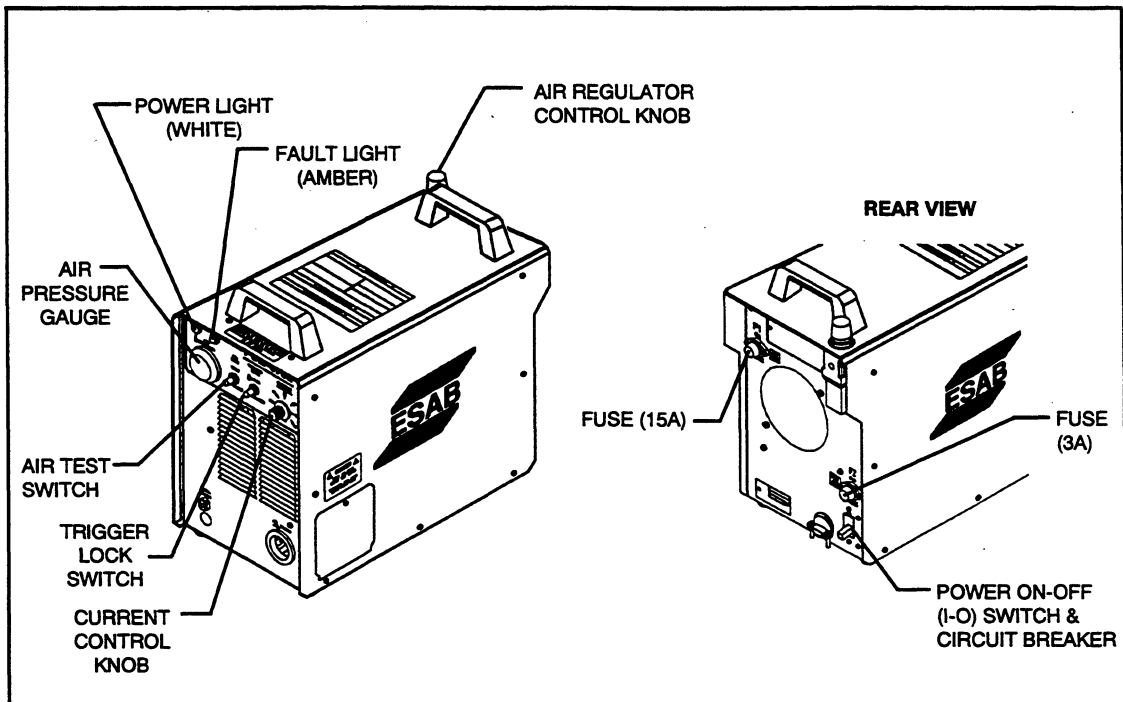


Figure 3-1. PCM-875 Controls

- E. When ending a cut, the torch switch should be released (press and release if using trigger LOCK mode) and lifted off the workpiece just before the end of the cut. This is to prevent the high frequency from reigniting after cutting arc extinguishes and causing damage to the nozzle (double arcing).

NOTE: When replacing the nozzle, always inspect the electrode for wear. If less than 18 mm of electrode shaft is remaining, replace the electrode. If the electrode is used beyond this recommended wear limit, damage to the torch and power source may occur. Nozzle life is also greatly reduced when using the electrode below the recommended limit. Refer to Figure 3-3.

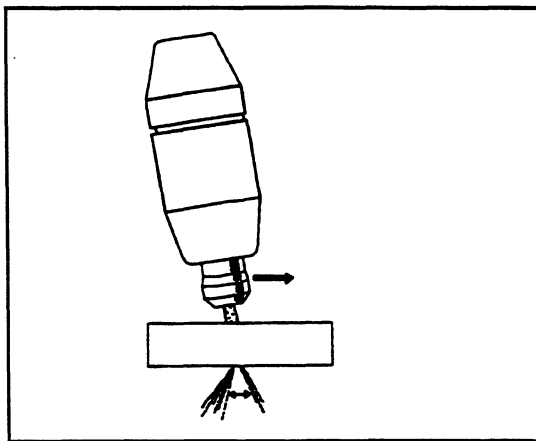


Figure 3-2. Recommended Torch Angle of 5° to 15°

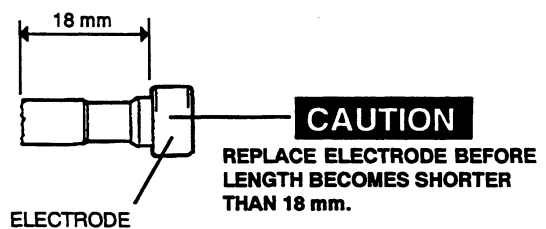


Figure 3-3. Electrode Wear Limit

- F. For rapid re-starts, such as grate or heavy mesh cutting, do not release the torch switch. In the postflow mode, the arc can be re-started immediately by depressing the torch switch. This avoids the 2-second preflow portion of the cutting cycle.

3.3.1. Drag Cutting with the PT-27/PCM-875 System

If drag cutting is desired, the 15 amp pilot arc fuse located on the rear panel must be removed. This converts pilot arc starting to high frequency starting allowing you to cut by dragging the torch nozzle on the workpiece. Cutting thickness should not exceed 10 mm for drag cutting.

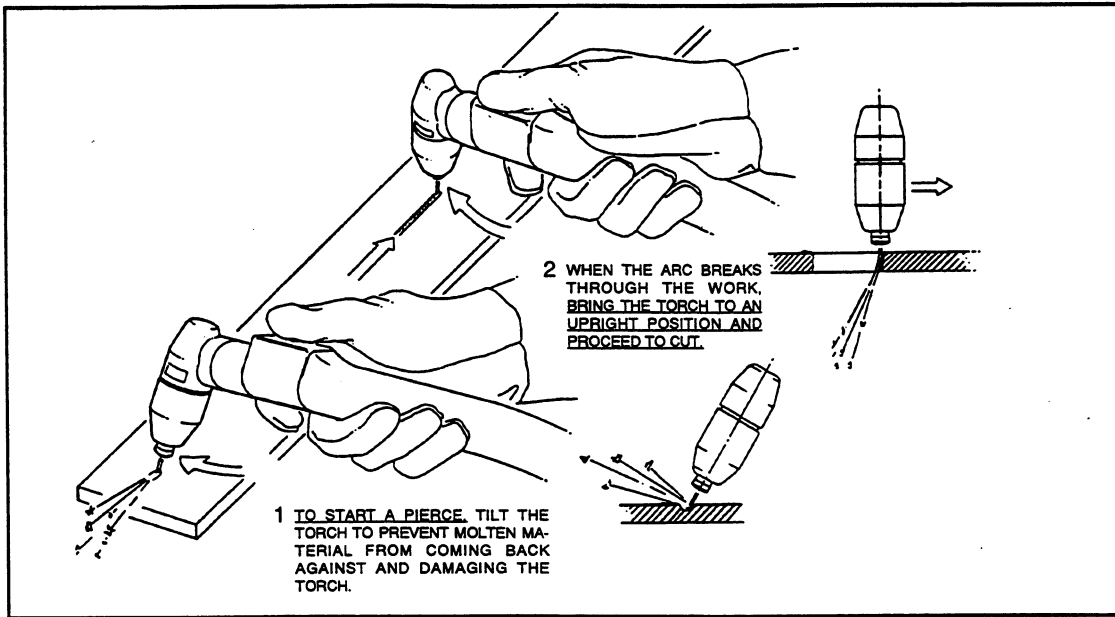


Figure 3-4. Piercing Technique using the PT-27

3.4 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.

A. Insufficient Penetration.

1. Current too low.
2. Cutting speed too fast.
3. Damaged cutting nozzle.
4. Improper air pressure.
5. Low air flow rate.

B. Main Arc Extinguishes.

1. Cutting speed too slow.
2. Worn electrode.

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

1. Current too low.
2. Cutting speed too fast or too slow.
3. Improper air pressure.
4. Faulty nozzle or electrode.
5. Low air flow rate.

D. Double Arcing. (Damaged Nozzle Orifice.)

1. Low air pressure.
2. Damaged cutting nozzle.
3. Loose cutting nozzle.
4. Heavy spatter accumulation on nozzle.

E. Uneven Arc.

1. Damaged cutting nozzle or worn electrode.

F. Unstable Cutting Conditions.

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

G. Main Arc Does Not Strike.

1. Worn electrode.
2. Loose connections.
3. Worn cable not attached.

H. Poor Consumable Life.

1. Improper gas pressure.
2. Contaminated air supply.
3. Low air flow rate.