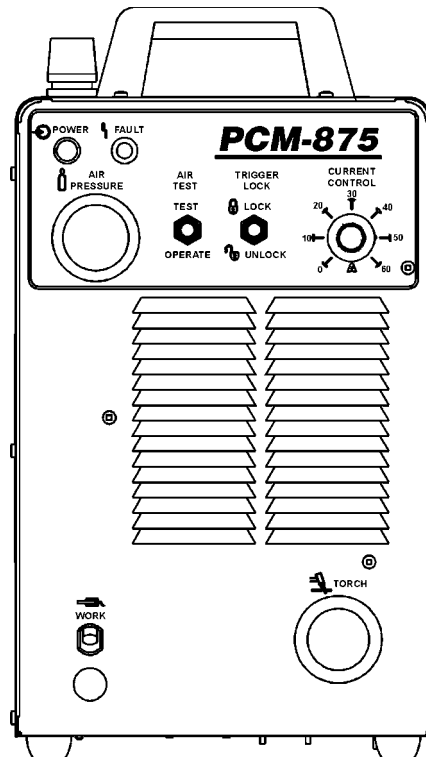


# PCM-875



## PLASMA CUTTING CONSOLE/POWER SOURCES

with CE Compliances  
230 V, 50 Hz, 3-Phase  
400 V, 50 Hz, 3-Phase



# 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!**

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### CAUTION

**Maintenance and Repair work should be performed by an experienced person, and electrical work only by a trained electrician. Do not permit untrained persons to inspect, clean, or repair equipment. Use only recommended replacement parts.**

For installation and operation instructions, see 558000-880 (F-15-418).

## 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	220 V ac, 50/60 Hz, 3-phase	24 A/phase
	400 V ac, 50/60 Hz, 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 bar
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.

## 2.1 GENERAL

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

**! WARNING**

Be sure that the wall disconnect switch or wall circuit breaker is open before attempting any inspection or work inside of the PCM-875.

## 2.2 INSPECTION AND CLEANING

Frequent inspection and cleaning of the PCM-875 is recommended for safety and proper operation. Some suggestions for inspecting and cleaning are as follows:

- Check work cable for secured connection to workpiece.
- Check safety earth ground at workpiece and at power source chassis.
- Check heat shield on torch. It should be replaced if damaged.
- Check the torch electrode and cutting nozzle for wear on a daily basis. Remove spatter or replace if necessary.
- Make sure cable and hoses are not damaged or kinked.
- Make sure all plugs, fittings, and ground connections are tight.
- With all input power disconnected, and wearing proper eye and face protection, blow out the inside of the PCM-875 using low-pressure dry compressed air.

**CAUTION**

Water or oil occasionally accumulates in compressed air lines. Be sure to direct the first blast of air away from the equipment to avoid damage to the PCM-875.

- Occasionally, bleed all water from the filter beneath the air filter-regulator.

## 2.3 PT-27 TORCH CONSUMABLE PARTS

**! WARNING**

Make sure power switch on PCM-875 is in OFF position before working on the torch.

**! WARNING**

The PT-27 torch head contains a gas flow check valve that acts in conjunction with the flow switch and circuitry within the power source. This system prevents the torch from being energized with high voltage if the torch switch is accidentally closed when the shield is removed. Always replace torch with the proper torch manufactured by ESAB since it alone contains ESAB's patented safety interlock.

To assemble the consumable parts, refer to Figure 2-1.

- Place nozzle, swirl baffle and electrode into the shield as shown.
- Thread assembly to the torch body and hand tighten. **Always make sure the shield is very tight before cutting.**

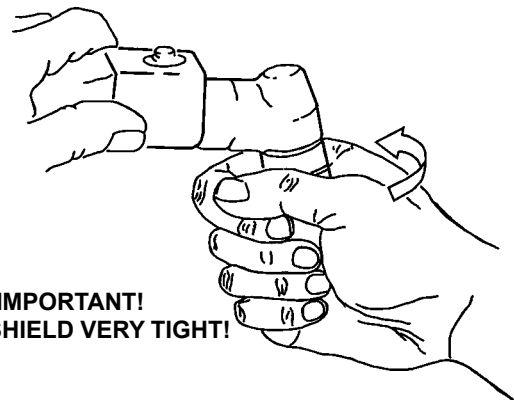
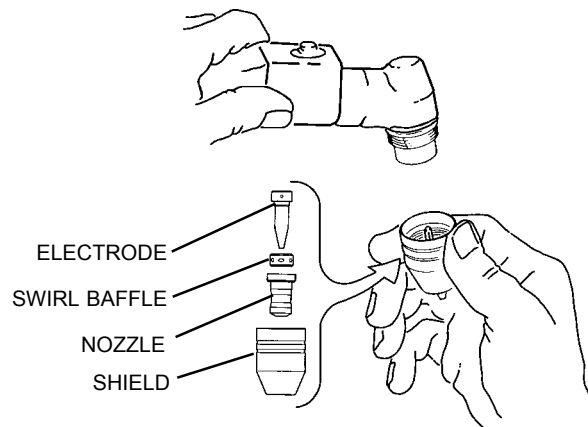


Figure 2-1. Assembly of PT-27 Torch Front End Parts

**2.4 FLOW SWITCH (FIGURE 2-2)**

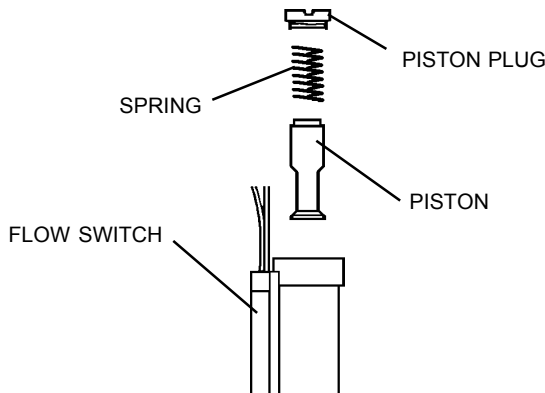
When excessive contamination is found in the air, the flow switch (FS-4) should be disassembled and cleaned as follows:

- A. Ensure the system is shut down and there is no trapped air under pressure in the piping.
- B. Remove the piston plug.
- C. Remove the spring. Use care when handling spring to prevent distortion.
- D. Remove the piston.
- E. Clean all parts with cleaning agent.

**NOTE**

**Ensure cleaning agent does not contain solvents which can degrade polysulfone. Warm water and detergent is recommended for cleaning. Allow all parts to dry thoroughly before reassembly.**

Reassemble the flow switch in reverse order.



**Figure 2-2. Disassembly / Assembly of Flow Switch**

**2.5 IGBT HANDLING & REPLACEMENT**

Since IGBT gates are insulated from any other conducting region, care should be taken to prevent static build up, which could possibly damage gate oxides. All IGBT modules are shipped from the factory with conductive foam contacting the gate and emitter sense pins.

Always ground parts touching gate pins during installation. In general, standard ESD precautions application to FETs should be followed.

Other handling precautions that should also be observed are as follows:

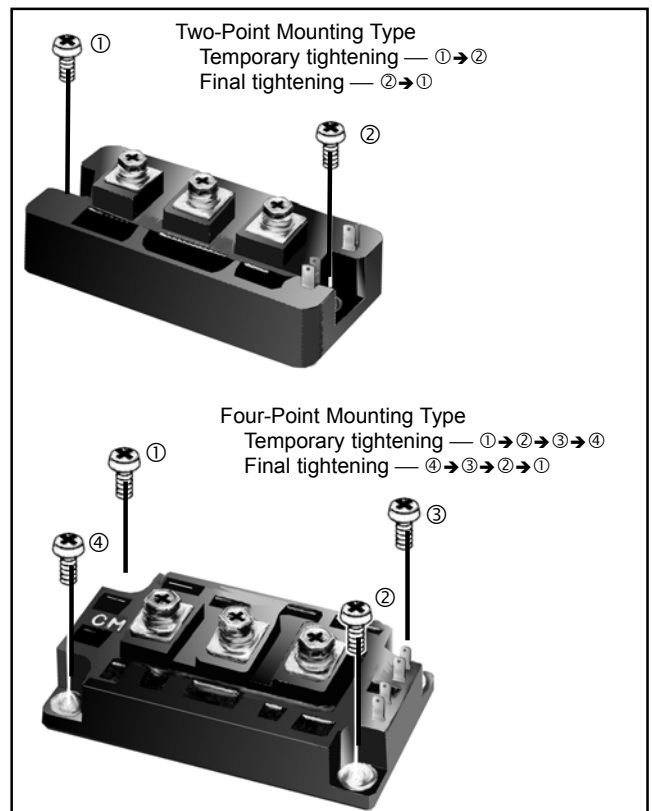
- Use grounded work station with grounded floors and grounded wrist straps when handling devices.
- Use a 100W resistor in series with the gate when performing curve tracer tests.
- Never install devices into systems with power connected to the system.
- Use soldering irons with grounded tips when soldering to gate terminals.

When mounting IGBT modules on a heatsink, certain precautions should be taken to prevent any damage against a sudden torque. If a sudden torque (“one-sided tightening”) is applied at only one mounting terminal the ceramic insulation plate or silicon chip inside the module may get damaged.

The mounting screws are to be fastened in the order shown in Figure 2-3. Also, care must be taken to achieve maximum contact (i.e. minimum contact thermal resistance) for the best heat dissipation.

Application of a thermal pad on the contact surface improves its thermal conductivity. See Replacement Parts section for the required pad.

A torque wrench should be used. Tighten mounting screws to 32 kg-cm; wire connecting screws to 22 kg-cm. If torque is too heavy, the device can damage like the above “one-sided tightening”.



**Figure 2-3. Screw Fastening Order**

### 3.1 Troubleshooting



#### **WARNING**

**ELECTRIC SHOCK CAN KILL! Be sure that all primary power to the machine has been externally disconnected. Open the line (wall) disconnect switch or circuit breaker before attempting inspection or work inside of the power source.**

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

The cause of control malfunctions can be found by referring to the sequence of operations and electrical schematic diagram (Figure 3-1 or 3-3) and checking the various components. A volt-ohmmeter will be necessary for some of these checks.



#### **WARNING**

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

#### NOTE

Before checking voltages in the circuit, disconnect the power from the high frequency generator to avoid damaging your voltmeter.

### 3.2 TROUBLESHOOTING GUIDE

#### **A. Power Light (PL1) does not come on.**

1. Visually inspect the machine for any damage.
2. Check if the cooling fan is running. If not, then check the following :
  - a. Check if the machine power cord is plugged to the input power receptacle.
  - b. Measure the input power at the receptacle. If not present, then check the wall disconnect switch and it's fuses.
  - c. Check Fuse (F1). If fuse is ok, then check the input circuit breaker (CB1) for proper operation. Replace if defective.
3. If above items check OK , the problem is internal. Send unit to an Authorized Repair Station for repair.
  - a. If the cooling fan is running, then measure voltage between pins P2-11 and P2-14 of the control board (should be 115 VAC). If there is no voltage, then replace transformer T2.
  - b. If the voltage is present, then the pilot light may be defective.

#### **B. No Air Flow**

- A. Check air inlet supply. Unit requires 150 l/min at 4.5 bars.
- B. Check air hose and connections. Tighten if leaking.
- C. Does air flow when "air test" switch is in test position?
  - a. If not, check torch consumables, replace if necessary.
  - b. If above items check OK , the problem is internal. Take unit to an Authorized Repair Station for repair.

**C. The Power light is on, but nothing happens when the torch switch is depressed. Fault light does not activate.**

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

1. 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:
  - a. 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:
    - i. 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:
      - ii. 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 defective switch.
  - b. 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.
  - c. If everything above checks out all right, then the PCB1 Control Board should be replaced.

**D. Fault light activates when torch switch is closed.**

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:

1. **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.
2. **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.
  - a. 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.
  - b. 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.**

- c.. 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.
  - d. Air Check switch may also be defective if the air is flowing continuously or putting in the On position does not turn air on.
3. **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.
  - a. Thermal switch may be open. It will open if the temperature at the IGBT base reaches 94°C. 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.

b. If the switch is defective, replace it. Clean the surface of the heat sink before installing the switch.

4. **Over Current.** The fault light will be on **continuously**. This indicates that the input current to the main transformer has exceeded preset limits.

a. 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.

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

#### **E. Air is On but nothing happens when torch switch is operated.**

1. Check the pilot arc fuse located on the rear panel. If it is open, nothing will happen when the torch switch is depressed.

2. Check the torch. Make sure the heat shield is tight. PT27 torch has a built in safety circuit in which the torch will not fire if heat shield is tightly secured.

3. Check to assure high frequency is present at the torch. If not, then listen for high frequency at the high frequency generator. It is located on the bottom/right side of the unit. The high frequency gap is set between 0.71 to 0.78mm **Disconnect HI FREQUENCY leads.** Check for 115 volt supply to the high frequency unit between P2-12 & P2-13 of the control board with torch switch closed.

4. 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:

a. Check the operation of the Thermal Switch. See D.3.a. above.

b. Check Air Check switch operation. It might be stuck in On position. Pilot arc will not initiate if this switch is on the ON position. (safety reasons)

c. Check air flow switch. There may be internal short. See D.2.c above.

d. Measure voltage across C1 or C2 capacitor. It should be as follows:

approx. 325 VDC for the 220 volt unit.

approx. 280 VDC to 325 VDC for the 400 volt unit

If not, one of following could be defective:

1). Check the capacitors C1 and C2 for any damage.

2.) Check input bridge/SCR Module (IBR) This can be checked without taking it out of the circuit using an volt/ohmmeter. Replace it if found defective. Follow bridge installation instructions.

3.) Check Inrush current resistor, R10 and SCR1. Both are located on the input bridge heat sink. Replace it if defective.

e. IGBTs (2 on 220 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.



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

1. Make sure work clamp is connected to work material.
2. Check the torch. Replace consumables if necessary.
3. 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.

**G. Poor Cutting Performance.**

1. Check air supply regulator . It should be adjusted to 4.5-5.2 bar.
2. The air supplied to the torch should be free of oil and water.
3. Make sure the consumables in the torch are acceptable.
4. Check open circuit voltage. See E.4 above.
5. Check the output. Use a calibrated current probe capable of measuring 100 amps in the presence of high frequency.

**H. Air does not shut off.**

1. Check air test, the gas solenoid valve is energized when the switch is in the “on” position.
2. 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.
  - a. Check voltage to solenoid coil, if present when torch switch is unplugged, replace PCB1. If voltage is “0”, replace solenoid valve.

**I. Main arc is difficult to start.**

1. The most common reason is worn or missing consumables. Check and replace if necessary.
2. Input air must be clean and dry.
3. Input air pressure must be between 4.5 and 5.2 bar.
4. Torch connections must be tight.
5. Work cable and clamp must be in good condition and must make a good electrical connection to the material to be cut.
6. If above items check OK , the problem is internal. send unit to an Authorized Repair Station for repair.
  - a. Missing or weak pilot arc. Check pilot arc fuse, open circuit voltage, pilot arc resistors and pilot arc wiring.
  - b. Inoperative starter board (PCB-5).

### 3.3 REFERENCE VOLTAGE CHECKS

#### A. Control Board Assembly (PCB1)

##### 1. LED's

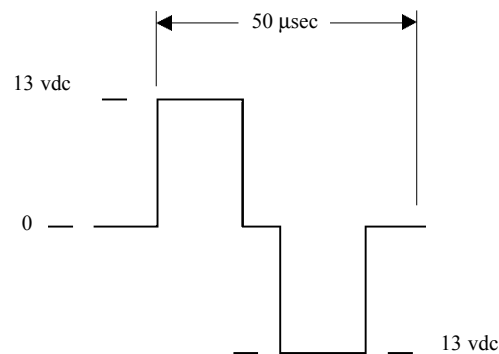
- LED-1 - Torch Switch
- LED-2 - High Frequency
- LED-3 - Gas Solenoid Valve

##### 2. 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 = 20 KHz
- TP-10 - IGBT's driving signal - switching frequency = 20 KHz

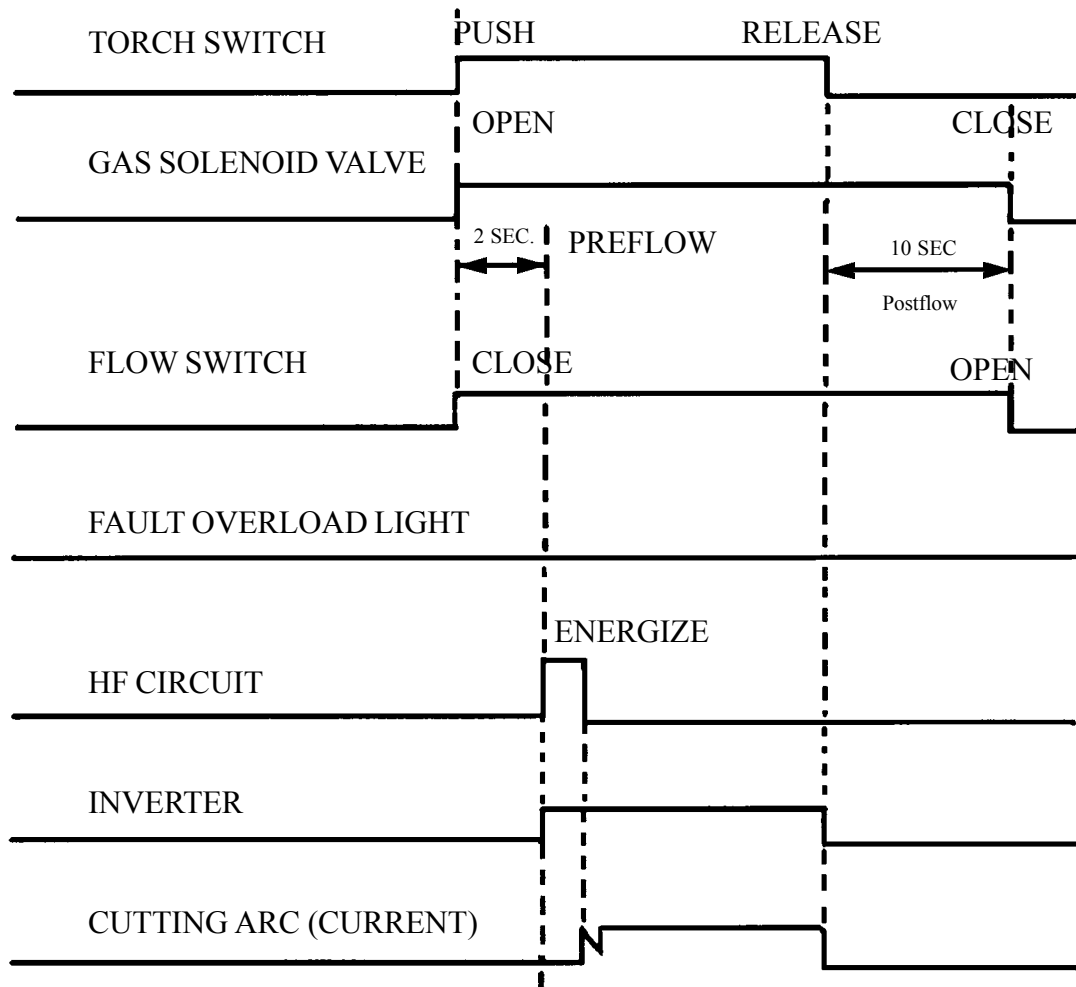


For 220 VAC input, the IGBT off time is 3μsec.  
For 400 VAC input, the IGBT off time is 6μsec.

**Figure 3.1 IGBT Gating Signal**

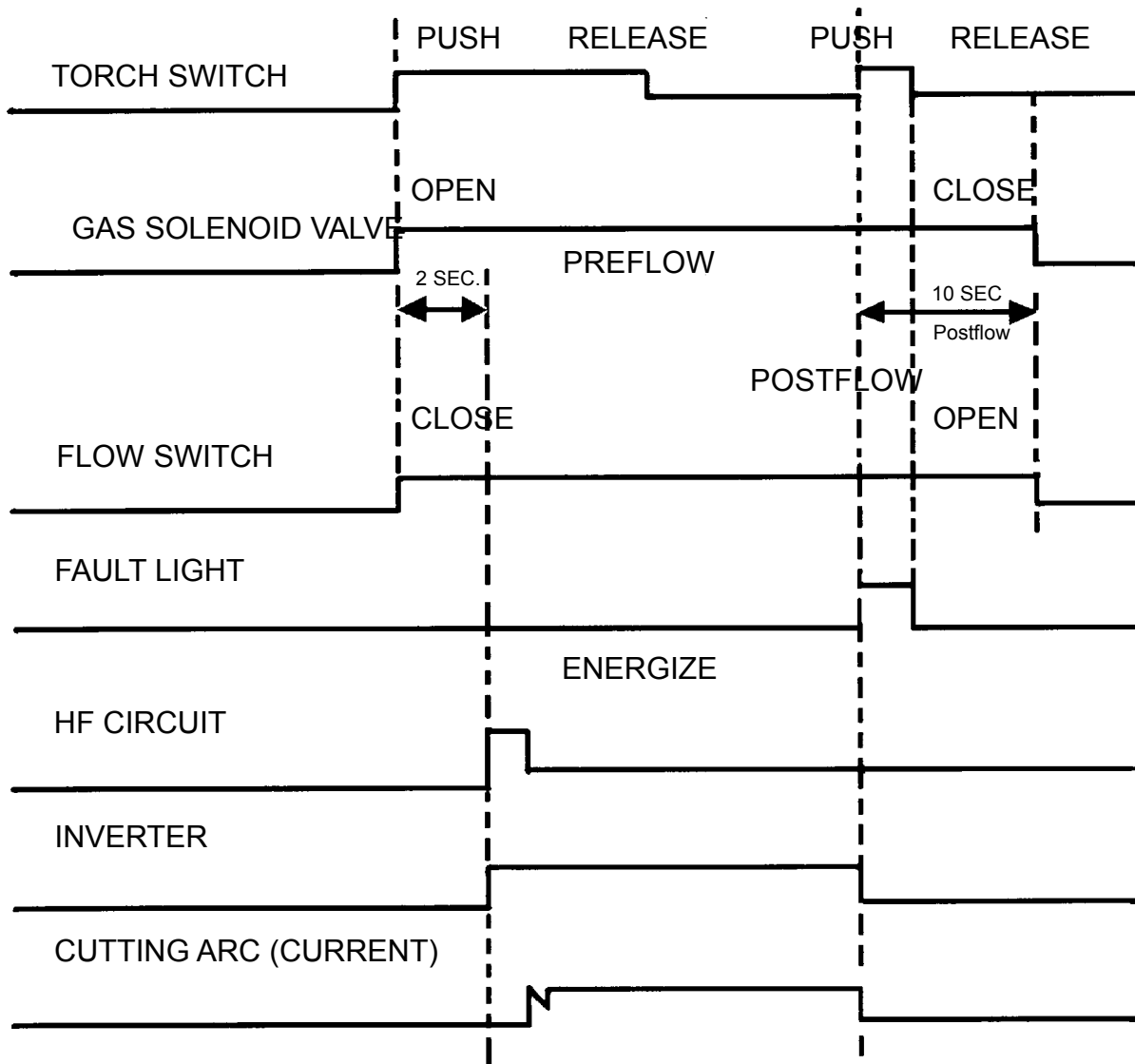
## 3.4 SEQUENCE OF OPERATION

## A. TRIGGER LOCK "UNLOCK" position

**NOTES:**

1. When the torch switch is pushed during postflow period, the postflow and preflow times are canceled, and the HF is energized immediately.
2. When the amber fault light comes on, cutting operation should be stopped. The postflow time starts from the moment the torch switch is released.

## B. TRIGGER LOCK "LOCK" position



## NOTES:

1. When the torch switch is pushed during postflow period, the postflow and preflow times are canceled, and the HF is energized immediately.
2. When the red fault light comes on, cutting operation should be stopped. The postflow time starts from the moment the torch switch is released.
3. FAULT light is on during second "turn-off" trigger only. This does not affect performance in any way.



DETAIL "A" (PCB1)

P1		P2		P5		P6	
1	TS-1	10	TS-7	1	J1-1	1	SC-1
2	TS-2	11	TS-8	2	J1-2	2	SC-2
3	TS-3	12	TS-9	3	J1-3	3	SC-3
4	TS-4	13	TS-10	4	J1-4	4	SC-4
5	TS-5	14	TS-11	5	J1-5	5	SC-5
6	TS-6	15	TS-12	6	J1-6	6	SC-6
7	TS-7	16	TS-13	7	J1-7	7	SC-7
8	TS-8	17	TS-14	8	J1-8	8	SC-8
9	TS-9	18	TS-15	9	J1-9	9	SC-9
10	TS-10	19	TS-16	10	J1-10	10	SC-10
11	TS-11	20	TS-17	11	J1-11	11	SC-11
12	TS-12	21	TS-18	12	J1-12	12	SC-12
13	TS-13	22	TS-19	13	J1-13	13	SC-13
14	TS-14	23	TS-20	14	J1-14	14	SC-14
15	TS-15	24	TS-21	15	J1-15	15	SC-15
16	TS-16	25	TS-22	16	J1-16	16	SC-16
17	TS-17	26	TS-23	17	J1-17	17	SC-17
18	TS-18	27	TS-24	18	J1-18	18	SC-18
19	TS-19	28	TS-25	19	J1-19	19	SC-19
20	TS-20	29	TS-26	20	J1-20	20	SC-20
21	TS-21	30	TS-27	21	J1-21	21	SC-21
22	TS-22	31	TS-28	22	J1-22	22	SC-22
23	TS-23	32	TS-29	23	J1-23	23	SC-23
24	TS-24	33	TS-30	24	J1-24	24	SC-24
25	TS-25	34	TS-31	25	J1-25	25	SC-25
26	TS-26	35	TS-32	26	J1-26	26	SC-26
27	TS-27	36	TS-33	27	J1-27	27	SC-27
28	TS-28	37	TS-34	28	J1-28	28	SC-28
29	TS-29	38	TS-35	29	J1-29	29	SC-29
30	TS-30	39	TS-36	30	J1-30	30	SC-30
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34	TS-34	43	TS-40	34	J1-34	34	SC-34
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36	TS-36	45	TS-42	36	J1-36	36	SC-36
37	TS-37	46	TS-43	37	J1-37	37	SC-37
38	TS-38	47	TS-44	38	J1-38	38	SC-38
39	TS-39	48	TS-45	39	J1-39	39	SC-39
40	TS-40	49	TS-46	40	J1-40	40	SC-40
41	TS-41	50	TS-47	41	J1-41	41	SC-41
42	TS-42	51	TS-48	42	J1-42	42	SC-42
43	TS-43	52	TS-49	43	J1-43	43	SC-43
44	TS-44	53	TS-50	44	J1-44	44	SC-44
45	TS-45	54	TS-51	45	J1-45	45	SC-45
46	TS-46	55	TS-52	46	J1-46	46	SC-46
47	TS-47	56	TS-53	47	J1-47	47	SC-47
48	TS-48	57	TS-54	48	J1-48	48	SC-48
49	TS-49	58	TS-55	49	J1-49	49	SC-49
50	TS-50	59	TS-56	50	J1-50	50	SC-50
51	TS-51	60	TS-57	51	J1-51	51	SC-51
52	TS-52	61	TS-58	52	J1-52	52	SC-52
53	TS-53	62	TS-59	53	J1-53	53	SC-53
54	TS-54	63	TS-60	54	J1-54	54	SC-54
55	TS-55	64	TS-61	55	J1-55	55	SC-55
56	TS-56	65	TS-62	56	J1-56	56	SC-56
57	TS-57	66	TS-63	57	J1-57	57	SC-57
58	TS-58	67	TS-64	58	J1-58	58	SC-58
59	TS-59	68	TS-65	59	J1-59	59	SC-59
60	TS-60	69	TS-66	60	J1-60	60	SC-60
61	TS-61	70	TS-67	61	J1-61	61	SC-61
62	TS-62	71	TS-68	62	J1-62	62	SC-62
63	TS-63	72	TS-69	63	J1-63	63	SC-63
64	TS-64	73	TS-70	64	J1-64	64	SC-64
65	TS-65	74	TS-71	65	J1-65	65	SC-65
66	TS-66	75	TS-72	66	J1-66	66	SC-66
67	TS-67	76	TS-73	67	J1-67	67	SC-67
68	TS-68	77	TS-74	68	J1-68	68	SC-68
69	TS-69	78	TS-75	69	J1-69	69	SC-69
70	TS-70	79	TS-76	70	J1-70	70	SC-70
71	TS-71	80	TS-77	71	J1-71	71	SC-71
72	TS-72	81	TS-78	72	J1-72	72	SC-72
73	TS-73	82	TS-79	73	J1-73	73	SC-73
74	TS-74	83	TS-80	74	J1-74	74	SC-74
75	TS-75	84	TS-81	75	J1-75	75	SC-75
76	TS-76	85	TS-82	76	J1-76	76	SC-76
77	TS-77	86	TS-83	77	J1-77	77	SC-77
78	TS-78	87	TS-84	78	J1-78	78	SC-78
79	TS-79	88	TS-85	79	J1-79	79	SC-79
80	TS-80	89	TS-86	80	J1-80	80	SC-80
81	TS-81	90	TS-87	81	J1-81	81	SC-81
82	TS-82	91	TS-88	82	J1-82	82	SC-82
83	TS-83	92	TS-89	83	J1-83	83	SC-83
84	TS-84	93	TS-90	84	J1-84	84	SC-84
85	TS-85	94	TS-91	85	J1-85	85	SC-85
86	TS-86	95	TS-92	86	J1-86	86	SC-86
87	TS-87	96	TS-93	87	J1-87	87	SC-87
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89	TS-89	98	TS-95	89	J1-89	89	SC-89
90	TS-90	99	TS-96	90	J1-90	90	SC-90
91	TS-91	100	TS-97	91	J1-91	91	SC-91
92	TS-92	101	TS-98	92	J1-92	92	SC-92
93	TS-93	102	TS-99	93	J1-93	93	SC-93
94	TS-94	103	TS-100	94	J1-94	94	SC-94
95	TS-95	104	TS-101	95	J1-95	95	SC-95
96	TS-96	105	TS-102	96	J1-96	96	SC-96
97	TS-97	106	TS-103	97	J1-97	97	SC-97
98	TS-98	107	TS-104	98	J1-98	98	SC-98
99	TS-99	108	TS-105	99	J1-99	99	SC-99
100	TS-100	109	TS-106	100	J1-100	100	SC-100
101	TS-101	110	TS-107	101	J1-101	101	SC-101
102	TS-102	111	TS-108	102	J1-102	102	SC-102
103	TS-103	112	TS-109	103	J1-103	103	SC-103
104	TS-104	113	TS-110	104	J1-104	104	SC-104
105	TS-105	114	TS-111	105	J1-105	105	SC-105
106	TS-106	115	TS-112	106	J1-106	106	SC-106
107	TS-107	116	TS-113	107	J1-107	107	SC-107
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114	TS-114	123	TS-120	114	J1-114	114	SC-114
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132	TS-132	141	TS-138	132	J1-132	132	SC-132
133	TS-133	142	TS-139	133	J1-133	133	SC-133
134	TS-134	143	TS-140	134	J1-134	134	SC-134
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140	TS-140	149	TS-146	140	J1-140	140	SC-140
141	TS-141	150	TS-147	141	J1-141	141	SC-141
142	TS-142	151	TS-148	142	J1-142	142	SC-142
143	TS-143	152	TS-149	143	J1-143	143	SC-143
144	TS-144	153	TS-150	144	J1-144	144	SC-144
145	TS-145	154	TS-151	145	J1-145	145	SC-145
146	TS-146	155	TS-152	146	J1-146	146	SC-146
147	TS-147	156	TS-153	147	J1-147	147	SC-147
148	TS-148	157	TS-154	148	J1-148	148	SC-148
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150	TS-150	159	TS-156	150	J1-150	150	SC-150
151	TS-151	160	TS-157	151	J1-151	151	SC-151
152	TS-152	161	TS-158	152	J1-152	152	SC-152
153	TS-153	162	TS-159	153	J1-153	153	SC-153
154	TS-154	163	TS-160	154	J1-154	154	SC-154
155	TS-155	164	TS-161	155	J1-155	155	SC-155
156	TS-156	165	TS-162	156	J1-156	156	SC-156
157	TS-157	166	TS-163	157	J1-157	157	SC-157
158	TS-158	167	TS-164	158	J1-158	158	SC-158
159	TS-159	168	TS-165	159	J1-159	159	SC-159
160	TS-160	169	TS-166	160	J1-160	160	SC-160
161	TS-161	170	TS-167	161	J1-161	161	SC-161
162	TS-162	171	TS-168	162	J1-162	162	SC-162
163	TS-163	172	TS-169	163	J1-163	163	SC-163</

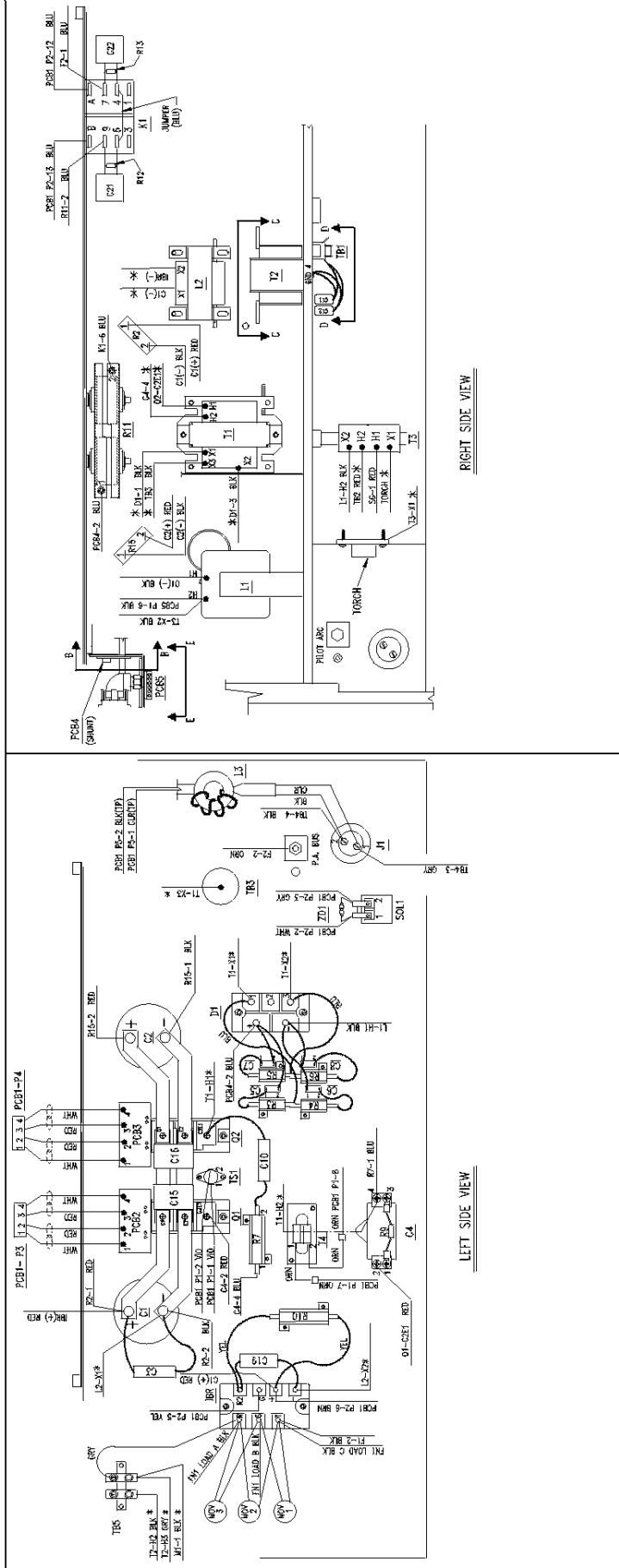
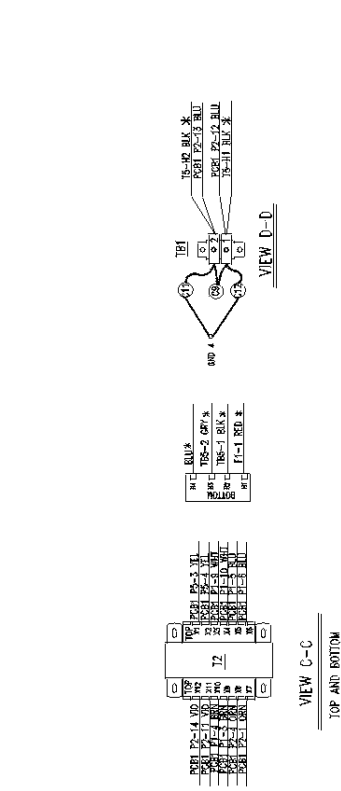


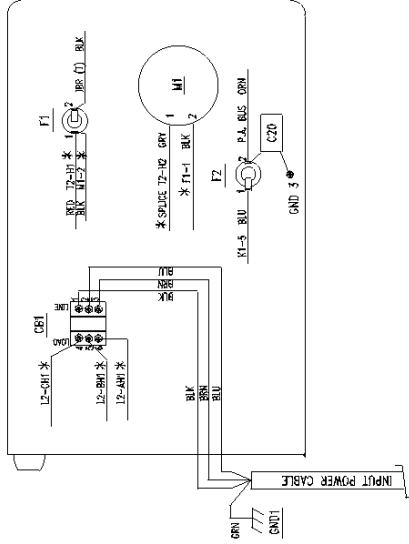
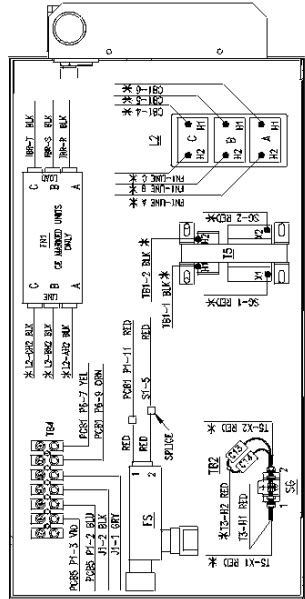
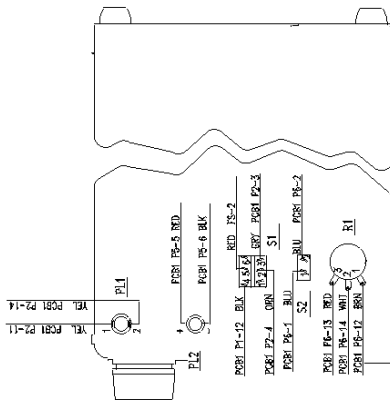
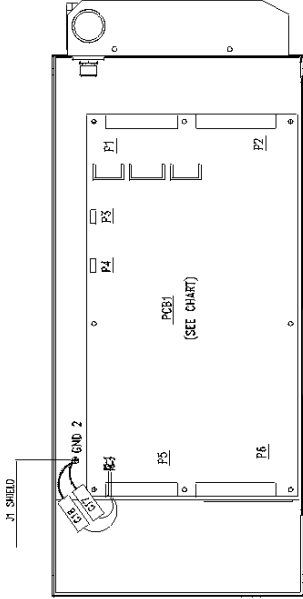
Figure 3.2 Wiring Diagram (Sheet 2 of 2), PCM-875, 220 V, 50/60 Hz, 3-Phase





DETAIL "A" (PCBE1)

P1		P2		P5		P6	
1	TS-1	VO	GRN	1	32-1	BLU	BLU
2	TS-2	GRN	GRN	2	32-2	BLU	BLU
3	TS-3	BLK	GRN	3	32-3	BLU	BLU
4	TS-4	BLK	GRN	4	32-4	BLU	BLU
5	TS-5	BLU	GRN	5	32-5	BLU	BLU
6	TS-6	BLU	GRN	6	32-6	BLU	BLU
7	TS-7	GRN	GRN	7	32-7	BLU	BLU
8	TS-8	GRN	GRN	8	32-8	BLU	BLU
9	TS-9	GRN	GRN	9	32-9	BLU	BLU
10	TS-10	GRN	GRN	10	32-10	BLU	BLU
11	TS-11	GRN	GRN	11	32-11	BLU	BLU
12	TS-12	GRN	GRN	12	32-12	BLU	BLU



NOTES:  
 1-# INDICATES SELF LEADS.  
 2-# (IP) DENOTES TWINED PAIR.

Figure 3.4 Wiring Diagram (Sheet 1 of 2), PCM-875, 400 V, 50/60 Hz, 3-Phase

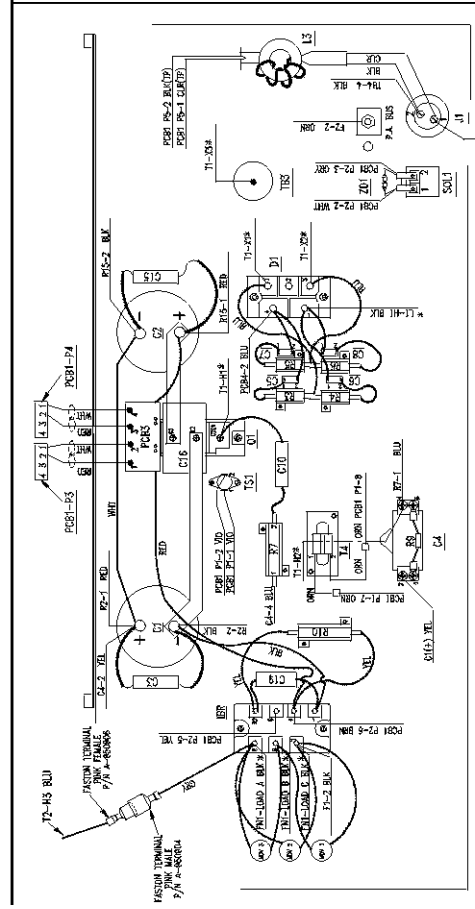
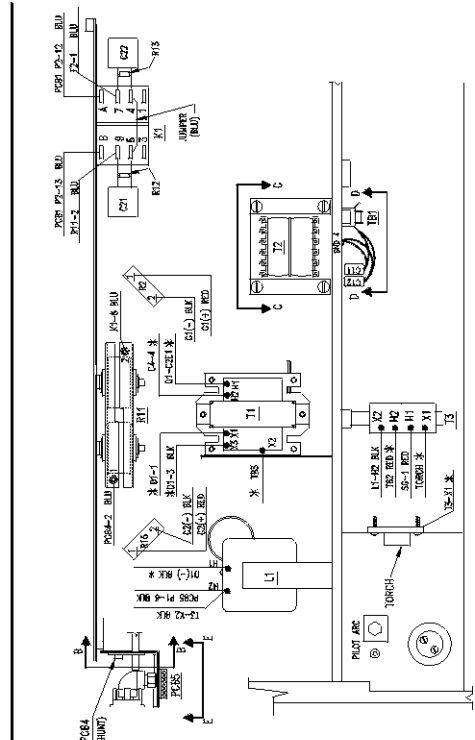
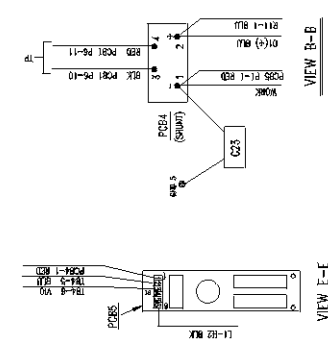
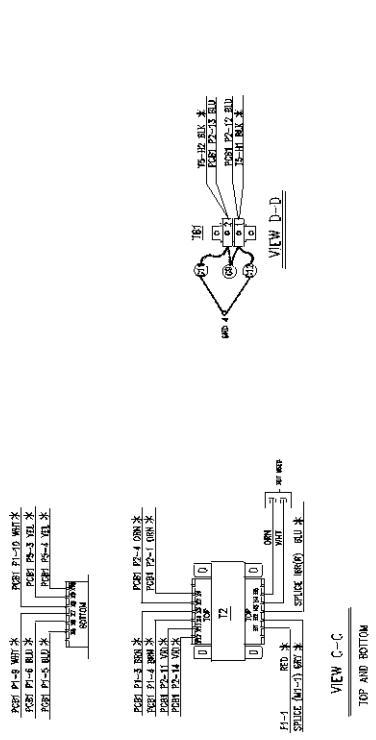


Figure 3.4 - Wiring Diagram (Sheet 2 of 2), PCM-875, 400 V, 50/60 Hz, 3-Phase

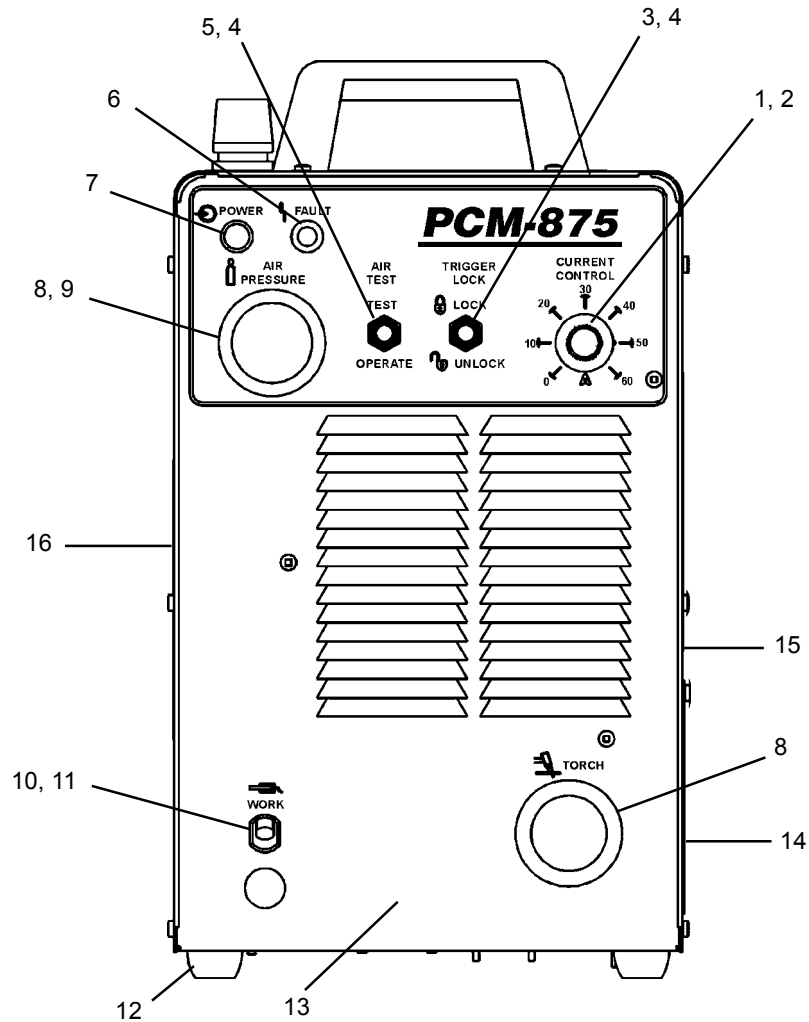
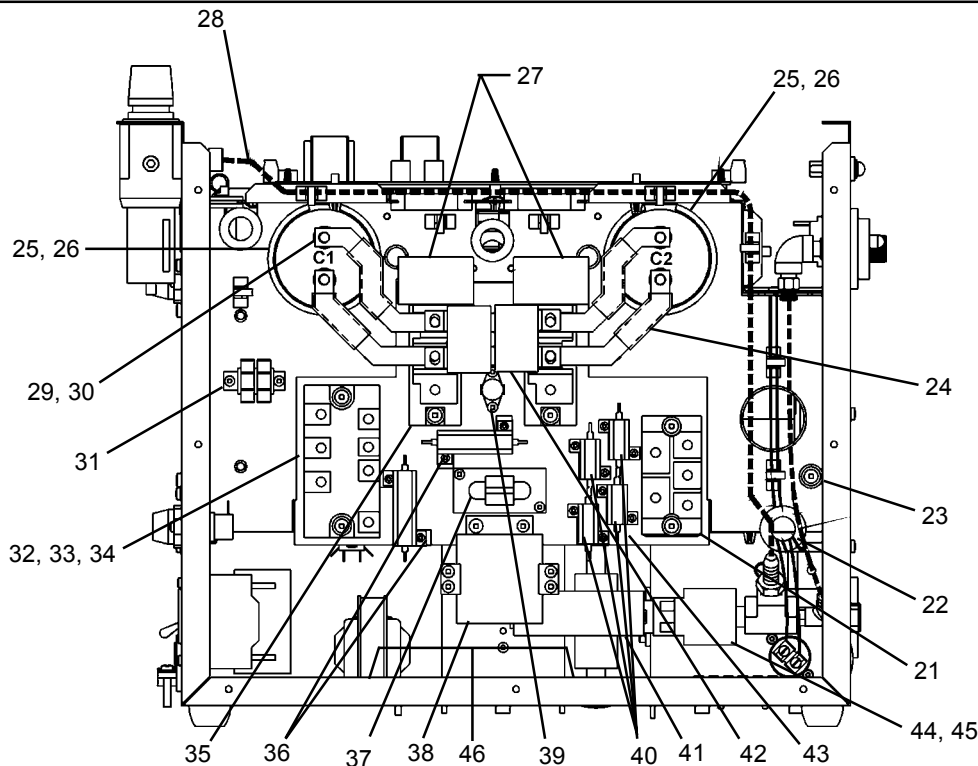


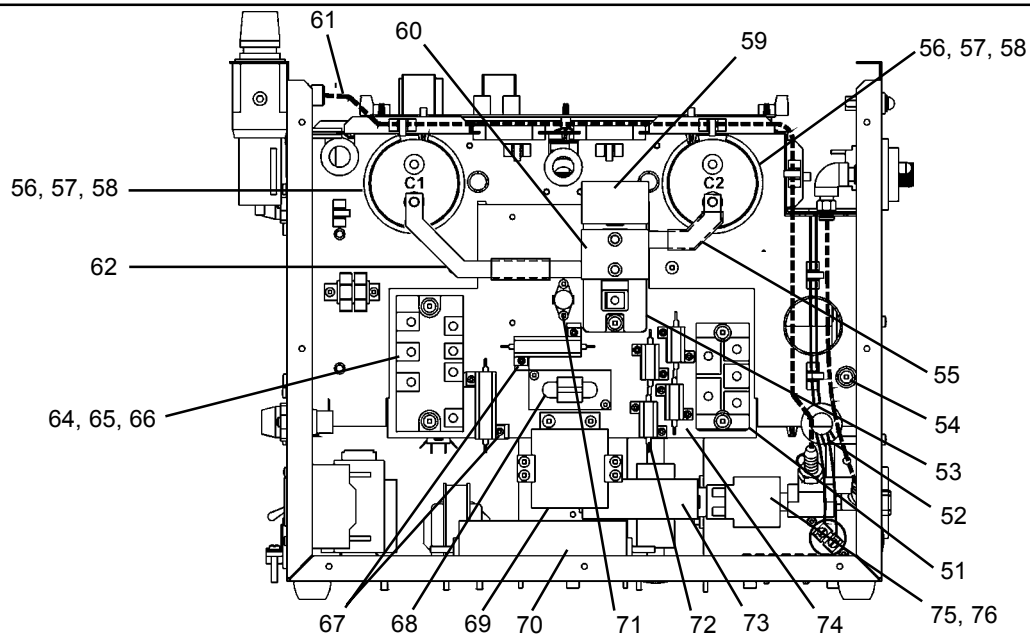
Fig. 4-1. PCM-875 Power Source, Front View

Item No.	Qty. Req.	Part No.	Description	Circuit Symbol
1	1	558000373	KNOB	
2	1	558000372	POT. 10K 2W (NOMEX INSUL. - 676876)	R2
3	1	558000698	SWITCH TOGGLE SPST 2 POS 15 A 125 V	S2
4	2	558000596	SWITCH SEAL BLACK	
5	1	558000385	SWITCH TOGGLE DPDT 2 POS 15 A 125 V	S1
6	1	558000383	LAMP LED YEL 12 V	PL2
7	1	558000384	LAMP NEON WHITE	PL1
8	2	558000593	GROMMET RUBBER 1.50 ID x 1.76 OD	
9	1	558000594	GAUGE 1.50 160 PSI WHITE	
10	1	558000178	STRAIN RELIEF HEYCO #1214	
11	1	558000608	WORK CABLE 25 FT. (Not Shown)	
12	4	558000552	FOOT RUBBER	
13	1	558000630	CHASSIS PCM-875	
14	1	558000631	DOOR ACCESS YEL (ESAB)	
15	1	558000599	LABEL WARNING HI VOLTAGE	
16	2	558000598	LABEL ESAB	



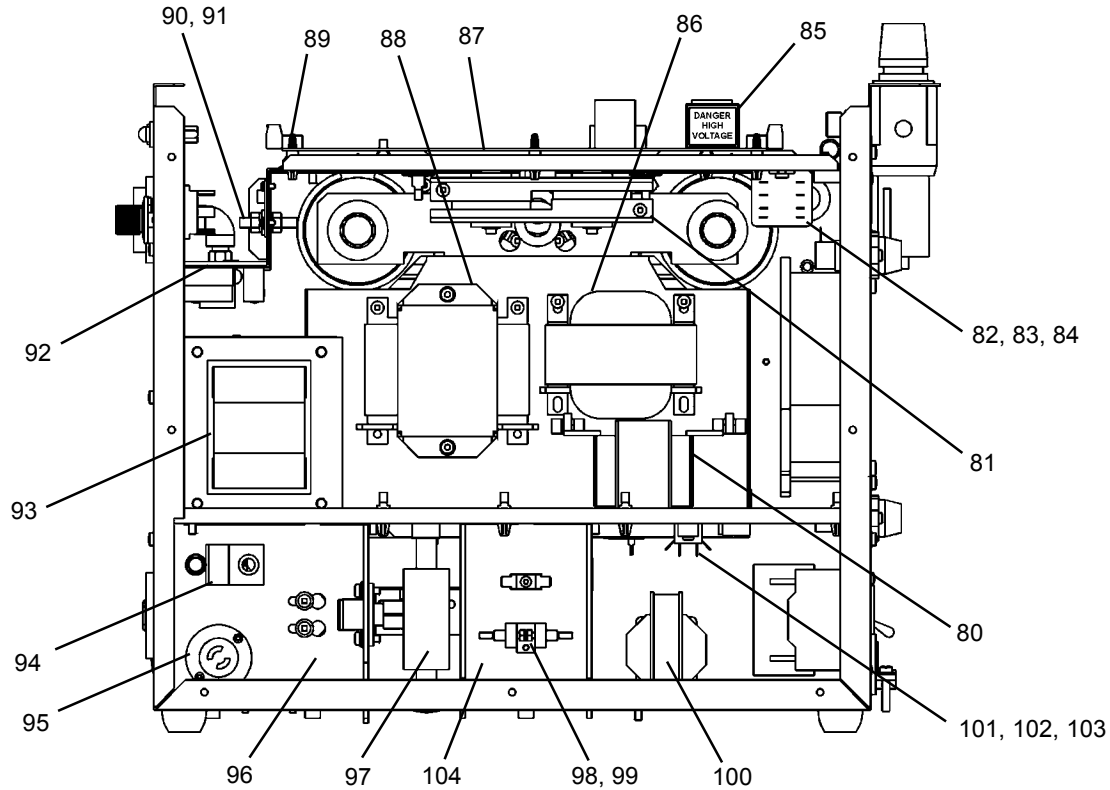
**Fig. 4-2. PCM-875 Power Source, Left Side View (230 V)**

Item No.	Qty. Req.	Part No.	Description	Circuit Symbol
21	1	558000626	BRIDGE 60ADC 100NS 600 V (PAD - 558000527)	D1
22	1	558000634	CORE SATURABLE	L3
23	1	558000635	STANDOFF INS.	TB3
24	1	558000636	BUSBAR NEG	
25	2	558000637	CAPACITOR 1800 $\mu$ f 450VDC	C1, 2
26	2	558000638	GROMMET STRIP	
27	2	558000639	PCB ASS'Y 1GBT DRIVER BOARD	PCB2, 3
28	1	558000640	HOSE AY B/A-2X 1/4NPT RUB 2 FT	
29	1	558000641	BUSBAR POS	
30	1	558000642	CAPACITOR 1 $\mu$ f 630VDC (Not shown - see wiring)	C3
31	1	558000600	TERM BLOCK 2 POS	TB5
32	1	558000643	MODULE INPUT BRIDGE/SCR (PAD - 558000651)	IBR
33	1	558000622	CAPACITOR .22 $\mu$ f 1KV (See wiring)	C19
34	3	558000689	METAL OXIDE VARISTOR 275 V (See wiring)	MOV1, 2, 3
35	2	558000450	IGBT 600 V 100 A (PAD - 558000539)	Q1, 2
36	2	558000400	RESISTOR 50 W 10 OHM (PAD - 558000529)	R7, 10
37	1	558000408	CURRENT TRANSFORMER ASS'Y	T4
38	1	558000644	CAPACITOR 40 $\mu$ f 400 VDC	C4
39	1	558000412	THERMAL SWITCH 194°F	TS1
40	4	558000404	RESISTOR 24 W 20 OHMS (PAD 558000528)	R3, 4, 5, 6
41	1	558000410	FLOW SWITCH .25 GPM	FS
42	2	558000532	CAPACITOR 1 $\mu$ f 630W VDC	C15, 16
43	1	558000645	HEATSINK	
44	1	558000409	SOL. VALVE 1/4NPT 165 PSI 24 VAC	SOL1
45	1	558000625	DIODE ZENER 60 V 75 MA (See Wiring)	ZD1
46	1	558000826	FILTER EMI (230 V CE)	FN1



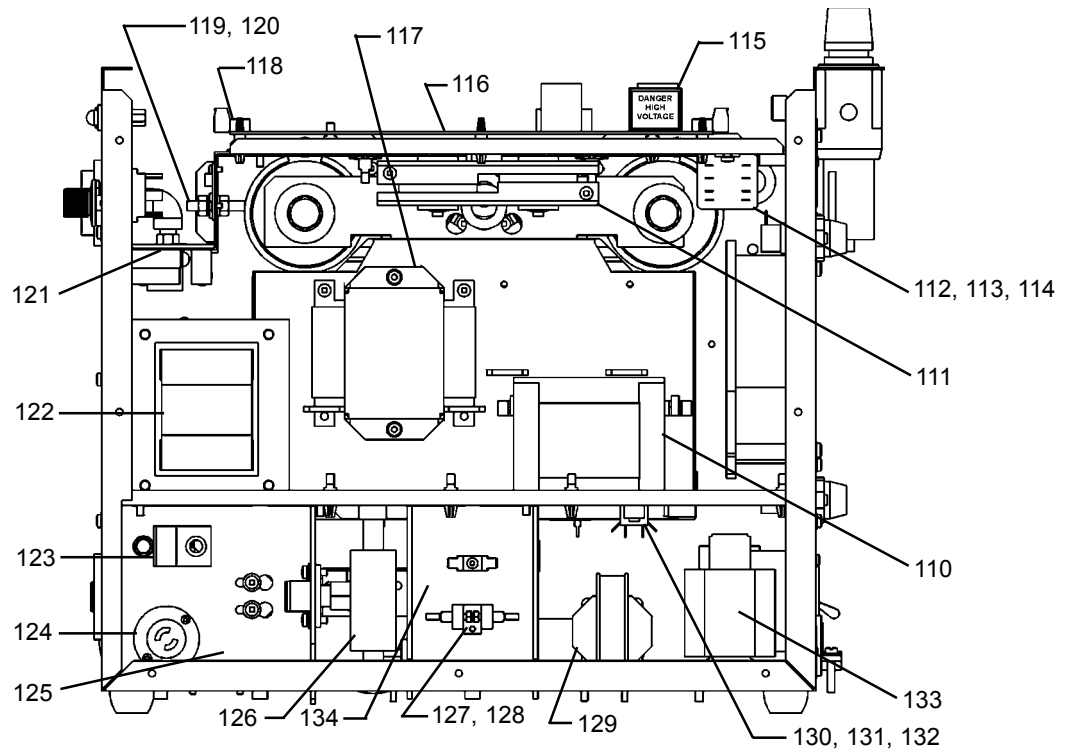
**Fig. 4-3. PCM-875 Power Source, Left Side View (400 V)**

Item No.	Qty. Req.	Part No.	Description	Circuit Symbol
51	1	558000626	BRIDGE 60 ADC 100NS 600 V (PAD - 558000527)	D1
52	1	558000634	CORE SATURABLE	L3
53	1	558000646	MODULE DUAL IGBT 150 A, 1200 V (PAD - 558000526)	Q1
54	1	558000635	STANDOFF INS	TB3
55	1	558000647	BUSBAR POS	
56	2	558000637	CAPACITOR 1800 $\mu$ f 450 VDC	C1, 2
57	2	558000638	GROMMET STRIP	
58	2	558000642	CAPACITOR 1 $\mu$ f 630 VDC (See wiring)	C3, 15
59	1	558000619	PCB ASS'Y IGBT DRIVER BOARD	PCB2
60	1	558000649	CAPACITOR 2 $\mu$ f 800 VDC	C16
61	1	558000640	HOSE ASS'Y B/A x 1/4 NPT RUB	
62	1	558000650	BUSBAR NEG	
64	1	558000643	MODULE INPUT BRIDGE/SCR (PAD - 558000651)	IBR
65	1	558000622	CAPACITOR .22 $\mu$ f 1KV	C19
66	3	558000629	METAL OXIDE VARISTOR 510 V	MOV1, 2, 3
67	2	558000400	RESISTOR 50W 10 OHM (PAD - 558000529)	R7, 10
68	1	558000408	CURRENT TRANSFORMER ASS'Y	T4
69	1	558000644	CAPACITOR 40 $\mu$ f 400 VDC	C4
70	1	558000654	FILTER EMI (400 V CE)	FN1
71	1	558000412	THERMAL SWITCH 194°F	TS1
72	4	558000404	RESISTOR 25W 20 OHMS (PAD - 558000528)	R3, 4, 5, 6
73	1	558000410	FLOWSWITCH .25 GPM	FS
74	1	558000645	HEATSINK	
75	1	558000409	SOL, VALVE 1/4 NPT 165 PSI 24 VAC	SOL1
76	1	558000625	DIODE ZENER 60 V 75m A	ZD1



**Fig. 4-4. PCM-875 Power Source, Right Side View (230 V)**

Item No.	Qty. Req.	Part No.	Description	Circuit Symbol
80	1	558000604	CONTROL TRANSFORMER ASS'Y	T2
81	1	558000655	RESISTOR ASS'Y PILOT ARC	R11
82	1	558000656	RELAY 25 A 120 VAC	K1
83	2	558000657	CAPACITOR .82 $\mu$ f 630 VDC (See Wiring)	C21, 22
84	2	558000658	RESISTOR, 10K OHM 1W (See Wiring)	R12, 13
85	1	558000563	LABEL WARNING HI VOLTAGE RED	
86	1	558000659	INDUCTOR PFC	L2
87	1	558000660	CONTROL BOARD ASS'Y	PCB1
88	1	558000661	MAIN TRANSFORMER ASS'Y	PCB4
89	2	558000585	CAPACITOR .022 $\mu$ f 250 VAC (See Wiring)	C17, 18
90	1	558000396	SHUNT BOARD ASS'Y	PCB4
91	1	558000521	CAPACITOR .047 $\mu$ f 660 VAC	C23
92	1	558000498	START UP BOARD ASS'Y	PCB5
93	1	558000662	INDUCTOR OUTPUT	L1
94	1	558000663	BUSBAR OUTPUT	
95	1	558000380	LOCK TWIST MIDGET	J1
96	1	558000664	BRACKET OUTPUT	
97	1	558000403	REACTOR ASS'Y HI FREQ.	T3
98	1	558000610	SPARK GAP ASS'Y	SG
99	2	558000611	CAPACITOR 2500pf 15 K V	C13, 14
100	1	558000467	TRANSFORMER HI VOLTAGE	T5
101	1	558000600	TERM. BLOCK 2 POS 20 A	TB1
102	2	558000602	CAPACITOR .01 $\mu$ f 1KV (See wiring)	C11, 12
103	1	558000665	CAPACITOR .01 $\mu$ f 250 VAC (See wiring)	C9
104	1	558000666	BOX HI FREQ.	



**Fig. 4-5. PCM-875 Power Source, Right Side View (400 V)**

Item No.	Qty. Req.	Part No.	Description	Circuit Symbol
110	1	558000391	CONTROL TRANSFORMER ASS'Y	T2
111	1	558000655	RESISTOR ASS'Y PILOT ARC	R11
112	1	558000656	RELAY 25 A 120 VAC	K1
113	2	558000657	CAPACITOR .82 $\mu$ f 630 VDC (See wiring)	C21, 22
114	2	558000658	RESISTOR 10 K OHM 1 W (See wiring)	R12, 13
115	1	558000563	LABEL WARNING HI VOLTAGE RED	
116	1	558000667	CONTROL BOARD ASS'Y	PCB1
117	1	558000661	MAIN TRANSFORMER ASS'Y	T1
118	2	558000585	CAPACITOR .022 $\mu$ f 250 VAC (See wiring)	C17, 18
119	1	558000396	SHUNT BOARD ASS'Y	PCB4
120	1	558000521	CAPACITOR .047 $\mu$ f 660 VAC	C23
121	1	558000498	START UP BOARD ASS'Y	PCB5
122	1	558000662	INDUCTOR OUTPUT	L1
123	1	558000663	BUSBAR OUTPUT	
124	1	558000380	LOCK TWIST MIDJET	J1
125	1	558000664	BRACKET OUTPUT KYDEX	
126	1	558000403	REACTOR ASS'Y HI FREQ.	T3
127	1	558000610	SPARK GAP ASS'Y	SG
128	2	558000611	CAPACITOR 2500pf 15 K V	C13, 14
129	1	558000467	TRANSFORMER HI VOLTAGE	T5
130	1	558000600	TERM. BLOCK 2 POS 20 A	TB1
131	2	558000602	CAPACITOR .01 $\mu$ f 1KV (See wiring)	C11, 12
132	1	558000665	CAPACITOR .01 $\mu$ f 250 VAC (See wiring)	C9
133	1	558000669	REACTOR 3PH LINE 12 A	L2
134	1	558000666	BOX HI FREQ	





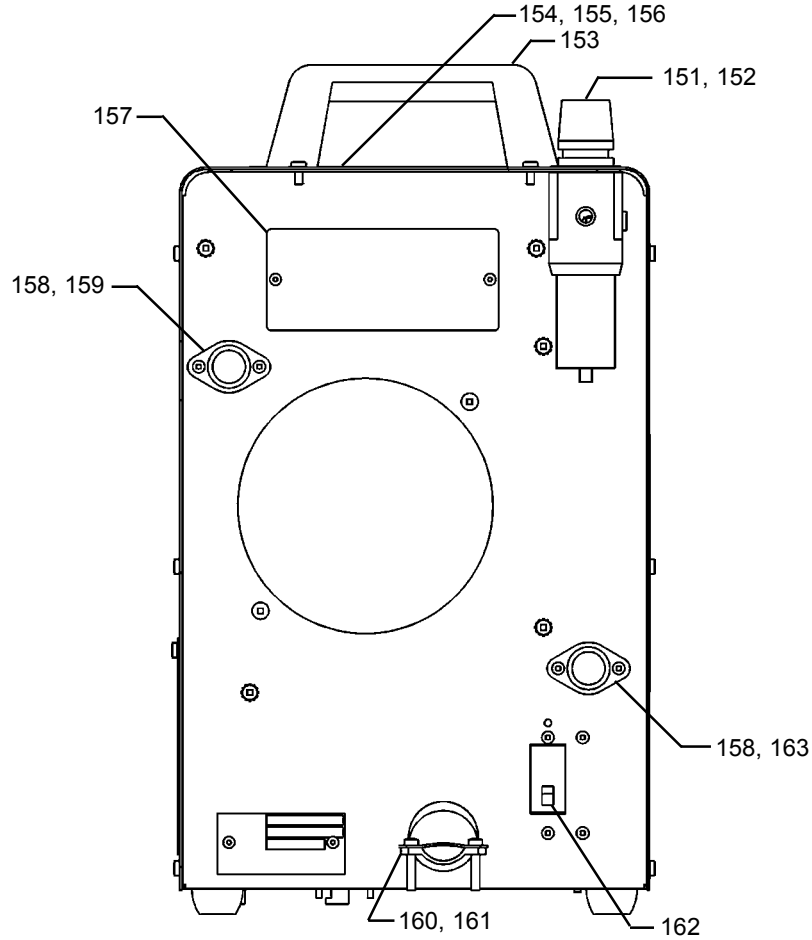


Fig. 6-7. PCM-875 Power Source, Rear View

Item No.	Qty. Req.	Part No.	Description	Circuit Symbol
151	1	558000675	FILTER REGULATOR	F2
152	1	558000534	ADAPTOR B/A-WM x 1/4 NPTM	
153	2	558000592	HANDLE	
154	1	558000676	TOP COVER	
155	1	558000536	LABEL WARNING	
156	1	558000562	LABEL WARNING	
157	1	558000957	LABEL RATING PCM-875 220 3PH. V	
	1	558000681	LABEL RATING PCM-875 400 3PH. V	
158	2	558000516	FUSE HOLDER	
159	1	558000517	FUSE 15 A FAST ACTING	
160	1	558000682	STRAIN RELIEF	
161	1	558000458	INPUT POWER CABLE, 10 FT 4-COND. 6AWG (230 V)	
	1	558000459	INPUT POWER CABLE, 10 FT 4-COND. 4 x 4 MM (400 V CE)	
162	1	558000474	CIRCUIT BREAKER 3P 30 A 480 VAC (400 V)	CB1
163	1	558000686	FUSE 3A FAST ACTING	F1





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