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*SAFETY*

# ! IMPORTANT !

**THIS MANUAL HAS BEEN DESIGNED FOR EXPERIENCED WELDING AND CUTTING EQUIPMENT OPERATORS AND MUST BE READ COMPLETELY BEFORE USING THIS EQUIPMENT. IF YOU LACK EXPERIENCE OR ARE UNFAMILIAR WITH THE PRACTICES AND SAFE OPERATION OF WELDING AND CUTTING EQUIPMENT, PLEASE CONSULT YOUR FOREMAN. DO NOT ATTEMPT TO INSTALL, OPERATE, OR PERFORM MAINTENANCE ON THIS EQUIPMENT UNLESS YOU ARE QUALIFIED AND HAVE READ AND UNDERSTOOD THIS MANUAL. IF IN DOUBT ABOUT INSTALLING OR OPERATING THIS EQUIPMENT, CONTACT YOUR DISTRIBUTOR OR THE CUSTOMER SERVICE DEPARTMENT OF PowCon.**

## DEFINITIONS

Throughout this manual, **NOTE**, **CAUTION**, **WARNING** and **DANGER** are inserted to call attention to particular information. The methods used to identify these highlights and the purpose for which each is used, are as follows:

## NOTE

Operational, procedural, and background information which aids the operator in the use of the machine, helps the service personnel in the performance of maintenance, and prevents damage to the equipment.

## CAUTION

An operational procedure which, if not followed, may cause minor injury to the operator, service personnel and/or bystanders.

## WARNING

An operational procedure which, if not followed, may cause severe injury to the operator, service personnel, or others in the operating area.

## DANGER

An operational procedure which, if not followed, will cause severe injury or even death to the operator, service personnel or bystanders.

# SAFETY INFORMATION

Safety is a combination of good judgement and proper training. Operation and maintenance of any arc welding and cutting equipment involves potential hazards. Individuals who are unfamiliar with cutting and welding equipment, use faulty judgement or lack proper training, may cause injury to themselves and others. Personnel should be alerted to the following potential hazards and the safeguards necessary to avoid possible injury. In addition, before operating this equipment, you should be aware of your employer's safety regulations.

**BE SURE TO READ AND FOLLOW ALL AVAILABLE SAFETY REGULATIONS BEFORE USING THIS EQUIPMENT.**

## ELECTRIC SHOCK

**THE VOLTAGES PRESENT IN THE WELDING AND CUTTING ENVIRONMENT CAN CAUSE SEVERE BURNS TO THE BODY OR FATAL SHOCK. THE SEVERITY OF ELECTRICAL SHOCK IS DETERMINED BY THE PATH AND THE AMOUNT OF CURRENT THROUGH THE BODY.**

**A)** Install and continue to maintain equipment according to USA Standard C1, National Electric Code.

**B)** Never allow live metal parts to touch bare skin or any wet clothing. Use only dry gloves.

**C)** When welding or cutting in a damp area, or when standing on metal, make sure you are well insulated by wearing dry gloves, rubber soled shoes, and by standing on a dry board or platform.

**D)** Do not use worn or damaged welding or torch cables. Do not overload the cables. Use well maintained equipment.

**E)** When not welding/cutting, turn equipment **OFF**. Accidental grounding can cause overheating and create a fire hazard. Do not coil or loop the cable around parts of the body.

**F)** The ground cable should be connected to the workpiece as close to the work area as possible. Grounds connected to building framework or other locations remote to the work area reduce efficiency and increase the potential hazard of electric shock. Avoid the possibility of the cutting current passing through lifting chains, crane cables or other electrical paths.

G) Keep everything dry you might touch, including clothing, the work area, welding gun, torch and welding or cutting machines. Fix water leaks immediately. Do not operate equipment standing in water.

H) Never use a cutting torch or welding gun which is damaged or contains cracks in its housing.

I) Refer to AWS-Z49.1 for grounding recommendations.

# PERSONAL PROTECTION

**SKIN AND EYE BURNS RESULTING FROM BODY EXPOSURE TO ELECTRIC-ARC WELDING AND CUTTING RAYS OR HOT METAL CAN BE MORE SEVERE THAN SUNBURN.**

A)

Use a proper face shield fitted with the correct filter (#10 or greater) and cover plates to protect your eyes, face, neck and ears from the sparks and rays of the cutting/welding arc when cutting/welding or observing cutting/welding. Warn bystanders not to watch the arc and not to expose themselves to the cutting/welding arc rays or to hot metal.

B) Wear flameproof gauntlet-type gloves, a heavy long-sleeve shirt, cuffless trousers, high-topped shoes, and a welding helmet or cap (for hair protection) to protect the skin from arc rays and hot sparks or hot metal.

C) Protect other nearby personnel from arc rays and hot sparks with a suitable non-flammable partition.

D) Always wear safety glasses or goggles when in a cutting or welding area. Use safety glasses with side shields or goggles when chipping slag or grinding. Chipped slag is hot and may travel a considerable distance. Bystanders should also wear safety glasses or goggles.

E) Compressed gas cylinders are potentially dangerous, refer to the suppliers for proper handling procedures.

F) Wear ear plugs or other ear protection devices when operating cutting or welding equipment.

# FIRE SAFETY

**HOT SLAG OR SPARKS CAN CAUSE A SERIOUS FIRE WHEN IN CONTACT WITH COMBUSTIBLE SOLIDS, LIQUIDS OR GASES.**

A)

Move all combustible materials well away from the cutting area or completely cover materials with a non-flammable covering. Combustible materials include but are not limited to wood, clothing, sawdust, gasoline, kerosene, paints, solvents, natural gases, acetylene, propane, and similar articles.

B) Do not weld, cut or perform other hot work on used barrels, drums, tanks or other containers until they have been completely cleaned. There must be no substances in the container which might produce flammable or toxic vapors.

C) For fire protection, have suitable extinguishing equipment handy for instant use.

# VENTILATION

**WELDING AND CUTTING FUMES AND GASES, PARTICULARLY IN CONFINED SPACES, CAN CAUSE DISCOMFORT AND PHYSICAL HARM IF INHALED OVER AN EXTENDED PERIOD OF TIME.**

**A)** At all times, provide adequate ventilation in the welding and cutting area by either natural or mechanical means. Do not weld or cut on galvanized, zinc, lead, beryllium or cadmium materials unless positive mechanical ventilation is provided to prevent inhaling fumes and gases from these materials.

**B)** Do not weld or cut in locations close to chlorinated hydrocarbon vapors coming from degreasing or spraying operations. The heat of arc rays can react with solvent vapors to form phosgene, a highly toxic gas, and other irritant gases.

**C)** If you develop momentary eye, nose or throat irritation during welding or cutting, it is an indication that the ventilation is not adequate. Stop work and take the necessary steps to improve ventilation in the welding or cutting area. Do not continue to weld or cut if physical discomfort persists.

**D)** Use an air supplied respirator if ventilation is not adequate to remove all fumes and gases.

**E)** Beware of gas leaks. Welding or cutting gases containing argon are more dense than air and will replace air when used in confined spaces. Do not locate gas cylinders in confined spaces. When not in use, shut **OFF** the gas supply at its source.

**F)** Refer to AWS Standard Z49.1 for specific ventilation recommendations.

# SAFETY REFERENCES

The following publications provide additional information on important welding safeguards.

**A)** ANSI/ASC Z49.1-1988, American National Standard "Safety in Welding and Cutting".

**B)** Bulletin No. F4-1, "Recommended Safe Practices for the Preparation for Welding and Cutting Containers and Piping that have held Hazardous Substances".

**C)** OSHA Safety and Health Standards, 29CFR 1910, available from the United States Department of Labor, Washington, DC 20210.

**D)** NFPA Standard 51B, "Fire Prevention in Use of Cutting and Welding Processes", available from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 00210.

**E)** NEMA Standards Publication/No. EW1-1989, Electric Arc-Welding Apparatus, approved as ANSI C87.1-1989. Available from National Electrical Manufacturers Association, 155 E. 44th Street, New York, NY 10017.

*GENERAL INFORMATION*

## DESCRIPTION OF EQUIPMENT

The PowCon 275SS is a portable welding power source designed primarily for STICK (SMAW) welding. It is also capable of performing carbon arc gouging and scratch-start TIG (GTAW) welding, and features:

### SPECIFICATIONS

- PowCon 275SS Welding Power Source:
- Power Input and Output (see Figure 1)
- Open Circuit Voltage - 80V maximum
- Current Range - adjustable from 30 to 300 amps
- Output cable connectors (DINSE or TWECO).
- Digital VA Meter (OPT)
- Weight - 70 pounds (31.8 Kg)
- Dimensions Height 17" (43 cm), Width 10" (25 cm), Depth 19" (48 cm)

### ACCESSORIES:

- PDVS Voltage Sensing Wirefeeder for GMAW/FCAW
- Running Gear - Carts
- StarCut; for Plasma Cutting

### ACCESSORIES: (When optional remote connector is installed)

- Remote pulser.
- Remote, foot-operated and hand-operated contactor and current control.
- Remote control cable extension - 12 ft (3.6M) or 25 ft (7.6M) or 50 ft (15.2M) lengths.

## THEORY OF OPERATION

(See Figure 2)

The PowCon Welding Power Sources use the frequency converter principle to produce direct current DC power. In contrast to the conventional transformer rectifier, the frequency converter design offers two main advantages: (1) lower weight and (2) smaller size.

For the PowCon, the input alternating current (AC) primary power is passed through a circuit breaker to a 6 pulse full wave bridge rectifier, where the input is transformed to DC power. The DC current output of the rectifier is fed to an inverter of series capacitor switching type. Using SCR's (thyristors), the DC current is switched alternately ON and OFF. The action of charging and discharging the capacitors creates a new alternating current (AC). The frequency of the firing of the SCR's varies from 400 Hz to 6,000 Hz, dependent upon the output demand, i.e., the greater the output power required, the higher the frequency. The output power is determined by the weld power dial setting and by the output range selector switch..

The new alternating current, with its higher frequency provided by the switching devices (SCR's), is fed into the main transformer. One advantage of higher frequency alternating current is a significantly reduced transformer size. The PowCon main transformer weighs 12 pounds, versus approximately 200 pounds used in the conventional transformer rectifier. The transformer takes the higher voltage of the switching SCR's and transforms it to the welding voltage range.

The final step in the production of weld current is to rectify the AC output from the main transformer into DC output. This is done by diodes connected to the secondary of the transformer which rectifies the AC output to DC output appropriate for welding.

The entire sequence of operation from primary (AC) input to the weld output (DC), is regulated by the main PC board through control logic feedback.

**Figure 1 - Power Input and Output**

| | | | | | |
|---|---|---|---|---|---|
| OUTPUT RANGE | ⎓ DC | 30A/21V..... 300A/32V | | | |
| DUTY CYCLE | | X | --- | 60 | 100 | % |
| RATED OUTPUT @ 3 PHASE PRIMARY INPUT | ($U_1$ 3~) 50/60 HZ | $I_2$ | --- | 300 | 200 | A |
| | | $U_2$ | --- | 32 | 28 | V |
| RATED OUTPUT @ 1 PHASE PRIMARY INPUT | ($U_1$ 1~) 50/60 HZ | $I_2$ | --- | --- | --- | A |
| | | $U_2$ | --- | --- | --- | V |
| MAXIMUM CURRENT DRAW AT INDICATED PRIMARY INPUT AND MAXIMUM RATED OUTPUT | $U_1$ SUPPLY | $I_1$ MAX | / | X | |
| | 460V 3 ~ | 18 | A/ | 60 | % |
| | 415V 3 ~ | 24 | A/ | 60 | % |
| | ------ ~ | -- | A/ | -- | % |
| | ------ ~ | -- | A/ | -- | % |

## SPECIAL SAFEGUARDS FOR USE WITH THE PowCon 275SS

- Individuals using this equipment should give the following safeguards their special attention.
- Install the PowCon welding power source in accordance with OSHA and National Electrical Code Standards, or other applicable standards.
- Locate the unit so that air flow into the front and out of the back is not obstructed.
- Provide access to all controls on both the front and back panel for operator manipulation.
- Never drag, pull or lift the unit by either the primary or secondary electrical cable.
- Never place the unit in a location where the unit's weight cannot be supported, especially when the unit is above ground level.
- Do not allow the unit, or its input and output cables, to impede or block foot traffic.
- Move and lift the unit in accordance with OSHA job site standards.
- Servicing of the unit should be done only by personnel factory trained by PowCon.
- When servicing the unit, the first operation, once the case is removed from the source of primary input, is to discharge the capacitors.
- Periodically blow or vacuum out dirt build-up in the unit.
- Do not operate unit if the circuit breaker must be forced or repeatedly held in the ON position.
- Never lift or move the unit when the circuit breaker is ON.
- Follow the recommendations for fuse and cable sizing when connecting the unit.
- Always turn the unit OFF when it is not in use.
- Primary quick disconnects, etc., must be suitably rated for current demand at primary voltage.
- Read entire manual prior to performing operations using the power source.

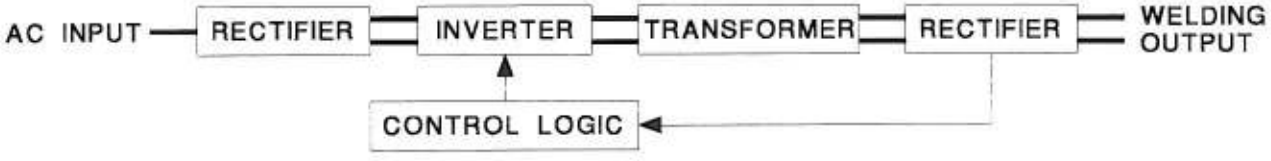



**Figure 2-Electronic Block Diagram of Converter Principal**

*INSTALLATION*

## UNPACKING NEW EQUIPMENT

(Receiving and Handling)

Remove the PowCon Welding Power Source from its shipping carton and inspect for any possible damage that might have occurred during shipping. Make sure that all items on the packing list are accounted for and identified. One copy of the PowCon 275SS Operation Manual is packed with each PowCon 275SS unit.

Any claims for loss or damage that may have occurred in transit must be filed by the PURCHASER with the CARRIER. Copies of the bill of lading and freight bill will be furnished by the carrier on request, if the need to file a claim arises. When requesting information concerning this equipment, it is essential that model description, serial number and/or part number of the equipment be supplied.

**NOTE**

**To assure a valid warranty, you MUST complete and return the warranty card (enclosed with all products) within 10 days of the purchase date.**

## EQUIPMENT INSTALLATION

### Input Power Requirements

The PowCon 275SS is manufactured for use on 460 volt, 50/60 hertz, three phase power.

The primary cable supplied consists of conductor colors black, red, white, green. When connecting an attachment plug or hard-wiring to an electrical service box, connect the green conductor to GROUND connector. The other three phases can be be connected in any order.

**NOTE**

**Always make the installation in accordance with your plant regulations and applicable electrical code.**

## FUSE SIZE

**Table 1 - Recommended Fuse Size***

| Input Voltage | Continuous Amperage | Recommended Fuse Capacity |
|---|---|---|
| 460V, 3ϕ | 18A | 25A |

*Continous current demand is based on an output of 32VDC and 300 amps for 3 phase input.

## ENGINE DRIVEN GENERATOR USE

Failure to take special precautions with the PowCon Welding Power Sources and engine driven generators will result in damage to equipment. The following special startup procedure MUST be followed to prevent damage to both the unit and the generator.

**CAUTION**

**NEVER start up the generator with the circuit breaker on the PowCon unit in the UP/ON position. The PowCon unit may be switched on at the circuit breaker only after the generator is started and running steady (at least ten seconds.)**

Perform the following step on the factory equipped primary:

1. Connect green wire to ground.
2. The other three phases can be connected in any order.

## LOCATION OF EQUIPMENT

### Service Operating Conditions

NEMA Standard EW1-2.02 approved as ANSI C87.1-1976 outlines both usual and unusual service conditions for a welding power source. The PowCon 275 series of welding power sources have been designed and manufactured to meet the usual service conditions as well as conform to the other NEMA standards. If an unusual service condition is required, PowCon should be consulted.

The small size and unique design of the PowCon 275SS series of welding power sources requires the operator be aware of certain safeguards regarding the proper procedure for movement and placement of the unit. Good judgement and compliance with your particular job site safety requirements are essential. The following safeguards are recommended for the movement and placement of the unit.

## COOLING

Locate the PowCon Welding Power Source so that air flow into the front and out of the back is not obstructed. Avoid placing the unit where dust or grinding particles will be directed in the unit.

## ACCESS

Locate the PowCon Welding Power Source where there is room for the operator to manipulate controls or change the connections on either the front or back panel. Avoid placing the unit in a hallway or other area where foot traffic might be impeded.

## LIFTING

In lifting and carrying the unit, it is recommended that two people be used. The unit is designed to be lifted using a suitably rated and inspected choker (made of rope or nylon) run through both handles. Refer to the applicable OSHA standards or contact PowCon for any questions regarding the lifting of this unit.

## SECURITY

Locate the unit where it can be secured to a platform, deck, or other structure which is capable of safely supporting the unit and any other potential load.

### WARNING

**DO NOT allow the unit to remain operating when lifting or moving it.**

**DO NOT drag or lift the unit by primary or secondary cable. Exercise care in the handling of primary and secondary cable to avoid wearing out or loss of electrical insulation.**

**DO NOT lift the unit unless all 10 flange screws and nuts holding the top and bottom cases are tight.**

**Any time the PowCon unit is placed above ground level, the potential hazard of falling exists.**

## OUTPUT CONNECTIONS

### Welding Cable

Run electrode and ground cables of the appropriate size as shown in Table 2. To avoid excessive heat losses during welding, all output connections, lugs, and cables should be secure and well insulated. Failure to use proper cable sizes contributes to lost efficiency of the power source and excessive consumption of electrical power.

The electrode and work leads have to be assembled using customer supplied welding cable and cable connectors. After the cables are assembled, connect the electrode lead to the negative ( - ) jack and the work lead to the positive (+) jack for straight polarity operation. For reverse polarity operation, the electrode lead is connected to the positive (+) jack and the work lead is connected to the negative ( - ) jack.

**Table 2 - Recommended Copper Welding Cable Sizes***

| | | |
|---|---|---|
| 0'-50' | 15.2M | 1/0 |
| Up to 100' | 30.5M | 1/0 |
| 100'-150' | 30.5M-47.7M | 1/0 |
| 150'-200' | 45.7M-61M | 2/0 |
| 200'-250' | 61M-76.2M | 3/0 |

*Based on 60% duty cycle and combined length of electrode ground cable**

**Use of aluminum cable requires increase by two AWG sizes over recommended copper cable size. Recommended cable sizes for other duty cycles and output currents can be found in Volume 2, WELDING HANDBOOK, 7th Edition, published by the American Welding Society.

**NOTE**

**Locate the PowCon unit so that the air flow into the front and out of the back of the unit is not obstructed.**

## OPTIONAL: REMOTE CURRENT AND CONTACTOR CONTROL CONNECTIONS

Both the remote control devices (hand and foot) come with a 17-pin connector plug which connects to the remote terminal on the rear panel of the PowCon unit. The remote control devices come with a pre-wired plug and 12 1/2 feet (3.8 M) of cable. When a remote control device is plugged into the rear panel receptacle, certain front panel controls are overridden by the remote device.

To connect the remote control device, insert the 17-pin plug from the control cable of the device fully into the receptacle on the rear panel. Ensure that the plug keyways align with the receptacle keys. Rotate the plug threaded collar clockwise as far as possible into the receptacle threaded body to secure the plug in the receptacle.

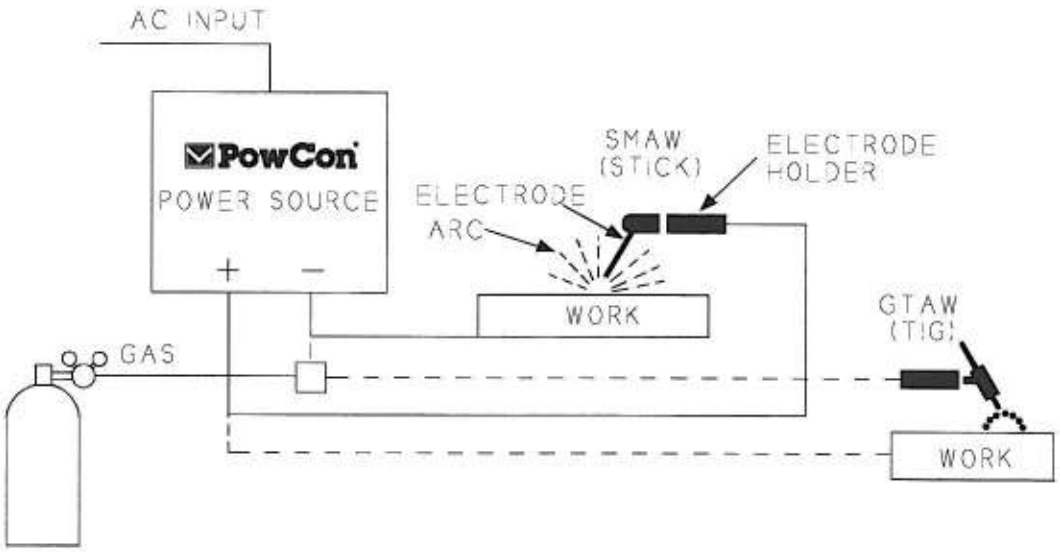



**Figure 3 - Typical SMAW/GTAW Set Up**

*OPERATION*

## FUNCTION OF OPERATING CONTROLS AND CONNECTIONS

(See Figure 4)

**1> Circuit Breaker**

The circuit breaker acts as a switch to turn the incoming primary power on and off and also protects the semiconductors in the power source in case of fault in the control circuits.

### WARNING

**In order to avoid an electrical shock, potential fire or equipment malfunction, the circuit breaker must never be forcibly held closed in the ON position.**

**Once the circuit breaker is turned on, DC voltage is present at the output of this power source. This means that the electrode is live, presenting a lethal shock hazard.**

**2> Indicator Lamp**

Indicates that the circuit breaker is closed and primary power is being supplied to the unit.

### WARNING

**This light verifies power on two phases only. Ensure power supply is disconnected from supply before opening cover.**

**3> Weld Power Control Dial**

Adjusts the output current.

Two Scales Provided:

- 30-200Amps for SMAW and GTAW
- 40-300Amps for SMAW, PDVS, ARC Gouging and Plasma Cutting.

**4> SMAW/GTAW Selector Switch**

Selects operating mode for the welding process:

- SMAW - 30 to 200A and SMAW - 40 to 300A

  OCV is present, approximately 80 VDC, at output terminals. Output current is selected by the weld power potentiometer 3. Spatter is controlled by arc force potentiometer 5.

- GTAW - 30 to 200A

  OCV is present at approximately 8 VDC, touching the torch tip to the work piece will activate a pilot current. By lifting the torch with a slight wrist twisting motion , the arc will establish and run as set by weld power potentiometer 3. Arc force potentiometer 5 is disabled automatically. Maximum OCV is limited to about 30 VDC, providing a softer arc turn off quality.

**5> Arc Force Potentiometer**

Controls the spatter properties for different welding rods used in SMAW (Stick) process. Setting to higher numbers will increase the output current available to clear molten droplets bridging in between the rod and work piece, thus appropriate arc force settings will provide the optimum spatter control at the arc.

**6> Optional Remote Control**

Connection for remote current control device. When connected, control of the welding power is automatically switched to remote device. The indicator lamp remains on when the remote is connected and the circuit breaker is ON.

**7> Primary Input**

Unit comes from factory with 12 feet (3.6 m) of primary lead connected to the circuit breaker through the strain relief. See Installation Section for recommended cable size and fuse requirements.

**8> Output Terminals**

Quick connect female output receptacle with polarity as marked. User must supply cable and male connect plugs. See Installation Section for recommended cable size.

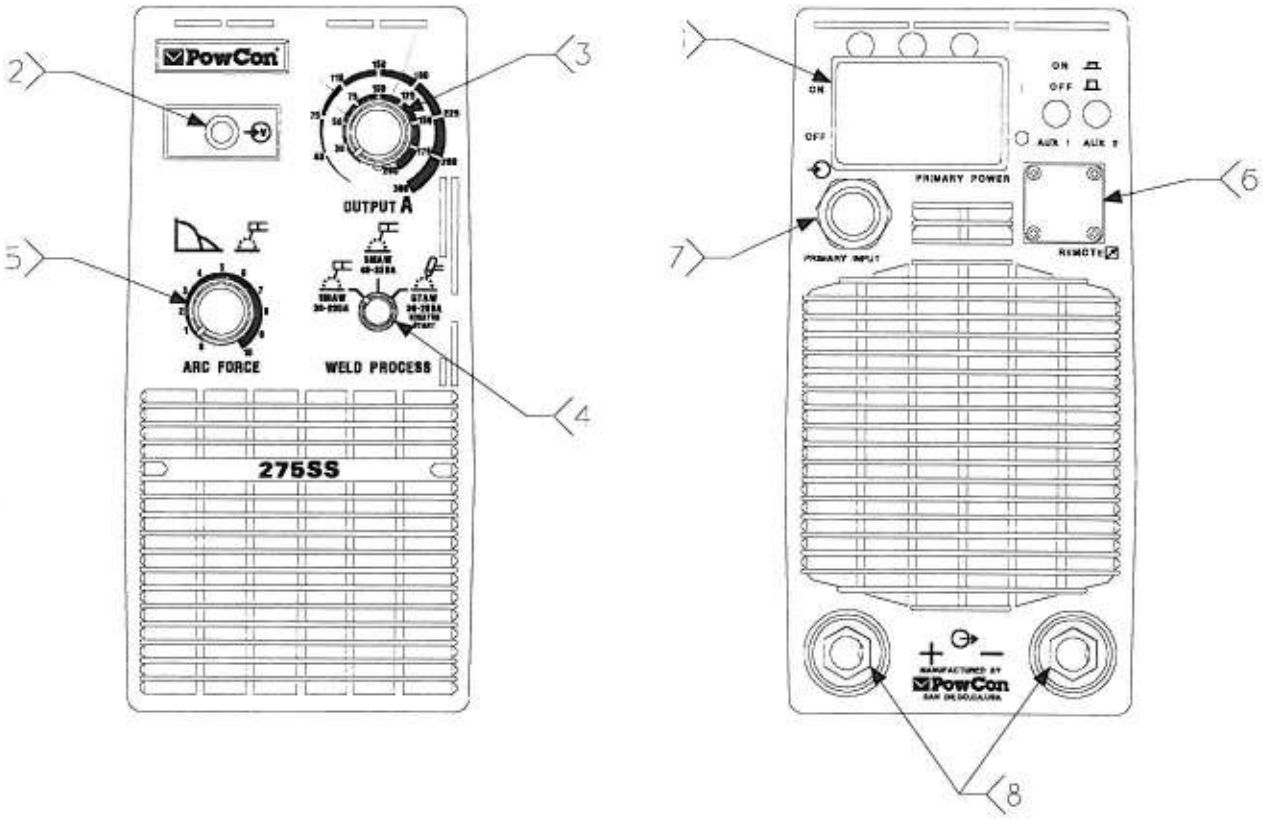



**Figure 4 - Front and Back Panel Controls and Connections**

## SEQUENCE OF OPERATION

1. Inspect the unit to make sure it is set up properly according to the equipment installation section.

2. Adjust the weld power control to the desired power level needed for you application.

3. Lift the handle of the automatic circuit breaker to its "UP" position. At this time the pilot light will come on and the fan will start. A "ticking" sound will be heard in SMAW mode, (if the machine is not under load.) This indicates that the rectifier is coming on about once per second for a very short time to provide the open circuit voltage.

**NOTE**

**In SMAW mode, when either a foot or hand operated remote device is connected to the power source, the "ticking" sound will not occur. The ticking will only occur when the contactor is engaged by the remote device. The indicator lamp and fan, however, will remain on while a remote device is installed.**

4. Proceed with your chosen weld program.

5. After welding has been completed, allow the fan in the unit to run for a few minutes to remove the heat from the power source prior to turning the unit off.

## WELDING TECHNIQUES

Welding techniques vary as a function of both the individual performing the operation and the code requirements of the applicable welding procedure.

In SMAW mode, the PowCon 275SS has a hot start circuit to aid the welder in striking an arc. The hot start automatically provides a short duration current pulse when the arc is initiated.

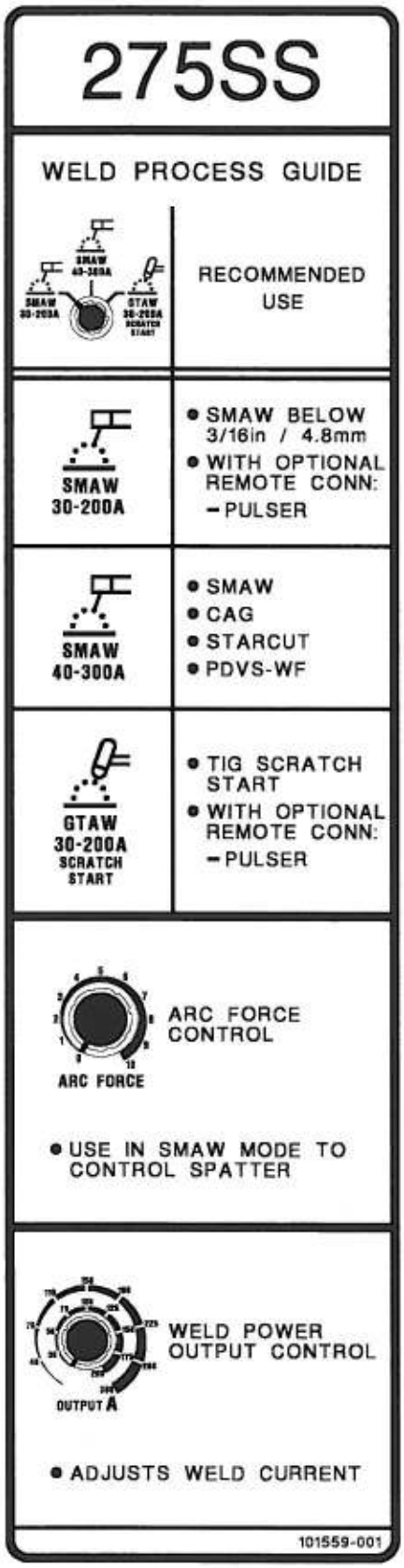



**Figure 5 - Weld Process Guide**

## DUTY CYCLE

The duty cycle of a welding power source is a measure of the capacity of the unit. The PowCon 275SS has a duty cycle based on a 10 minute time period. The duty cycle is the percent of that time period the unit can produce the specified output.

The PowCon 275SS can operate for 6 minutes out of a 10 minute period at an output of 300 amperes and 32 volts. To assure the safe operation of the unit the remaining 4 minutes must be spent idling to permit proper cooling. The duty cycle at this output is 60%.

Lowering the output current allows increases in the duty cycle. Thus the 100% duty cycle (weld output continuous) is 200 amperes and 28 volts.

### NOTE

**Failure to allow unit to idle for required period of duty cycle will activate thermal overload devices. If these devices are activated, unit will shut down until components are naturally cooled.**

*MAINTENANCE*

## SERVICE

Unauthorized service to this unit by anyone other than a PowCon trained and authorized technician will void the limited warranty.

## INTERNAL CLEANING

The use of a PowCon unit in an environment containing airborne dust and dirt requires occasional blowing out or vacuuming of the unit. The frequency of the cleaning operation should be done dependent upon the severity of the environment. Use only clean, dry air or a vacuum suction to clean the unit. Do not open the case; just direct cleaning through the vents while the unit is turned off and disconnected from the primary power source.

## EXTERNAL TROUBLESHOOTING

If the PowCon power source malfunctions, this Troubleshooting Guide will be helpful in locating the problem. This guide covers only malfunctions that can be located and corrected without opening the unit.

1. Before doing anything else, make sure that the unit is connected to the correct voltage and that all three legs of the three phase power are connected.
2. Make sure the unit is properly grounded.
3. The circuit breaker on the rear panel is intended to trip in the event of a fault or component failure in the unit. It does not trip if the unit overheats; the control circuit automatically turns the output off until it cools down.

If the circuit breaker trips, it is probable that a fault has occurred. It may be reset ONCE to see if it was a momentary fault.

**NOTE**

**Repeated resetting of the circuit breaker only increases the chance of causing additional failures to the unit.**

4. With no load connected, turn the unit on and switch between all the output ranges. A "ticking" sound should be heard.

## INTERNAL TROUBLESHOOTING

**⚠ DANGER**

**No reason exists for unauthorized personnel opening the case of the unit.**

**Table 3 - General Troubleshooting Guide**

| Trouble | Possible Cause | Remedy |
|---|---|---|
| Welding current too low for power setting. | Phase missing primary power. | Check primary connections. |
| Welding current too high or too low when remote control is used. | Bad remote control assembly. | Replace. |
| Unit shuts down while welding. Fan still rotates and ready light working. | Unit overheated due to:<br>a. Running too high amperage.<br><br>b. Improper cooling of unit. | • Wait 10 minutes.<br>• Reduce the welding current and duty cycle.<br>• Make sure the air vents are not obstructed. |

# PARTS LIST



## Parts List, Side View

| Item No. | Qty. | Part Number | Description | Ref. Des. |
|---|---|---|---|---|
| 1 | 1 | 902016-001 | Resistor, 12 OHM 70W | R6 |
| 2 | 1 | 100199-001 | Assembly, CF PWB | CR1-6 |
| 3 | 1 | 250018-006 | Case Top Kit | |
| 4 | 1 | 100241-006 | Assembly, Output PWB | R7-10, C11, 12, 15, 16 |
| 5 | 1 | 100148-002 | Capacitor Bracket with PTC | RT3 |
| 6 | 2 | 250017-002 | Handle Kit | |
| 7 | 1 | 101538-007 | Assembly, Control PWB | |
| 8 | 2 | 900000-001 | Capacitor, Input | C1, C2 |
| 9 | 1 | 101552-001 | Assembly, Front Panel | |
| 10 | 1 | 100313-001 | Assembly, Main Transformer | T2 |
| 11 | 1 | 101556-001 | Bracket, Surge Resistor | |
| 12 | 1 | 100396-008 | Assembly, Rear Panel | |
| 13 | 1 | 100190-002 | Chassis | |
| 14 | 1 | 922001-004 | Fan Blade | |
| 15 | 1 | 101549-001 | Fan Motor | FAN |
| 16 | 1 | 103010-002 | Assembly, Output Inductor | |
| 17 | 1 | 100183-001 | Bracket, Transformer | |
| 18 | 1 | 100215-001 | Assembly, WR Heatsink | CR11-12 |
| 19 | 1 | 100006-001 | Case Bottom | |

# PARTS LIST

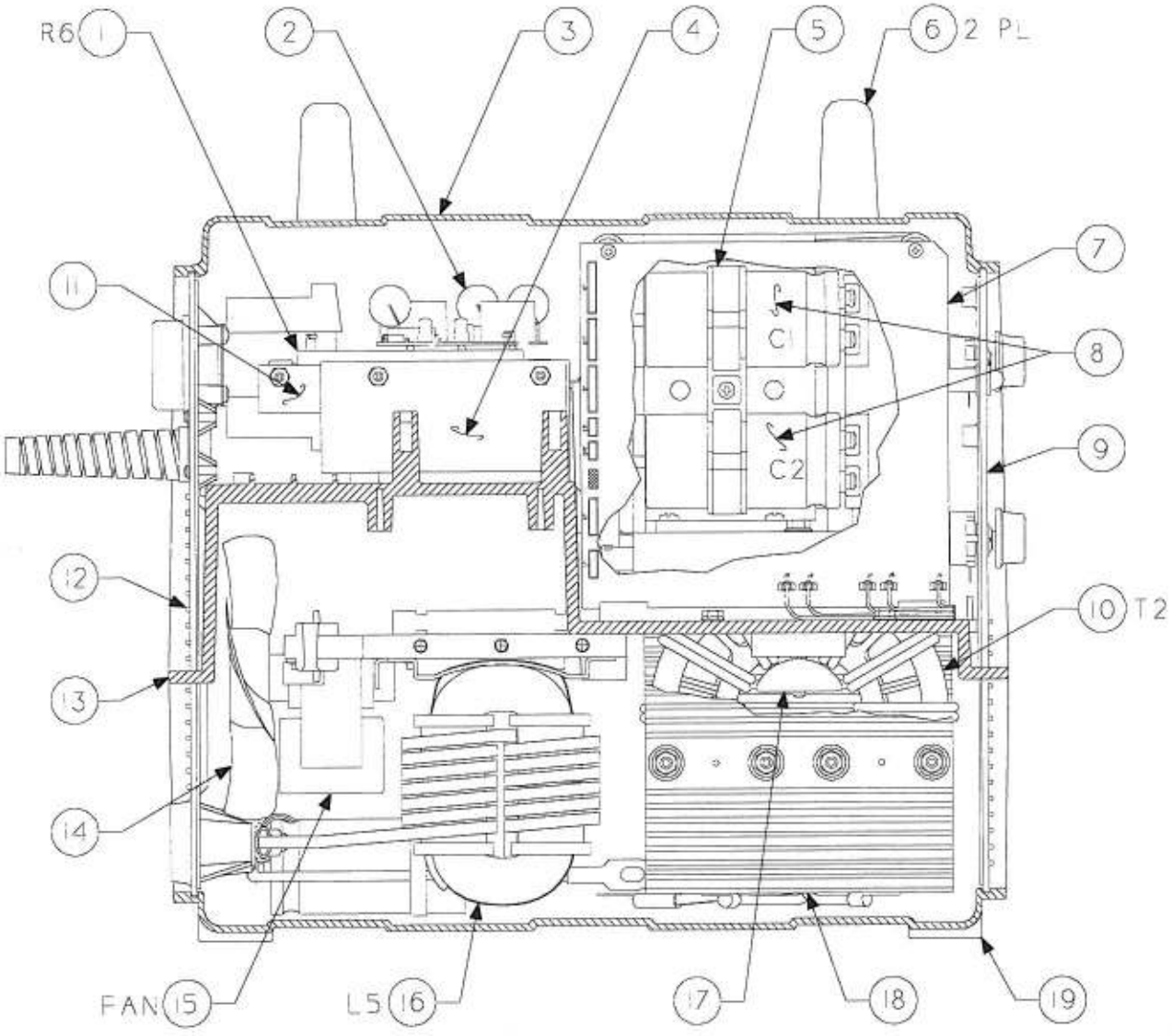



**Figure 6 - Side View**

# PARTS LIST

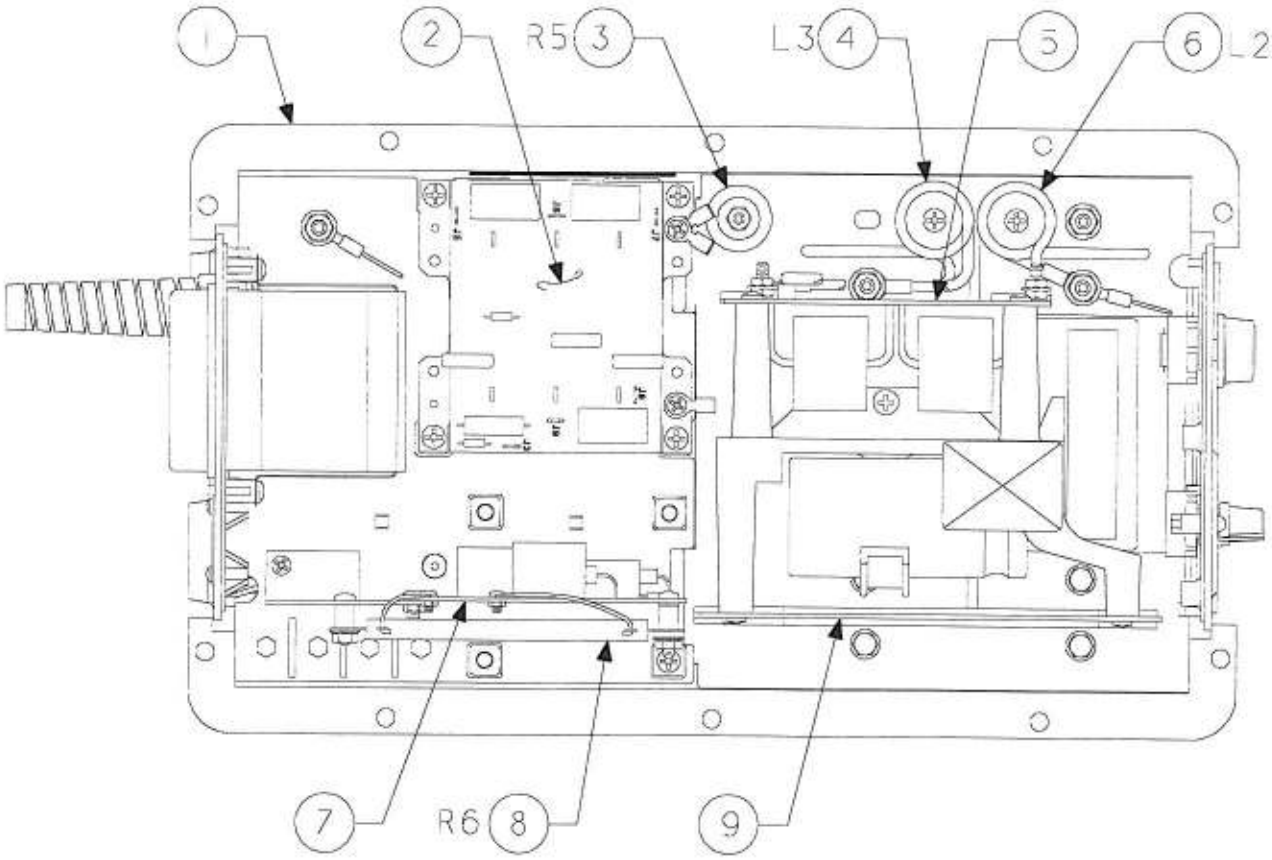



**Figure 7 - Top View**

| Item No. | Qty. | Part Number | Description | Ref. Des. |
|---|---|---|---|---|
| 1 | 1 | 100190-002 | Chassis | |
| 2 | 1 | 100199-001 | Assembly, CF PWB | CR1-6 |
| 3 | 1 | 902003-002 | Resistor, Power 40 OHM 100W | R5 |
| 4 | 1 | 250004-001 | Assembly, Commutating Inductor Kit - Rear | L3 |
| 5 | 1 | 101542-001 | Assembly, Capacitor PWB | CR8-9, RV1, C7-8 |
| 6 | 1 | 250005-001 | Assembly, Commutating Inductor Kit - Front | L2 |
| 7 | 1 | 100241-006 | Assembly, Output PWB | R7-10, C11, 12, 15, 16 |
| 8 | 1 | 902016-001 | Resistor, 12 OHM 70W | R6 |
| 9 | 1 | 101538-007 | Assembly, Control PWB | |

# PARTS LIST

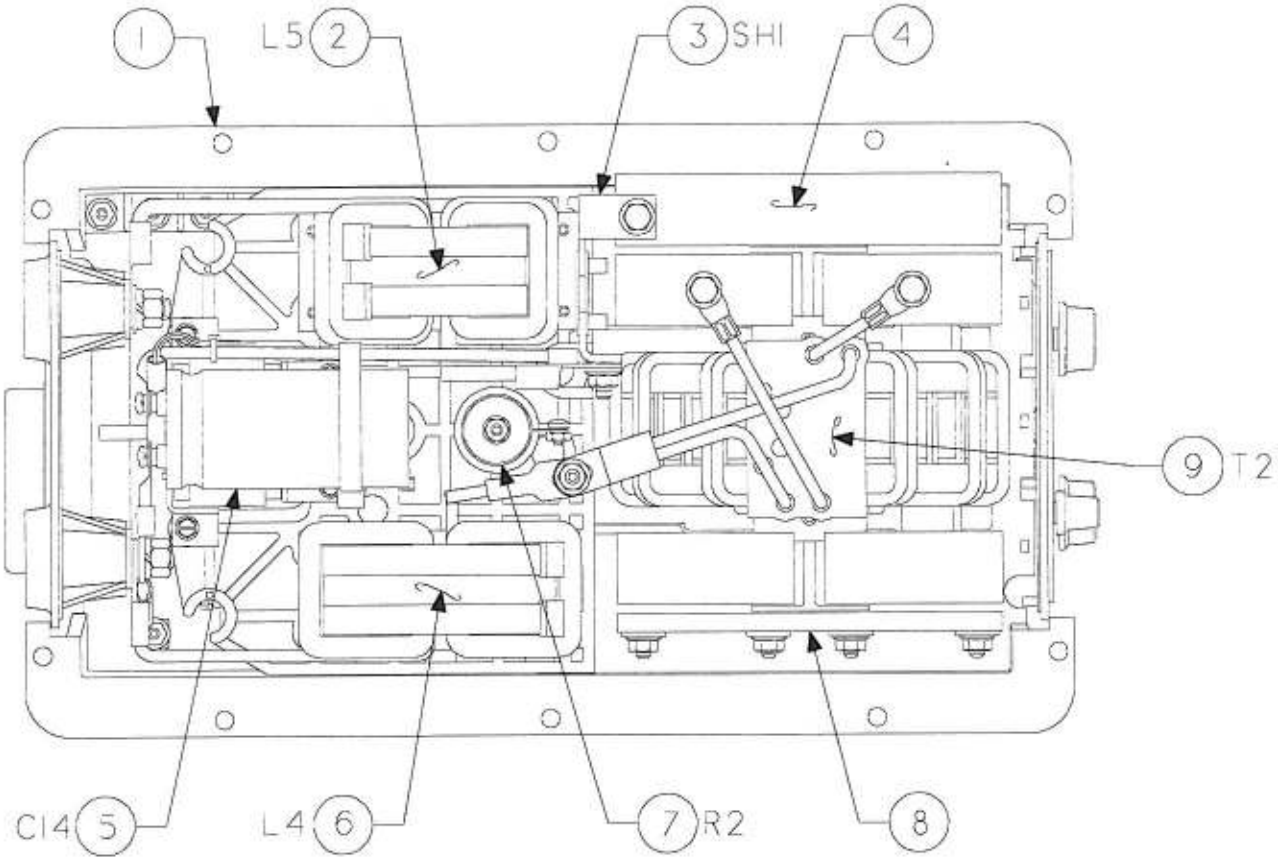



**Figure 8 - Bottom View**

| Item No. | Qty. | Part Number | Description | Ref. Des. |
|---|---|---|---|---|
| 1 | 1 | 100190-002 | Chassis | |
| 2 | 1 | 103010-002 | Assembly, Output Inductor | L5 |
| 3 | 1 | 100057-001 | Assembly, Shunt | SH1 |
| 4 | 1 | 100215-003 | Assembly, WR Heatsink | CR11-12 |
| 5 | 1 | 101547-001 | Assembly, Output Capacitor | C14 |
| 6 | 1 | 100039-002 | Assembly, Main Inductor | L4 |
| 7 | 1 | 902006-001 | Resistor, Surge | R2 |
| 8 | 1 | 101557-001 | Assembly, SCR Heatsink | Q1-2 |
| 9 | 1 | 100313-001 | Assembly, Main Transformer | T2 |

# PARTS LIST

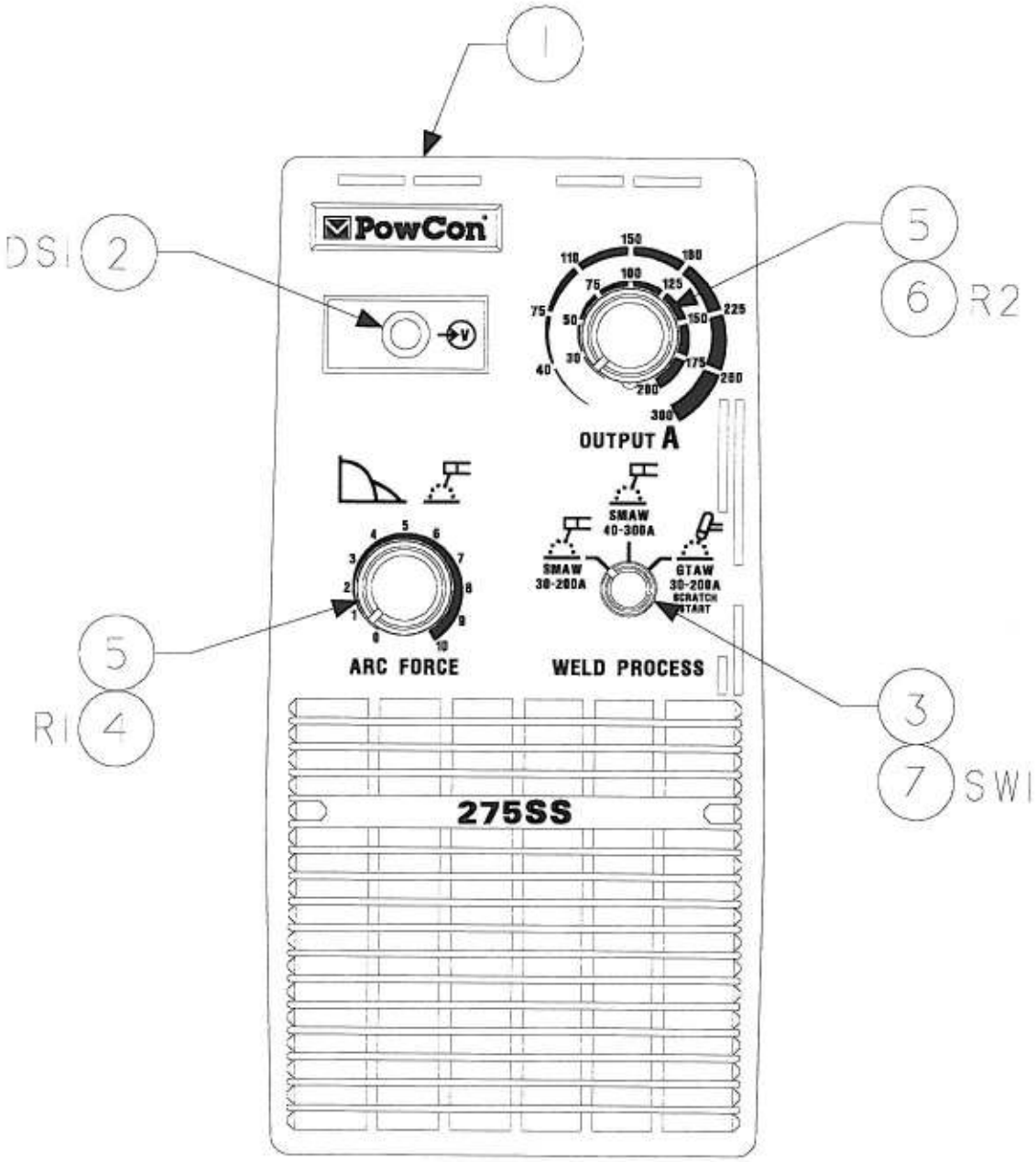



**Figure 9 - Front Panel**

| Item | Qty. | Part Number | Description | Ref. Des. |
|---|---|---|---|---|
| 1 | 1 | 101553-001 | Front Panel, Silkscreened | |
| 2 | 1 | 941006-001 | Indicator Lamp | DS1 |
| 3 | 1 | 940024-001 | Knob, Small | |
| 4 | 1 | 903000-008 | Potentiometer, 100K | R1 |
| 5 | 2 | 940024-101 | Knob, Large | |
| 6 | 1 | 903000-002 | Potentiometer, 5K | R2 |
| 7 | 1 | 920019-001 | Switch, 3 Position | SW1 |

# PARTS LIST

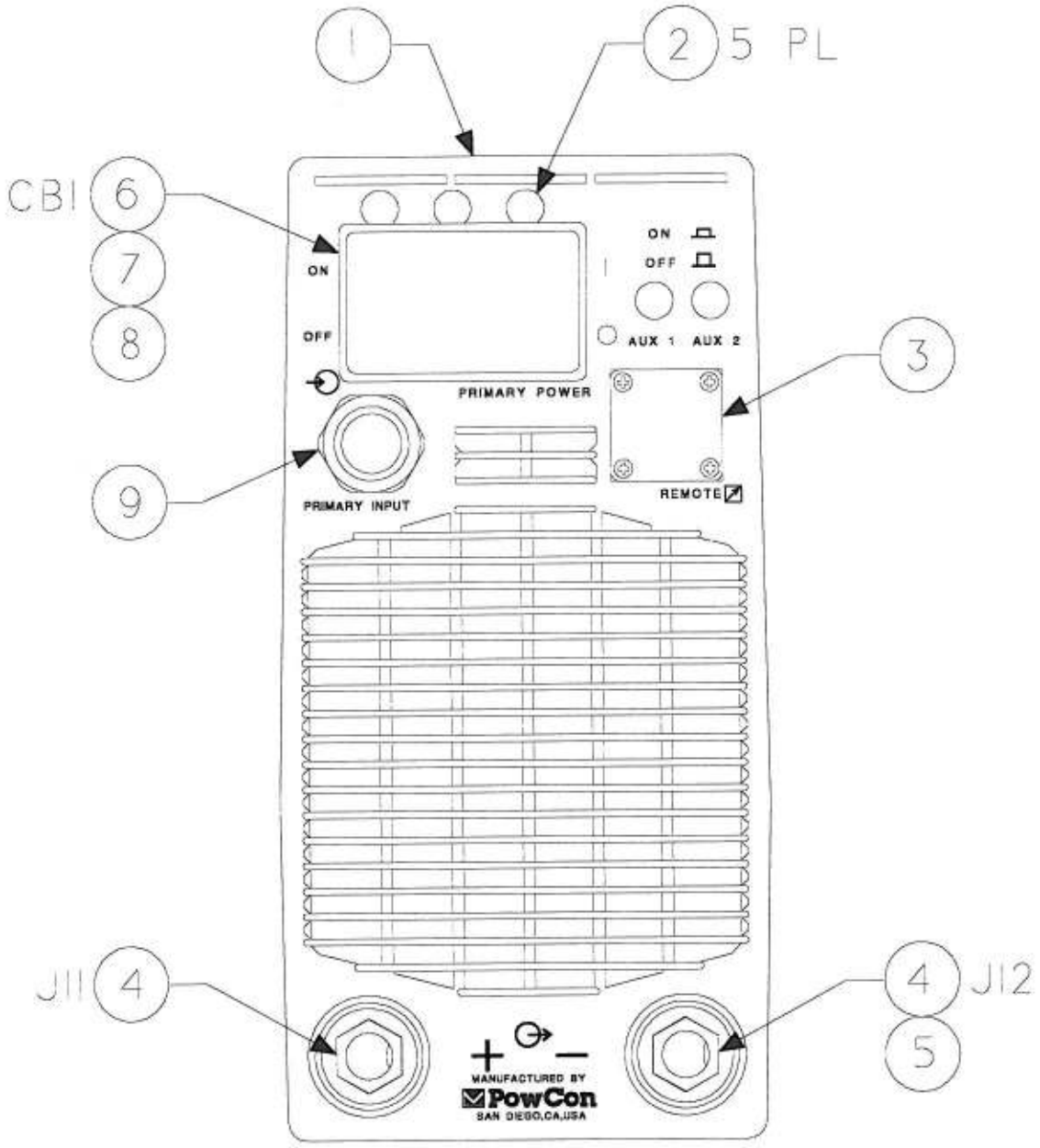



**Figure 10 - Rear Panel**

| Item No. | Qty. | Part Number | Description | Ref. Des. |
|---|---|---|---|---|
| 1 | 1 | 100397-001 | Rear Panel, Silkscreened | |
| 2 | 5 | 940002-001 | Hole Plug | |
| 3 | 1 | 107600-001 | Plate, Remote | |
| 4 | 2 | 100025-001 | Output Jack, Tweco | |
| OPT | 2 | 100028-001 | Output Jack, Dinse | |
| 5 | 1 | 250002-001 | Output Jack Hardware Kit | |
| 6 | 1 | 921000-001 | Circuit Breaker | CB1 |
| 7 | 1 | 100030-001 | Bracket, Circuit Breaker | |
| 8 | 1 | 100005-001 | Boot, Circuit Breaker | |
| 9 | 1 | 940015-003 | Strain Relief with Nut | |

# SCHEMATIC

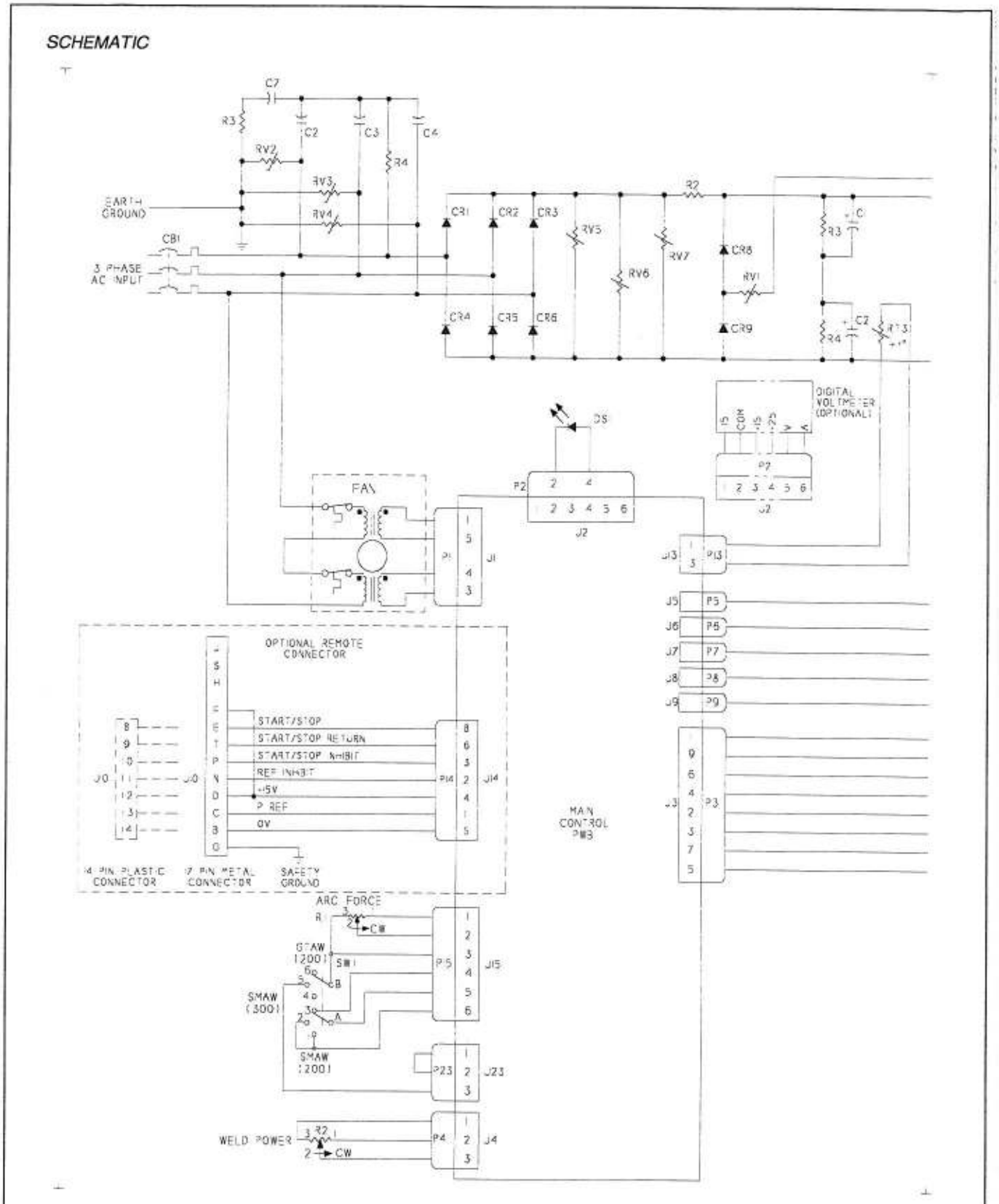
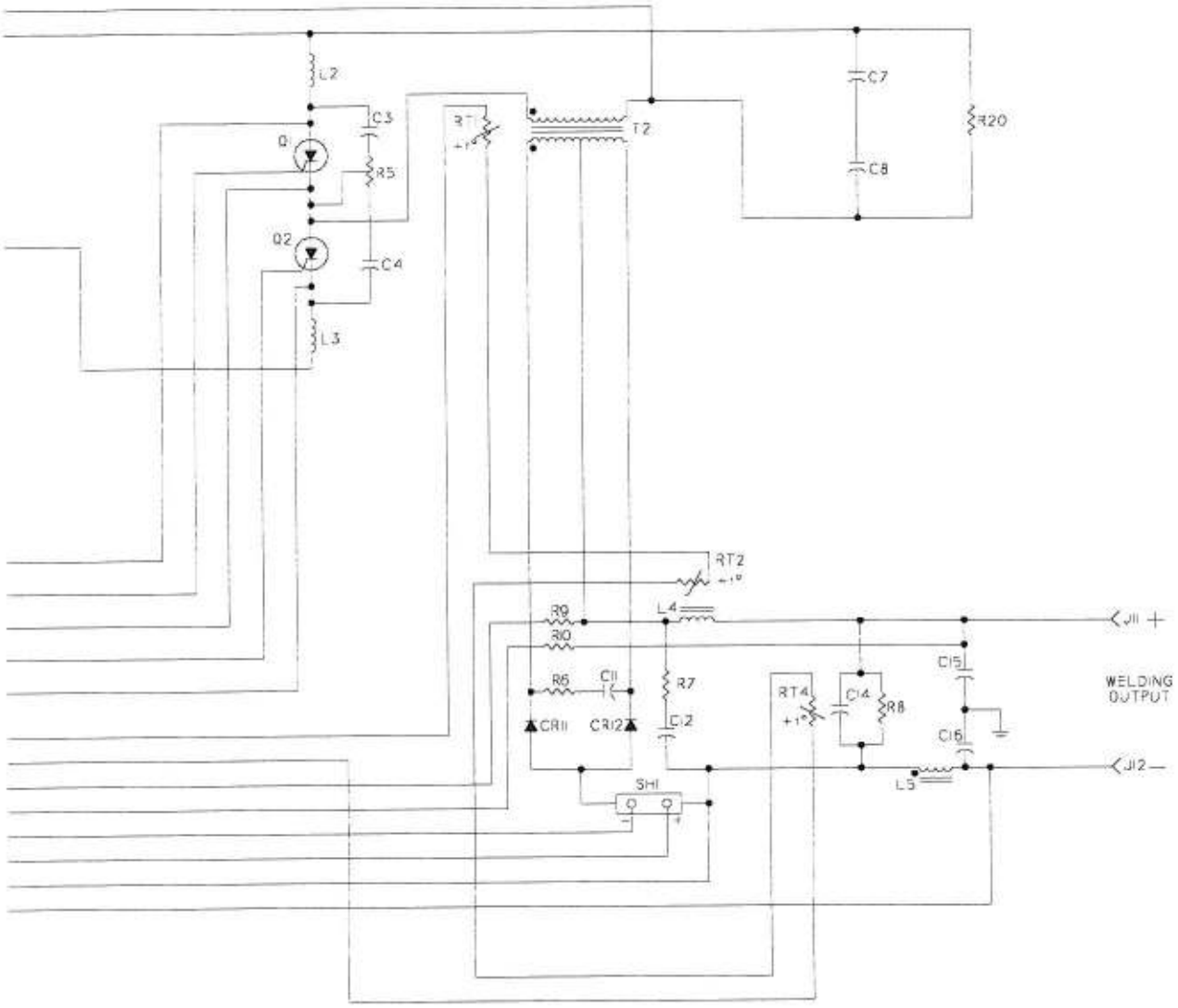



**Figure 11 - 275SS Schematic**

# SCHEMATIC


L2
C3
Q1
R5
Q2
C4
L3
R1
T2
C7
C8
R20
RT2
R9
R10
L4
J11 +
R6
C11
R7
CR11
CR12
C12
RT4
C14
R8
C15
C16
L5
J12 —
WELDING OUTPUT
SH1