



WC-1 Weld Control Box Owner's Manual

Product:	WC-1-110
Manual:	091-0249
Serial:	n/a
Voltage Rating:	115 VAC
Revision:	June 1999 Rev A
Model Number:	n/a



SAFETY CONSIDERATIONS

ELECTRIC ARC WELDING EQUIPMENT

CAUTION : READ BEFORE ATTEMPTING INSTALLATION, OPERATION OR MAINTENANCE OF THIS EQUIPMENT

1-1 INTRODUCTION

This equipment is intended for ultimate application by commercial/industrial users and for operation by persons trained and experienced in the use and maintenance of welding equipment. Operation should not be undertaken without adequate training in the use of such equipment. Training is available from many public and private schools or similar facilities.

Safe practices in the installation, operation and maintenance of this equipment requires proper training in the art, a careful study of the information provided with the equipment, and the use of common sense. Rules for safe use are generally provided by suppliers of welding power sources, compressed gas suppliers, and electrode suppliers. Careful compliance with these rules will promote safe use of this equipment.

The following Safety Rules cover some of the more generally found situations. READ THEM CAREFULLY. In case of any doubt, obtain qualified help before proceeding.

1-2 GENERAL PRECAUTIONS

A. Burn Prevention

ELECTRIC ARC WELDING PRODUCES HIGH INTENSITY HEAT AND ULTRAVIOLET RADIANT ENERGY WHICH MAY CAUSE SERIOUS AND PERMANENT EYE DAMAGE AND WHICH MAY DAMAGE ANY EXPOSED SKIN AREAS.

Wear helmet with safety goggles or glasses with side shields underneath, appropriate filter lenses or plates (protected by clear cover glass). This is a must for welding or cutting (and chipping) to protect the eyes from radiant energy and flying metal. Replace cover glass when broken, pitted, or spattered.

Medical first aid and eye treatment. First aid facilities and a qualified first aid person should be available for each shift unless medical facilities are close by for immediate treatment of flash burns of the eyes and skin burns.

Wear protective clothing - leather (or asbestos) gauntlet gloves, hat, and high safety-toe shoes. Button shirt collar and pocket flaps, and wear cuffless trousers to avoid entry of sparks and slag.

Avoid oily or greasy clothing. A spark may ignite them.

Flammable hair preparations should not be used by persons intending to weld or cut.

Hot metal such as electrode stubs and work pieces should never be handled without gloves.

Ear plugs should be worn when working on overhead or in a confined space. A hard hat should be worn when others work overhead.

B. Toxic Fume Prevention

WARNING: The use of this product may result in exposure to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Adequate ventilation. Severe discomfort, illness or death can result from fumes, vapors, heat, or oxygen enrichment or depletion that welding (or cutting) may produce. Prevent them with adequate ventilation. NEVER ventilate with oxygen.

Lead-, cadmium-, zinc-, mercury-, beryllium-bearing and similar materials, when welded or cut, may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area, as well as the operator, must wear an air-supplied respirator. For beryllium, both must be used.

Metals coated with or containing materials that emit toxic fumes should not be heated unless coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator.

Work in a confined space only while it is being ventilated and, if necessary, while wearing an air-supplied respirator.

Gas leaks in a confined space should be avoided. Leaked gas in large quantities can change oxygen concentration dangerously. Do not bring gas cylinders into a confined space.

Leaving confined space, shut OFF gas supply at source to prevent possible accumulation of gases in the space if downstream valves have been accidentally opened or left open. Check to be sure that the space is safe before reentering it.

Vapors from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form PHOSGENE, a highly toxic gas, and other lung and eye irritating products. The ultraviolet (radiant) energy of the arc can also decompose trichloroethylene and perchloroethylene vapors to form phosgene. DO NOT WELD or cut where solvent vapors can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.

C. Fire and Explosion Prevention

Causes of fire and explosion are: combustibles reached by the arc, flame, flying sparks, hot slag, or heated material, misuse of compressed gases and cylinders, and short circuits.

BE AWARE THAT flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the goggled operator. Sparks can fly many feet.

To prevent fires and explosion:

Keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits.

If combustibles are in area, do NOT weld or cut. Move the work if practicable, to an area free of combustibles. Avoid paint spray rooms, dip tanks, storage areas, ventilators. If the work cannot be moved, move combustibles at least 35 feet away, out of reach of sparks and heat; or protect against ignition with suitable and snug-fitting, fire-resistant covers or shields.

Walls touching combustibles on opposite sides should not be welded on (or cut). Walls, ceilings, and floor near work should be protected by heat-resistant covers or shields.

Fire watcher must be standing by with suitable fire extinguishing equipment during and for some time after welding or cutting if:

1. Appreciable combustibles (including building construction) are within 35 feet.
2. Appreciable combustibles are further than 35 feet, but can be ignited by sparks.
3. Openings (concealed or visible) in floors or walls within 35 feet may expose combustibles to sparks.
4. Combustibles adjacent to walls, ceilings, roofs, or metal partitions can be ignited by radiant or conducted heat.

Hot work permit should be obtained before operation to ensure supervisor's approval that adequate precautions have been taken.

After work is done, check that area is free of sparks, glowing embers, and flames.

An empty container that held combustibles, or that can produce flammable or toxic vapors when heated, must never be welded on or cut, unless container has first been cleaned in accordance with industry standards.

This includes: a thorough steam or caustic cleaning (or a solvent of water washing, depending on the combustible's solubility), followed by purging and

inerting with nitrogen or carbon dioxide, and using protective equipment.

Water-filling just below working level may substitute for inerting.

A container with unknown contents should be cleaned (see paragraph above). Do NOT depend on sense of smell or sight to determine if it is safe to weld or cut.

Hollow castings or containers must be vented before welding or cutting. They can explode.

Explosive atmospheres. NEVER weld or cut where the air may contain flammable dust, gas, or liquid vapors (such as gasoline).

D. Compressed Gas Equipment

The safe handling of compressed gas equipment is detailed in numerous industry publications. The following general rules cover many of the most common situations.

1. Pressure Regulators

Regulator relief valve is designed to protect only the regulator from overpressure; it is not intended to protect any downstream equipment. Provide such protection with one or more relief devices.

Never connect a regulator to a cylinder containing gas other than that for which the regulator was designed.

Remove faulty regulator from service immediately for repair (first close cylinder valve). The following symptoms indicate a faulty regulator:

Leaks - if gas leaks externally.

Excessive Creep - if delivery pressure continues to rise with downstream valve closed.

Faulty Gauge - if gauge pointer does not move off stop pin when pressurized, nor returns to stop pin after pressure release.

Repair. Do NOT attempt repair. Send faulty regulators for repair to manufacturer's designated repair center, where special techniques and tools are used by trained personnel.

2. Cylinders

Cylinders must be handled carefully to prevent leaks and damage to their walls, valves, or safety devices:

Avoid electrical circuit contact with cylinders including third rails, electrical wires, or welding circuits. They can produce short circuit arcs that may lead to a serious accident. (See 1-3C)

ICC or DOT marking must be on each cylinder. It is an assurance of safety when the cylinder is properly handled.

Identifying gas content. Use only cylinders with name of gas marked on them; do not rely on color to identify gas content. Notify supplier if unmarked. NEVER DEFACE or alter name, number, or other markings on a cylinder. It is illegal and hazardous.

Empties: Keep valves closed, replace

caps securely; mark MT; keep them separate from FULLS, and return promptly.

Prohibited use. Never use a cylinder or its contents for other than its intended use, NEVER as a support or roller.

Locate or secure cylinders so they cannot be knocked over.

Passageways and work areas. Keep cylinders clear of areas where they may be stuck.

Transporting cylinders. With a crane, use a secure support such as a platform or cradle. Do NOT lift cylinders off the ground by their valves or caps, or by chains, slings, or magnets.

Do NOT expose cylinders to excessive heat, sparks, slag, and flame, etc. that may cause rupture. Do not allow contents to exceed 55 degrees C (130 degrees F.) Cool with water spray where such exposure exists.

Protect cylinders, particularly valves from bumps, falls, falling objects, and weather. Replace caps securely when moving cylinders.

Stuck valve. Do NOT use a hammer or wrench to open a cylinder valve that cannot be opened by hand. Notify your supplier.

Mixing gases. NEVER try to mix any gases in a cylinder.

NEVER refill any cylinder.

Cylinder fittings should never be modified or exchanged.

3. Hose

Prohibited use. Never use hose other than that designed for the specified gas. A general hose identification rule is: red for fuel gas, green for oxygen, and black for inert gases.

Use ferrules or clamps designed for the hose (not ordinary wire or other substitute) as a binding to connect hoses to fittings.

No copper tubing splices. Use only standard brass fittings to splice hose.

Avoid long runs to prevent kinks and abuse. Suspend hose off ground to keep it from being run over, stepped on, or otherwise damaged.

Coil excess hose to prevent kinks and tangles.

Protect hose from damage by sharp edges, and by sparks, slag, and open flame.

Examine hose regularly for leaks, wear, and loose connections. Immerse pressured hose in water; bubbles indicate leaks

Repair leaky or worn hose by cutting area out and splicing. Do NOT use tape.

4. Proper Connections

Clean cylinder valve outlet of impurities that may clog orifices and damage seats before connecting regulator. Except for hydrogen, crack valve momentarily, pointing outlet away from people and sources of ignition. Wipe with a clean, lintless cloth.

Match regulator to cylinder. Before connecting, check that the regulator label and cylinder marking agree, and that the

regulator inlet and cylinder outlet match. NEVER Connect a regulator designed for a particular gas or gases to a cylinder containing any other gas.

Tighten connections. When assembling threaded connections, clean and smooth seats where necessary. Tighten. If connection leaks, disassemble, clean, and retighten, using properly fitting wrench.

Adapters. Use a CGA adapter (available from your supplier) between cylinder and regulator, if one is required. Use two wrenches to tighten adapter marked RIGHT and LEFT HAND threads.

Regulator outlet (or hose) connections may be identified by right hand threads for oxygen and left hand threads (with grooved hex on nut or shank) for fuel gas.

5. Pressurizing Steps:

Drain regulator of residual gas through suitable vent before opening cylinder (or manifold valve) by turning adjusting screw in (clockwise). Draining prevents excessive compression heat at high pressure seat by allowing seat to open on pressurization. Leave adjusting screw engaged slightly on single-stage regulators.

Stand to side of regulator while opening cylinder valve.

Open cylinder valve slowly so that regulator pressure increases slowly. When gauge is pressurized (gauge reaches regulator maximum) leave cylinder valve in following position: for oxygen and inert gases, open fully to seal stem against possible leak; for fuel gas, open to less than one turn to permit quick emergency shut-off.

Use pressure charts (available from your supplier) for safe and efficient recommended pressure settings on regulators.

Check for leaks on first pressurization and regularly thereafter. Brush with soap solution. Bubbles indicate leaks. Clean off soapy water after test; dried soap is combustible.

E. User Responsibilities

Follow all Safety Rules.

Remove leaky or defective equipment from service immediately for repair. Read and follow user manual instructions.

F. Leaving Equipment Unattended

Close gas supply at source and drain gas.

G. Rope Staging-Support

Rope staging-support should not be used for welding or cutting operation; rope may burn.

1-3 ARC WELDING

Comply with precautions in 1-1, 1-2, and this section. Arc Welding, properly done, is a safe process, but a careless operator invites trouble. The equipment carries high currents at significant voltages. The

arc is very bright and hot. Sparks fly, fumes rise, ultraviolet and infrared energy radiates, weldments are hot, and compressed gases may be used. The wise operator avoids unnecessary risks and protects himself and others from accidents.

A. Burn Protection

Comply with precautions in 1-2.

The welding arc is intense and visibly bright. Its radiation can damage eyes, penetrate lightweight clothing, reflect from light-colored surfaces, and burn the skin and eyes. Skin burns resemble acute sunburn; those from gas-shielded arcs are more severe and painful. **DON'T GET BURNED; COMPLY WITH PRECAUTIONS.**

1. Protective Clothing

Wear long-sleeve clothing in addition to gloves, hat, and shoes. As necessary, use additional protective clothing such as leather jacket or sleeves, flameproof apron, and fire-resistant leggings. Avoid outer garments of untreated cotton.

Bare skin protection. Wear dark, substantial clothing. Button collar to protect chest and neck, and button pockets to prevent entry of sparks.

2. Eye and Head Protection

Protect eyes from exposure to arc. Eyes may be damaged by radiant energy when exposed to the electric arc, even when not looking in the direction of the arc. Never look at an electric arc without protection.

Welding helmet or shield containing a filter plate shade no. 12 or denser must be used when welding. Place over face before striking arc.

Protect filter plate with a clear cover plate.

Cracked or broken helmet or shield should NOT be worn; radiation can be passed through to cause burns.

Cracked, broken, or loose filter plates must be replaced IMMEDIATELY. Replace clear cover plate when broken, pitted, or spattered.

Flash goggles with side shields MUST be worn under the helmet to give some protection to the eyes should the helmet not be lowered over the face before an arc is struck. Looking at an arc momentarily with unprotected eyes (particularly a high intensity gas-shielded arc) can cause a retinal burn that may leave a permanent dark area in the field of vision.

3. Protection of Nearby Personnel

Enclose the welding area. For production welding, a separate room or enclosed bay is best. In open areas, surround the operation with low-reflective, noncombustible screens or panels. Allow for free air circulation, particularly at floor level.

Viewing the weld. Provide face shields for all persons who will be looking directly at the weld.

Others working in area. See that all persons are wearing flash goggles.

Before starting to weld, make sure that screen flaps or bay doors are closed.

B. Toxic Fume Prevention

Comply with precautions in 1-2B.

Generator engine exhaust must be vented to the outside air. Carbon monoxide can kill.

C. Fire and Explosion Prevention

Comply with precautions in 1-2C.

Equipment's rated capacity. Do not overload arc welding equipment. It may overheat cables and cause a fire.

Loose cable connections may overheat or flash and cause a fire.

Never strike an arc on a cylinder or other pressure vessel. It creates a brittle area that can cause a violent rupture or lead to such a rupture later under rough handling.

D. Compressed Gas Equipment

Comply with precautions in 1-2D.

E. Shock Prevention

Exposed electrically hot conductors or other bare metal in the welding circuit, or in ungrounded, electrically-HOT

equipment can fatally shock a person whose body becomes a conductor. **DO NOT STAND, SIT, LIE, LEAN ON, OR TOUCH** a wet surface when welding without suitable protection.

To protect against shock:

Keep body and clothing dry. Never work in damp area without adequate insulation against electrical shock. Stay on a dry duckboard, or rubber mat when dampness or sweat cannot be avoided. Sweat, sea water, or moisture between body and an electrically HOT part - or grounded metal - reduces the body surface electrical resistance, enabling dangerous and possibly lethal currents to flow through the body.

1. Grounding the Equipment

When installing, connect the frames of each unit such as welding power source, control, work table, and water circulator to the building ground. Conductors must be adequate to carry ground currents safely. Equipment made electrically HOT by stray currents may shock, possibly fatally. **DO NOT GROUND** to electrical conduit, or to a pipe carrying ANY gas or a flammable liquid such as oil or fuel.

Three-phase connection. Check phase requirement of equipment before installing. If only three-phase power is available, connect single-phase equipment to only two wires of the three-phase line. **DO NOT** connect the equipment ground lead to the third (live) wire, or the equipment will become electrically HOT - a dangerous condition that can shock, possibly fatally.

Before welding, check ground for continuity. Be sure conductors are touching bare metal of equipment frames at connections.

If a line cord with a ground lead is provided with the equipment for connection to a

switch box, connect the ground lead to the grounded switch box. If a three-prong plug is added for connection to a grounded mating receptacle, the ground lead must be connected to the ground prong only. If the line cord comes with a three-prong plug, connect to a grounded mating receptacle. Never remove the ground prong from a plug, or use a plug with a broken ground prong.

2. Connectors

Fully insulated lock-type connectors should be used to join welding cable lengths.

3. Cables

Frequently inspect cables for wear, cracks, and damage. **IMMEDIATELY REPLACE** those with excessively worn or damaged insulation to avoid possibly lethal shock from bared cable. Cables with damaged areas may be taped to give resistance equivalent to original cable.

Keep cable dry, free of oil and grease, and protected from hot metal and sparks.

4. Terminals and Other Exposed Parts

Terminals and other exposed parts of electrical units should have insulating covers secured before operation.

5. Electrode Wire

Electrode wire becomes electrically HOT when the power switch of gas metal-arc welding equipment is ON and welding gun trigger is pressed. Keep hands and body clear of wire and other HOT parts.

6. Safety Devices

Safety devices such as interlocks and circuit breakers should not be disconnected or shunted out.

Before installation, inspection, or service of equipment, shut OFF all power, and remove line fuses (or lock or red-tag switches) to prevent accidental turning ON of power. Disconnect all cables from welding power source, and pull all 115 volts line-cord plugs.

Do not open power circuit or change polarity while welding. If, in an emergency, it must be disconnected, guard against shock burns or flash from switch arcing.

Leaving equipment unattended. Always shut OFF, and disconnect all power to equipment.

Power disconnect switch must be available near the welding power source.

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Introduction

This manual details the installation and operation of your WC-1 weld control.

The WC-1 can be used with any constant voltage(CV) or constant current(CC) power source having its own contactor. A secondary contactor is available for the WC-1, for those power supplies not having a contactor system. CC Posa start "Run-in Speed" is included as a standard feature.

The WC-1 has a 7 pin "W" clocked amphenol connector and is designed for use with Prince® and Prince® XL Spool guns models 146-XXX and 216-XXX.

In order to assure optimum performance of your WC-1, familiarize yourself with the contents of this manual and carefully follow all instructions.

This manual will not only guide you in installing your WC-1, but will also be a handy reference for optional items and replacement parts.

Section 1

SPECIFICATIONS

Power Input 115 VAC 50/60 Hz.
Weight 6 3/4 pounds
Shipping Weight 8 pounds
For Use with Torch Numbers 146-XXX,216-XXX

Section 2

SUPPORT EQUIPMENT REQUIRED

C. V. or C.C. power source of sufficient capacity for your needs.
Regulated gas supply and hoses.
Properly sized power lead from power source to ground.

Section 3

OPTIONAL KIT

CV POSA START ADAPTOR KIT

005-0339

Used only when having arc starting problems with a CV power source.

Section 4

OPTIONAL ACCESSORY

SECONDARY CONTACTOR BOX

001-3066

Used in conjunction with the WC-1 on power sources that do not have a contactor system. Mounts on top of the WC-1 and is rated at 200 amps, 100% duty cycle.

Section 5

INSTALLATION

Location

The WC-1 should be secured to the power supply or another suitable locations where it can be secured to protect it from damage. Lead lengths and accessibility to a 115 VAC 50/60 Hz power source must also be considered when installing the control. Refer to specifications for dimensional information.

Contactor Selection

The WC-1 is shipped from the factory in the closing contacts position. A six foot contactor/Posa Start sense cable is supplies with the unit to which the black and white wires supply the contactor signal.

NOTE:

Refer to the power supply owner's manual for location of and type of contactor signal required.

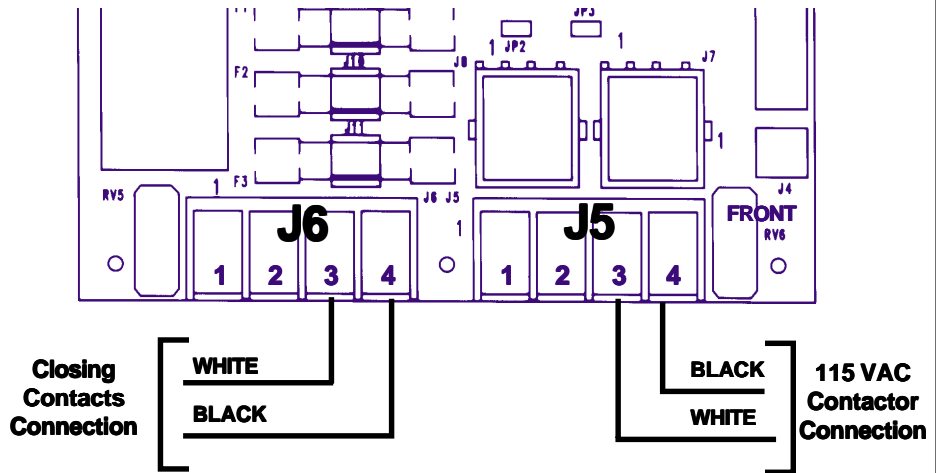
WARNING:

Disconnect the WC-1 from all power sources before changing contactor.

If a 115 VAC signal is required, remove the four screws from both sides on the control box, and remove cover. Locate black and white wire on #3 and #4 of terminal strip J6. Move black wire to #4 and white wire to #3 of terminal strip J5. The unit will now supply 115 VAC on the black (hot) and white (neutral) wires.

WARNING:

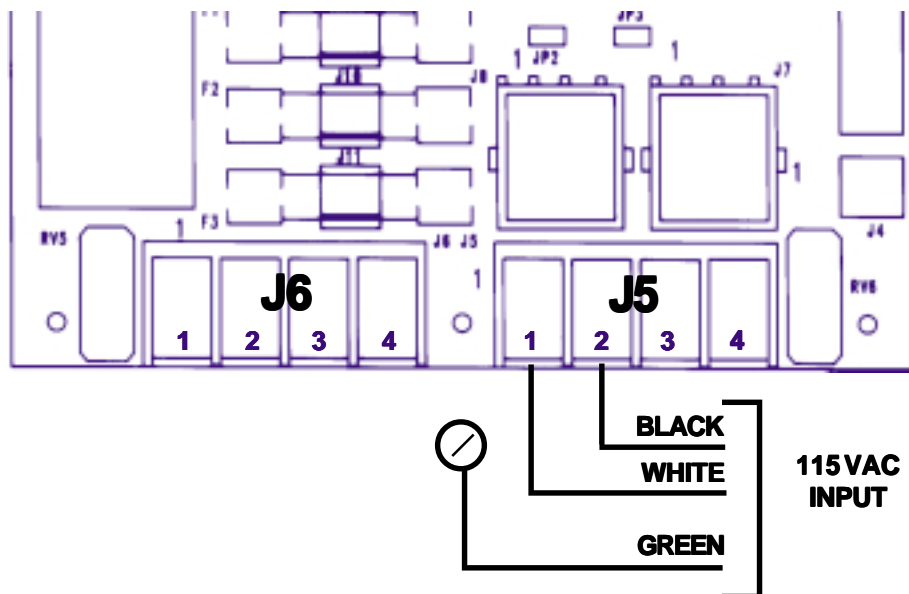
In the 115 VAC Contactor Mode, the contactor leads will be "LIVE" with 115 VAC whenever the trigger is pulled. Leads should be protected to prevent accidental contact and labeled 115 VAC.



115 VAC Connection

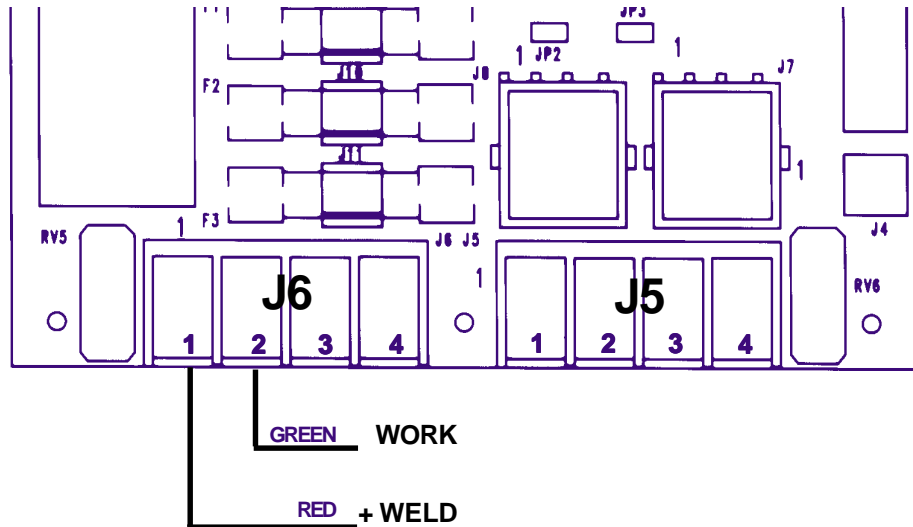
Connect the supplied 6' power cord to a 115 VAC 50/60 Hz outlet.

The cord is connected to the PC Board on terminal strip **J5 #1** (neutral) and **#2** (hot) and Ground to the WC-1 chassis.



Posa Start Connections

When using a constant current power supply, the Posa Start sensing leads must be connected to the power source. Place the red wire on the power supply positive terminal and the green wire on the power supply negative terminal. When using a constant voltage power supply, the sensing leads need not be connected, and the Posa Start should be turned off. The Posa Start Sense Leads are internally connected to the P.C. Board on terminal strip J6 terminal 1 (red) and terminal 2 (green).



Spool Gun Connections

Connect the gun control cable amphenol plug to the WC-1, and secure.

Attach the power cable lug from the gun to the positive terminal of the power supply, and the negative terminal of the power supply to work ground.

Connect gas hose to regulator/flowmeter on gas supply.

Section 6

OPERATION

General

The WC-1 is designed to interface the Prince® XL Spool Gun to most DC Constant Current, Constant Voltage, and pulsed power supplies.

The Posa Start feature allows the WC-1 to be used in combination with constant current DC welding power sources of open circuit voltage in excess of 55 volts.

NOTE:

*Reverse polarity **MUST** be used)*

CAUTION:

Do not operate a WC-1 on a power source having a high frequency starting circuit before making sure that the high frequency portion of the power source is turned off. Failure to take this precaution will cause permanent damage to the posa start circuitry.

The Posa Start Run-in Speed Control, located on the front panel, provides adjustment for slow wire run-in. Once the arc has been established, the wire feed speed is automatically changed from the slow run-in speed to the welding speed set on the torch potentiometer.

CC Posa Start Operation

Attach the WC-1 to a CC power source according to the installation instructions.

Insure power supply high frequency switch is in the “OFF” position, and power supply is set to DC reverse polarity.

The power supply contactor should be set to “Remote” or “Tig” and the amperage control set to “Panel” or “Standard” depending on power supply.

Turn the WC-1 power switch to the “ON” position and the Posa Start switch to the “OFF” position.

Adjust power source to desired amperage for your weld condition.

Press gun trigger and adjust wire feed speed at gun to match current setting. If approximate wire feed speed is not known, it is better to start with excess wire feed rather than too little, in order to prevent possible damage to the contact tip.

Turn Posa Start switch to the “ON” position. Press torch trigger and, using Run-in Speed Control, adjust wire feed speed to approximately 10% of the welding wire speed.

Strike an arc; if the wire stubs out, reduce wire feed rate at gun, or increase amperage setting on power source.

NOTE:

Because the Posa Start Run-in Speed always remains a percentage of the actual welding wire feed rate, the Posa Start run-in speed will always slow down or speed up proportional to any adjustment you now make at the gun. Therefore, if you slow down the welding wire feed speed, you will have to increase the Run-in Speed setting.

CV Posa Start Operation

(005-0339 kit must be installed)

Attach WC-1 to CV power source according to the installation instructions.

Turn the WC-1 to the “ON” position and the Posa Start to the “OFF” position.

Adjust power source to desired voltage for your weld condition.

Depress gun trigger and adjust wire feed speed at gun to match voltage setting. If approximate wire feed is not known, it is better to start with excess wire feed rather than too little, in order to prevent a “burn-back”.

Strike an arc, and adjust wire feed rate at gun until correct condition is achieved.

Section 7

MAINTENANCE

Maintenance of the torch will normally consist of a general cleaning of the wire guide system, including tubes, drive rolls, and liners at regular intervals. Remove spatter build-up from inside of nozzles with a hardwood stick.

The only parts of the spool gun that are subject to normal wear are the contact tips, gas cups, front and rear liners, wire guides, drive and idler rolls. A supply of these parts should be maintained on hand.

If repairs do become necessary, any part can easily be replaced by a qualified shop maintenance person.

Your WC-1 is designed to provide years of reliable service. Normal wear and component failure may require occasional service.

The number of units in operation and the importance of minimal "down time" will determine to what extent spare parts should be stocked on hand. The following list comprises the most commonly replaced parts on the WC-1.

WC-1 Recommended Spare Parts List

QTY	P/N	DESCRIPTION
1	003-1636	Main P.C. Board
1	003-1644	Front Panel Board

Section 8

TESTING THE TORCH

Motor Check

Remove the amphenol connector from the WC-1.

Using the torch amphenol, check the resistance across pins "A" and "B" (motor leads). The resistance across the motor should be between **5-10 ohms**.

If an open circuit or short exist, check the motor leads and motor independently.

Testing The Potentiometer

Using the torch amphenol, check the resistance across pin "D" (wiper) and pin "C". The resistance should vary from **0 - 5K ohms**.

Check the resistance across pin "D" (wiper) and pin "G". The resistance should vary from **5K - 0 ohms**.

Testing The Micro Switch

Using the torch amphenol, check for continuity across pins "E" and "F" when the trigger is pressed.

Section 9

RELAY K2 OPERATION

When the torch trigger is pressed, 24VAC is sent to the coil of relay K2. When K2 is energized, 115VAC is sent to the 115VAC contactor. Relay K2 is also responsible for sending 24VAC to the speed control circuit and shorting the torch motor leads together when the trigger is released for the dynamic braking system. K2 also provides the closing contactor signal.

Section 10

TESTING THE 115 VAC CIRCUITS

The 115 VAC circuit is protected by fuse F3. If either continually blows, remove J5-3,4 (115 VAC Contactor) from the P.C. Board. Replace fuse, and retrigger system.

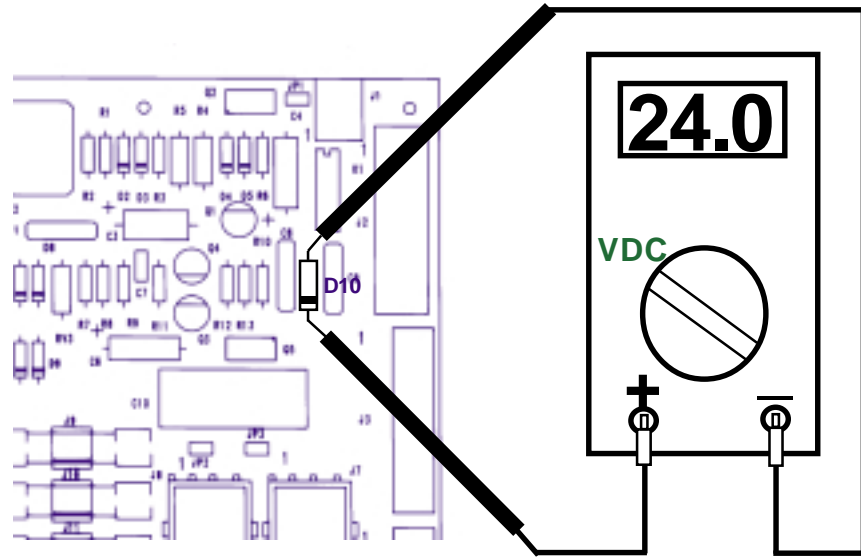
Section 11

TESTING THE SPEED CONTROL

NOTE:

The torch should be tested first and the amphenol must be connected to the WC-1 to perform this test.

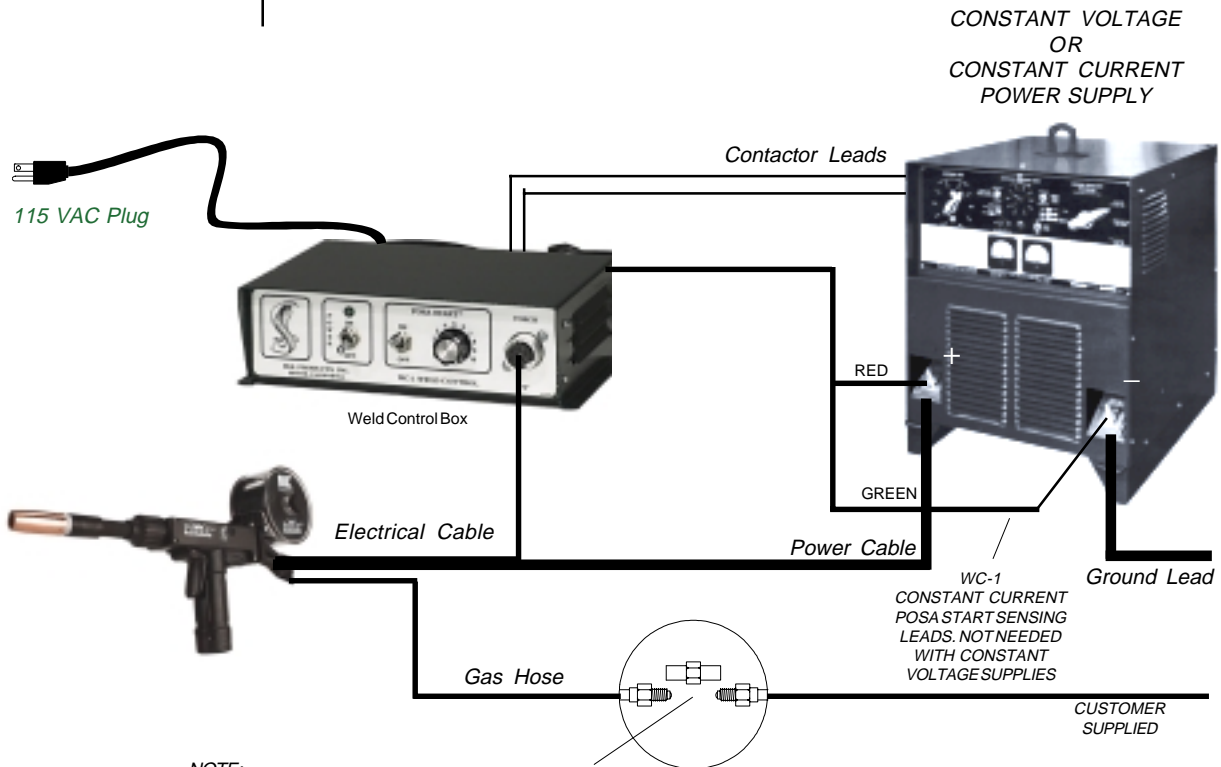
Place a voltmeter across diode **D10** and press torch trigger. A reading of **0 - 24VDC** should be observed, as the potentiometer is varied.



Section 12

INTERCONNECTIONS

Prince® XL Spool Gun 216-xxx connected to a WC-1 Weld Control Box 001-3062



NOTE:
The Posa Start feature permits the WC-1 to be used in combination with any Constant Current DC power source with an open circuit voltage in excess of 55 volts.

COUPLER - AW-430-RH
M.K. P/N 753-3377

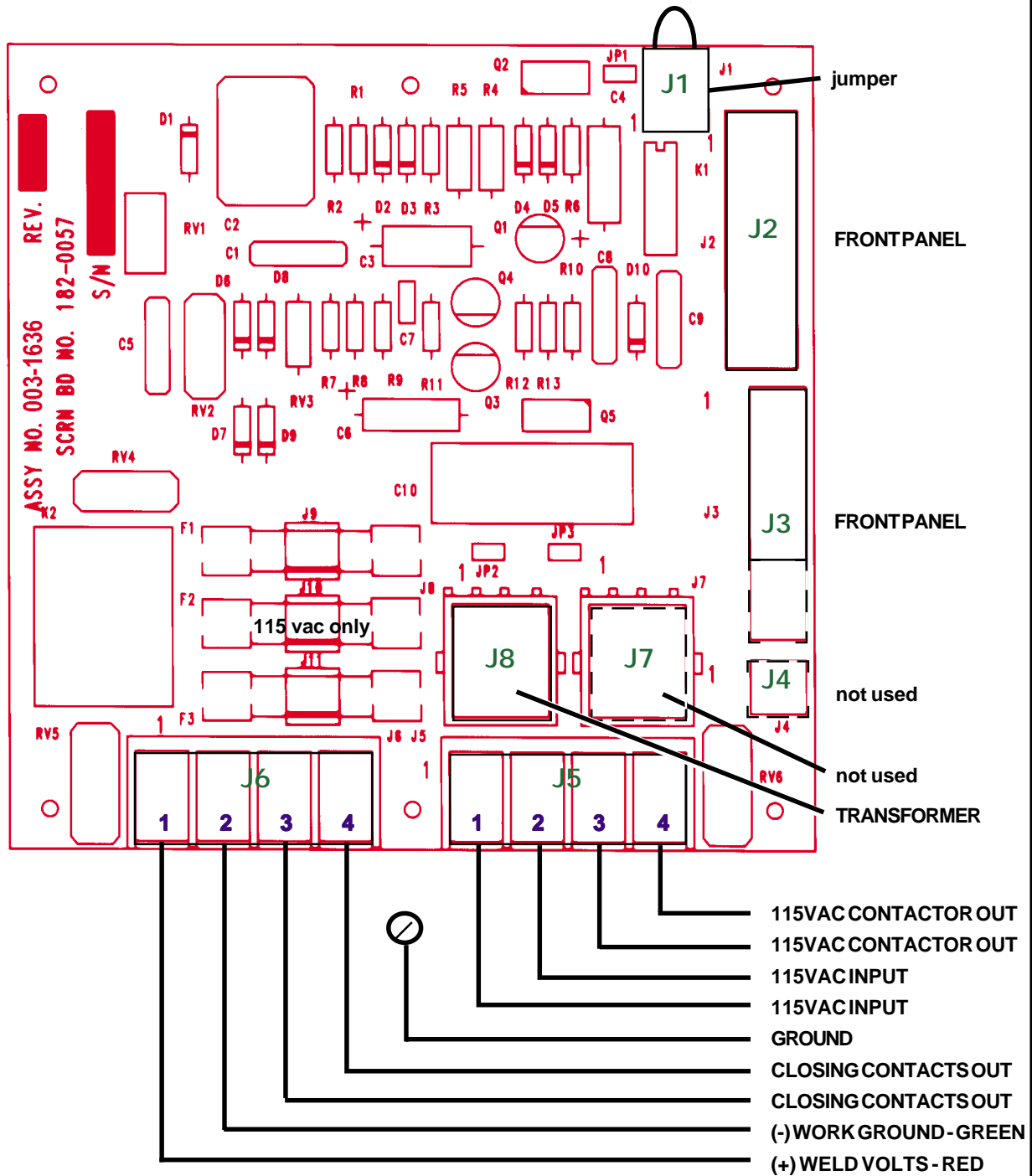
Section 13

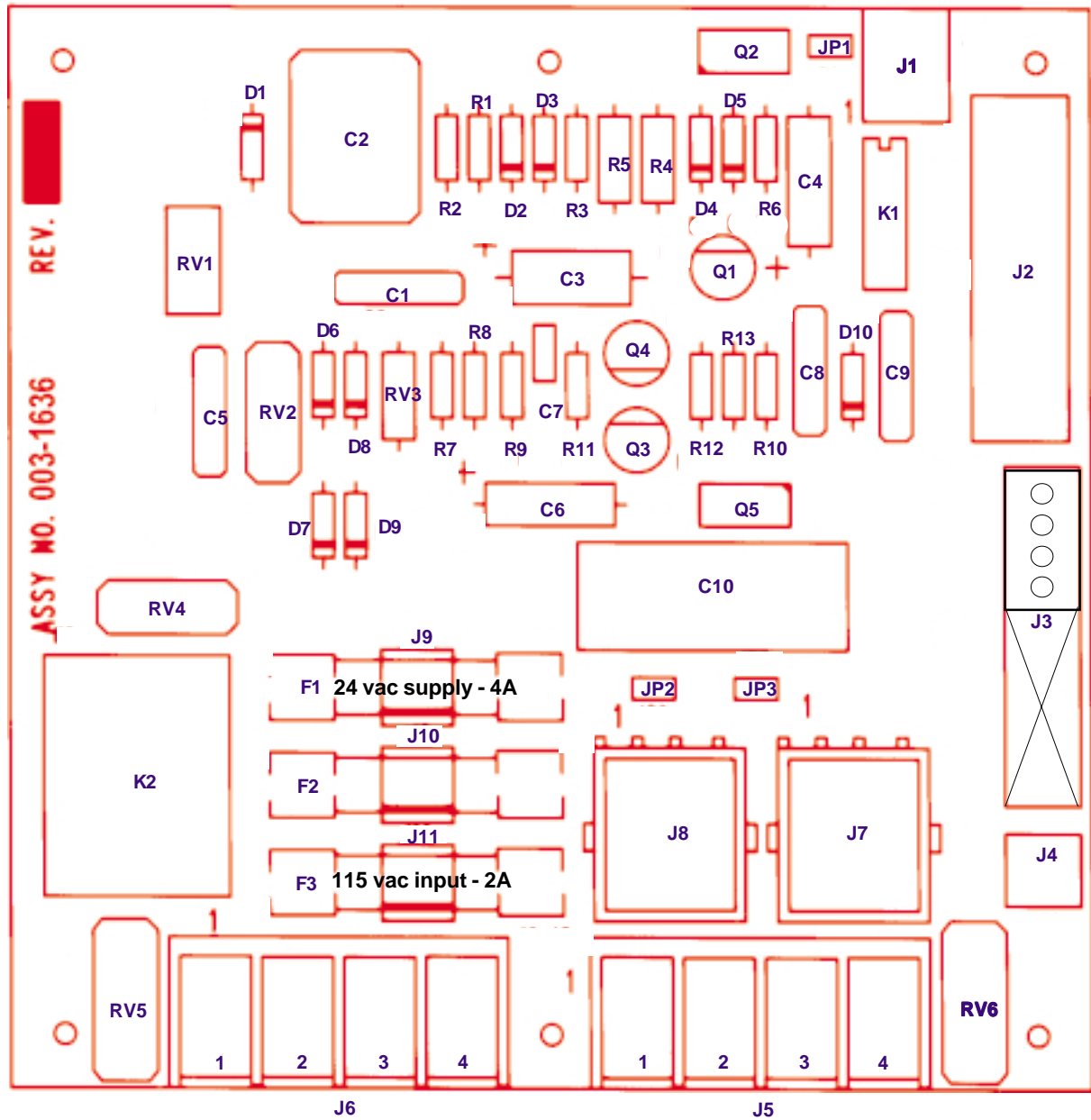
TROUBLESHOOTING

TROUBLE	CAUSE	REMEDY
No wire feed at torch	F3 fuse in WC-1 blown.	Check 115VAC circuit. Replace fuse.
	F1 fuse in WC-1 blown.	Check motor leads for shorts, then replace with 4A fuse.
	Micro-switch defective/not being activated. Broken electrical cable.	Replace switch. Check switch for operation. Check micro switch wires for continuity.
	Relay K2 inoperative.	Check/Replace relay K2.
	Loose P.C. board connectors.	Check connectors.
	Bad potentiometer.	Check potentiometer with meter.
	Bad torch motor.	Check/replace motor.
	Broken electrical cable	Check motor and potentiometer wires for continuity.
	Bad speed control/PCB.	Check/Replace P.C. board.
Wire feeds, but welding wire is not energized.	Loose or no cable connections. Relay K2 not sending contactor signal.	Check all power connections. Check/replace relay K2.
	Contactor control cable loose or in wrong position.	Check power supply owners manual for location and type of contactor signal required, i.e., closing contacts or 115VAC.
	Welding power source.	Check power source for operation.
Wire feeds erratically.	Excessive spool drag pressure.	Decrease spool drag pressure.
	Dirty or worn liners.	Blow out or replace liners.
	Incorrect pressure on drive rolls.	Adjust pressure at both feeder and torch.
	Idler roll stuck.	Check for lock washer under idler roll, or replace if damaged.
	Wrong size contact tip.	See contact tip table.
Wire feeds one speed only.	Bad potentiometer.	Check with meter.
	Broken electrical cable.	Check potentiometer wires for continuity or short.
	Bad speed control.	Check/replace P.C. board.
Wire walks out of drive rolls	Idler roll upside-down.	Place groove in idler roll towards top.
	Rear wire guide missing.	Replace wire guide.

Section 14

MAIN P.C. BOARD CONNECTIONS



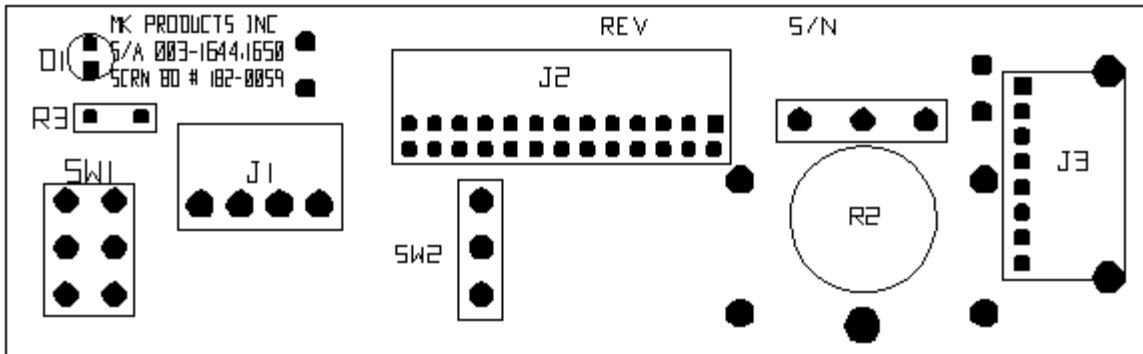


COMPONENTS TO BE REPLACED BY QUALIFIED SERVICE PERSONNEL ONLY.

MAIN P.C. BOARD PARTS LIST (P/N 003-1636)

<u>COMPONENT#</u>	<u>P/N</u>	<u>DESCRIPTION</u>
K1	157-0144	RELAY, 5V 5000HM 200MA
R2, R3	115-0154	RESISTOR, carbon .25 watt 6.8K ohm
R4, R5	115-0042	RESISTOR, carbon .50 watt 6.8K ohm
R12, R13	115-0120	RESISTOR, carbon .25 watt 100 ohm
R6	115-0122	RESISTOR, carbon .25 watt 150 ohm
R7	115-0144	RESISTOR, carbon .25 watt 10K ohm
R8	115-0138	RESISTOR, carbon .25 watt 3.3K ohm
R9	115-0129	RESISTOR, carbon .25 watt 560 ohm
R10	115-0136	RESISTOR, carbon .25 watt 2.2K ohm
R11	115-0141	RESISTOR, carbon .25 watt 5.6K ohm
D1, D3	124-0002	DIODE, 1 amp 800 volts
D6-D10	124-0003	DIODE, 2.5 amps 1KV
D4	124-0011	DIODE, zener 1 watt 10 volts
Q2	122-0011	TRANSISTOR, NPN 500MA 250 volts
Q3	122-0004	TRANSISTOR, PNP 1 amp 50 volts
Q4	122-0013	TRANSISTOR, unijunction 30 volts
Q5	125-0028	THYRISTOR, 8 amps 400 volts
C1, C5, C8, C9	101-0016	CAPACITOR, ceramic .01uf 600VDC
C2	101-0013	CAPACITOR, Poly .047uf 200VDC
C4, C6	104-0002	CAPACITOR, tantalum 10uf 20VDC
C7	101-0021	CAPACITOR, ceramic .047uf 50VDC
RV1, RV5, RV6	124-0026	VARISTOR, 130 volts 10 amps
RV2, RV4	124-0028	VARISTOR, 56 volts 8 amps
J1	153-0866	TERMINAL, header 2 pin
J2	153-0885	TERMINAL, header 26 pin
J3	153-0713	TERMINAL, header 4 pin
J5, J6	186-0057	TERMINAL, strip 4 pin
J8	153-0850	CONNECTOR, 6 pin
Fuse Holder	152-0008	FUSE HOLDER, PC mount
F3	151-0001	FUSE, AGC 2A 250V
K2	157-0022	RELAY, 24VAC 4PDT
K2 Socket	173-0026	SOCKET, relay 14 pin
F1	151-0043	FUSE, 3AG 4A, 250V
D5	124-0093	DIODE, zener, 1 watt, 5-1volts

Section 16 FRONT PANEL P.C. BOARD LAYOUT



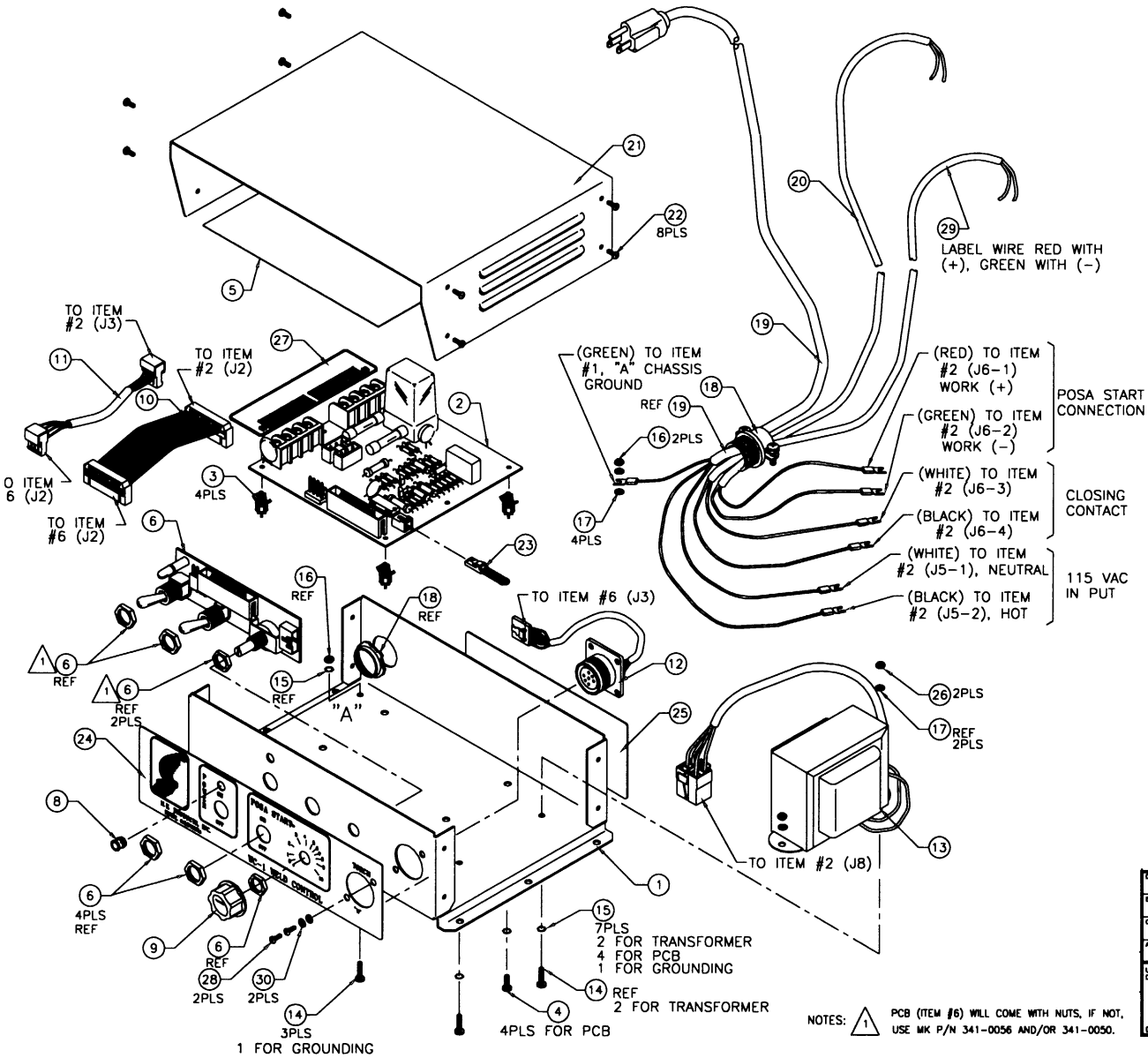
COMPONENTS TO BE REPLACED BY QUALIFIED SERVICE PERSONNEL ONLY

FRONT PANEL P.C. BOARD PARTS LIST 003-1644

<u>COMPONENT #</u>	<u>P/N</u>	<u>DESCRIPTION</u>
R2	119-0020	POTENTIOMETER, 100k ohm
R3	115-0037	RESISTOR, Carbon 2.7k ohm, 1/2watt
D1	124-0045	LED, green
J1A	153-0845	HEADER, 4 pin 90 degree
J2	153-0876	HEADER, 26 pin 90 degree
J3	153-0860	HEADER, 8 pin 90 degree
SW1	159-3587	SWITCH, DPDT, p.c. mount
SW3	159-3586	SWITCH, SPDT, p.c. mount
R2 (bracket)	435-0901	BRACKET, p.c. mount

Section 17

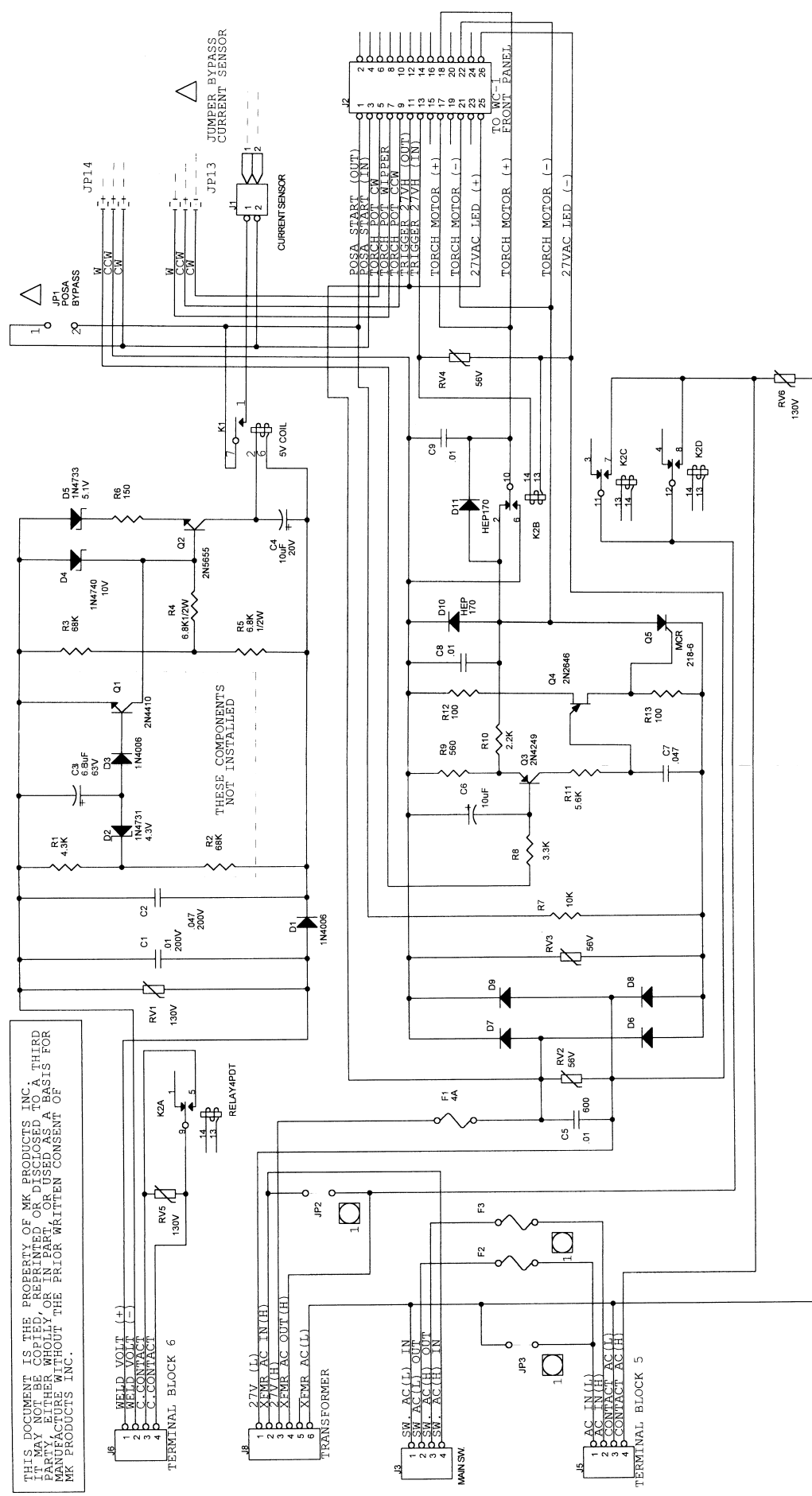
**DRAWINGS
AND
SCHEMATICS**



No.	Qty.	Part No.	Description
1	1	438-0026	Base
2	1	003-1636	PCB, Main w/Posa Start 115V
3	4	342-0410	Spacer tacking #6-32 x 0.534 LG
4	4	336-0005	Screw, PH. FIL. #6-32 x 3/8
5	1	405-0716	Decal, Block Diagram WC-1 115V
6	1	003-1644	PCB, Panel w/Posa Start
7			
8	1	301-0023	Grommet pnl., mtg., LED
9	1	401-0012	Knob 1.00 Dia.
10	1	003-1645	Cable, board to board
11	1	003-1646	Cable, power board to board
12	1	003-1642	Cable, board to torch "W"
13	1	003-0773	Transformer 115V Assy.
14	3	325-0135	Screw, PH. FIL> #6-32 x 1/2
15	7	333-0023	Washer, X star #6
16	2	341-0005	Nut Hex #6-32
17	4	331-0002	Washer flat #6
18	1	411-0157	Clamp, cable strain rel.
19	1	003-0796	Power cable
20	1	003-1302	Cable, contact assy.
21	1	438-0025	Cover
22	8	336-0026	Screw, St T/A #6-32 x 3/8 LG.
23	1	003-1639	Jumper bypass assy.
24	1	405-0647	Decal, front WC-1
25	1	405-0709	Decal, rear WC-1 115V
26	2	345-0008	Nut, self locking #6-32
27	1	405-0725	Decal, terminal block
28	2	327-0110	Screw, ST-F #6-32 x 3/8 LG.
29	1	003-1301	Cable, Posa Start assy.
30	2	331-0019	Washer flat #4

DESIGN T. NGUYEN	DATE 02/90	M.K. PRODUCTS, INC. IRVINE, CALIFORNIA		
ENGINEER	DATE	TITLE WC-1 ASSY 115 VOLTS, W/POSA START		
CHECKED	DATE			
APPROVED	DATE			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES (40)		SIZE CAD FILE NO.	DWG. NO. 001-3062	REV. F
TOLERANCES ARE DECIMALS ANGLES SIZE 3.000 1/2° 30 0.01 1/2° 3 0.03		SCALE NONE	SHEET 1 OF 1	
DO NOT SCALE DRAWING				

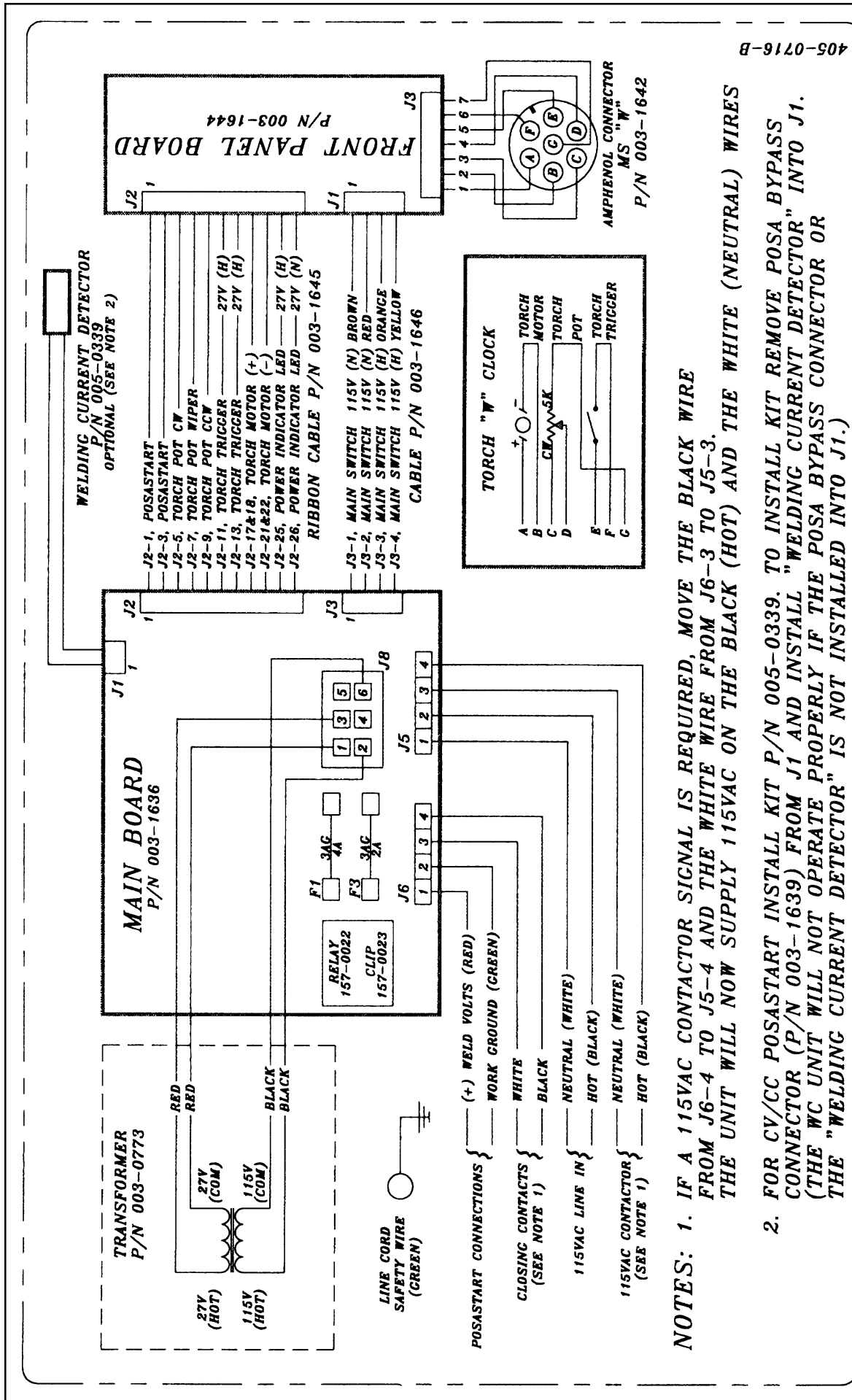
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MK Products, Inc. 1682 Armstrong Ave. Irvine, CA 92606	
Title WC-1 115VAC/230VAC Main PCB	
Size B	Document Number 071-0274
Rev	G

REV.	E/ZONE	DCN #	DATE	APPR.
E		DCN 10999	8/97	CKT
F		DCN 11119	12/97	CKT
G		DCN 11548	12/98	DT

WC/PCB ASSY	F2	F3	JP2	JP3
WC1 P/N 003-1636 (115VAC)	NOT INSTALLED	2A	IN	IN
WC1 P/N 003-1637 (230VAC)	2A	2A	OUT	OUT



405-0716-B

- NOTES:**
- IF A 115VAC CONTACTOR SIGNAL IS REQUIRED, MOVE THE BLACK WIRE FROM J6-4 TO J5-4 AND THE WHITE WIRE FROM J6-3 TO J5-3. THE UNIT WILL NOW SUPPLY 115VAC ON THE BLACK (HOT) AND THE WHITE (NEUTRAL) WIRES
 - FOR CV/CC POSASTART INSTALL KIT P/N 005-0339. TO INSTALL KIT REMOVE POSA BYPASS CONNECTOR (P/N 003-1639) FROM J1 AND INSTALL "WELDING CURRENT DETECTOR" INTO J1. (THE WC UNIT WILL NOT OPERATE PROPERLY IF THE POSA BYPASS CONNECTOR OR THE "WELDING CURRENT DETECTOR" IS NOT INSTALLED INTO J1.)

LIMITED WARRANTY

Effective January 1, 2000

This warranty supersedes all previous MK Products warranties and is exclusive, with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY - MK Products, Inc., Irvine, California warrants that all new and unused equipment furnished by MK Products is free from defect in workmanship and material as of the time and place of delivery by MK Products. No warranty is made by MK Products with respect to trade accessories or other items manufactured by others. Such trade accessories and other items are sold subject to the warranties of their respective manufacturers, if any.

MK Products' warranty does not apply to components having normal useful life of less than one (1) year, such as relay points, wire conduit, tungsten, and welding torch parts that come in contact with the welding wire, including gas cups, gas cup insulators, and contact tips where failure does not result from defect in workmanship or material.

In the case of MK Products' breach of warranty or any other duty with respect to the quality of any goods, the exclusive remedies therefore shall be at MK Products' option:

- (1) repair
- (2) replacement
- (3) where authorized in writing by MK Products, the reasonable cost of repair or replacement at our Irvine, California plant; or
- (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Upon receipt of notice of apparent defect or failure, MK Products shall instruct the claimant on the warranty claim procedures to be followed.

As a matter of general policy only, MK Products may honor an original user's warranty claims on warranted equipment in the event of failure resulting from a defect within the following periods from the date of delivery of equipment to the original user:

- 1. **Torches and Weldheads 1 year**
- 2. **All Other Equipment 3 years**
- 3. **Repairs 90 days**

Classification of any item into the foregoing categories shall be at the sole discretion of MK Products. Notification of any failure must be made in writing within 30 days of such failure.

A copy of the invoice showing the date of sale must accompany products returned for warranty repair or replacement.

All equipment returned to MK Products for service must be properly packaged to guard against damage from shipping. MK Products will not be responsible for any damages resulting from shipping.

Normal surface transportation charges (both ways) for products returned for warranty repair or replacement will be borne by MK Products, except for products sold to foreign markets.

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FORM : LW-9MK
DATE : January 1, 2000



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