



Cobramatic® II Wire Feed Cabinet Owner's Manual

Product:	Cobramatic II Cabinet
Manual:	091-0392
Serial:	03040001
Voltage Rating:	42 VAC 100 VAC
Revision:	April 2003 Rev D
Model Number:	150-004 150-204



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: com-

busibles 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 over-pressure; 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 afire.

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.

Thank You

For selecting a quality product. We want you to take pride in operating this product...as much pride as we have in bringing the product to you!

Please Examine Carton and Equipment For Damage Immediately

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Name & Number _____

Code & Serial Number _____

Date of Purchase _____

Whenever you request replacements parts for, or information on this equipment always supply the information you have recorded above.

Read this Owner's Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection.

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SECTION A

INSTALLATION

TECHNICAL SPECIFICATIONS

Wire Diameter Capacity	.030 - 1/16" ALL Types
Wire Capacity	12" Standard (Insulated or Non-Insulated)
Power Input	42 VAC 50/60 Hz 110 VAC 50/60 Hz 150 Watts Peak
Wire Feed Rate	(Depending on Torch used) 10--1000 ipm
Weight	31 pounds
Shipping Weight	37 pounds
Compatible Torches	All MK 7pin Amphenol Plug Mig Torches MK RoboKing Automated Torch

SUPPORT EQUIPMENT REQUIRED

MK 2000A Power Supply or any C. V. or C.C. power source of sufficient capacity for your needs.

Regulated gas supply and hoses.

Properly sized power leads from power source to wire feeder and ground.

Water source and hose capable of providing a minimum of 1 qt/min. at 45 p.s.i. when using water cooled torches.

COOLANT RECOMMENDATIONS

Use a name-brand additive which does not contain reactive sulphur or chlorine and does not react with copper, brass, or aluminum. Here's also mixture that works well :

Use 3 Gallons (11.4 Liters) deionized water. (NOT DISTILLED)

Use 1 Gallon (3.8 Liters) ethleyne glycol.

Use 1 tsp (5 ml) liquid glycerin per gallon (3.8 Liters) of mixture

Check coolant periodically to remain within limits of the following:

Coolant Flow rate - 1 quart/minute at 45 p.s.i.

Resistivity - 10K ohms/centimeter

Ph Range - 5.5-8.5

Particle Size - .005"

MACHINE GROUNDING

The Cobramatic®II and GMAW wire feeders are ground to the power source through the input cable. The power source grounding terminal must be properly connected to electrical ground per the power source operating manual.

MACHINE LOCATION

The cabinet should be placed in a location where it can be protected from damage. Lead lengths and accessibility to input power(42/110VAC 50/60 Hz) must also be considered when installing the cabinet.

CONTACTOR SELECTION - (FIG. 1)

The Cobramatic® II is shipped from the factory in the closing contacts position. A six foot (6') contactor cable is supplied with the unit to which the black and white wires supply the contactor signal.

If a 115 VAC contactor out signal is required, remove the screws from the left

side of the cabinet and open door. Locate the black and white wire on #2 and #3 of terminal strip J16. Move black wire to #4 and white wire to #3 of terminal strip J15. The unit will now supply 115 VAC on the black (hot) and white (neutral) wires.

NOTE:

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

WARNING:

Disconnect the Cobramatic® Cabinet from all power sources before changing contactor.

INPUT CONNECTIONS

POWER CONNECTIONS - (FIG. 2)

Connect the supplied 6' three (3) prong plug to a 115 VAC 50/60 Hz outlet. (For 42VAC export cabinets, no input power cord is provided.)

The input power cord is connected to the PC Board on terminal strip J15 #1 (neutral) and #2 (hot) and Ground to the cabinet chassis.

POSA START CONNECTIONS - (FIG. 2)

When using a Constant Voltage (CV) Power source such as the MK2000A, the Posa Start lead need not be connected and switch 3 should be placed in the "INT" position. The Posa Start lead is internally connected to the P.C. board on terminal strip J16 terminal #1.

When using a Constant Current (CC) Power Source, attach the No. 14 single black lead which extends from the back of the Cobramatic® II to the negative terminal of the welding power source or work ground. Switch 3 must also be in the "EXT" position.

CABLE CONNECTIONS - (FIG. 3)

Connect the positive power cable (DCEP) from the power supply to the bottom hole on the power block and secure with bolt.

GAS HOSE - (FIG. 3)

Connect hose from regulator/flowmeter to the fitting on the power block using a 5/8"-18 IAA R.H. Gas fitting.

WATER CONNECTIONS - (FIG. 3)

When using a water cooled torch, connect the 5/8"-18 L.H. male fitting extending from the torch lead assemblies to your water supply line. The water return also uses a 5/8"-18 L.H. male fitting and connects to the lefthand fitting on the power block.

WIRE THREADING PROCEDURE

WIRE SPOOL INSTALLATION

Release latches, and open right side door of cabinet.

Remove spool retainer from spindle hub.

Install wire spool onto spindle hub so that wire feeds from bottom of spool towards slave motor. Make sure that the hole in the spool aligns with pin on spindle hub. The white dot on the end of the spindle hub will aid in this alignment.

Replace the spool retainer.

THREADING PROCEDURE

Place wire size selector switch on front panel to the correct position for the wire being used.

NOTE:

For 3/64" and 1/16" aluminum wire use the "ALL OTHER WIRES" position.

Loosen end of wire from spool and cut off any kinked or bent portions.

Unreel and straighten out first 6" to 8" of wire.

Release tension from slave motor drive rolls.

Route wire into inlet guide, along drive roll groove, and into wire conduit.

Prevent the wire spool from turning with the palm of the right hand, and at the same time grasp the slave motor pressure adjusting knob.

Pull the torch trigger and slowly tighten the slave motor pressure adjusting knob until the slave motor stalls; then add an additional 1/4 turn more.

CAUTION:

EXCESSIVE DRIVE ROLL TENSION WILL REDUCE RATHER THAN IMPROVE WIRE FEED PERFORMANCE.

Tighten the torch pressure adjusting knob so the wire will be picked up and fed through the contact tip. Proper tension is achieved when wire does not slip if a small amount of pressure is added to the wire as it exits the tip.

SPINDLE DRAG ADJUSTMENT

Loosen nut inside spindle until spring is not compressed.

When in the ".030-.035 Aluminum Only" position, tighten nut until you feel spring start to compress then add 1 turn.

Press the trigger and make sure the wire comes level off of the spool. If you can see the wire cast when feeding, add a little more drag. (1/4 turn)

When in the "All Other Wires" position, start with 3 turns of drag and adjust.

PRE-SETTING SLAVE MOTOR TENSION

All Cobramatic®s have preset adjusting nuts which enables spools of the same wire diameter and type to be changed without further pressure adjustment after initial set-up.

To preset the slave motor tension bottom out the pressure adjusting knob by turning it completely clockwise.

Prevent the wire spool from turning and using a 9/16" wrench adjust the preset nut until the slave motor stalls, then add an additional 1/4 turn.

Correct pressure will now be achieved by simply bottoming out the pressure adjusting knob.

WIRE GUARD

The Cobramatic® Wire Guard (P/N 005-0618) is designed to keep the welding wire from jumping off the spool inside the wire feed cabinet. When the trigger is released and the brake engages, especially when using a new spool that is heavier towards the outside, the spool will tend to rotate more against the spindle drag adjustment.

However, since the wire is held by the slave motor it will not move and could subsequently jump off the back of the spool and become lodged in the brake mechanism, or jump off the front of the spool and electrically short-out to the cabinet chassis. The wire guard will keep the wire from doing either.

The wire guard is designed to run inside the spool on top of the wire, and when the brake is engaged the wire guard will hold the wire onto the spool. The wire guard is made of a heavy woven nylon material that is resistant to

wear and will not contaminate the surface of the wire

TORCH DRIVE ROLL ADJUSTMENT

----- IMPORTANT -----

NOTE: Over-tightening of the drive rolls will cause excessive knurling and/or deformation of the wire. When the complete system is set-up properly, feeding wire out of the end of the torch and letting fall on the ground should form a large uniform circle. If it forms a spiral or spring then there is too much tension in the system, please refer to the Cabinet Owners Manual for adjustment to the tension setting detailed there.

THIS IS THE NUMBER ONE CAUSE OF POOR WIRE FEED PERFORMANCE

SECTION B

OPERATION

GENERAL DESCRIPTION

The Cobramatic® II is an analog input version of the popular Cobramatic® I Cabinet and operates on the same basic principles. The AC slave motor in the feeder runs at a fast, constant speed, but has very low torque. It is always trying to feed more wire than the torch motor wants, and when the motor gets all it wants, it slows the slave motor preventing a bird's nest.

Because of the low torque produced by the slave motor, a brake system is used to prevent wire overrun rather than tension. The drag adjustment in the spindle is used to keep the wire slightly taut, so it will not unspool while feeding wire. The high torque 24 VDC torch pull motor is controlled by a solid state speed control and a potentiometer located in the torch, feeder or remotely.

The solid state control circuit provides a wide range of operating conditions and includes performance and fault isolation L.E.D. indicators. The wire feed speed command can be derived from the cabinet, torch, or from a 0-10 volt analog external signal. A variety of input/output signals make it highly suitable for automatic applications.

CONTROLS AND SETTINGS (SEE FIG. 4)

ON/OFF SWITCH

Placing the switch in the "ON" position energizes the feeder circuitry and the power indicator light.

WIRE SIZE SELECTOR SWITCH

The wire size selector switch changes the torque of the slave motor for the wire you are using. When in the ".030-.035 Aluminum Only Position", the slave motor produces approximately 1 1/2 lbs. inches and approximately 4 1/2 lbs. inches when in the "All Other Wires Position."

NOTE: Operating the cabinet with the switch in the wrong position will cause wire feed difficulties.

POSA START CONTROL

When in the "ON" position, the wire feed command is derived from the Posa Start potentiometer. After arc initiation, the wire feed speed is controlled by the selected wire feed source, i.e., torch, cabinet, or remotely.

WIRE INCH

The Wire Inch button causes wire feed at the weld feed rate from the selected source, independent of Posa Start and may be used to observe or time

the weld wire feed rate without turning Posa Start off. The contactor is not activated during "Wire Inch".

(NOTE: If the wire feed speed is set to accept a remote source, and no input command voltage is present, no wire feed will occur).

TORCH ELECTRICAL RECEPTACLE

The Cobramatic® II has a 7 pin "W" clocked Amphenol connector to provide an electrical connecting point to the torch. See specifications for more information.

CABINET WIRE FEED SPEED POTENTIOMETER (OPTIONAL - P/N 005-0166)

By selecting the cabinet potentiometer, the wire feed speed may be adjusted from the cabinet. See wire speed source, section 9.4. The counter dial directly reads in inches per minute (0 to 1000 IPM).

POWER CABLE INLET

The Power Inlet provides access to the power block fitting inside the cabinet.

CONDUIT INLET

The Conduit Inlet provides access to the slave motor outlet guide.

SHIELDING GAS INLET

Provides access to the gas fitting inside the cabinet.

CONTROLS FOR OPTIONAL TIMER KIT (P/N 005-0196)

WATER INLET

Provides access to make the gun water connection to recirculator hose.

GAS PURGE

The Gas Purge button operates the gas solenoid in the cabinet. When the solenoid in the cabinet is used, a modified gas valve, P/N 431-1080, must be installed in the torch.

PRE-PURGE

The smaller knob on the pre/post purge control may be turned clockwise to increase the pre-purge interval. The control cannot be turned off and provide a range of approximately .07 to 3.4 seconds. When the trigger is depressed, the gas solenoid will open, and all other functions will be inhibited until the end of the pre-purge interval, when normal welding will start. If the trigger is released during pre-purge, no weld will be initiated.

POST-PURGE

The larger knob on the pre/post purge control may be turned clockwise to increase the post-purge interval. This control cannot be turned off and provides approximately .07 to 4.5 seconds of post flow. The post-purge will not activate unless an arc has been established.

BURN BACK

The larger knob on the spot time/Burn-back control may be turned clockwise to increase the burn-back interval. During this interval, all functions except wire feed are maintained and, thus, the arc burns the wire back towards the tip. Excessive burn-back may result in damage to the contact tip. The burn-back control must be clicked on and is adjustable from .015 to .085 seconds. The burn-back control is not activated until an arc has been established.

SPOT TIME

The spot timer has the capability to time and terminate a weld cycle following a trigger ON command. The spot time function is initiated once the arc is

established, and, even if the trigger is held ON or released, the cycle will end at the spot timer time out. To initiate a new cycle, the trigger must be turned OFF (released) and re-triggered. The spot time knob must be clicked ON and the duration may be set from .07 to 3 seconds. The spot time may be used with all other functions; pre-purge, burn-back, post-purge.

NOTE: Even with the spot timer turned "ON", the wire will not time out until you strike an arc. This provides very accurate, repetitive timing.

CONTROLS FOR OPTIONAL METER KIT (P/N 005-0190)

The LED meter provides a continuous reading of wire feed speed in inches per minute. When the trigger is energized, the meter will display weld voltage.

POSA START OPERATING PROCEDURE

GENERAL DESCRIPTION

The Posa Start feature allows the Cobramatic® II to be used in combination with constant current DC welding power sources of open circuit voltage in excess of 55 volts - also, any constant voltage welding power source capable of a minimum of 50 amps.

*NOTE:
Reverse polarity MUST be used.*

The Posa Start MUST be used with a Constant Current power source to provide arc initiation and may be used with a Constant Voltage power supply to help eliminate burn-backs at arc start.

*CAUTION:
DO NOT OPERATE A Cobramatic® II 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. The Posa Start does not control the wire speed while welding.

CV POSA START OPERATION

Attach Cobramatic® II to CV power source according to the installation instructions.

Turn the Cobramatic® II 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 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".

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

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

CC POSA START OPERATION

Attach the Cobramatic® II 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 Cobramatic® II 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.

WIRE SPEED SOURCE (S1) (FIGURE 5)

The wire feed command may be obtained from the torch, cabinet, or from a 0-10VDC analog signal by simply changing switch 1 (S1) settings.

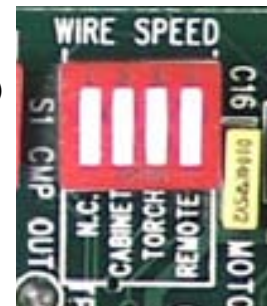
S1, a four-position dip switch, is located in the upper left hand corner of the Main PC Board and set as follows:

NOTE :

Only one switch may be "ON" at a time.

SWITCH 1 SETTINGS (S1) (FIGURE 5)

Position	#1	No connection (NC)
	#2	Selects cabinet potentiometer. (opt)
	#3	Selects torch potentiometer.
	#4	Selects a remote 0-10VDC analog signal command through a 5K ohm potentiometer:
	J22-1	Ground
	J22-3	Wiper
	TP5	10VDC or external source



TORCH COMPENSATING NETWORK (S2)

The Cobramatic® II circuit provides for linear control of the wire feed from less than one volt to ten volts. The torch compensating network is provided to match the torch motor gearbox ratio to the 0-10VDC linear control.

Therefore, regardless of which type of torch is used, one volt will equal 100 ipm, two volts equals 200 ipm, etc.

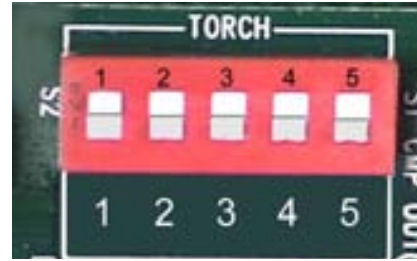
To set up the network for the torch you are using, locate dip switch 2 (S2) in the upper left corner of the Main PC Board, and set as follows:

NOTE:

Only one switch may be "ON" at a time.

SWITCH 2 SETTINGS (S2)

Position #1	Cobra System III Torches (800ipm) Cobra Gold Torches RoboKing Torches Python CobraMax
#2	Prince (750ipm)
#3	King Cobra (700ipm)
#4	Prince XL
#5	not used (future)



During Posa Start Run-In Interval, the network is bypassed to permit very smooth, slow run-in to be achieved.

See wire feed calibration section for torch calibration procedure.

REMOTE/AUTOMATIC OPERATION (FIG. 5)

The Cobramatic® II cabinet may be set up to operate in a wide variety of automatic and semi-automatic applications. The remote input/output connector (J22) provides the electrical interface to your equipment. When the Cobramatic® is used in this capacity, timer kit, P/N 005-0196, should be installed to provide control of the gas, as well as spot time and burn-back functions, see optional kits.

PERFORMANCE & FAULT ISOLATION INDICATORS

GENERAL

The Cobramatic® II is equipped with LED indicators to aid in operation and trouble-shooting. The indicators check out individual circuits, respond to signals, and indicate overload conditions.

DETAILED OPERATION

When the cabinet is turned "ON", D6 and D10, both green LED's, will light. D6 indicates that 27VAC is being supplied to the board, and D10 indicates the presence of the 10VDC. When the trigger signal is supplied, either from the torch or remotely, D21 (trigger), a yellow LED, will light. After the pre-purge times out, D19 (wire forward), D34 (torch motor voltage) and D31 (Slave motor voltage), all yellow LED's will light, and the welding wire will begin to feed. (Note: If the timer kit, P/N 005-0196, is not installed, D19 (wire forward), D34 (torch motor voltage), and D31 (115vac) indicators will light with the trigger signal. D34 indicates the presence of the torch motor voltage, whereas D31 indicates the presence of AC voltage for the brake solenoid and slave motor. When the arc is initiated, D17 (arc establish), a yellow LED, will light and remain on until the arc is extinguished.

D39, a red LED when lit, indicates a torch overload condition has occurred. Turn main power switch "OFF", then back "ON" to reset. See trouble-shooting section, for more information.

WIRE FEED CALIBRATION PROCEDURE

CALIBRATION INSTRUCTIONS

The Cobramatic® II comes from the factory already calibrated for the torches indicated on the torch selector switch (S2), but further fine-tuning can be done to the motor drive circuit by using trim pots R54 and R69. This adjustment may be necessary due to variations in different torch motor gearboxes, type of drive rolls used, age of torch and many other contributing factors. Each time you use a different torch on the cabinet you may want to re-check this calibration. While this adjustment is not critical for most

applications, it is important when using a meter kit on the Cobramatic® II cabinet to make sure the demand and actual wire speeds are the same. It is equally important to maintain proper calibration when using a remote (0-10VDC) input to control wire speed, as this will expect certain results for each demand of input voltage.

The goal of this calibration procedure is to have 1 volt of input to equal 100 ipm at the torch, 2 volts equals 200 ipm, etc.

1. Insure that switch 2 (S2) is in the correct position for the torch you are using.
2. Insure that switch 1 (S1) is in the correct position for your control requirements (torch pot, cabinet pot or remote).
3. Set the pre-purge control to off, if so equipped. Turn Posa Start off.
4. Adjust the command voltage (TP11) to 2.00 VDC using the torch pot, cabinet pot or remote command depending on the position of (S1). Use J22-1 for ground reference.
5. Feed out wire for exactly six (6) seconds and measure. You should have 20 inches of wire for a 2 volt command. Repeat and compare the two segments of wire for an average length.
6. If wire length is less than 20 inches (200 IPM), increase (clock wise) R54 and repeat step 5. If wire length is is greater than 20 inches (200 IPM), decrease (counter-clock wise) R54 and repeat step 5. R54 adjustment is approximately 0.5 inches/turn (5 IPM/turn).
7. Adjust the command voltage (TP11) to 6.00 VDC using the torch pot, cabinet pot or remote command depending on the position of (S1),
8. Feed out wire exactly exactly six (6) seconds and measure. You should have 60 inches of wire for a 6 volt command. Repeat and compare the two segments of wire for an average length.
9. If wire length is less than 60 inches (600 IPM), increase (clockwise) R69 and repeat step 5. If wire length is greater than 60 inches (600 IPM), decrease (counter-clockwise) R69 and repeat step 8. R69 adjustment is approximately 1.0 inch/turn (10 IPM/turn).
10. Repeat steps 4 through 9 until the wire speed (IPM) matches the demand voltage (VDC).

SECTION C

ACCESSORIES

Plastic Guides for Slave Motor

Inlet Guide	753-0062
Outlet Guide with Knob	003-0428

OPTIONAL KITS

Cabinet Potentiometer Kit	005-0166
Removes wire feed speed control from the torch to the cabinet and provides a 10-turn counter dial.	
Timer Kit	005-0196
Provides pre-purge, post-purge, Burn-back and spot-time	
Meter Kit	005-0190
Displays both wire feed speed and weld voltage	
Preset Adjusting Screw Kit	005-0125*
Water Flow Kit	005-0253
Wire Guard Kit	005-0618*

*standard on all wire feeders

SECTION D

MAINTENANCE

ROUTINE MAINTENANCE

Maintenance of the torch will normally consist of a general cleaning of the wire guide system, including tubes, drive rolls, and conduits at regular intervals.

Remove spatter build-up from inside of nozzles with a hardwood stick.

The only parts on the Cobramatic® system that are subject to normal wear are the conduit, contact tips, gas cups, front body 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 qualified shop maintenance personnel.

Your Cobramatic® II 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.

RECOMMENDED SPARE PARTS

<u>QTY</u>	<u>DESCRIPTION</u>	<u>P/N</u>
1	Brake Solenoid w/leads	003-2096
1	Main P.C. Board	003-1977
or 1	Main P.C. Board (exchange)	006-1977
1	Front Panel P.C. Board	003-1688
or 1	Front Panel P.C. Board (exchange)	006-1688
1	Slave Motor Drive Roll	511-0206
1	Slave Motor Idler Roll	501-0207
2+	Fuse AGC 2A 250V	151-0001

TESTING THE TORCH

MOTOR CHECK

Remove the amphenol connector from the cabinet.

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 - "W" CLOKED

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.

TESTING THE 115 VAC CIRCUITS

The 115 VAC circuit is protected by fuse F3. If F3 continually blows, remove J10 (Brake Solenoid), J12 (slave motor) and J15-3,4 (115 VAC Contactor) from the P.C. Board. Replace fuse, and retrigger system. If fuse does not blow; isolate the problem by plugging in J10, J12, and J15-3,4 one at a time until the fuse blows.

SECTION E

TROUBLESHOOTING

Regardless of which torch or feeder used, all MK Products push-pull guns operate on the same principle. The 115VAC slave motor in the feeder runs at a fast, constant speed, but has very low torque. It is always trying to feed more wire than the torch motor wants, and when the motor gets all it wants, it slows the slave motor, preventing a bird's nest. Because of the low torque produced by the slave motor, a brake system is used to prevent wire overrun rather than tension. The drag adjustment in the spindle is used simply to keep the wire slightly taut, so it will not pull off the spool while feeding wire.

The 24VDC torch motor is controlled by a solid state speed control and a pot located in the torch, cabinet or remotely. The torch motor, potentiometer, and micro switch are connected to the cabinet via a control cable and amphenol. If this cable becomes damaged, a variety of symptoms can occur, depending on which wire(s) break. To test, check each wire for continuity and shorts.

Remember the micro switch in the torch activates both the 115VAC and 24V circuits in the cabinet. Therefore, if the slave motor and brake solenoid operate, but the torch does not, look more toward the 24V circuits, speed control, control cable, or the torch motor. If nothing operates, look more toward the 115VAC input, micro switch leads, or micro switch.

The objective of this trouble-shooting section is to identify and replace faulty assemblies, not individual component repairs.

SLAVE MOTOR TENSION TEST

To check for proper operation of the slave motor, the following test may be performed:

Disconnect welding power from Cobramatic® II cabinet.

Plug Cabinet into 115VAC power outlet (different for export) and turn cabinet "ON"

Remove torch wire conduit from the outlet guide on the slave motor assembly.

Cut a piece of .045" hard wire 10" long and make a small loop on one end to attach the spring scale.

Place the wire size selector switch on the front panel in the .030 & .035 ALUMINUM ONLY position.

Insert the .045" hard wire into slave motor assembly, press trigger, and tighten slave motor drive roll pressure adjusting nut until the drive roll stalls. The spring scale should read about 1 1/2 lbs of pull when the slave motor stalls.

Now repeat the test with the wire selector switch set to the "ALL OTHER WIRES" position.

Depress the torch trigger and readjust the drive roll pressure adjusting nut until the drive stalls once again. This time the spring scale should read approximately 4 1/2 lbs.

TROUBLESHOOTING MAIN BOARD

MAIN BOARD - Test Points

High - 9 to 10 volts

Low - 1 volt or less

A voltmeter is required for the following test. TP3 is ground.

Turn the unit "OFF" and unplug the J9 connector going to the timer board, if so equipped, from the main board.

Turn unit "ON" and set meter to DC.

27VAC INPUT

Set voltmeter to AC. Place negative on TP1 and positive on TP4; should have 27 to 30VAC at all times.

10V SUPPLY

Place negative lead on TP3 and positive on TP5. Should have 10VDC with trigger "ON" or "OFF".

15V SUPPLY

Place negative on TP3 and positive on TP2; should have 14.3 to 15.7VDC at all times.

TRIGGER SIGNAL

Place negative lead on TP3 and positive on TP8, should be high; press trigger--should go low.

WIRE FORWARD SIGNAL

Place negative on TP3 and positive on TP9, should be high; press trigger--should go low.

TORCH MOTOR VOLTAGE

Place negative on TP3 and positive on TP10. Press torch trigger and change wire feed speed potentiometer--should vary from 0-27VDC.

INHIBIT CIRCUIT

Place negative on TP3 and positive on TP7, should be high; press trigger--should go low.

Units with Timer Kit Installed (J9)

Follow above steps, except note the following changes:

Turn unit "OFF" and plug in the J9 connector.

Trigger signal high may only be 7VDC.

Inhibit circuit should be low at all times

TROUBLESHOOTING GUIDE

Trouble	Cause	Remedy
No wire feed at torch, feeder not operating, i.e. no slave motor or brake solenoid.	F3 (2 amp) fuse in feeder blown.	Check 115 VAC circuit. Replace fuse.
	Micro-switch defective/not being activated. Broken electrical cable.	Replace switch. Check switch for operation. Check micro-switch wires for continuity.
	Loose J13, PC board connector	Check J13 connector.
Brake Solenoid inoperative	Solenoid defective	Replace
	Main PC board defective	Check for D31 LED operation/replace board.
No wire feed at torch, feeder operating properly.	Switch 1 on Main PC board in wrong position.	Select cabinet, torch or remote position.
	Bad Speed control/PCB	Check/replace Main PC board
	Broken electrical cable	Check motor and potentiometer wires for continuity.
	Bad torch motor (D39 LED "ON")	Check/replace motor.
	Bad Potentiometer	Check potentiometer with ohm meter.
Wire feeds, but welding wire is not energized.	Loose or no cable connections	Check all power connections
	Relay K1 not sending contactor signal.	Check/replace relay K1.
	Contactor control cable loose or in wrong position.	Check power supply owners manual for location and type of contactor signal required, i.e.; closing or 115VAC.
	Welding power source	Check power source for operation.
Wire feeds erratically.	Excessive spool drag pressure	Decrease spool drag pressure inside hub.
	Dirty or worn conduit.	Blow out or replace conduit
	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 in torch manual.
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 Main PC board.
Wire walks out of drive rolls.	Idler roll upside-down.	Place groove in idler roll toward top.
	Rear wire guide missing.	Replace wire guide.

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SECTION F

APPENDICES

DIAGRAMS AND PARTS LISTS

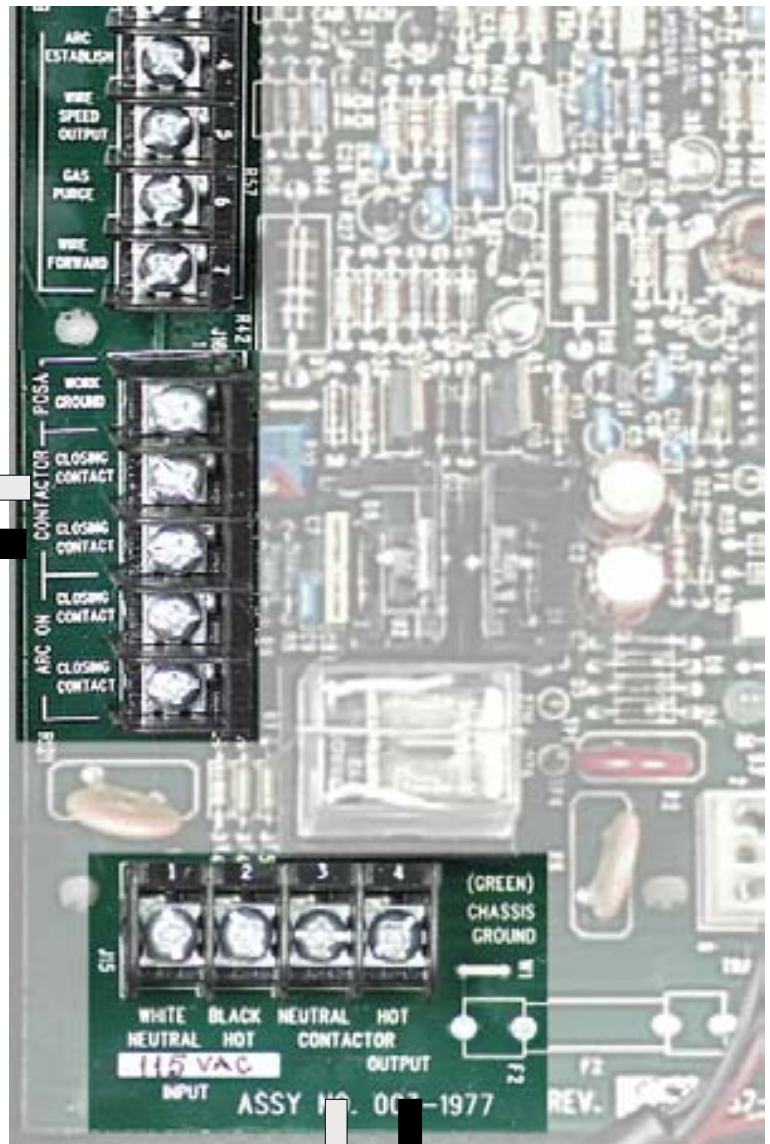
Figure 1, Contactor Hook-up Selection.....	16
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Figure 4, Front Panel - Controls Layout	19
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001-3070 Cobramatic® II Assembly	21
003-1701 Front Panel Assembly.....	23
003-1674 Power Block Assembly	24
003-2078 Slave Motor Assembly.....	25
003-0570 Spindle Brake Assembly	26
071-0252 Multi Function Timer Board.....	28
071-0296 Front Panel.....	29
071-0330 Meter.....	30
071-0365 Main Board	31
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CONTACTOR HOOK-UP SELECTION

FIGURE 1

**CLOSING CONTACTOR
WIRE POSITION**
(As Shipped From Factory)

J16



J15

**120VAC CONTACTOR
WIRE POSITION**



NOTE :

BOTH TYPES OF CONTACTOR OUTPUTS ARE AVAILABLE SIMULTANEOUSLY, THERE IS NO SWITCH TO SELECT BETWEEN THE DIFFERENT TYPES, YOU MUST MOVE THE CONTACTOR LEADS BETWEEN TERMINAL STRIPS (J15) AND (J16)

INPUT POWER AND POSA START CONNECTIONS FIGURE 2

S3
POSA START VOLT SENSE
(S3 - see text for correct position)

POSA START
WORK GROUND
CONNECTION

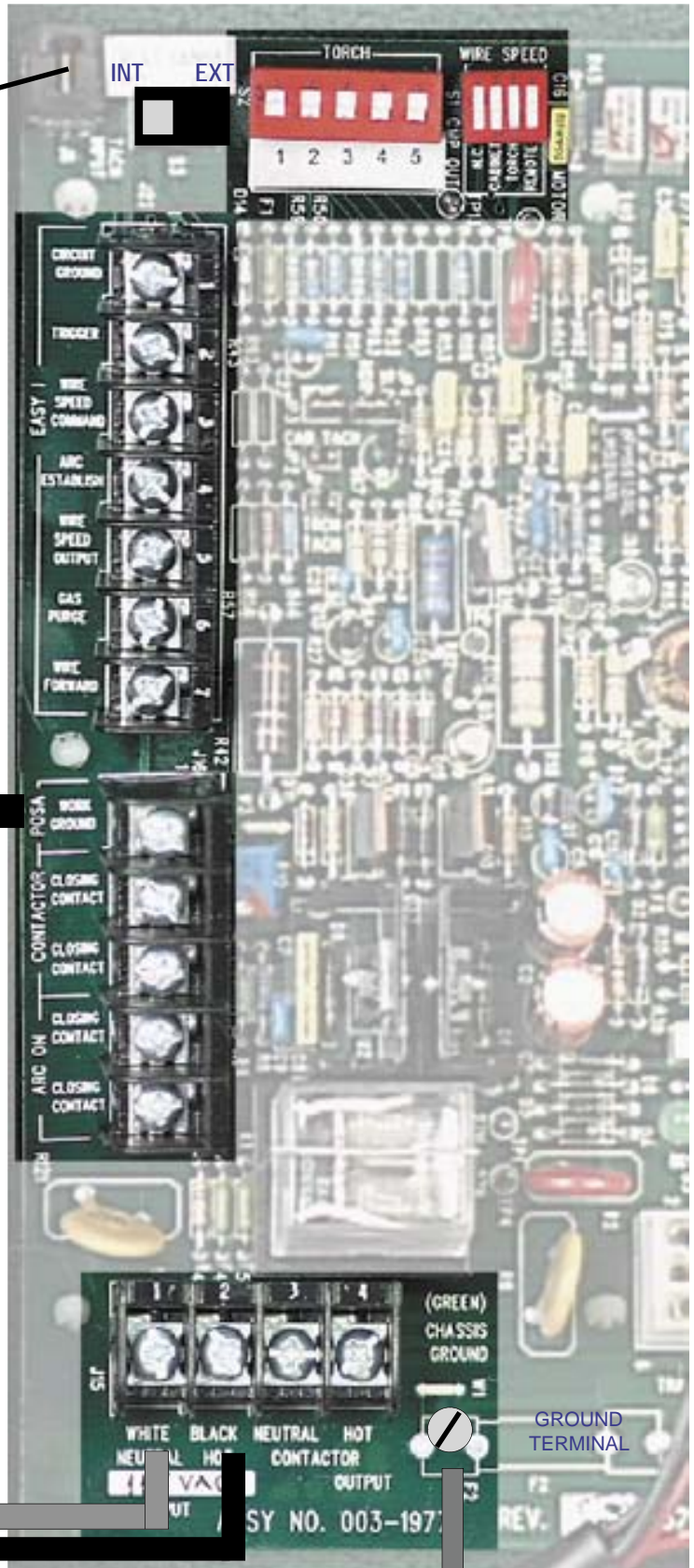
BLACK WIRE

INPUT POWER
WIRE POSITION

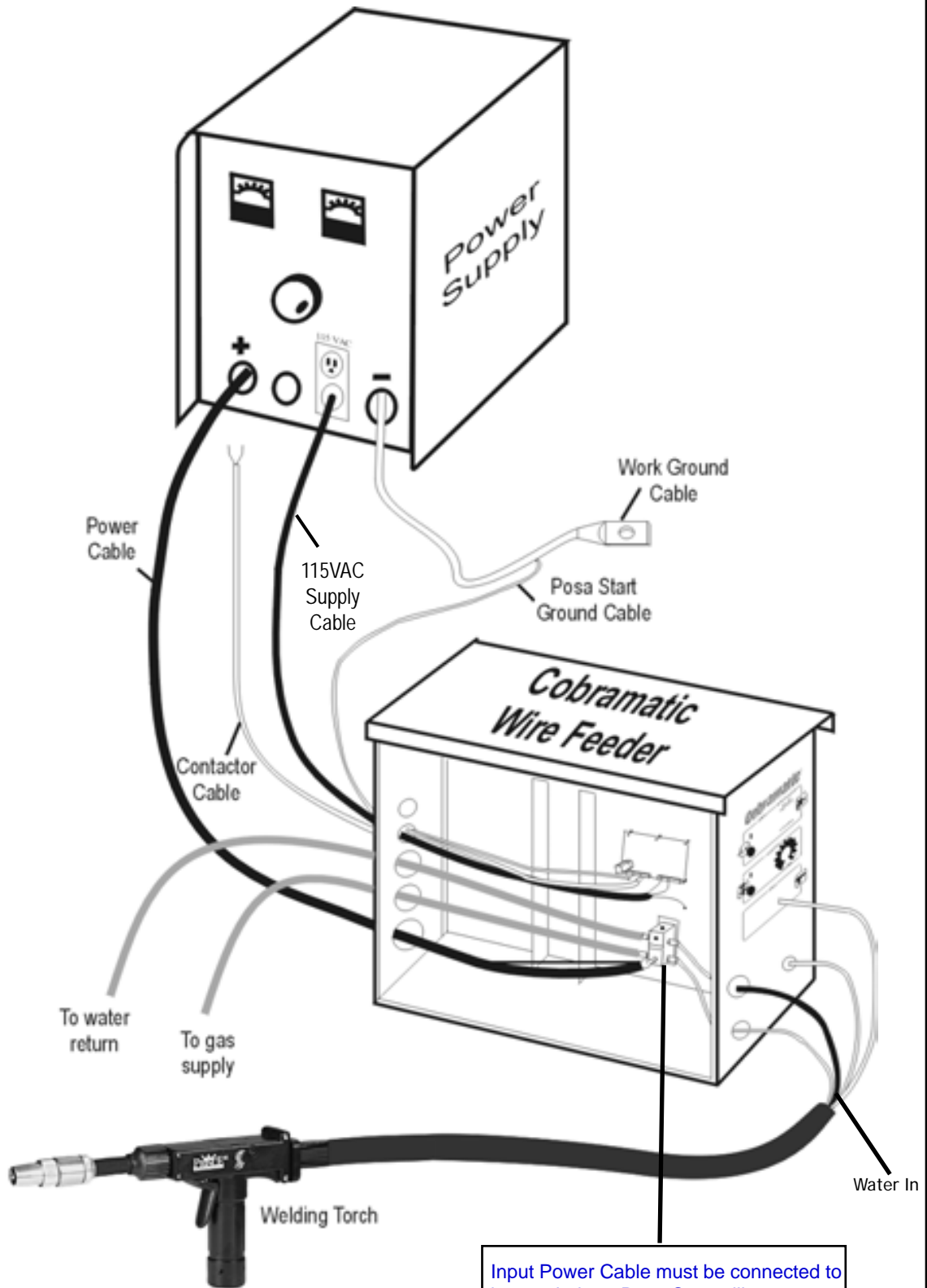
WHITE WIRE

BLACK WIRE

GREEN WIRE



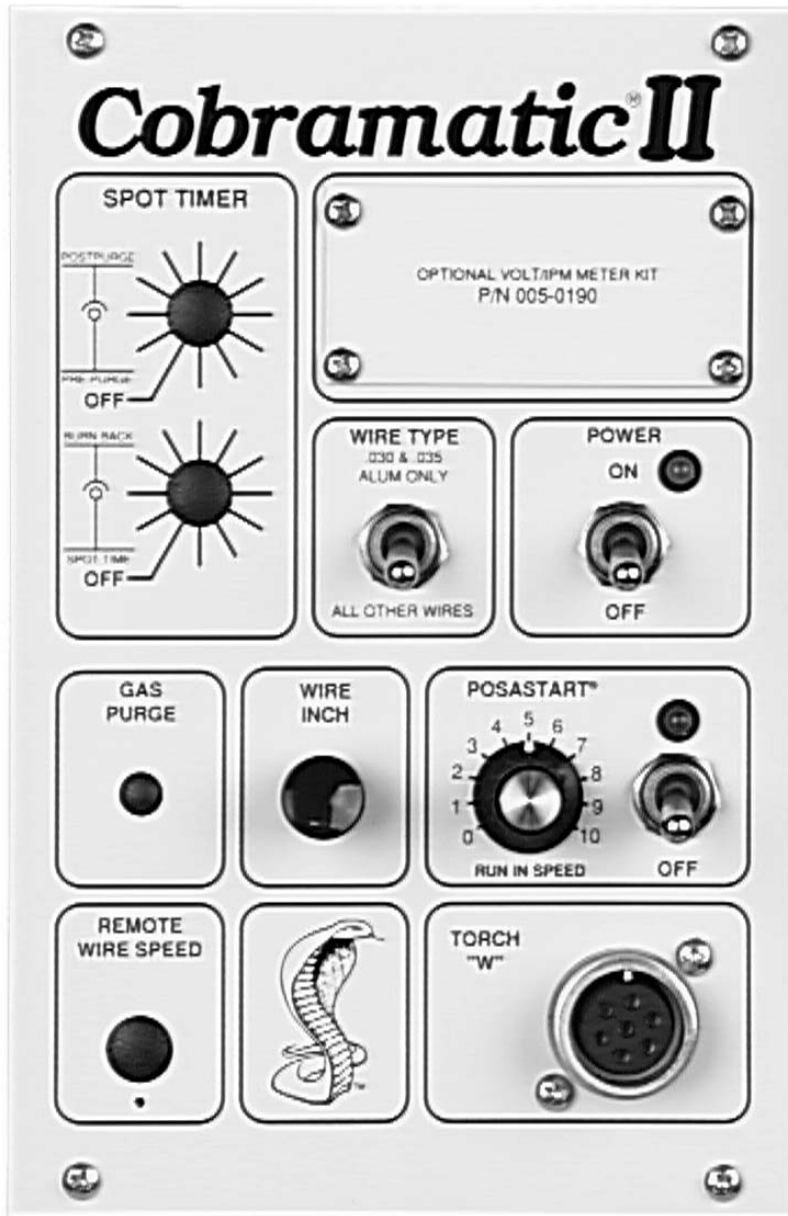
CABINET AND TORCH HOOK-UP DIAGRAM
 FIGURE 3



Input Power Cable must be connected to bottom hole or Posa-Start will not operate properly!

Upper hole is to be used only when connecting to the Prince spoolgun to the cabinet as a push-pull system.

FRONT PANEL - CONTROLS LAYOUT
FIGURE 4



MAIN BOARD SWITCH SETTINGS AND REMOTE CONNECTIONS

FIGURE 5

POSA START
VOLT SENSE
S3

TORCH
SELECTIONS
S2

WIRE SPEED
SELECTIONS
S1

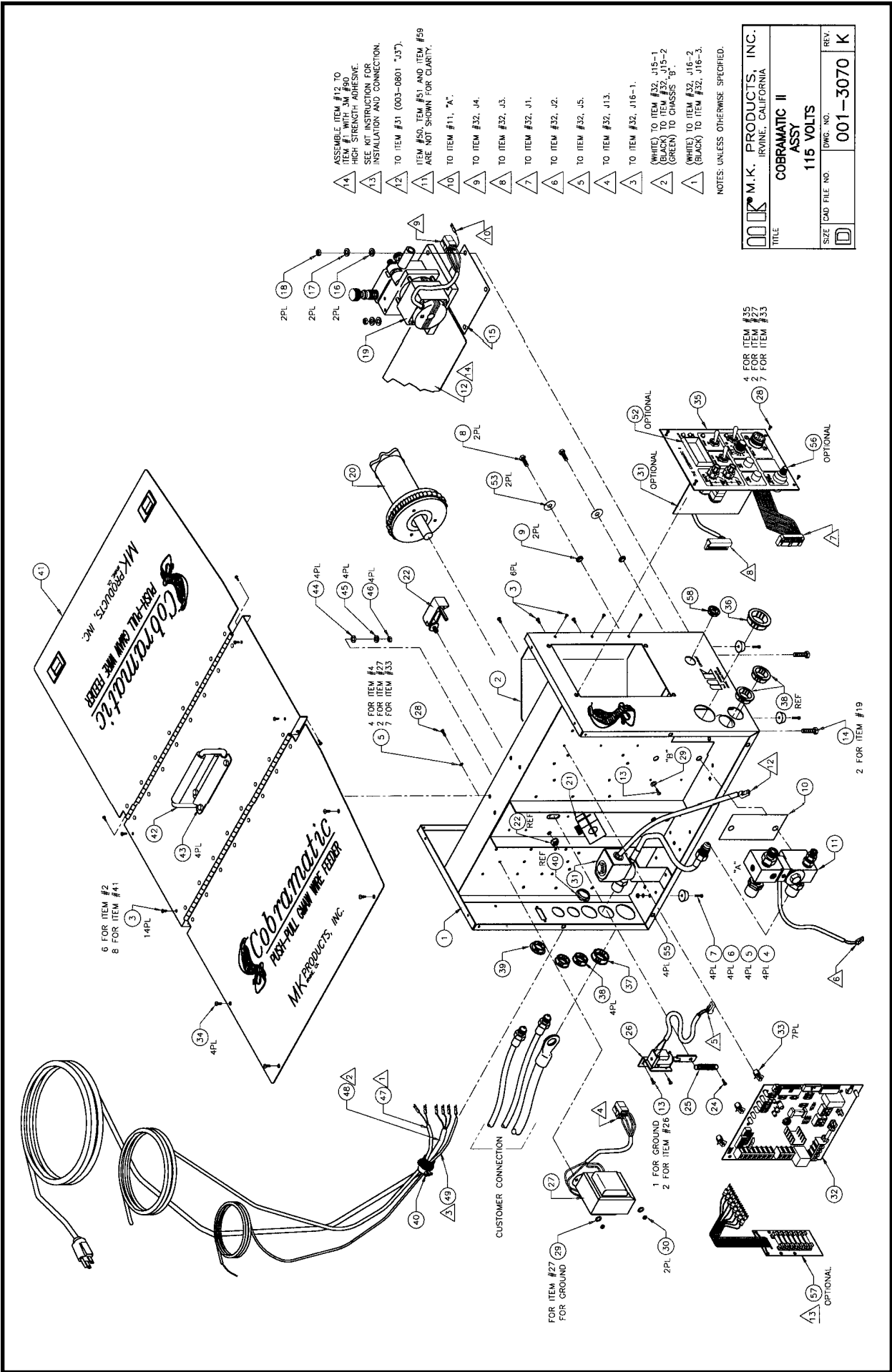


J22 Analog Signal Connector Pin-Outs

Circuit ground	J22-1
Trigger (cycle start) Contact Closure ref. to J22-1	J22-2
Wire speed command input (+)1V = 100 ipm 0-10VDC @ 50ma to ref to J22-1 (-)	J22-3
Arc established output (+) 10VDC with ref. to J22-1 during arc. 10K ohm source impedance	J22-4
Torch potentiometer ref. voltage (+) 1V = 100 ipm 0-10VDC output ref to J22-1 (-)	J22-5
Gas purge Input Contact closure to J22-1	J22-6
Wire forward Input Contact closure to J22-1	J22-7

J16 Signal Connector Pin-Outs

Weld ground Input	J16-1
Closing Contactor Output - trigger	J16-2
Closing Contactor Output - trigger	J16-3
Closing Contact Output - Arc Est.	J16-4
Closing Conatct Output - Arc Est.	J16-5




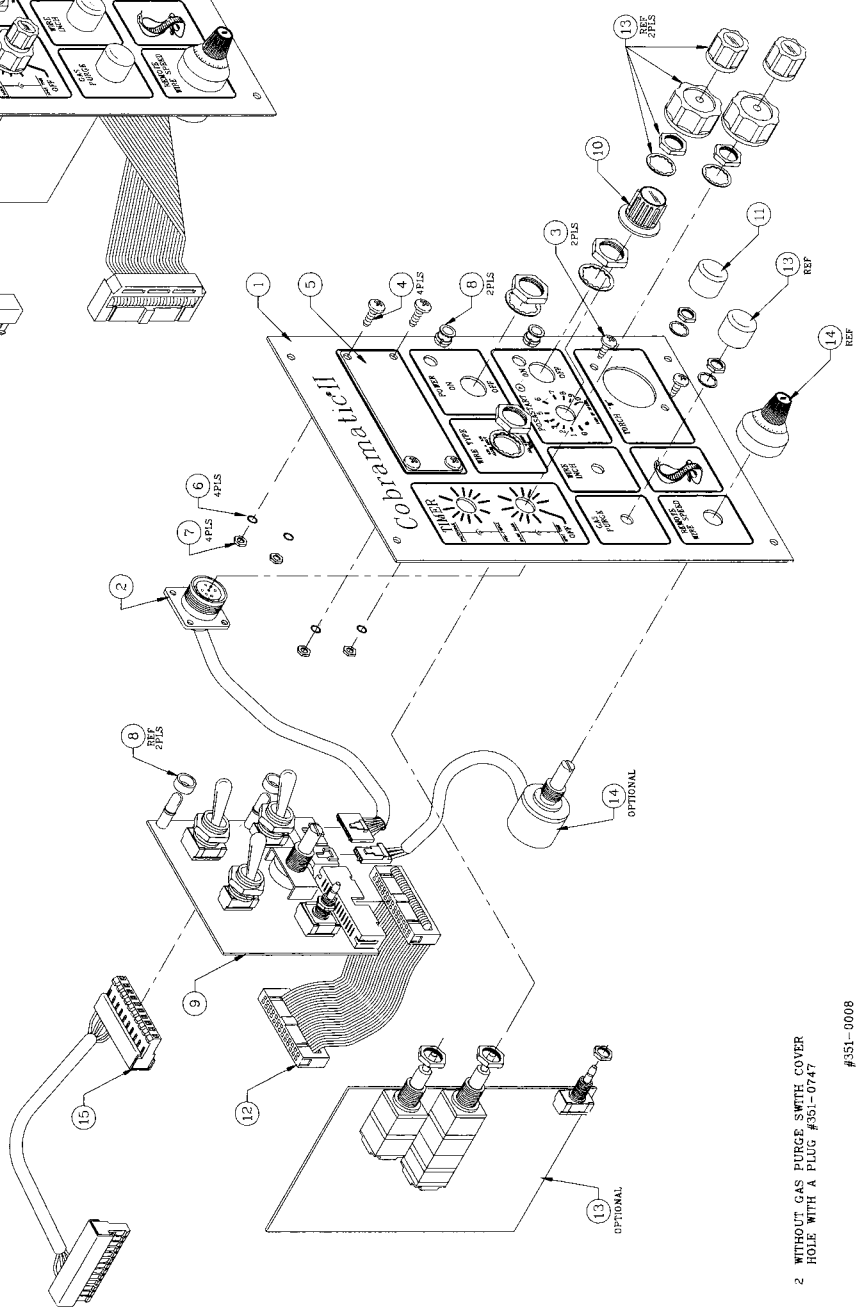
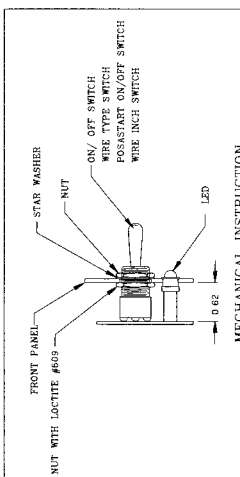
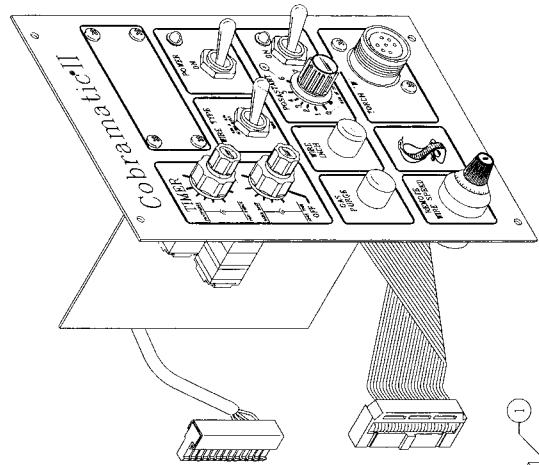
NO.	P/ZONE	QTY.	P. NUMBERS	DESCRIPTIONS
59	A	1	301-0087	WIRE GUARD
58	2/C7	1	351-0758	BUSHING SNAP #3/4 BLACK
57	2/A2	1	005-3562	FUSE KIT (OPTIONAL)
56	2/A12	1	005-0166	CABINET POT KIT COBRA II (OPTIONAL)
55	2/C6	4	351-0089	THREAD INSERT #10-32
54	2/C9	4	351-0086	THREAD INSERT #6-32
53	2/E11	2	331-0049	WASHER, FLAT 1/4 ID.
52	2/D12	1	005-0190	METER KIT (OPTIONAL)
51	2/A	1	405-0767	SERIAL NUMBER I.D. PLATE
50	2/A	4	411-0020	TIE WRAPS
49	2/F3	1	843-0327	POSASTART CABLE
48	2/G3	1	003-0796	CABLE POWER FOR CONTROL BOX
47	2/G4	1	843-0064	CABLE CONTACTOR 8 FT.
46	2/F9	4	341-0007	NUT, HEX #10-24
45	2/F9	4	333-0007	WASHER, SPRING LOCK #10
44	2/F9	4	331-0067	WASHER, FLAT #10
43	2/H9	4	329-0219	SCREW, HEX #10-24 X 1/2 LG.
42	2/I7	1	415-0243	HANDLE CARRY
41	2/J10	1	003-1698	DOOR ASSY
40	2/F2	1	411-0157	CLAMP CABLE STRAIN REL.
39	2/E6	1	351-0082	CAP PLUG 7/8 DIA. MTG. HOLE
38	2/D5	4	351-0745	BUSHING SNAP 1.13 DIA MTG. HOLE
37	2/D6	1	351-0744	BUSHING SNAP 1.38 DIA MTG. HOLE
36	2/B10	1	351-0752	BUSHING SNAP 1.50 DIA MTG. HOLE
35	2/C12	1	003-1701	FRONT PANEL COBRA II ASSY.
34	2/I5	4	336-0039	SCREW, PH.FIL. #10-32 X 3/8 LG.
33	2/B5	7	342-0410	SPACER STACKING #6-32 X .534 LG
32	2/A3	1	003-1977	PCB, MAIN ASSY.
31	2/D7	1	005-0196	TIMER PCB KIT COBRA II (OPTIONAL)
30	2/C2	2	345-0008	NUT, SELF LOCKING #6-32
29	2/D2	3	331-0002	WASHER, FLAT #6
NO.	P/ZONE	QTY.	P. NUMBERS	DESCRIPTIONS

PARTS LIST

NO.	P/ZONE	QTY.	P. NUMBERS	DESCRIPTIONS
28	2/F8	13	336-0005	SCREW, P.H. FIL. #6-32 X 3/8 LG.
27	2/D3	1	003-0773	TRANSFORMER 115 VOLTS ASSY.
26	2/D5	1	003-2096	ASSY BRAKE SOL 115V
25	2/C4	1	419-0080	SPRING EXTENSION
24	2/C4	1	327-0012	SCREW, ST. F. #6-32 X 1/4 LG.
23		0	071-0366	WIRING DIAGRAM
22	2/F10	1	003-0784	PAWL RATCHET ASSY.
21	2/D8	1	328-0112	SCREW, SOC. HD. 3/8-16 X 1.00 LG.
20	2/G11	1	003-0570	SPINDLE BRAKE ASSY.
19	2/F12	1	003-2014	SLAVE MOTOR ASSY 115V
18	2/F13	2	341-0010	NUT, HEX 1/4-20
17	2/G13	2	333-0009	WASHER, SPRING LOCK 1/4
16	2/F13	2	331-0005	WASHER, FLAT 1/4
15	2/E12	1	261-0372	INSULATOR SLAVE MOTOR
14	2/A8	2	329-0005	SCREW, HEX 1/4-20 X 1.00 LG.
13	C-4	3	336-0037	SCREW, PH FIL T/B #6-32 X 1/4
12	2/E12	1	261-0104	INSULATOR SPOOL
11	2/B7	1	003-1674	POWER BLOCK ASSY.
10	2/B8	1	261-0105	INSULATOR POWER BLOCK
9	2/E10	2	332-0009	WASHER, SHOULDER 0.265 ID
8	2/E11	2	329-0003	SCREW, HEX 1/4-20 X 3/4 LG.
7	2/B6	4	341-0005	NUT, HEX #6-32
6	B-6	4	336-0006	SCREW, PH FIL #6-32 X 1/2
5	2/G8	13	333-0043	WASHER, INT. STAR #6
4	2/B6	4	301-0103	RUBBER FEET
3	2/I6	14	336-0038	SCREW, TAP PH FIL T/B #6 X 3/8
2	2/E9	1	438-0017	COVER PANEL
1	2/E6	1	436-0035	BASE CABINET SCREENED.
NO.	P/ZONE	QTY.	P. NUMBERS	DESCRIPTIONS

PARTS LIST

 M.K. PRODUCTS, INC. IRVINE, CALIFORNIA	
COBRAMATIC II ASSY 115 VOLTS	
TITLE	DWG. NO. 001-3070
SIZE CAD FILE NO.	REV. K
SCALE NONE	SHEET 1 OF 2



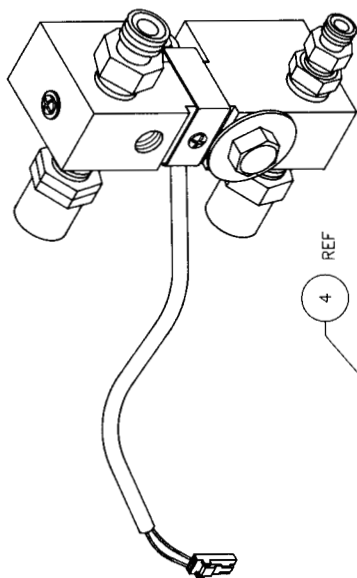
Front Panel Assembly 003-1701 b

No.	Qty.	Part No.	Description
1	1	436-0026	Screened Front Panel COB II
2	1	003-1642	Connector "W" Clock 7 Pins
3	2	327-0110	Screw, St T/F #6 x 3/8 LG
4	4	336-0005	Screw, Ph Fil #6-32 x 3/8 LG
5	1	436-0034	Screened Window Cover
6	4	333-0043	Washer, In-Star #6
7	4	341-0005	Nut, Hex #6-32
8	2	301-0023	Grommet Panel Mntg. LED
9	1	003-1688	Front PCB Assy
10	1	401-0074	Knob Ribbed 0.25 Shaft
11	1	401-0029	Button Switch, Black
12	1	003-1332	Cable, Ribbon 8.50 LG Cob II
13	1	005-0196	Timer, PCB Kit Cob II (optional)
14	1	005-0166	Cabinet Pot Kit Cob II (optional)
15	1	003-1631	Cable, Power Assy
16	1	351-0747	Dome Plug 0.25 Dia Hole
17	3	351-0008	Hole Plug 0.38 Dia

2 WITHOUT GAS PURGE SWITCH COVER
HOLE WITH A PLUG #351-0747

#351-0008
#003-1688
#51-0008

NOTES: UNLESS OTHERWISE SPECIFIED.



**Power Block Assembly
003-1674d**

No.	Qty.	Part No.	Description
1	1	431-3505	Connector, Power Block
2	1	435-3038	Bracket, Current Sensor
3	1	003-1243	Current Sensor Assy.
4	2	336-0005	Screw, PH Phill., #6-32 x 3/8
5	1	342-0395	Spacer
6	1	313-0021	Stud Receiver, Push-On
7	1	329-0054	Screw, Hex, 3/8-16 x 5/8
8	1	331-0777	Washer, Flat, 0.391 ID x 0.875 OD
9	1	753-0466	Fitting, 1/4-18M to 5/8-18F
10	1	753-0475	Fitting, 1/4-18NPT to 5/8-18 LH
11	1	331-0002	Washer, Flat, #6 St
12	1	753-0112	Fitting 1/4-18NPT to 5/8-18
13	1	753-0115	Bushing, 1/4 NPT. M. to 1/8 NPT F
14	1	753-0114	Fitting, 1/8
15	1	351-0066	Plug, Hole 5/16

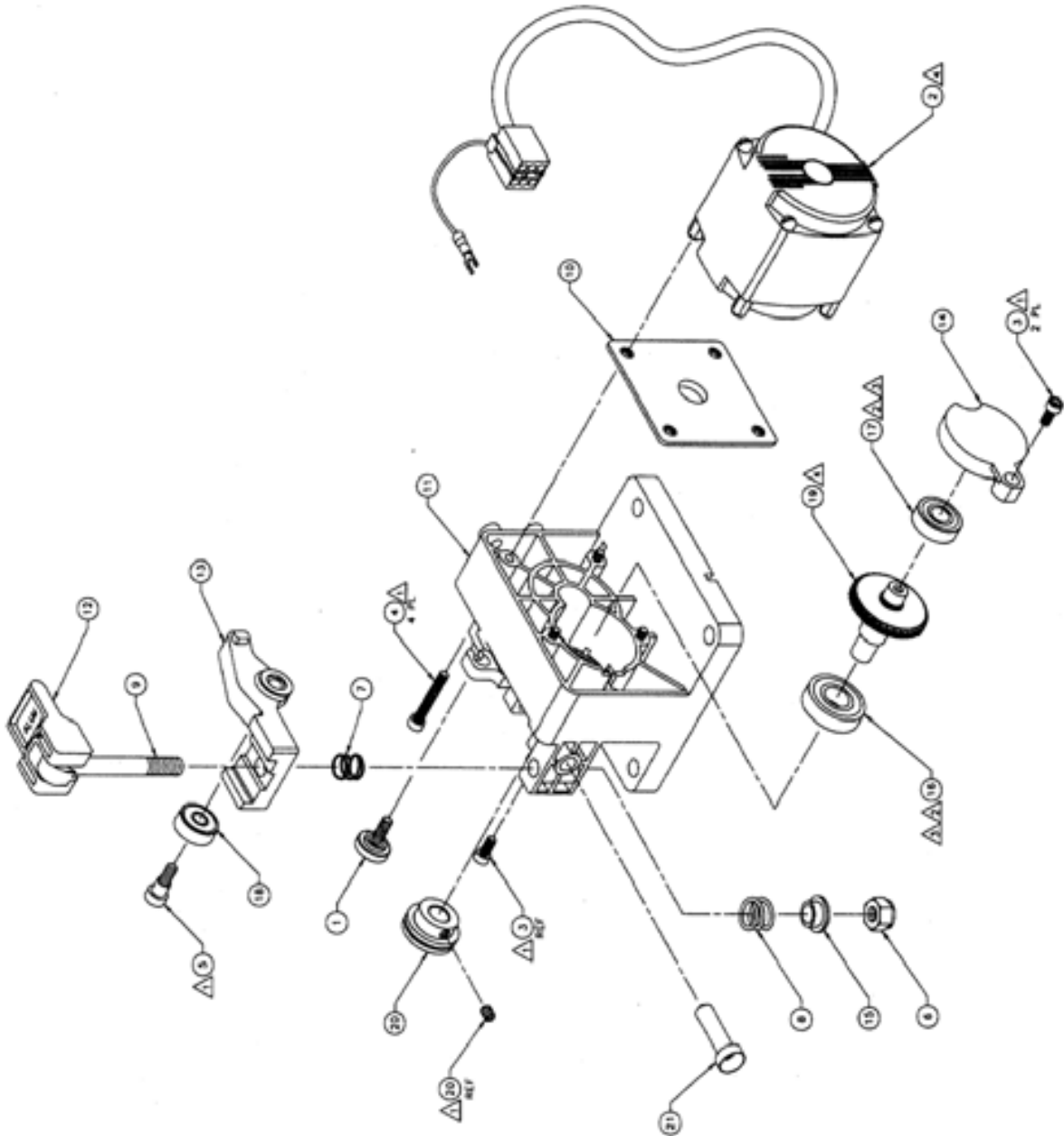
2 USE NOALOX, P/N 823-0029.

1 USE LOCTITE #567 PST.

NOTES: UNLESS OTHERWISE SPECIFIED.

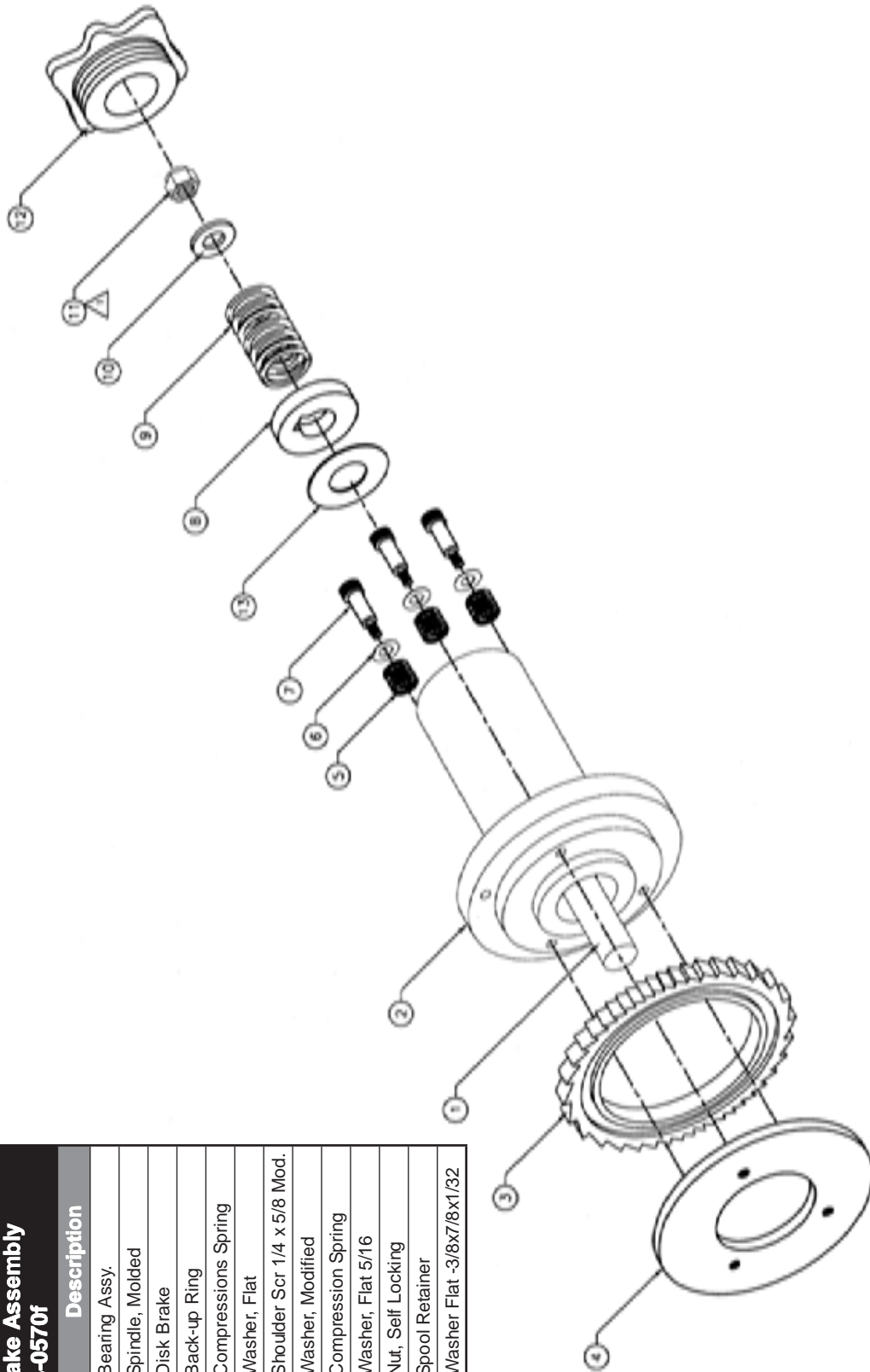
Slave Motor Assembly, 115V 003-2078a

No.	Qty.	Part No.	Description
1	1	003-0178	Assy Knob Conduit
2	1	003-2069	Assy Torque Motor 115 V -
3	1	328-0024	Scr Shc 8-32 x 7/8 SH
4	1	328-0259	Scr Shc 8-32 x 1-1/8 SH
5	1	330-0258	Scr Shldr 1/4 x 1/4 x 10-24
6	1	345-0018	Nut Lock 5-16-18
7	1	419-0085	Spring Comp 1/32 x OD .40
8	1	419-0211	Spring Comp OD 5/8 x 1/16
9	1	431-1576	Bolt Swing Mod
10	1	435-1582	Plate Locate Slave Motor
11	1	437-0230	Housing Slave Motor Mold
12	1	437-0231	Handle Mold Slave Motor
13	1	437-0232	Arm Idler Mold Slave Motor
14	1	437-0245	Cap Bearing Mold
15	1	437-0254	Sleeve Spring
16	1	501-0118	Bearing 1.125 x .50 x .31
17	1	501-0156	Bearing .875 x .38 x .28
18	1	501-0207	bearing Idler Roll
19	1	507-0130	Shaft Gear
20	1	511-0206	Drive Roll
21	1	753-0210	Guide Wire Inlet
22	A/R	823-0043	Loctite Threadlocking
23	A/R	835-0001	Grease Mobilux 2
24	A/R	823-0051	Loctite Retaining Compound
25	REF	031-0167	Test Procedure
26	1	751-0018	Cap .5 x .5 Lg Vinyl Black



**Spindle Brake Assembly
003-0570f**

No.	Qty.	Part No.	Description
1	1	003-0569	Bearing Assy.
2	1	437-0645	Spindle, Molded
3	1	723-0059	Disk Brake
4	1	431-1266	Back-up Ring
5	3	419-0059	Compressions Spring
6	3	331-0063	Washer, Flat
7	3	330-3063	Shoulder Scr 1/4 x 5/8 Mod.
8	1	437-0180	Washer, Modified
9	1	419-0230	Compression Spring
10	1	331-0100	Washer, Flat 5/16
11	1	345-0018	Nut, Self Locking
12	1	431-0169	Spool Retainer
13	1	331-0200	Washer Flat -3/8x7/8x1/32



**Spindle Brake Assy.
003-0570F**

MK Warranty Repair Stations

as of 04/17/03

Please visit www.mkproducts.com for most up-to-date listings.

ALABAMA

AIRGAS - SOUTH, INC.
Birmingham, AL
205/251-6835

DIXIE WELDING SUPPLY
Attalla, AL
256/538-6157

INDUSTRIAL WELDING SERVICES
Quinton, AL
205/674-3258

KIBRO, INC.
Theodore, AL
251/653-4672

WELDING ENGINEERING SUPPLY CO.
Prichard, AL
334/457-8681

WELDING MACHINE HOSPITAL
Montgomery, AL
334/832-9353

ALASKA

FAIRBANKS AERO SERVICES
Fairbanks, AK
907/479-6666

RNR, INC. dba
Rubey Engine & Electric
Anchorage, AK
907/336-5152

ARIZONA

PRAXAIR DISTRIBUTION, INC.
Phoenix, AZ
602/269-2151

ALLSTATE ELECTRIC MOTOR CO.
Phoenix, AZ
602/233-0500

VERN LEWIS WLDG. SUPPLY
Phoenix, AZ
602/252-0341

ARKANSAS

APPLIED SERVICES, INC.
Benton, AR
501/860-6464

ARKANSAS WELDING IND'L SUPPLY
Hot Springs, AR
501/321-9922

EL DORADO WELDING & IND'L SUPPLY
El Dorado, AR
870/863-4088

CALIFORNIA

ADVANCED WELDER REPAIR
Commerce, CA
323/263-7383

AIRGAS - WEST, INC.
Gardena, CA
310/523-9355

ALL PHASE WELDER REPAIR & CONSULTING
Sacramento, CA
916/331-0595

ARC PRODUCTS
San Diego, CA
619/628-1022

ARCO WELDER REPAIR
Santa Fe Springs, CA
562/921-5240

ARK WELDER REPAIR
Fresno, CA
559/292-4714

CAL-WELD SUPPLY
Fresno, CA
209/445-0131

DELTA-TECH
Sun Valley, CA
818/767-4234

EMCO EAST WELD'R REPAIR
Concord, CA
925/798-4411

FRESNO OXYGEN
Fresno, CA
559/233-6684

INDUSTRIAL ELECTRICAL CO
Modesto, CA
209/527-2800

INDUSTRIAL WELDER REPAIR
LaPuente, CA
626/961-7643

NESCO WELDING SUPPLY
Fontana, CA
909/427-9670

PRAXAIR DISTRIBUTION (ARC RENTS)
Signal Hill, CA
562/989-3212

PRAXAIR DISTRIBUTION, INC.
Bakersfield, CA
661/321-9922

R. J. KATES
San Diego, CA
619/565-6960

MK Warranty Repair Stations

as of 04/17/03

Please visit www.mkproducts.com for most up-to-date listings.

RED-D-ARC, INC.
Carson, CA
310/233-3327

SIMS-ORANGE WELDING SUPPLY
Santa Ana, CA
714/549-9393

SOUTHWEST WELDER REPAIR
Fontana, CA
909/357-1661

SWEINHART ELECTRIC CO., INC.
Long Beach, CA
714/521-9100

COLORADO

AIRGAS - INTERMOUNTAIN, INC.
Colorado Springs, CO
719/473-1947

WELDERS & EQUIP. SVC. & TESTING
Littleton, CO
303/932-8755

WESTERN SLOPE WELDER REPAIR
Grand Junction, CO
970/243-9616

CONNECTICUT

ABCO WELDING & INDUSTRIAL SUPPLY CO.
Waterford, CT
800/962-0285

TECH AIR
Milford, CT
203/783-1834

DELAWARE

KEEN COMPRESSED GAS
New Castle, DE
302/594-4555

FLORIDA

A & I SPECIALTIES
Lehigh Acres, FL
941/368-7435

AAA GENERATOR & PUMP
Ft. Myers, FL
941/332-1136

ACTION WELDING SUPPLY
Jacksonville, FL
904/786-2254

AMVEL CORPORATION
Miami, FL
305/592-5678

ELECTRICAL WELDERS SERVICE
Orlando, FL
407/999-5214

HAUN SYSTEMS REPAIR, INC.
Orlando, FL
407/681-6064

HOLOX
Ocala, FL
352/351-4417

J.K. CIRCUIT TECHNOLOGY
Boynton Beach, FL
561/733-7859

ROPER ELECTRIC MOTOR SERVICE
Panama City, FL
850/769-6643

SMITTY'S WELDER SERVICE
West Palm Beach, FL
561/845-1224

TRI-GAS
Miami, FL
305/592-3180

TRI-STATE SALES & LEASING
Lake City, FL
904/397-3340

TRI-TECH
Sarasota, FL
941/758-3825

V.A. ELECTRICAL MOTORS CENTER
Hialeah, FL
305/825-3327

WELD DIRECT CORPORATION
Jacksonville, FL
904/387-5664

GEORGIA

B&W INDUSTRIAL SERVICES
Augusta, GA
706/738-8722

Mc CULLOUGH ELEC. MOTOR SVC.
Atlanta, GA
404/688-5251

HAWAII

DC ELECTRIC, INC.
Aiea, HI
808/483-8900

MK Warranty Repair Stations

as of 04/17/03

Please visit www.mkproducts.com for most up-to-date listings.

IDAHO

NORCO
Boise, ID
208/336-1643

ROSSITER ELECTRIC
Idaho Falls, ID
208/529-3665

ILLINOIS

CMS ELECTROMECHANICAL SERVICES, INC.
Galesburg, IL
309/342-4125 - 888/964-3526

FRED ARMS ELECTRIC MOTOR REPAIR
Stone Park, IL
708/343-6262

INDUSTRIAL WELDER REBUILDERS
Alsip, IL
708/371-5688

RELIABLE EQUIPMENT REPAIR
Hamel, IL
618/633-5000

ROCKFORD INDUSTRIAL WELDING SUPPLY
Rockford, IL
815/226-1900

INDIANA

AGA GAS, INC.
Hammond, IN
219/989-9030

AIRGAS-MID AMERICA, INC.
Evansville, IN
800/424-8905

B & H ELECTRIC
Seymour, IN
812/522-5607

COX EQUIPMENT COMPANY
Indianapolis, IN
317/241-8881

EVANSVILLE ARMATURE, INC.
Evansville, IN
812/428-9034

HARRISON ELECTRIC, INC.
Michigan City, IN
219/879-0444

MODERN SUPPLY CO., INC.
Evansville, IN
812/425-9353

PRAXAIR DISTRIBUTION, INC.
Speedway, IN
317/481-4550

SUTTON-GARTEN COMPANY
Indianapolis, IN
317/264-3236

IOWA

AIRGAS NORTH CENTRAL
Des Moines, IA
515/266-1111

CEDAR RAPIDS WELDING SUPPLY
Cedar Rapids, IA
319/365-1466

ELECTRICAL ENGRG. & EQUIPMENT
Des Moines, IA
515/266-8890

SUPERIOR WELDING SUPPLY
Waterloo, IA
319/236-9660

WRIGHT WELDING SUPPLY
Ft. Dodge, IA
515/576-0640

KANSAS

AEROFORM CORPORATION
Coffeyville, KS
620/251-1430

KANOX
Hutchinson, KS
316/665-5551

KENTUCKY

GENERAL WELDING PRODUCTS
Louisville, KY
502/635-5218

RED-D-ARC
Lexington, KY
800/245-3660

WELDING EQUIPMENT
Louisville, KY
502/636-0545

LOUISIANA

GT SVCS OF MORGAN CITY
Morgan City, LA
985/385-4135

RED BALL OXYGEN CO.
Shreveport, LA
318/425-3211

MK Warranty Repair Stations

as of 04/17/03

Please visit www.mkproducts.com for most up-to-date listings.

WELDERS EQUIPMENT CO.
Broussard, LA
337/837-5701

WELDERS SUPPLY & EQUIP.
Port Allen, LA
225/346-4712

MARYLAND

CCM MECH/ELEC REPAIR SERVICE
Owings, MD
301/855-7508

MASSACHUSETTS

AIMTEK WELDING SUPPLY
Auburn, MA
508/832-5035

MICHIGAN

ANN ARBOR WELDING SUPPLY CO.
Ypsilanti, MI
734/572-0444

APEX WELDING GASES & SUPPLY
Muskegon Heights, MI
616/722-3185

AUTOMATIC WELD
Midland, MI
517/496-9245

GREAT LAKES EQUIPMENT
Clare, MI
517/386-4630

HAMILTON ELECTRIC CO.
Saginaw, MI
517/799-6291

PLYMOUTH WAYNE, INC.
Wixom, MI
248/735-7700

SAGINAW WELDING SUPPLY CO.
Saginaw, MI
517/793-9696

SIMPKINS ELECTRICAL SVC.
Michigan Center, MI
517/764-7766

SOUTHPARK WELDING
Marysville, MI
810/364-6521

WELDING METALS, INC.
Madison Heights, MI
248/585-0480

WESAR COMPANY
Three Rivers, MI
616/483-9125

WILSON WELDING & MEDICAL GASES
Warren, MI
586/751-7400

MINNESOTA

AIRGAS - NORTH CENTRAL
Albert Lea, MN
507/373-2411

CAPITOL CITY WELDING SUPPLY
St. Paul, MN
651/224-4843

CENTRAL McGOWAN
St. Cloud, MN
320/252-5292

MINNEAPOLIS OXYGEN CO.
Minneapolis, MN
612/588-8855

OXYGEN SERVICE CO.
St. Paul, MN
612/644-7273

MISSOURI

CEE-KAY SUPPLY, INC.
St. Louis, MO
324/644-3500

P.G. WALKER
Springfield, MO
417/862-1745

ROD'S SERVICE, INC.
St. Louis, MO
314/721-6000

MISSISSIPPI

NORDAN SMITH WELDING SUPPLY
Hattiesburg, MS
601/545-1800

3D SUPPLIES, INC.
Jackson, MS
601/353-3330

MONTANA

VALLEY WELDERS SUPPLY
Billings, MT
406/256-3330

MK Warranty Repair Stations

as of 04/17/03

Please visit www.mkproducts.com for most up-to-date listings.

NEVADA

SIERRA WELDING SUPPLY CO.
Sparks, NV
775/359-0542

NEW JERSEY

INDUSTRIAL ELECTRIC SERVICE CO.
Hawthorne, NJ
973/423-1212

NEW YORK

DELO WELDING SUPPLY
Syracuse, NY
315/478-2188

DYNAMIC WELD'G & REPAIR
Bayshore, NY
631/643-1308

HAUN WELDING SUPPLY
Syracuse, NY
315/463-5241

JACKSON WELDING SUPPLY
Rochester, NY
585/235-2920

NORTH CAROLINA

ADAMS WELDER REPAIR & ELECTRICAL SERVICE,
INC.

Nashville, NC
252/459-1960

HOLOX LTD.
Colfax, NC
336/996-1974

M & L WELDER REPAIR
Asheville, NC
828/250-9353

MACHINE AND WELDING SUPPLY CO.
Dunn, NC
910/892-4016

MACHINE AND WELDING SUPPLY CO.
Greenville, NC
252/752-3089

MACHINE AND WELDING SUPPLY CO.
Raleigh, NC
919/772-9500

MACHINE AND WELDING SUPPLY CO.
Winston-Salem, NC
336/723-9651

NATIONAL WELDERS SUPPLY CO.
High Point, NC
910/882-1110

NATIONAL WELDERS SUPPLY CO.
Charlotte, NC
704/392-7317

OHIO

AGA GASES, INC.
Lima, OH
419/228-2828

ALBRIGHT WELDING SUPPLY
Wooster, OH
330/264-2021

ALL ABOUT SERVICE
Wickliffe, OH
440/516-0303

ARC EQUIPMENT COMPANY
Struthers, OH
333/750-9353

ARC SERVICES, INC.
Toledo, OH
419/478-6204

BELAIR PRODUCTS, INC.
Akron, OH
330/253-3116

BIG RIVER ELECTRIC
Gallipolis, OH
740/446-4360

CnD MACHINE, INC.
Canton, OH
330/478-8811

ELECTRIC WELDER REPAIR
Cuyahoga Heights, OH
216/271-5600

MAINTENANCE UNLTD. & TOOL REPAIR
Cincinnati, OH
513/554-1313

O.E. MEYER CO.
Sandusky, OH
419/621-4201

OHIO AIR PRODUCTS
Canton, OH
330/821-2771

RICK'S WELDER REPAIR SERVICE
Eastlake, OH
440/269-1204

S.D. NOLD, INC.
Lisbon, OH
330/424-3134

MK Warranty Repair Stations

as of 04/17/03

Please visit www.mkproducts.com for most up-to-date listings.

VALLEY NATIONAL GASES

Cincinnati, OH
513/241-5840

VALLEY NATIONAL GASES

Hilliard, OH
614/771-1311

VALLEY NATIONAL GASES

Lima, OH
419/228-1008

VALLEY NATIONAL GASES

Toledo, OH
419/241-9114

VOLLMER ELECTRIC CO.

Columbus, OH
614/476-8800

WEILER WELDING CO., INC.

Dayton, OH
937/222-8312

WELDINGHOUSE, INC.

Cleveland, OH
216/524-1955

OKLAHOMA

AIRGAS MID-SOUTH

Tulsa, OK
918/582-0885

BILL'S WELDER REPAIR

Oklahoma City, OK
405/232-4799

MUNN SUPPLY

Enid, OK
580/234-4120

OKLAHOMA WELDERS SUPPLY

Madill, OK
580/795-5561

OREGON

ARC SYSTEMS SERVICES

Central Point, OR
541/665-2676

E C COMPANY

dba ELECTRICAL CONSTRUCTION CO.
Portland, OR
800/452-1511

INDUSTRIAL SOURCE

Eugene, OR
541/344-1438

WELDER SERVICE & REPAIR

Redmond, OR
541/548-8711

PENNSYLVANIA

ALLWELD EQUIPMENT REPAIR

Pittsburgh, PA
412/821-8460

BY DESIGN

Columbia, PA
717/681-9494

GEOVIC WELDING SUPPLY

Milton, PA
717/742-9377

J.A. CUNNINGHAM EQUIPMENT, INC.

Philadelphia, PA
215/426-6650

JOSEPH PINTO, JR. EQUIPMENT CO.

E. Lansdowne, PA
610/259-4100

POWER SOURCE REPAIR CO., INC.

Collingdale, PA
610/532-6460

VALLEY NATIONAL GASES

Pittsburgh, PA
412/281-1835

SOUTH CAROLINA

CAROLINA WELDER SERVICE

Lake City, SC
843/687-0413

TENNESSEE

INDUSTRIAL MACHINE REPAIRS

Rogersville, TN
423/272-8199

NATIONAL RENTAL & REPAIR

Knoxville, TN
423/584-6390

NEXAIR

Memphis, TN
901/523-6821

QUALITY WELD'G EQUIPMENT

Nashville, TN
615/726-5282

TRAMCO

Bristol, TN
423/968-4499

TEXAS

AIRGAS - SOUTHWEST, INC.

Austin, TX
512/835-0202

MK Warranty Repair Stations

as of 04/17/03

Please visit www.mkproducts.com for most up-to-date listings.

AIRGAS - SOUTHWEST, INC.
Houston, TX
713/462-8027

DENISON OXYGEN
Denison, TX
903/465-3369

FT. WORTH WELDERS SUPPLY, INC.
Fort Worth, TX
817/332-8696

GPC SERVICES, INC.
San Angelo, TX
915/655-4545

LEKTROTECH, INC.
Greenville, TX
903/454-7146

RITE-WELD SUPPLY, INC
Fort Worth, TX
817/626-8237

TexAir WELDING SUPPLY
Longview, TX
903/238-9353

WELDING MACHINE & TORCH REPAIR
San Antonio, TX
210/680-8390

UTAH

ARC SERVICES, LLC
West Valley City, UT
801/975-1121

C.W. SILVER INDUSTRIAL SERVICE
Salt Lake City, UT
801/531-8888

VERMONT

W.J. WELDING EQUIPMENT REPAIR, INC.
N. Clarendon, VT
802/775-7422

VIRGINIA

AIR PRODUCTS & CHEMICALS, INC.
Bristol, VA
540/669-3161

ARC WELDERS, INC.
Ashland, VA
804/798-1818

ARCET EQUIPMENT CO.
Hampton, VA
757/728-9353

N.W. MARTIN CO.
Springfield, VA
703/644-0120

NORFOLK WELDERS SUPPLY
Norfolk, VA
804/622-6571

WASHINGTON

AIRGAS - NORPAC, INC.
Tacoma, WA
253/473-2282

AIRGAS - NORPAC, INC.
Vancouver, WA
360/574-5311

A-L WELDING PRODUCTS
Tukwila, WA
425/228-2218

AMERICAN EQUIPMENT SERVICES
Kent, WA
253/395-9947

HARRIS ELECTRIC, INC.
Seattle, WA
206/782-6668

OXARC, INC.
Spokane, WA
509/535-7794

PACIFIC WELDING SUPPLIES
Tacoma, WA
253/572-5302

PRECISION WELDER & ENGINE REPAIR
Seattle, WA
206/382-6227

WEST VIRGINIA

CARDINAL SALES & SERVICE, INC.
Clarksburg, WV
304/622-7590

WILLARD C. STARCHER
Spencer, WV
304/927-2520

WISCONSIN

INTERSTATE WELDING SALES CORP.
Appleton, WI
920/734-7173

MOSINEE MACHINE & ELECTRIC
Mosinee, WI
715/693-0858

PRAXAIR DISTRIBUTION, INC.
Brookfield, WI
414/938-6365

VALLEY NATIONAL GASES
Milwaukee, WI
414/281-9540

MK Warranty Repair Stations

as of 04/17/03

Please visit www.mkproducts.com for most up-to-date listings.

WELDER REPAIR & SERVICE, INC.
Fredonia, WI
262/692-3068

CANADA

A&A WELDER SERVICES LTD.
Saskatoon, Saskatchewan
306/934-1601

ARC & GENERATOR REPAIR
Garson, Ontario
705/525-2141

B. HARRIS WELDING SVCS. LTD.
Dartmouth, Nova Scotia
902/468-6255

BARRY HAMEL EQUIPMENT LTD.
Coquitlam, B.C.
604/945-9313

D-TECH WELD SERVICES
Regina, Saskatchewan
306/586-9353

ELECTRO-MÉCANIK, INC.
Sainte-Foy, Quebec
418/683-1724

GPR INDUSTRIES 1994 LTD.
Grande Prairie, Alberta
780/532-5900

HYPERDYNAMICS TECHNOLOGIES LTD.
Pickering, Ontario
905/683-9938

INDUSTRIAL ELECTRONIC SERVICES
Calgary, Alberta
403/279-3432

LADEL LTD.
Quebec
819/376-6577

LeBLANC ELECTRO-TECH, INC.
Boucherville, Quebec
450/449-5244

M.R.T. REPAIR CENTER, INC.
Montreal, Quebec
514/648-0800

OZARK ELECTRICAL MARINE LTD.
St. Johns, Newfoundland
709/726-4554

PEEL ENGINES
Mississauga, Ontario
905/670-1535

PROMOTECH ÉLECTRIQUE, INC.
Fleurimont, Quebec
819/822-2111

WELDERS SUPPLY
Winnipeg, Manitoba
204/772-9476

WELDERTECH
Calgary, Alberta
403/279-3432

WELDTEC
B.C.
604/545-3886

CHINA

PHT Group Company
Beijing, China
86-10-6858 8395

			
WARNING	<ul style="list-style-type: none"> ● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground. 	<ul style="list-style-type: none"> ● Keep flammable materials away. 	<ul style="list-style-type: none"> ● Wear eye, ear and body protection.
Spanish AVISO DE PRECAUCION	<ul style="list-style-type: none"> ● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aislase del trabajo y de la tierra. 	<ul style="list-style-type: none"> ● Mantenga el material combustible fuera del área de trabajo. 	<ul style="list-style-type: none"> ● Protéjase los ojos, los oídos y el cuerpo.
French ATTENTION	<ul style="list-style-type: none"> ● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. ● Isolez-vous du travail et de la terre. 	<ul style="list-style-type: none"> ● Gardez à l'écart de tout matériel inflammable. 	<ul style="list-style-type: none"> ● Protégez vos yeux, vos oreilles et votre corps.
German WARNUNG	<ul style="list-style-type: none"> ● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden! 	<ul style="list-style-type: none"> ● Entfernen Sie brennbares Material! 	<ul style="list-style-type: none"> ● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese ATENÇÃO	<ul style="list-style-type: none"> ● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra. 	<ul style="list-style-type: none"> ● Mantenha inflamáveis bem guardados. 	<ul style="list-style-type: none"> ● Use proteção para a vista, ouvido e corpo.
Japanese 注意事項	<ul style="list-style-type: none"> ● 通電中の電気部品、又は溶材にヒブやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。 	<ul style="list-style-type: none"> ● 燃えやすいものの側での溶接作業は絶対にしてはなりません。 	<ul style="list-style-type: none"> ● 目、耳及び身体に保護具をして下さい。
Chinese 警告	<ul style="list-style-type: none"> ● 皮肤或湿衣物切勿接觸帶電部件及鋼條。 ● 使你自己與地面和工件絕緣。 	<ul style="list-style-type: none"> ● 把一切易燃物品移離工作場所。 	<ul style="list-style-type: none"> ● 佩戴眼、耳及身體勞動保護用具。
Korean 위험	<ul style="list-style-type: none"> ● 전도체나 용접봉을 젖은 환경 또는 피부로 절대 접촉치 마십시오. ● 모재와 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> ● 인화성 물질을 접근 사키지 마시오. 	<ul style="list-style-type: none"> ● 눈, 귀와 몸에 보호장구를 착용하십시오.
Arabic تحذير	<ul style="list-style-type: none"> ● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجهد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل. 	<ul style="list-style-type: none"> ● ضع المواد القابلة للاشتعال في مكان بعيد. 	<ul style="list-style-type: none"> ● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
<ul style="list-style-type: none"> ● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone. 	<ul style="list-style-type: none"> ● Turn power off before servicing. 	<ul style="list-style-type: none"> ● Do not operate with panel open or guards off. 	WARNING
<ul style="list-style-type: none"> ● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases. 	<ul style="list-style-type: none"> ● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio. 	<ul style="list-style-type: none"> ● No operar con panel abierto o guardas quitadas. 	Spanish AVISO DE PRECAUCION
<ul style="list-style-type: none"> ● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail. 	<ul style="list-style-type: none"> ● Débranchez le courant avant l'entretien. 	<ul style="list-style-type: none"> ● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés. 	French ATTENTION
<ul style="list-style-type: none"> ● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes! 	<ul style="list-style-type: none"> ● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!) 	<ul style="list-style-type: none"> ● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen! 	German WARNUNG
<ul style="list-style-type: none"> ● Mantenha seu rosto da fumaça. ● Use ventilação e exaustão para remover fumo da zona respiratória. 	<ul style="list-style-type: none"> ● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas. 	<ul style="list-style-type: none"> ● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas. 	Portuguese ATENÇÃO
<ul style="list-style-type: none"> ● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。 	<ul style="list-style-type: none"> ● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。 	<ul style="list-style-type: none"> ● パネルやカバーを取り外したまま機械操作をしないで下さい。 	Japanese 注意事項
<ul style="list-style-type: none"> ● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。 	<ul style="list-style-type: none"> ● 維修前切斷電源。 	<ul style="list-style-type: none"> ● 儀表板打開或沒有安全罩時不準作業。 	Chinese 警告
<ul style="list-style-type: none"> ● 얼굴로부터 용접가스를 멀리하십시오. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오. 	<ul style="list-style-type: none"> ● 보수전에 전원을 차단하십시오. 	<ul style="list-style-type: none"> ● 판넬이 열린 상태로 작동치 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها. 	<ul style="list-style-type: none"> ● قطع التيار الكهربائي قبل القيام بأية صيانة. 	<ul style="list-style-type: none"> ● لا تشغل هذا الجهاز اذا كانت الاغطية الحديدية الوالفة ليست عليه. 	Arabic تحذير

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀焊材料，並請遵守貴方的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

LIMITED WARRANTY

Effective March 1, 2001

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 nozzles, nozzle 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, Weldheads and Water Recirculators..... 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.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY, OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE, OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MK PRODUCTS, IS EXCLUDED AND DISCLAIMED BY MK PRODUCTS.

EXCEPT AS EXPRESSLY PROVIDED BY MK PRODUCTS IN WRITING, MK PRODUCTS ARE INTENDED FOR ULTIMATE PURCHASE BY COMMERCIAL/INDUSTRIAL USERS AND FOR OPERATION BY PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT AND NOT FOR CONSUMERS OR CONSUMER USE. MK PRODUCTS WARRANTIES DO NOT EXTEND TO, AND NO RE-SELLER IS AUTHORIZED TO EXTEND MK PRODUCTS' WARRANTIES TO ANY CONSUMER.



MK Products, Inc.
16882 Armstrong Ave.
Irvine, CA 92606
Tel (949)863-1234
Fax (949)474-1428

DATE : March 1, 2001



MK Products, Inc.
16882 Armstrong Ave.
Irvine, California 92606
<http://www.mkproducts.com>
Tel (949) 863-1234
Fax (949) 474-1428