

## OPERATOR'S MANUAL

# Cobramatic®

**K2259-1**

**For use with code 11480**

Safety Depends on You  
Lincoln arc welding equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation...and thoughtful operation on your part.  
DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT. And, most importantly, think before you act and be careful.



## OPERATOR'S MANUAL



Copyright © 2007 Lincoln Global Inc.

World's Leader in Welding and Cutting Products

Sales and Service through Subsidiaries and Distributors Worldwide

Cleveland, Ohio 44117-1199 U.S.A. TEL: 216.481.8100 FAX: 216.486.1751 WEB SITE: [www.lincolnelectric.com](http://www.lincolnelectric.com)

Download from [www.Somaterials.com](http://www.Somaterials.com). All Manuals Search And Download.



# Table of Contents

---

Safety Guidelines .....	i-vi
-------------------------	------

---

Installation .....	Section A
--------------------	-----------

---

Technical Specifications .....	1
Machine Grounding .....	1
Mounting Location .....	1
Input Power Connections .....	1
Wire Threading Procedure .....	1
Welding Gun Connections .....	3

---

Operations .....	Section B
------------------	-----------

---

General Description .....	3
Recommended Processes and Equipment .....	4
Controls and Settings .....	4
PosaStart® Operating Procedure .....	6
Remote Operation .....	7

---

Accessories .....	Section C
-------------------	-----------

---

Optional Kits .....	7
---------------------	---

---

Maintenance .....	Section D
-------------------	-----------

---

Routine Maintenance .....	7
Testing the Feeder .....	8
Testing the Gun .....	8

---

Troubleshooting .....	Section E
-----------------------	-----------

---

Troubleshooting Guide .....	9
-----------------------------	---

---

Diagrams/Parts List .....	Section F
---------------------------	-----------

---

Diagrams Table of Contents .....	11
Main P.C. Board Connections .....	13
Cabinet and Gun Hook-Up .....	14
Mechanical .....	15
Electrical .....	23

---

Safety Warnings
-----------------

---

Warranty
----------

---

# *Declaration of Conformity for European Community (CE) Products*

**Note**  This information is provided for units with CE certification (see rating label on unit).

*Manufacturer's Name:* **MK Products, Inc.**  
16882 Armstrong Ave.  
Irvine, CA 92606

*Declares that the product:* **Cobramatic®**  
*conforms to the following Directives and Standards:*

## Directives

Low Voltage Directive: 73/23/EEC

Electromagnetic Compatibility (EMC) Directive: 89/336/EEC

## Standards

Arc Welding Equipment Part I: Welding Power Sources: IEC 60974-1  
(September 1998 - Second Edition)

Arc Welding Equipment: Wirefeed Systems: IEC 974-5  
(September 1997 - Draft Revision)

Degrees of Protection Provided by Enclosures (IP Code): IEC 529:1989  
(November 1989 - First Edition)

Insulation Coordination For Equipment With Low-Voltage Systems:  
Part I: Principles, Requirements and Tests: IEC 664-1: 1992  
(October 1992 - First Edition)

Electromagnetic Compatibility, (EMC): EN 50199  
(August 1995)

Torches And Guns For Arc Welding, EN 50078

# SAFETY

## ⚠ WARNING

### ⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The Above For Diesel Engines

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Gasoline Engines

**ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.**

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

**BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.**



### FOR ENGINE powered equipment.

1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.



1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.



1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

1.d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.



1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.



1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



### ELECTRIC AND MAGNETIC FIELDS may be dangerous

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

Mar '95





## ELECTRIC SHOCK can kill.

- 3.a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:**
- Semiautomatic DC Constant Voltage (Wire) Welder.
  - DC Manual (Stick) Welder.
  - AC Welder with Reduced Voltage Control.
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".
- 3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
- 3.e. Ground the work or metal to be welded to a good electrical (earth) ground.
- 3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- 3.g. Never dip the electrode in water for cooling.
- 3.h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
- 3.j. Also see Items 6.c. and 8.



## ARC RAYS can burn.

- 4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

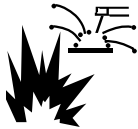


## FUMES AND GASES can be dangerous.

- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values (TLV) using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**
5. b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.
- 5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- 5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- 5.e. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.
- 5.f. Also see item 1.b.

AUG 06





### WELDING and CUTTING SPARKS can cause fire or explosion.

6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire.

Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

- 6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- 6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- 6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).
- 6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- 6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- 6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- 6.h. Also see item 1.c.
- 6.i. Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, Ma 02269-9101.
- 6.j. Do not use a welding power source for pipe thawing.



### CYLINDER may explode if damaged.

- 7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- 7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- 7.c. Cylinders should be located:
  - Away from areas where they may be struck or subjected to physical damage.
  - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- 7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- 7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- 7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- 7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.



### FOR ELECTRICALLY powered equipment.

- 8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- 8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- 8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

Jan, 07



## PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté spécifiques qui paraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

### Sûreté Pour Soudage A L'Arc

1. Protégez-vous contre la secousse électrique:
  - a. Les circuits à l'électrode et à la pièce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vêtements mouillés. Porter des gants secs et sans trous pour isoler les mains.
  - b. Faire très attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher métallique ou des grilles métalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
  - c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état de fonctionnement.
  - d. Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
  - e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
  - f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces précautions pour le porte-électrode s'appliquent aussi au pistolet de soudage.
2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas où on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.
3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:
  - a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
  - b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
  - c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.
4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.
5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans latéraux dans les zones où l'on pique le laitier.

6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.
7. Quand on ne soude pas, poser la pince à un endroit isolé de la masse. Un court-circuit accidentel peut provoquer un échauffement et un risque d'incendie.
8. S'assurer que la masse est connectée le plus près possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaînes de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'échauffement des chaînes et des câbles jusqu'à ce qu'ils se rompent.
9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particulièrement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumées toxiques.
10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgène (gas fortement toxique) ou autres produits irritants.
11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

## PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le châssis du poste conformément au code de l'électricité et aux recommandations du fabricant. Le dispositif de montage ou la pièce à souder doit être branché à une bonne mise à la terre.
2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.
3. Avant de faire des travaux à l'intérieur de poste, la débrancher à l'interrupteur à la boîte de fusibles.
4. Garder tous les couvercles et dispositifs de sûreté à leur place.

Mar. '93





## INSTRUCTIONS FOR ELECTRO-MAGNETIC COMPATIBILITY

### Conformance

Products displaying the C-Tick mark are in conformity with Australian/New Zealand requirements for Electromagnetic Compatibility (EMC) according to standard (emission) AS/NZS 3652 "Electromagnetic Compatibility – Arc Welding Equipment".

Products displaying the CE mark are in conformity with European Community Council Directive 89/336/EEC requirements for EMC by implementing EN50199 "Electromagnetic Compatibility (EMC) – Product standard for arc welding equipment".

#### Products are:

- For use with other Lincoln Electric/LiquidArc equipment.
- Designed for industrial and professional use.

### Introduction

All electrical equipment generates small amounts of electromagnetic emission. Electrical emission may be transmitted through power lines or radiated through space, similar to a radio transmitter. When emissions are received by other equipment, electrical interference may result. Electrical emissions may effect many kinds of electrical equipment: other nearby welding equipment, radio and TV transmitters and receivers, numerical controlled machines, telephone systems, computers, etc. Be aware that interference may result and extra precautions may be required when a welding power source is used in a domestic establishment.

### Installation and Use

The purchaser/user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the purchaser/user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing (grounding) the welding circuit (see note below). In other cases it could involve constructing an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

**Note:** The welding circuit may or may not be earthed for safety reasons according to national codes. Changing the earthing arrangements should only be authorized by a person who is competent to assess whether the changes increase the risk of injury, eg. by allowing parallel welding current return paths which may damage the earth circuits of other equipment.

### Assessment of Area

Before installing welding equipment the purchaser/user shall make an assessment of potential problems in the surrounding area.

The following shall be taken into account:

- Other supply cables, control cables, signalling and telephone cables above, below and adjacent to the welding equipment;
- Radio and television transmitters and receivers;
- Computer and other control equipment;
- Safety critical safety equipment, eg. guarding of industrial equipment;
- The health of people around, eg. the use of pacemakers and hearing aids;
- Equipment used for calibration or measurement;
- The immunity of other equipment in the environment. The purchaser/user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;
- The time of the day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

### Methods of Reducing Emissions

#### Mains Supply

Welding equipment should be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

#### Maintenance of the Welding Equipment

The welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustment covered in the manufacturer's instructions. In particular, the spark gaps of arc initiation and stabilizing devices should be adjusted and maintained according to the manufacturer's recommendations.

#### Welding Cables

The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

#### Equipotential Bonding

Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

#### Earthing of the workpiece

Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, eg. ship's hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of work pieces increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

#### Screening and Shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications.

Portions of the preceding text are extracted from:

- Australian/New Zealand standard AS/NZS 3652. Permission to reproduce has been granted by Standards Australia and Standards New Zealand. For further explanation, readers should be referred to the standard itself.
- British Standards Institution standard BS EN 50199:1995. Reproduced with permission of BSI under license number 2000SK0631. Complete standards can be obtained from BSI Customer Services, 389 Chiswick High Road, London W4 4AL. United Kingdom. (Tel +44 (0) 20 8996 9001).

Copyright of above text is property of Standards Australia, Standards New Zealand and British Standards Institution. Permission to reproduce the text must be obtained.

JAN '01

# Thank You

for selecting a **QUALITY** product by Lincoln Electric. We want you to take pride in operating this Lincoln Electric Company product ... as much pride as we have in bringing this product to you!

## CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to [www.lincolnelectric.com](http://www.lincolnelectric.com) for any updated information.

## **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.

Product \_\_\_\_\_

Model Number \_\_\_\_\_

Code Number or Date Code \_\_\_\_\_

Serial Number \_\_\_\_\_

Date Purchased \_\_\_\_\_

Where Purchased \_\_\_\_\_

Whenever you request replacement parts or information on this equipment, always supply the information you have recorded above. The code number is especially important when identifying the correct replacement parts.

## **On-Line Product Registration**

- Register your machine with Lincoln Electric either via fax or over the Internet.
  - For faxing: Complete the form on the back of the warranty statement included in the literature packet accompanying this machine and fax the form per the instructions printed on it.
  - For On-Line Registration: Go to our **WEB SITE at [www.lincolnelectric.com](http://www.lincolnelectric.com)**. Choose "Quick Links" and then "Product Registration". Please complete the form and submit your registration.

**Read this Operators 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. The level of seriousness to be applied to each is explained below:

### **WARNING**

This statement appears where the information **must** be followed **exactly** to avoid **serious personal injury or loss of life**.

### **CAUTION**

This statement appears where the information **must** be followed to avoid **minor personal injury or damage to this equipment**.

## Section A

## Installation

### Technical Specifications

**Wire Diameter Capacity** ..... .030" - .045" Solid and Hard wire  
..... .030" - 1/16" Aluminum

**Wire Capacity** ..... 12" Standard  
(Insulated or Non-Insulated)

**Power Input** ..... 42 VAC 50/60 Hz,  
..... 150 Watts Peak (3 amps)

**Weight** ..... 42 pounds

**Shipping Weight** ..... 47 pounds

### Support Equipment Required

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.

### Coolant Recommendations (for Water Cooled Guns)

Water Source and Hose Capable of Providing a Minimum of **1 qt/min. at 45 p.s.i.** when using water cooled guns.

MK Recommended Coolant Solution:

- 1 part ethylene glycol
- 3 parts distilled water
- 1 teaspoon liquid glycerin

Check coolant periodically to remain within limits of the following:

- A. Coolant Flow rate - 1 quart/minute at 45 p.s.i.**
- B. Resistivity - 10K ohms/centimeter**
- C. Ph Range - 5.5-8.5**
- D. Particle Size - .005"**

### Machine Grounding

The Cobramatic® and GMAW wire feeders are grounded 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.

### Mounting Location

The cabinet should be placed in a location where it can be protected from damage. Lead lengths and accessibility must also be considered when installing the cabinet.

### Input Power Connections

Your Wire Feeder comes factory ready with a harness to plug directly into all 14 pin Lincoln Power Sources equipped with 42 VAC auxiliary.

The **42 VAC** is connected to the PC Board on terminal strip **J5 #1** (neutral-white) and **#2** (hot-black) and Ground (green) to the Cabinet chassis. See diagram in the appendix.

### Wire Threading Procedure

#### Wire Spool Installation

Release latches, and open right side door of cabinet.

Remove spool retainer nut from spindle hub.

Raise wire retainer bar to latched position.

Install wire spool onto spindle hub so that wire feeds from bottom of spool towards slave motor. Make sure that the hole in the wire 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 nut.

Lower the wire retainer bar onto the spool.

### Wire Spool Drag Setting

**NOTE:**

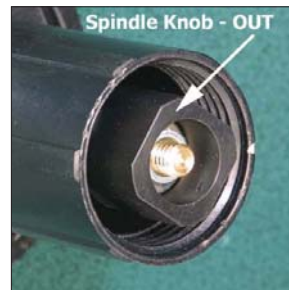
***Standard factory setting of the Spindle Tension Knob is set for All Other Wires.***

There are two visible position settings for this Knob, IN - All Other Wires (Fig. 1) and, OUT - .030"/.035" Al Only (Fig. 2). The Spindle Tension Knob must be set to match the Wire Size Selector Switch on the Cobramatic® front panel.

To change this setting, it is easier done without the spool of wire on the spindle. Remove the wire spool retainer nut and re-install it reversed back onto the Spindle Tension Knob (Fig. 3). In the "Tool Mode", the square shaped end of the retainer fits onto the Knob. Grab the retainer nut and turn in the COUNTER-CLOCKWISE direction until it stops. The Knob is now set to the OUT position (.030"/.035" AL Only).



IN - All other wires  
Figure 1



OUT - .030/.035 Aluminum ONLY  
Figure 2



Wire Spool Retainer In "Tool Mode";  
used to change spindle drag.  
Figure 3

To reset the Knob back to the factory setting of All Other Wires, use the retainer nut as described above, and turn in the CLOCKWISE direction until it stops. The Spindle Knob is now set to the IN position. Turning the retainer nut and Spindle Knob in this direction may require more effort, since turning CLOCKWISE is working against a spring.

Load wire spool onto spindle according to the previous instructions.

Replace the spool retainer nut.

Lower the wire retainer bar onto the spool.

### Wire Threading Procedure

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

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

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

Raise wire type lever on the slave motor assembly of gun to center position.

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

Flip wire type lever to display name of wire type being used.

When using a Cobra® Gold or Prince® XL gun tighten the gun 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 pres-

sure is added to the wire as it exits the tip.

### **Wire Retainer Bar**

The design of the patented Cobramatic® Wire Retainer Bar performs two very important and very basic functions of the wire feeder: a) spool drag tension, and b) wire maintenance on the spool.

The spool drag tension is set by lowering the wire retainer bar onto the surface of the wire inside of the spool. The spring tension of the wire retainer bar applies enough pressure on the spool so that when the gun trigger is released, engaging the brake pall, the spool does not overrun kicking wire off the spool.

Wire maintenance on the spool is performed by the applied pressure of the wire retainer bar spread across the coiled wire on the spool. The replaceable pad (P/N 437-0255) of the wire retainer bar is designed to hold the wire on the spool, maintaining the smooth layering of the wire and keeping it from jumping off, and possibly, electrically shorting to the cabinet chassis.

## **Welding Gun Connections**

### **Control Cable**

The 7-Pin "W" Clocked connector screws onto the mating receptacle on the front panel of the wire feeder. This provides all electrical signals (motor voltage, potentiometer control & trigger) to and from the feeder to the gun.

### **Water Inlet (For Water Cooled Guns)**

Front panel access to connect the water hose to the middle fitting on the power block.

### **Wire Conduit Inlet**

Front panel access to attach conduit to front of slave motor assembly.

### **Power Cable Inlet**

Front panel access to attach power cable (air or water) to top of power block.

Guns with ring lugs, **MUST** connect to top bolt of power block.

### **Gas Inlet**

Front panel access to attach gas hose to bottom fitting of power block.

### **Work Cable (Ground)**

Connect a work lead of sufficient size and length between the proper output stud on the power source and the work. Be sure the connection to the work makes tight metal to metal electrical contact. Improper work lead connections can result in poor arc initiation and unsatisfactory weld results.

Consult welding power supply manufacturer for proper work lead sizing.

## **Section B**

## **Operation**

### **General**

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 gun motor wants, and when the gun motor gets all the wire it wants, the slave motor automatically slows, preventing a bird's nest. Because of the low torque produced by the slave motor, a combination drag and electric brake system is used to prevent wire overrun rather than relying on spindle tension alone. The spool drag tension is produced by the patented Wire Retainer Bar mechanism to keep the wire slightly taut. The 24 VDC gun "pull" motor is controlled by a solid state speed control in the cabinet and through a potentiometer located in the gun.

The normal operating sequence of the wire feeder can be viewed on the board itself via sequence LED's. When the system is triggered, the green Trigger LED (L3) and the yellow Gas Solenoid LED (L1) illuminate simultaneously. The red Contactor/Wire Feed LED (L2) illuminates after the prepurge time. The blue Arc On LED (L4) illuminates as the arc is established. When the trigger is released the normal LED operating sequence is blue, green and red (L4, L3, & L2) turn off simultaneously followed by the yellow (L1) after the postpurge time has elapsed (Figure 4).

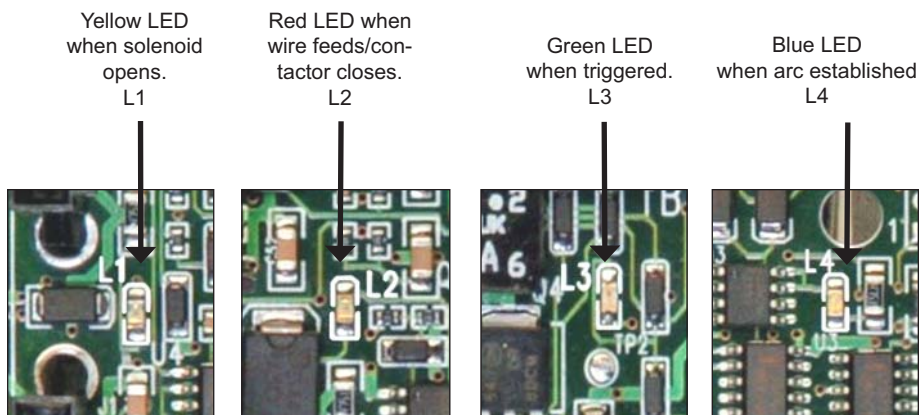


Figure 4 - L1, L2, L3 & L4

FOR REFERENCE, SEE MAIN P.C. BOARD CONNECTIONS PICTURE IN SECTION F

## Recommended Processes and Equipment

The Cobramatic® is recommended for use in the GMAW and FCAW welding applications. It is recommended for use with constant voltage power sources. The Cobramatic® is capable of feeding wires (diameter capacity) ranging from .030" through .045" solid/cored and .030" through 1/16" aluminum.

## Controls and Settings

### 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.***

---

### PosaStart Switch & Run Speed Setting

The Posa Start Run-in Speed Control, located on the front panel, provides wire speed adjustment for slow wire run-in. This setting tracks as a percentage of the welding wire speed setting. Once the arc has been established, the wire feed speed automatically changes from the slow run-in speed to the welding wire speed set on the gun potentiometer.

PosaStart operation and configuration is explained later in this section.

### Trigger Normal/Trigger Latched

This switch configures the electronic Trigger Latching mechanism. In the Trigger Normal mode, pull and hold the trigger to start welding functions - release to stop welding functions. In the Trigger Latched mode, pull and

release trigger to start welding functions - pull trigger again and release to stop welding functions.

The Prepurge/Postpurge functions are pre-configured to provide a preset amount of pre & postpurge gas time; **0.25** and **2.0** second respectively. The default factory position of this jumper is horizontal (top right) across pins.

Changing the position of the JP3 jumper changes the configuration of the pre & postpurge sequences. Refer to Figure 5 for the desired pre and postpurge sequence. Once the desired sequence is selected, relocate on JP3 jumper from its horizontal default pattern (top right) to its new vertical sequence position.

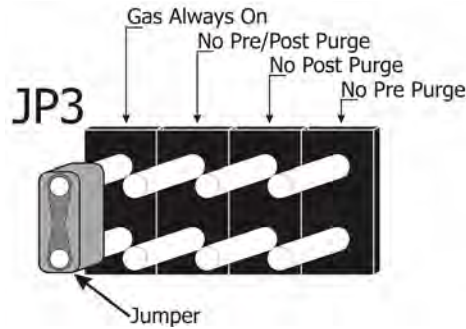
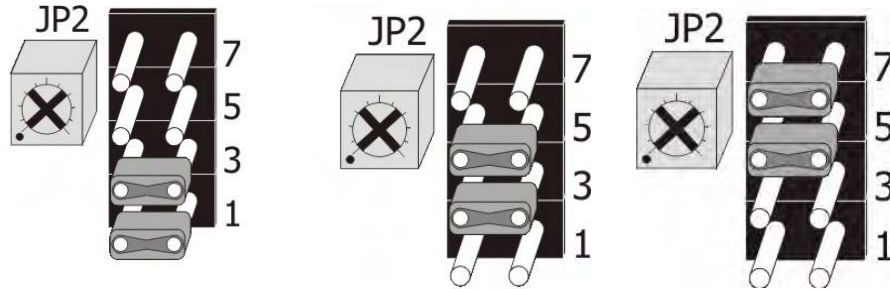


Figure 5

### Pre-Purge Settings & Adjustments (JP2)

The Pre-Purge Jumper/Pot Configuration at JP2 has 3 available settings: 0.25 sec. fixed, variable from 0-1 sec. or variable from 0-5 seconds.

By default, the twin two-pin jumpers, across rows 1 & 3, are configured for 0.25 sec. Just to the left of the jumpers is a 3/4-turn potentiometer (pot) which is used with both variable settings. For the 0-1 sec. range, move the jumpers across rows 3 & 5. For the 0-5 second range, move the jumpers across rows 5 & 7 (Figure 6a).



Rows 1 & 3: 0.25 sec. fixed    Rows 3 & 5: 0-1 sec.    Rows 5 & 7: 0-5 sec.  
Figure 6a

Timing adjustment for the variable settings are as follows: Move the jumpers to either variable setting location. Turn potentiometer screw (Small flat or cross-head) half way. Pull gun trigger and count time between red contactor wire feed LED (L2) and yellow Gas Solenoid LED (L1). Adjust pot screw as necessary.

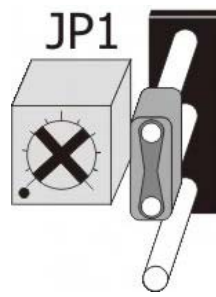
### Post-Purge Settings & Adjustments (JP1)

The Post-Purge Jumper/Pot Configuration at JP1 has 2 available settings: 2 sec. fixed and variable from 0-5 seconds.

By default, the two-pin jumper across the top-and-middle pins, is configured for 2 sec. Just to the left of the jumper is a 3/4-turn pot which is used with the variable setting. For the 0-5 second range, move the jumper from the top-and-middle to the middle-and-bottom pins (Figure 6b).



Middle/Bottom: 0-5 sec.



Top/Middle: 2 sec fixed

Figure 6b

Timing adjustment for the variable settings are as follows: Move the jumpers to variable setting location. Turn potentiometer screw (Small flat or cross-head) half way. Upon release of gun trigger, count time between yellow Gas Solenoid LED (L1) and green Trigger LED (L3). Adjust as necessary.

## Posa Start Operating Procedure

### CAUTION:

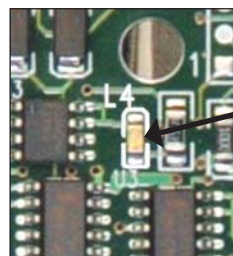
***Do not operate this wire feeder on a power source having a high-frequency (HF) starting circuit until the high frequency feature has been turned off or disabled. Failure to disable the HF will result in damage to the PosaStart circuitry of the main board.***

### General

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 gun potentiometer.

The Posa Start feature allows the Cobramatic® feeder and gun to be used in conjunction 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.

Once the PosaStart circuit has transferred from slow run-in to weld speed, the blue LED (L4) illuminates (Figure 7).



Blue LED  
when PosaStart engages.  
L4

Figure 7

## CV/CC Posa Start Operations

### NOTE:

***CV Posa Start does not need welding voltage sensing lead.***

The default factory setting is CV mode. Attach Cobramatic® cabinet to CV power source according to the installation instructions.

Turn the Cobramatic® cabinet 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.

Turn the Posa Start switch to the "ON" position. Depress gun trigger and,



using Run-in Speed Control, adjust wire feed rate to approximately 50% of welding wire speed set at gun.

Initiate an arc, and adjust wire feed speed at gun until correct condition is achieved. At the moment when welding wire speed transition occurs, L4 will illuminate.

---

**POSA START WIRE SPEED 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.***

---

### **Remote Operation: Input/Output**

The terminal strip TB1 (reference Appendix pages) allows for external input signals for remote operation of the feeder as well as output signals for voltage and wire speed measurements, for a wide variety of automatic and semi-automatic applications. By making connections across specific points of TB1, such functions as the trigger and motor speed control can be controlled using an external source, such as a controller interface or a PLC (programmable logic controller).

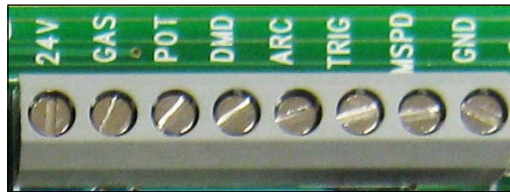


Figure 8

### **Section C**

#### **Accessories**

None available.

### **Section D**

#### **Maintenance**

##### **Routine Maintenance**

Your Cobramatic® 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.

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

Maintenance of the gun 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.

## Testing the Feeder

### Testing the Input Power Circuits

The AC circuits are protected by pico-fuses F1 and F2 (see page 13 for location). If these continually fail, especially when powering up the cabinet, remove the connectors for the components that draw on this power, J6 (Brake Solenoid), J7 (Slave Motor) and J5-3 & 4 (AC Contactor - if used) from the P.C. Board. Replace fuses and retrigger system. If fuses does not fail, isolate the problem by plugging in J4, J7, and J5-3,4 one at a time until the fuses fail.

### Testing the Speed Control

**NOTE:**

**The gun should be tested prior to testing circuitry on the main board. Gun amphenol must be connected to the Cobramatic® to perform the following tests.**

To test the motor voltage circuit and measure how much voltage is being delivered to the gun motor, place a voltmeter across diode test points **TP1 & TP2** and pull gun trigger. A reading between **0 VDC & 28 VDC+/-** should be observed, as the gun potentiometer is varied (Figure 9).

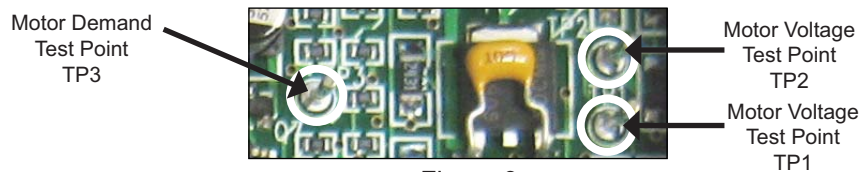


Figure 9

## Testing the Gun

### Motor Check

Remove the amphenol connector from the cabinet.

Using the gun 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 exists, check the motor leads and motor independently.

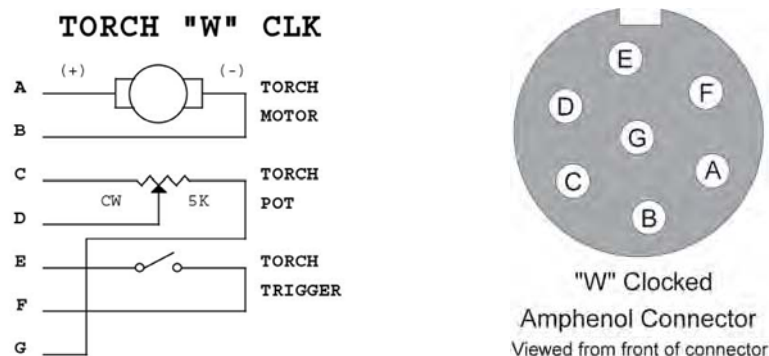
### Testing the Potentiometer - "W" Clocked

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

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

### Testing the Micro Switch

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



## Section E Troubleshooting

Troubleshooting		
Symptom	Cause	Remedy
No wire feed at gun, feeder not operating, i.e., no slave motor or brake solenoid.	F1 & F2 fuse(s) in feeder failed.	Check AC circuit. Replace fuse(s).
	F3 (4 amp) fuse in feeder failed.	Check motor leads for shorts then replace fuse.
	Micro-switch defective/not being activated. Broken electrical cable.	Replace switch. Check switch for operation. Check micro switch wires for continuity.
	Loose J2, J3, P.C. board connector.	Check J2, J3 connectors.
Brake solenoid inoperative.	Solenoid defective.	Replace solenoid.
	Loose connector at J6.	Check J6 connector.
No wire feed at gun, feeder operating properly.	Bad potentiometer.	Check potentiometer with meter.
	Bad gun 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 power supply connections.	Check all power connections.
	Contacting control cable loose or in wrong position.	Check power supply owner's manual for location and type of contactor signal required, i.e. closing contacts or AC.
	Welding power source not working correctly.	Check power supply for proper operation.
Wire feeds erratically.	Dirty or worn conduit.	Blow out or replace conduit.
	Incorrect pressure on drive rolls.	Adjust pressure at gun (Gold or Prince)
	Idler roll stuck in gun.	Check for lock washer under idler roll, or replace if damaged or worn.
	Wrong size contact tip.	See contact tip table.
Wire feeds one speed only.	Bad potentiometer.	Check with meter.
	Broken electrical cable in lead assy.	Check potentiometer wires for continuity or shorts.
	Bad speed control.	Check/Replace P.C. boards.
Wire walks out of drive rolls.	Idler roll upside-down.	Place groove in idler roll toward the top.
	Rear wire guide missing.	Replace wire guide.
Trigger inoperable or not operating correctly.	Trigger mode configuration.	Check front panel Trigger Normal/Latched toggle switch.
Purge not operating correctly.	Jumper incorrectly configured. Gas solenoid malfunctioning.	Check jumper location per Jumper Table in Appendix. Check cable connections to gas solenoid. Check valve in gun.
No PosaStart Wire Speed Transition	Welding power cable and/or gun power cable connected to wrong bolt on power block.	Welding power cable to bottom bolt. Gun power cable to top bolt.
	Welding current not being sensed.	Check current sensor in power block.
Remote Functions Not Working	Wires not connected at TB1	Reseat all wire connections at TB1.

***THIS PAGE INTENTIONALLY BLANK***

## Section F

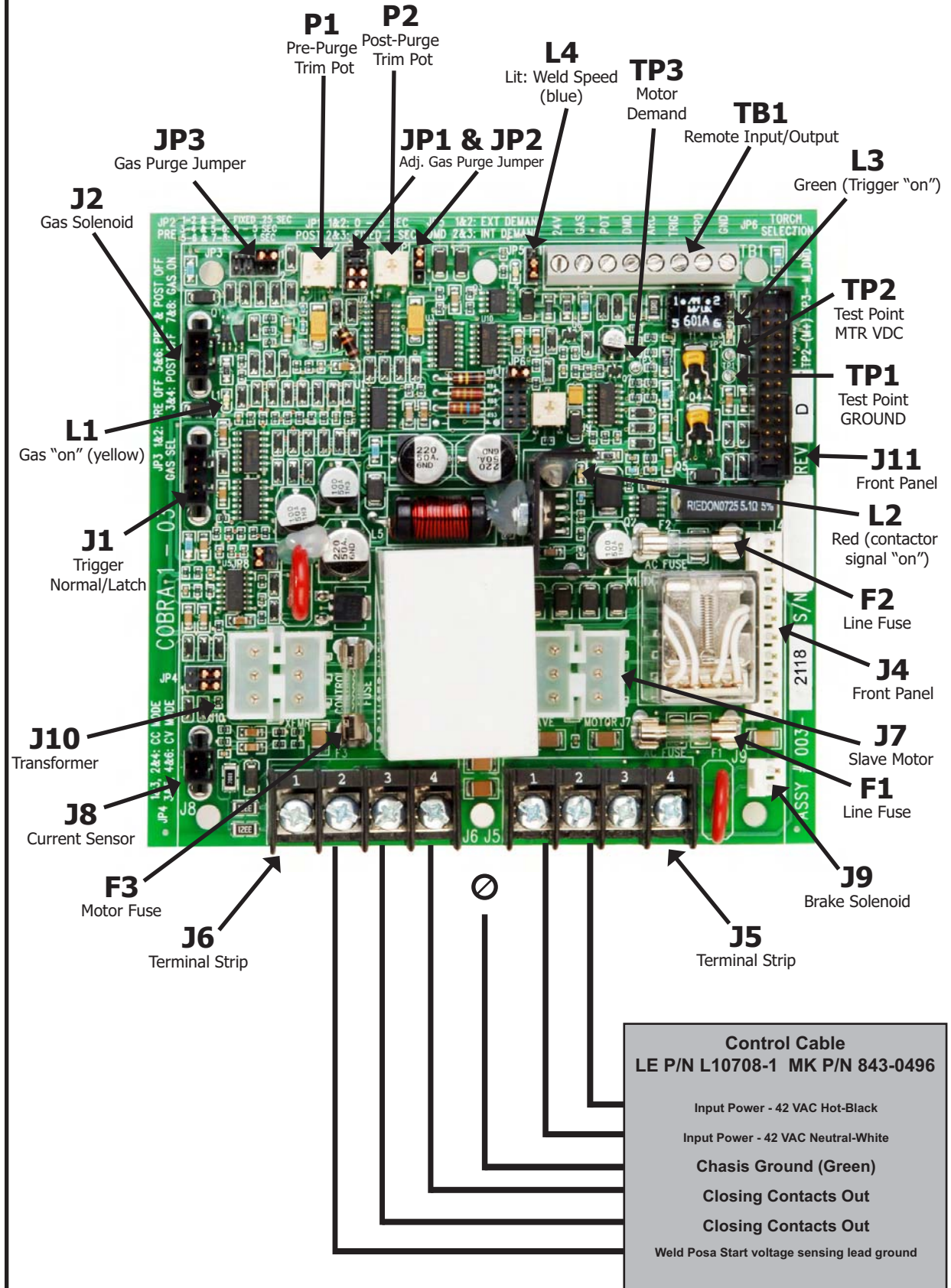
## Appendices

### Diagrams/Parts List

Main P.C. Board Connections.....	13
Cabinet and Gun Connections .....	14
001-4022 Cobramatic® Assembly .....	15
003-2237 Cobramatic® Front Panel Assembly .....	17
003-2068 Cobramatic® Slave Motor Assembly.....	18
003-2063 Cobramatic® Power Block Assembly.....	19
003-2146 Cobramatic® Spindle Assembly .....	20
003-2137 Gas Solenoid Assembly .....	21
843-0496 LE Cobramatic® Control Cable .....	22
071-0402 LE Cobramatic® Block Diagram.....	23
071-0400 Cobramatic® Main P.C. Board .....	24
071-0367 Cobramatic® Gun Connections.....	26
Input/Output Configuration for TB1.....	27

***THIS PAGE INTENTIONALLY BLANK***

# Main P.C. Board Connections

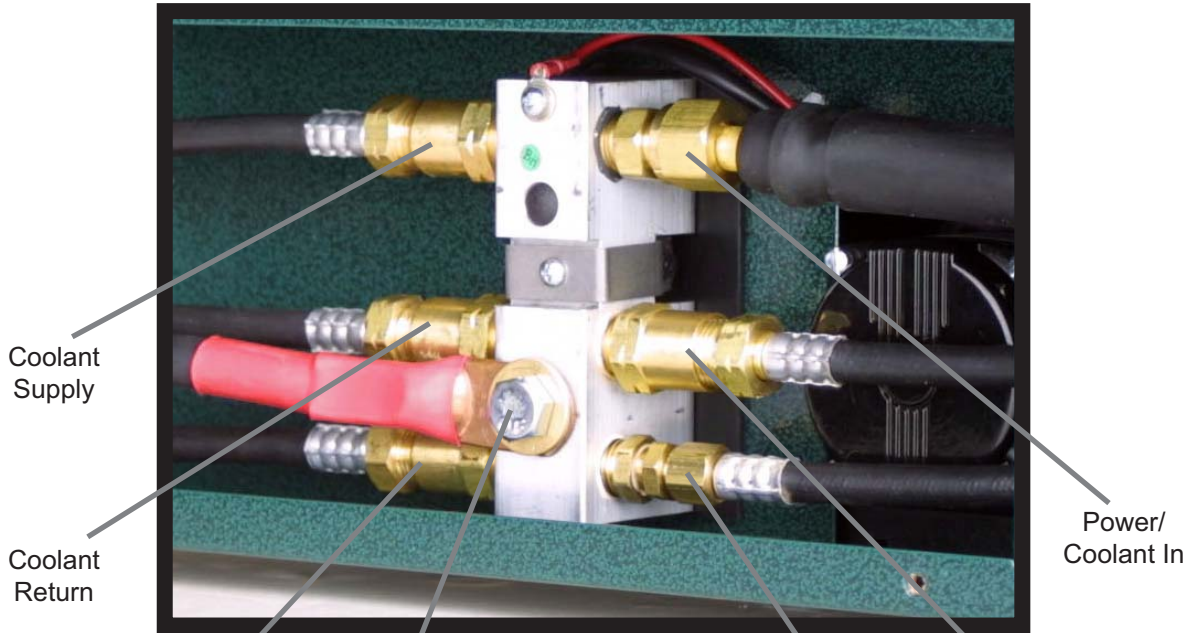


# Cabinet and Gun Connections

Input Connections

Water Cooled

Gun Connections



Coolant Supply

Coolant Return

Shielding Gas

Welding Power

Gas

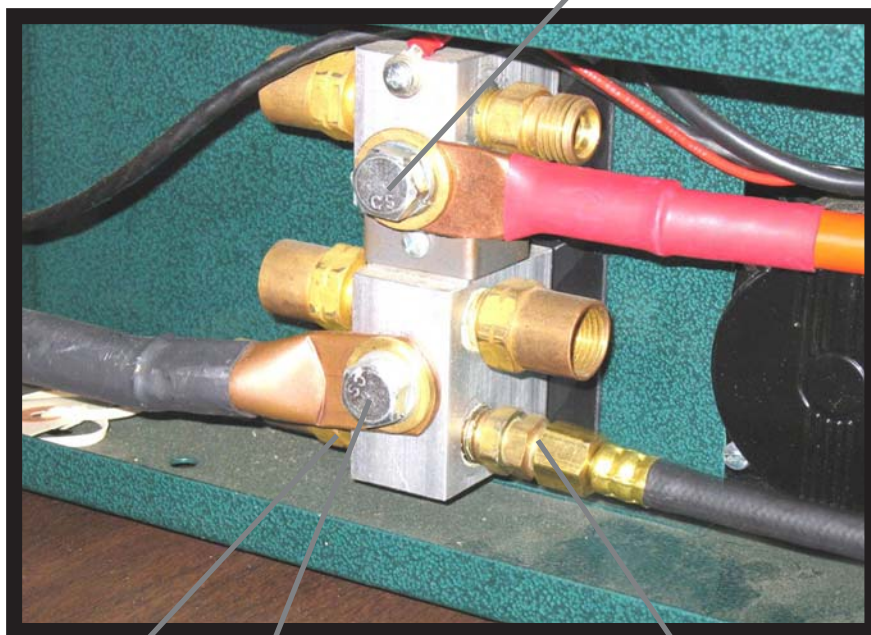
Coolant Return

Power/Coolant In

Input

Air Cooled

Gun



Shielding Gas

Welding Power

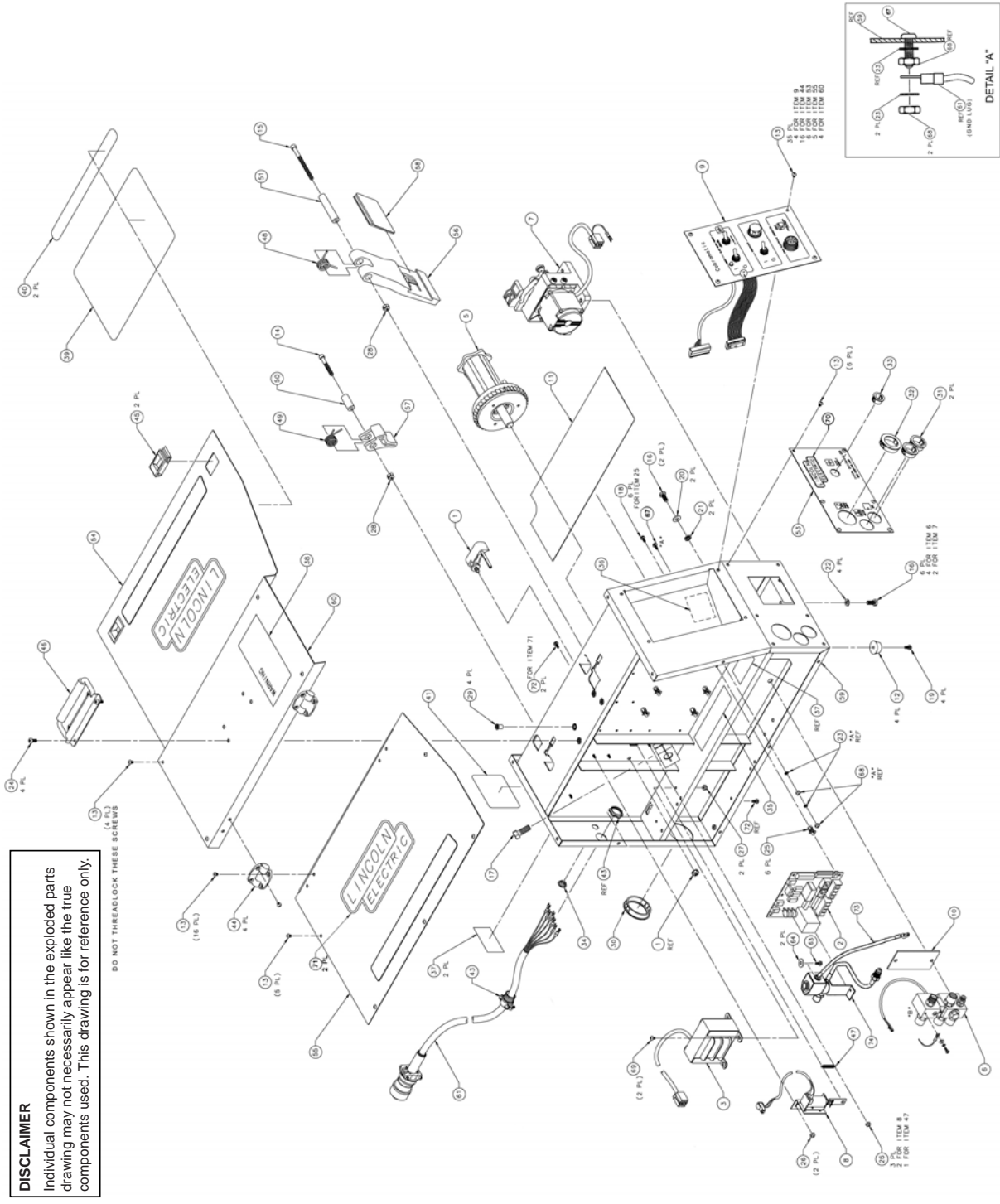
Gas

Power Cable



**Cobramatic 42 V Assembly**  
001-4022

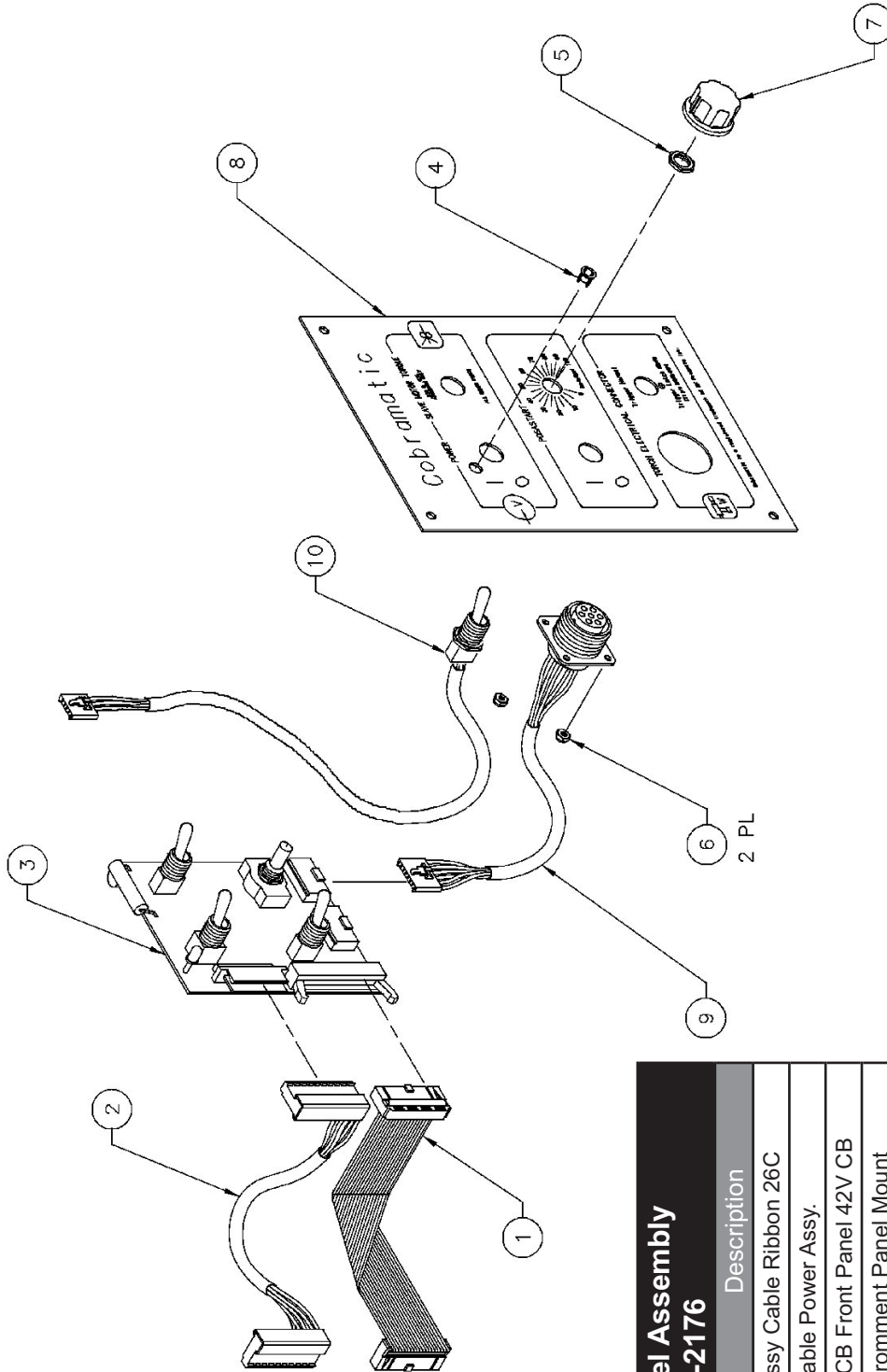
No.	Qty.	Part No.	Description
1	1	003-0784	Assy Pawl Cobramatic
2	1	003-2118	Assy PCB Main 42V
3	1	003-1723	Assy Ximr 42V
4	-	-	-
5	1	003-2146	Assy Spindle Cobramatic
6	1	003-2063	Assy Power Block
7	1	003-2068	Assy Slave Motor 42V LE
8	1	003-2095	Assy Sol Bk 42V Top
9	1	003-2237	Assy Pnl Ft CB 42V LE
10	1	261-0635	Insulator Power Block
11	1	261-0634	Insulator Spool
12	4	301-0107	Foot Rbt W/Wshr #8 ID
13	35	336-0230	Scr Pan Pnl 8-32 x 1/4 Bk
14	1	328-0063	Scr Sch 1/4-20 x 1-3/4 Bk
15	1	328-0258	Scr Sch 1/4-20 x 3 1/2 Sll
16	6	328-0202	Screw Hex 1/4-20 x .58
17	1	328-0208	Scr Hex 3/8-16 x 1.0
18	6	328-1007	Scr Hex Wshr Slt 6-32 x 3/8 st
19	4	328-1019	Scr Hex Wshr Slt 8-32 x 3/8 st
20	2	331-0049	Wshr Flt .261 ID x .625OD st
21	2	431-1650	Wshr Slidr .265ID x .365OD x .500D
22	4	333-0009	Wshr Spr Lk 1/4
23	2	333-0023	Wshr Lk Ex Star #6
24	4	336-0228	Scr Pnl Ph 10-32 x 1/2 Sll Bk
25	6	342-0410	Spacer Stacking 6-32 x 0.53
26	3	345-0008	Nut Hex Lock 6-32
27	2	345-0009	Nut Hex Lock 1/4-20 Sll
28	2	345-0015	Nut Hex Lock 1/4-20 Sll
29	4	351-0089	Insert Thread 10-32
30	1	351-0100	Bush Slidg 1.96ID 2 Hole
31	2	351-0745	Bush Slidg 1.96ID 1/8 Hole
32	1	351-0752	Bush Slidg 1.96ID 3/4 Hole
33	1	351-0758	Bush Slidg 1.96ID 3/4 Hole
34	1	351-0930	Spring Blt 1/2 Hole Bk
35	1	405-0003	Wgr Blt 1/2 Hole Bk
36	1	405-0886	Decal Warning T13297
37	2	405-0887	Decal Warning T13470
38	1	405-0888	Decal Warning T16196
39	1	405-0943	Decal Instructions Door Spool
40	2	405-0944	Decal Door Caution
41	1	405-0946	Decal ID Plate 42V LE
42	6	411-0020	Tie Wrap
43	1	411-0157	Clamp Cable Strain Relief
44	4	415-0075	Latch Cobramatic
45	2	415-0079	Latch Slide
46	1	415-0243	Handle Carry Black
47	1	419-0080	Spring Ex .219OC x .94LG
48	1	419-0089	Torsion Spring Restrainer CB
49	1	419-0090	Torsion Spring Catch
50	1	431-1603	Mandrel Catch Cobramatic
51	1	431-1609	Mandrel Restrainer Wire Cobramatic
52	-	-	-
53	1	436-0154	SS Pwr Pnl Cobramatic LE
54	1	436-0065	Paint Door Spl Cobramatic LE
55	1	436-0066	Paint Door Pwr Cobramatic LE
56	1	437-0242	Restrainer Wire Mold Cobramatic
57	1	437-0243	Catch Mold Restrainer CB
58	1	437-0255	Pad Restrainer Wire
59	1	438-0067	Paint Strap CB LE
60	1	438-0068	Paint Top CB LE
61	1	843-0496	Cable Control 42V CB LE
62	AIR	823-0043	Thread Locking Cmpd Med Str
63	2	336-0029	Scr 8-32 3/8
64	2	333-0006	Washer #8
65	AIR	823-0050	Thread Locking Cmpd Low Str
66	REF	031-0067	Test Procedure
67	1	336-0008	Scr Pan Pnl 6-32 x 1/2
68	2	341-0005	Nut Hex 6-32
69	2	336-0030	Scr Pan Pnl 8-32 x 1/2 Sll
70	1	405-0947	Decal Door Pnl LE
71	2	405-0948	Decal Power LE
72	1	327-0121	Scr #10-32 x 3/8
73	1	003-2137	Assy Gas Solenoid
74	1	435-1464	Bracket Gas Solenoid



**THIS PAGE INTENTIONALLY BLANK**

Cobramatic® Owner's Manual

# 003-2237 Front Panel Assembly

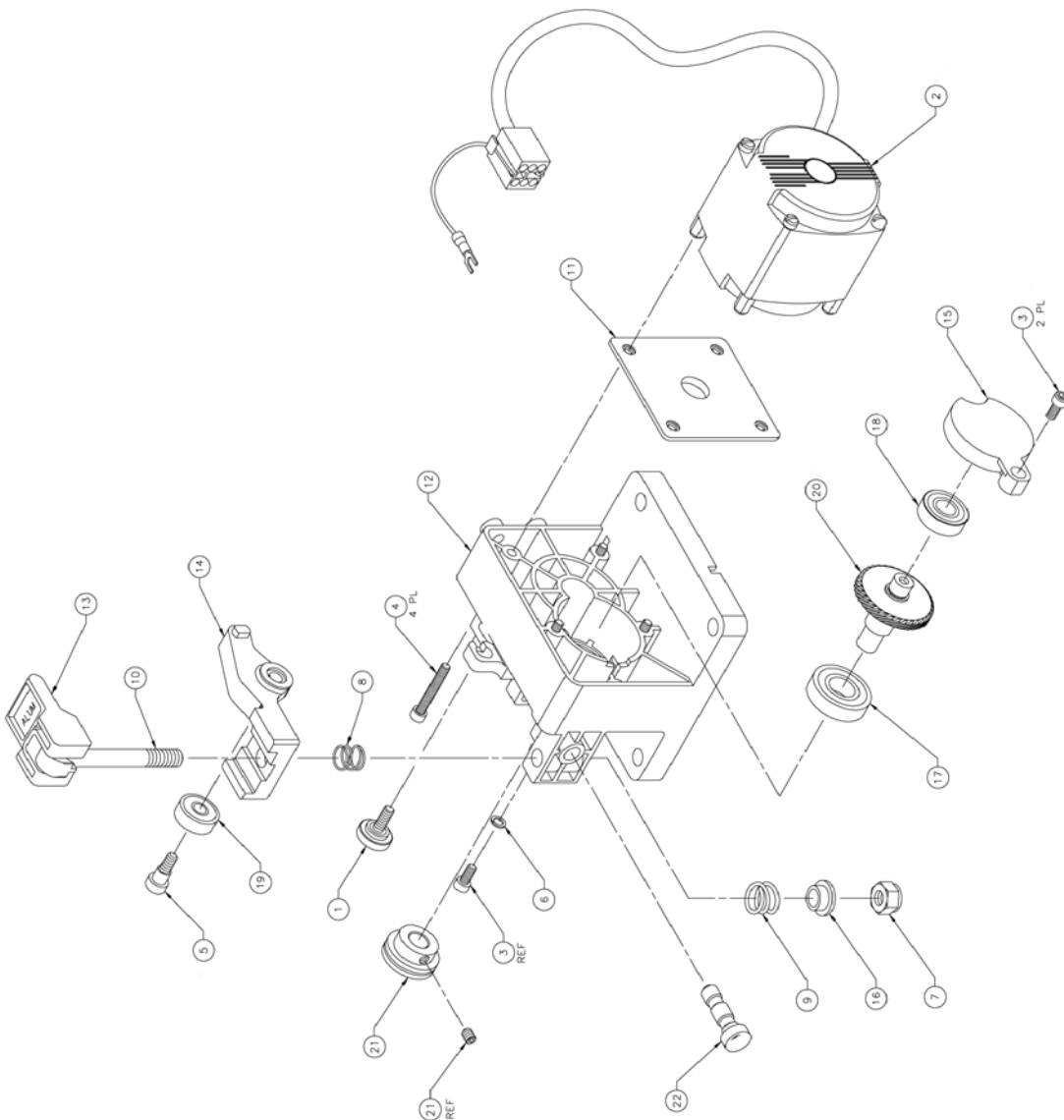


**DISCLAIMER**  
 Individual components shown in the exploded parts drawing may not necessarily appear like the true components used. This drawing is for reference only.

Front Panel Assembly 003-2176		
No.	Qty.	Part No. Description
1	1	003-1332 Assy Cable Ribbon 26C
2	1	003-1631 Cable Power Assy.
3	1	003-2001 PCB Front Panel 42V CB
4	1	301-0023 Grommet Panel Mount
5	1	341-0050 Nut 3/8-32 St.
6	2	345-0004 Nut Hex Lock 4-40
7	1	401-0012 Knob 1.0 Blk
8	1	436-0153 Silkscreen Pnl Fr Lincoln CB
9	1	003-1642 Assy con 7P"W"CB
10	1	003-2138 Assy Swx Trigger Latch

# 003-2068 Slave Motor Assembly

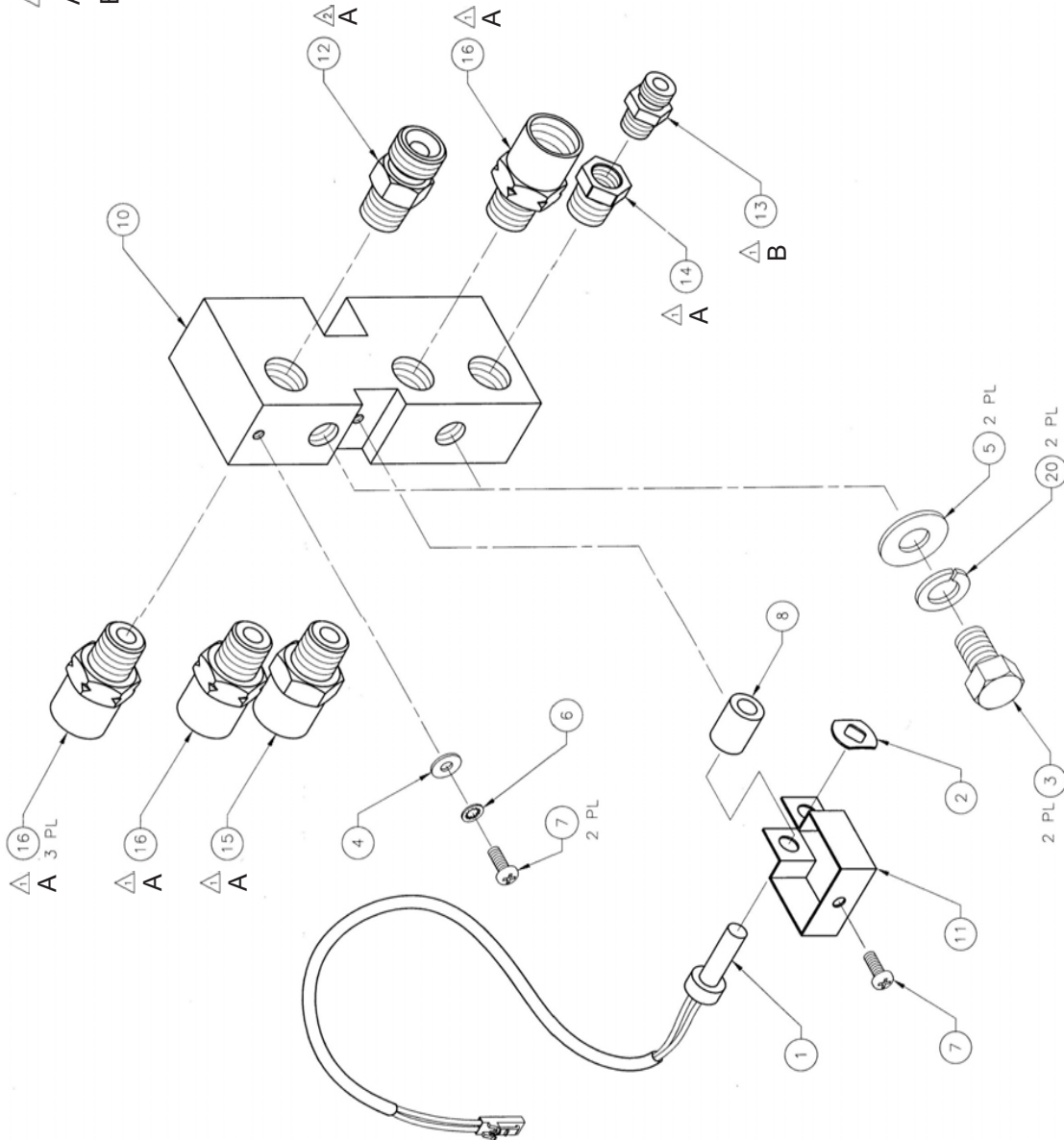
Slave Motor Assembly 003-2068			
No.	Qty.	Part No.	Description
1	1	003-0176	Assy Knob Conduit
2	1	003-2113	Assy Torque Mtor 42V
3	1	328-0024	Scr Shc B-32 x 3/B Stl
4	4	328-0259	Scr Shc B-32 x 1-1/B Stl
5	1	330-0258	Scr Shldr 1/4 x 1/4 x 10-24
6	1	333-0006	Washer Spring Lock #8
7	1	345-0018	Nut lock 5-16-18
8	1	419-0085	Spring Comp 1/32 x DD .40
9	1	419-0211	Spring Comp OD 5/8 x 1/16
10	1	431-1576	Bolt Swing Mod
11	1	435-1582	Plate Locater Slave Motor
12	1	437-0231	Housing slave Motor Mold
13	1	437-0231	Handle Mold Slave Motor
14	1	437-0232	Arm Idler Mold Slave Motor
15	1	437-0245	Cap Bearing Mold
16	1	437-0254	Sleeve Spring
17	1	501-0118	Bearing 1.125 x .50 x .31
18	1	501-0156	Bearing .875 x .38 x .28
19	1	501-0207	Bearing Idler roll
20	1	507-0130	Shaft Gear
21	1	511-0206	Drive Roll
22	1	753-0062	Guide Wire Inlet Nylon
23	A/R	823-0043	Loctite Threadlocking
24	A/R	835-0001	Grease Mobilux 2
25	A/R	823-0051	Loctite Retaining Compound
26	A/R	031-0167	Test Procedure



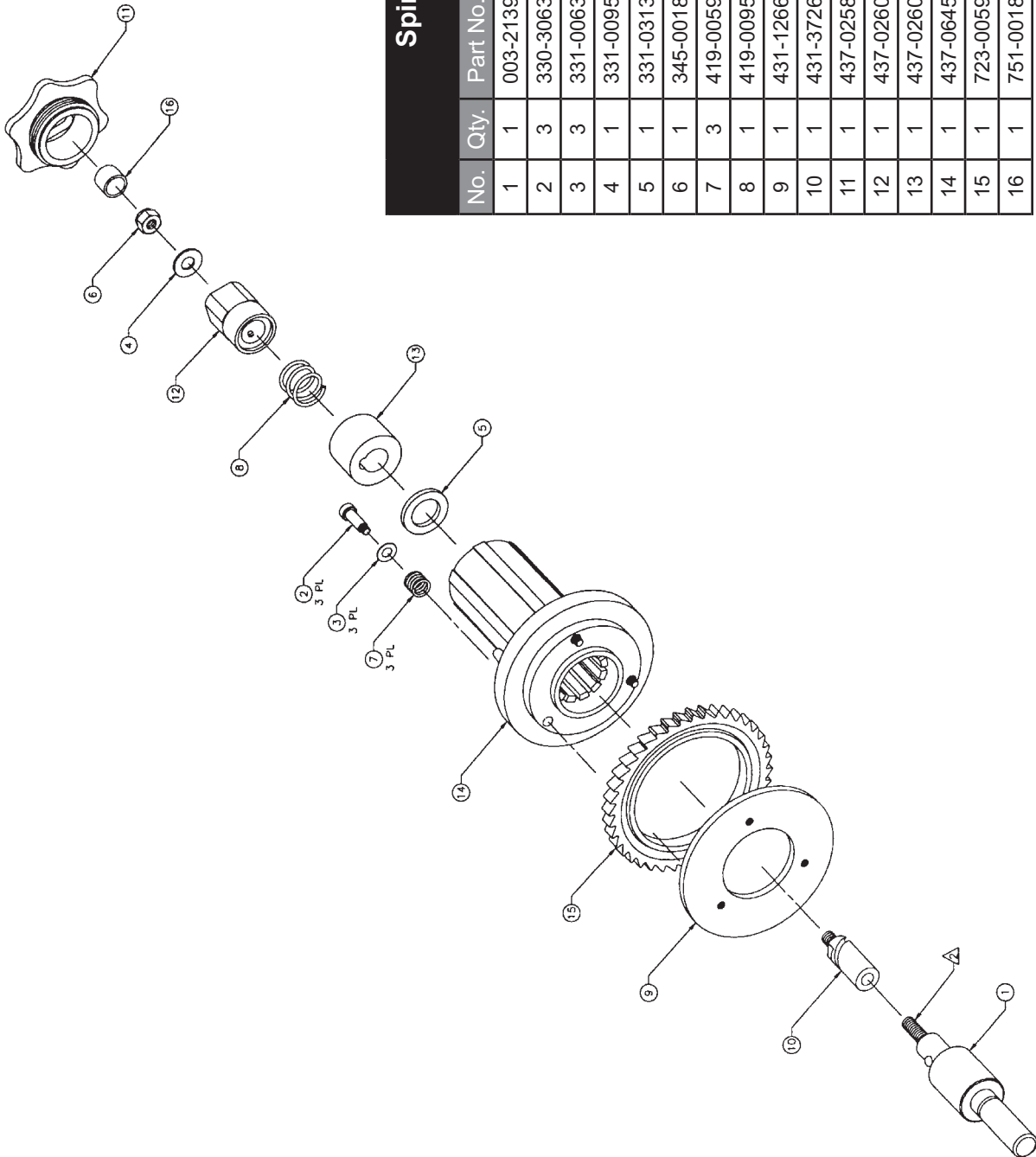
# 003-2063 Power Block Assembly

- △ Apply pipe thread sealant
- △ Apply anti-corrosive compound
- A Torque: 140 in-lb to 150 in-lb
- B Torque: 92 in-lb to 108 in-lb

Power Block Assembly 003-2063		
No. Qty.	Part No.	Description
1	003-1243	Assy Sensor Posa-Start
2	313-0021	Stud Receiver Push-on
3	329-0054	Scr Hex 3/8-16 x 5/8
4	331-0002	Washer Flat #6 Stl
5	331-0777	Washer Flat 0.391 ID x 0.875 OD
6	333-0252	Wshr Lk Star-in #6 St.
7	336-0005	Scr Pn Ph 6-32 x .375
8	342-0395	Spacer Current Sensor
9	-	-
10	431-1612	Block Power CB
11	435-3038	Bracket Current Sensor
12	753-0112	Fig 1/4npt Male to 5/8-18 Male
13	753-0114	Adptr 1/8npt x 1/8nps
14	753-0115	Bush 1/4npt Male to 1/8npt Fem
15	753-0466	Adptr 1/4npt Male to 5/8-18 Fem
16	753-0475	Adptr 1/4npt M to 5/8-18 Fem LH
17	823-0029	Anti-corrosion Compound
18	823-0043	Removable Threadlock Compound
19	823-0044	Pipe Thread Sealant
20	333-0011	Washer Spring Lock 3/8



# 003-2146 Spindle Assembly

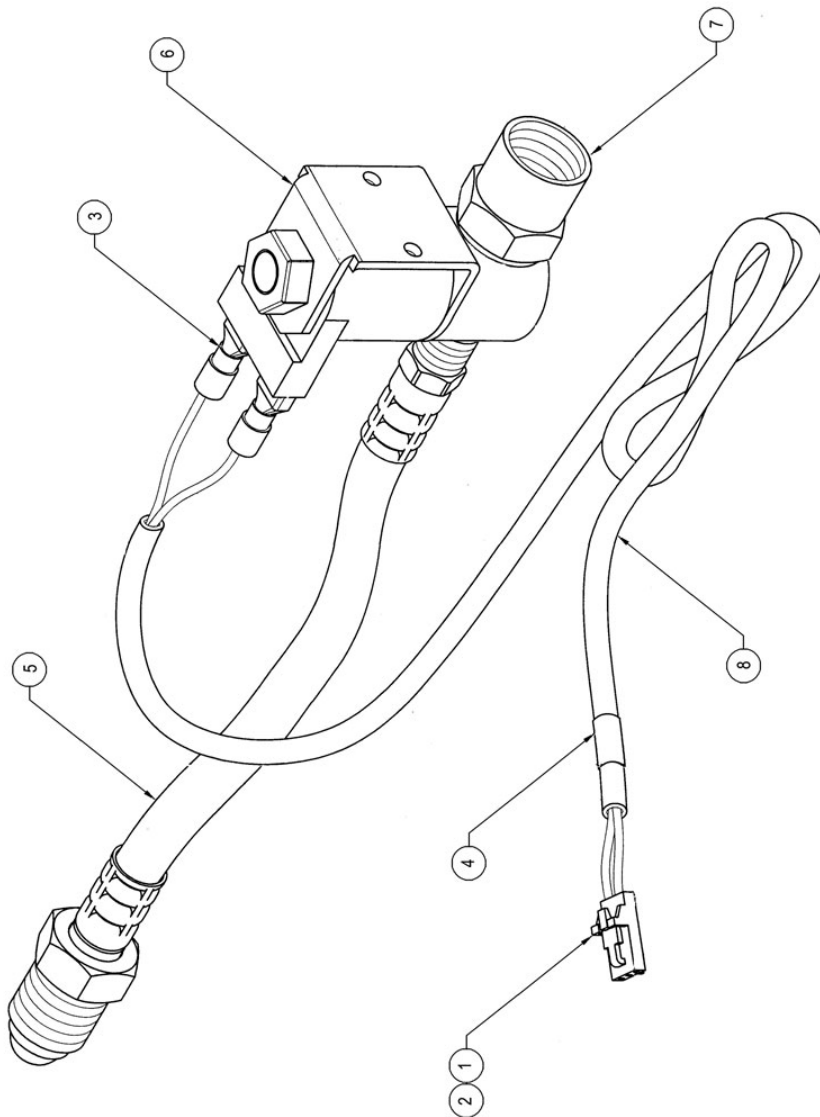


## Spindle Assembly 003-2146

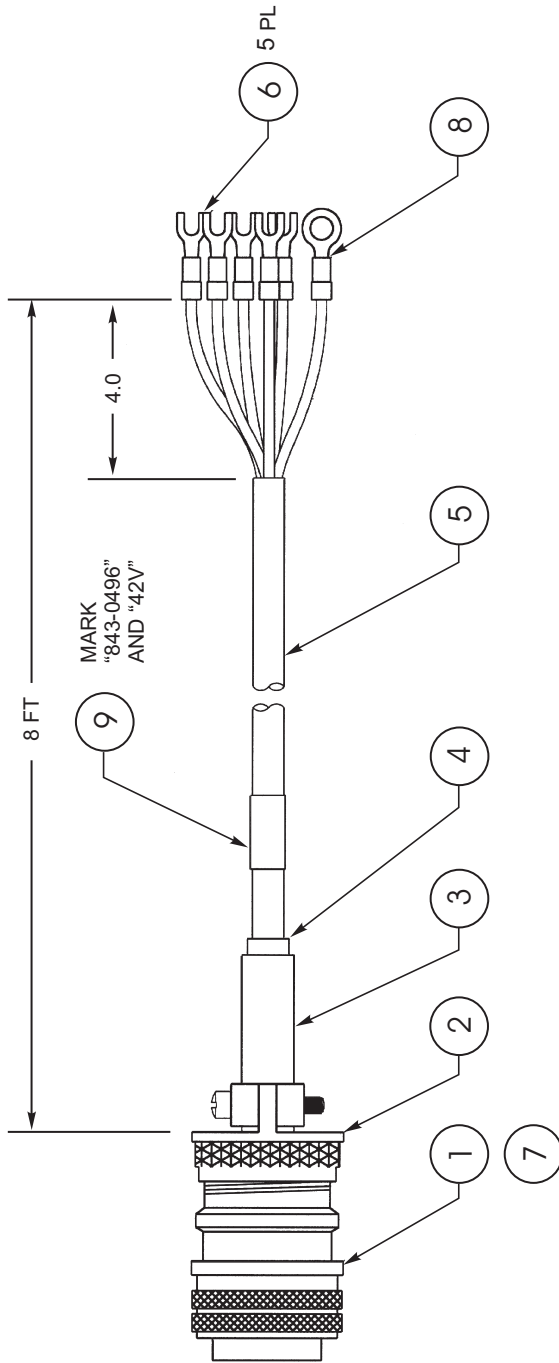
No.	Qty.	Part No.	Description
1	1	003-2139	Assy Bearing Spindle
2	3	330-3063	Scr Shldr Mod .25 x .63 10-24
3	3	331-0063	Wshr Flt .355 x .505
4	1	331-0095	Wshr Flt 11/32 x 3/4 sst
5	1	331-0313	Wshr Leather .75 ID x .125 Thk
6	1	345-0018	Nut Hex Lock 5/16-18 St
7	3	419-0059	Spg Comp .468 x .437 .056
8	1	419-0095	Spg Comp .85 x .69 x .75
9	1	431-1266	Plate Back-Up Ring
10	1	431-3726	Adapter Spiral Spindle
11	1	437-0258	Spool Retainer Nut
12	1	437-0260	Knob Tension Spindle
13	1	437-0260	Spacer Spindle
14	1	437-0645	Spindle
15	1	723-0059	Disk Ratchet Brake
16	1	751-0018	Cap .5 x .5 Lg Vinyl Black

# 003-2137 Gas Solenoid Assembly

Gas Solenoid Assy 003-2137			
No.	Qty.	Part No.	Description
1	2	153-0853	Pin Crimp
2	1	153-0868	Conn single row 3P
3	2	185-0476	Term slip-on female
4	1	405-0762	Label self-lam .8 x 1.4
5	1	552-0205	Assy gas connector
6	1	561-0017	Gas solenoid 24V
7	1	753-3285	Adptr FE 5/8-18 to M 1/8 NPT
8	2.50 FT	844-0089	Cable 22GA/2CNDT flex



# 843-0496 LE Cobramatic® Control Cable



FRONT VIEW  
PLUG CONNECTIONS  
STRIP OUTER JACKET BACK  
3/4" THIS END



Pin	Wire Color	Terminal
A	Not Used	
B	Green	Chassis
C	Red	J9-3
D	Orange	J9-4
E	Not Used	
F	Not Used	
G	Not Used	
H	Blue	J9-2
I	White	J5-1
J	Not Used	
K	Black	J5-2
L	Not Used	
M	Not Used	
N	Not Used	

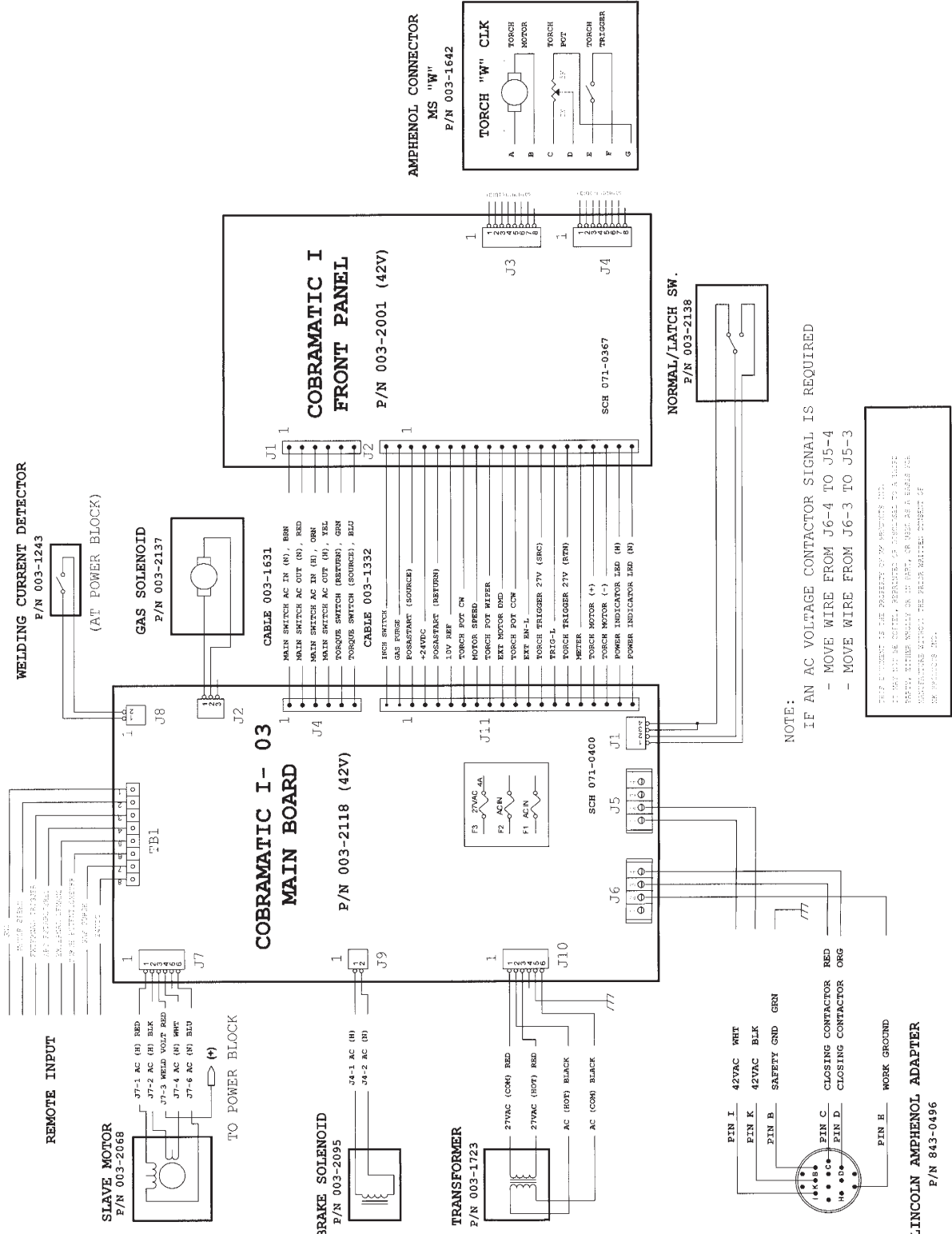
## 42 V Lincoln Cobramatic Control Cable 843-0496

No.	Qty.	Part No.	Description
1	1	153-1161	Conn, 14P, X Clocked
2	1	411-0035	Clamp, Cable
3	1	301-0026	Boot, Cable, #12
4	1	301-0021	Boot, Cable, #10
5	8 ft	844-0025	Cable, 7 Conductor, 10 Ga
6	5	185-0003	Lug, Spade, Insul, 18 Ga
7	0.25 ft	739-0004	Tube, HT Shrink, 1/8
8	1	185-0514	Lug, Ring, Insul, #6-18 Ga
9	7	405-0762	Label Self Laminate

**NOTE: Posa Start lead from Cobramatic® must be attached to working (welding) ground.**



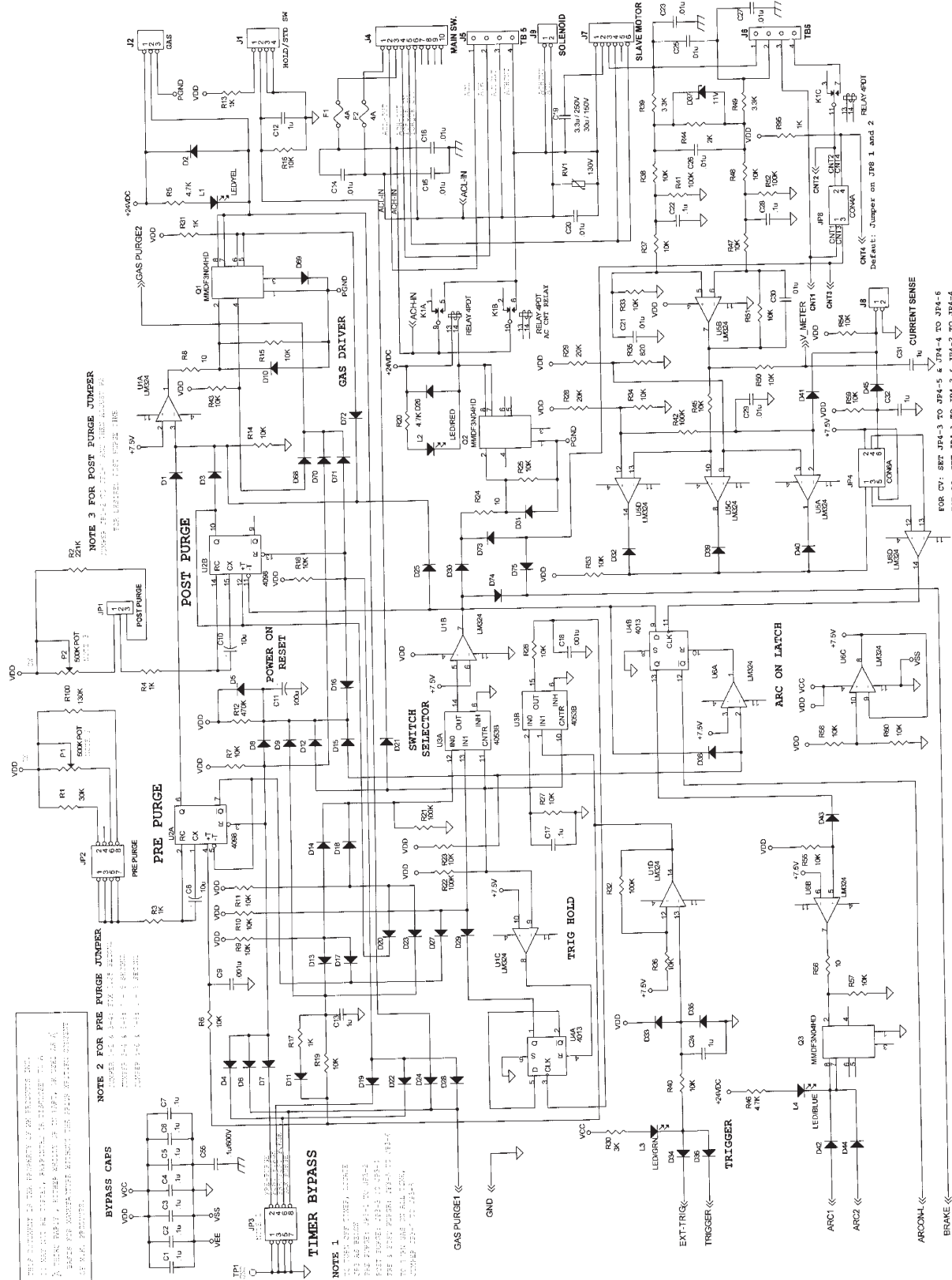
# 071-0402 Cobramatic® Block Diagram

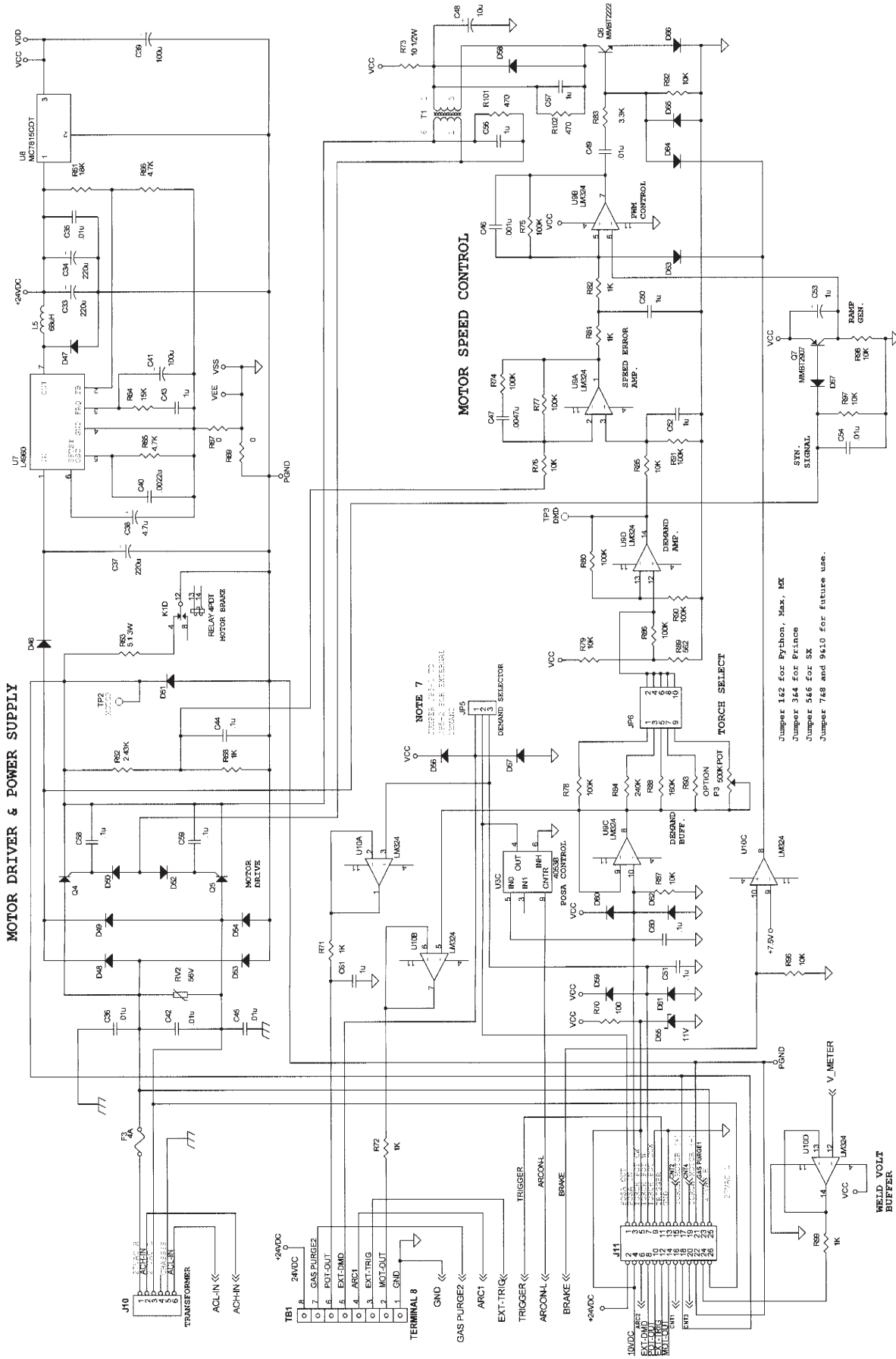


**NOTE:**  
IF AN AC VOLTAGE CONTACTOR SIGNAL IS REQUIRED  
- MOVE WIRE FROM J6-4 TO J5-4  
- MOVE WIRE FROM J6-3 TO J5-3

THIS SYMBOL IS THE PROPERTY OF THE MANUFACTURER.  
IT MAY NOT BE COPIED, REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.  
LINCOLN ELECTRIC COMPANY  
MILWAUKEE, WISCONSIN 53212

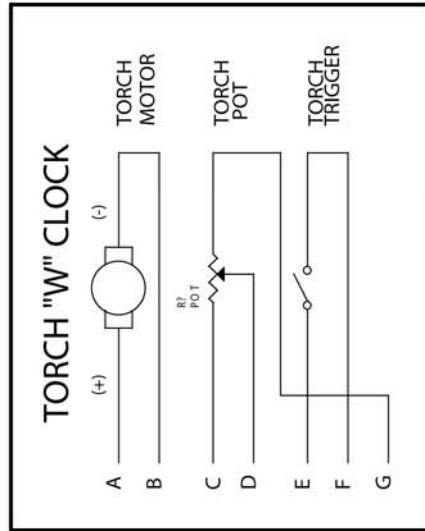
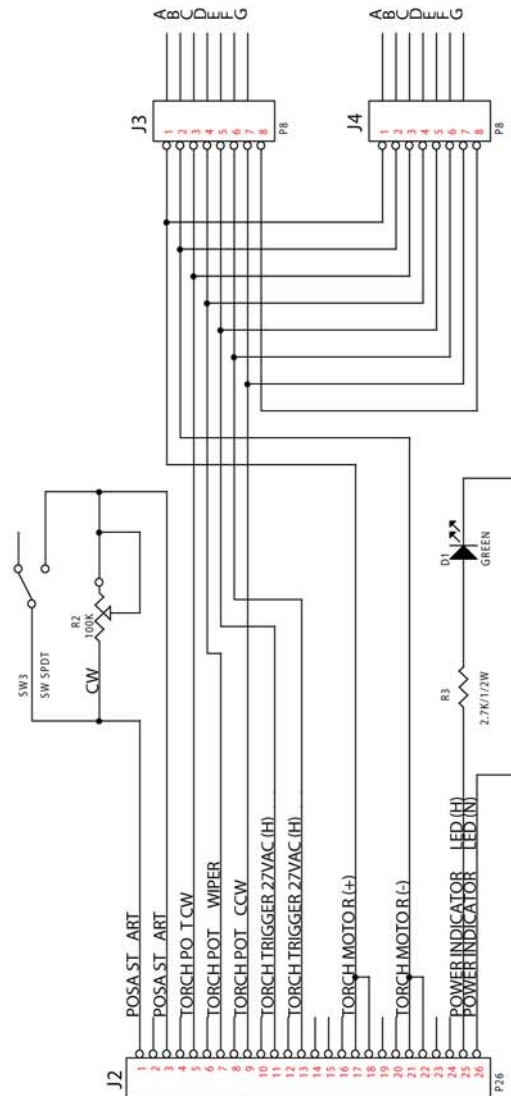
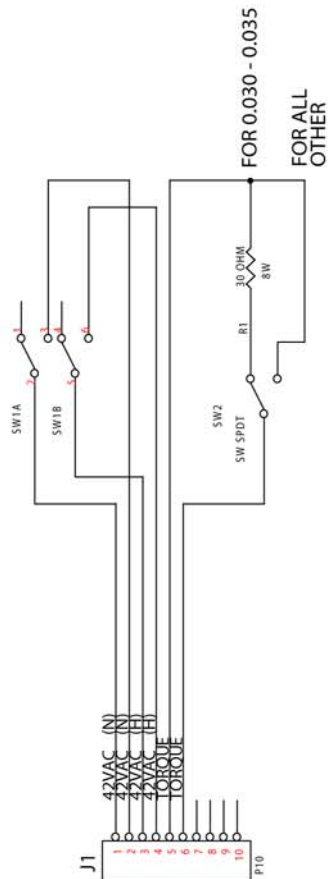
# 071-0400 Cobramatic® Main PC Board





Jumper 142 for Python, Max, MX  
 Jumper 364 for Prince  
 Jumper 546 for SX  
 Jumper 748 and 9410 for future use.

# 071-0367 Cobramatic® Gun Connections and Front Panel Schematic

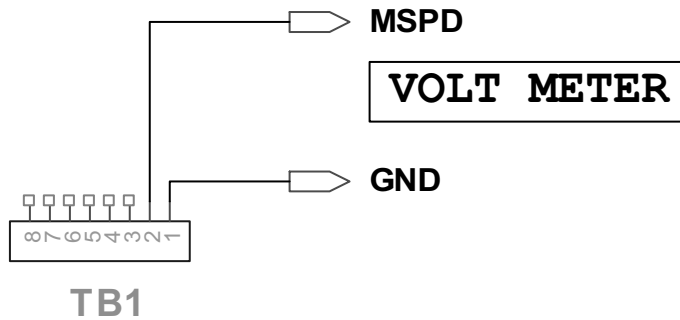


## Input / Output Configuration for TB1

### Monitor Wire Feed Speed

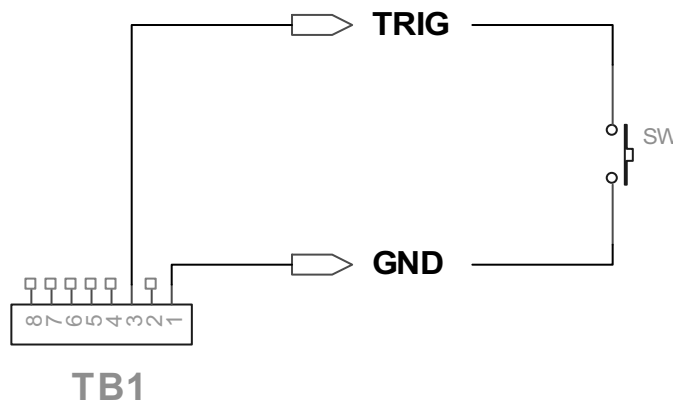
Use digital volt meter between: TB1 – 1(GND) and TB1 – 2(MSPD).  
Measured value defined as: Reading x 100 = Wire Feed Speed.

Example: 3.54 VDC is equivalent to 354 IPM



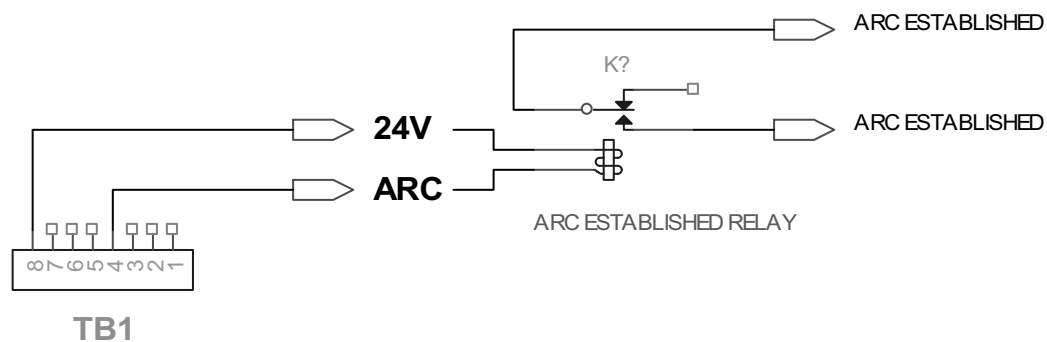
### Remote/External Trigger

Install jumper between: TB1 – 1(GND) and TB1 – 3(TRIG) to trigger system.



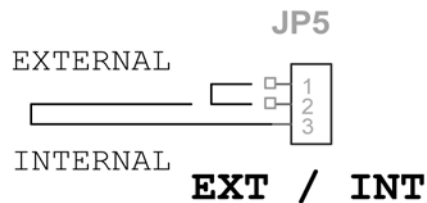
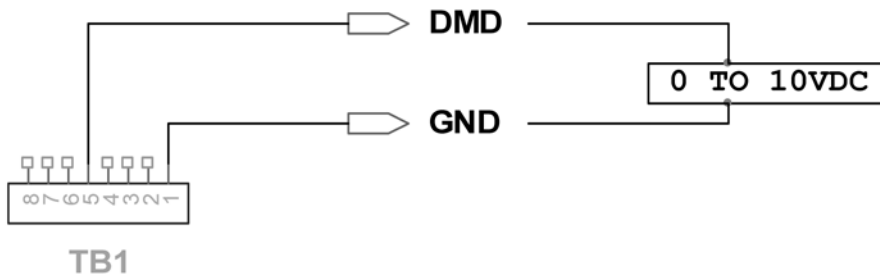
### Arc Establish Relay Closure

External Contact Signal; Connect 24VDC relay coil between TB1 – 8 (24V) and TB1 – 4 (ARC). When arc is established, the relay coil will close.



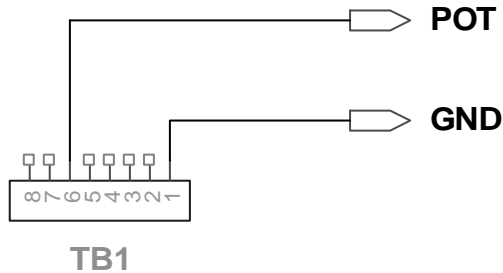
## External Motor Speed Control

To control the motor wire feed speed using an external source of DC voltage, other than from the board itself. Relocate JP5 jumper from bottom position (Internal-GUN) to upper position (External-POT). Connect external DC voltage between TB1 – 1 (GND) and TB1 – 5 (DMD) .

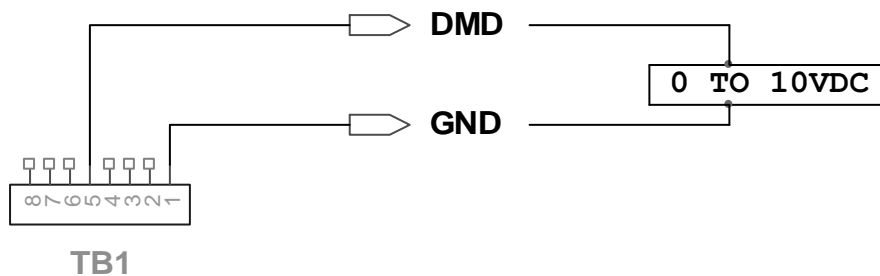


## Torch Pot Output

Some power supplies can utilize a variable DC voltage signal from the gun potentiometer adjustment as their external voltage control. Adjusting the potentiometer at the gun will give 0 to 10VDC output between TB1 – 1 (GND) and TB1 – 6 (POT).



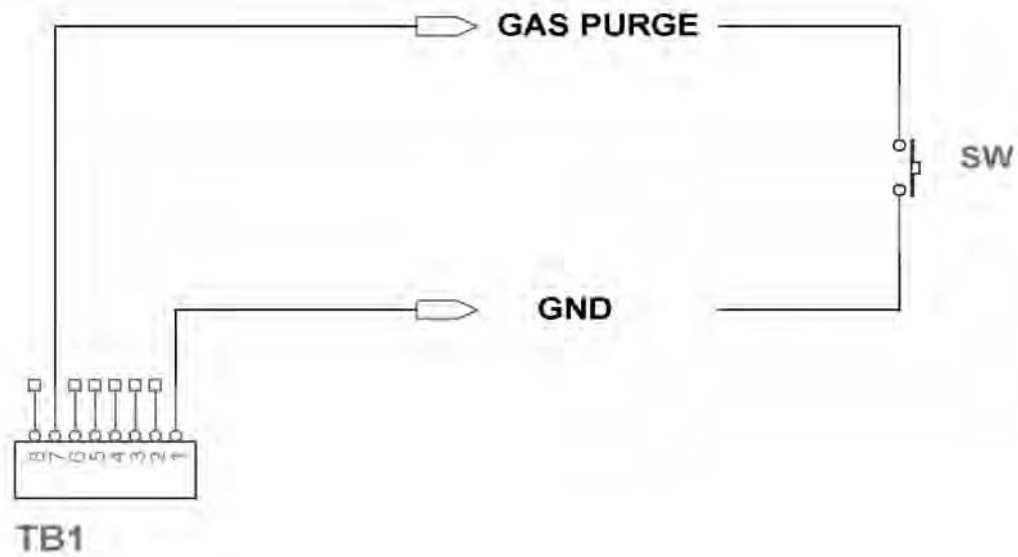
A common “synergic” type of setup is to have the gun potentiometer signal control the welding voltage of the welding power supply. As this external signal adjusts the voltage up or down, its external 0-10VDC signal can come back into TB-1, as shown below in External Motor Speed Control, and control the wire feed speed.



This is mainly dependant on the configuration and signal adaptation of the welding power supply. Check with your welding equipment manufacturer to see if your welding power source has this feature or can adapt to this type of setup. Not all welding power sources can do this.

### Manual Gas Purge

Jumper from TB1-7 to TB1-1 to externally operate the gas solenoid in the cabinet





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

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

**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.

***THIS PAGE INTENTIONALLY BLANK***

# LIMITED WARRANTY

**Effective October 1, 2006**

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 defects 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 gun 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.

MK Products shall, exclusively remedy the limited warranty or any duties with respect to the quality of goods, based upon the following options:

- (1) repair
- (2) replacement
- (3) where authorized in writing by MK Products, the reasonable cost of repair or replacement at our Irvine, California plant.

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. **Power Supplies and Wire Feed Cabinets..... 3 years**
- 2. **Weldheads, Positioners, Prince XL and Prince XL Spool Guns, Python, CobraMAX, Cobra SX, Cobra MX..... 1 year**
- 3. **Sidewinder® Spool Gun, Prince SG Spool Guns, Modules ..... 180 days**
- 4. **Repairs/Exchanges/Parts ..... 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 (one way) 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's 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.

USE OF OTHER THAN *GENUINE* MK PRODUCTS' CONSUMABLES, PARTS, AND ACCESSORIES MAY INVALIDATE YOUR PRODUCT WARRANTY.



16882 Armstrong Ave.  
Irvine, CA 92606  
Tel (949)863-1234  
Fax (949)474-1428  
www.mkproducts.com

October 1, 2006



Copyright © 2007 Lincoln Global Inc.

World's Leader in Welding and Cutting Products

Sales and Service through Subsidiaries and Distributors Worldwide

Cleveland, Ohio 44117-1199 U.S.A. TEL: 216 481 8100 FAX: 216 486 1751 WEB SITE: www.lincolnelectric.com

Download from www.Somaterials.com. All Manuals Search And Download.

## Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>