

# Operator's Manual

## ***BOOTH ASSIST***

For use with machines having Code Numbers:  
13320



Register your machine:  
[www.lincolnelectric.com/register](http://www.lincolnelectric.com/register)

Authorized Service and Distributor Locator:  
[www.lincolnelectric.com/locator](http://www.lincolnelectric.com/locator)

Save for future reference

Date Purchased

Code: (ex: 10859)

Serial: (ex: U1060512345)

# THANK YOU FOR SELECTING A QUALITY PRODUCT BY LINCOLN ELECTRIC.

## 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.

## SAFETY DEPENDS ON YOU

Lincoln arc welding and cutting 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.

### **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.



## KEEP YOUR HEAD OUT OF THE FUMES.

**DON'T** get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance away from the arc.

**READ** and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

**USE ENOUGH VENTILATION** or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area.

**IN A LARGE ROOM OR OUTDOORS**, natural ventilation may be adequate if you keep your head out of the fumes (See below).

**USE NATURAL DRAFTS** or fans to keep the fumes away from your face.

If you develop unusual symptoms, see your supervisor. Perhaps the welding atmosphere and ventilation system should be checked.



## WEAR CORRECT EYE, EAR & BODY PROTECTION

**PROTECT** your eyes and face with welding helmet properly fitted and with proper grade of filter plate (See ANSI Z49.1).

**PROTECT** your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.

**PROTECT** others from splatter, flash, and glare with protective screens or barriers.

**IN SOME AREAS**, protection from noise may be appropriate.

**BE SURE** protective equipment is in good condition.

Also, wear safety glasses in work area **AT ALL TIMES.**



## SPECIAL SITUATIONS

**DO NOT WELD OR CUT** containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned. This is extremely dangerous.

**DO NOT WELD OR CUT** painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.

## Additional precautionary measures

**PROTECT** compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.

**BE SURE** cylinders are never grounded or part of an electrical circuit.

**REMOVE** all potential fire hazards from welding area.

**ALWAYS HAVE FIRE FIGHTING EQUIPMENT READY FOR IMMEDIATE USE AND KNOW HOW TO USE IT.**



## SECTION A: WARNINGS



### CALIFORNIA PROPOSITION 65 WARNINGS



**WARNING:** Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects, or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an exposed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to [www.P65warnings.ca.gov/diesel](http://www.P65warnings.ca.gov/diesel)

**WARNING:** This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code § 25249.5 *et seq.*)



**WARNING:** Cancer and Reproductive Harm  
[www.P65warnings.ca.gov](http://www.P65warnings.ca.gov)

**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. 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.

- Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.
- Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- 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.

- 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.
- 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.
- 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.
- 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.
- To avoid scalding, do not remove the radiator pressure cap when the engine is hot.
- Using a generator indoors CAN KILL YOU IN MINUTES.
- Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.
- NEVER use inside a home or garage, EVEN IF doors and windows are open.
- Only use OUTSIDE and far away from windows, doors and vents.
- Avoid other generator hazards. READ MANUAL BEFORE USE.



### ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



- Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- Exposure to EMF fields in welding may have other health effects which are now not known.
- All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
  - Route the electrode and work cables together - Secure them with tape when possible.
  - Never coil the electrode lead around your body.
  - 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.
  - Connect the work cable to the workpiece as close as possible to the area being welded.
  - Do not work next to welding power source.



## 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.



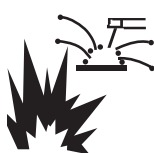
## FUMES AND GASES CAN BE DANGEROUS.



- 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 hardfacing (see instructions on container or SDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation unless exposure assessments indicate otherwise. In confined spaces or in some circumstances, outdoors, a respirator may also 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 Safety Data Sheet (SDS) and follow your employer’s safety practices. SDS forms are available from your welding distributor or from the manufacturer.
- 5.f. Also see item 1.b.




## 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 022690-9101.
- 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, 14501 George Carter Way Chantilly, VA 20151.



## 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.

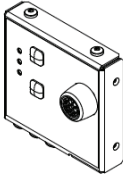
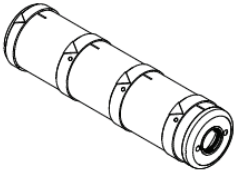
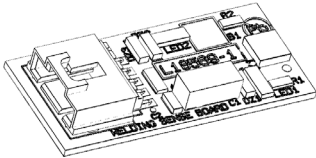
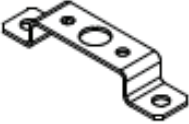
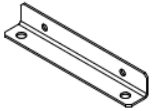

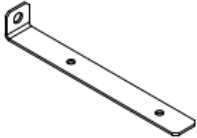
**Refer to**  
**<http://www.lincolnelectric.com/safety>**  
**for additional safety information.**

	Page
<b>Installation</b> .....	
Major Components .....	1
Technical Specifications .....	2
Safety Precautions .....	3
Select Suitable Location .....	4
Product Description .....	5
Control Panel .....	6
Light Stack .....	7
Light Stack Assembly .....	8
12V Power Supply .....	9
<b>Operation</b> .....	
Startup .....	10
<b>Maintenance</b> .....	
Cleaning & Maintenance .....	11
<b>Troubleshooting</b> .....	
How To Use Troubleshooting Guide .....	12
Troubleshooting Guide .....	13
<b>Diagrams</b> .....	
Wiring Diagram .....	14
Dimensions .....	15
<b>Parts</b> .....	<a href="http://parts.lincolnelectric.com">parts.lincolnelectric.com</a>



# MAJOR COMPONENTS

Booth Assist contains the following parts referenced throughout the manual:

	<p>Control Panel</p>		<p>Light Stack</p>
	<p>Weld Sensing PC Board</p>		<p>Light Stack Bracket</p>
	<p>Wall Bracket</p>		<p>12 Volt Power Supply</p>
	<p>Ledge Bracket</p>		



# TECHNICAL SPECIFICATIONS

<b>INPUT</b>			
<b>MODEL</b>	<b>DESCRIPTION</b>	<b>INPUT VOLTAGE ± 10%</b>	<b>INPUT CURRENT (MAX.)</b>
K5319-1	BOOTH ASSIST	115/230 VAC (50/60 HZ)	0.5/0.25 SINGLE PHASE
<b>PHYSICAL DIMENSIONS</b>			
<b>HEIGHT</b>	<b>WIDTH</b>	<b>DEPTH</b>	<b>WEIGHT</b>
5.5 in. 140 mm	5.5 in. 140 mm	2 in. 50 mm	3 lbs. 1.4 kgs.
<b>TEMPERATURE RANGES</b>			
<b>OPERATING TEMPERATURE RANGE</b>		<b>STORAGE TEMPERATURE RANGE</b>	
32° - 149° F (0° - 65° C)		32° - 149° F (0° - 65° C)	
<b>RELATIVE HUMIDITY</b>			
80% For Temperatures Up To 88° F / 31° C 50% @ 104° F / 40° C			

Read entire installation section before starting installation.

## SAFETY PRECAUTIONS

ELECTRIC SHOCK can kill.

- Only qualified personnel should perform this installation.

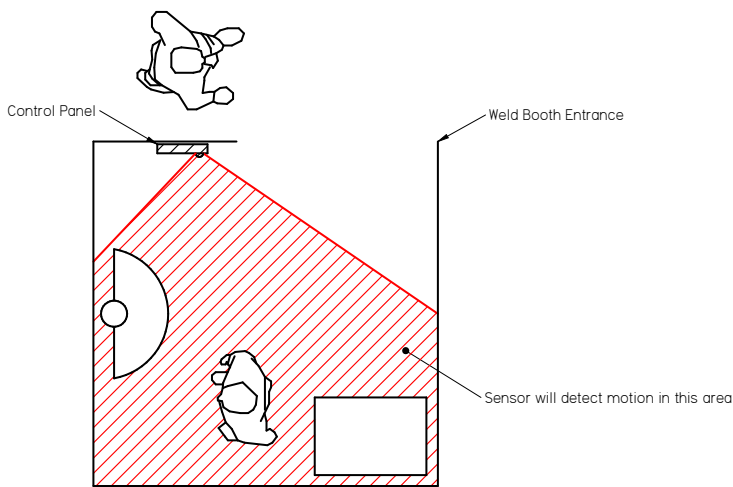
Example showing Booth Assist Installed in a Weld Booth



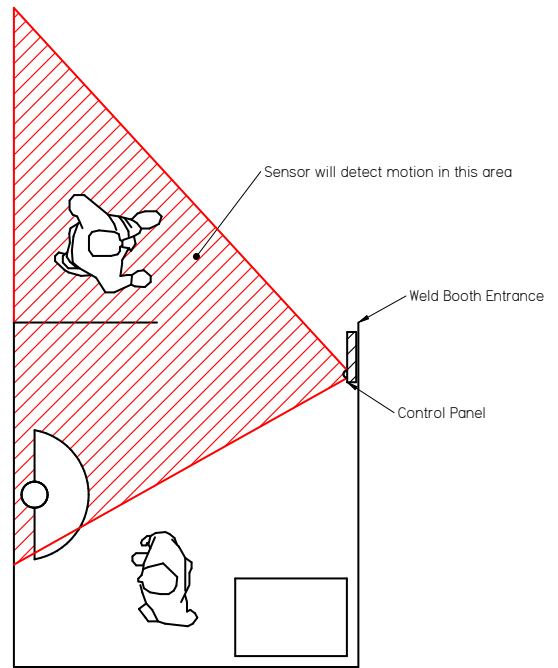
# SELECT SUITABLE LOCATION

- It is important that simple preventative measures are followed in order to assure long life and reliable operation. This product is for INDOOR USE ONLY.
- The Control Panel can be installed with either the Wall and/or Ledge brackets. Choose what works best for the style of the weld booth.

- A variety of hardware is included. Choose what works best for the style of the weld booth.
- Install the Control Panel at an appropriate height to allow a student to press the buttons.
- The Control Panel must be installed so the cables can be routed neatly to the Light Stack, Ground Cable and a Power Outlet.
- The Control Panel contains a motion sensor to detect if the booth is occupied. The panel must be installed properly to detect a person inside the booth and avoid false positives:



Correct panel placement will detect a person in the booth and avoid someone outside the booth



Incorrect panel placement will detect someone walking outside the booth and fail to detect a person in the booth

- It is recommended to temporarily place and test the Control Panel to ensure all requirements are met before permanent installation.

# PRODUCT DESCRIPTION

Booth Assist is intended to provide status of a weld booth. This product will indicate if the booth is occupied, if a student has been welding or if the student needs support. A light stack mounted to the top of the weld booth will provide a visual status of these parameters. A control panel inside the booth controls the system.



# CONTROL PANEL

It is recommended to temporarily place and test the Control Panel to ensure all requirements are met before permanent installation.



The Wall Brackets and/or Ledge Brackets can be used for the installation. Choose whichever fits best for the style of Weld Booth.



Attach Brackets with included screws



Ledge Bracket Installation

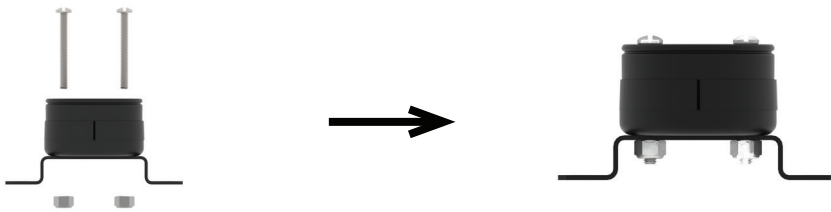
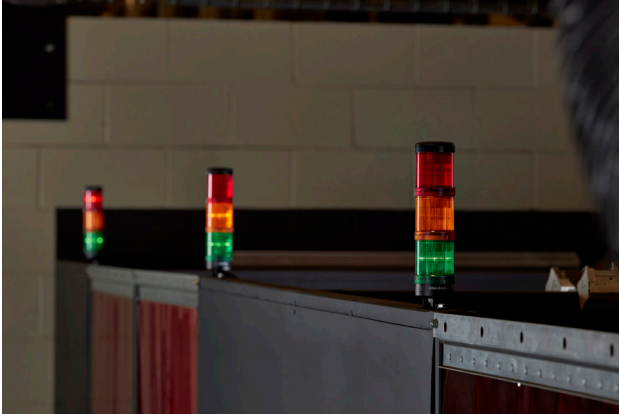


Wall Bracket Installation

A variety of hardware (screws, nuts, bolts) are included, or end-user supplied hardware can be used (i.e. masonry screws for cinder blocks). Mount the Control Panel in the Weld Booth and route the cables neatly to where the Light Stack, 12V Power Supply and Welding Sense PC Board will be placed.

# LIGHT STACK

The Light Stack should be installed to the top of the Weld Booth. If using the Light Stack Bracket and included hardware, a 5/32 drill bit should be used to open the screw holes on the Light Stack Base.



Light Stack Bracket Installation (drill out screw holes with 5/32 drill bit.)

Install the Light Stack cable as shown; this cable can be cut and shortened if needed.

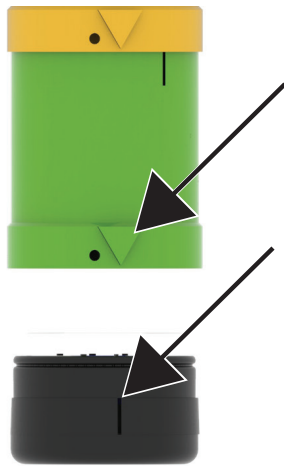


Wire Color	Terminal
RED	0
TAN	1
WHITE	2
BLUE	3

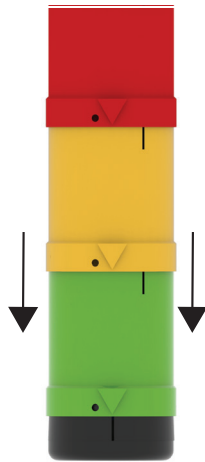
Connect cable to Light Stack base

# LIGHT STACK ASSEMBLY

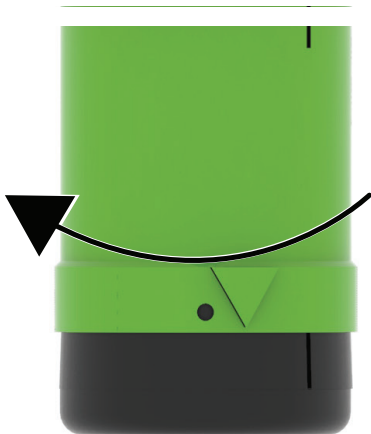
1. Assemble the Light Stack by positioning the Arrow to the line.  
Push together, then rotate to secure.



2. Push Light Stack on Base.



3. Twist together to secure.



# 12V POWER SUPPLY

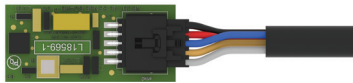
Connect the 12V Power Supply to a standard power outlet. Connect the barrel connector to power ON the Control Panel.



12V Power Supply Connection

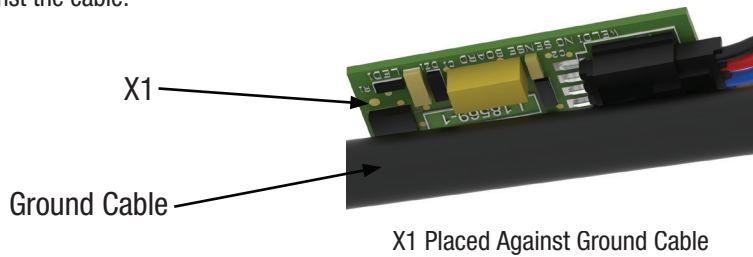
## Weld Sensing PC Board:

The Weld Sensing PC Board is designed to detect current (i.e. active welding) and should be placed on the Ground Cable. Connect the cable to the Weld Sensing PC Board.



## Weld Sensing PC Board Connection

Place the assembly (upside down) against the Ground Cable. The component labeled “X1” is the current detector so ensure this part is placed against the cable.



X1 Placed Against Ground Cable

Secure the assembly to the Ground Cable using an appropriate method. Heatshrink, electrical tape, etc. are approved methods.



Weld Sensing PC Board Placed Against Ground Cable



Example Attachment: Assembly Secured with Heatshrink and Cable Ties



# STARTUP

When power is applied, the WELDING and OCCUPIED lights will immediately illuminate, but turn OFF after 30 seconds. The unit will take 1 minute to initialize then will be ready to use.

Control Panel:

The Control Panel contains buttons for SUPPORT and CANCEL and the Motion Sensor.

- Pressing SUPPORT will turn ON the RED Light to alert the instructor the student has a question
- Pressing CANCEL will turn OFF the RED Light



Light Stack:

The lights on the Light Stack are intended to indicate the following conditions:

- RED Light
  - o Student Needs Assistance
  - o SUPPORT button will turn ON the light
  - o CANCEL button will turn OFF the light
- AMBER Light
  - o Student is Welding
  - o Welding will turn ON the light
  - o Light will remain ON for 10 seconds after welding has stopped
- GREEN light
  - o Student is in booth
  - o Motion will turn ON the light
  - o Light will remain ON for 10 seconds after motion has stopped



# CLEANING & MAINTENANCE

---

It is recommended to clean the Control Panel and Light Stack as needed.

Compressed air, lightly sprayed, can be used to clean the motion sensor.

# HOW TO USE TROUBLESHOOTING GUIDE

## WARNING

Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

### **Step 1. LOCATE PROBLEM (SYMPTOM).**

Look under the column labeled "PROBLEM (SYMPTOMS)". This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

### **Step 2. POSSIBLE CAUSE.**

The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

### **Step 3. RECOMMENDED COURSE OF ACTION**

This column provides a course of action for the Possible Cause.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Lincoln Authorized Field Service Facility.

## CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

**Observe Safety Guidelines detailed in the beginning of this manual.**

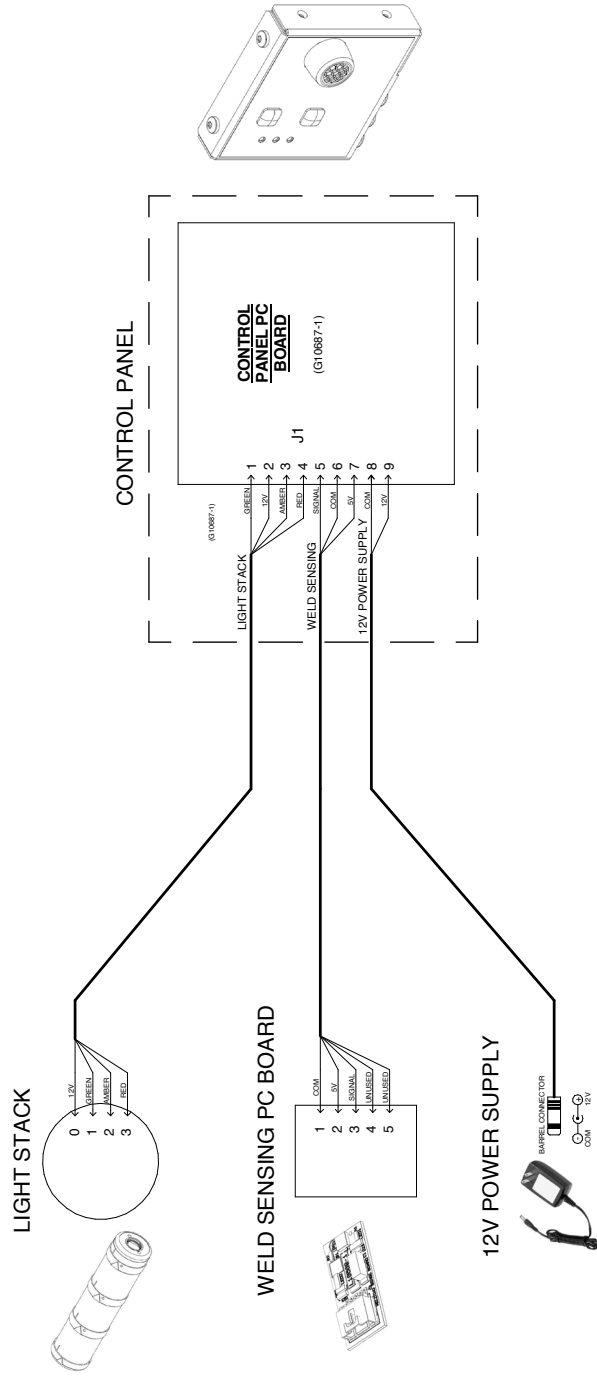
**TROUBLESHOOTING GUIDE**

<b>PROBLEMS (SYMPTOMS)</b>	<b>POSSIBLE AREAS OF MISADJUSTMENT(S)</b>	<b>RECOMMENDED COURSE OF ACTION</b>
Welding light does not turn on.	PC Board not placed correctly on ground cable.	Ensure PC Board is placed correctly, reference Installation Section.
Green light is turns ON when no one is in the booth.	Control panel is not positioned correctly and monitoring motion outside welding booth.	Reposition control panel and test, reference Suitable Location Section.
Green light does not turn ON when someone is in the booth.	Control panel is not positioned correctly to monitor motion inside welding booth.	Reposition control panel and test, reference Suitable Location Section.
Unit does not turn ON.	Power is not applied correctly.	Ensure 12V Power is attached correctly and Power Outlet is ON
Light Stack Not Working.	Wires are not connected to light stack properly or light stack has not been rotated to secure.	Check wire connections, reference Installation Section. Rotate Light Stack to secure in place.

** CAUTION**

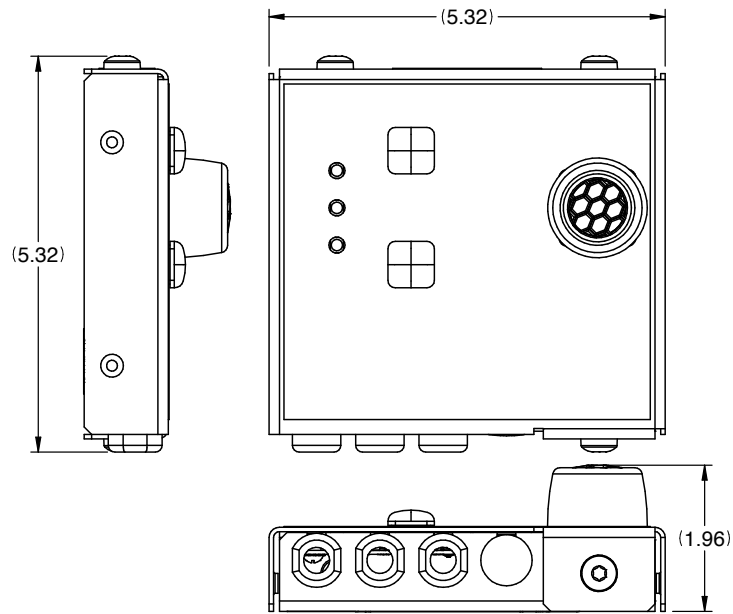
If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact the Lincoln Electric Automation Department for technical troubleshooting assistance before you proceed. Call 1-888-935-3878.

# BOOTH ASSIST - Wiring diagram



**NOTE:** This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, contact the service department for a replacement. Give the equipment code number.

DIMENSIONS



This page intentionally left blank

---

## **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.



**THE LINCOLN ELECTRIC COMPANY**

22801 St. Clair Avenue • Cleveland, OH • 44117-1199 • U.S.A.

Phone: +1.888.935.3878 • [www.lincolnelectric.com](http://www.lincolnelectric.com)