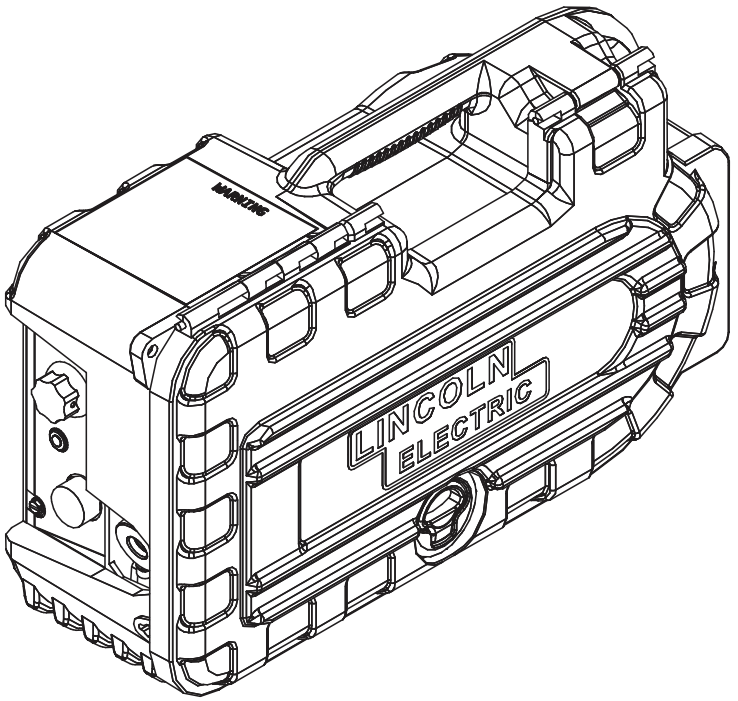
Operator's Manual

ACTIVE8 ™



For use with machines having Code Numbers:

11770, 12198

GENUINE LINCOLN PARTS™

Register your machine:
www.lincolnelectric.com/registration

Authorized Service and Distributor Locator:
www.lincolnelectric.com/locator

Save for future reference

Date Purchased

Code: (ex: 10859)

Serial: (ex: U1060512345)

IM10085-A | Issue Date Mar-14

THE LINCOLN ELECTRIC COMPANY
22801 St. Clair Avenue • Cleveland, OH • 44117-1199 • U.S.A.
Phone: +1.216.481.8100 • www.lincolnelectric.com

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 Material Safety Data Sheet (MSDS) 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

Diesel Engines

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

Gasoline Engines

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

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACE-MAKER 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.

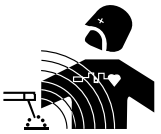
1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

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.

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. I 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 within applicable OSHA PEL and ACGIH TLV limits 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.

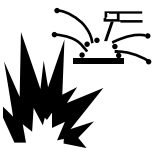
5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

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.

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.

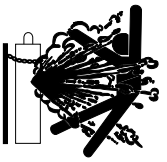
6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This 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-I, "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.

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

Welding Safety Interactive Web Guide for mobile devices

Get the free mobile app at
http://gettag.mobi

ELECTROMAGNETIC COMPATIBILITY (EMC)

CONFORMANCE

Products displaying the CE mark are in conformity with European Community Council Directive of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (89/336/EEC). It was manufactured in conformity with a national standard that implements a harmonized standard: EN 60974-10 Electromagnetic Compatibility (EMC) Product Standard for Arc Welding Equipment. It is for use with other Lincoln Electric equipment. It is 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 affect many kinds of electrical equipment; other nearby welding equipment, radio and TV reception, 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 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 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. In other cases it could involve construction of 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 access whether the changes will increase the risk of injury, e.g., by allowing parallel welding current return paths which may damage the earth circuits of other equipment.

ASSESSMENT OF AREA

Before installing welding equipment the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account:

a. other supply cables, control cables, signaling and telephone cables; above, below and adjacent to the welding equipment;

b. radio and television transmitters and receivers;

c. computer and other control equipment;

d. safety critical equipment, e.g., guarding of industrial equipment;

e. the health of the people around, e.g., the use of pacemakers and hearing aids;

f. equipment used for calibration or measurement

g. the immunity of other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;

h. the time of 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 of 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 adjustments covered in the manufacturers instructions. In particular, the spark gaps of arc striking 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 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, not connected to earth because of its size and position, e.g., ships 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 the work piece 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 a direct connection to the work piece, 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.

[1] Portions of the preceding text are contained in EN 60974-10: "Electromagnetic Compatibility (EMC) product standard for arc welding equipment."

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS – ACTIV8™ (K2999-1)

INPUT VOLTAGE

15-110 V DC (4 Input Amperes)

RATED CURRENT

330 Amps 60% Duty Cycle

ELECTRODE DIAMETERS and SPEED RANGE

Electrode	Electrode Size	Speed Range
Solid Steel	0.023 - 0.052" (0.6 - 1.3 mm)	50 - 800 ipm (1.3 - 20.3 m/min)
Flux Cored	0.035 - 5/64" (0.9 - 2.0 mm)	

PHYSICAL DIMENSIONS

HEIGHT	WIDTH	DEPTH	WEIGHT	SPOOL SIZE CAPABILITY
11.8 Inches (298 mm)	7.6 Inches (193mm)	19.8 Inches (503 mm)	27lbs (12.2kg)	8 (200mm) Dia.

TEMPERATURE RANGE

OPERATING TEMPERATURE:	14°F to 104°F (-10°C to 40°C)
STORAGE TEMPERATURE:	14°F to 122°F (-10°C to 50°C)

C US

N80

EN 60974-5

IEC 60974-5

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK CAN KILL.

- **ONLY QUALIFIED PERSONNEL SHOULD PERFORM THIS INSTALLATION.**
- **Turn the input power OFF at the disconnect switch or fuse box before attempting to connect or disconnect input power lines, output cables or control cables.**
- **Only qualified personnel should perform this installation.**
- **Do not touch metal portions of the ACTIV8™ work clip when the welding power source is on.**
- **Do not attach the work clip to the wire feeder.**
- **Connect the work clip directly to the work, as close as possible to the welding arc.**
- **Turn power off at the welding power source before disconnecting the work clip from the work.**
- **Only use on power sources with open circuit voltages less than 110 V DC.**

LOCATION

For best wire feeding performance, place the ACTIV8™ on a stable and dry surface. Keep the wire feeder in the upright position. Do not operate the wire feeder on an angled surface of more than 15 degrees.

Do not submerge the ACTIV8™.

The ACTIV8 is rated IP23 and is suitable for outdoor use in the upright position.

The handle of the ACTIV8™ is intended for moving the wire feeder about the work place only.

When suspending a wire feeder in a hanging device, insulate the hanging device from the wire feeder enclosure.

HIGH FREQUENCY PROTECTION

⚠ CAUTION

Locate the ACTIV8™ away from radio controlled machinery. The normal operation of the ACTIV8™ may adversely affect the operation of RF controlled equipment, which may result in bodily injury or damage to the equipment.

WELD CABLE SIZES

Table A.1 located below are copper cable sizes recommended for different currents and duty cycles. Lengths stipulated are the distance from the welder to work and back to the welder again. Cable sizes are increased for greater lengths primarily for the purpose of minimizing cable drop.

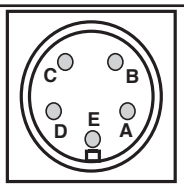
TABLE A.1

RECOMMENDED CABLE SIZES (RUBBER COVERED COPPER - RATED 167°F or 75°C)**						
AMPERES	PERCENT DUTY CYCLE	CABLE SIZES FOR COMBINED LENGTHS OF ELECTRODE AND WORK CABLES				
		0 to 50Ft. (0 to15m)	50 to 100Ft. (15 to 30m)	100 to 150 Ft. (30 to 46m)	150 to 200 Ft. (46 to 61m)	200 to 250 Ft. (61 to 76m)
200	60	2	2	2	1	1/0
200	100	2	2	2	1	1/0
225	20	4 or 5	3	2	1	1/0
225	40 & 30	3	3	2	1	1/0
250	30	3	3	2	1	1/0
250	40	2	2	1	1	1/0
250	60	1	1	1	1	1/0
250	100	1	1	1	1	1/0
300	60	1	1	1	1/0	2/0
325	100	2/0	2/0	2/0	2/0	3/0
350	60	1/0	1/0	2/0	2/0	3/0
400	60	2/0	2/0	2/0	3/0	4/0
400	100	3/0	3/0	3/0	3/0	4/0
500	60	2/0	2/0	3/0	3/0	4/0

** Tabled values are for operation at ambient temperatures of 104°F(40°C) and below. Applications above 104°F(40°C) may require cables larger than recommended, or cables rated higher than 167°F(75°C).

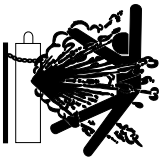
TRIGGER CONNECTOR

There is one circular connector for the gun trigger on the front of the ACTIV8™

Picture	Function	Pin	Wiring
	5-pin trigger connector for push-guns only.	A	15 volt
		B	Not used
		C	Trigger
		D	83% WFS switch
		E	15 volt

SHIELDING GAS CONNECTION

⚠ WARNING



CYLINDER may explode if damaged.

- **Keep cylinder upright and chained to support.**
- **Keep cylinder away from areas where it may be damaged.**
- **Never lift welder with cylinder attached.**
- **Never allow welding electrode to touch cylinder.**
- **Keep cylinder away from welding or other live electrical circuits.**

- **BUILD UP OF SHIELDING GAS MAY HARM HEALTH OR KILL.**
- **Shut off shielding gas supply when not in use.**
- **See American National Standard Z-49.1, "Safety in Welding and Cutting" Published by the American Welding Society.**

Maximum inlet pressure is 100 psi. (6.9 bar.)

Install the shielding gas supply as follows:

1. Secure the cylinder to prevent it from falling.

2. Remove the cylinder cap. Inspect the cylinder valves and regulator for damaged threads, dirt, dust, oil or grease. Remove dust and dirt with a clean cloth. **DO NOT ATTACH THE REGULATOR IF OIL, GREASE OR DAMAGE IS PRESENT!** Inform your gas supplier of this condition. Oil or grease in the presence of high pressure oxygen is explosive.

3. Stand to one side away from the outlet and open the cylinder valve for an instant. This blows away any dust or dirt which may have accumulated in the valve outlet.

4. Attach the flow regulator to the cylinder valve and tighten the union nut(s) securely with a wrench. Note: if connecting to 100% CO_2 cylinder, insert regulator adapter between regulator and cylinder valve. If adapter is equipped with a plastic washer, be sure it is seated for connection to the CO_2 cylinder.

5. Attach one end of the inlet hose to the outlet fitting of the flow regulator. Attach the other end to the welding system shielding gas inlet. Tighten the union nuts with a wrench.

6. Before opening the cylinder valve, turn the regulator adjusting knob counterclockwise until the adjusting spring pressure is released.

7. Standing to one side, open the cylinder valve slowly a fraction of a turn. When the cylinder pressure gage stops moving, open the valve fully.

8. The flow regulator is adjustable. Adjust it to the flow rate recommended for the procedure and process being used before making a weld.

WIRE DRIVE CONFIGURATION

(See Figure A.1)

CHANGING THE GUN RECEIVER BUSHING

⚠ WARNING

ELECTRIC SHOCK can kill.

- **Turn the input power OFF at the welding power source before installation or changing drive rolls and/or guides.**
- **Do not touch electrically live parts.**
- **When inching with the gun trigger, electrode and drive mechanism are "hot" to work and ground and could remain energized several seconds after the gun trigger is released.**
- **Do not operate with covers, panels or guards removed or open.**
- **Only qualified personnel should perform maintenance work.**

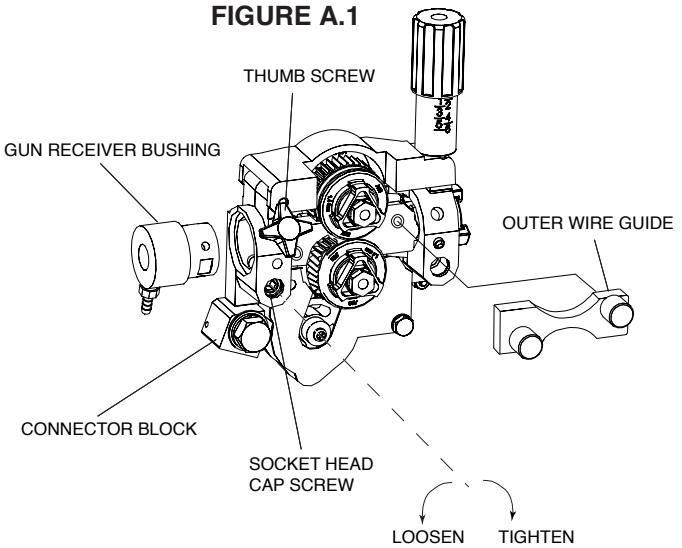
Tools required:

- 1/4" hex key wrench.

Note: Some gun bushings do not require the use of the thumb screw.

1. Turn power off at the welding power source.
2. Remove the welding wire from the wire drive.
3. Remove the thumb screw from the wire drive.
4. Remove the welding gun from the wire drive.
5. Loosen the socket head cap screw that holds the connector bar against the gun bushing.
   Important: Do not attempt to completely remove the socket head cap screw.
6. Remove the outer wire guide, and push the gun bushing out of the wire drive. Because of the precision fit, light tapping may be required to remove the gun bushing.
7. Disconnect the shielding gas hose from the gun bushing, if required.

FIGURE A.1



8. Connect the shielding gas hose to the new gun bushing, if required.
9. Rotate the gun bushing until the thumb screw hole aligns with the thumb screw hole in the feedplate. Slide the gun receiver bushing into the wire drive and verify the thumb screw holes are aligned.
10. Tighten the socket head cap screw 10 to 14 ft-lbs (13.5 to 19.0 Nm).
11. Insert the welding gun into the gun bushing and tighten the thumb screw.

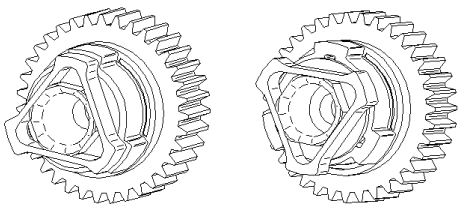
PROCEDURE TO INSTALL DRIVE ROLLS AND WIRE GUIDES

⚠ WARNING

- **Turn the input power OFF at the welding power source before installation or changing drive rolls and/or guides.**
- **Do not touch electrically live parts.**
- **When inching with the gun trigger, electrode and drive mechanism are "hot" to work and ground and could remain energized several seconds after the gun trigger is released.**
- **Do not operate with covers, panels or guards removed or open.**
- **Only qualified personnel should perform maintenance work.**

---

1. Turn power off at the welding power source.
2. Release the idle roll pressure arm.
3. Remove the outer wire guide by turning the knurled thumbscrews counter-clockwise to unscrew them from the feed plate.
4. Rotate the triangular lock and remove the drive rolls.



UNLOCKED POSITION — LOCKED POSITION

5. Remove the inner wire guide.
6. Insert the new inner wire guide, groove side out, over the two locating pins in the feed plate.
7. Install a drive roll on each hub assembly secure with the triangular lock.
8. Install the outer wire guide by aligning it with the pins and tightening the knurled thumbscrews.
9. Close the idle arm and engage the idle roll pressure arm. Adjust the pressure appropriately.

PRESSURE ARM ADJUSTMENT

⚠ WARNING

ELECTRIC SHOCK can kill.
- **Turn the input power OFF at the welding power source before installation or changing drive rolls and/or guides.**
- **Do not touch electrically live parts.**
- **When inching with the gun trigger, electrode and drive mechanism are "hot" to work and ground and could remain energized several seconds after the gun trigger is released.**
- **Do not operate with covers, panels or guards removed or open.**
- **Only qualified personnel should perform maintenance work.**

The pressure arm controls the amount of force the drive rolls exert on the wire. Proper adjustment of the pressure arm gives the best welding performance. Many welding problems can be attributed to setting the pressure arm too high and causing wire deformation. Set the pressure arm to minimum amount that provides reliable feeding.

Set the pressure arm as follows:

Cored wires	between 1 and 3
Steel, Stainless wires	between 3 and 5

LOADING SPOOLS OF WIRE

⚠ WARNING

- **Keep hands, hair, clothing and tools away from rotating equipment.**
- **Do not wear gloves when threading wire or changing wire spool.**
- **Only qualified personnel should install, use or service this equipment.**

SPOOL RETAINER

When loading and removing the 8” spools make sure that the wing nut (inside the wire reel spindle hub) is turned 90° from the wire reel spindle locking tabs. If the wing nut is positioned in line with the locking tabs, the tabs cannot be depressed to load or unload the wire spool. (See Fig A.2)

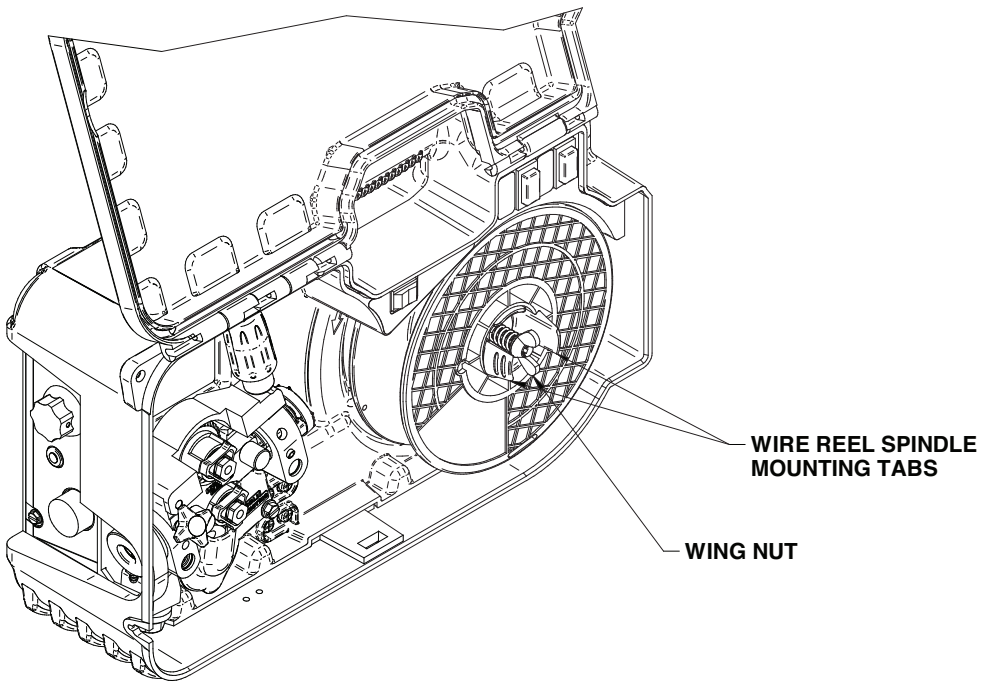
The wire spool must be pushed all the way on the spindle so that both the spindle’s tabs will hold it in place. The wire spool will rotate counter clockwise when wire is de-reeled.

SPOOL BRAKE

Adjust the spool brake with wire spool installed, to provide enough friction to stop wire overrun. To adjust the brake turn the wing nut clockwise to increase the brake, and counterclockwise to loosen the brake.

Excessive brake force may cause motor thermal overloads or welding problems.

FIGURE A.2



GUN CONNECTION

⚠ WARNING

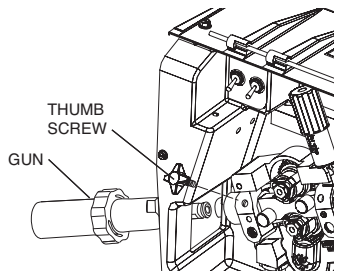
ELECTRIC SHOCK can kill.
- **Turn the input power OFF at the welding power source before installation or changing drive rolls and/or guides.**
- **Do not touch electrically live parts.**
- **When inching with the gun trigger, electrode and drive mechanism are "hot" to work and ground and could remain energized several seconds after the gun trigger is released.**
- **Do not operate with covers, panels or guards removed or open.**
- **Only qualified personnel should perform maintenance work.**

The ACTIV8™ comes with a K1500-2 gun adapter installed. (See Figure A.3)

To install a gun,
1. Turn power OFF.
2. Remove the thumb screw.
3. Push the gun the completely into the gun bushing.
4. Secure the gun in place with the thumb screw.
5. Connect the trigger cable from the gun to the trigger connector on the front of the feeder.

Note: Not all gun bushings require the use of the thumb screw.

FIGURE A.3

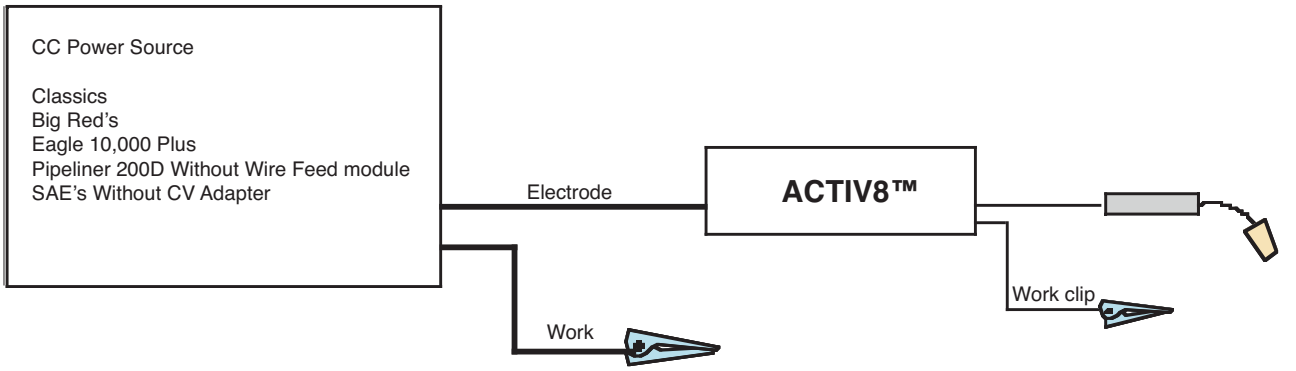


POWER SOURCE TO ACTIV8™ CABLE CONNECTION DIAGRAMS

ACROSS THE ARC SET-UPS

CC Power Sources with Output Terminals Always Hot (See Figure A.4)

FIGURE A.4



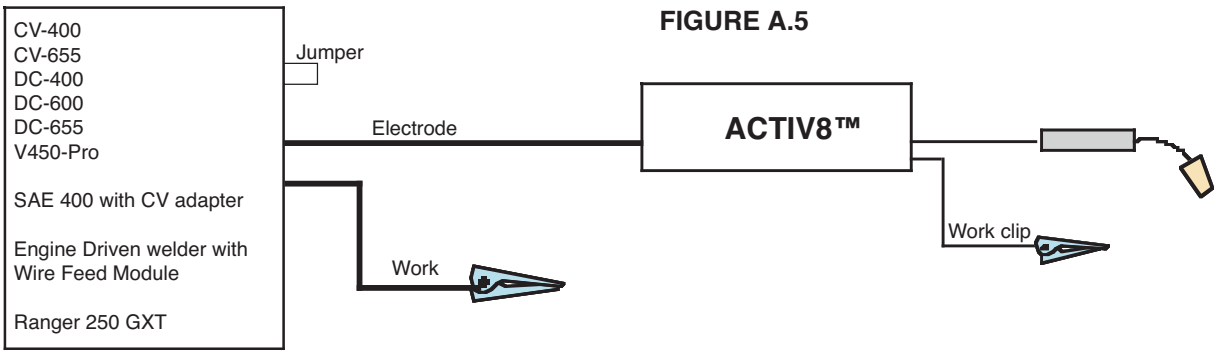
If the power source has a Remote/Local switch, place the switch in the Local position.

Place the CV/CC switch in the feeder in the "CC" position.

K#	Description
K2999-1	ACTIV8™
KP1696-XX	Drive Roll Kit
KP1697-XX	
See Magnum Literature	Welding Gun
	CC power Source
K1803-XX	Welding Cables

CV Power Sources with Stud Connectors and Remote/Local Switch (See Figure A.5)

FIGURE A.5



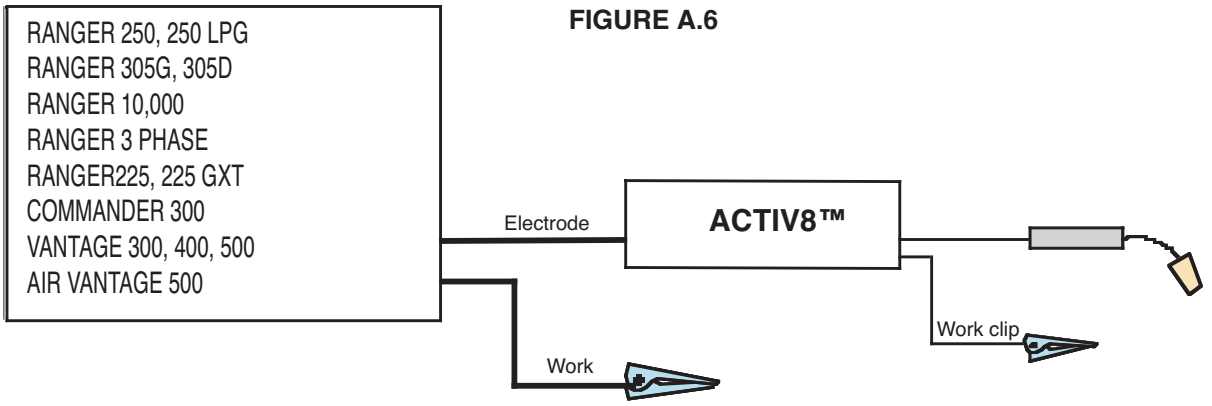
Place the power source Remote/Local switch in the Local position.

Place CV/CC switch in the feeder in the "CV" position.

K#	Description
K2999-1	ACTIV8™
KP1696-XX	Drive Roll Kit
KP1697-XX	
See magnum Literature	Welding Gun
	CV power Source
K1803-XX	Welding Cables
K484	Jumper Plug kit

CV Power Sources with Stud Connectors and no Remote/Local Switch(See Figure A.6)

FIGURE A.6

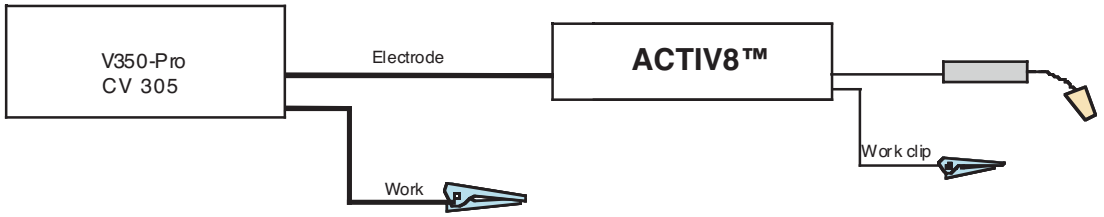


Place CV/CC switch in the feeder in the "CV" position.

K#	Description
K2999-1	ACTIV8™
KP1696-XX	Drive Roll Kit
KP1697-XX	
See Magnum Literature	Welding Gun
	CC power Source
K1803-XX	Welding Cables

CV Power Source with Twist-Mate Connectors and Remote/Local Switch. (See Figure A.7)

FIGURE A.7



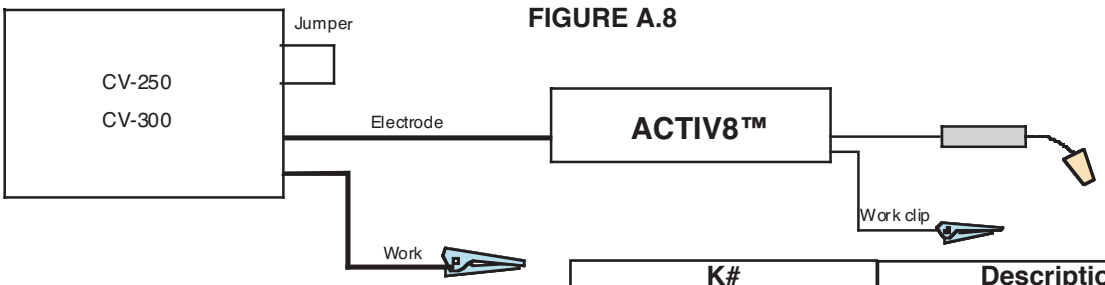
Place the power source Remote/Local switch in the Local position.

Place CV/CC switch in the feeder in the "CV" position.

K#	Description
K2999-1	ACTIV8™
KP1696-XX	Drive Roll Kit
KP1697-XX	
See Magnum Literature	Welding Gun
	CV power Source
K1841-XX	Welding Cables
K852-95	Twist-Mate Cable Plug

CV Power Source with Twist-Mate Connectors and no Remote/Local Switch. (See Figure A.8)

FIGURE A.8



Place CV/CC switch in the feeder in the "CV" position.

K#	Description
K2999-1	ACTIV8™
KP1696-XX	Drive Roll Kit
KP1697-XX	
See Magnum Literature	Welding Gun
	CV power Source
K1841-XX	Welding Cables
K852-95	Twist-Mate Cable Plug
K484	Jumper Plug kit

PROCEDURE TO INSTALL CONDUIT BUSHING FOR THE WIRE FEEDER UNIT

⚠ WARNING	
	• Turn off the Welding Power Source before installing or changing drive rolls and / or guides. • When inching with gun trigger, electrode and drive mechanism are "hot" to work and ground. • Only qualified persons should install, use or service this machine.
ELECTRIC SHOCK CAN KILL	

PROCEDURE TO INSTALL CONDUIT BUSHING

1. Turn OFF Welding Power Source.
2. Loosen the set screw which secures the existing incoming guide bushing and remove the incoming guide bushing from the wire feed head (See Fig 1).

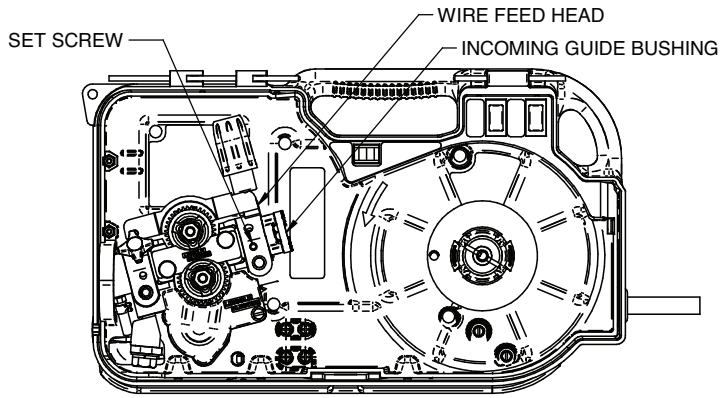


FIG 1

3. Insert flex tube into new conduit bushing. Insert the thumb screw into the new conduit bushing and tighten the thumb screw. The thumb screw threads will lock the flex tube into place (See Fig. 2).
4. Install the new conduit bushing, flex tube and thumb screw into the wire feed head.
5. Tighten the set screw.

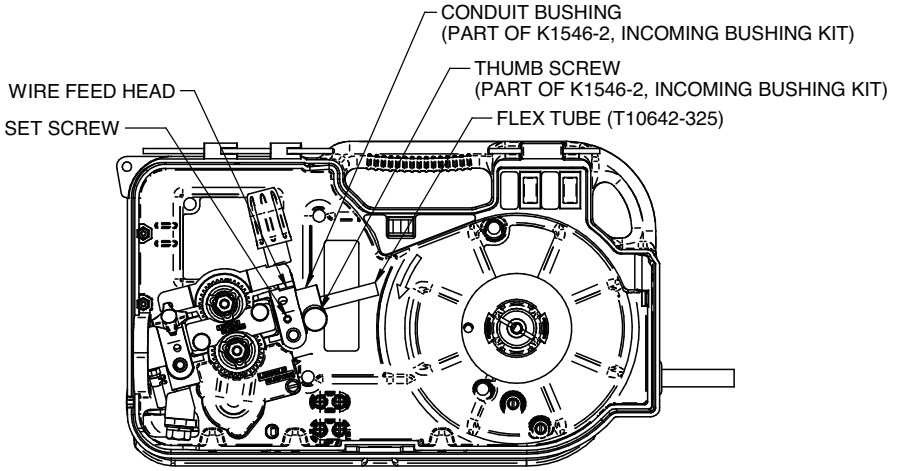


FIG 2

A.01

M22832

SAFETY PRECAUTIONS

READ AND UNDERSTAND ENTIRE SECTION BEFORE OPERATING MACHINE.

⚠ WARNING

- **ELECTRIC SHOCK CAN KILL. Unless using COLD FEED feature, when feeding with gun trigger, the electrode and drive mechanism are always electrically energized and could remain energized several seconds after the welding ceases..**
- **The work clip is energized any time the output of the welding power source is "ON", even when the feeder is not welding.**
- **Do not touch electrically live part or electrode with skin or wet clothing.**
- **Insulate yourself from work and ground.**
- **Always wear dry insulating gloves.**
- **The serviceability of a product or structure utilizing the ACTIV8™ wire feeder is and must be the sole responsibility of the builder/user. Many variables beyond the control of The Lincoln Electric Company affect the results obtained in using the ACTIV8™ wire feeder. These variables include, but are not limited to, welding procedure, plate chemistry and temperature, weldment design, fabrication methods and service requirements. The available range of the ACTIV8™ wire feeder may not be suitable for all applications, and the builder/user is and must be solely responsible for welding settings.**

- **FUMES AND GASSES can be dangerous.**
- **Keep your head out of fumes.**
- **Use ventilation or exhaust at the arc, or both, to remove fumes and gases from breathing zone and general area.**

- **WELDING SPARKS can cause fire or explosion.**
- **Keep flammable material away.**

ARC RAYS can burn.

- **Wear eye, ear and body protection.**

SEE ADDITIONAL WARNING INFORMATION UNDER ARC WELDING SAFETY PRECAUTIONS AND IN THE FRONT OF THIS OPERATING MANUAL.

GRAPHIC SYMBOLS THAT APPEAR ON THIS MACHINE OR IN THIS MANUAL

INPUT POWER

ON

OFF

WIRE FEEDER

POSITIVE OUTPUT

NEGATIVE OUTPUT

INPUT POWER

DIRECT CURRENT

U_0 **OPEN CIRCUIT VOLTAGE**

U_1 **INPUT VOLTAGE**

U_2 **OUTPUT VOLTAGE**

I_1 **INPUT CURRENT**

I_2 **OUTPUT CURRENT**

PROTECTIVE GROUND

WARNING OR CAUTION

PRODUCT DESCRIPTION

The ACTIV8™ is a portable feeder for 15 lbs. / 8 in. spools specifically designed for shipyard (shipbuilding and offshore structure fabrication). This wire feeder will offer excellent feeding and welding performance with hard and soft shell welding wires. It will be compatible with any DC CV and/or CC power source.

The ACTIV8™ comes factory equipped with a K1500-2 Magnum® Tweco-compatible style #2-#4 gun bushing. Other K1500 series gun bushings are available as field installed options.

The ACTIV8™ with it's patented features are specially engineered to be the most rugged portable wire feeder available:

- Simple Controls – WFS knob on the front; Cold Feed/Gas Purge, Trigger Interlock and CV/CC switches inside.
- Across-The-Arc Operation (Voltage Sensing) – uses a work lead and a contactor for enabling welding current.
- Rating- 330 amp, 60% duty cycle rating.
- Single potted control board – design commonality.
- Gas apparatus – can be used for FCAW-G and GMAW processes.
- MAXTRAC® Wire Drive System – with two drive rolls allows best in class feeding performance.
- The plastic case is molded from a high impact, flame retardant plastic for high durability and low weight.
- The heart of the ACTIV8™ is the 2 roll MAXTRAC® drive. The patented features on the wire drive offer tool-less changing of the drive rolls and wire guides for quick spool changes. A tachometer controlled motor powers the patented drive rolls for smooth, steady feeding without slippage.

DUTY CYCLE

The ACTIV8™ wire feeders are intended for semi-automatic use. The maximum rating of the ACTIV8™ is based upon a 60% duty cycle; welding 6 minutes of welding followed by 4 minutes of idling within a 10 minute period.

RECOMMENDED PROCESSES

The ACTIV8™ wire drive feeds electrode for various processes as follows:(See Table B.1)

PROCESS LIMITATIONS

- GMAW-P procedures must be qualified by the customer.
- ACTIV8™ is not recommended for stitch or spot welding.

EQUIPMENT LIMITATIONS

- The duty cycle of the wire feeder is 330A, 60%. Duty cycle is based upon the amount of welding performed in a 10 minute period.
- The maximum spool size is 12.5 lb, 8" diameter.
- Maximum FCAW gun length is 15 ft.
- Maximum GMAW gun length is 15 ft.
- Push-pull guns do not work with the ACTIV8™.
- Not compatible with K489-7 Euro connector.

RECOMMENDED POWER SOURCES

- CV-305
- CV-400
- CV-655
- DC-400
- DC-600
- DC-655
- Invertec V-350-Pro
- FlexTec 450
- Multi-Weld 350
- Ranger 10,000
- Ranger 3 Phase
- Ranger 225, 225 GXT
- Ranger 250
- Ranger 305
- SAE-400
- Pipeliner 200G
- Classic 300
- Vantage 300
- Vantage 400
- Vantage 500

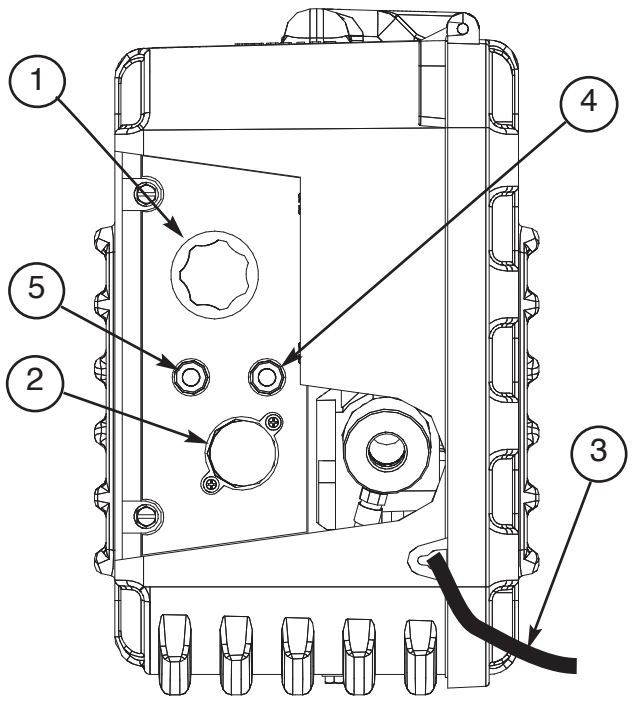
TABLE B.1

Process	Wire Diameter Range	Wire Feed Speed Range
GMAW	0.023 - 0.052" (0.6 - 1.3 mm)	50 - 800 ipm (1.3 - 20.3 m/minute)
FCAW	0.035 - 5/64" (0.9 - 2.0 mm)	

(See **Customer Assistance Policy** in the front of this Instruction Manual)

CASE FRONT CONTROLS (See Figure B.1)

FIGURE B.1



ITEM	DESCRIPTION
1	Wire Feed Speed Knob
2	5-pin gun trigger connector
3	Work lead
4	Thermal LED
5	Polarity LED

1. WIRE FEED SPEED KNOB

Use the Wire Feed Speed Knob to adjust the rate of wire feed speed.

WFS range:
50 to 800 ipm

Because the wire feeder is powered by the arc voltage, the full range of wire feed speed may not be available at low voltages.

Arc Voltage	Max WFS
15V	440 ipm
18V	523 ipm
21V	609 ipm
24V	690 ipm
27V	783 ipm

See **"Constant Current Operation"** for setting the Wire Feed Speed when in the CC mode.

2. TRIGGER CONNECTOR

There is one circular connector for the gun trigger on the front of the ACTIV8™. Note – if the gun trigger is already depressed when the feeder is powered up, the feeder will not activate. Release and then press the gun trigger to begin welding.

3. WORK LEAD

Always turn power off at the welding power source before moving the work lead.

The work lead attaches to the item being welded.

4. THERMAL LED, MOTOR OVERLOAD

The thermal LED illuminates when the wire drive motor draws too much current. If the thermal light illuminates, the wire drive will automatically shut-down for up to 30 seconds to allow the motor to cool. To start welding again, release the gun trigger, inspect the gun cable, liner (and conduit). Clean and make repairs as necessary. Start welding again when the problem has been safely resolved.

For best results, keep the gun cable and conduit as straight as possible. Perform regular maintenance and cleaning on the gun liner, conduit and gun. Always use quality electrode, such as L-50 or L-56 from Lincoln Electric.

5. POLARITY LED

The polarity LED illuminates when the wire feeder is connected to positive polarity.

INTERNAL CONTROLS (See Figure B.2)

ITEM	DESCRIPTION
1	Pressure Arm
2	Cold Feed / Gas Purge Switch
3	2-Step / Trigger Interlock Switch
4	CV / CC Switch
5	Spool Retainer
6	Spindle Brake
7	Gun Bushing, Thumb Screw and Socket Head Cap Screw.
8	Drive Hub

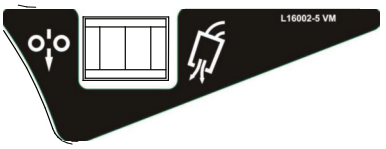
1. PRESSURE ARM

(See **"Installation Section"** for function.)

2. COLD FEED / GAS PURGE SWITCH

Place the rocker (momentary) switch in the FORWARD position for cold feeding, or in the REAR position for gas purge.

When cold feeding, the wire drive will feed electrode but neither the feedplate nor the gas solenoid will be energized. Adjust the speed of cold feeding by rotating the WFS knob. Cold feeding, or "cold inching" the electrode is useful for threading the electrode through the gun.



When gas purging the gas solenoid valve will energize but neither the power source output nor the drive motor will be turned on. The Gas Purge switch is useful for setting the proper flow rate of shielding gas.

3. 2-STEP/ TRIGGER INTERLOCK SWITCH

The 2-Step/Trigger Interlock switch changes the function of the gun trigger. 2-Step trigger operation turns welding on and off in direct response to the trigger. Trigger Interlock operation allows welding to continue when the trigger is released for comfort on long welds.

Place the rocker switch in the DOWN position for 2-Step operation or in the UP position for Trigger Interlock operation.

2-Step Trigger

2-Step trigger operation is the most common. When the gun trigger is pulled, the welding power source energizes the electrode output and the wire feeder feeds wire for welding. The power source and wire feeder continue welding until the trigger is released.

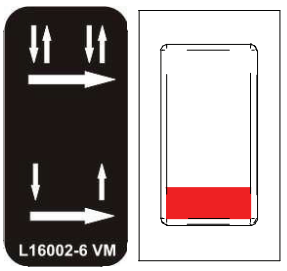
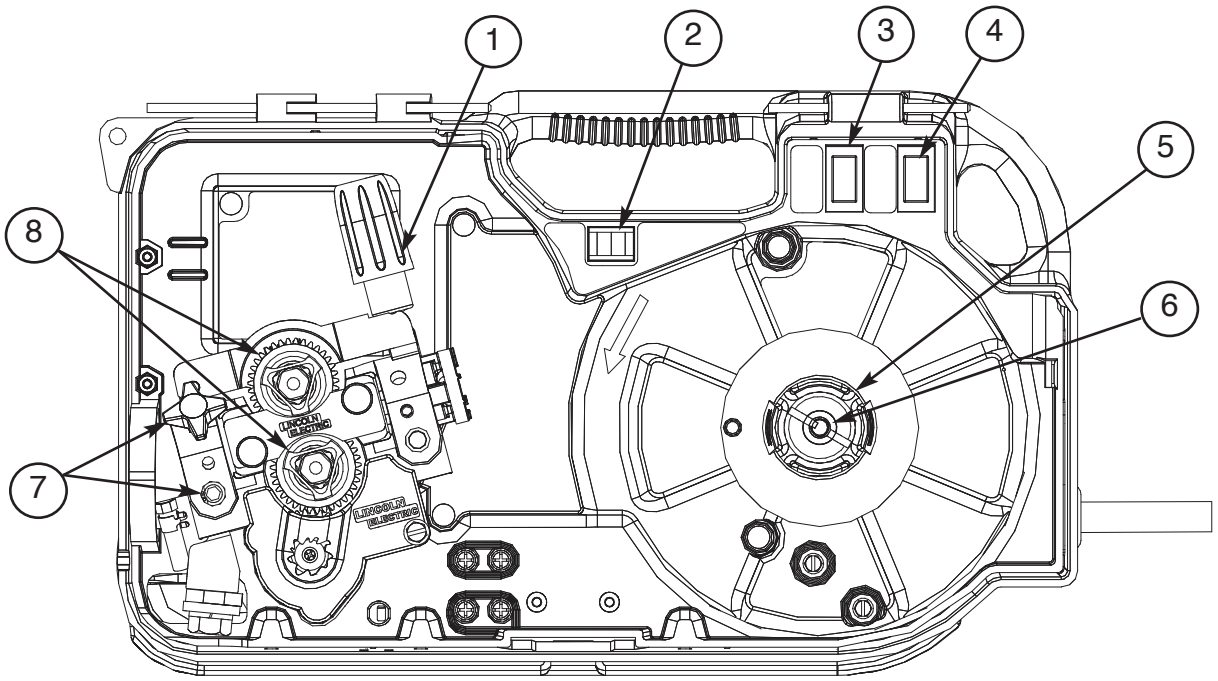


FIGURE B.2



Trigger Interlock

Trigger Interlock operation provides for operator comfort when making long welds. When the gun trigger is first pulled, the welding power source energizes the output and the wire feeder feeds wire for welding. The gun trigger is then released while the weld is made. To stop welding, the gun trigger is pulled again, and when it is released the welding power source output turns off and the wire feeder stops feeding wire.

⚠ CAUTION

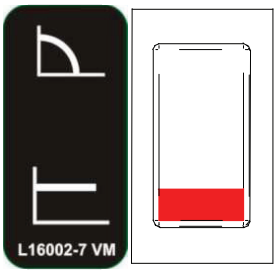
If the arc goes out while welding with trigger interlock operation, the electrode output from the welding power source remains energized and the wire feeder will continue to feed wire until the gun trigger is again pulled and then released.

4. CV/CC SWITCH

The CV/CC switch sets the wire feed speed control method for the wire feeder.

Place the rocker switch in the UP position for CC operation or in the DOWN position for CV operation.

In the CC position, the wire feed speed varies during welding. The arc length is maintained by changing the wire feed speed.



In the CV position, the wire feed speed remains constant during welding. A steady arc voltage is regulated by the power source by adjusting the arc current.

5. SPOOL RETAINER*

6. SPOOL BRAKE*

7. GUN BUSHING, THUMB SCREW AND SOCKET HEAD CAP SCREW*

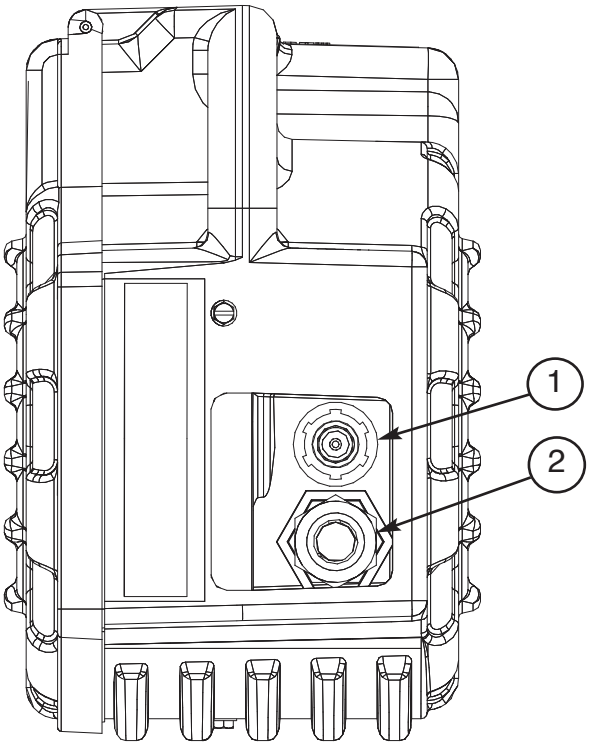
8. DRIVE ROLLS AND WIRE GUIDES*

* (See **"Installation Section"** for functions.)

REAR CONTROLS (See Figure B.3)

ITEM	DESCRIPTION
1	Shielding Gas Inlet with gas filter
2	Electrode Lead

FIGURE B.3



The serviceability of a product or structure utilizing the ACTIV8™ wire feeder is and must be the sole responsibility of the builder/user. Many variables beyond the control of The Lincoln Electric Company affect the results obtained in using the ACTIV8™ wire feeder. These variables include, but are not limited to, welding procedure, plate chemistry and temperature, weldment design, fabrication methods and service requirements. The available range of the ACTIV8™ wirefeeder may not be suitable for all applications, and the builder/user is and must be solely responsible for welding settings.

CONSTANT CURRENT OPERATION

Setting Wire Feed Speed in CC mode

When Across the Arc models are operated with CC power sources, the wire feed speed changes as the arc voltage changes. When the arc voltage increases, the wire feed speed will increase; and when the arc voltage decreases, the wire feed speed will decrease.

To preset the wire feed speed on CC power sources:

1. Set the Wire Feed Mode switch inside the ACTIV8™ to "CC".
2. Refer to the Figure B.4 graph to determine cc setting of the wire feed speed knob. Select the horizontal line representing the Desired Wire Feed Speed. (See Figure B.4 arrow for 375 in/min.)
3. Select the diagonal line representing the Arc Volts. (See Figure B.4 for 29 volts.)
4. Determine the vertical line representing the CC Wire Feed Speed setting where the above two lines cross. (See Figure B.4 arrow line for 450.) Set the ACTIV8™ wire feed speed knob to this value.

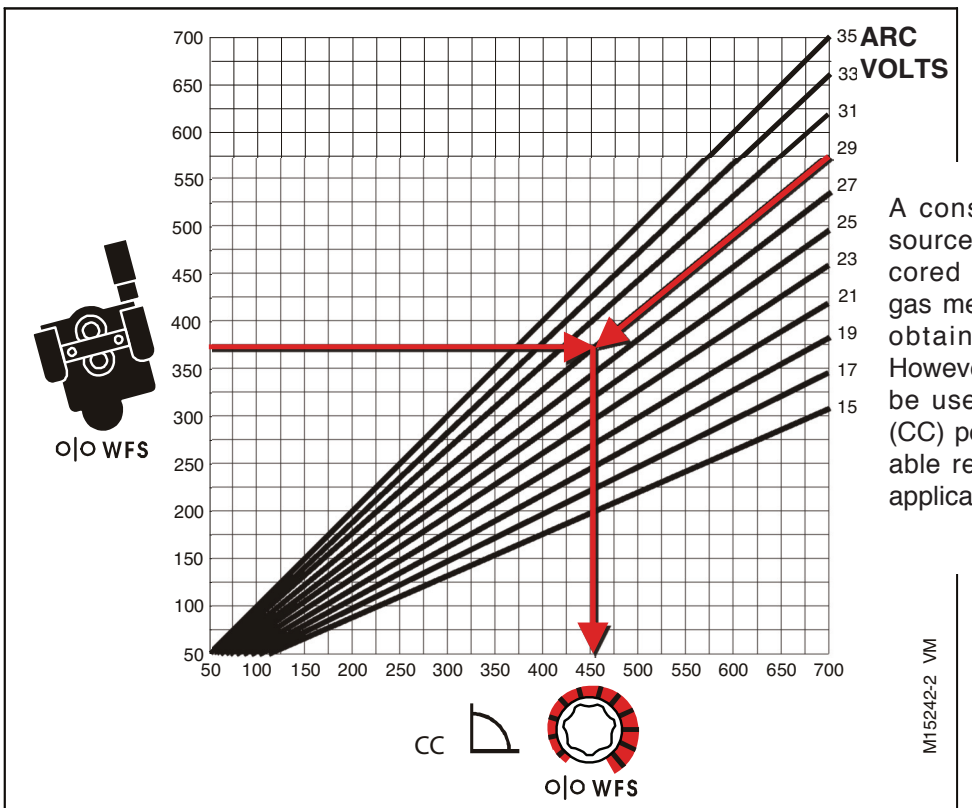
$$\text{CC WFS dial setting} = \frac{\text{desired WFS} \times 35}{\text{Arc Volts}}$$

Example:

$$= \frac{375 \text{ in/min. (Horizontal Line)} \times 35}{29 \text{ Arc Volts (Diagonal Line)}}$$

= 452.5 (Vertical Line) **Use 450** setting (See Figure B.4)

FIGURE B.4



A constant voltage (CV) power source is recommended for flux-cored arc welding. (FCAW) and gas metal arc welding (GMAW) to obtain code quality results. However, this wire feeder may also be used with a constant current (CC) power source to obtain passable results for noncritical quality applications.

CONSTANT CURRENT OPERATION

(See Figure B.5)

⚠ CAUTION

Lincoln Electric does NOT recommend constant current semiautomatic welding for applications which need to meet specified weld metal chemical or mechanical property requirements or weld quality requirements.

Most semiautomatic welding processes perform better using constant voltage power sources.

Welding codes usually do not address the power source selection or specifically, whether the welding process is to be operated in the constant voltage or constant current mode. Instead, codes typically specify limitations on the current, voltage, heat input and preheat temperature based on the material to be welded. The intention is to assure that proper weld material properties will develop.

Welding is sometimes performed using constant current power sources. The operation can be more convenient because it may allow the use of an existing stick (SMAW) power source and the power source can be placed at a distant location without any provision for adjusting the output settings.

For constant current operation, the power source is set to deliver the specified current. The power source regulates this current regardless of changes in the welding circuit, including cable length, electrode diameter, wire feed speed, contact tip to work distance, etc.

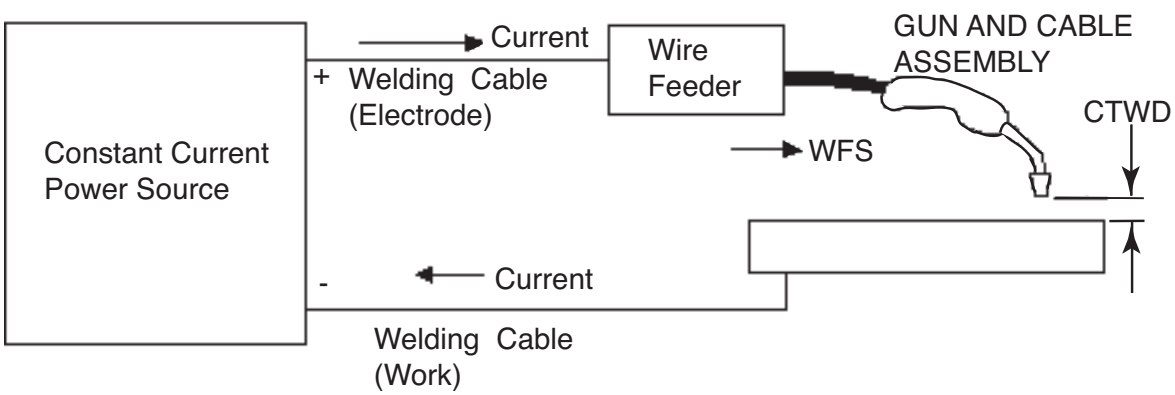
Changes in the wire feed speed (WFS) or contact tip to work distance (CTWD) affect the arc voltage when constant current power sources are used. Lowering the wire feed speed raises the voltage, raising the wire feed speed lowers the voltage. Lengthening the contact tip to work distance raises the voltage, shortening the contact tip to work distance lowers the voltage.

If the contact tip to work distance is properly maintained, a satisfactory operating voltage range may be achieved, and a sound weld may result. However, when a welder uses a longer contact tip to work distance, an arc-sensing wire feeder compensates by increasing the wire feed speed to regulate the voltage. Even if the voltage and current remain unchanged, the increased wire feed speed may result in a deposition rate well beyond the specified range of the electrode. Under these conditions, the specified weld metal properties may not be achieved.

Constant voltage power sources deliver large current surges to stabilize the arc when the electrode is shorted or the arc length is very short. However, a constant current power source does not provide such a response to stabilize the arc. It may be difficult to achieve required weld metal properties, or to achieve the required quality of welds needed to pass nondestructive tests, when such welds are made under constant current operation.

For these reasons, Lincoln Electric does **NOT** recommend constant current semiautomatic welding for applications which need to meet specified weld metal chemical or mechanical property requirements or weld quality requirements.

FIGURE B.5



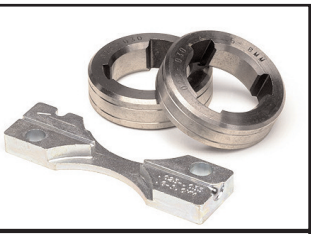
MAKING A WELD

The serviceability of a product or structure utilizing the ACTIV8™ wire feeder is and must be the sole responsibility of the builder/user. Many variables beyond the control of The Lincoln Electric Company affect the results obtained in using the ACTIV8™ wire feeder. These variables include, but are not limited to, welding procedure, plate chemistry and temperature, weldment design, fabrication methods and service requirements. The available range of the ACTIV8™ wire feeder may not be suitable for all applications, and the builder/user is and must be solely responsible for welding settings.

- Close the door on the ACTIV8™.
- Check that the power source is turned off.
- Connect the work cable to the metal to be welded. The work cable must make good electrical contact to the work. The work must also be grounded as stated in "Arc Welding Safety Precautions".
- Connect the ACTIV8™ electrode and work cable to the power source for the polarity and process to be used. Check that the appropriate power source settings are made for the procedure to be used. (Refer to the power source operating and connection instructions.)
- Place the ACTIV8™ conveniently near the work area in a safe location to minimize exposure to weld spatter and to avoid sharp bends in the gun cable.
- Connect the ACTIV8™ work clip to the work.
- Be sure the proper contact tip for the wire size being used is in the gun.
- Turn on the welding power source, as well as the shielding gas supply (if used.)
- Cut the electrode within approximately 3/8" (10mm) of the end of the contact tip for solid wire and within 3/4" (19mm) of the extension guide for cored wire.
- Position the electrode over the joint. The end of the electrode should be slightly off the work.
- Lower welding helmet, close the gun trigger and begin welding. Hold the gun so the contact tip to work distance gives the correct electrical stickout as required for the procedure being used.
- To stop welding, release the gun trigger and the pull the gun away from the work.

OPTIONAL KITS AND ACCESSORIES

DRIVE ROLL KITS, 2 ROLL DRIVE

WIRE TYPE	ELECTRODE SIZE	KP KIT		
Steel Wires:	.023 -.030" (0.6 - 0.8mm) .035" (0.9mm) .045" (1.2mm) .052" (1.4mm) .035 -.045" (0.9 - 1.2mm) .040" (1.0mm)	KP1696-030S KP1696-035S KP1696-045S KP1696-052S KP1696-1 KP1696-2	Includes: 2 V groove drive rolls and inner wire guide.	
Cored Wires:	.030 -.035" (0.8 - 0.9mm) .040 -.045" (1.0 - 1.2mm) .052" (1.4mm) 1/16" (1.6mm) .068" (1.7mm) 5/64" (2.0mm)	KP1697-035C KP1697-045C KP1697-052C KP1697-1/16C KP1697-068 KP1697-5/64	Includes: 2 Knurled drive rolls and inner wire guide.	

K3061-1	Plastic Case	Includes: a complete engineered plastic case.	
K1803-1	Work and Feeder Cables Package.	Includes: Twist-Mate to Lug 2/0 cable 14' (1.2m) long with Ground Clamp, and Twist-Mate to Lug 2/0 Cable 9' (2.7m) long.	
K1840-xx	Weld Power Cable, Twist-Mate to Lug.	Includes: Twist-Mate to Lug, 1/0 cable of length "xx".	
K1841-xx	Weld Power Cable, Twist-Mate to Twist-Mate.	Includes: Twist-Mate to Twist-mate, 1/0 Cable of length “xx” for length 25’(7.6m). Twist-Mate to Twist-mate, 2/0 Cable of length “xx” for length 50’(15.2).	
K852-95	Twist-Mate Plug.	Includes: Twist-Mate Plug, rubber boot, (2) set screws.	
K2946-1	Tweco® Style Cam-Lock Adapter Plug for Work & Electrode Cables.	Includes: Tweco® Style Cam-Lock Adapter Plug for 2/0 (70mm2) cable, rubber boot, (2) set screws, (1) Fillister head screw.	
K1842-xx	Weld Power Cable, Lug to Lug.	Includes: Lug to Lug, 3/0 Cable of length "xx" for lengths up to 60' (18.3m). Lug to Lug, 4/0 Cable of length "xx" for lengths greater than 60' (18.3m).	
KP3103-1	Shielding Gas Filter	Includes one in-line shielding gas filter.	
K3156-1	Flow Meter Kit	Includes one in-line flow meter assembly.	

K484	Jumper Plug Kit	Includes: 14 pin circular connector with jumper for leads 2-4. For use in power sources for turning the weld terminals "ON" at all times.	
K910-1	Ground Clamp	Includes: One 300 Amp Ground Clamp.	
K910-2	Ground Clamp	Includes: One 500 Amp Ground Clamp.	
K1500-1	Gun Receiver Bushing (for guns with K466-1 Lincoln gun connectors; Innershield and Subarc guns)	Includes: Gun receiver bushing, set screw and hex key wrench.	
K1500-2	Gun Receiver Bushing (for guns with K466-2, K466-10 Lincoln gun connectors; Magnum 200/300/400 guns and compatible with Tweco® #2-#4)	Includes: Gun receiver bushing with hose nipple, set screw and hex key wrench.	
K1500-3	Gun Receiver Bushing (for guns with K613-7 Lincoln gun connectors; Magnum 550 guns and compatible with Tweco® #5)	Includes: Gun receiver bushing with hose nipple, set screw and hex key wrench.	
K1500-4	Gun Receiver Bushing (for gun with K466-3 Lincoln gun connectors; compatible with Miller® guns.)	Includes: Gun receiver bushing with hose nipple, set screw and hex key wrench.	
K1546-2	Incoming Bushing for Lincoln Conduit	Includes: Feed Plate Incoming Bushings connect directly to wire conduit (not included), for use in boom system, long distances, or large payoff packages. Bushings can be used with any wire conduit (K515 or K565). For 1/16-1/8 in diameter wire. **NOTE:** T10642-325 Flex Tube Required with K1546-2	
K586-1	Deluxe Adjustable Gas Regulator.	Includes: Deluxe Gas Regulator for Mixed Gases, Adapter for CO^2 and 10' (3.0m) Hose.	
K283	Wire Feed Speed Meter	Includes: A wire feed speed meter with digital display.	

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.

- **Do not operate with covers removed.**
- **Turn off power source before installing or servicing.**
- **Do not touch electrically hot parts.**

- **Turn the input power to the welding power source off at the fuse box before working in the terminal strip.**
- **Only qualified personnel should install, use or service this equipment.**

ROUTINE MAINTENANCE

Routine maintenance consists of periodically blowing out the machine, using a low pressure airstream, to remove accumulated dust and dirt from inside the feeder. Check weld cables, control cables and gas hoses for cuts.

PERIODIC MAINTENANCE

- Replace the drive rolls and inner wire guide when they are worn.

- Blow out or vacuum the inside of the feeder.

CALIBRATION SPECIFICATION

Calibration of the ACTIV8™ may be required when the p.c. board, wire feed speed potentiometer or motor is replaced or serviced. Calibration matches the scale on the name plate to the actual wire feed speed.

To calibrate the ACTIV8™:

1. Turn power OFF at the welding power source.

2. Remove the spool of wire from the feeder. Remove the gun from the feed plate. Remove the plastic case from the center panel assembly. (See Figure D.1)

3. Connect the ACTIV8™ to the constant voltage DC power supply capable of supply at least 9 amps or welding power source. Connect the electrode to the "+" positive terminal and the work clip to the "-" negative terminal. Set the CC/CV switch to "CV".

4. Attach the gun trigger to the 5 pin amphenol at the front of the feeder.

5. Open the wire drive pressure arm.

6. Adjust the WFS knob to 50 IPM. Activate the gun trigger connected to the wire feeder.

7. Measure WFS. If reading is 49 to 51 IPM, proceed to step 8. If not unplug J3, insert shorting plug into Control PC Board J3 (shorts pins 4 & 8), and adjust WFS knob to 49 to 51 IPM and remove the shorting plug.

8. Set WFS knob to 300 IPM.

9. Measure WFS. If reading is 297 to 303 IPM, proceed to step 10. If not, insert shorting plug into Control PC Board J3, and adjust WFS knob to 297 to 303 IPM and then remove the shorting plug.

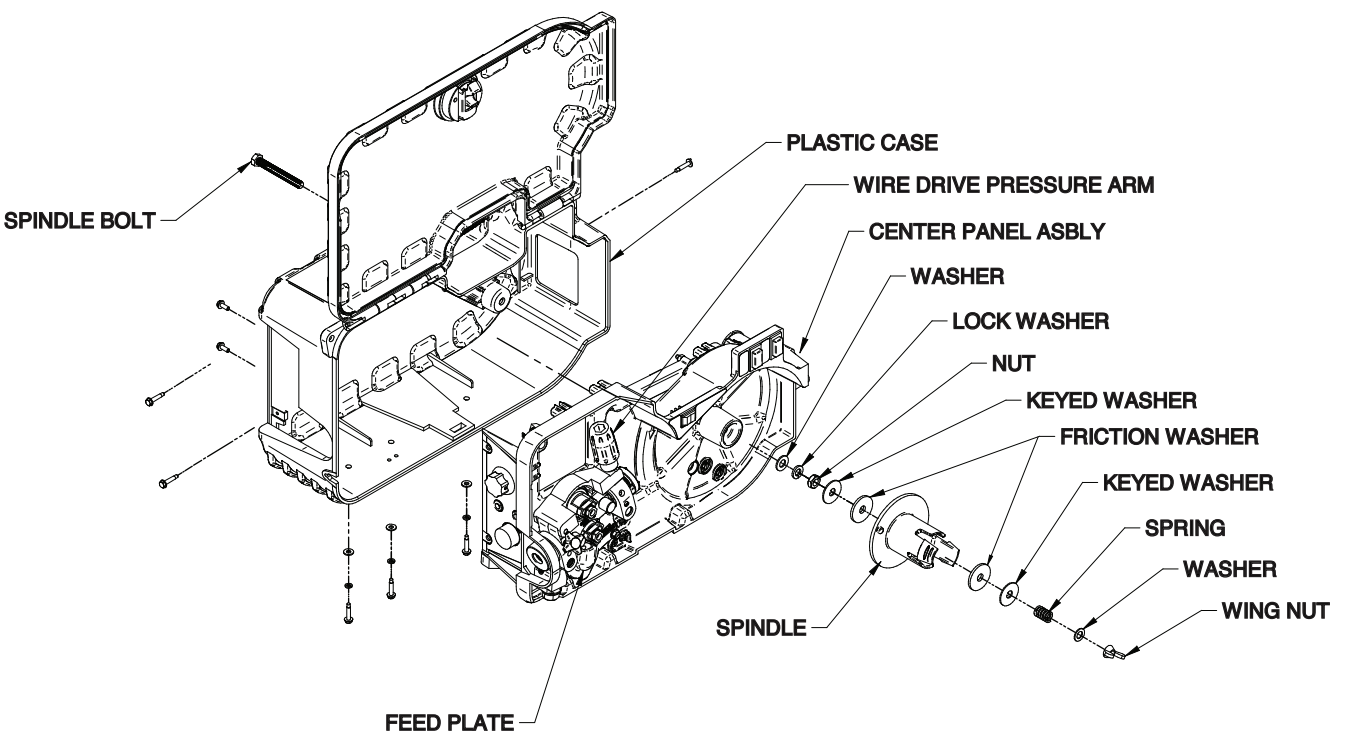
10. Set WFS knob to 800 IPM.

11. Measure WFS. If reading is 795 to 805 IPM calibration is complete. If not, insert shorting plug into Control PC Board J3, and adjust WFS knob to 795 to 805 IPM and then remove the shorting plug.

12. Release the gun trigger.

13. Turn power OFF at the power supply or welding power source, and reassemble.

FIGURE D.1



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, generally it states to contact your local Lincoln Authorized Field Service Facility.

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.

TROUBLESHOOTING

E-2

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
The feeder does power up - no voltage, no cold feed.	1. The work lead is disconnected or is a poor electrical connection.	1. Connect the work lead to the work in a location free of dirt, rust and paint.
	2. The power source is OFF.	2. Turn ON the power source.
The wire feeder power up but there is no output when the trigger is pulled. The shielding gas is flowing and the drive rolls turn.	1. The contactor coil connections are loose.	1. Verify the contactor coil connections.
	2. The contactor has failed.	2. Replace the contactor.
No shielding gas, or low shielding gas flow.	1. The gas supply is OFF or empty.	1. Verify the gas supply is ON and flowing.
	2. The gas hose is cut or crushed.	2. Route the gas hose so it avoids sharp corners and make sure nothing is on top of it. Repair or replace damaged hoses.
	3. Dirt or debris is in the solenoid.	3. Apply filtered shop at 80psi to the solenoid to remove dirt.
	4. There is a loose solenoid connection.	4. Check that all connections are in good condition.
	5. The solenoid has failed.	5. Replace the solenoid.
	6. Dirt or debris in the shielding gas filter.	6. Remove the shielding gas filter. Apply filtered shop air at 80 psi to the outlet (male thread side) of the shielding gas filter. Replace the shielding gas filter if needed.
Inconsistent wire feeding or wire not feeding but drive rolls turning.	1. The gun cable is kinked and/or twisted	1. Keep the gun cable as straight as possible. Avoid sharp corners or bends in the cable.
	2. The wire is jammed in the gun and cable.	2. Remove the gun from the wire feeder and pull the jammed wire out of the gun and cable.
	3. The gun liner is dirty or worn.	3. Blow dirt out of the liner with low pressure (40psi or less). Replace the liner if worn.
	4. The electrode is rusty or dirty.	4. Use only clean electrode. Use quality electrode, like L-50 or L-56 from Lincoln Electric.
	5. The contact tip is partially melted or has spatter.	5. Replace the contact tip.
	6. Improper gun liner, tip, drive rolls and/or inner wire guide.	6. Verify the proper parts are installed.
	7. Incorrect tension arm pressure on the drive rolls.	7. Adjust the tension arm per the Instruction Manual. Most electrodes feed well at a tension arm setting of "3".
	8. The spindle brake is too tight.	8. Verify the spool of wire moves with minimal effort.
	9. Worn drive roll.	9. Replace the drive rolls if worn or filled with dirt.

⚠ 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.

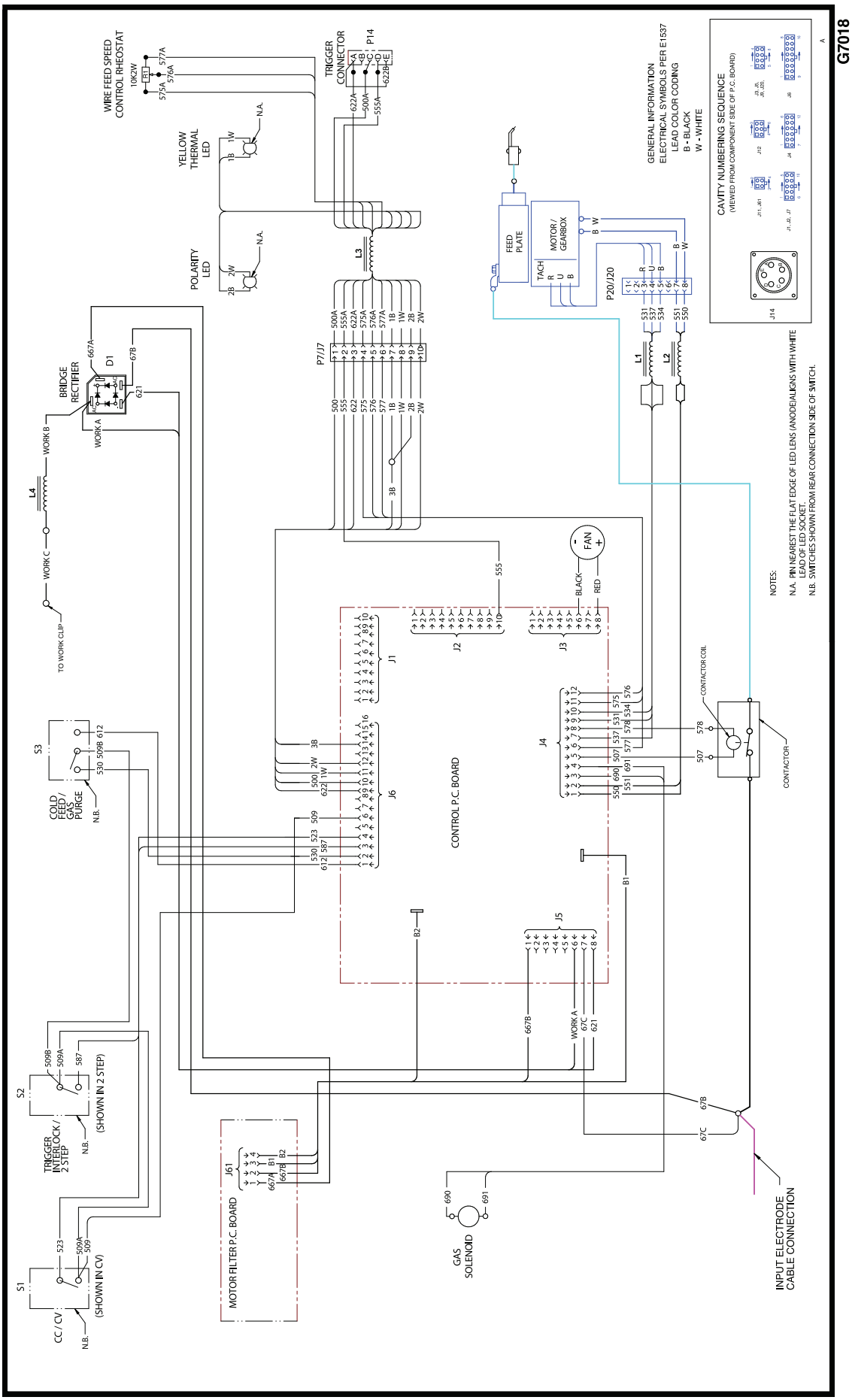
Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Wire feed speed consistently operates at the wrong value. The speed changes when the wire feed speed knob is adjusted.	1. The brushes on the motor are worn.	1. Replace the motor and tachometer assembly.
The wire feed speed stuck at 200-300 in/min and there is no change when the wire feed speed knob is adjusted.	1. The tachometer is connected improperly. 2. The tachometer has failed.	1. Verify all of the tachometer leads are properly connected. 2. Replace the motor and tachometer assembly.
Variable or "hunting" arc.	1. Wrong size, worn and/or melted contact tip. 2. Worn work cable or poor work connection. 3. Wrong polarity. 4. The gas nozzle is extended beyond the contact tip or the wire stickout is too long. 5. Poor gas shielding on processes requiring gas.	1. Replace the contact tip. 2. Verify all work and electrode connections are tight and that the cables are in good condition. Clean/replace as necessary. 3. Adjust polarity to the recommended procedure. Verify DIP switch #7 setting matches the electrode polarity. 4. Adjust the gas nozzle and shorten the stickout to ½ to ¾ inches. 5. Check gas flow and mixture. Remove or block sources of drafts.
Poor arc starts with sticking or "blast-offs", weld porosity, narrow and ropy looking bead.	Improper procedures or techniques.	See "Gas Metal Arc Welding Guide" (GS-100)

⚠ CAUTION

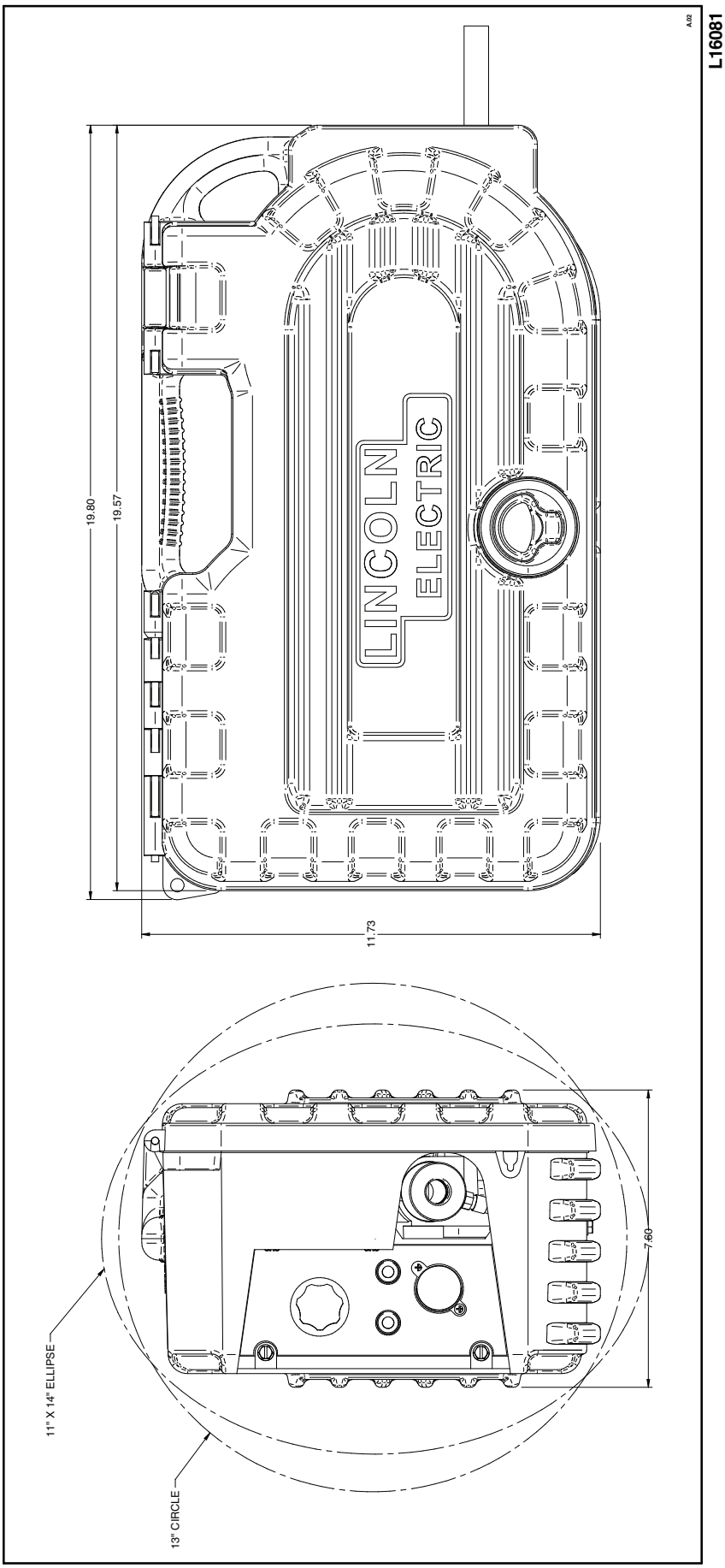
If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

WIRING DIAGRAM- ACTIV8



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, write to the Service Department for a replacement. Give the equipment code number.

DIMENSION PRINT



NOTES

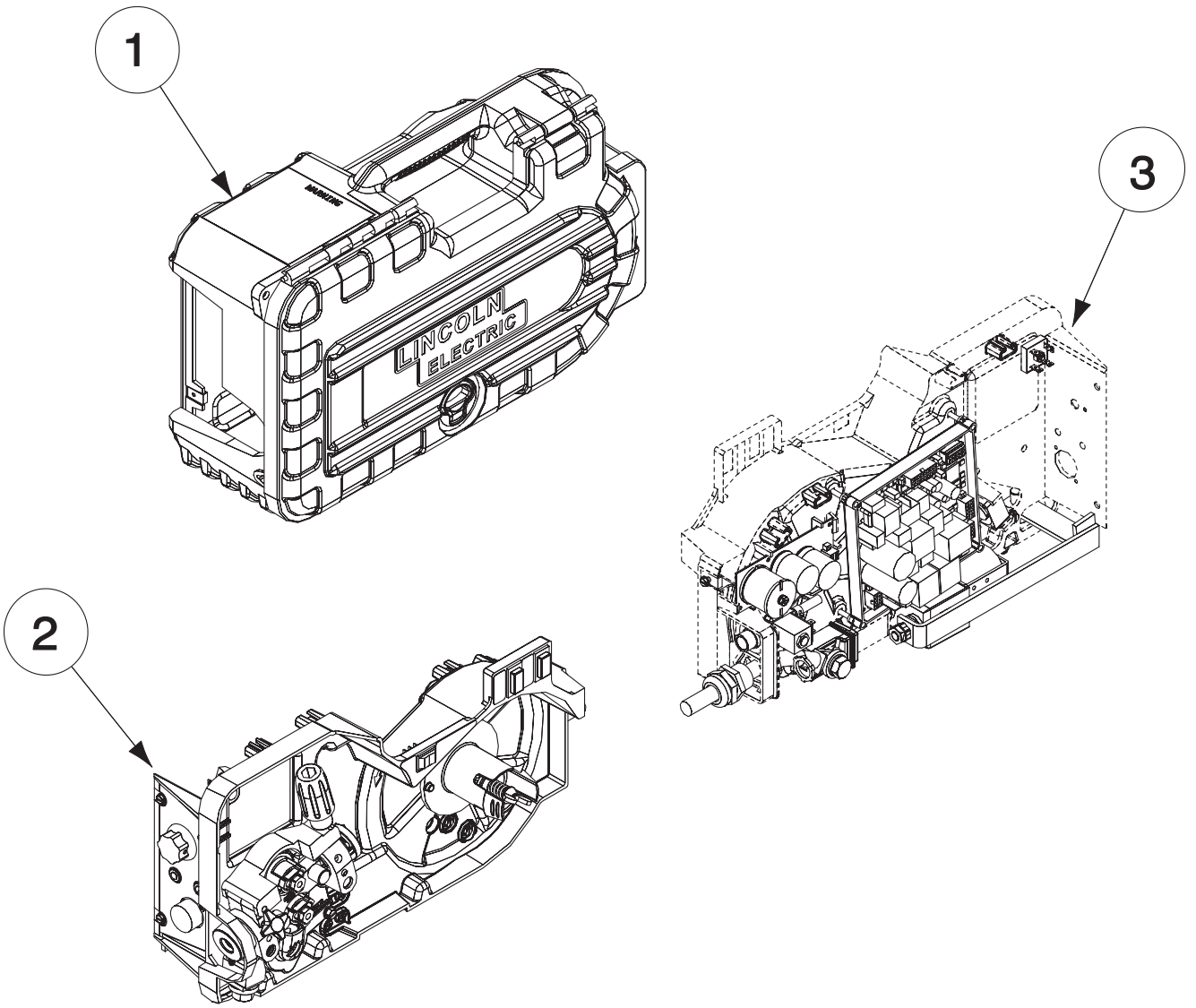
P-677

PARTS LIST FOR

ACTIV8™

P-677-A

ILLUSTRATION OF SUB-ASSEMBLIES



P-677-A.1

ACTIV8™

For Code: 11770, 12198

Do Not use this Parts List for a machine if its code number is not listed. Contact the Service Department for any code numbers not listed.

Use the Illustration of Sub-Assemblies page and the table below to determine which sub assembly page and column the desired part is located on for your particular code machine.

Sub Assembly Item No. →		1	2	3					
SUB ASSEMBLY PAGE NAME →	Miscellaneous Items	Plastic Case Assembly	Wire Drive Assembly, Spindle & Miscellaneous	P.C. Boards, Fan & Contactor Assembly					
PAGE NO. →	P-677-B.1	P-677-C	P-677-D	P-677-E					
CODE NO. ↓									
11770	1	1	1	1					
12198	1	1	1	2					

MISCELLANEOUS ITEMS
(THESE ITEMS ARE NOT ILLUSTRATED)

P-677-B.1

# Indicates a change this printing.

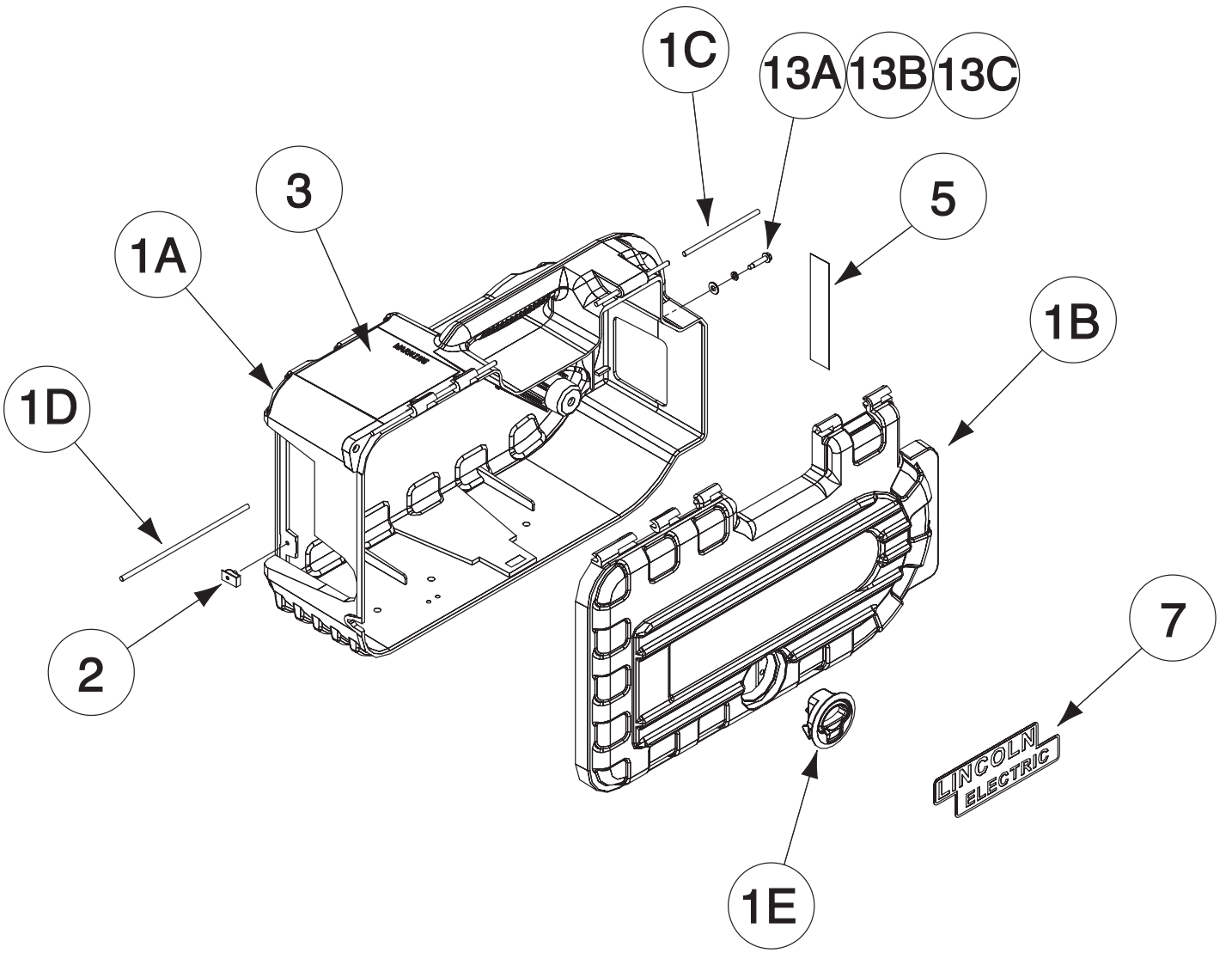
Use only the parts marked “x” in the column under the heading number called for in the model index page.

DESCRIPTION	PART NO.	QTY.	1	2	3	4	5	6	7	8	9
Inert Arc Nut (Brass)	T15007-1	1	X								
Hose Nipple (Brass)	T15008	1	X								
Flex Tube	T10642-325	1	X								
Ground Lead Assembly	S17211-7	1	X								

NOTES

P-677-C

Plastic Case Assembly



P-677-C.1

# Indicates a change this printing.

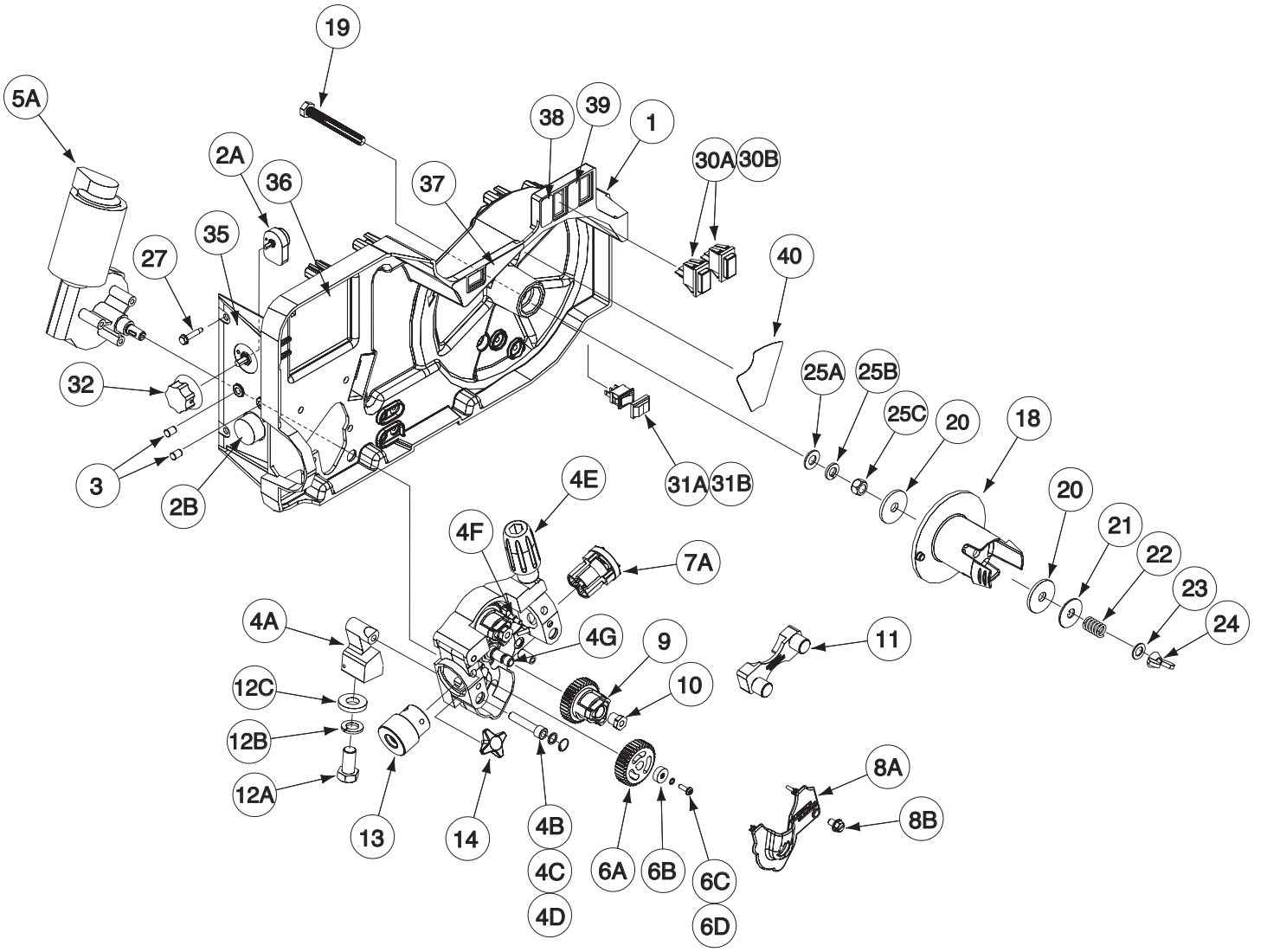
Use only the parts marked “x” in the column under the heading number called for in the model index page.

ITEM	DESCRIPTION	PART NO.	QTY.	1	2	3	4	5	6	7	8	9
	Complete Plastic Case Asbly (G7039), Includes:	K3061-1	1	X								
	Plastic Case Asbly (G6696), Includes:	**NSS**	1	X								
1A	Case	**NSS**	1	X								
1B	Door	**NSS**	1	X								
1C	Hinge Pin	S26671-2	1	X								
1D	Hinge Pin	S26671-3	1	X								
1E	Door Latch	M20977-1	1	X								
1F	Metric Screw (Not Shown)	T14731-73	2	X								
2	Speed Nut	T11525-8	2	X								
3	Warning Decal	S20601-4	1	X								
4	Procedure Decal (Not Shown)	L16003	1	X								
5	Decal (Rating) (L16002-2) (Part of L16002)	**NSS**	1	X								
6	Decal (LECO Logo) (Not Shown) (L16002-8) (Part of L16002)	**NSS**	1	X								
7	Decal (Lincoln Logo) (L16002-9) (Part of L16002)	**NSS**	1	X								
8	Decal (Product Name) (Not Shown) (L16002-10) (Part of L16002)	**NSS**	1	X								
9	Decal (Product Name) (Not Shown) (L16002-11) (Part of L16002)	**NSS**	1	X								
10	Warning Decal (Not Shown)	S25815	1	X								
13A	Self Drilling Screw	S28933-1	3	X								
13B	Lock Washer	E106A-1	3	X								
13C	Plain Washer	S9262-27	3	X								

NSS - Not Sold Separately

P-677-D

Wire Drive Assembly, Spindle & Miscellaneous



P-677-D.1

# Indicates a change this printing.

Use only the parts marked “x” in the column under the heading number called for in the model index page.

ITEM	DESCRIPTION	PART NO.	QTY.	1	2	3	4	5	6	7	8	
	Wire Drive Assembly, Includes:	G7040	1	X								
1	Center Panel (Plastic)	G6695	1	X								
2A	Connector & Harness Assembly, Includes:	M22646-2	1	X								
2B	Connector (5 Socket)	S12021-66	1	X								
2C	Self Tapping Screw (Not Shown)	S8025-118	2	X								
3	LED Lens (Includes S23094-1 Retaining Ring)	S23093-1	2	X								
4	Feedplate Assembly, Includes:	M19932-7	1	X								
4A	Connection Bar	M19611-1	1	X								
4B	Socket Head Cap Screw	T9447-112	1	X								
4C	Plain Washer	S9262-167	1	X								
4D	Retaining Ring	S9776-69	1	X								
4E	Adjustment Arm Assembly	M20593-3	1	X								
4F	Wire Guide Retaining Pin	S22672	2	X								
4G	Shaft	S25402	2	X								
4H	Set Screw (Not Shown)	S11604-47	1	X								
4K	Thread Forming Screw (Not Shown)	S9225-102	4	X								
5A	Motor Gearbox (with Tachometer)	L15910	1	X								
5B	Lock Washer (Not Shown)	E106A-2	3	X								
5C	M6 x1.00 PPNHS (Not Shown)	T14731-18	3	X								
6A	Drive Gear	M19870	1	X								
6B	Collar	S25414	1	X								
6C	Lock Washer	T4291-A	1	X								
6D	Metric Screw	T14731-47	1	X								
7A	Ball Bushing Assembly	M18947-1	1	X								
7B	Set Screw (Not Shown)	S11604-21	1	X								
8A	Cover	M19999	1	X								
8B	Thread Forming Screw	S9225-102	1	X								
9	Drive Roll Shaft Assembly	S25638	2	X								
10	Retainer	S25403	2	X								
11	Wire Guide Assembly	KP2071-3	1	X								
12A	1/2-13 x 1.00 HHCS	CF000021	1	X								
12B	Lock Washer	E106A-15	1	X								
12C	Plain Washer	S9262-1	1	X								
13	Gun Adapter Assembly	S22905-2	1	X								
14	Screw Stud	T13858	1	X								
18	Spindle	L15659	1	X								
19	Spindle Bolt Rework	S28271	1	X								
20	Friction Washer	S17435-5	2	X								
21	Keyed Washer	T12965-3	2	X								
22	Compression Spring	T11862-68	1	X								
23	Plain Washer	S9262-120	1	X								
24	Wing Nut	T9968-5	1	X								
25A	Plain Washer	S9262-120	1	X								
25B	Lock Washer	E106A-16	1	X								
25C	3/8-16 HJN	CF000121	1	X								
26	Speed Nut (Not Shown)	T11525-8	1	X								
27	#10-24 x 1.00 Self Drilling Screw	S28933-1	3	X								
30A	Rocker Switch	T10800-68	2	X								
30B	Rocker Switch Boot	S28672-1	2	X								
31A	Rocker Switch	T10800-69	1	X								
31B	Rocker Switch Boot	S28672-2	1	X								

P-677-D.2

# Indicates a change this printing.

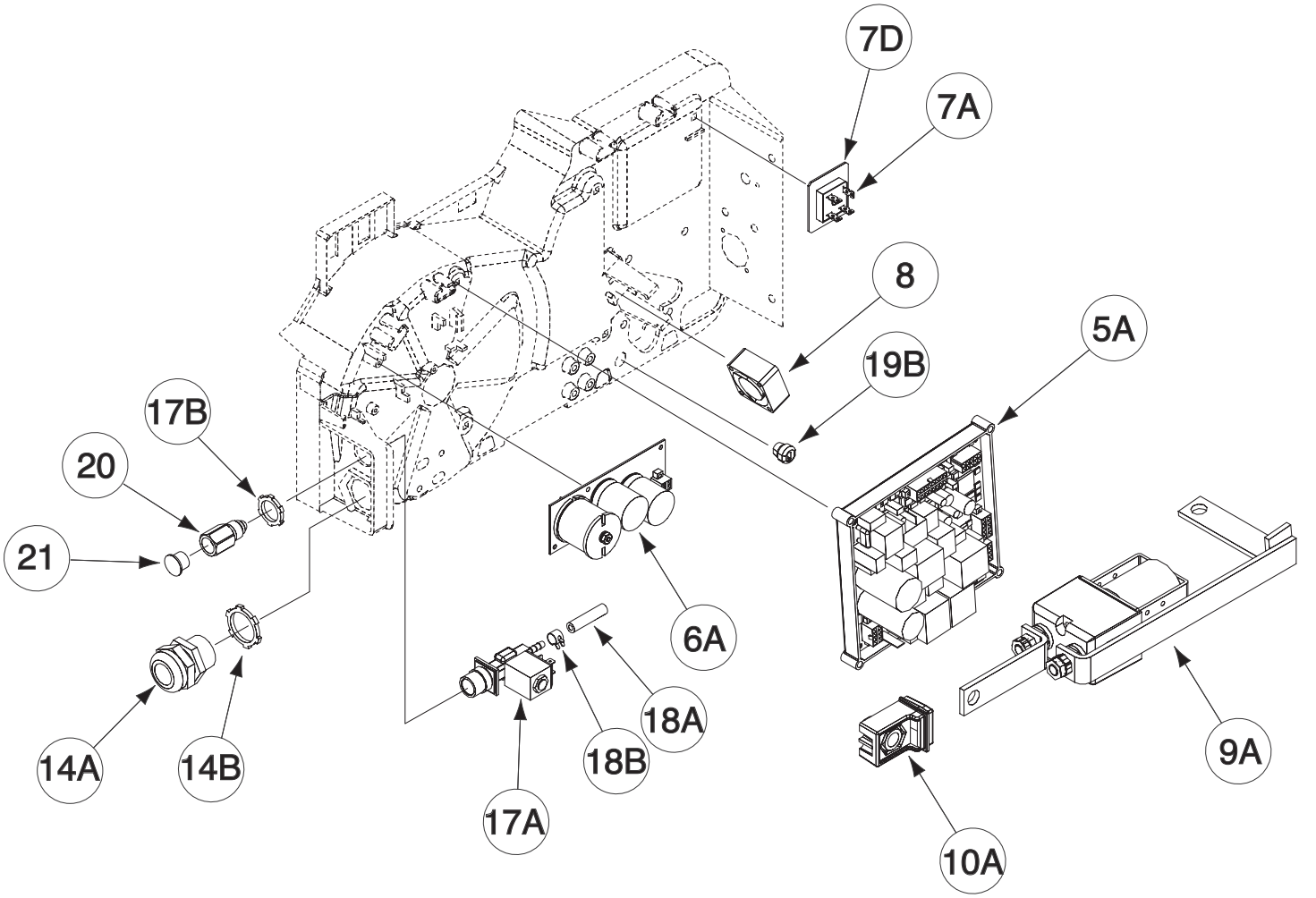
Use only the parts marked “x” in the column under the heading number called for in the model index page.

ITEM	DESCRIPTION	PART NO.	QTY.	1	2	3	4	5	6	7	8	9
32	Potentiometer Knob	M22778-2	1	X								
35	Decal, Nameplate (L16002-1) (Part of L16002)	**NSS**	1	X								
36	Decal, Pressure Arm (L16002-3) (Part of L16002)	**NSS**	1	X								
37	Decal, Cold Feed/Gas Purge (L16002-5) (Part of L16002)	**NSS**	1	X								
38	Decal, 2 Step/Trigger Interlock (L16002-6) (Part of L16002)	**NSS**	1	X								
39	Decal, CV/CC (L16002-7) (Part of L16002)	**NSS**	1	X								
40	Decal, Panel (L16002-4) (Part of L16002)	**NSS**	1	X								

NSS - Not Sold Separately

NOTES

P.C. Boards, Fan & Contactor Assembly



P-677-E.1

# Indicates a change this printing.

Use only the parts marked “x” in the column under the heading number called for in the model index page.

ITEM	DESCRIPTION	PART NO.	QTY.	1	2	3	4	5	6	7	8	9
5A	Control P.C. Board	S28659-[ ]	1	X	X							
5B	Carriage Bolt (Not Shown)	T11827-69	4	X	X							
5C	#10-24 HN	CF000010	4	X	X							
5C	#10-24 HLN (Not Shown)	T9187-13	4	X	X							
6A	Motor Filter P.C. Board Assembly	S27506-[ ]	1	X	X							
6B	Self Tapping Screw (Not Shown)	S8025-118	2	X	X							
7A	Diode Bridge	T13637-5	1	X	X							
7B	Carriage Bolt (Not Shown)	T11827-49	1	X	X							
7C	#10-24 HLN (Not Shown)	T9187-13	1	X	X							
7D	Heatsink (Not Shown)	S14008-22	1	X	X							
8	Fan Assembly	S27028	1	X	X							
9A	Contactor Assembly	L15947	1	X	•							
9A	Contactor Assembly	L15947-1	1	•	X							
9B	Metric Screw (Not Shown)	T14731-73	4	X	X							
9C	Lock Washer (Not Shown)	E106A-1	4	X	X							
10A	Insulated Mounting Block	M21096	1	X	X							
10B	1/2-13 HN (Not Shown)	CF000027	1	X	X							
10C	Self Tapping Screw (Not Shown)	S9225-99	2	X	X							
11	Wiring Harness (P2, P4, P5, P6, P20, P61 & J7) (Not Shown)	G6754	1	X	X							
14A	Cord Grip Connector	S19999-5	1	X	X							
14B	Conduit Lock Nut	T14370-2	1	X	X							
17A	Solenoid Assembly	M17294-8	1	X	X							
17B	Conduit Lock Nut	T14370-1	1	X	X							
18A	Flex Tube	T10642-217	1	X	X							
18B	Hose Clamp	T13777-8	1	X	X							
19A	Toroid Assembly (Not Shown)	S22104-16	1	X	X							
19B	Grommet	T9274-5	1	X	X							
20	Shielding Gas Filter	S28863	1	X	X							
21	Hole Plug	T12250-5	1	X	X							

Note: When ordering new printed circuit boards indicate the dash number [ ] of the “Old” board that is to be replaced. This will aid Lincoln in supplying the correct and latest board along with any necessary jumpers or adapters. The dash number brackets [ ] have purposely been left blank so as to eliminate errors, confusion and updates.

NOTES

NOTES

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 for any updated information.

THE LINCOLN ELECTRIC COMPANY
22801 St. Clair Avenue • Cleveland, OH • 44117-1199 • U.S.A.
Phone: +1.216.481.8100 • www.lincolnelectric.com