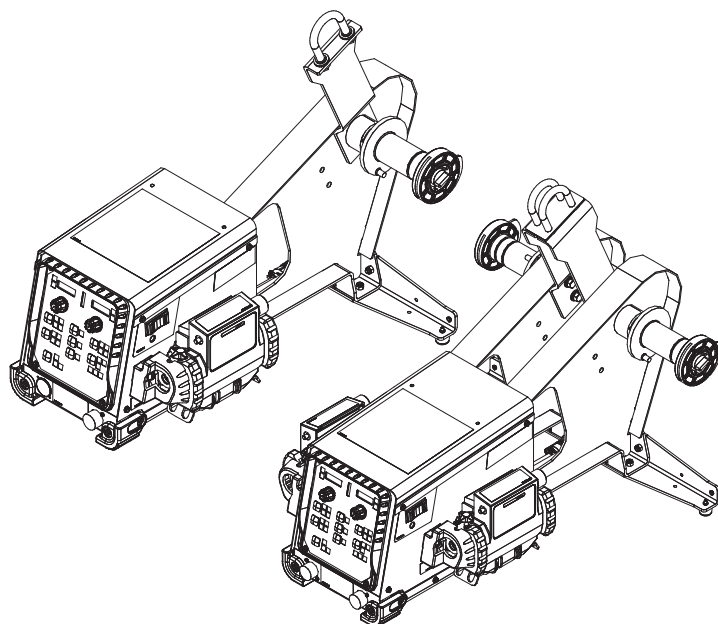


## Operator's Manual

# ***Flex Feed™ 84, Flex Feed™ 84 Dual***



For use with machines having Code Numbers:

**Flex Feed 84: 12251, 12252,  
12253, 12544, 13033, 13034,  
13035, 13040**

**Flex Feed 84 Dual: 12258,  
12259, 12262, 12545, 13036,  
13037, 13038, 13041**

**Flex Feed 84 Control Box:  
12271, 13039**



**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.

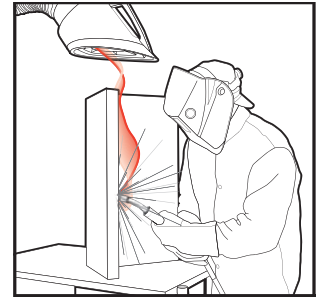
**READ** and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

**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.

- 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 Z87.1 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.





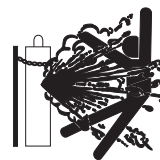
## WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.



- 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 02269-9101.
- 6.j. Do not use a welding power source for pipe thawing.



## CYLINDER MAY EXPLODE IF DAMAGED.



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

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CONTENT/DETAILS MAY BE CHANGED OR UPDATED WITHOUT NOTICE. FOR MOST CURRENT INSTRUCTION MANUALS, GO TO PARTS.LINCOLNELECTRIC.COM.

## GENERAL PHYSICAL DESCRIPTION

The Flex Feed 84 is an industrial, modular wire feeder. At the heart of the feeder is the proven wire drive and motor, capable of feeding large diameter electrodes and pulling through long conduits.

The modular platform allows the Flex Feed 84 to be used in many applications. The user interface may be separated from the wire drive for “boom” applications. For single feeders, the feed plate may be located on either the left or right hand side of the wire drive housing. Two single Flex Feed 84 wire drives may be connected to one user interface. A dual wire drive is offered for a compact set-up. The same user interface is used for both single and dual wire drive systems.

Single wire drives are available with a gouging kit for automatic power routing. Dual feeders are available with power routing contactors so only the active wire drive is at weld potential.

## GENERAL FUNCTIONAL DESCRIPTION

The Flex Feed 84 is ideal for applications requiring display of preset voltage at the wire feeder. In addition, the feeder has digital display of the wire feed speed and for amperage. Each wire drive stores 4 procedures, with individual start and crater settings. An hour meter records actual arc time.

Included with the wire drive is a pinion gear for high speed operation.

The wire drive easily rotates to any angle.

A new series of gun adapters has been created for better reliability and lower voltage drop.

Built-in to the wire drive is a terminal strip for easy installation in hard automation setups. When operating from a PLC, the control box may be removed to prevent operator adjustments.

## RECOMMENDED PROCESSES

- GMAW
- FCAW
- SAW
- CAG (with gouging option installed)

## PROCESS LIMITATIONS

- Processes must be within the duty cycle and rating of the wire feeder.
- The gouging kit may not be used when the feeder is configured for Hard Automation.

## EQUIPMENT LIMITATIONS

- Does not include weld cables
- Operates on 24 – 42 VAC input
- The user interface may be located a maximum of 50 feet away from the wire drive.
- No more than (2) wire drives may be connected to (1) user interface.
- Does not operate with the CV-300 or V-300.
- Must use newer gun adapter kits. Not compatible with K1500-1, K1500-2, K1500-3, K1500-4 K1500-5 and K489-7 gun adapter kits.
- K1449-1 Dual Procedure Remote Control is not supported
- Not compatible with K2335-1 competitive adapter. Use K2335-2.
- Flex Feed 84 control boxes are not compatible with LN-10, DH-10 or STT-10 wire drives
- Flex Feed 84 wire drives are not compatible with LN-10, DH-10 or STT-10 control boxes.

## RECOMMENDED POWER SOURCES

Flextec 350X

Flextec 450

Flextec 500

Flextec 500P

Flextec 650

V-350

CV-400

CV-655

DC-400

DC-600

DC-1000

---

## DESIGN FEATURES

### Flexible System

- Bench or boom configurations
- One single, one dual or two single wire drives may connect to a user interface.
- The feed plate may be located on the left or right side of the single wire drive.
- Uses 14 pin K1797-xx cables. Cables may be joined together to make longer lengths.
- Built-in hard automation interface.

### Wire Drive

- 4 roll wire drive
- Changeable gun bushings
- Wire Drive rotates
- Ball bushing inlet guide
- High resolution encoder on the motor
- Motor runs both forward and reverse
- 30 tooth pinion gear included for expanded wire feed speed range.

### User Interface

- Displays voltage and wire feed speed or amps
- Multiple trigger modes
- Limits
- Hour meter
- Means to calibrate wire feed speed, amps and voltage
- Digital communication to the wire drive



## TECHNICAL SPECIFICATIONS

### FLEX FEED 84, FLEX FEED 84 DUAL, CONTROL BOX

K5000-xx, K5002-xx, K4429-xx, K4430-xx

INPUT VOLTAGE AND CURRENT		
Voltage	Input Amperes	NOTES
24 – 42 VAC	9 A	Wire Drives
24 – 42 VAC	1 A	User Interface

RATED OUTPUT			
		Duty Cycle	Amperes
Wire Drive Only	Wire Drive	60%	600 Amps
With gouging kit	Wire Drive	60%	500 Amps
	Gouging Stud	30%	600 Amps
Wire Drive with Contactors	Wire Drive	60%	500 Amps

PHYSICAL DIMENSIONS (AS SHIPPED FROM THE FACTORY)				
Model	Height	Width	Depth	Weight
Flex Feed 84 Wire Drive only, single	11.6 in (257 mm)	13.6 in (345 mm)	13.3 in (338 mm)	37 lb (16.8 kg)
Flex Feed 84 Wire Drive only, Dual	11.9 in (302 mm)	17.2 in (437 mm)	15.9 in (404 mm)	59 lb (26.8 kg)
Flex Feed 84 Control Box	11.0 in (279 mm)	8.7 in (221 mm)	3.6 in (31 mm)	6.5 lb (2.9 kg)
Standard Duty Wire Reel Stand	13.3 in (338 mm)	11.0 in (279 mm)	10.3 in (262 mm)	11 lb (5.0 kg)
Heavy Duty Wire Reel Stand	25.2 in (640 mm)	11.0 in (279 mm)	14.6 in (371 mm)	19 lb (8.6 kg)

TEMPERATURE RANGES	
Operating Temperature	-40°F to 104°F (-40°C to +40°C)
Storage Temperature	-40°F to 185°F (-40°C to +85°C)

Thermal tests have been performed at ambient temperature. The duty cycle (duty factor) at 40°C has been determined by simulation.

AGENCY MARKINGS		
Model	Conformity Mark	Standard
All	cCSA <sub>US</sub>	CAN/CSA-E60974-5 ANSI/IEC 60974-5
K5000 K5002	CE	EN 60974-5 EN 50199
K4429 K4430	CCC	GB15579.5

RoHS IP2X for the wire drive and user interface.  
EMC complies with IEC 60974-10, Class A

GEARING – WFS RANGE – APPLICABLE WIRE SIZE				
Gearbox gearing	Pinion Gear	Speed	Solid Wire Size	Cored - Wire Size
37.69:1 (standard speed)	20*	35 – 500 inch/min (0.9 – 12.7 m/min)	.025" – 3/32" (0.6 – 2.4 mm)	.035" – .120" (0.9 – 3.0 mm)
	30	50 – 750 inch/min (1.3 – 19.0 m/min)	.025" – 1/16" (0.9 – 1.6 mm)	.035 – 5/64" (0.9 – 2.0 mm)
22.57:1 (high speed) (field installed option)	20	50 – 750 inch/min (1.3 – 19.0 m/min)	.025" – 1/16" (0.9 – 1.6 mm)	.035 – 5/64" (0.9 – 2.0 mm)
	30	50 – 1200 inch/min (1.3 – 30.4 m/min)	.025" – .045" (0.9 – 1.2 mm)	.035 – 1/16" (0.9 – 1.6 mm)

\* = pinion gear installed in the wire drive as equipped from the factory.

SINGLE WIRE DRIVE FEEDERS							
K#	Configuration	Wire Reel Stand	Gun Adapter	Control Cable	Inlet Bushing	Gouging Kit	Contactor
K5000-1	Boom	N	Std #2-#4	N	K3929-1	N	N
K5000-2	Bench	Hvy Duty	Std #2-#4	K1797-10	K1551-2	N	N
K5000-3	Bench	N	Std #2-#4	N	K3929-1	Y	Y

DUAL WIRE DRIVE FEEDERS							
K#	Configuration	Wire Reel Stand	Gun Adapter	Control Cable	Inlet Bushing	Gouging Kit	Contactor
K5002-1	Boom	N	Std #2-#4	N	K3929-1	N	N
K5002-2	Bench	Hvy Duty	Std #2-#4	K1797-10	K1551-2	N	Y
K5002-5	Bench	Hvy Duty	Std #2-#4	K1797-10	K1551-2	N	N

ONE-PAKS	
K#	Configuration
K5000-11	Single boom kit for up to 16' boom. Includes: K5000-1 Wire Drive, K5004-1 Control Box and K1797-25 Control Cable
K5002-11	Dual boom kit for up to 16' boom. Includes: K5002-1 Wire Drive, K5004-1 Control Box, and K1797-25 Control Cable

CONTROL BOXES	
K#	Configuration
K5004-1	Control Box with User Interface

# **READ ENTIRE INSTALLATION SECTION BEFORE INSTALLING THE FLEX FEED™ 84 OR FLEX FEED™ 84 DUAL.**

## **⚠ 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.
- Do not touch the wire drive, drive rolls, wire coil or electrode when welding output is **ON**.
- Wire feeder may be connected to a piece of automatic equipment that may be remotely controlled.
- Do not operate with covers, panels or guards removed.
- Do not let the electrode or wire spool touch the wire feeder housing.
- Insulate yourself from the work and ground.
- Always wear dry insulating gloves.
- The lift bail is insulated from the wire feeder enclosure. If an alternate hanging device is used, it must be insulated from the wire feeder enclosure.



### **MOVING PARTS can injure.**

- Keep away from moving parts.
- Wear Eye Protection

## **SELECT SUITABLE LOCATION**

For best wire feeding performance, place the Flex Feed 84 on a stable and dry surface.

Do not submerge the Flex Feed 84.

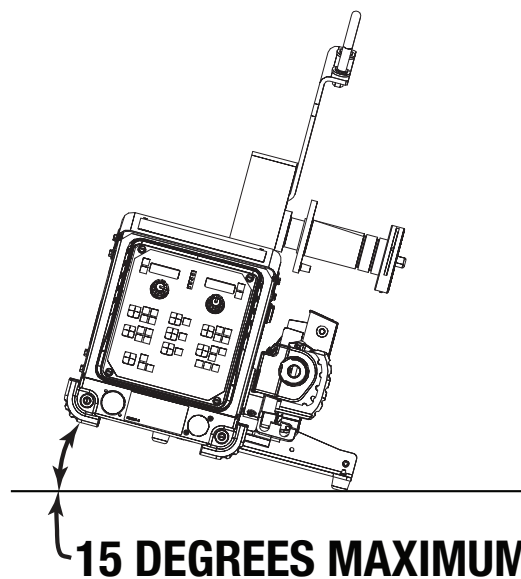
The Flex Feed 84 is rated IP2X and is suitable for indoor use.

This equipment is for industrial use only and it is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in residential locations due to conducted as well as radiated radio-frequency disturbances. The EMC or RF classification of this equipment is Class A.

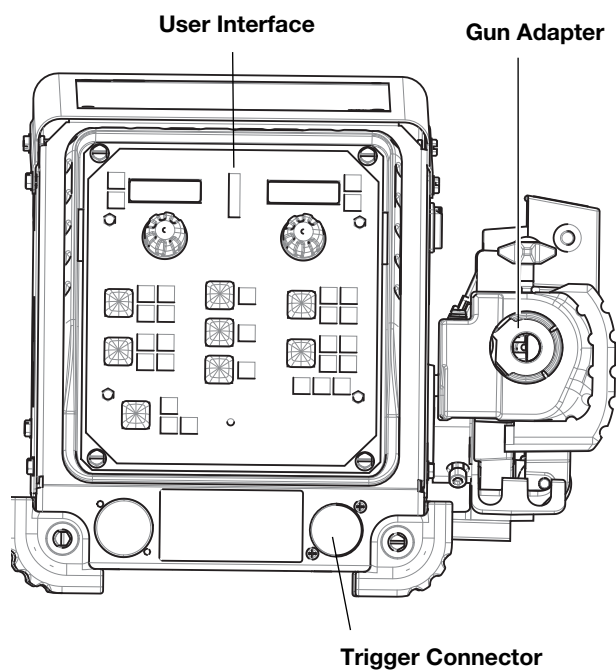
When suspending a wire feeder, insulate the hanging device from the wire feeder enclosure.

For bench models, do not angle spindle for the wire spool or coil more than 15 degrees downward. **(See Figure A.A)**

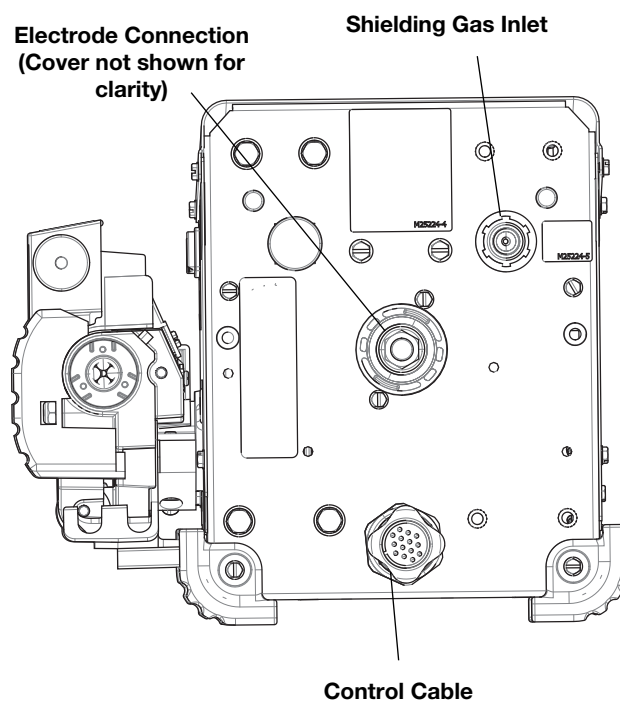
**Figure A.A**



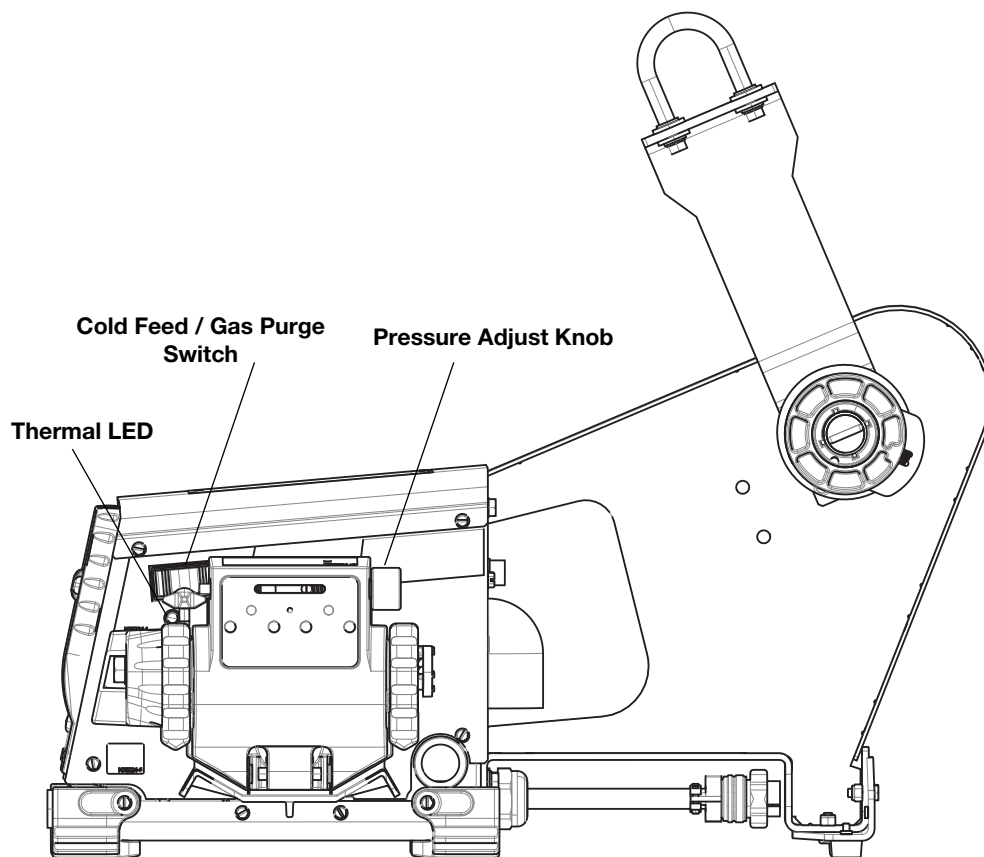
## FRONT VIEW



## REAR VIEW



## SIDE VIEW



MECHANICAL INSTALLATION

Only connect wire drives and user interfaces with the power OFF. DIP Switches on the wire drive board indicate the system configuration. The feeders ship from the factory with the DIP switches placed in the proper position. To access the DIP switches, remove the roof of the wire drive and examine the wire drive pc board mounted to the underside of roof.

Bench Configurations

“Bench” configuration means the user interface is mounted directly to the wire drive housing. Valid Bench configurations are:

- Single Wire Drive with User Interface installed (See Figure A.1)
- Dual Wire Drive with User Interface installed (See Figure A.2)
- Single Wire Drive with User Interface and Gouging Kit Installed

FIGURE A.1

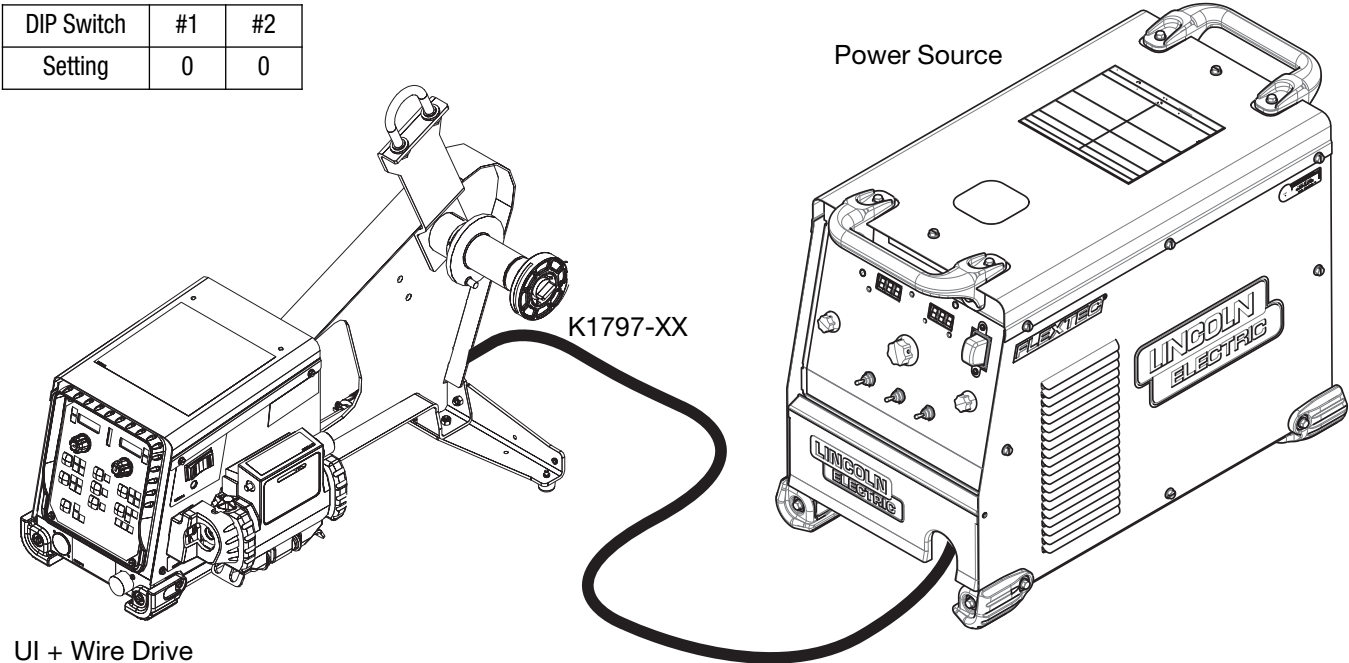
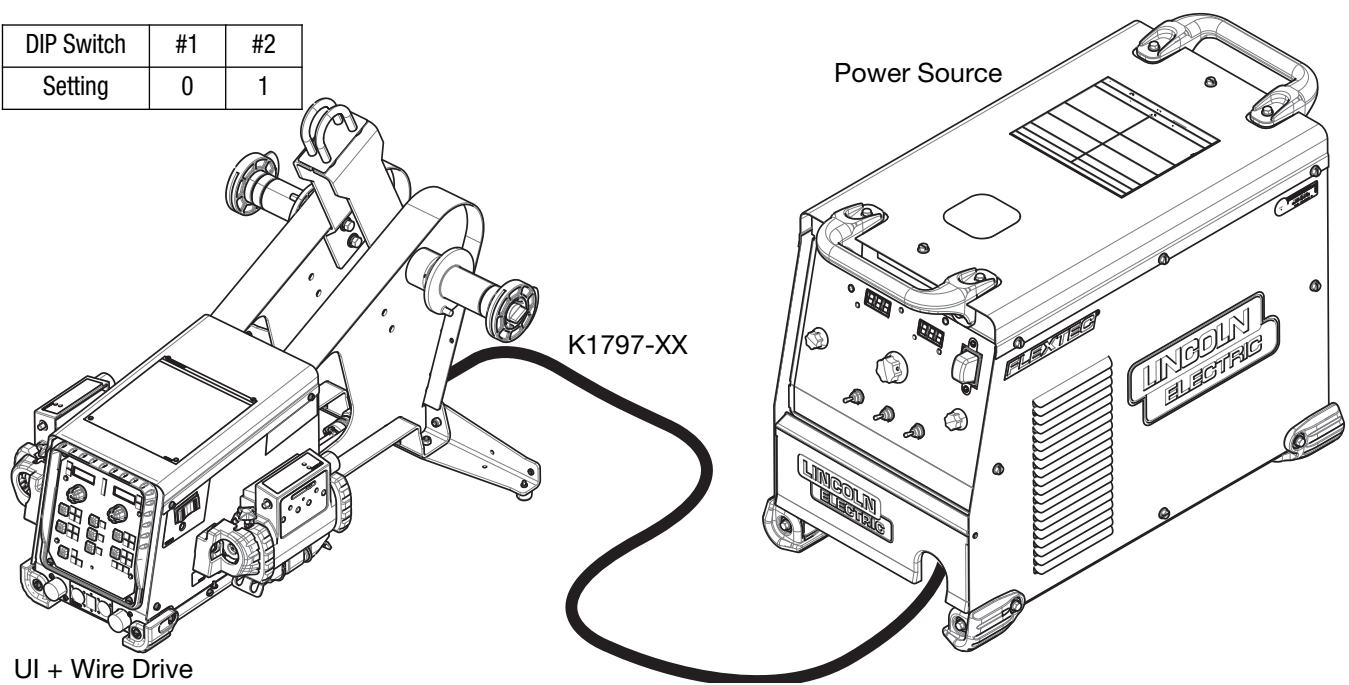


FIGURE A.2





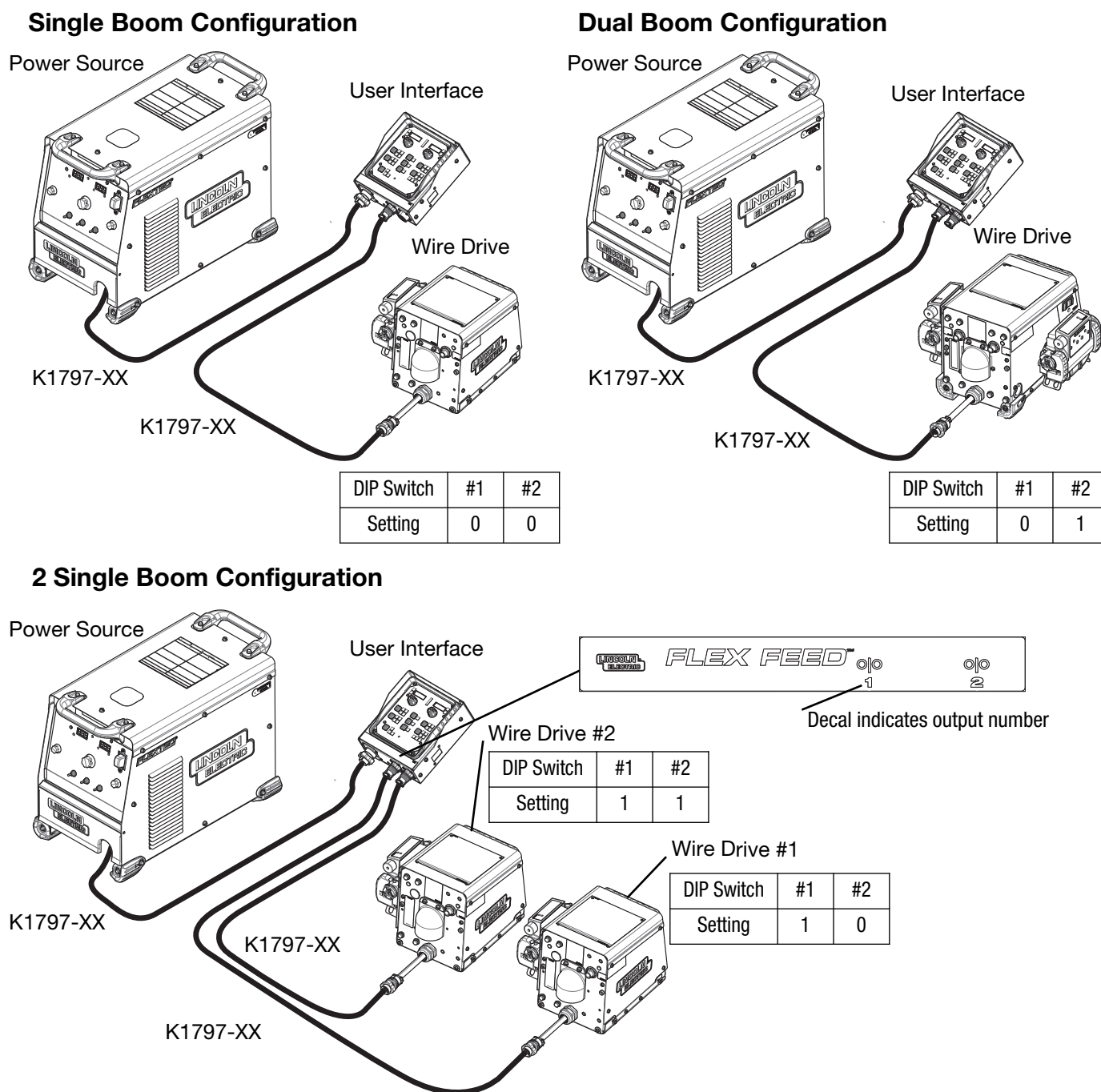
## Boom Configurations (See Figure A.3)

“Boom” configuration means the user interface is located in a separate control box. Valid Boom configurations are:

- 1 Control box + 1 Single Wire Drive
- 1 Control box + 1 Dual Wire Drive
- 1 Control box + 2 Single Wire Drives

The User Interface may be remotely located from the wire drive up to 50 feet.

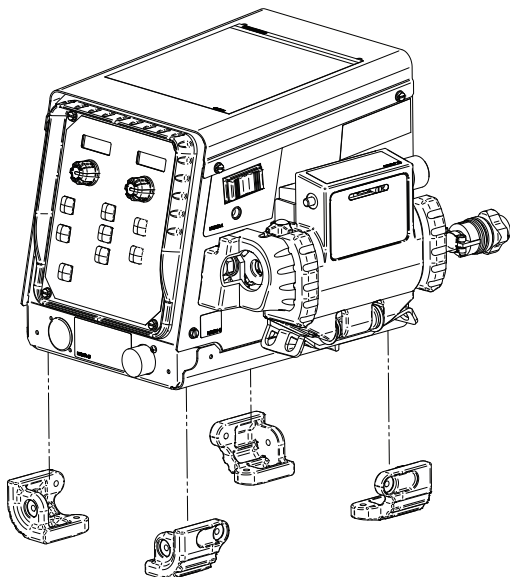
FIGURE A.3



## Boom Mounting

When the wire drive is to be bolted to a boom or other flat surface, first remove the (4) rubber mounting feet. (3) screws secure each foot.

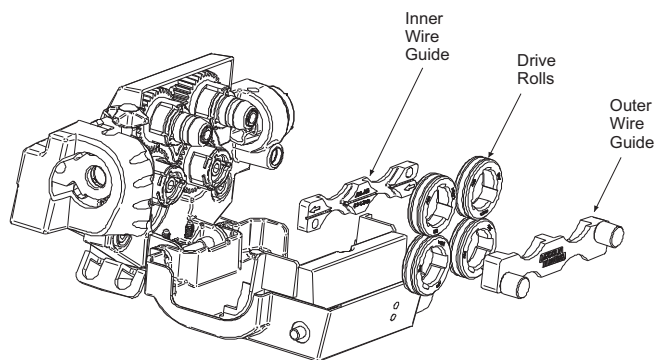
Mounting bolts securing the wire drive should not protrude more than 1" into the wire feeder.



**DRIVE ROLL AND WIRE GUIDES**

(See Figure A.4)

1. Turn power OFF at the welding power source.
2. Open the wire drive door by pulling on the top.
3. Remove the outer wire guide.
4. Remove drive rolls by pulling straight out. It may be necessary to wiggle the drive roll to free it from the snap ring.

**FIGURE A.4**

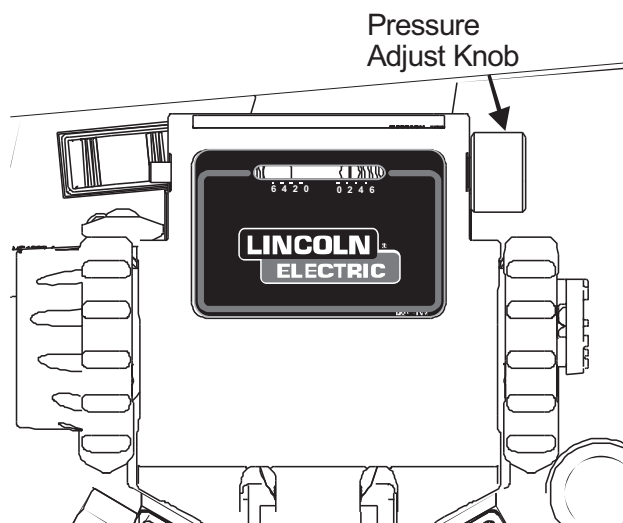
5. Remove the inner wire guide.
6. Install the new inner wire guide, with the arrow pointing in the direction of wire travel.
7. Install the drive rolls and outer wire guide.
8. Close the wire drive door and adjust the pressure setting accordingly.

**FEED PLATE PRESSURE ADJUSTMENT**

The Flex Feed 84 ships from the factory with a pressure setting of "2". The best drive roll pressure varies with wire type, wire surface, lubrication and hardness. Too much pressure may crush the wire or cause "birdnesting", but too little pressure could cause slippage.

Set the drive roll pressure by:

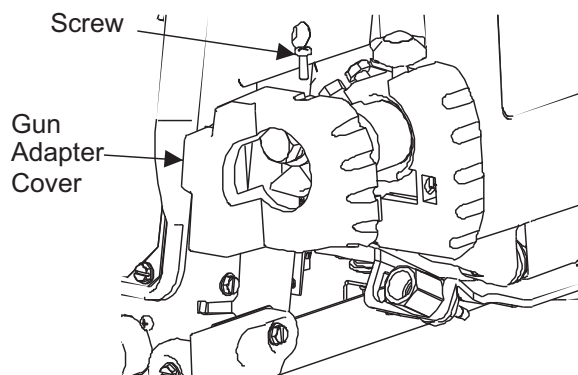
1. Press the end of the gun against a solid object that is electrically isolated from the welder output and press the gun trigger for several seconds.
2. If the wire "birdnests" or jams, the drive roll pressure is too high. Reduce the pressure by one turn of the knob, run new wire through the gun, and repeat step 1.
3. If the only result is slippage, disconnect the gun and pull the gun cable forward about 6" (150mm). There should be a slight waviness in the exposed wire. If there is no waviness, increase the pressure setting one turn, reconnect the gun and repeat the above steps.

**FIGURE A.5**

**GUN ADAPTERS:**  
**K3344-1 LINCOLN,**  
**K3345-1 STANDARD #4,**  
**K3346-1 STANDARD #5,**  
**K3347-1 MILLER**

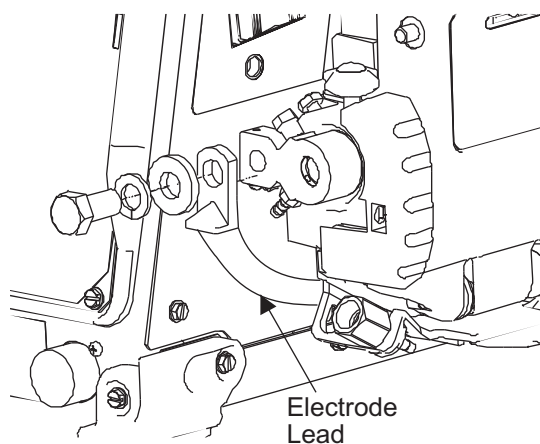
1. Turn power OFF at the welding power source.
2. Using a Phillips screw driver, remove the screw, lock washer and washer securing the gun adapter cover. Remove the gun adapter cover (See Figure A.6-A).

**FIGURE A.6-A**



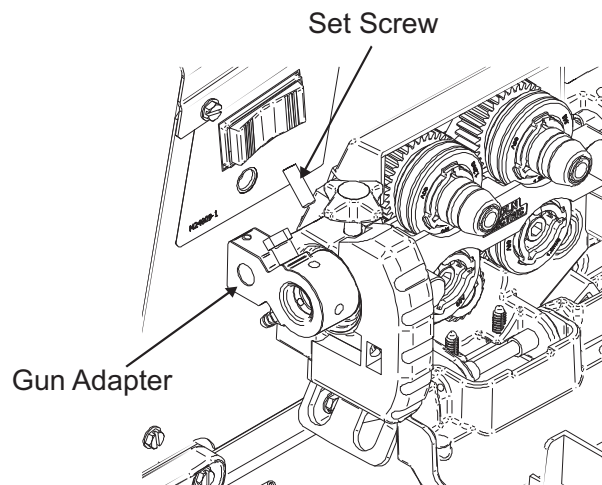
3. With a 3/4" wrench, remove the bolt holding the electrode lead to the gun adapter (See Figure A.6-B below).

**FIGURE A.6-B**



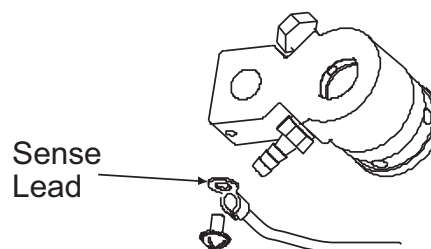
4. Use a 1/8" hex key to loosen the set screw securing the gun adapter (See Figure A.7).

**FIGURE A.7**



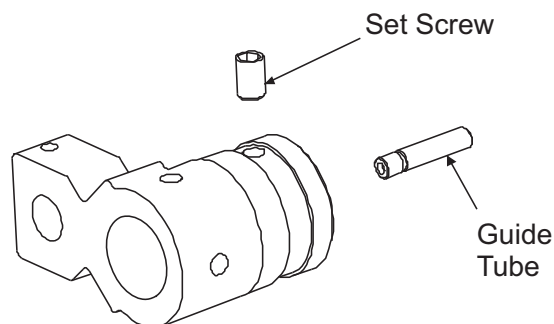
5. Remove the sense lead with a Phillips screw driver (See Figure A.8).

**FIGURE A.8**



6. If a gas hose is attached to the gun adapter, use pliers to remove the hose clamp and remove the gas hose.
7. If the gun adapter requires guide tubes, install the correct size guide tube and secure with the set screw (See Figure A.9).

**FIGURE A.9**



Wire size	Number of grooves in guide tube
.023-.045" ( 0.6 – 1.2mm)	1
.045 – 1/16" (1.2 – 1.6 mm)	2
1/16 – 5/64" (1.6 – 2.0 mm)	3
.068 – 7/64" (2.0 – 2.8 mm)	4
.120" (3.0 mm)	no guide tube required

8. Assemble the sense lead to the new gun adapter. Orient the lead towards the rear of the gun adapter.
9. If required, assemble the gas hose to the gun adapter or the fitting on the feed plate and secure with a hose clamp.
10. Assemble the gun adapter to the wire drive. Tighten the set screw once the gun adapter is at a 90° angle.
11. Bolt the electrode lead to the gun adapter, (*see Figure A.10*) making sure to route the lead straight down.
12. Assemble the gun adapter cover and secure with the screw, lock washer and washer.

FIGURE A.10

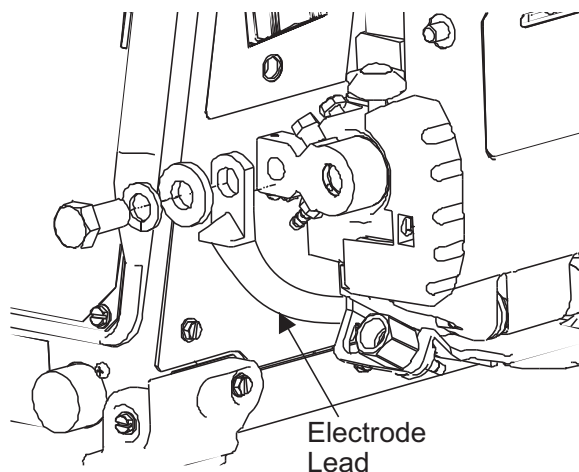
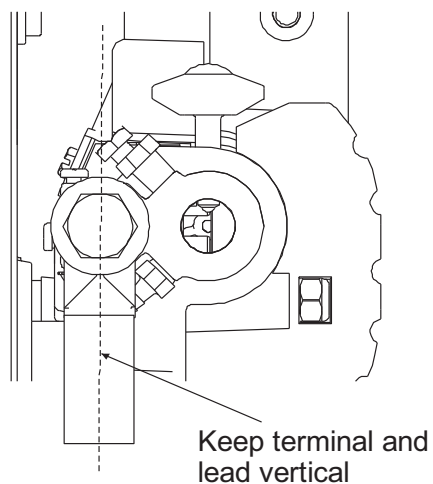
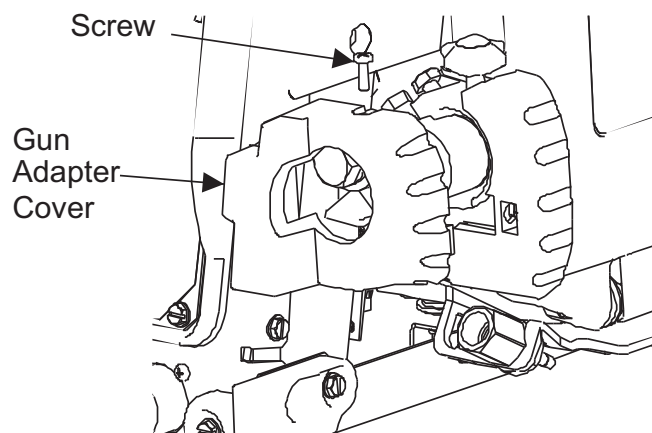


FIGURE A.11



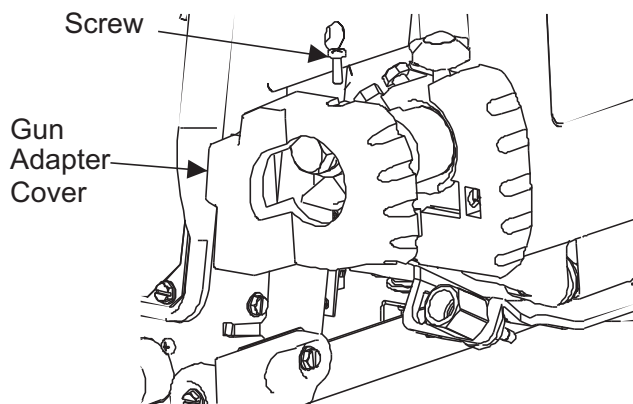


**GUN ADAPTERS:**

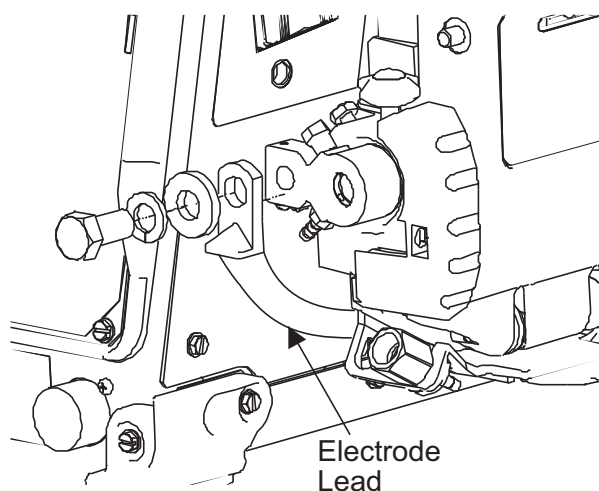
**K3348-1 OXO,  
K3349-1 FASTMATE**

Using the Oxo or FastMate gun adapters requires a K3344-1 Standard #4 gun adapter to be installed in the wire drive.

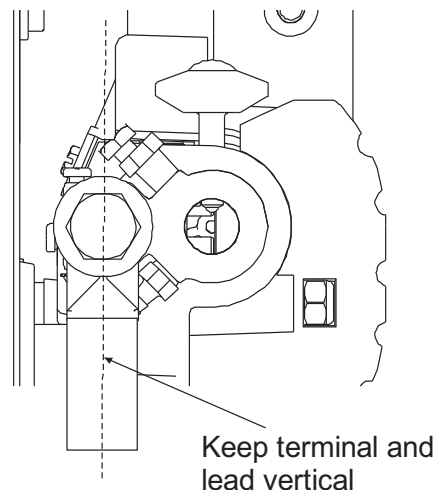
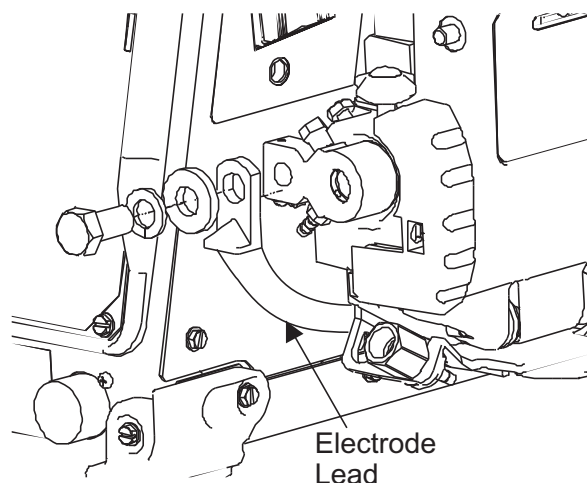
1. Turn power OFF at the welding power source.
2. Using a Phillips screw driver, loosen the screw securing the gun adapter cover. Remove the gun adapter cover.

**FIGURE A.12**

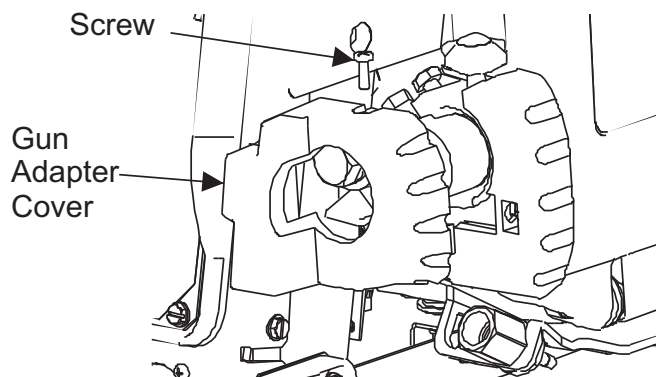
3. With a  $\frac{3}{4}$ " wrench, remove the bolt holding the electrode lead to the gun adapter. (See Figure A.13).

**FIGURE A.13**

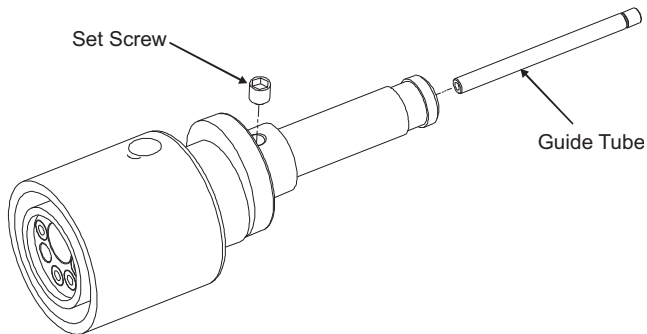
4. Using pliers, remove the hose clamp and hose from the gun adapter.
5. Bolt the electrode lead to the gun adapter, making sure to route the lead straight down (See Figure A.14).

**FIGURE A.14**

6. Assemble the gun adapter cover and secure with the screw (See Figure A.15).
7. Assemble the gas hose to the Oxo or FastMate gun adapter.

**FIGURE A.15**

8. Select the appropriate guide tube and secure with the set screw.
9. Slide the Oxo or FastMate gun adapter into the wire drive and secure with the thumb screw.
10. For FastMate gun adapters, connect the trigger pigtail to the connector on the front of the feeder. **(See Figure A.16).**

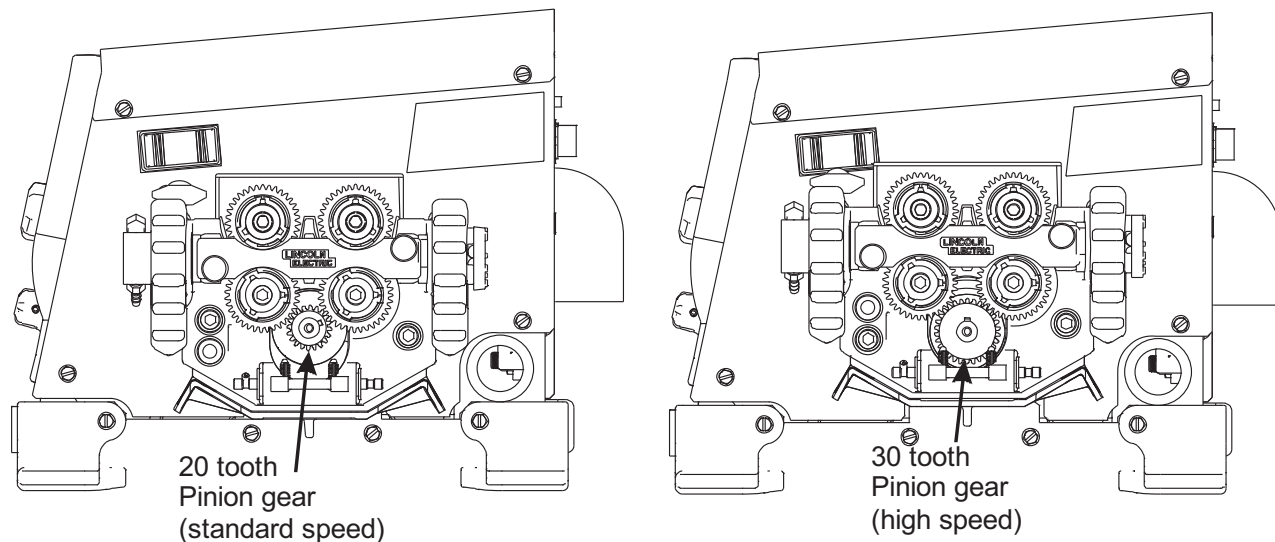
**FIGURE A.16**

Wire size	Number of grooves in guide tube
.023-.045" ( 0.6 – 1.2mm)	1
.045 – 1/16" (1.2 – 1.6 mm)	2
1/16 – 5/64" (1.6 – 2.0 mm)	3
.068 – 7/64" (2.0 – 2.8 mm)	4

## PINION GEAR RATIO

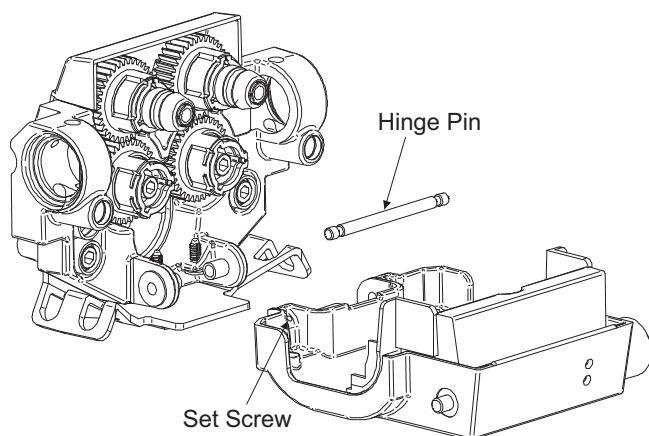
As shipped from the factory, a 20 tooth pinion gear is installed. If desired, the 30 tooth pinion gear may be installed for more speed but less torque (*See Figure A.17*).

FIGURE A.17



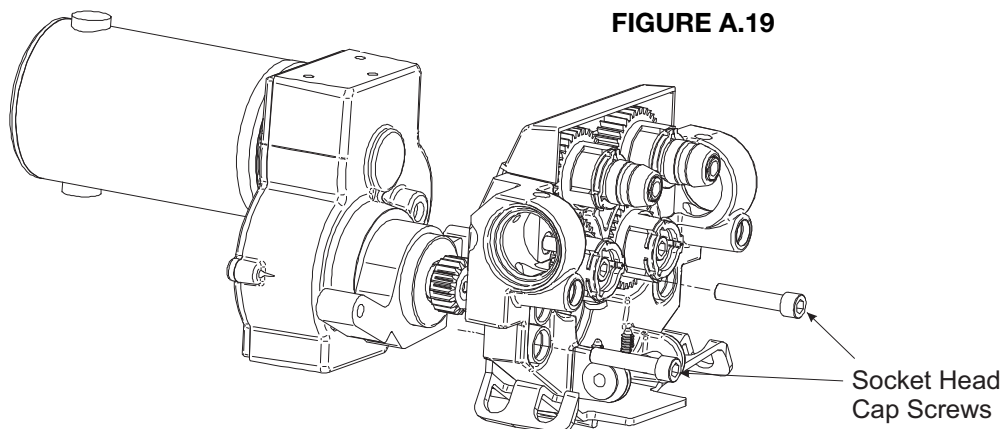
1. Turn power OFF at the welding power source.
2. Open the wire drive door and loosen the set screw holding the hinge pin using a 5/64" hex key. Slide the hinge pin towards the rear and remove the door (*See Figure A.18*).

FIGURE A.18



3. Remove the two socket head cap screws securing the feed plate and remove the feed plate from clamp using a 1/4" hex key (*See Figure A.19*).
4. Remove the screw holding the pinion gear using a Phillips screw driver. Remove the pinion gear.
5. Install the new pinion gear.
6. Position the feed plate and tighten the socket head cap screws.
7. Re-assemble the hinge pin and door. Secure the hinge pin with the set screw.
8. Restore power to the Flex Feed 84.
9. Enter the set-up menu per section 7.1 and set the pinion gear ratio as required.

FIGURE A.19



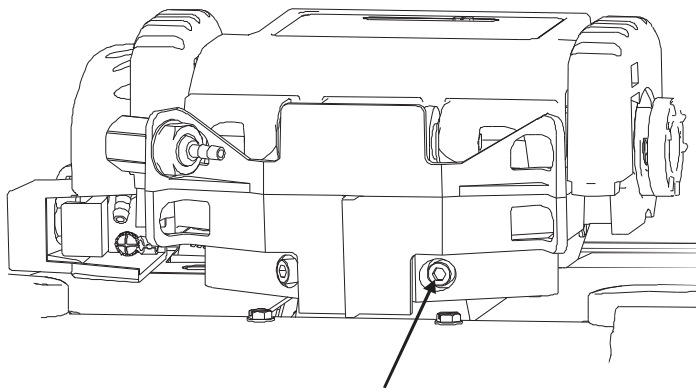
).

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## ROTATING THE FEED PLATE

1. Turn power OFF at the welding power source.
2. Locate the socket head cap screw at the bottom of the wire drive. Loosen, but do not remove the screw using a ¼" hex key (*See Figure A.20*).

**FIGURE A.20**



**Socket Head Cap Screw**

3. Rotate the wire drive to the desired position and tighten the screw.

## LEFT HAND WIRE DRIVE

The Flex Feed 84 single wire drive may be reassembled with the wire drive on the left hand side. To convert to a left hand wire drive:

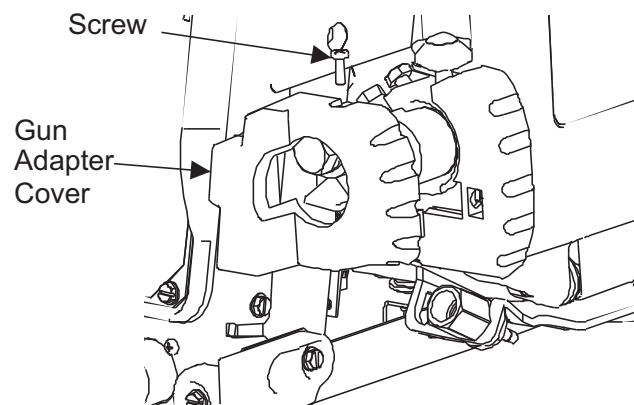
Requires: G7644-1 Gun adapter cover, left

Tools required:

- Phillips Screw Driver
- 3/4" wrench
- 11/16" wrench
- 3/8" wrench
- 5/16" nut driver
- 1/4" nut drive
- 1/8" hex key
- 1/4" hex key
- pliers

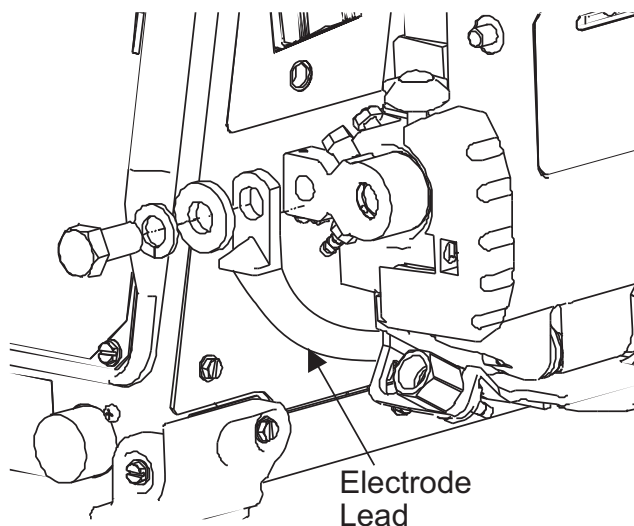
1. Turn OFF power at the welding power source.
2. Using a Phillips screw driver, loosen the screw securing the gun adapter cover. Remove the gun adapter cover (*See Figure A.21*)

**FIGURE A.21**



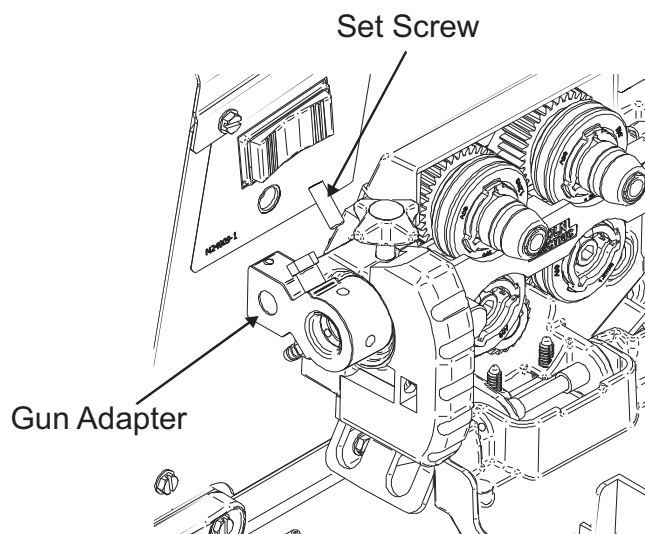
3. With a 3/4" wrench, remove the bolt holding the electrode lead to the gun adapter (*See Figure A.22*).

**FIGURE A.22**



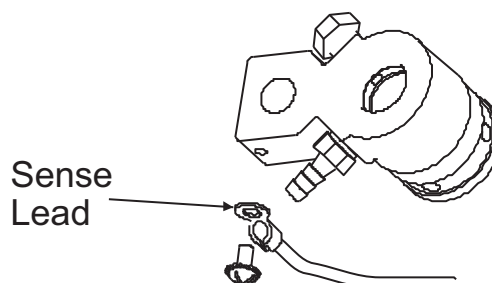
4. Use a 1/8" hex key to loosen the set screw securing the gun adapter (*See Figure A.23*).

**FIGURE A.23**



5. Remove the sense lead with a Phillips screw driver (*See Figure A.24*).

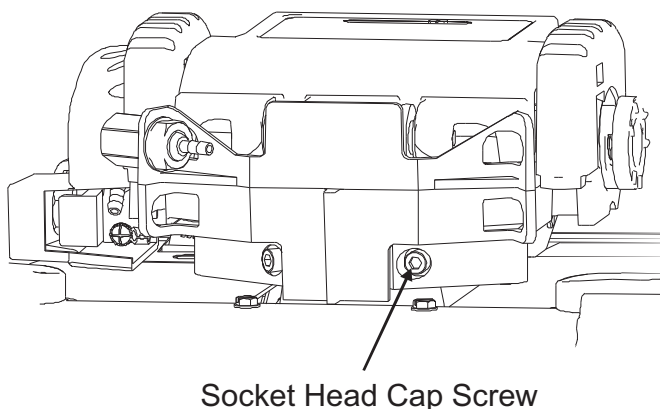
**FIGURE A.24**





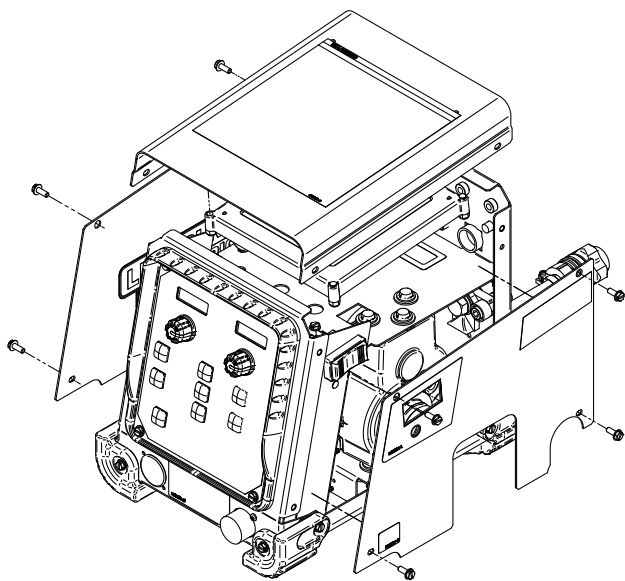
6. If a gas hose is attached to the gun adapter, use pliers to remove the hose clamp and remove the gas hose.
7. Loosen the socket head cap screw at the bottom of the feed plate and slide the feed plate off of the gear box (See Figure A.25).

FIGURE A.25



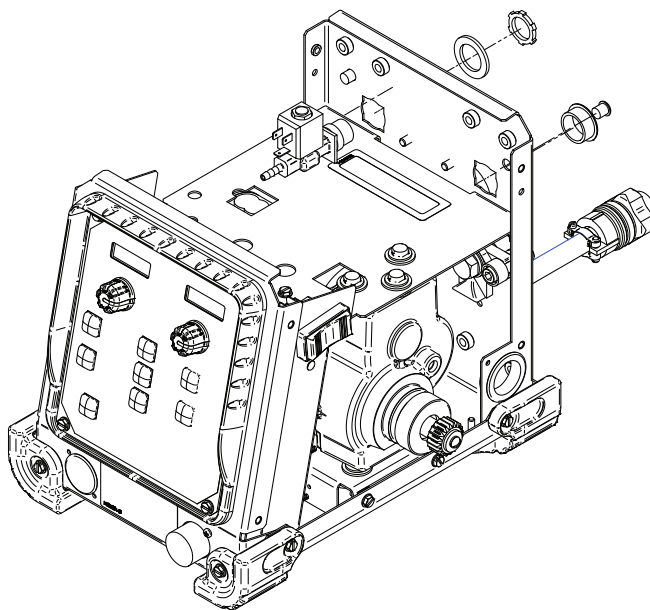
8. Remove the (4) screws securing the roof with a 5/16" nut driver. Remove the remaining (2) screws securing each case side. If a gouging kit is installed, unbolt the large lead from the case side (See Figure A.26).

FIGURE A.26



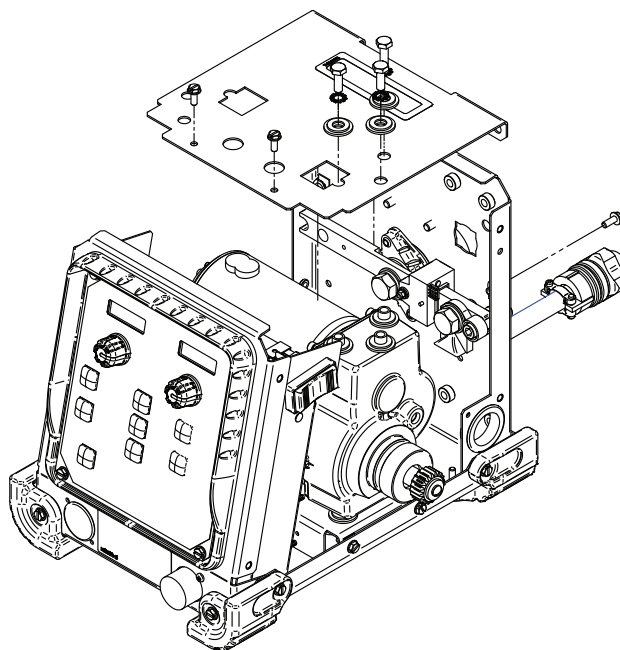
9. Remove the lock-nut holding the gas solenoid. Leave the gas hose and leads connected to the gas solenoid. Remove the plug button from the rear opposite the gas solenoid (See Figure A.27).

FIGURE A.27



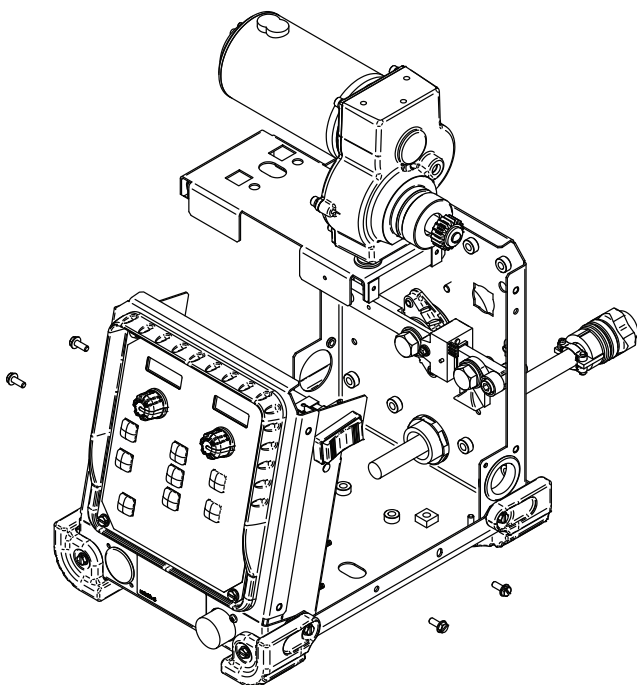
10. Remove the upper motor support. Use a 5/16" nut driver to remove the (2) screws at the rear and the (2) screws at the front. Use a 3/8" wrench to remove the (3) screws holding the support to the gearbox (See Figure A.28).

FIGURE A.28



11. Remove the (4) screws holding the motor gearbox assembly to the case and lift out the motor gearbox (See Figure A.29).

FIGURE A.29

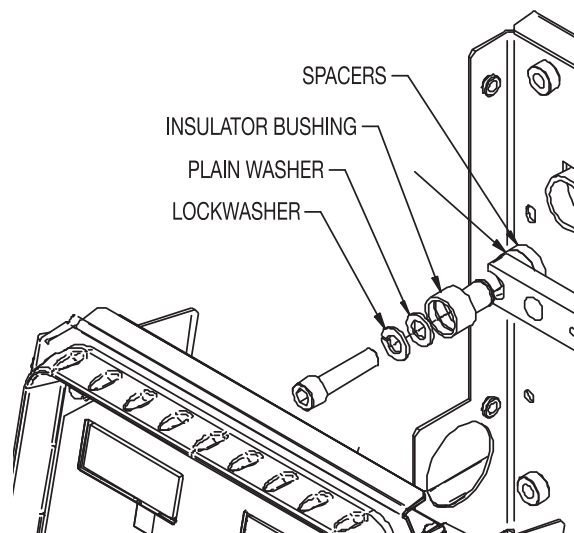
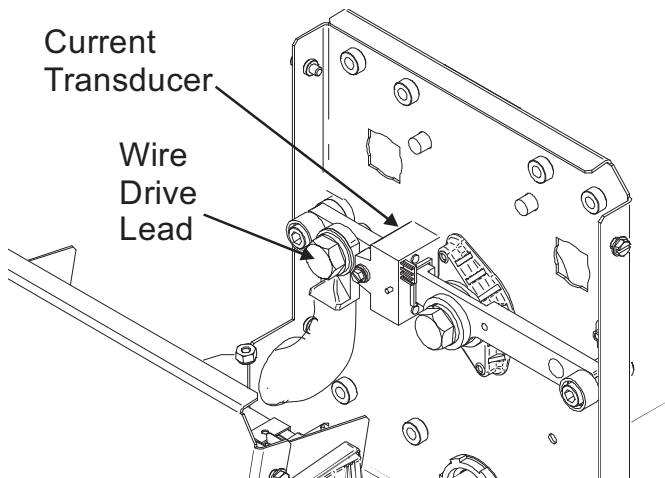


12. To move Current Transducer:

- Unbolt the wire drive lead from the bus bar with a  $\frac{3}{4}$ " wrench.
- Unbolt the bus bar from the case and the input stud using a  $\frac{1}{4}$ " hex key.
- Using a Phillips screwdriver, remove the current transducer and reassemble to the left side.
- Reassemble the bus bar to the case and input stud.
- Bolt the wire drive lead to the left side of the bus bar

(See Figure A.30).

FIGURE A.30

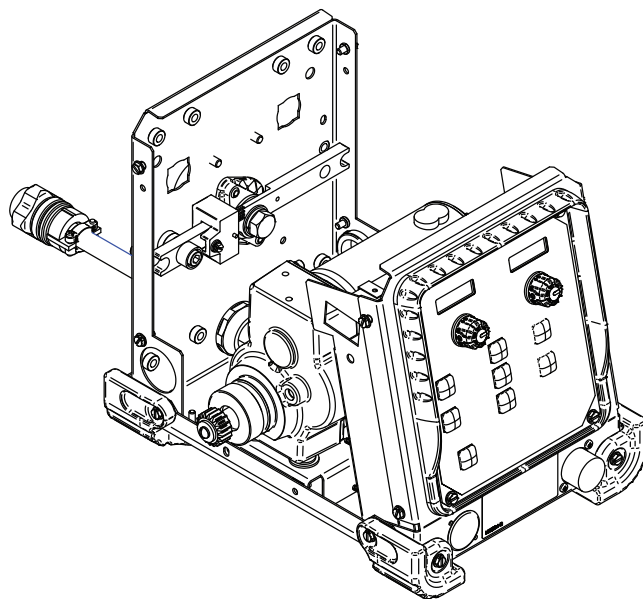


13. For wire feeders with a gouging kit installed:

- Swap the gouging lead and wire drive lead positions.
- Swap the leads to the contactor coils. Lead 549A attaches to the wire drive contactor. Lead 549B attaches to the gouging stud contactor. Lead 552 is common to both contactors.

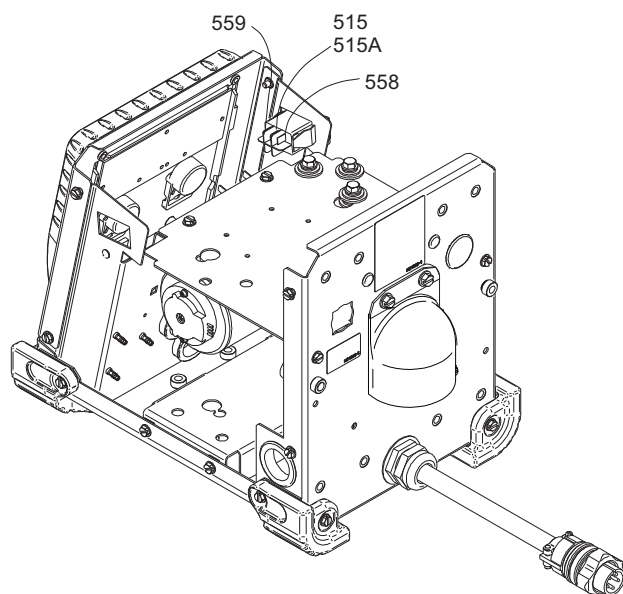
14. Place the motor gearbox assembly in the case with the drive facing the left side. Secure with (4) screws.

FIGURE A.31



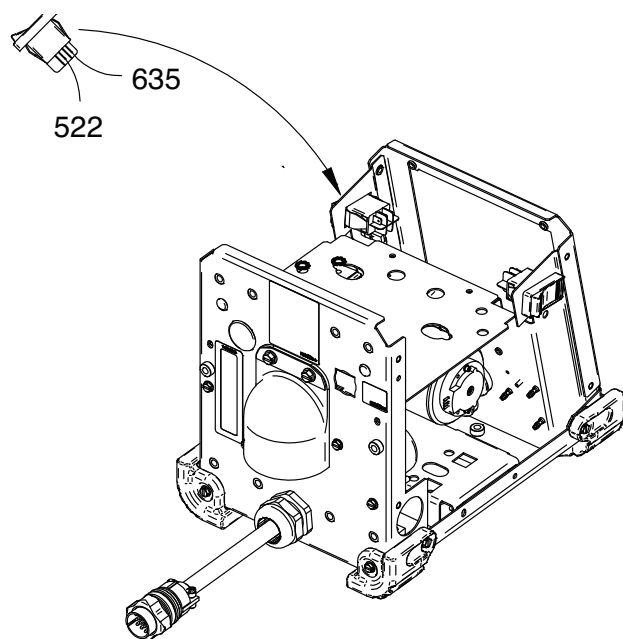
15. Reassemble the upper motor support with the plastic washers on the appropriate side
16. To move the Cold Feed/Gas Purge rocker switch from the right side to the left side, remove the leads from the switch. Squeeze the snaps holding the switch to the sheet metal and push the switch outwards. Reassemble the switch on the left side. **(See Figure A.32).**

FIGURE A.32



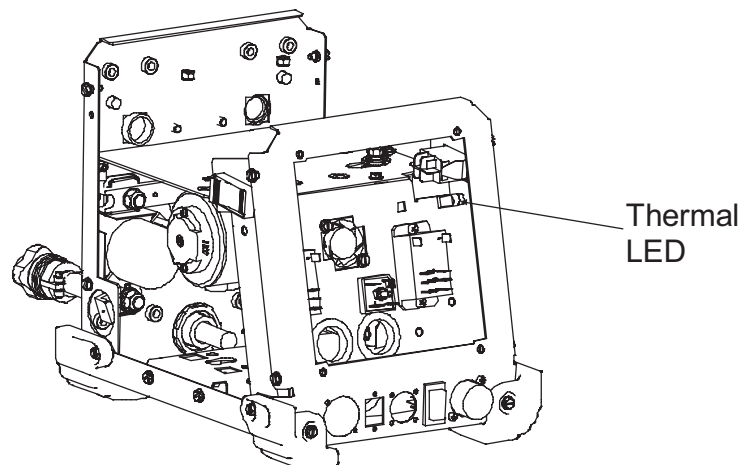
17. If present, reassemble the Gouge/Wire Feed switch on the opposite side **(See Figure A.33).**

FIGURE A.33



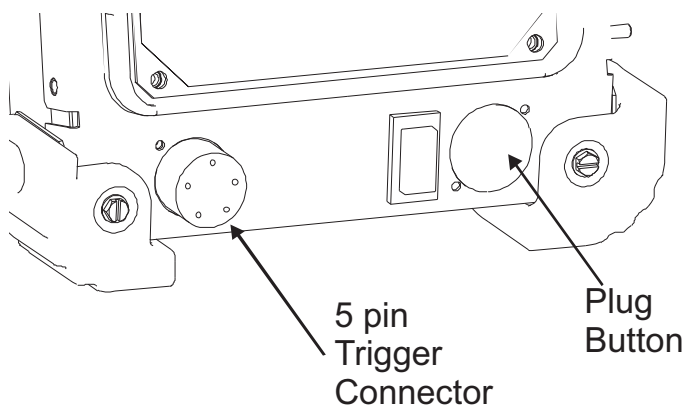
18. Remove the (4) screws holding the user interface to gain access to the inside front compartment of the feeder
19. Move the thermal LED from right to the left hand side. Gently pull on the black body of the LED holder to separate it from the clear lens. **(See Figure A.34).**

FIGURE A.34

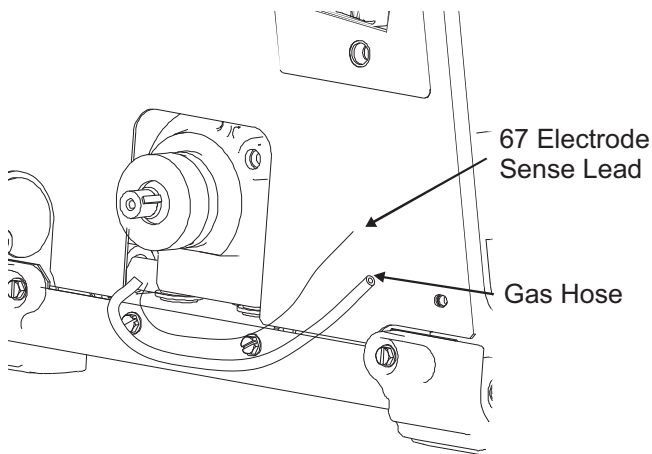


20. Swap the location of the plug button and the 5 pin trigger connection on the front of the feeder, then reassemble the user interface **(See Figure A.35).**

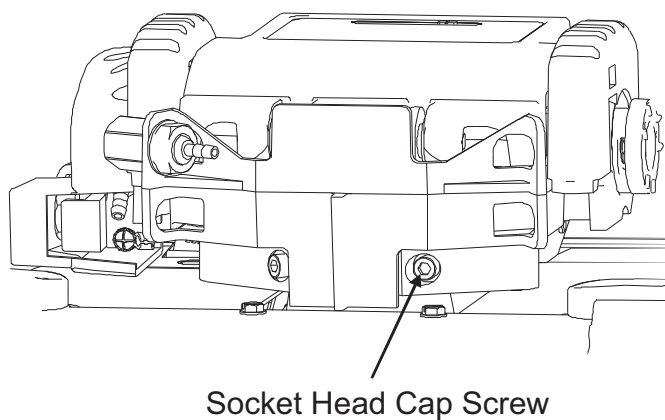
FIGURE A.35



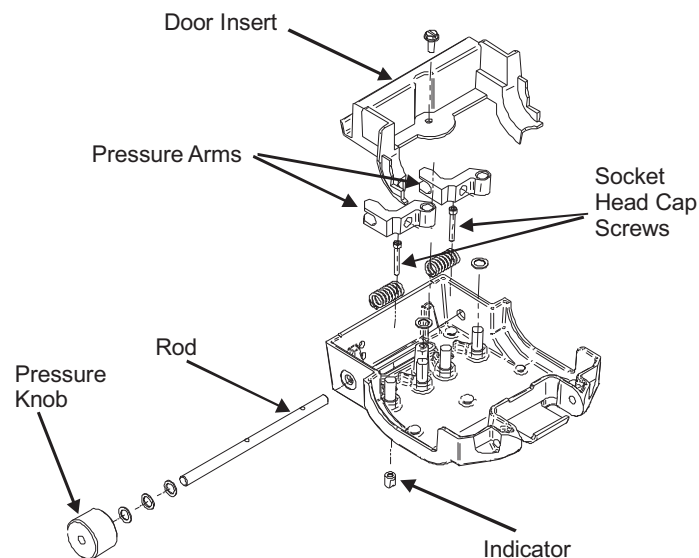
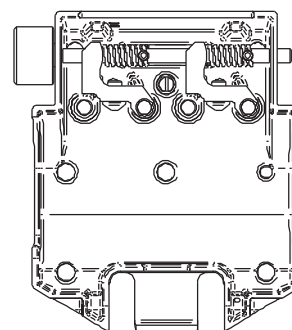
21. Reassemble the gas solenoid and plug button to the rear of the feeder.
22. Reassemble the case sides and roof to the feeder, taking care to route the gas line and electrode sense lead through the case side opening by the rear of the motor gearbox (**See Figure A.36**).

**FIGURE A.36**

23. Reassemble the feed plate to the gear box and secure by tightening the socket head cap screw (**See Figure A.37**).

**FIGURE A.37**

24. Open the feed plate door. Remove the screw holding the door insert. Remove the (2) socket head cap screws. Fully unscrew the pressure knob and slide the washers and rod out of the door.

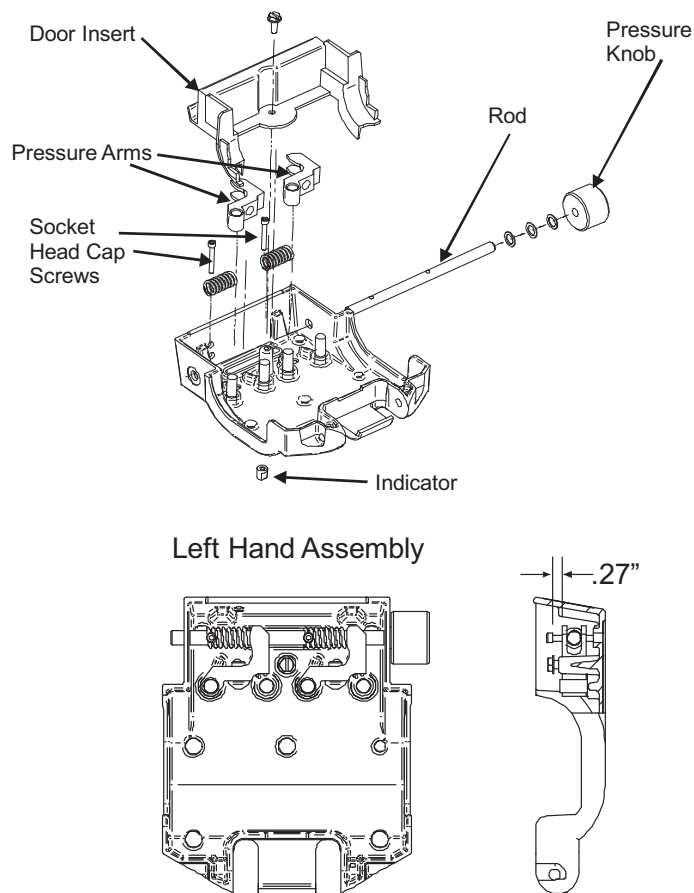
**FIGURE A.38****Right Hand Assembly**

25. To reassemble the door for left hand operation:

(See Figure A.39).

- Place the pressure arms on the door in the orientation as shown.
- Slide the rod through the door and through the springs.
- Assemble the socket head cap screws and indicator, tightening the indicator screw to a height of .27" and the other screw to .34"
- Assemble the washers and pressure knob.
- Assemble the door insert.

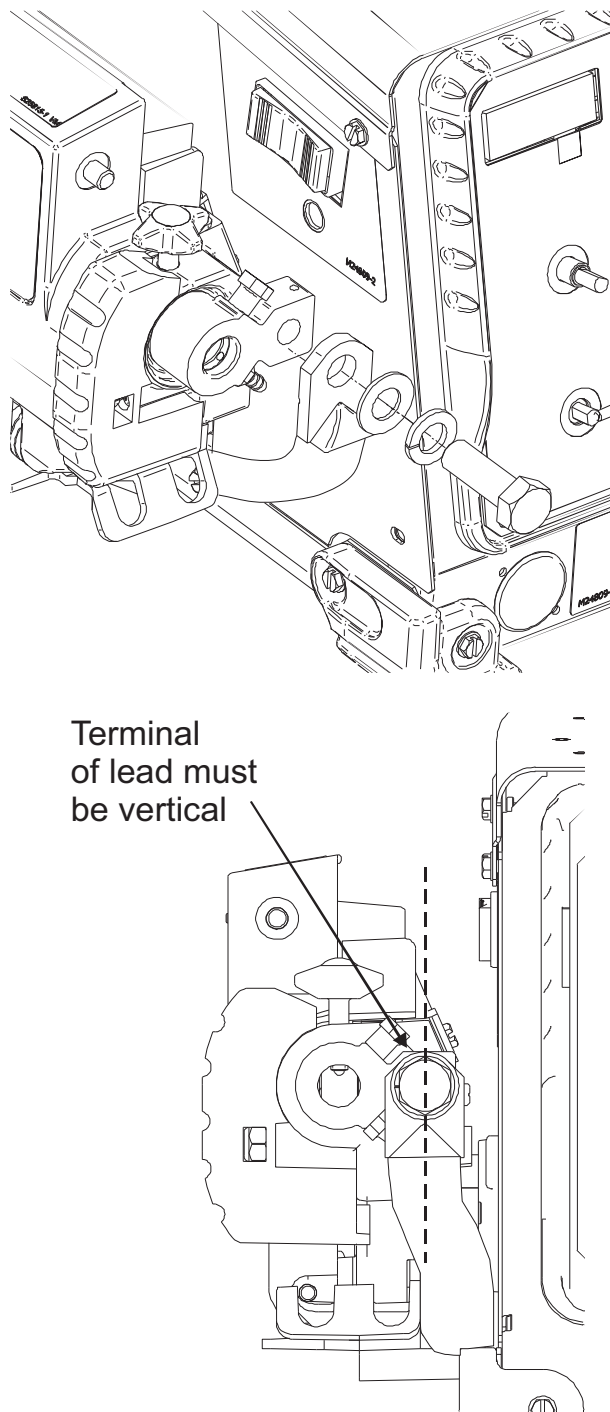
FIGURE A.39



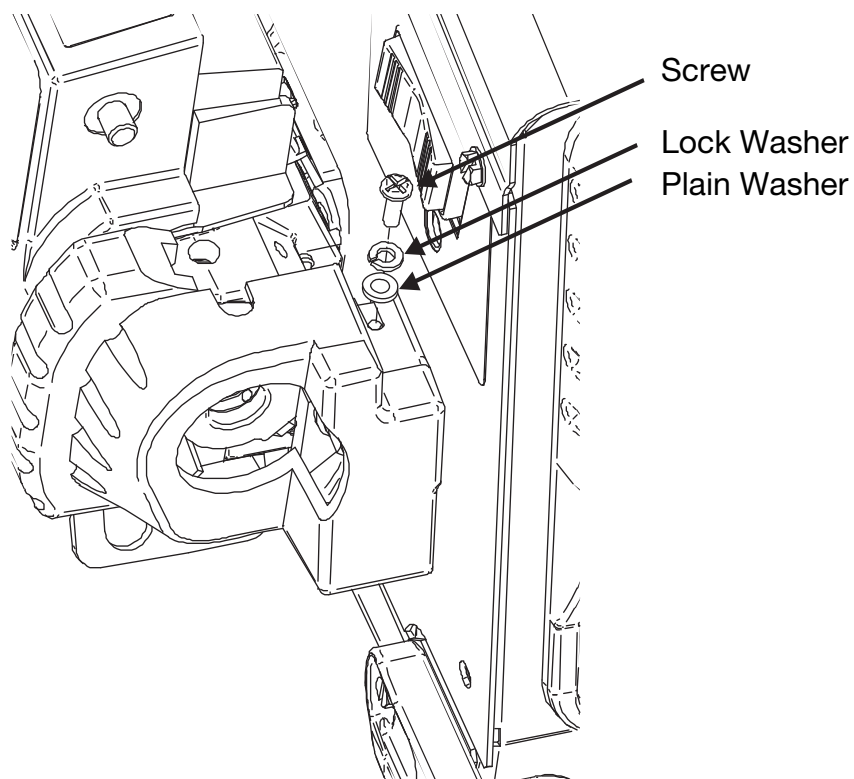
26. Place the gun adapter into the feed plate. If required, swap the position of the barbed fitting with the plug. Assemble the gas hose to the gun adapter.

27. Assemble the wire drive lead to the gun adapter. The bolt for the wire drive lead will align the gun adapter with the feed plate as the bolt is tightened. The terminal of the lead must be in a vertical position. (See Figure A.40).

FIGURE A.40



28. Tighten the set screw to secure the gun adapter in place.
29. Secure the G7644-1 gun adapter cover in place with the Phillips screw, lockwasher and plain washer. (*See Figure A.41*).

**FIGURE A.41**

30. Restore power to the Flex Feed 84
31. Enter the set-up per section 7.1 and set the wire drive direction as required.

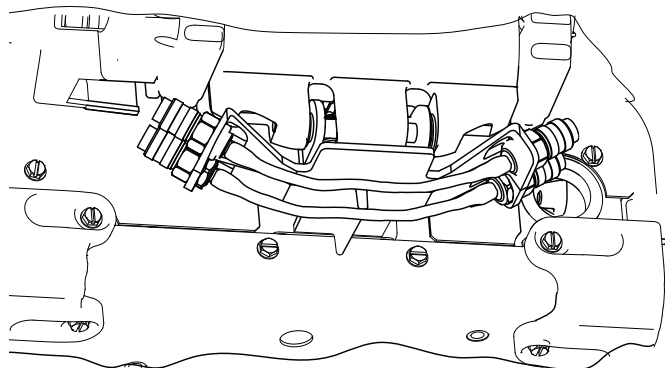
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**WATER COOLING KIT**

The K590-6 water connection kit installs underneath the wire drive. The finished product is shown in Figure A.42

1. Turn power OFF at the welding power source.
2. Install the quick disconnect fittings to the plastic bracket, by holding the rear nut stationary and spinning the fitting.
3. Cut the tubing to the desired length, and then install the tubing and hose clamps to the fittings.

**FIGURE A.42**





## SHIELDING GAS

**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).**

**THE INLET FITTING IS 5/8-18 CGA TYPE CONNECTION.**

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<sub>2</sub> 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<sub>2</sub> 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.



## LOADING SPOOLS AND COILS

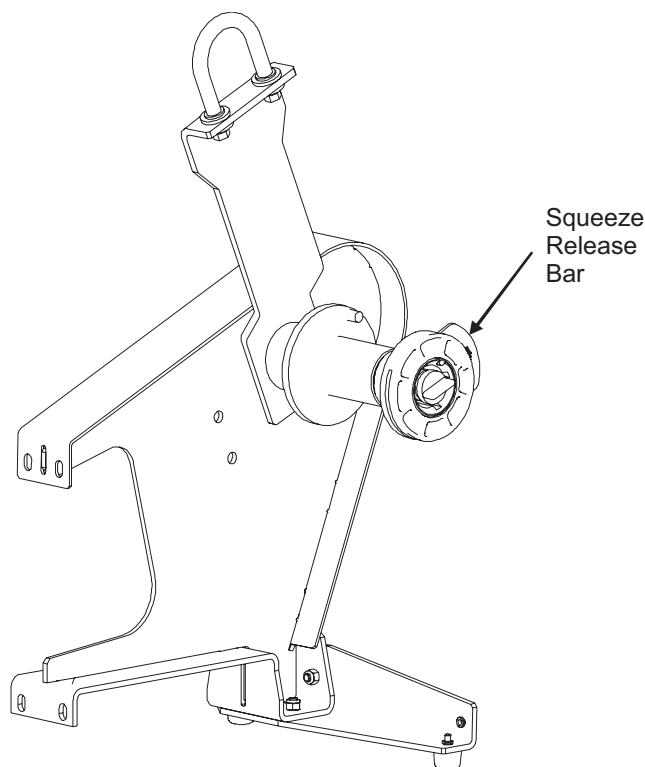
**! WARNING**

- 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.

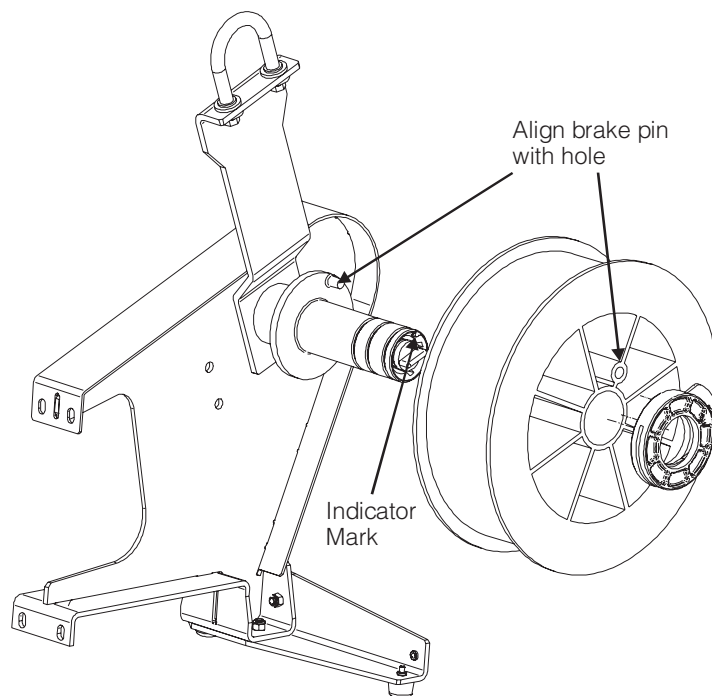
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**50 - 60 lb (22 – 27 kg) coils require K3343-1 Heavy Duty Wire Reel Stand**

1. Turn power OFF at the welding power source.
2. Squeeze the release bar on the retaining collar and remove it from the spindle (*See Figure A.43*).

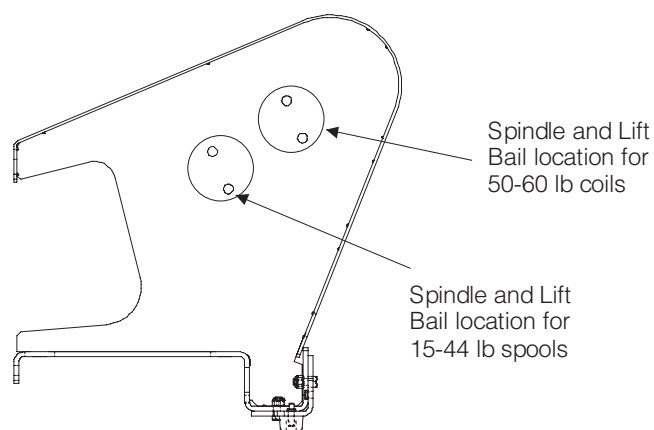
**FIGURE A.43**

3. Place the spool on the spindle, aligning the spindle brake pin with one of the holes in the back side of the spool. An indicator mark on the end of the spindle shows the orientation of the brake holding pin. Be certain the wire feeds off of the spool in the proper direction. (*See Figure A.44*).
4. Re-install the retaining collar, with the metal bar engaging one of the grooves of the spindle. The release bar will spring out when engaged.

**FIGURE A.44****WIRE REEL STANDS**

**K3342-1 Standard Duty Wire Reel Stand is for use with spools 10 to 44 lb (4.5 to 20 kg)**

When using the K3343-1 Heavy Duty Wire Reel, place the spindle in the location as shown.

**FIGURE A.45**

**ELECTRICAL INSTALLATION****DIP Switch Settings**

4 DIP switches are located on the wire drive board. Set the DIP Switches as follows (*See Figure A.46*):

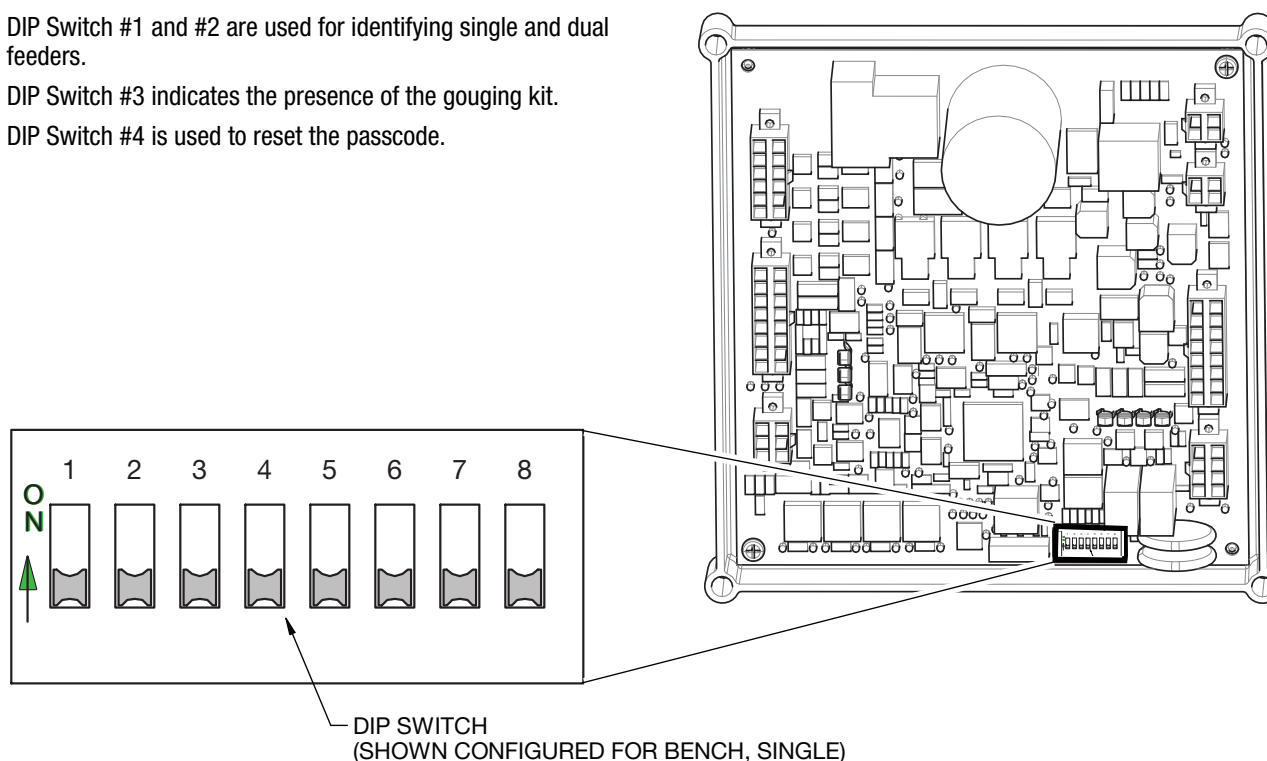
**FIGURE A.46**

Configuration	Wire Drive #1				Wire Drive #2			
	DIP Switch #1	DIP Switch #2	DIP Switch #3	DIP Switch #4	DIP Switch #1	DIP Switch #2	DIP Switch #3	DIP Switch #4
Bench, Single	0 (Off)	0 (Off)	0 (Off)	0 (Off)				
Bench, Single + gouging kit	0 (Off)	0 (Off)	1 (On)	0 (Off)				
Bench, Dual	0 (Off)	1 (On)	0 (Off)	0 (Off)				
Boom, Single + gouging kit	0 (Off)	0 (Off)	1 (On)	0 (Off)				
Boom, Dual	0 (Off)	1 (On)	0 (Off)	0 (Off)				
Boom, 1 + 1 Single, no gouging kits	1 (On)	0 (Off)	0 (Off)	0 (Off)	1 (On)	1 (On)	0 (Off)	0 (Off)
Boom, 1 single with gouging kit, 1 single no gouging kit	1 (On)	0 (Off)	1 (On)	0 (Off)	1 (On)	1 (On)	0 (Off)	0 (Off)
Boom, 1 single with gouging kit + 1 single with gouging kit	1 (On)	0 (Off)	1 (On)	0 (Off)	1 (On)	1 (On)	1 (On)	0 (Off)

DIP Switch #1 and #2 are used for identifying single and dual feeders.

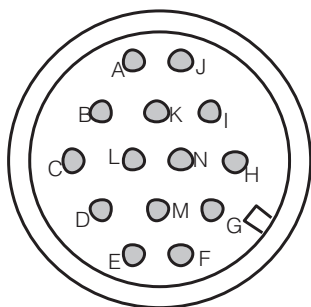
DIP Switch #3 indicates the presence of the gouging kit.

DIP Switch #4 is used to reset the passcode.

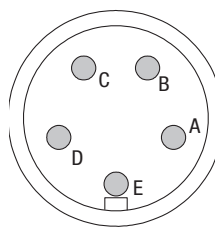


## Connectors

FIGURE A.47



14 PIN CONNECTOR		
Pin	Function	Lead #
A	Reserved	--
B	Reserved	--
C	Welding Output Control (trigger to power source)	2
D	Welding Output Control (trigger to power source)	4
E	Remote Voltage Control ("+" supply, from power source)	77
F	Remote Voltage Control (control signal from feeder or remote.)	76
G	Remote Voltage Control ("-" supply, from power source)	75
H	Work connection from power source	21
I	42 VAC to feeder	41
J	Reserved	--
K	42 VAC to feeder	42
L	CAN	82
M	CAN	81
N	Reserved	--



5 PIN TRIGGER CONNECTOR FOR PUSH-ONLY GUNS	
Pin	Function
A	Trigger
B	Not used
C	Trigger
D	Dual Procedure
E	Dual Procedure

## HARD AUTOMATION INSTALLATION

When installing Hard Automation configurations, connect the user interface to the wire drive to set all initial parameters:

- Cold wire feed speed
- Preflow time
- Run-in wire feed speed and voltage
- Start wire feed speed, voltage and time
- Crater wire feed speed, voltage and time.
- Burnback time
- Postflow time

If required, set the values in the set-up menu for:

- Calibration of volts, amps and wire feeds
- Gearbox pinion gear
- Gearbox ratio.

Once all of the values have been set, use the set-up menu to select “Automatic Control.” The wire feed speed and voltage are now set through analog inputs on the wire drive board. For wire feed speed, 0 – 10 VDC is scaled to match the low WFS to high WFS; for example 0 VDC = 35 in/min and 10 VDC = 500 in/min. Voltage scaling is 0 – 10 VDC = 10.0 to 45.0 welding voltage, and ignores the power source type selection that may have been selected through the set-up menu (See Figure A-49).

**The 0-10 VDC supplies must be isolated.  
Do not connect the common from the  
0-10 VDC to anything other than the  
Flex Feed 84.**

Trigger is controlled through the trigger inputs on the front of the wire drive. The trigger must be set to 2-step operation.

Use the arc established signal to detect when welding begins and ends.

If desired, the user interface may be disconnected. The wire drive will continue to operate with values previously stored.

The gouging kit may not be used when the feeder is configured for Hard Automation.

Only one single or one dual wire drive may be used. Two single wire drives connected together will not function.

## Flex Feed 84

FIGURE A.48

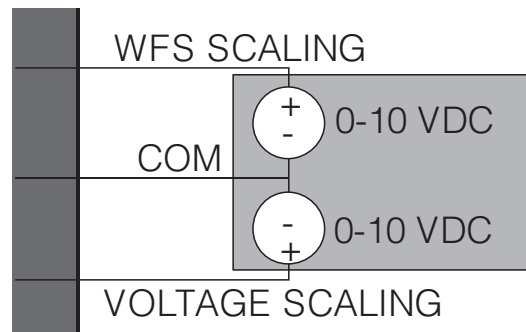
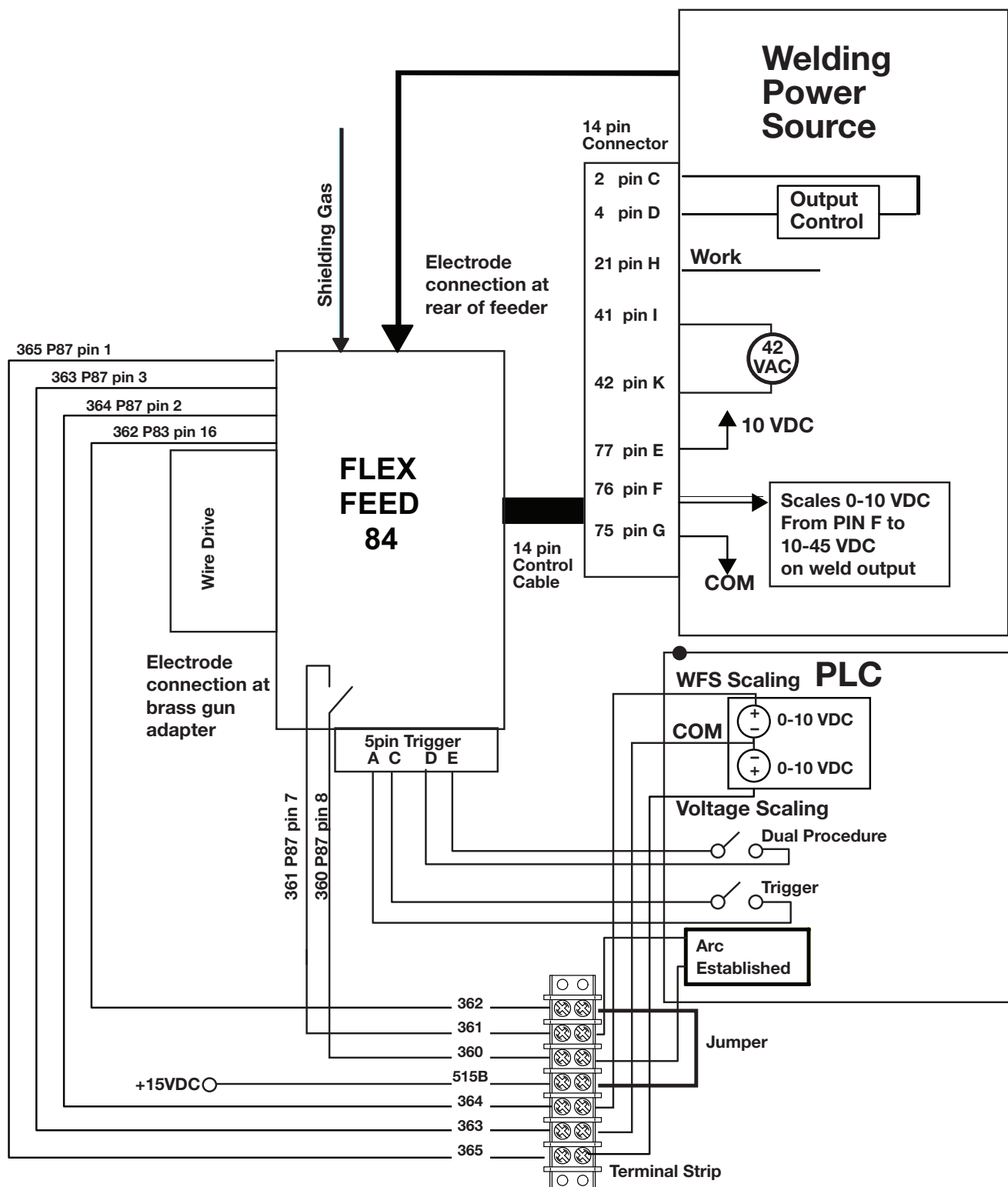


FIGURE A.49



# OPERATION

## SAFETY PRECAUTIONS

### ⚠ WARNING

#### ELECTRIC SHOCK can kill.

- Do not touch electrically live parts or electrode with skin or wet clothing.
- Insulate yourself from work and ground.
- Always wear dry insulating gloves.



**IMPORTANT:** When the FLEX FEED 84 is first installed, the Set-Up Menu must be entered to select the welding power source.

To enter the set-up menu press and hold the timer and sequence buttons for one second.

#### FUMES AND GASES can be dangerous.

- Keep your head out of fumes.
- Use ventilation or exhaust to remove fumes from breathing zone.

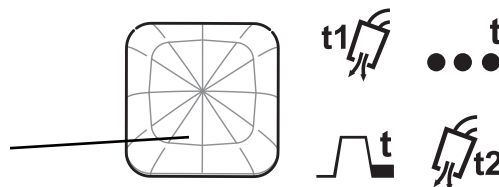


#### ARC RAYS can burn.

- Wear eye, ear and body protection.



Timer



Sequence



















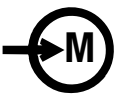
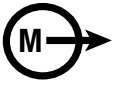







Press the sequence button when “pass” “0000” shows on the display.

Rotate the right knob to select the power source. See the set-up menu selection on page B-19 for Power Source Definitions.

**⚠ WARNING**

The serviceability of a product or structure utilizing the welding programs 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 applying these programs. 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 a welding program may not be suitable for all applications, and the build/user is and must be solely responsible for welding program selection.

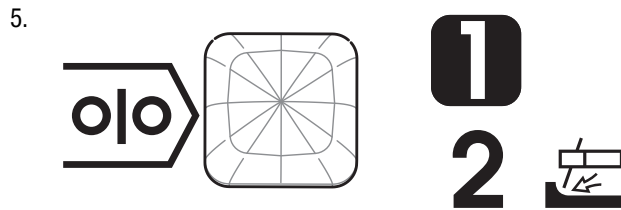
**GRAPHIC SYMBOLS THAT APPEAR ON FLEX FEED 84,  
FLEX FEED 84 DUAL OR IN THIS MANUAL**

	<b>WARNING OR CAUTION</b>		<b>SHIELDING GAS</b>
	<b>INPUT POWER</b>		<b>MENU</b>
	<b>ON</b>		<b>WAVE CONTROL</b>
	<b>OFF</b>		<b>ARC START PARAMETERS</b>
	<b>POSITIVE OUTPUT</b>		<b>ARC END PARAMETERS</b>
	<b>NEGATIVE OUTPUT</b>		<b>COLD FEED</b>
	<b>CHASSIS GROUND</b>		<b>GAS PURGE</b>
$U_1$	<b>INPUT VOLTAGE</b>		<b>SHIELDING GAS INLET</b>
$I_1$	<b>INPUT CURRENT</b>		<b>SHIELDING GAS OUTLET</b>
$I_2$	<b>OUTPUT CURRENT</b>		<b>MEMORY SAVED</b>
<b>A</b>	<b>WELDING AMPERAGE</b>		<b>MEMORY RECALL</b>
<b>V</b>	<b>WELDING VOLTAGE</b>		<b>WIRE DRIVE SELECTION</b>
	<b>WIRE FEEDER</b>		<b>2-STEP TRIGGER</b>
			<b>4-STEP TRIGGER</b>
			<b>THERMAL</b>
			<b>SET-UP MENU</b>
			<b>TRIM</b>

## POWER UP SEQUENCE

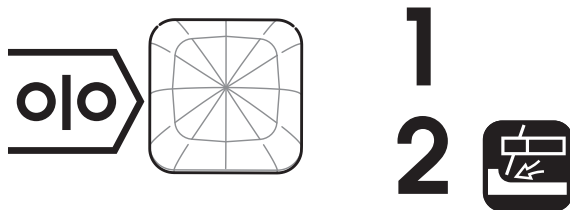
1. All LED's illuminate for 2 seconds.
2. If DIP Switch #4 of any of the wire drives is set to "ON," then the left display shows "PASS" and the right display shows "Clr." This resets the pass code to OFF. The feeder remains in this state and must then be powered off and DIP Switch #4 set to OFF.
3. The displays show the power source type for 2 seconds.
4. The left display shows either "FF" (single wire drive), "FF11" (two single wire drives) or "FF2" (dual wire drive) for 2 seconds while the right display shows the arc timer value. If the feeder has two single wire drives or is a dual wire drive, then the arc timer value for wire drive #1 is shown first for 2 seconds followed by the arc timer value for wire drive #2 for 2 seconds. The wire drive LED illuminates on the user interface to indicate wire drive #1 or #2 (See FIGURE B.1).

FIGURE B.1



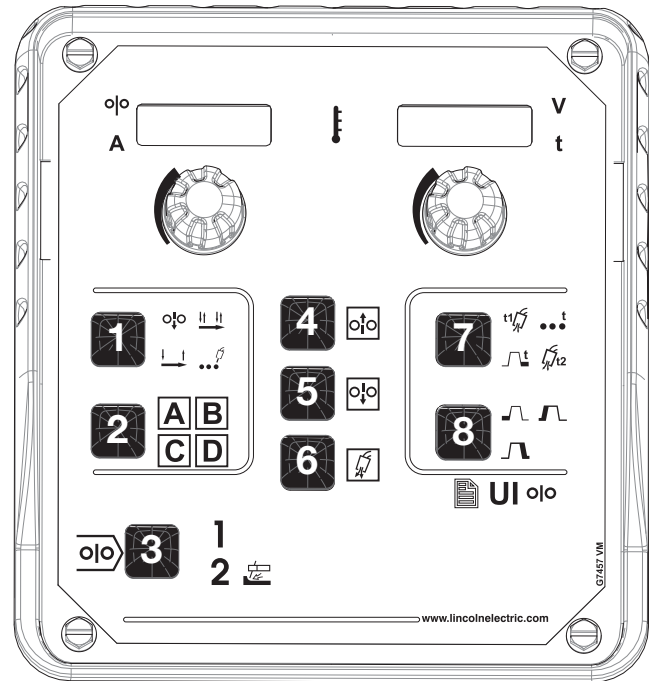
If a gouging kit is installed in a wire drive, the left display continues to show "FF," "FF11," "FF2." The right display shows the arc timer value for the gouging kit of wire drive 1 and wire drive 1 and the gouging LED illuminates, followed by the value for the gouging kit on wire drive 2, if present (See Figure B.2).

FIGURE B.2



6. If the trigger is already activated, the displays show "gun" "on." The feeder remains in this state until the trigger is released and then goes to step 7.
7. If any of the user interface buttons are already pressed, "Err" "000n" is shown to indicate a stuck button, where "n" indicates the number of the button that is stuck. The feeder remains in this state until the button is released or unstuck. It then goes to step 8 (Please See Figure B.3).

FIGURE B.3

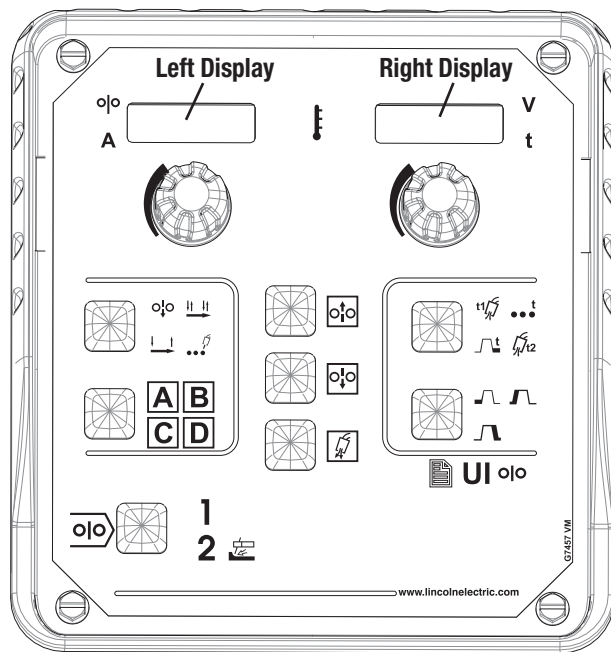


8. If Gas Purge from the rocker switch is already pressed, the display shows "gAS" "On." The feeder remains in this state until the Gas Purge switch is released and then goes to step 9.
9. If Cold Feed from the rocker switch is already pressed, the display shows "FEEd" "On." The feeder remains in this state until the Cold Feed switch is released and then goes to step 10.
10. If the Gouge/Wire Feed switch is in the Gouge position, the display shows "goug" "On." The feeder remains in this state until the switch is placed in the Wire Feed position and then goes to step 11.
11. The contactor drive energizes the contactor to match the active wire drive. The LED for the active wire drive illuminates.
12. Settings of the feeder before the last power-down are restored – wire feed speed, voltage, trigger type, procedure, etc.



## USER INTERFACE

FIGURE B.4

**Left Display:**

The left display is a 4 digit display and shows wire feed speed and amperage. Wire feed speed is displayed as up to a four digit number for in/min (xxxx) and three digits for meters/min (xx.x).

The wire feed speeds kept in memory (See Figure B.5):

FIGURE B.5

	<b>Wire Drive 1</b>	<b>Wire Drive 2</b>
Procedure A	Run-in WFS	Run-in WFS
	Start WFS	Start WFS
	Weld WFS	Weld WFS
	Crater WFS	Crater WFS
Procedure B	Run-in WFS	Run-in WFS
	Start WFS	Start WFS
	Weld WFS	Weld WFS
	Crater WFS	Crater WFS
Procedure C	Run-in WFS	Run-in WFS
	Start WFS	Start WFS
	Weld WFS	Weld WFS
	Crater WFS	Crater WFS
Procedure D	Run-in WFS	Run-in WFS
	Start WFS	Start WFS
	Weld WFS	Weld WFS
	Crater WFS	Crater WFS
	Cold Feed WFS	

Amperage is always shown as an absolute value. There is no polarity sign. Amperage is displayed as a 3 digit number xxx. If amperage is shown while welding and the wire feed speed is adjusted, then the left display will show wire feed speed for 5 seconds and then revert to displaying amperage.

**Right display:**

The right display is a 4 digit display and shows values for voltage and time. Voltage is displayed as a three digit number xx.x with a minus sign when negative. As the voltage knob is rotated, the value changes by 0.1 volts. (Ex: 20.1, 20.2, 20.3, 20.4, etc.) During welding, the voltage shown is always the actual voltage, even when the voltage knob is adjusted.

The preset voltage range is 10.0 to 45.0 volts.

The voltages to store in memory (See Figure B.6):

FIGURE B.6

	<b>Wire Drive 1</b>	<b>Wire Drive 2</b>
Procedure A	Run-in Voltage	Run-in Voltage
	Start Voltage	Start Voltage
	Weld Voltage	Weld Voltage
	Crater Voltage	Crater Voltage
Procedure B	Run-in Voltage	Run-in Voltage
	Start Voltage	Start Voltage
	Weld Voltage	Weld Voltage
	Crater Voltage	Crater Voltage
Procedure C	Run-in Voltage	Run-in Voltage
	Start Voltage	Start Voltage
	Weld Voltage	Weld Voltage
	Crater Voltage	Crater Voltage
Procedure D	Run-in Voltage	Run-in Voltage
	Start Voltage	Start Voltage
	Weld Voltage	Weld Voltage
	Crater Voltage	Crater Voltage
Gouging	Gouging Voltage	

**Thermal LED:**

The thermal LED illuminates yellow when a fault related to overheating occurs. For example Error 81 or Error 82 for motor overload.

**IDLE STATE**

When the feeder is sitting idle, the left display shows the preset wire feed speed for the selected procedure and the right display shows the preset voltage. The WFS and voltage LEDs illuminate.

The trigger type, procedure and active wire drive LED's illuminate to indicate the active selection.

## PROCEDURE MENU

The procedure LED's indicate the active procedure, either A, B, C or D (See Figure B.7).

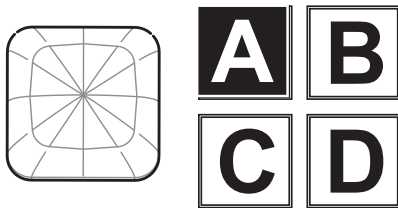
A dual procedure gun may be connected to the trigger connector. Upon closure of the dual procedure switch (pins D and E), if the procedure was in A it will change to B, and if the procedure was in C it will change to D. When changing procedures with the dual procedure switch, the trigger type for both procedures must be identical. The dual procedure switch is ignored if the procedure is already set to B or D.

Parameters recorded for each procedure are:

- Run-in WFS and volts
- Start WFS, volts and time
- Weld WFS and volts
- Crater WFS, volts and time
- Limits for WFS and Volts
- Trigger type and time
- Preflow time
- Postflow time
- Burnback time

Note: When the arc is established, the procedure may be switched only while in the Weld state. The procedure may not be changed while in Start, Crater or Burnback.

FIGURE B.7



## WIRE DRIVE SELECTION

The wire drive selection is only active when a dual wire drive or two single wire drives are connected to the user interface. When a single wire drive (Flex Feed 84) is connected, LED 1 is always illuminated (See Figure B.8).

Pressing the button toggles the active wire drive between 1 and 2. The active wire drive may also be selected by pulling the gun trigger on wire drive 1 or 2. Icon "1" or "2" illuminates to indicate the active wire drive.

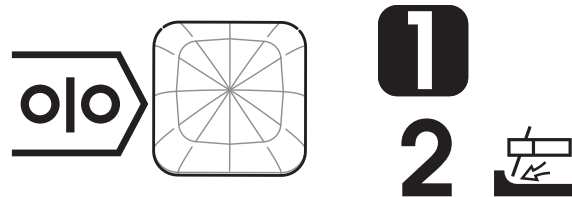
When the active wire drive is switched, all parameters of the active drive from the last active procedure (A, B, C or D) are loaded into the display. Parameters associated with each wire drive and each procedure are:

- Preflow time
- Run-in WFS and volts
- Start WFS, volts and time
- Weld WFS and volts
- Crater WFS, volts and time
- Burnback time
- Postflow time
- Trigger type (Cold Feed, 2-step, 4-step or Spot)
- Limits for WFS and Volts

A signal is also sent to the optional electrode contactor.

If a gouging kit is installed, it must be activated by the rocker switch on the side of the feeder.

FIGURE B.8

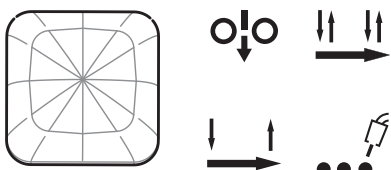


## TRIGGER MENU

The user interface has four different trigger modes available. The trigger mode may be different between drive 1 and drive 2, and different for each procedure A, B, C and D.

Pressing the trigger menu button cycles through the trigger modes and the associated icon illuminates (See Figure B.9).

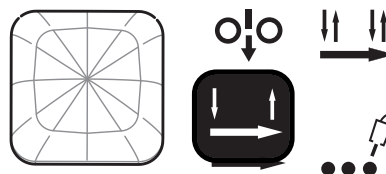
FIGURE B.9



## 2-Step Trigger

2-Step Trigger controls the welding sequence in direct response to the trigger. When the gun trigger is pulled, the welding system (power source and wire feeder) cycles through the arc starting sequence and into the main welding parameters. The welding system will continue to weld as long as the gun trigger is activated. Once the trigger is released, the welding system cycles through the arc ending steps (See Figure B.11).

FIGURE B.11

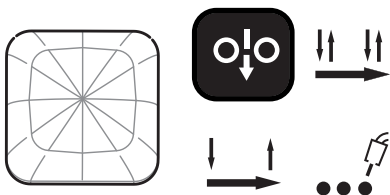


## Cold Feed Trigger.

When the gun trigger is activated, wire is fed at the weld wire feed speed while the power source output remains OFF (See Figure B.10).

Values set in the sequence menu for Run-in, Start and Crater are ignored when Cold Feed Trigger is selected.

FIGURE B.10



## Example 1: 2-Step Trigger: Simple operation

The simplest trigger operation occurs with a 2-Step trigger and Start and Crater set to OFF (See Figure B.12).

For this sequence,

**PREFLOW:** Shielding gas begins to flow immediately when the gun trigger is pulled.

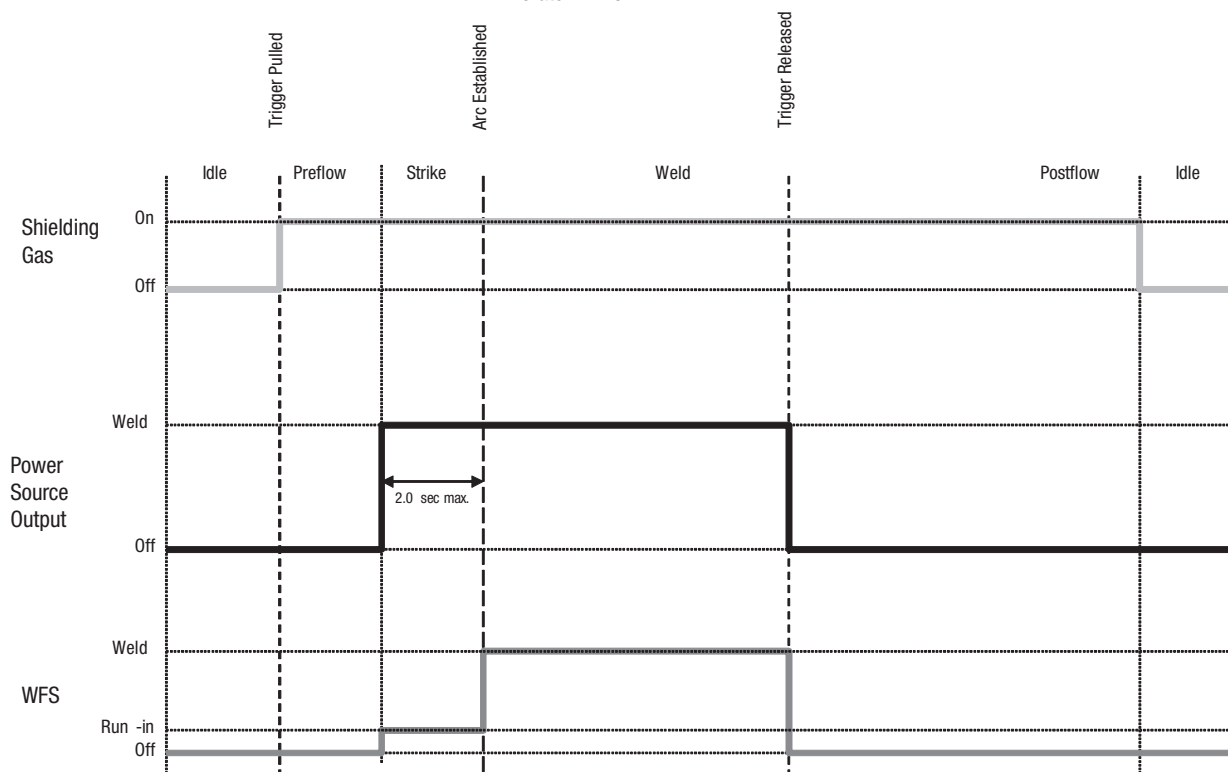
**RUN-IN:** After preflow time expires, the power source regulates to the welding output and wire is advanced towards the work piece at the Run-In WFS. If an arc is not established within 2.0 seconds, the wire feed speed will jump to the welding wire feed speed.

**WELD:** The power source output and the wire feed speed continue at the weld settings for as long as the trigger is pulled.

**POSTFLOW:** As soon as the trigger is released, the power source output and the wire feed speed are turned OFF. Shielding gas continues until the post flow timer expires.

**FIGURE B.12**

2-Step Trigger  
Start = OFF  
Crater = OFF



## Example 2: 2-Step Trigger: Improved Arc Start and Arc End

Tailoring the arc start and arc end is a common method for reducing spatter and improving weld quality. This can be accomplished with the Start and Burnback functions set to a desired values and Crater set to OFF.

For this sequence (See Figure B.13),

**PREFLOW:** Shielding gas begins to flow immediately when the gun-trigger is pulled.

**RUN-IN:** After preflow time expires, the power source regulates to the start output and wire is advanced towards the work piece at the Run-In WFS. If an arc is not established within 2.0 seconds, the power source output and wire feed speed skips to the weld settings.

**START:** Once the wire touches the work and an arc is established, both the machine output and the wire feed speed ramp to the weld settings throughout the start time. The time period of ramping from the start settings to the weld settings is called UPSLOPE.

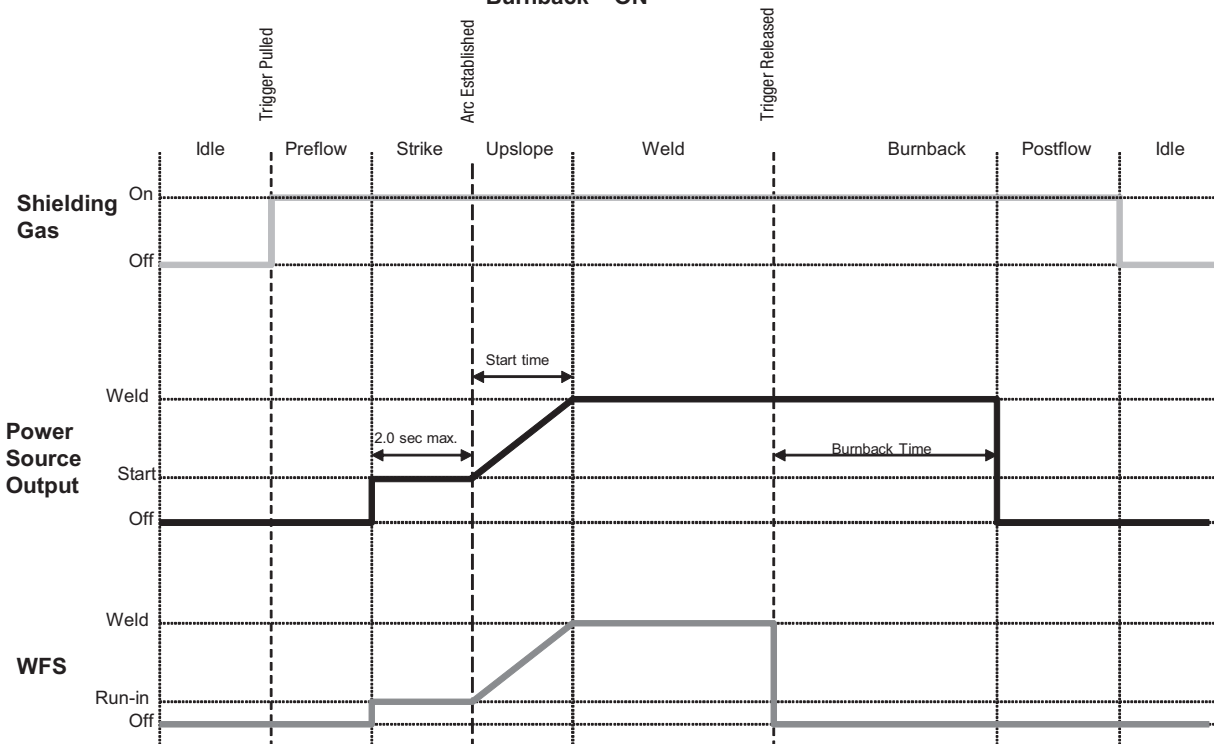
**WELD:** After upslope, the power source output and the wire feed speed continue at the weld settings.

**BURNBACK:** As soon as the trigger is released, the wire feed speed is turned OFF and the machine output continues for the burnback time.

**POSTFLOW:** Next, the machine output is turned OFF and shielding gas continues until the post flow timer expires.

**FIGURE B.13**

**2 Step Trigger**  
**Start = ON**  
**Crater = OFF**  
**Burnback = ON**



### Example 3: 2-Step Trigger: Customized Arc Start, Crater and Arc End

Aluminum is an example of where start, crater and burnback are commonly used to improve welding performance.

For this sequence (See Figure B.14),

**PREFLOW:** Shielding gas begins to flow immediately when the gun trigger is pulled.

**RUN-IN:** After preflow time expires, the power source regulates to the start output and wire is advanced towards the work piece at the Run-In WFS. If an arc is not established within 2.0 seconds, the power source output and wire feed speed skips to the weld settings.

**START & UPSLOPE:** Once the wire touches the work and an arc is established, both the machine output and the wire feed speed ramp to the weld settings throughout the start time. The time period of ramping from the start settings to the weld settings is called UPSLOPE.

**WELD:** After upslope, the power source output and the wire feed speed continue at the weld settings.

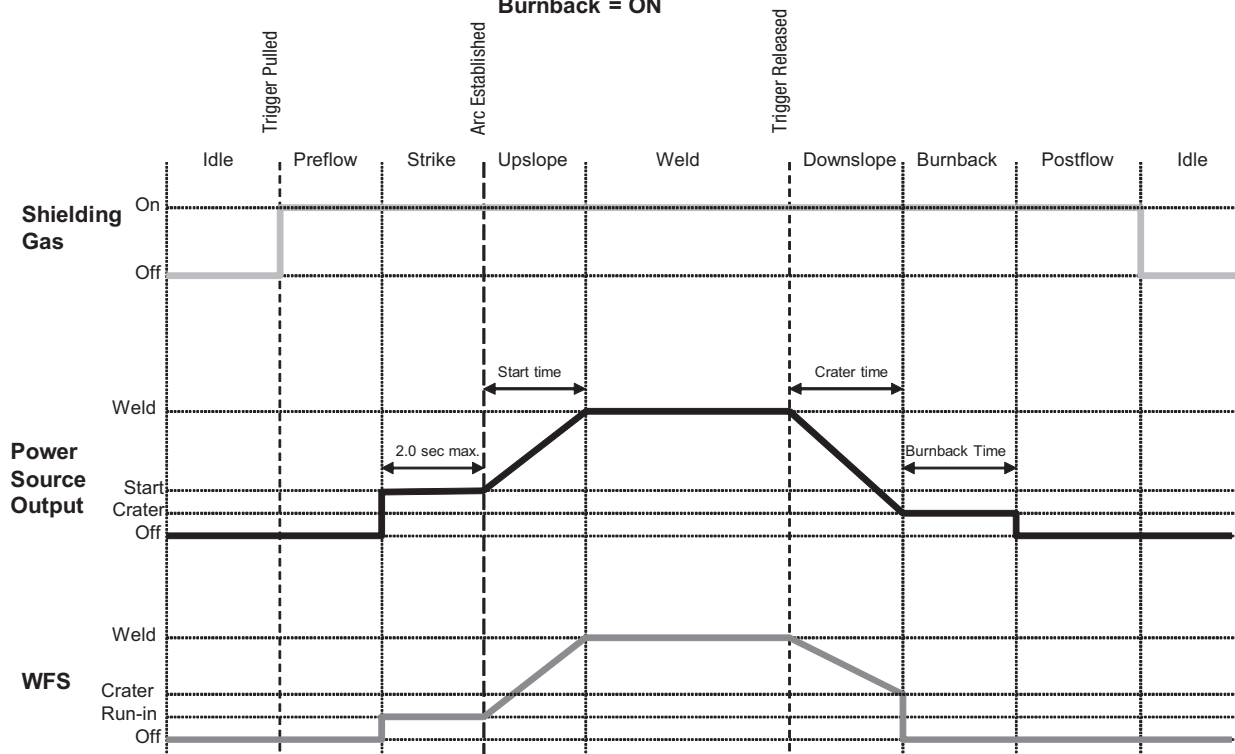
**CRATER & DOWNSLOPE:** As soon as the trigger is released, the wire feed speed and power source output ramp to the crater settings throughout the crater time. The time period of ramping from the weld settings to the crater settings is called DOWNSLOPE.

**BURNBACK:** After the crater time expires, the wire feed speed is turned OFF and the machine output continues for the burnback time.

**POSTFLOW:** Next, the machine output is turned OFF and shielding gas continues until the post flow timer expires.

**FIGURE B.14**

**2 Step Trigger**  
**Start = ON**  
**Crater = ON**  
**Burnback = ON**



## 2-Step trigger: Special considerations

The weld sequence response depends upon when the trigger is pulled and released and whether or not START or CRATER are active.

An example sequence:

Pull the trigger to start feed of wire. When arc is established the sequencer will begin START/UPSLOPE. If trigger is released during UPSLOPE and CRATER/DOWNSLOPE is active, the machine will begin CRATER/DOWNSLOPE and sloping down over the CRATER time, regardless of when the trigger release occurred.

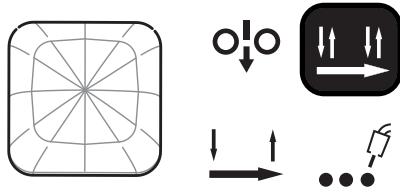
If the CRATER is disabled and the trigger is released during START/UPSLOPE, the sequencer will move to the BURNBACK state to end the weld.

### 4-Step Trigger

4-step trigger allows the operator to release the trigger once an arc has been established. To end the weld, the trigger is pulled and then released again.

NOTE: if the arc goes out for more than 0.5 seconds while the trigger is released, the welding process stops and goes to the idle state.

FIGURE B.15



### Example 1: 4-Step Trigger: Trigger Interlock

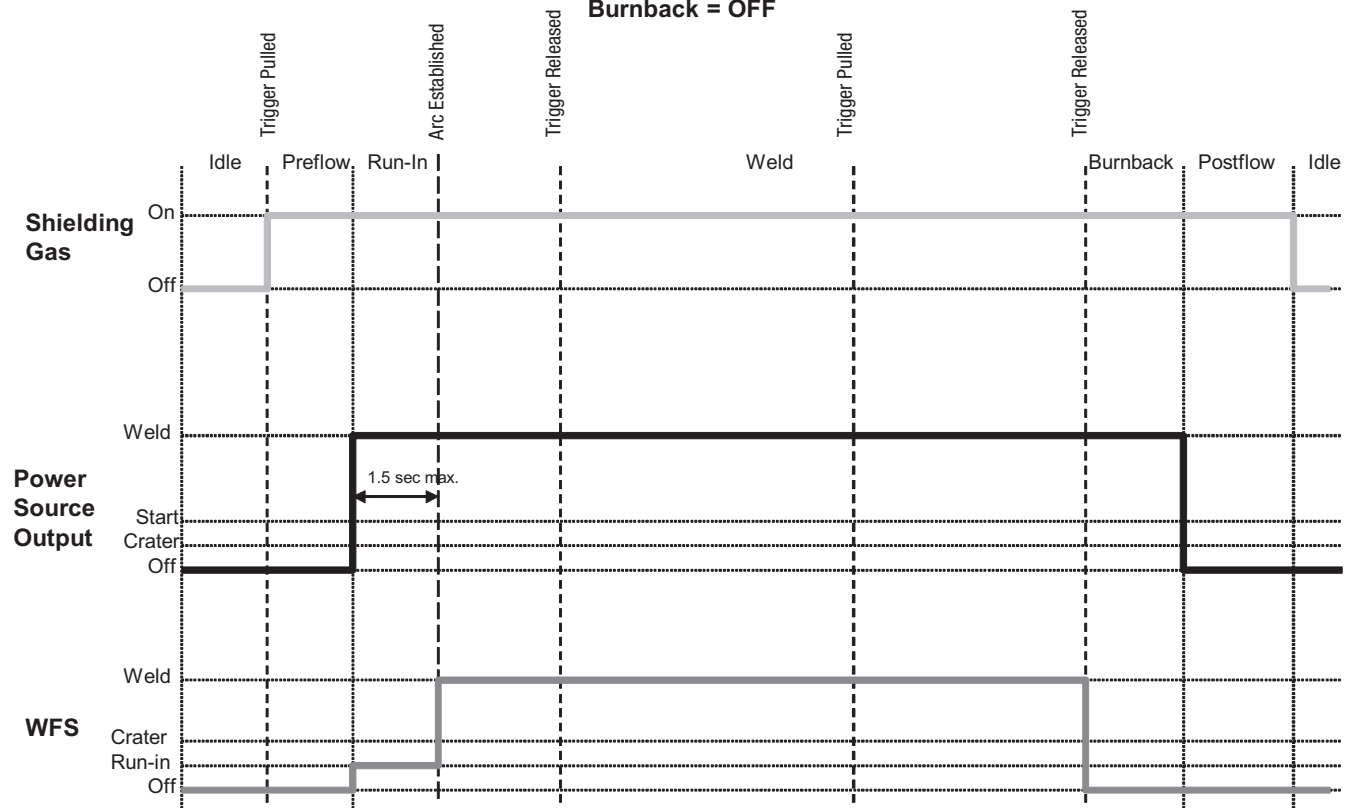
The 4-Step trigger can be configured as a trigger interlock. Trigger interlock adds to the welder's comfort when making long welds by allowing the trigger to be released after an initial trigger pull. Welding stops when the trigger is pulled a second time and then released, or if the arc is interrupted.

For this sequence (See Figure B.16),

- PREFLOW:** Shielding gas begins to flow immediately when the gun trigger is pulled.
- RUN-IN:** After preflow time expires, the power source regulates to the welding output and wire is advanced towards the work piece at the Run-In WFS. If an arc is not established within 1.5 seconds, the wire feed speed will jump to the welding wire feed speed.
- WELD:** The power source output and the wire feed speed continue at the weld settings. The trigger is released and welding continues. Welding continues when the trigger is pulled a second time.
- POSTFLOW:** As soon as the trigger is released for the second time, the power source output and the wire feed speed are turned OFF. Shielding gas flows until the post flow timer expires.

FIGURE B.16

4 Step Trigger  
Start = OFF  
Crater = OFF  
Burnback = OFF





## Example 2: 4-Step Trigger: Manual Control of Start and Crater times with Burnback ON.

The 4-Step trigger sequence gives the most flexibility when the Start, Crater and Burnback functions are active. This is a popular choice when welding aluminum because extra heat may be needed during Start and less heat desired during crater. With 4-Step trigger, the welder chooses the amount of time to weld at the Start, Weld and Crater settings by using the gun trigger. Burnback reduces the occurrence of wire to sticking into the weld pool at the end of a weld and conditions the end of the wire for the next arc start.

In this sequence (See Figure B.17),

**PREFLOW:** Shielding gas begins to flow immediately when the gun trigger is pulled.

**RUN-IN:** After preflow time expires, the power source regulates to the start output and wire is advanced towards the work piece at the run-in WFS. If an arc is not established within 1.5 seconds, the power source output and wire feed speed skips to the weld settings.

**START:** The power source welds at the start WFS and voltage until the trigger is released.

**UPSLOPE:** During upslope, the power source output and the wire feed speed ramp to the weld settings throughout the start time. The time period of ramping from the start settings to the weld settings is called UPSLOPE. If the

trigger is pulled before upslope is complete, WELD is skipped and the sequence jumps to DOWNSLOPE.

**WELD:** After upslope, the power source output and the wire feed speed continue at the weld settings.

**DOWNSLOPE:** As soon as the trigger is pulled, the wire feed speed and power source output ramp to the crater settings throughout the crater time. The time period of ramping from the weld settings to the crater settings is called DOWNSLOPE

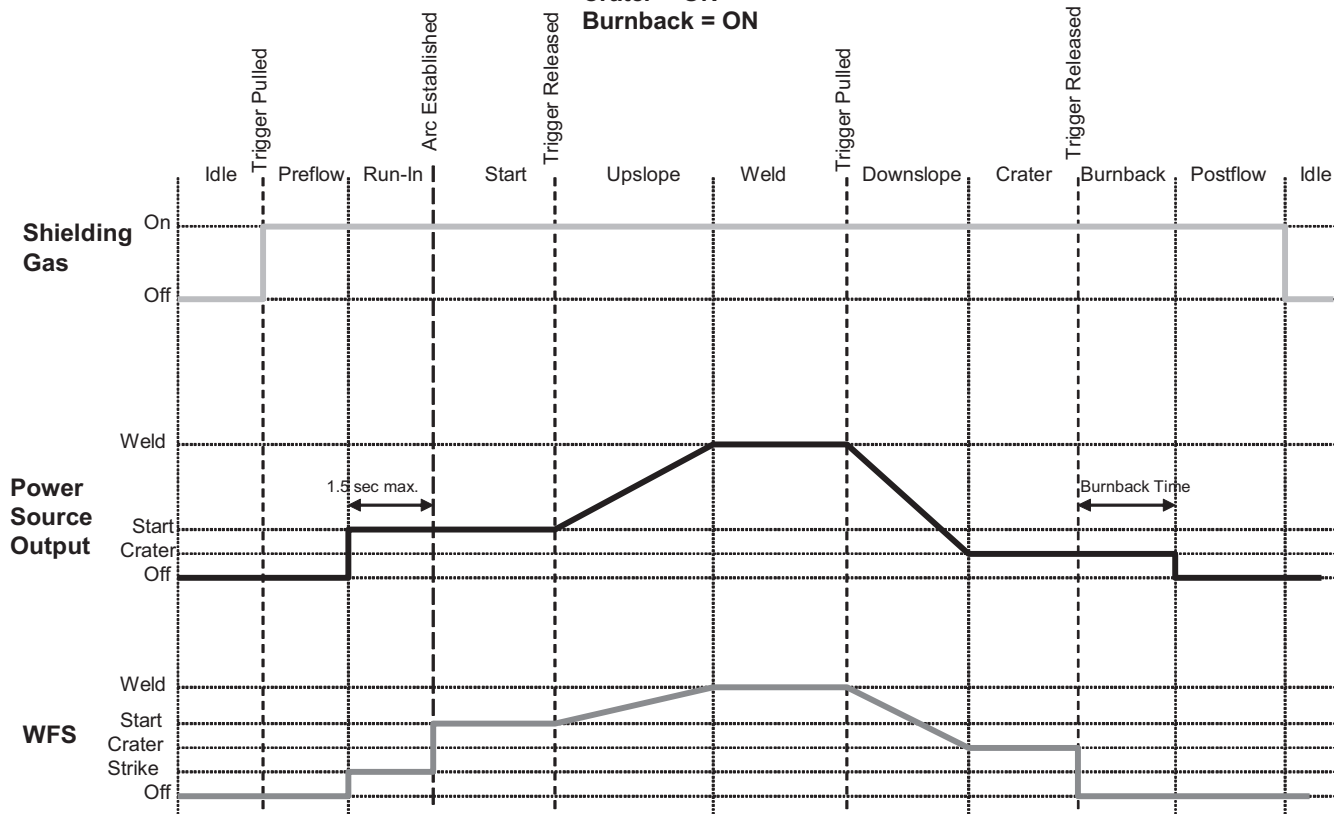
**CRATER:** During CRATER, the power source continues to supply output at the crater WFS and voltage.

**BURNBACK:** When the trigger is released, the wire feed speed is turned OFF and the machine output continues for the burnback time.

**POSTFLOW:** Next, the machine output is turned OFF and shielding gas continues until the post flow timer expires.

**FIGURE B.17**

**4 Step Trigger**  
**Start = ON**  
**Crater = ON**  
**Burnback = ON**



## Spot Trigger

(See Figure B.18)

The Spot Trigger may only be selected if the Spot Time has previously been set to a value other than 0.0 (OFF) and the Start and Crater are both OFF.

Spot time causes the welding system to turn on for a fixed time, regardless if the trigger is held for a longer period of time. If the trigger is released before the spot timer is complete, welding stops.

If the Spot Time is set to 0.0 (OFF), the left display will show "SPOT" and the right display will show "OFF." The Spot Time LED from the timer menu will blink. After 2.0 seconds, the trigger menu cycles back to the Cold Feed Trigger option.

If Start is not set to OFF, the left display will show "Strt" and the right display will show "On." The Start LED from the sequence menu will blink twice. After 2.0 seconds, the trigger menu cycles back to the Cold Feed Trigger option.

If Crater is not set to OFF, the left display will show "Crtr" and the right display will show "On." The Crater LED from the sequence menu will blink twice. After 2.0 seconds, the trigger menu cycles back to the Cold Feed Trigger option.

(See Figure B.19).

FIGURE B.18

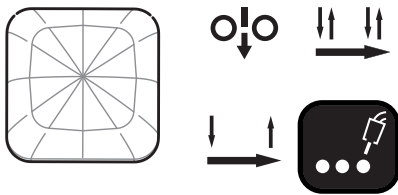
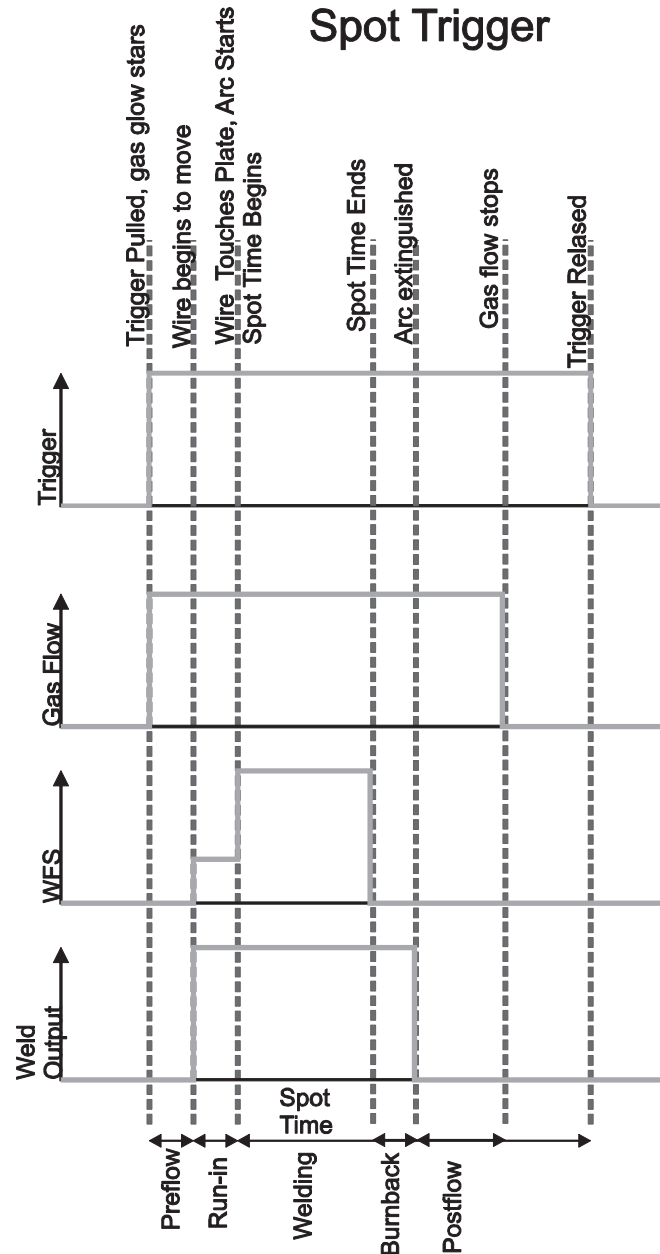


FIGURE B.19

## Spot Trigger



## 4-Step Trigger: Special Considerations

The response to the trigger with 4-step trigger active is dependent upon when the trigger is pulled/released and the settings for START and CRATER.

### Example 1.

Pull the trigger to start feed of wire. When arc is established the sequencer will remain in START until the trigger is released. When the trigger is released, UPSLOPE begins. If trigger is pulled again during UPSLOPE and CRATER/DOWNSLOPE is active, the feeder will begin the DOWNSLOPE, sloping down over the CRATER time, regardless of when the trigger pull occurred.

If the CRATER/DOWNSLOPE state is disabled and the trigger is pulled during UPSLOPE, the sequencer will remain in the UPSLOPE state and continue with the weld. If the fourth step (trigger release) occurs during UPSLOPE, the sequencer will jump to the BURNBACK to end the weld.

### Example 2:

Pull the trigger to start feed of wire. When arc is established the sequencer will remain in START until the trigger is released. When the trigger is released, UPSLOPE begins and continues into WELD when the START timer is complete. When the trigger is pulled again (step 3) and CRATER/DOWNSLOPE is active, DOWNSLOPE begins and continues until the CRATER timer expires, at which time CRATER will be entered until the trigger is released.

While in DOWNSLOPE, if the trigger is released before the timer expires, the trigger will be ignored and the DOWNSLOPE state will continue until the timer expires, at which point CRATER state will be enabled, check for trigger, and jump to BURNBACK since the trigger has been released.

While in the DOWNSLOPE state and the trigger is released and then pulled again, it will be ignored. During 4-Step operation in DOWNSLOPE, the trigger will always be ignored.

## TIMER MENU

Different timer values may be set for each procedure (A, B, C and D).

The gun trigger is ignored while in the timer menu.

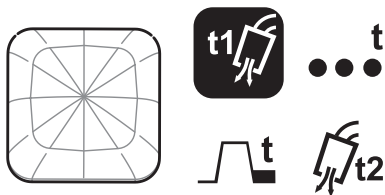
After 10 seconds of inactivity, the feeder returns to the idle state.

### Preflow Timer

Pressing the Sequence/Timer button will illuminate the Preflow Timer LED (See Figure B.20). The right display shows the preflow time and the time LED illuminates; the left display shows "PreFLO".

Preflow is adjustable from OFF, to 0.1 to 2.5 seconds in increments of 0.1 seconds. Factory setting is 0.1 seconds.

FIGURE B.20



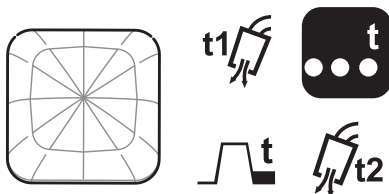
### Spot Time

Pressing the Timer button again illuminates the Spot Timer LED (See Figure B.21). The right display shows the Spot Time and the time LED illuminates; the left display shows "SPOT".

Spot Time is adjustable from OFF, to 0.1 to 199.9 seconds in increments of 0.1 seconds. Factory setting is OFF.

When Spot Time is set, welding will occur for up the specified time and then stop. The timer for Spot Time begins when an arc has been established.

FIGURE B.21

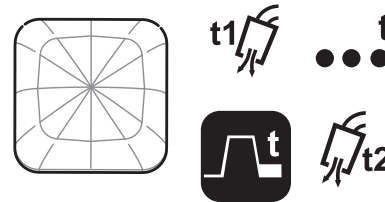


### Burnback Timer

Pressing the Timer button again illuminates the Burnback Timer LED (See Figure B.22). The right display shows the burnback time and the time LED illuminates; the left display shows "burn bac".

Burnback is adjustable from OFF, to 0.01 to 0.25 seconds in increments of 0.01 seconds. Factory setting is 0.01 seconds.

FIGURE B.22



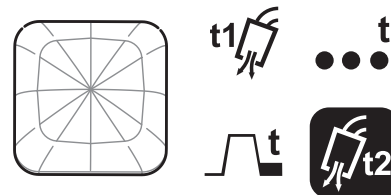
### Postflow Timer

Pressing the Timer button again illuminates the Postflow Timer LED (See Figure B.23). The right display shows the postflow time and the time LED illuminates; the left display shows "Post FLO".

Postflow is adjustable from OFF, to 0.1 to 10.0 seconds in increments of 0.1 seconds. Factory setting is 0.5 seconds.

Pressing the Timer button again sends the feeder to the Idle state.

FIGURE B.23



## SEQUENCE MENU

The Sequence Menu allows for customization of Run-In, Start and Crater. Different sequence values may be selected for each procedure (A, B, C and D)

The wire feed speed and voltage values for Run-In, Start and Crater may not be adjusted while welding. They are only modified through the Sequence menu.

The gun trigger is ignored while in the Sequence Menu.

After 10 seconds of inactivity, the feeder returns to the idle state.

### Run-In

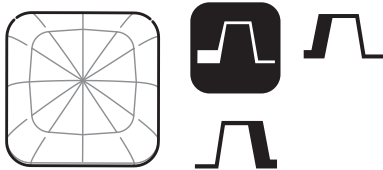
Pressing the Sequence button illuminates the Run-In LED (See Figure B.24). The left display shows Run-In WFS and the WFS LED illuminates. The right display shows the Run-in (Strike) voltage and the voltage LED illuminates.

Run-in WFS is adjustable from OFF (factory setting), to the low wire feed speed range limit (either 35 or 50 in/min) up to the weld wire feed speed. When Run-In WFS is set to OFF, it operates at the weld WFS.

Rotate the left knob to adjust the Run-in WFS and the right knob to adjust the Run-in voltage.

Run-in (strike) voltage is adjustable from 10.0 to 45.0 volts.

FIGURE B.24



### Start

Pressing the Sequence button again illuminates the Start LED (See Figure B.25). The left display shows the Start WFS and the WFS LED illuminates. The right display shows the Start voltage and the voltage LED illuminates.

Rotate the left knob to adjust the Start WFS and the right knob to adjust the Start voltage.

Pressing the timer button displays the Start time in the left display and the time LED illuminates. Start time is adjustable from OFF, 0.1 to 10.0 seconds in increments of 0.1 seconds. Factory setting is OFF.

Pressing the timer button again toggles the left display back to show Start WFS.

FIGURE B.25



### Crater

Pressing the Sequence button again illuminates the Crater LED (See Figure B.26). The left display shows the Crater WFS and the WFS LED illuminates. The right display shows the Crater voltage and the voltage LED illuminates.

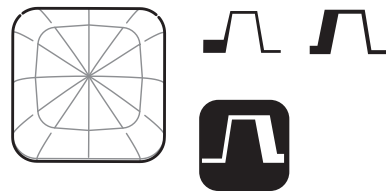
Rotate the left knob to adjust the Crater WFS and the right knob to adjust the Crater voltage.

Pressing the timer button displays the Crater time in the left display and the time LED illuminates. Crater time is adjustable from OFF, 0.1 to 10.0 seconds in increments of 0.1 seconds. Factory setting is OFF.

Pressing the timer button again toggles the left display back to show Start WFS.

Pressing the Sequence button once more returns the feeder to the idle state.

FIGURE B.26



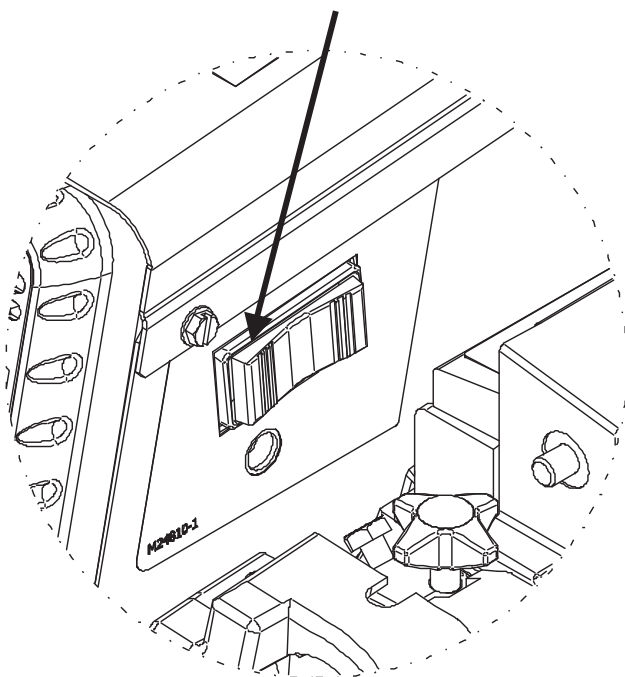
## COLD FEED BUTTONS

Pressing the Cold Feed buttons feeds wire either forward or backward for the active wire drive head. When feeding wire forward, the cold WFS is shown in the left display and may be adjusted with the left knob. Feeding in reverse is fixed at 80 in/min.

Cold Feed Forward may also be activated by the momentary rocker switch located on the wire drive (See Figure B.27).

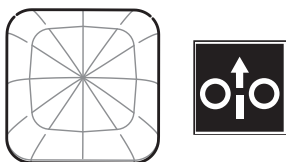
FIGURE B.27

## COLD FEED



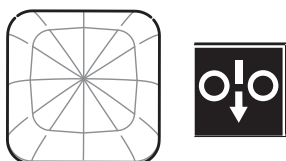
When the Cold Feed Reverse button is pressed, the cold feed reverse icon illuminates (See Figure B.28).

FIGURE B.28



When Cold Feed Forward is activated by either pressing the button on the user interface or the rocker switch on the wire drive, the cold feed forward icon illuminates (See Figure B.29).

FIGURE B.29



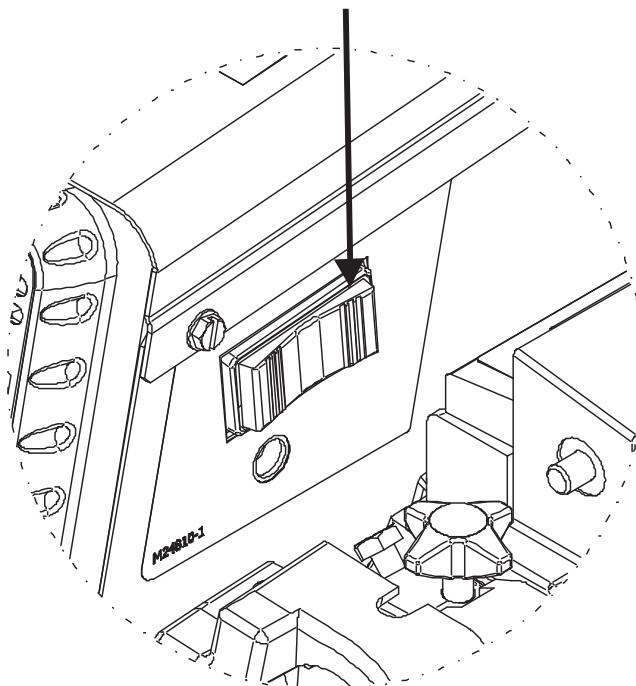
The power source output remains OFF during Cold Feeding.

## GAS PURGE

Pressing the gas purge turns on the gas solenoid for as long as the gas purge button is held.

FIGURE B.30

## GAS PURGE



Gas Purge may also be activated with the momentary rocker switch on the wire drive (See Figure B.30).

When Gas Purge is activated by either the button or the rocker switch, the Gas Purge icon on the user interface illuminates (See Figure B.31).

FIGURE B.31



The power source output remains OFF during Gas Purge.

## GOUGING KIT

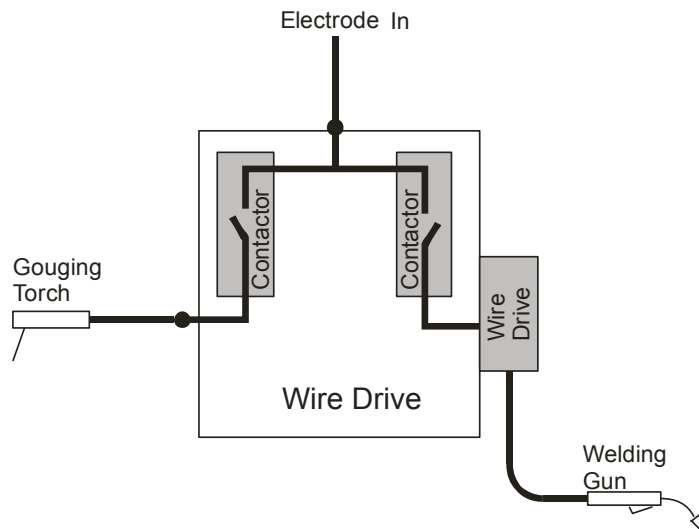
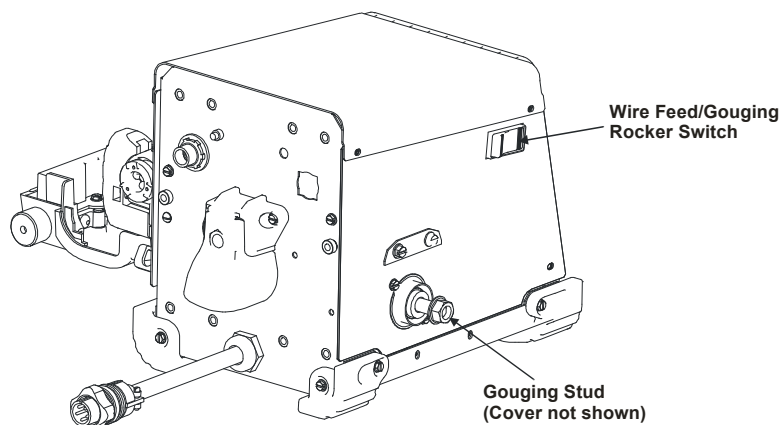
The Flex Feed 84 wire drive may have a gouging kit installed. The gouging kit includes a rocker switch to select either a wire feed process or a gouging process, a mounting stud for attaching a gouging torch and two contactors to electrically isolate the gouging torch while welding, and to isolate the welding head while gouging.

The gouging kit is not available for dual wire drives.

When the rocker switch is in the Gouging position, the gouging LED illuminates on the user interface.

Two single wire drives, each with a gouging kit, may be connected to one user interface. However, only one gouging stud may be active at a time. The wire drive LED indicates which wire drive and gouging stud is active.

Setting the rocker switch on both wire drives to “gouging” causes an error.



## GOUGING OPTION OPERATION

The gouging option provides a method to switch between wire welding processes and a gouging process. The gouging process will be performed using the same process as the wire welding process. For example, if the power source is set for CV wire welding, then gouging will be performed with the CV process.

When in the gouging mode, the output to the power source is turned ON and the gouging output stud will be at electrode potential. Actual voltage and amperage are displayed on the user interface.

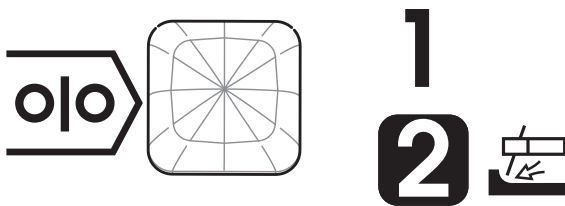
The gouging voltage is always controlled in an “open loop” fashion, using the 10 – 45 linear preset power source selection. The Flex Feed 84 does not attempt to regulate the output voltage to preset voltage.

Do not attempt to switch the wire feeder/gouging switch under load. Wait until all welding or all gouging is complete before changing the switch position. Attempting to switch under load will cause an error to show on the display.

When in the gouging mode, the gouging LED will illuminate on the user interface as well as the active wire drive LED (See Figure B.32).

When 2 single wire drives, both with a gouging kit, are connected to one user interface, only one gouging stud may be active at a time. To switch from gouging from wire drive 1 to wire drive 2, first place wire drive 1 wire feed/gouge switch in the “Wire feed” position. Then place the wire feed/gouge switch on wire drive 2 to the “Gouge” position.

**FIGURE B.32**





## SET-UP MENU

The Set-up menu may only be entered when the feeder is in the idle state. Once the set-up menu is entered, all other inputs are disabled.

If calibration of wire feed speed is to be performed, before entering the set-up menu:

- Measure the actual wire feed speed (example: 405 inches per minute)
- Read the wire feed speed on the display (example: 400 inches per minute)

If calibration of amperage is to be performed, before entering the set-up menu:

- Connect the feeder to a power source and grid. Adjust the power source and grid to the desired amperage. (example: 220 Amps)
- Record the amperage display on the wire feeder. (example: 210 amps)

If calibration of voltage is to be performed, before entering the set-up menu:

- Connect the feeder to a power source and grid. For best results, use 4/0 cables of the shortest length possible. Verify that all connections are clean and tight. Adjust the power source and grid to the desired voltage. (example: 24.0 volts)
- Record the voltage display on the wire feeder. (example: 24.2 volts)

For Dual feeders, perform the calibration on both wire drives.

The Set-up menu is divided into two sections: The User Interface Menu and the Wire Drive Menu (*See Figure B.33*).

**FIGURE B.33**

USER INTERFACE MENU	WIRE DRIVE MENU
Power source type	Pinion Gear ratio
Security level	Gearbox Ratio
Passcode	WFS limits
Arc Hour Timer	Voltage limits
WFS units	Wire drive direction
Left display WFS/Amps	Amperage calibration
4-Step trigger type	WFS calibration
Local/Automatic Control	Voltmeter calibration
	Wire Pull back

To enter the Set-Up menu, press and hold the timer and sequence menu buttons simultaneously for 1 second to enter the User Interface Menu, or hold for 5 seconds to enter the Wire Drive Menu. The Set-up LED will illuminate while in the set-up menu, and either the “UI” symbol or the wire drive symbol will light (See Figure B.34).

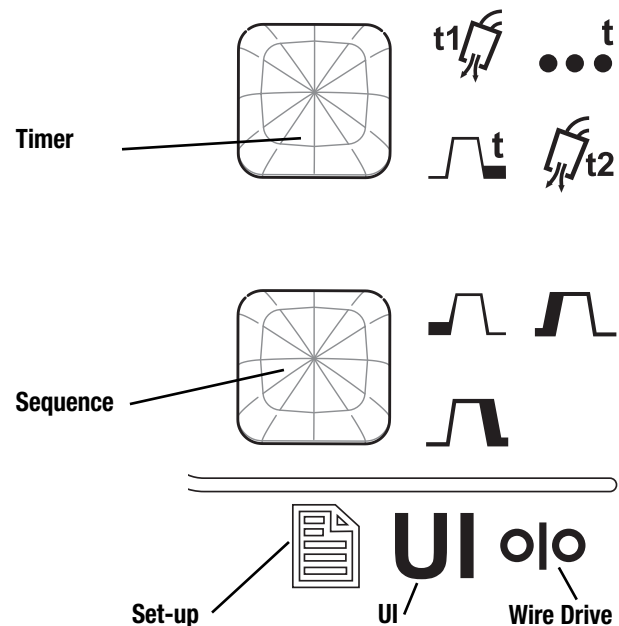
If no action is taken for 60 seconds while in the set-up menu, the feeder returns to the idle state.

If a passcode for the set-up menu has been enabled, enter the passcode followed by pressing the set-up menu button.

The left display shows “PASS” and the right display shows “0000.” Adjust the passcode number by rotating the left knob to change the first two digits “xx00” and the right knob to change the last two digits “00yy.”

If a wrong passcode is entered. “PASS” shows in the left display for two seconds while the right display shows “Err.” The wire feeder then reverts to the idle state.

**FIGURE B.34**



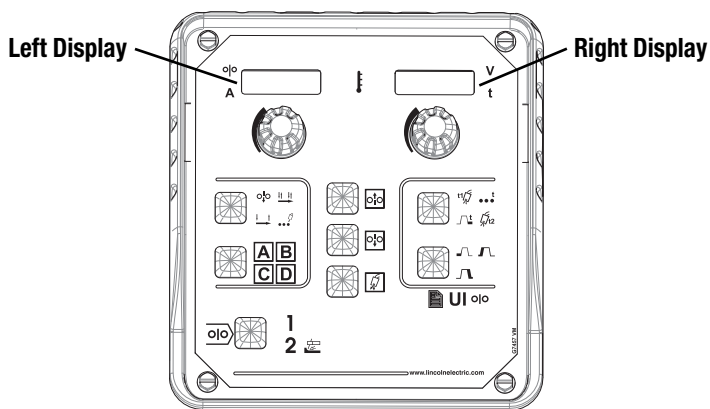
**USER INTERFACE MENU:**

To enter the user interface menu, press and hold the timer and sequence buttons for 1 second.

**Power source type**

Welding power sources use various curves for the relationship of 75-76-77 to actual welding output voltage.

For power sources not listed, select the 0 – 10 linear preset curve. Instead of displaying a preset voltage, the voltage display will be shown a number for 0.00 to 10.00. Actual voltage will still be displayed during welding (See Figure B.34).

**FIGURE B.34**

POWER SOURCE	LEFT DISPLAY	RIGHT DISPLAY	TYPE OF VOLTAGE CONTROL
CV-400, CV-500i	Cu	400	Closed Loop
CV-655	Cu	655	Closed Loop
V-350 PRO V-450 PRO Flextec 450 Flextec 500 Flextec 350	FLtc	450	Open Loop
Flextec 650	FLtc	650	Open Loop
DC-400	dC	400	Closed Loop
DC-600	dC	600	Closed Loop
DC-1000	dC	1000	Closed Loop
10.0 to 45.0 linear preset	blank	1045	Open Loop
Other: 0.0 to 10.0 linear preset	blank	0-10	Open Loop

Rotate the right knob to select the power source. The factory setting is "FLtc 450."

When two single wire drives are connected, the power source type is determined by wire drive 1. Wire drive 2 changes its power source type to match wire drive 1.

Press the Sequence button for the next option. Press the Timer button to exit.

## Security Level

The left display shows “SECU” and the right display shows “OFF,” “lo” or “Hi”

The levels of security are:

- **No Security “OFF” (Factory setting).** All buttons and knobs are enabled.
- **Low Security.**

FIGURE B.35-A

Enabled	Disabled
Weld WFS	Timer Menu
Weld Voltage	Trigger menu
Cold Feed WFS	Sequence Menu
Cold Feed	
Gas Purge	
Wire Drive Selection	
A/B/ C/D	

- **High Security.**

FIGURE B.35-B

Enabled	Disabled
Cold Feed WFS	Timer Menu
Cold Feed	Trigger menu
Gas Purge	Weld WFS
Wire Drive Selection	Weld Voltage
A/B/ C/D	Sequence Menu

Rotate the right knob clockwise and counter clockwise to select between OFF, low and high security.

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## Pass Code

A pass code may be set for entry into the Set-up menu.

The left display shows “PASS” while the right display will show the present code. The pass code is a 4 digit number in the format of xxyy, where the left knob changes the xx digits and the right knob changes the yy digits.

Factory setting is pass code “0000”

If the pass code is forgotten, it may be reset by turning power off and placing DIP switch #4 in the “ON” position. When two single wire drives are present, DIP switch #4 may be set to ON on either wire drive. Turn power on. The left display will show “PASS” and the right display will show “CLr”. Then turn power off, change DIP switch #4 to “OFF” and resume normal operation.

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## Wire Feed Speed Units

The WFS LED illuminates.

Rotate the right knob counter clockwise to select “US” (inches/minute) or clockwise to select “Euro” (meters/minute)

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## Arc Timer

The Arc Timer displays the number of arc hours in the right display in the format of “hhhh” and the time LED illuminates and the wire drive LED illuminates, either 1 or 2. The timer is on whenever the Arc Established logic is true.

The arc timer value is associated with the wire drive and not the user interface. For example, when two single FLEX FEED 84 wire drives are connected, there are two arc timer values. Likewise, there are two arc timer values for a dual feeder. If a wire drive is disconnected from one user interface and connected to another, the arc timer value shown is the value of the wire drive.

When a gouging kit is installed in a single wire drive, there are separate arc timers for the wire drive and gouging kit. When two single wire drives are present and both have gouging kits installed, there are a total of 4 arc timers. When the gouging time is shown, the gouging LED illuminates.

After 9,999 hours, the timer rolls over.

The left display will show “hour.” Rotating the right knob clockwise causes the right display to flash “0000.” Rotating the knob counterclockwise returns the display to the arc timer value. Pressing the Set-Up menu button clears the arc timer for the mode selected if the display is flashing “0000.” The display will then show a steady “0000” in the right display.

Use the wire drive select button to toggle between wire drive 1 and 2. If a gouging kit is installed, use the rocker switch to toggle between wire drive arc timer and the arc gouging timer.

Press the Sequence menu button to continue to the next option. Press the Timer button for the previous option.

## Left Display Selection

The left display can show either amperage or actual WFS during welding.

The left display shows “dISP.”

Rotate the right knob counter clockwise to select “Curr” (Amperage display) and clockwise to select “FEEd” (wire feed speed display). The Amperage or WFS LED illuminates, respectively.

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## Local/Automatic Control

During Local Control, all settings are set through the User Interface.

For Automatic Control, the wire feed speed and voltage are set through analog inputs on the wire drive board. For wire feed speed, 0 – 10 VDC is scaled to match the low WFS to high WFS; for example 0 VDC = 35 in/min and 10 VDC = 500 in/min. Voltage scaling is 0 – 10 VDC = 10.0 to 45.0 welding voltage.

When in Automatic Control

- The user interface knobs do not set the welding voltage or wire feed speed.
- The trigger is always in 2-step mode.
- Cold feed wire feed speed, Run-in settings, Start and Crater settings, preflow time, burnback time and postflow time use the last settings received from the user interface. If a user interface has never been connected to the wire drive, then default values are used.
- Spot time is set to OFF even if previously a value was set through the user interface.
- Calibration settings, gearbox pinion and gearbox ratio use the last settings received from the user interface. If a user interface has never been connected to the wire drive, then default values are used.
- For Dual feeders, wire drive 1 and 2 are always set both to Local or both to Automatic.

The left display shows “CntL.” Right display shows “loc” or “Auto” if no gouging kit is installed. If a gouging kit is installed (as indicated by the DIP switches), then the right display only shows “loc”

Rotate the right knob counter clockwise for “loc” (Local Control) and clockwise for “Auto” (Automatic Control). The factory setting is Local Control.

Press the Sequence menu button to exit. Press the Timer button for the previous option.

**WIRE DRIVE SET-UP MENU:**

To enter the wire drive setup menu, press and hold the timer and sequence buttons for 5 seconds.

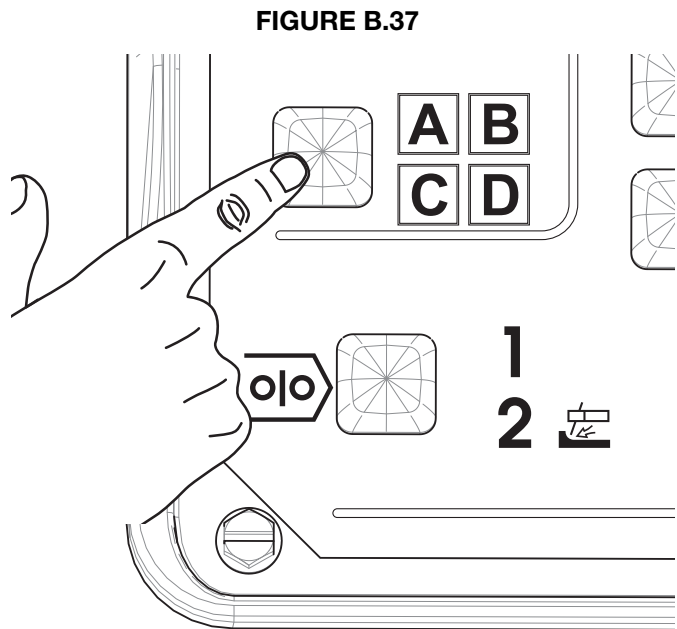
Parameters are changed for the active wire drive and procedure as indicated by the user interface. Use the wire drive button and procedure button to toggle between settings while in the wire drive set-up menu (See Figure B.37).

**Pinion Gear ratio (See Figure B.38)**

The wire drive ships from the factory with the standard speed gear (20 teeth) installed. The high speed gear (30 teeth) is shipped loose (See Figure B.36).

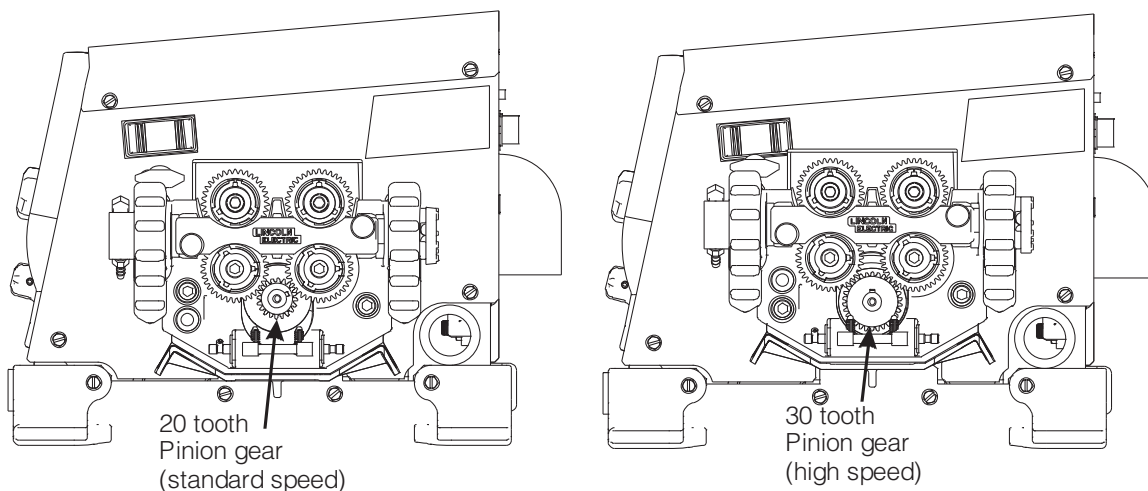
The left display shows “gEar.” The right display shows the present gear, either “30” or “20.” Rotate the right knob clockwise to select “30” (high speed gear) and counter clockwise to select “20” (standard speed gear).

Press the Sequence menu button for the next option. Press the Timer button to exit.

**FIGURE B.36**

GEARBOX GEARING	PINION GEAR	SPEED	WIRE SIZES	
			SOLID	CORED
37.69:1	20*	35 – 500 inch/min (0.9 – 12.7 m/min)	.025" – 3/32" (0.6 – 2.4 mm)	.035" – .120" (0.9 – 3.0 mm)
	30	50 – 750 inch/min (1.3 – 19.0 m/min)	.025" – 1/16" (0.9 – 1.6 mm)	.035 – 5/64" (0.9 – 2.0 mm)
22.57:1	20	50 – 750 inch/min (1.3 – 19.0 m/min)	.025" – 1/16" (0.9 – 1.6 mm)	.035 – 5/64" (0.9 – 2.0 mm)
	30	50 – 1200 inch/min (1.3 – 30.4 m/min)	.025" – .045" (0.9 – 1.2 mm)	.035 – 1/16" (0.9 – 1.6 mm)

\* Installed from factory.

**FIGURE B.38**

## Gear Box Ratio

The standard speed wire drive ships from the factory with a standard 37.69:1 gearbox. Other gears are available for a high speed 22.57:1 gearbox. Do not change the gearbox ratio in the set-up menu without also changing the gears within the gearbox (See Figure B.8).

The left display shows “grbo.” The right display shows the present gearbox ratio, either 37.69 or 22.57. Rotate the right knob counter clockwise to select 22.57 and clockwise to select 37.69.

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## Wire Feed Speed Limits

Setting limits helps to assure the welder stays within a specified range. Limits are only set for the welding wire feed speed and voltage. Run-in, Start and Crater wire feed speeds and voltages are not adjustable except through the sequence menu. To prevent adjustment of Run-in, Start and Crater values see Security Level in the set-up menu.

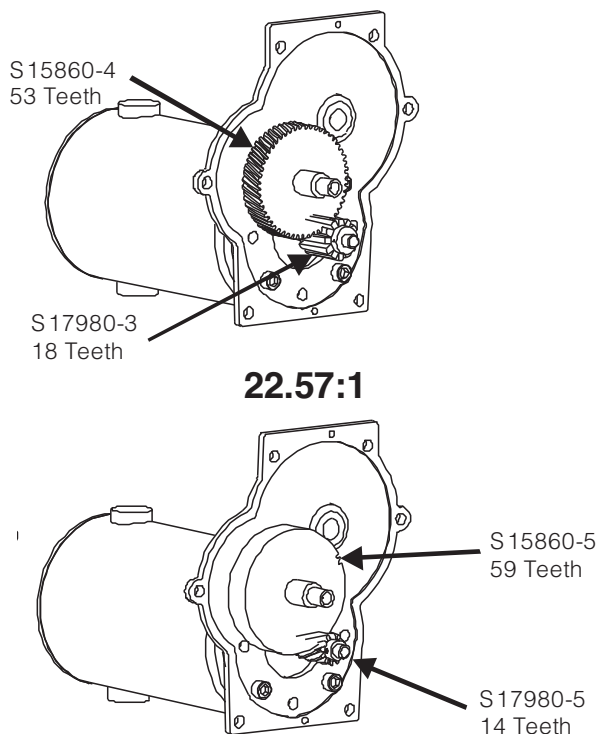
The WFS LED will illuminate.

The left display shows the low WFS limit. The value is adjustable from “OFF” (factory setting) or from the bottom of the WFS range to the set WFS. Rotate left knob to adjust.

The right display shows the high WFS limit. The value is adjustable from “OFF” (factory setting) or from the set WFS to the top of the WFS range. Rotate the right knob to adjust.

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

FIGURE B.39



37.69:1

## Voltage Limits

Setting limits helps to assure the welder stays within a specified range. Limits are only set for the welding wire feed speed and voltage. Run-in, Start and Crater wire feed speeds and voltages are not adjustable except through the sequence menu. To prevent adjustment of Run-in, Start and Crater values see Security Level in the set-up menu.

The Voltage LED will illuminate.

The left display shows the low Voltage limit. The value is adjustable from “OFF” (factory setting) or from the bottom of the voltage range to the set Voltage. Rotate left knob to adjust.

The right display shows the high Voltage limit. The value is adjustable from “OFF” (factory setting) or from the set Voltage to the top of the Voltage range. Rotate the right knob to adjust.

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## Wire Drive Direction

The wire drive may be located on either the left or right hand side of the feeder. Dual feeders have a wire drive on both sides. The “Forward” direction for each drive is defined to either be Left or Right.

The left display shows “drct” and the right display shows either “L” or “r.”

Rotate the right knob counter clockwise to select “L” (left hand) and clockwise to select “r” (right hand).

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## Amperage calibration

Measurements for adjusting the Amperage calibration must be made before entering the set-up menu.

The left display shows the present calibration factor and the amperage LED illuminates. Factory setting is 1.00. The right display is initially blank. If the right knob is rotated, the new calibration factor is displayed in the right display and flashes.

On dual feeders, there is a calibration value for each wire drive.

The calibration factor is adjustable from 0.90 to 1.10.

While in the set-up menu, adjust the calibration factor as follows:

$$\frac{\text{Power Source Amperage}}{\text{Feeder Amperage}} = \text{Calibration Factor} \quad \text{Example: } \frac{220}{210} = 1.05$$

Rotate the right knob until the Amperage Calibration Factor is at the desired value.

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## WFS Calibration

Measurements for adjusting the WFS calibration must be made before entering the set-up menu.

On dual feeders, there is calibration value for each wire drive.

The left display shows the present calibration factor and the WFS LED illuminates. Factory setting is 1.00. The right display is initially blank. If the right knob is rotated, the new calibration factor is displayed in the right display and flashes.

The calibration factor is adjustable from 0.90 to 1.10.

While in the set-up menu, adjust the calibration factor as follows:

$$\frac{\text{Set WFS}}{\text{Actual WFS}} = \text{Calibration Factor} \quad \text{Example: } \frac{405}{400} = 1.01$$

Press the Sequence menu button for the next option. Press the Timer button for the previous option.

## Voltage calibration

Measurements for adjusting the voltage calibration must be made before entering the set-up menu.

On dual feeders, there is a calibration value for each wire drive.

The calibration factor is adjustable from 0.90 to 1.10.

The left display shows the present calibration factor and the voltage LED illuminates. Factory setting is 1.00. The right display is initially blank. If the right knob is rotated, the new calibration factor is displayed in the right display and flashes.

The calibration factor is adjustable from 0.90 to 1.10.

While in the set-up menu, adjust the calibration factor as follows:

Rotate the right knob until the Voltage Calibration Factor is at the

$$\frac{\text{Reference Meter Voltage}}{\text{Feeder Voltage}} = \text{Calibration Factor} \quad \text{Example: } \frac{24.0}{24.2} = 0.99$$

desired value.

Press the Sequence menu button to for the next option. Press the Timer button for the previous option.

## Wire Pull Back

When activated, Wire Pull Back retracts the wire back into the contact tip of the gun when a weld is complete. Wire Pull Back parameters are the same for all procedures (A, B, C, D) and wire drives (1, 2).

Two parameters are associated with wire pull back:

- **Delay time:** the amount of time (in seconds) to wait before pulling the wire back.
- **Length:** the length of wire (in inches) to pull back into the gun. Note the actual length of wire retracted is influenced by the length of the gun, wire diameter and wire type.

Wire is retracted at a speed of 50 in/min.

If the gun trigger is depressed while wire retract is in process, wire pull back stops and the weld sequence begins.

The wire feed LED and time LED illuminate. "Pull" and "OFF" show in the left and right displays, respectively. Factory setting is OFF. Rotating the left knob changes the pull back length from 0.1 to 2.0 inches, in increments of 0.1. The pull back length is shown in the left display. Rotating the right knob changes the delay time, up to 5 seconds, in increments of 1.0 seconds. The right display shows the delay time. Note: If the delay has been set to a value but the pull back length remains "OFF," there will be no wire pull back.

The timer for wire pull back begins when the arc goes out.

Press the Sequence menu button to exit. Press the Timer button for the previous option.

**Engineering note:** The wire feeder controls the pull back length by turning on the motor at a fixed speed for a given time. For example, to pull back the wire 0.75 inches, the wire drive reverses at 50 in/min for 0.015 seconds. A factor to allow for accelerating and slowing the motor may be required.

# OPTIONAL KITS AND ACCESSORIES

## ACCESSORIES INCLUDED WITH ALL FLEX FEED 84'S:

- Bench models of the Flex Feed 84 include a 10 foot control cable
- All models include a standard #4 gun adapter.
- Models with the Heavy Duty Wire Reel stand include a lift bail.
- Models without a wire reel stand include K3929-1 quick disconnect inlet bushing.

## DRIVE ROLL KITS

SOLID WIRES		
KP#	Size	
KP1505-030S	.023-.030" (0.6-0.8mm)	Includes: 4 Smooth V groove drive rolls and inner wire guide.
KP1505-035S	.035" (0.9mm)	
KP1505-045S	.045" (1.2mm)	
KP1505-052S	.052" (1.4mm)	
KP1505-1/16S	1/16" (1.6mm)	
KP1505-1	.035,.045" (0.9, 1.2mm)	
KP1505-2	.040" (1.0mm)	

CORED WIRES		
KP#	Size	
KP1505-035C	.030-.035" (0.8-0.9mm)	Includes: 4 Knurled drive rolls and inner wire guide.
KP1505-045C	.040-.045" (1.0-1.2mm)	
KP1505-052C	.052" (1.4mm)	
KP1505-1/16C	1/16" (1.6mm)	

SOLID OR CORED WIRES		
KP#	Size	
KP1505-068	.068-.072" (1.8mm)	Includes: 4 Knurled drive rolls and inner wire guide.
KP1505-5/64	5/64" (2.0mm)	
KP1505-3/32	3/32" (2.4mm)	
KP1505-7/64	7/64" (2.8mm)	
KP1505-.120	.120" (3.2mm)	

HARDFACING WIRES		
KP#	Size	
KP1505-7/64C	7/64" (2.8mm)	Includes: 2 Knurled drive rolls, 2 Smooth V groove drive rolls and inner wire guide.




ALUMINUM WIRE		
KP#	Size	
KP1507-035A	.035" (0.9 mm)	Includes: 4 polished U groove drive rolls, outer wire guide and inner wire guide, pressure door springs, conduit bushing.
KP1507-040A	.040" (1.0mm)	
KP1507-3/64A	3/64" (1.2mm)	
KP1507-1/16A	1/16" (1.6mm)	
KP1507-3/32A	3/32" (2.4mm)	















## GUN ADAPTER KITS

K#	Description	
<b>K3344-1</b>	Gun Adapter Kit, Lincoln Back-end. Includes a guide tube kit.	
<b>KP4069-1</b>	Guide tube kit for K3344-1 Lincoln gun adapters.	
<b>K3345-1</b>	Gun Adapter Kit, Standard #2-#4 back-end	
<b>K3346-1</b>	Gun Adapter Kit, Standard #5 back-end	
<b>K3347-1</b>	Gun Adapter Kit, Miller back-end	
<b>K3348-1</b>	Gun Adapter Kit, Oxo back-end. Includes a guide tube kit.)	
<b>KP4069-2</b>	Guide tube kit for K3348-1 Oxo gun adapters	
<b>K3349-1</b>	Gun Adapter Kit, Fast-Mate (Euro). Includes a guide tube kit.	
<b>KP4069-3</b>	Guide tube kit for K3349-1 FastMate gun adapters	

**CABLES**

K#	Description	Purpose	
K1797-xx	Control Cable: Male 14 pin to Female 14 pin cable	Connects the user interface to the wire drive for boom systems. Connects the wire drive to the power source on bench systems.	
K2335-2	Competitive Equipment Adapter	Used to connect the Flex Feed 84 to power sources with 24 VAC.	
K1798	Adapter Cable: Female 14 pin to Terminal Strip	Connects the control cable to older power sources that only have terminal strips.	

**GENERAL ACCESSORIES**

K# / KP#	Description	Purpose	
K1546-1	Incoming Bushing for Lincoln Conduit.	Use with .025 – 1/16” wires.	
K1546-2	Incoming Bushing for Lincoln Conduit	Use with 1/16” to 1/8” wires	
K1733-1	Wire Straightener		
K1504-1	50-60 lb coil adapter for 2 inch spindles	For use with K3343-1 heavy duty wire reel stand	
K590-6	Water Connection Kit	Includes 4 female quick disconnects, tubing and clamps water cooled guns	
K1520-1	42 volt Transformer Kit	Converts 110 VAC to 42 VAC.	
K1551-2	Incoming Ball Bearing Bushing		
K283	Portable Digital Wire Feed Speed Meter		
K3342-1	Standard Duty Wire Reel Stand	For spools up to 44 lbs.	
K3343-1	Heavy Duty Wire Reel Stand	For spools up to 44 lbs and coils up to 60 lbs. Includes K3341-1 Lift Bail.	
K3341-1	Lift Bail	Insulated lift bail for suspending the wire feeder. Requires either standard duty or heavy duty wire reel stand.	
K4068-1	Cart Bracket	Bracket and hardware for mounting feeders to either K3059-2 or K3059-3 carts.	
K1634-4	Spool Cover	For use with 30-40 lb spools.	
K3340-1	Spool Cover	For use with 50-60 lb coils.	
KP3103-1	Shielding Gas Filter	Protects the gas solenoid and gun from contaminants.	

# ROUTINE MAINTENANCE

## WARNING

Before carrying out service, maintenance and/or repair jobs, fully disconnect power to the machine.



Use Personal Protective Equipment (PPE), including safety glasses, dust mask and gloves to avoid injury. This also applies to persons who enter the work area.



**MOVING PARTS** can injure.

- Do not operate with doors open or guards off.
- Stop engine before servicing.
- Keep away from moving parts.



Have qualified personnel do all maintenance and troubleshooting work.



The product has been designed to function without problems for a long time with minimum maintenance. The maintenance activities in the table below are strictly reserved for well trained and authorized service personnel.

## Routine Maintenance

Check weld cable, control cables and gas hoses for cuts.

## Periodic Maintenance

Clean the drive rolls and inner wire guide and replace if worn.

Blow out or vacuum the inside of the feeder.

Inspect the motor brushes every 6 months. Replace if shorter than 0.5" (12.7mm).

## Calibration Specification

Calibration of the Flex Feed 84 may be required when the p.c. board or the motor is replaced or serviced.

## 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.

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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.



### 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.
- Welding power source must be connected to system ground per the National Electrical Code or any applicable local codes.
- Only qualified personnel should perform maintenance work.



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**Observe all additional Safety Guidelines detailed throughout this manual.**



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

**[WWW.LINCOLNELECTRIC.COM/LOCATOR](http://WWW.LINCOLNELECTRIC.COM/LOCATOR)**

Observe all Safety Guidelines detailed throughout this manual

Problems (Symptoms)		Possible Areas of Misadjustment(s)	Recommended Course of Action
<b>Error Codes</b>			
PASS Clr	Pass code reset	DIP Switch #4 of wire drive 1 has been set to ON to reset the pass code.	1. Turn power off, set DIP Switch #4 to OFF, and then turn power on. The pass code for the set-up menu will be cleared.
gun On	Gun trigger depressed at power up	The trigger of the gun has been activated when the wire feeder powers up.	1. Release the gun trigger.
gAS On	Gas Purge activated at power up	The Gas Purge rocker switch is activated when the wire feeder powers up.	1. Release the gas purge switch.
FEEd On	Cold Feed activated at power up	The Cold Feed rocker switch is activated when the wire feeder powers up.	1. Release the cold feed switch.
goug ON	Gouging activated at power up	The Gouging/Wire Feed switch is in the gouging position at power up.	1. Place the Gouging/Wire Feed switch in the Wire Feed position.
Err n, where n represent a number 1-8	Button stuck	During power up, one of the user interface buttons was depressed.	1. Inspect the User Interface panel to see if any of the buttons are loose not properly inserted. 2. Remove User Interface panel, remove the UI board, and check that the buttons are assembled properly on the inside surface.
Err Conf	Configuration error	1. More than 1 user interface is present; more than two wire drives are present; two single wire drives are connected and both have the same ID set in the DIP switch 2. There is no communication between the user interface and wire drive.	1. Assemble the user interface and wire drive in a valid configuration. 2. Verify the DIP switches are set properly on the wire drive board. 3. Check cables for a bad connection.
Err goug	Wire Feed/Gouging switch error	1. The wire feed/gouging rocker switch was thrown while an arc was established. 2. If two single wire drives are connected to one user interface and both have a gouging kit, both rocker switches may be in the "Gouge" position.	1. Wait for welding or gouging to finish before changing the switch position. 2. Place both switches in the "Wire Feed" and then select one switch for gouging.
Err FL	Fault Switch Error	The fault switch circuit is open.	1. Verify that the fault switch circuit is closed. A common item wired into a the fault switch is a water flow sensor.



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

**WWW.LINCOLNELECTRIC.COM/LOCATOR**

Observe all Safety Guidelines detailed throughout this manual

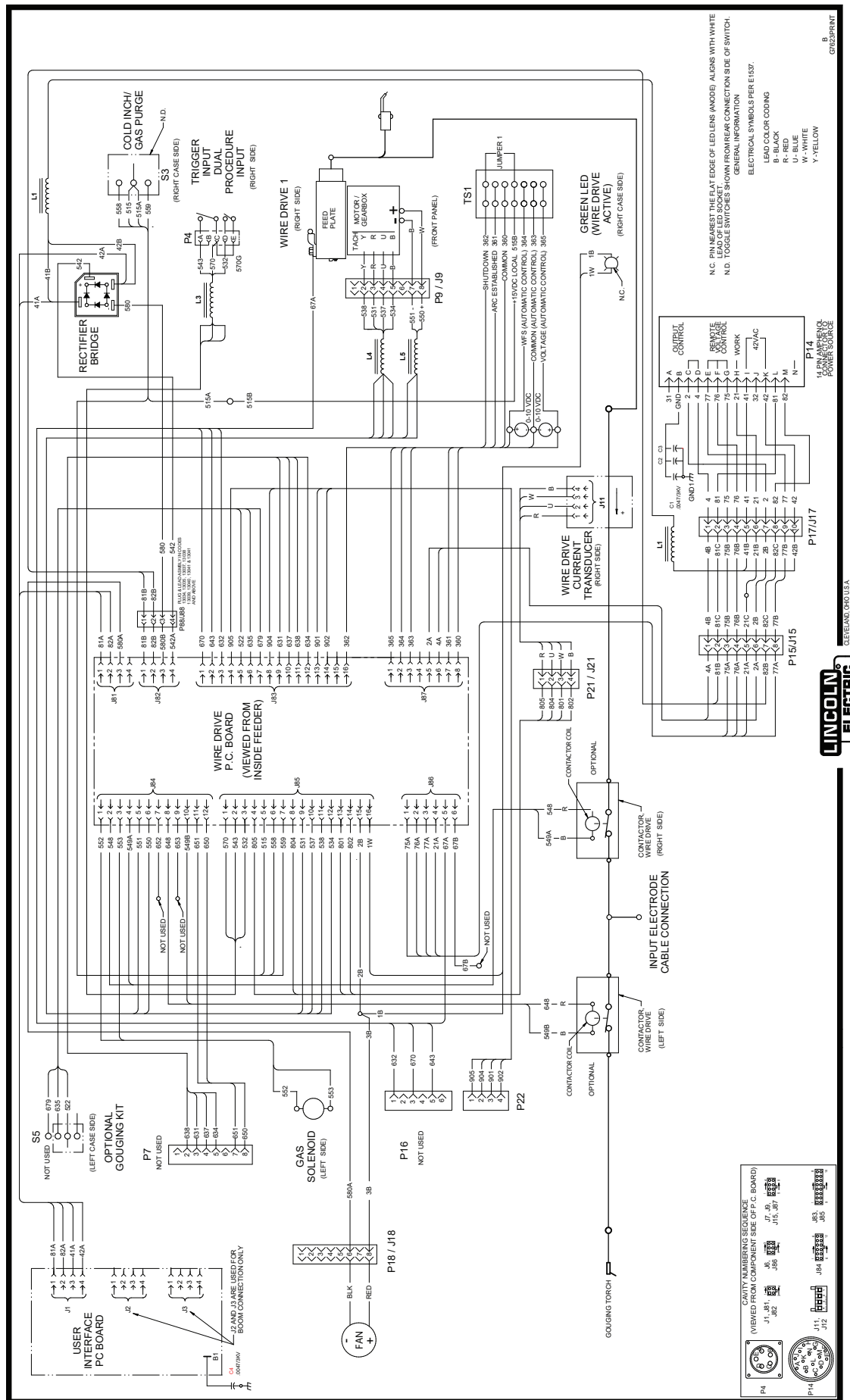
Problems (Symptoms)		Possible Areas of Misadjustment(s)	Recommended Course of Action
Err 81	Motor overload, long term.	The wire drive motor has overheated.	<ol style="list-style-type: none"> <li>2. Check that the electrode slides easily through the gun and cable.</li> <li>3. Remove tight bends from the gun and cable.</li> <li>4. Check that the spindle brake is not too tight.</li> <li>5. Verify a high quality electrode is being used.</li> <li>6. Wait for the error to reset and the motor to cool (approximately 1 minute).</li> </ol>
Err 82	Motor overload, short term.	The wire drive motor current draw has exceeded limits, usually because the motor is in a locked rotor state.	<ol style="list-style-type: none"> <li>1. Check that motor can turn freely when idle arm is open.</li> <li>2. Verify that the gears are free of debris and dirt.</li> </ol>
<b>General Problems</b>			
The LED on the side of the wire drive flashes on and off 0.5 seconds.		<ol style="list-style-type: none"> <li>1. The wire drive is not connected to a control box.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify that all cables are properly connected.</li> <li>2. If the installation is a hard automation set -up that does not require a control box, temporarily connect a control box and use the set-up menu to set the wire drive for "automatic" control.</li> </ol>
The feeder is stuck in procedure B or D.		<ol style="list-style-type: none"> <li>1. A dual procedure gun is being used with the dual procedure switch closed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the position of the dual procedure switch.</li> </ol>
Unable to select Spot Time from the Trigger menu.		<ol style="list-style-type: none"> <li>1. The Spot Time has been set to OFF (zero).</li> <li>2. Start and/or Crater are ON.</li> </ol>	<ol style="list-style-type: none"> <li>1. Go to the Timer menu and set the Spot Timer to a value other than OFF (zero).</li> <li>2. Using the Sequence Menu, set the Start Time and Crater Timer to OFF (zero).</li> </ol>



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

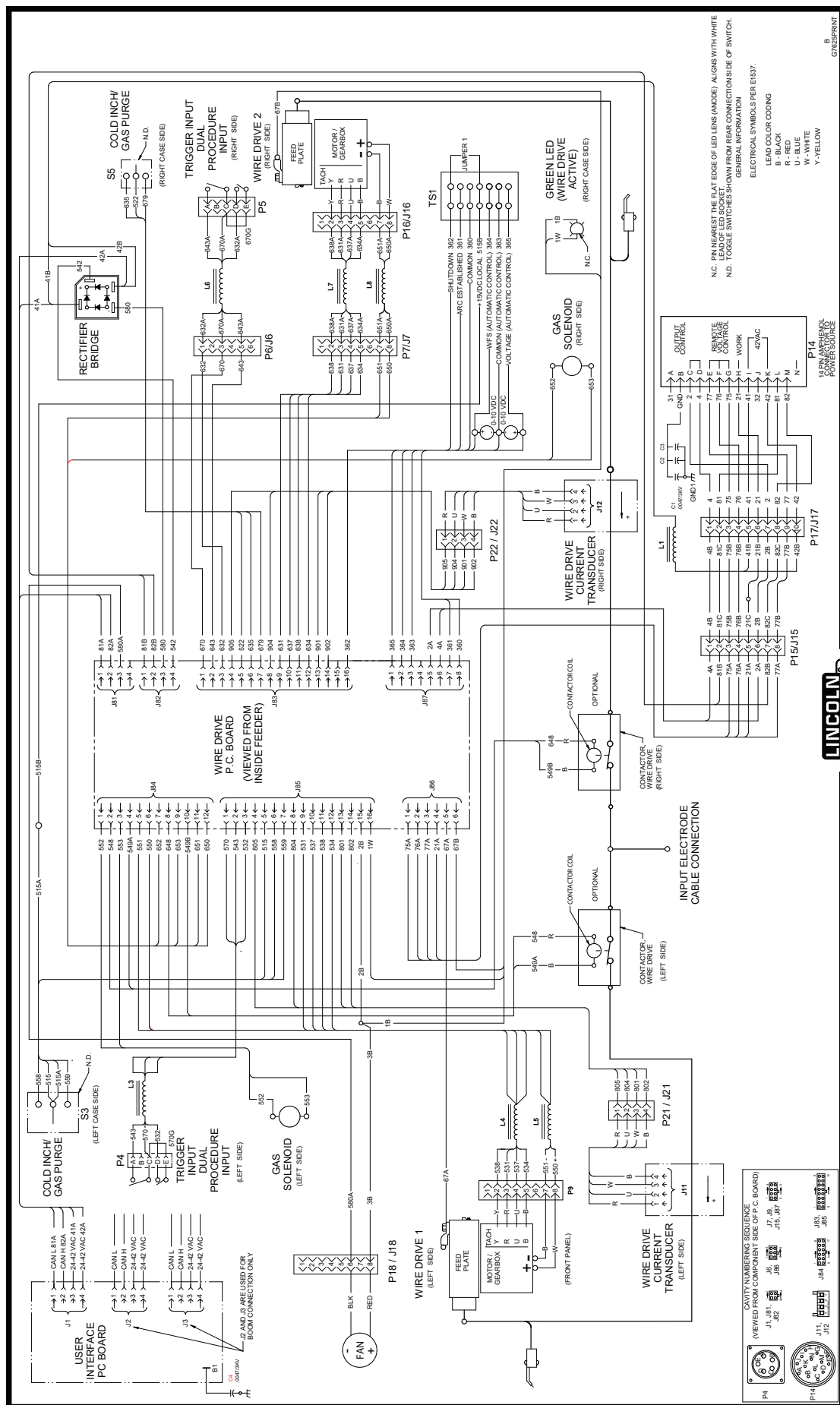
**WWW.LINCOLNELECTRIC.COM/LOCATOR**

# WIRING DIAGRAM - FLEX FEED 84 FOR CODES 12251, 12252, 12544, 13033, 13034, 13035, 13040



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.

WIRING DIAGRAM - FLEX FEED 84 DUAL FOR CODES 12259, 12260, 12261, 12262, 12545, 13036, 13037, 13038, 13041



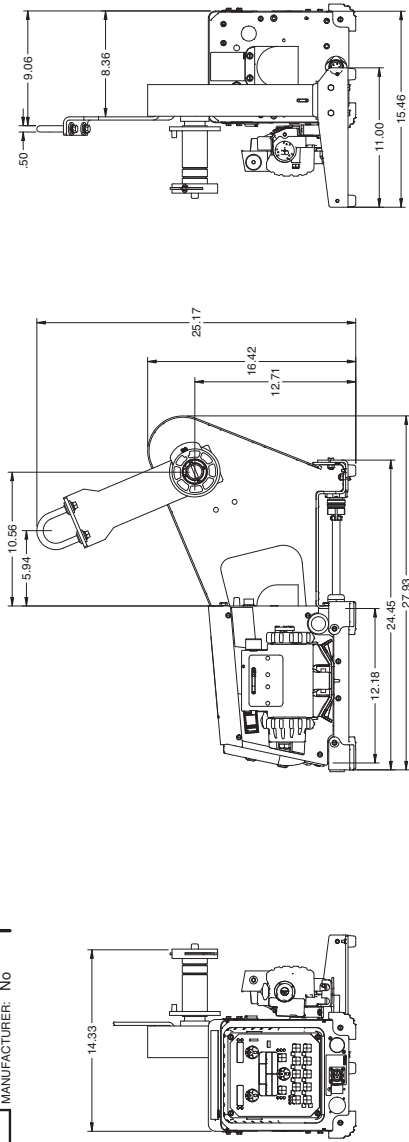
NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment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



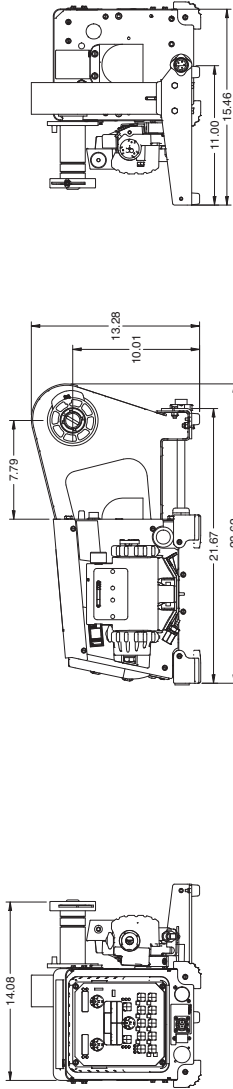
ENGINEERING CONTROLLED CHANGE DETAIL RELEASED A.03 FROM "X"  
MANUFACTURER: No

M24854

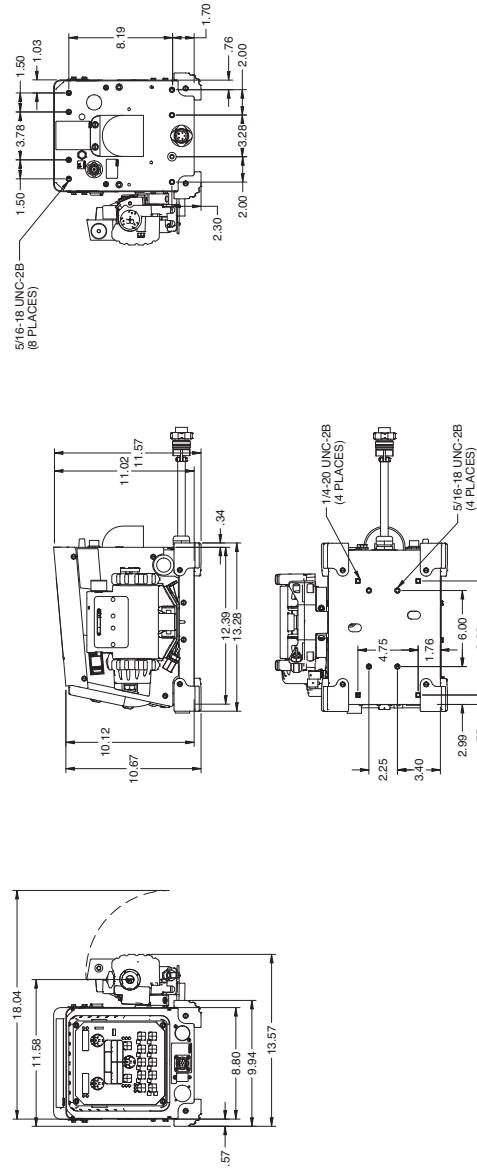
HEAVY DUTY  
WIRE REEL STAND



STANDARD DUTY  
WIRE REEL STAND



WIRE DRIVE  
HOUSING



M24854

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

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

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

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

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

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

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

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

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

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

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

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