

# Power Feed 11 SemiAutomatic Cabinet Wire Feeder

IM613-B

October, 2000

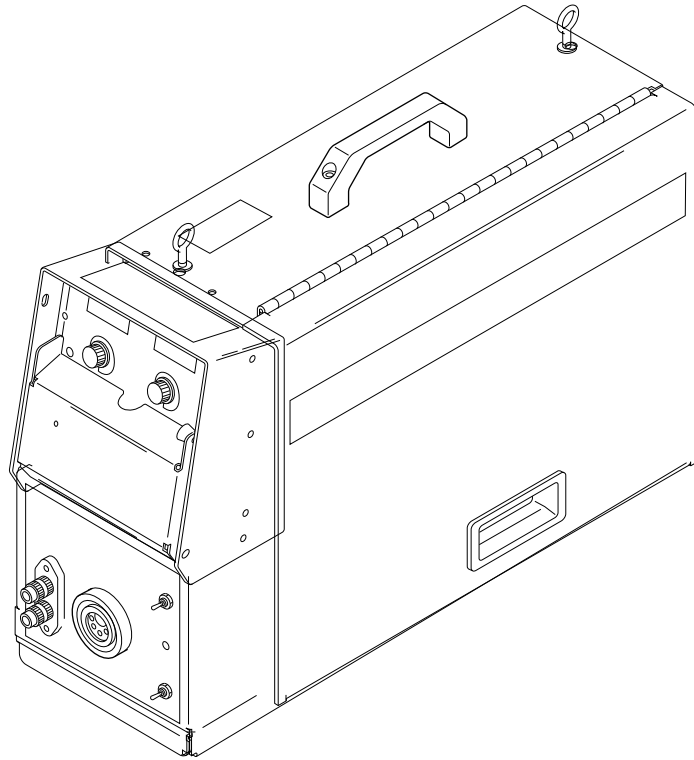
For use with: Power Feed 11 K1635-1 (World Model) Code 10529; 10777  
Power Feed 11 K1636-1 (European Model) Code 10531; 10778



This manual covers equipment which is no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

## 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.



Date of Purchase: \_\_\_\_\_

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

Code Number: \_\_\_\_\_

Model: \_\_\_\_\_

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



## OPERATOR'S MANUAL



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## ⚠ WARNING

### ⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

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

The Above For Diesel Engines

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

The Above For Gasoline Engines

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

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

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



### FOR ENGINE powered equipment.

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



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



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

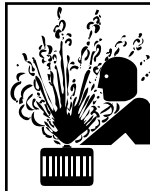
1.d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

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



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

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



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



### ELECTRIC AND MAGNETIC FIELDS may be dangerous

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

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

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

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

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

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

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

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

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

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## ELECTRIC SHOCK can kill.

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



## ARC RAYS can burn.

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



## FUMES AND GASES can be dangerous.

- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values (TLV) using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**
- 5.b. 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.c. 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.d. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.
- 5.e. Also see item 1.b.

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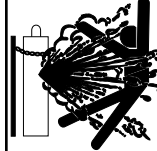


### WELDING SPARKS can cause fire or explosion.

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.



### CYLINDER may explode if damaged.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

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



### FOR ELECTRICALLY powered equipment.

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

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## PRÉCAUTIONS DE SÛRETÉ

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

### Sûreté Pour Soudage A L'Arc

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

zones où l'on pique le laitier.

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

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

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

Mar. '93

# Thank You

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

## **Please Examine Carton and Equipment For Damage Immediately**

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

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

Model Name & Number \_\_\_\_\_

Code & Serial Number \_\_\_\_\_

Date of Purchase \_\_\_\_\_

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

**Read this Operators Manual completely** before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection. The level of seriousness to be applied to each is explained below:

### **⚠ WARNING**

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

### **⚠ CAUTION**

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

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## TECHNICAL SPECIFICATIONS – Power Feed 11

COMPLETE UNITS							
SPEC.#	TYPE	LOW SPEED RATIO			HIGH SPEED RATIO		
		Speed	Wire Size		Speed	Wire Size	
	Solid		Cored			Solid	Cored
K1635-1	Power Feed 11 Cabinet Wire Feeder (World Model)	50-625 IPM (1.27-15.9 m/m)	.025 - 1/16 in. (0.6 - 1.6 mm)	.030 - 5/64 in. (0.8 - 2.0 mm)	75 - 1100 IPM (2.03 - 27.9 m/m)	.025 - .045 in. (0.6 - 1.2 mm)	.030 - .045 in. (0.8 - 1.2 mm)
K1636-1	Power Feed 11 Cabinet Wire Feeder (European Model)	50-625 IPM (1.27-15.9 m/m)	.025 - 1/16 in. (0.6 - 1.6 mm)	.035 - 5/64 in. (0.9 - 2.0 mm)	75 - 1100 IPM (2.03 - 27.9 m/m)	.025 - .045 in. (0.6 - 1.2 mm)	.035 - .045 in. (0.9 - 1.2 mm)

COMPLETE UNITS								
SPEC.#	TYPE	INPUT POWER	PHYSICAL SIZE•			Weight	TEMPERATURE RATING	
			Dimensions				Operating	Storage
			Height	Width	Depth			
K1635-1	Power Feed 11 (World Model)	40 VDC	20.0 " (508 mm)	9.0 " ( 230 mm)	28.7 " (729 mm)	61 Lbs (27.7 Kg)	+40°C to -20°C	+40°C to -40°C
K1636-1	Power Feed 11 (European Model)	40 VDC	20.0 " (508 mm)	9.0 " ( 230 mm)	28.7 " (729 mm)	61 Lbs (27.7 Kg)		

The PF-11 is environmentally rated IP21S per IEC60529

POWER FEED 11



## SAFETY PRECAUTION



### ELECTRIC SHOCK can kill.

- Only qualified personnel should perform this installation.
- Turn off the input power to the power source at the disconnect switch or fuse box before working on this equipment. Turn off the input power to any other equipment connected to the welding system at the disconnect switch or fuse box before working on this equipment.
- Do not touch electrically hot parts.
- Always connect the Power Wave grounding lug (located inside the reconnect input access door) to a proper safety (Earth) ground.

## WIRE FEEDER TO POWER SOURCE CONFIGURATIONS

The Wire Feeder is equipped to operate in the vertical or horizontal position. It is shipped ready for use in the vertical position.

### MOUNTING ON TOP OF THE POWER SOURCE

The Wire Feeder is shipped with the vertical mounting bracket installed on the bottom of the Feeder. The Feeder must be placed on top (right side) of the Power Source such that the bolt on the mounting bracket goes thru the hole in the Power Source's Lift Bail and the front hole on the right front foot of the mounting bracket is placed over the weld stud on the roof of the Power Source. Use the Wing Nut/washer assembly provided to secure the Feeder to the Power Source.

**Note:** The Wire Feeder can also be mounted horizontally. See ACCESSORIES section for information on the Optional Horizontal Mounting Bracket.

### HANGING

The Wire Feeder is equipped with 2 insulated Lifting Eyes for hanging the Feeder. It is recommended that the Lifting Eyes always be used when hanging the Feeder. The Lifting Handles should be used for short term carrying of the Feeder

**Note:** A longer or additional Control Cable may be required when hanging the Feeder. See ACCESSORIES section for information on optional Control Cables.

### ON THE FLOOR

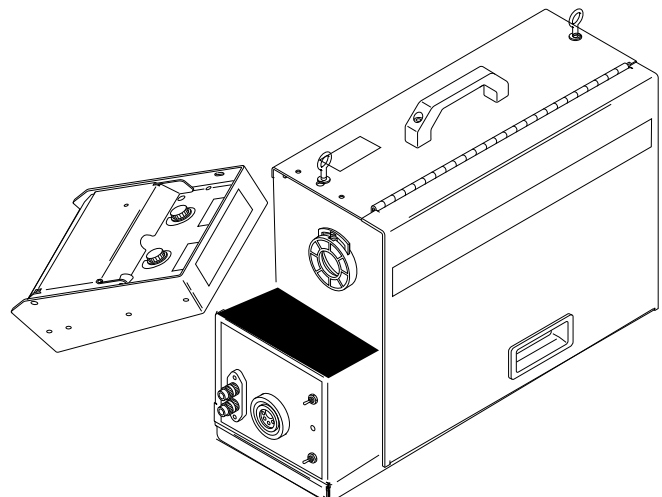
The Wire Feeder is equipped with aluminum skids which protect the enclosure when the Feeder is placed on the floor in either the horizontal or vertical position.

### CONTROL BOX ORIENTATION

The Control Box is designed to be easily rotated to accommodate horizontal or vertical positions. The procedure to change the Control Box Orientation is as follows:

1. Open the Wire Drive compartment door.
2. Locate the Retaining Collar (just above the Wire Drive unit) and depress the Release Bar and remove the Retaining Collar from the Control Box mounting shaft.
3. Pull the Control Box out just enough to allow the Control Box to be rotated to the desired position and then re-install. ( Be sure no leads are pinched)
 

**Note:** For the Horizontal position the right side of the Control Box must be next to the front panel components.
4. Re-install the Retaining Collar. Some light pressure on the Control Box may be necessary to get the release bar to "click" into the mounting shaft groove.



## CABLE CONNECTIONS

### CONTROL CABLE CONNECTIONS

- All system control cables are the same.
- All control cables can be connected end to end to extend their length.
- All system equipment must be connected to a control cable.

Welding systems using the Power Feed 11 offer previously unprecedented flexibility in the connection of system components. This system uses the same type of control cable between each of the system components. Connections can be “daisy chained” from one system component to another. Since communication over the control cables is done by a robust communications network, the order of connection of the components makes no difference. The cables can be connected anywhere that there is a mating connector.

### CONTROL CABLE SPECIFICATIONS

The cable is a 5 copper conductor cable in a SO-type rubber jacket. There is one 20 gauge twisted pair for network communications. This pair has an impedance of approximately 120 ohms and a propagation delay per foot of < 2.1 ns. There are two 12 gauge conductors that are used to supply the 40 VDC to the network. The fifth wire is 18 gauge and is used as an electrode sense lead. It is typically connected to the feed plate on the feed head when that feed head is active.

**NOTE:** Maximum cable length between any two nodes is 250'.

### TYPICAL CABINET FEEDER CONNECTION

The Control cable is connected from the Power Source to the Wire Feeder. The Power Feed 11 comes standard with an 8 ft. Control Cable.

### CONTROL CABLE INSTALLATION:

1. Connect the end of the control cable with the 5-pin cable plug to the mating receptacle on the power source. With the pins and key aligned, plug it into the power source, rotate the threaded locking ring until the connector is completely fastened
2. Connect the end of control cable with the 5-socket end to the mating receptacle on the back of the wire feeder. To connect the cable to the feeder,

aligning the pins and key, plug it into the back of the wire feeder head, rotate the threaded locking ring until the connector is completely fastened

**Note:** Depending on the location of the of the Wire Feeder relative to the Power Source a longer Control Cable or additional Control Cable(s) may be required. See section 2.0 “Optional Features” for information on optional Control Cables.

### ELECTRODE CABLE CONNECTIONS

Most welding applications run with the electrode being positive (+). For those applications, connect the electrode cable between the wire feeder and the positive (+) output stud on the power source (located beneath the spring loaded output cover near the bottom of the case front).

A work lead must be run from the negative (-) power source output stud to the work piece. The work piece connection must be firm and secure, especially if pulse welding is planned. Excessive voltage drops at the work piece connection often result in unsatisfactory pulse welding performance.

When negative electrode polarity is required, such as in some Innershield™ applications, install as above, except reverse the output connections at the power source (electrode cable to the negative (-) stud, and work cable to the positive (+) stud).

### ELECTRODE CABLE INSTALLATION:

The Power Feed 11 comes with an installed electrode cable. Connect the power source end of the cable to the power source output terminal of the desired polarity.

The K1636-1 Power Feed 11 (Europe) electrode cable is equipped with a Twist-Mate™ connector while the K1635-1 Power Feed 11 (World) is equipped with a lug connector. Also for both models open the Wire Drive compartment door and check that the electrode cable lug is against the Feedplate and that the connection is tight. Any electrode cable replacement or extension should be sized according to the specifications given in the work cable connections section .

## WORK CABLE CONNECTIONS

Connect a work lead of sufficient size and length (per the following table) between the proper output terminal on the power source and the work. Be sure the connection to the work makes tight metal-to-metal electrical contact.

To avoid interference problems with other equipment and to achieve the best possible operation, route all cables directly to the work or wire feeder. Avoid excessive lengths, bundle the electrode and ground cables together where practical, and do not coil excess cable.

Minimum work and electrode cables sizes are as follows:

Current 60% Duty Cycle	Minimum Copper Work Cable Size, AWG
	Up to 100 ft Length (30m)
500 Amps	3/0 (85 mm <sup>2</sup> )
600 Amps	3/0 (85 mm <sup>2</sup> )

When using an inverter type power source, Use the largest welding (electrode and ground) cables that are practical. At least 3/0 (85 mm<sup>2</sup>) copper wire — even if the average output current would not normally require it. When pulsing, the pulse current can reach very high levels. Voltage drops can become excessive, leading to poor welding characteristics, if undersized welding cables are used.

## WIRE DRIVE GEAR RATIO (HIGH OR LOW SPEED)

The speed range capability and drive torque of the Power Feed 11 wire drive can be easily and quickly changed by changing the external drive gear. The Power Feed 11 is shipped with both a high speed and a low speed gear. As shipped from the factory, the high speed (low torque) gear is installed on the feeder. If this is the desired gear ratio, no changes need to be made.

## SELECTING THE PROPER GEAR RATIO

See the Technical Specifications at the front of this section for feed speed and wire size capabilities with high and low speed gear ratios. To determine whether you should be using the high or low speed ratio use the following guidelines:

- When operating at wire feed speeds **above** 625 IPM (15.9 m/m), you must have the high speed gear (large 30 tooth, 1.6 inch diameter gear) installed.
- When operating at wire feed speeds **below** 625 IPM (15.9 m/m), you must have the low speed gear (small 17 tooth, .95 inch diameter gear) installed for all wire sizes because using the low speed ratio provides the maximum available wire feeding force.  
**Note:** If you are feeding only .045" (1.2 mm) diameter and smaller wires you may, at your option, use the factory installed high speed ratio.

## CHANGING THE WIRE DRIVE RATIO

Changing the ratio requires a gear change and a PC board switch change. The Power Feed 11 is shipped with both a high speed and a low speed gear. As shipped from the factory, the high speed (low torque) gear is installed on the feeder. For identification purposes, the low speed (high torque) gear has 17 teeth and is .95 inches in diameter. The high speed gear has 30 teeth and is 1.6 inches in diameter. See Figure A.2.

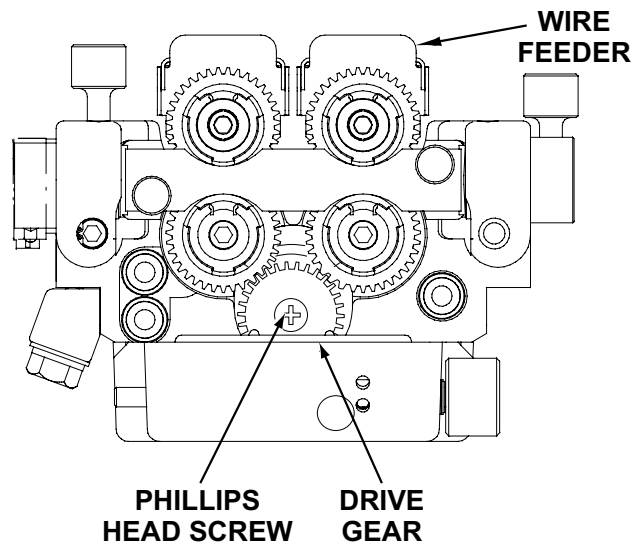


FIGURE A.2 — CHANGING WIRE DRIVE RATIO.

**RATIO CHANGE PROCEDURE:**

- 1) Power down the Power Feed by turning OFF its companion PowerWave power source. For maximum safety, disconnect the control cable from the Power Feed.
- 2) Pull open the Wire Feeder's Compartment Door.
- 3) Remove the Feedplate per the following:
  - a) Disconnect the Electrode from the Feedplate
  - b) Pull open the Wire Drive Pressure Door.
  - c) Using a 3/16" Hex Key Wrench remove the two screws that secure the Feedplate to the Interface Plate. These screws are located just below and to the right and just below and to left of the lower drive gears.
  - d) Swing the rear of the Feedplate out towards the front of the machine which will allow it to be pulled back and out of the machine.

**Note:** The shielding gas hose and gun leads are still attached to the Feedplate. This is OK provided that the Feedplate is setting on a suitable surface such that no excess tension is being place on the gas hose and gun leads. If necessary remove the gas hose and disconnect the leads.

- 4) Remove the pinion gear as follows:
  - a) Using a phillips head screwdriver remove the screw that secures the gear to the output shaft of the gearbox and remove the gear.
  - b) Lightly cover the output shaft with engine oil or equivalent. Install appropriate size gear (small gear for low speed and a large gear for high speed) onto output shaft and secure with flat washer, lock washer, and Phillips head screw which were previously removed.

**Note:** Be sure that the woodruff key remains secured to the output shaft during the gear change.

- 5) Position the Motor/Gearbox as follows:
  - a) There are 4 screws that secure the Motor/Gearbox to the Interface Plate. Using a 3/16" Hex Key Wrench remove the 2 upper screws and loosen (but don't remove) the 2 lower screws.
  - b) Slide the Motor/Gearbox to the  
**UPPER SET OF HOLES FOR LOW SPEED**  
**LOWER SET OF HOLES FOR HIGH SPEED.**
  - c) Secure in position with flat washers, lock washers, and socket head screws that were previously removed and loosened.

- 6) Re-attach Feedplate (and gas hose and gun leads if they were removed) that was removed in Step 3 and reconnect the Electrode Cable.

**Note:** The screws that secure the Feedplate to the Interface Plate must go thru the insulator bushings in the Feedplate.

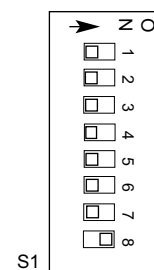
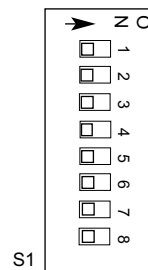
- 7) Close the Wire Drive Pressure Door and Wire Feeder's Compartment Door.
- 8) Set the High/Low Dip Switch on Feed Head PC board as follows:
  - a) Remove the left case side as follows:
    - Remove 4 screws that directly secure the case side
    - Loosen the 3 screws that secure the lower skid rail. This will free the case side edge and allow it to be lifted up and removed.

**Note:** PF-11's that have been installed horizontally on top of the Power Source will need to remove the Mounting Bracket in order to access the the left case side.

- b) Locate the 8-position DIP switch (S1) on the Feed Head PC board. The setting will be made on the bottom most switch, DIP switch #8.
- c) Using a pencil or other small object, to slide the switch left, to the "OFF" position, when the low speed gear is installed. Conversely, slide the switch right, to the "ON" position, when the high speed gear is installed. Refer to the diagrams below.

Setting for Low Speed

Setting for High Speed

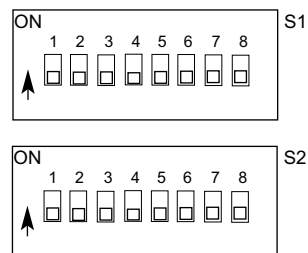


- d) Replace the left case side and screws (and Mounting Bracket if required). The PC board will "read" the switch at power up, automatically adjusting all control parameters for the speed range selected.

## DIP SWITCH SETUP

### SETTING DIP SWITCHES IN THE CONTROL BOX

There are two DIP switch banks on the mother board of the Control Box. They are labeled S1 and S2 and are located and oriented as shown in Figure A.3.



**FIGURE A.3**

#### S1 DIP Switch Bank on Control Box Motherboard (For Software version S24456-1)

Switch	Off	On
1	Standard speed limits adjustable	High speed gearbox limits adjustable
2	WFS Display = inches/minute	WFS Display = meters/minute
3	Left Display is always preset WFS	Left Display is preset WFS when weld current is not flowing Left Display is actual weld current when weld current is flowing
<b>CC modes override this switch regardless of position.</b> Left Display is always preset weld current when weld current is not flowing and actual weld current when weld current is flowing		
4	Run-in = Minimum Speed Available	Run-in = weld WFS
<b>If any option containing a Run-in setting is connected to the motherboard, it automatically overrides this switch regardless of position.</b>		
5	Memory change with trigger disabled	Memory change with trigger enabled
6	Acceleration, MSB (Sets acceleration rate for wire drive) see below	
7	Acceleration (Sets acceleration rate for wire drive) see below	
8	Acceleration, LSB (Sets acceleration rate for wire drive) see below	

	DIP SWITCH 6	DIP SWITCH 7	DIP SWITCH 8
Acceleration 1 (slow)	Off	Off	On
Acceleration 2	Off	On	Off
Acceleration 3	Off	On	On
Acceleration 4	On	Off	Off
Acceleration 5 (fast ) (factory setting)	Off	Off	Off

Note: the factory shipped settings for Switch S1 are as follows:  
 PF-11 European - Switches 1-2 "ON"; Switches 3-8 "OFF"  
 PF-11 World - Switch 1 "ON"; Switches 2-8 "OFF"

### S2 DIP Switch Bank on Control Box Motherboard (For software version S24456-1)

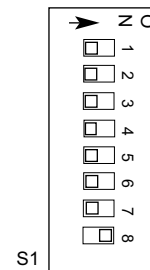
Switch	Off	On
1	Network Group ID, MSB (Assigns Control Box to a specific group) (Off is factory setting)	
2	Network Group ID, LSB (Assigns Control Box to a specific group ) (Off is factory setting)	
3	4-Step Domestic Configuration	4-Step European Configuration
4	Power Feed 10 / Dual	Power Feed 11
5	Procedure change with trigger "OFF"	Procedure change with trigger "ON"
6	Must be off for normal operation	Adjust lower limits
7	Must be off for normal operation	Adjust upper limits
8	Must be on for all units (Permits selection of extended modes)	

**Note:** the factory shipped settings for Switch S2 are as follows:  
 PF-11 European - Switches 1,2 & 5-7 "OFF"; Switches 3,4,8 "ON"  
 PF-11 World - Switches 1-3 & 5-7 "OFF"; Switches 4, 8 "ON"

### SETTING DIP SWITCHES IN THE WIRE DRIVE

FIGURE A.4

There is one DIP switch bank on the control board of the wire drive. It's labeled S1 and is located and oriented as shown in Figure A.4.



### S1 DIP Switch Bank on Wire Drive Control Board (For software version S24468-1)

Switch	Off	On
1	Network Group ID, MSB (Assigns Wire Drive to a specific group)	
2	Network Group ID, LSB (Assigns Wire Drive to a specific group )	
3	Network Feed Head ID, MSB (Assigns feed head number to wire drive)	
4	Network Feed Head ID (Assigns feed head number to wire drive)	
5	Network Feed Head ID, LSB (Assigns feed head number to wire drive)	
6	Spare	
7	Electrode Sense Polarity = Positive	Electrode Sense Polarity = Negative
<b>Switch position must match polarity of weld cable attached to feed plate.</b>		
8	Gear Box Ratio = Low	Gear Box Ratio = High
<b>Switch position must match actual gear box ratio of wire drive.</b>		

**Note:** the factory shipped settings for Switches 1-7 is "OFF", Switch 8 is "ON".

POWER FEED 11



## WIRE FEED DRIVE ROLL KITS AND FAST-MATE™ GUN ADAPTER GUIDE TUBES

NOTE: The maximum rated solid and cored wire sizes and selected drive ratios are shown on the SPECIFICATIONS in the front of this section. The electrode sizes that can be fed with each drive roll and wire guide are stenciled on each part. Check the kit for proper components. Kit specifications can be found in the ACCESSORIES section.

### FAST-MATE™ GUN ADAPTER GUIDE TUBES

#### Guide Tubes for Steel Wire:

The Power Feed 11 is supplied with 4 wire guide tubes which allow the I.D. of the Fast-Mate™ gun adapter to be optimized for every wire size. The various size wire guide tubes are identified by the number of rings scribed toward one end of the tube and should be selected per the table below.

Wire Size	Number of Rings
.023"-.045" (0.6-1.2mm)	1
.045"-1/16" (1.2-1.6mm)	2
1/16"-5/64" (1.6-2.0mm)	3
5/64"-7/64" (2.0-2.8mm)	4

#### Guide Tubes for Aluminum Wire:

For optimum aluminum wire feeding the appropriate plastic lined guide tube should be used per the table below. These must be ordered.

Part Number	Wire Size	Tube Color
S24129-1	.030"-.035" (0.8-0.9mm)	Black
S24129-2	.035"-3/64" (0.9-1.2mm)	Blue
S24129-3	1/16" (1.6mm)	Red

## PROCEDURE TO INSTALL DRIVE ROLLS AND GUIDE TUBES

### ⚠ WARNING



#### ELECTRIC SHOCK can kill.

- Do not touch electrically live parts such as output terminals or internal wiring.
- When feeding without Power Feed 11 "Cold Feed" feature, electrode and drive mechanism are "hot" to work and ground and could remain energized several seconds after the gun trigger is released.
- Turn OFF input power at welding power source before installation or changing drive roll and/or guide tubes.
- Welding power source must be connected to system ground per the National Electrical Code or any applicable local codes.
- Only qualified personnel should perform this installation.

Observe all additional Safety Guidelines detailed throughout this manual.

### DRIVE ROLL KIT AND GUIDE TUBE INSTALLATION

- 1) Turn OFF Welding Power Source.
- 2) Pull open Pressure Door to expose rolls and wire guides.
- 3) Remove Outer Wire Guide by turning knurled thumb screws counter-clock-wise to unscrew them from Feed plate.
- 4) Remove drive rolls, if any are installed, by pulling straight off shaft. Remove inner guide.

Note: Not all Drive Roll and Wire Guide changes require changing the Gun Adapter Guide Tubes. See FAST-MATE™ GUN ADAPTER GUIDE TUBES in this section for the proper size guide tube required for the wire size to be used. If a guide tube change is NOT required skip Steps 5 & 6 And go to Step 7.

- 5) Loosen the small Knurled Knob on the Feedhead. This the Knurled Knob that is closest to the Gun Adapter and is used to secure the wire guide tube into the Gun Adapter.
- 6) Insert the new wire guide tube (either end, tube is symmetric) into the incoming end of the Gun Adapter (This will remove an existing tube if present) until it flush with the incoming end and re-tighten the small Knurled Knob.



- 7) Insert inner Wire Guide, groove side out, over the two locating pins in the feed plate.
- 8) Install each drive roll by pushing over shaft until it butts up against locating shoulder on the drive roll shaft. (Do Not exceed maximum wire size rating of the wire drive).
- 9) Install Outer Wire Guide by sliding over locating pins and tightening in place.
- 10) Engage upper drive rolls if they are in the "open" position and close Pressure Door.

NOTE: To set drive roll pressure, see DRIVE ROLL PRESSURE SETTING in the OPERATION section.

## GUN AND CABLE ASSEMBLIES

The Power Feed 11 wire feeder is equipped with a Fast-Mate™ Gun Adapter that provides for the use of guns with Fast-Mate™ or European style gun connections and will handle both standard Fast-Mate™ and Dual Schedule Fast-Mate™ guns.

The Fast-Mate™ Gun Adapter requires the use of wire guide tubes. The Power Feed 11 is supplied with 4 wire guide tubes. See FAST-MATE™ GUN ADAPTER GUIDE TUBES and DRIVE ROLL KIT AND GUIDE TUBE INSTALLATION sections for proper selection and installation of Fast-Mate™ Gun Adapter wire guide tubes.

## MAGNUM GUNS

Magnum Fast-Mate™ air cooled and water cooled gun and cable assemblies are available to allow welding with solid and cored wire electrodes. See the appropriate Magnum Literature for descriptions of the 200 to 400 ampere air cooled gun and cables that are available, as well as the Magnum 450 ampere water cooled gun and cable.

Magnum X-Tractor gun and cable assemblies provide fume extraction capability for welding with solid and cored wire electrodes. See the appropriate Magnum Literature for descriptions of the 250 to 400 ampere air cooled gun and cable assemblies that are available.

Note: Most Non-Lincoln Guns can be connected to the Power Feed 11 provided the gun has a European Style Gun Connector.

## GUN CONNECTION GUIDELINES

### General Guidelines

The instructions supplied with the gun should be followed when installing and configuring a gun. What follows are some general guidelines that are not intended to cover all guns.

- a. Check that the drive rolls, wire guide and gun adapter wire guide tube are proper for the electrode size and type being used. If not, change them.
- b. Connect gun to gun connector making sure all pins and gas tube line up with appropriate holes in connector. Tighten gun by turning large nut on gun clockwise.

### WATER COOLED GUIDELINES

The Power Feed 11 comes equipped with coolant inlet and outlet connections on the front and back of the feeder. The maximum water pressure permitted for use with the PF-11 is 100 psi.

- a. Using male quick connect fittings, connect appropriate water hoses to the coolant inlet and outlet on the back of the feeder. Connect the other ends of these hoses to the appropriate ports on your water cooling unit.
- b. Connect the gun hoses to the coolant inlet and outlet on the front of the feeder. In the event the water line fittings on your water cooled gun are incompatible with the female quick connects on the front of the Power Feed 11, male quick connects are provided for installation on 3/16" (5mm) hose (Customer to provide appropriate clamps). The feeder connectors self seal when disconnected.
- c. Water cooled guns can be damaged very quickly if they are used even momentarily without water flowing. To protect the gun, we recommended that a K1536-1 Magnum Flow Sensor kit be installed. This will prevent wire feeding if no water flow is present. See ACCESSORIES Section for more information regarding this kit

## GMAW 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.



#### **BUILDUP 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.

Customer must provide a cylinder of shielding gas, a pressure regulator, a flow control valve, and a hose from the flow valve to the gas inlet fitting of the wire drive unit.

Any shielding gas can be used that is recommended in the electrode's product literature at a maximum pressure of 60 psi (4.1 bar) This may include such gasses as Argon, Helium, Nitrogen, and blended gasses such Ar-He, Ar-N<sub>2</sub>, Ar-O<sub>2</sub>, Ar-CO<sub>2</sub>, CO<sub>2</sub>, and Ar-CO<sub>2</sub>-O<sub>2</sub>.

Connect a supply hose from the gas cylinder flow valve outlet to the 5/8-18 female inert gas fitting on the back panel of the Wire Feeder. See ACCESSORIES section for information regarding the optional Gas Guard Regulator

Note: Included with the K1636-1 Power Feed 11 (Euro) ONLY is a barbed fitting and union nut that can be installed on the 5/8-18 female inert gas fitting on the back panel of the Wire Feeder and allows for the connection of a 3/16"(5mm) I.D. gas hose (Customer to provide appropriate clamps).

## LIFTING HANDLE

The Power Feed 11 is shipped with a insulated Lifting Handle which can be mounted on the top or back of the Wire Feeder. This handle is intended to be primarily used for short term carrying of the Feeder. While this handle is suitable for hanging the Feeder it is recommended that the Lifting Eyes also always be used when hanging the Feeder. The procedure to mount the Lifting Handle is as follows:

- 1) Turn Off the Welding Power Source
- 2) Open the Wire Drive Compartment Door and remove the wire reel if present.
- 3) Using the appropriate socket and wrench(1/2") remove the 2 screws and nuts from either the middle top or middle rear of the Feeder. The screws are black in color and about 6.5" apart.
- 4) Using the hardware provided with the handle secure the handle in the desired position.

Note: If it is desired to have handles in both the top and back locations, an additional handle can be ordered. ( Part Number S24131)

## OPTIONAL FEATURES INSTALLATION

A number of Optional Features are available for use with Power Feed 11. Some Installation information is provided in this section, REFER TO THE INSTRUCTIONS THAT COME WITH EACH KIT FOR DETAILED INFORMATION REGARDING INSTALLATION.

## OPTIONAL PANELS FOR CONTROL BOX

All optional panels for the control box are described in the ACCESSORIES section of this manual along with their installation instructions as are all other pieces of optional equipment.

The PF-11 Control Box is designed to accept two control panels and one door option. Panels can be mounted in one of two positions: Upper and lower.

Each Control Box is shipped with a Control/Display (CD) panel installed in the upper position, and a CV/Gauge (CV/G) panel in the lower position.

The CD panel must be installed in every Control Box. The remaining panel can be one of the following: CV/G, MX2, or MSP2.

Note: The CD panel must be installed in the upper position; its harness is not long enough to allow installation in the lower position. Similarly, option panels must be installed in the lower position.

## GENERAL PANEL INSTALLATION GUIDELINES:

Installation or removal of any panel can be done with only a Phillips screwdriver after the system power is turned off. To remove a panel, remove the two screws holding it in place, remove the push-on chassis ground wire and remove the harness connection to the Control Box main PC board. To install any panel, reverse that process. Turn power back on when complete (option panels are only recognized at power up. Do not install panels with the power on.) Note that removal or installation of any panel may also require the removal of the other panel, in order to have easy access to the PC board connectors. Detailed installation instructions are shipped with each option panel.

## SAFETY PRECAUTIONS

### ⚠ WARNING



#### ELECTRIC SHOCK can kill.

- Do not touch electrically live parts such as output terminals or internal wiring.
- When inching with gun trigger, electrode and drive mechanism are “hot” to work and ground and could remain energized several seconds after the gun trigger is released.
- Turn OFF input power at welding power source before installation or changing drive roll and/or guide tubes.
- Welding power source must be connected to system ground per the National Electrical Code or any applicable local codes.
- Only qualified personnel should perform this installation.

Observe all additional Safety Guidelines detailed throughout this manual.

## PRODUCT DESCRIPTION

The Power Feed 11 is a high performance, digitally controlled, modular cabinet style wire feeder. Properly equipped, it can support the GMAW, GMAW-P, FCAW, and SMAW processes. The Power Feed wire feeders are designed to be a part of a modular, multi process welding system.

The Power Feed 11 is a 4 driven roll feeder that operates on 40VDC input power.

The Power Feed wire feeders are designed to be used with Power Feed compatible power sources, operating as a system. Each component in the system has special circuitry to “talk with” the other system components, so each component (power source, wire feeder, electrical accessories) knows what the other is doing at all times. This shared information lays the groundwork for a system with superior welding performance.

The Power Feed 11 is available configured in both European and World models. There are two features that distinguish the European from the World model. The first is the 4 step trigger logic and the second is the type of electrode connection which is a Twist-Mate™ on the European and a Lug on the World. See later in this section for more details on the 4 step trigger logic.

## RECOMMENDED PROCESSES AND EQUIPMENT

### RECOMMENDED PROCESSES

The Power Feed 11 can be set up in a number of configurations. It is designed to be used for GMAW, GMAW-P, FCAW, and SMAW for a variety of materials, including mild steel, stainless steel, and cored wires.

### RECOMMENDED EQUIPMENT

The Power Feed 11 must be used with power sources having digital communication capabilities and 40 VDC auxiliary power. The presently available power source is the PowerWave 455.

### DUTY CYCLE

The Power Feed 11 wire feeder is capable of welding at a 100% duty cycle (continuous welding). The power source will be the limiting factor in determining system duty cycle capability.

## CONTROL BOX OPERATION

The most frequently used Control Box controls and settings are external; some features are accessed by internal controls and settings.

### CONTROL BOX PANELS - UPPER PANEL

#### Control/Display Panel: (Required)

Each PF-11 Control box must have a Control/Display (CD) panel. This panel consists of adjustment knobs, digital displays and a series of indicator lights (LEDs). There are two knobs; each has a 4 digit LED display and a pair of LEDs associated with it. Knobs and displays have dual functions; the LEDs indicate which function at any given time. This panel also has a dual color Status LED, used to indicate the general health status of the Control Box and its connection to other components in the system (power source, wire drive, etc.).

The left knob/display is labeled WFS / AMPS (wire feed speed/amps). In non-synergic modes, the WFS control changes the wire feed speed according to the desired procedure. In synergic welding modes (synergic CV, pulse GMAW) WFS is the dominant control parameter, controlling all other variables.

The user adjusts WFS according to factors such as weld size, penetration requirements, heat input, etc. The power source then uses the WFS setting to adjust its output characteristics (output voltage, output current) according to pre-programmed settings contained in the power source. In constant current modes (arc gouging, stick, TIG) this control adjusts the output current, in amps. An LED lights to inform the user which function (WFS or amps) is active. This display can be either English or metric units. Further, this display can be set up to display either WFS or amps when using wire welding modes. (See SETTING DIP SWITCHES in the INSTALLATION section.)

The right knob is labeled VOLTS / TRIM. In constant voltage modes (synergic CV, standard CV) the control adjusts the welding voltage. In pulse synergic welding modes (pulse GMAW only) the user can change the Trim setting to adjust the arc length. It is adjustable from 0.50 to 1.50. A Trim setting of 1.00 means that no adjustments will be made to the preset arc lengths, and is optimum for most conditions. An LED lights to inform the user which function (volts or trim) is active.

Both displays indicate preset values, according to the weld mode selected, when not welding. Once welding begins, they switch to displaying actual values. At that time, the indicator LEDs will flash to signify actual values are being displayed. The displays hold the actual values for 5 seconds after a weld is stopped. Turning a knob during the hold time shuts off the hold, and returns the meters to their preset values.

The allowable settings are determined by other system components. The WFS range, for instance, is dependent upon the gear range in the Wire Drive and on the welding programs in the Power Wave power source. The voltage and current are similarly limited by programs in the Power Wave.

### Control Box Panels - Lower Panels

A description of the set up controls, Preflow, Run In, Arc Control, Postflow, and Crater, and their maximum and minimum values, is in Control Box Panels - Set Up Controls Description in this section.

### K1542-4 CV/Gouge Panel:(Std.)

The CV/G Panel has a single toggle switch for selecting between two weld modes: CV welding and arc gouging. All other set up parameters, Preflow, Arc Control, Postflow, and Crater, default to zero or off. Run-in defaults to the minimum value, or to the weld speed depending on the position of its associated dip switch. (See "Setting DIP Switches in the Control Box" section.) Burn back defaults to the on-board trimmer adjustment. When used with the Dual Procedure or Memory options, only the WFS/Amps and Volts/Trim settings are saved.

Selecting the Gouge mode immediately energizes the output terminals on the power source. The output current is set by the Amps control. The Volts/Trim adjustment has no effect in this mode.

### K1542-11 MX2 Panel:(Optional)

This panel provides a selection of four weld modes: CV/MIG, CV/Flux Cored, CC/Stick/soft and CC/Stick/Crisp through a toggle switch and indicator lights (LEDs). It allows for adjustment of all set up parameters, Preflow, Run In, Arc Control, Burnback, Postflow, and Crater, through an up/down toggle switch, indicator lights and a 3 digit display.

Weld modes are selected with the Mode Select switch, an up/down center-off momentary toggle switch. Moving the switch bat up or down moves the Weld Mode LED in the corresponding direction. Holding the switch in either direction will cause the indicator to move quickly in the corresponding direction until the switch is released, or the upper or lower limit is reached.

To adjust Set Up parameters, first select the Set Up parameter for adjustment, and then adjust the displayed value up or down.

Set Up parameters are selected with the Select switch, an up/down center-off momentary toggle switch. Moving the switch bat up or down moves the Weld Mode LED in the corresponding direction. Holding the switch in either direction will cause the indicator to move quickly in the corresponding direction until the switch is released, or the upper or lower limit is reached.

The value of the active Set Up parameter, as defined by the Set Up LED, is displayed on the MX2 panel Set Up display. The value can be modified with the Set switch. The Set switch is an up/down center-off momentary toggle switch. Moving the switch bat up or down adjusts the displayed value in the corresponding direction. Holding the switch in either direction will cause the display to move quickly in the corresponding direction until the switch is released, or the upper or lower parameter limit is reached.

To energize the output studs in either CC/Stick mode, the right Control/Display panel knob, labeled Volts/Trim, must be used. The Volts/Trim knob must be turned clockwise roughly a quarter revolution to energize the output studs. (The Volts/trim display will indicate 'On' when the studs are energized.) Similarly, turning the knob a quarter turn counter-clockwise de-energizes the output studs. If a CC/Stick weld mode is entered through use of the Dual Procedure, the studs will be in the same state as when they were last used. If a CC/Stick weld mode is entered through a Memory recall, the studs will be de-energized.

**K1542-12 MSP2 Panel: (Optional)**

This panel provides a selection of over 25 weld modes, including CV, pulse, FCAW and CC, through a toggle switch and indicator lights (LEDs). It allows for adjustment of all set up parameters, Preflow, Run In, Arc Control, Burnback, Postflow, and Crater, through an up/down toggle switch, indicator lights and a 3 digit display.

To adjust a set up parameter (Weld Mode being one of those parameters), first select one of the set up parameters for adjustment, and then adjust the displayed value up or down.

Set up parameters are selected with the Select switch, an up/down center-off momentary toggle switch. Moving the switch bat up or down moves an LED in the corresponding direction. Holding the switch in either direction will cause the indicator to move quickly in the corresponding direction until the switch is released, or the upper or lower limit is reached.

The value of the active set up parameter is shown on the MSP2 panel digital display. The value can be modified with the Set switch. The Set switch is an up/down center-off momentary toggle switch. Moving the switch bat up or down adjusts the displayed value in the corresponding direction. Holding the switch in either direction will cause the display to move quickly in the corresponding direction until the switch is released, or the upper or lower parameter limit is reached.

To energize the output studs in either CC/Stick mode, the right Control/Display panel knob, labeled Volts/Trim, must be used. The Volts/Trim knob must be turned clockwise roughly a quarter revolution to energize the output studs. (The Volts/trim display will indicate 'On' when the studs are energized.) Similarly, turning the knob a quarter turn counter-clockwise de-energizes the output studs. If a CC/Stick weld mode is entered through use of the Dual Procedure, the studs will be in the same state as when they were last used. If a CC/Stick weld mode is entered through a Memory recall, the studs will be de-energized.

**K1640-1 Dual Procedure / Memory Door Panel: (Optional)**

This panel provides two functions: Dual Procedure and Memory. Dual Procedure provides for setting and manual selection of two procedures. Selection can be done at the panel, or through a dual procedure welding gun switch connected to the Wire Drive trigger receptacle. Memory provides six independent storage

locations for Control Box settings. All selections are done with push buttons and indicator lights. Dual Procedure can be used without making use of Memories; the opposite is also true.

To set Procedure A, hit the Procedure button until the A LED illuminates. Make all desired settings on the Control Box. Settings are automatically saved as changes are made. Do the same for procedure B. If using a gun switch to select procedures, hit the Procedure button until the Gun LED illuminates. When in the Gun mode is selected, either light A or B will be flashing. The flashing light identifies the Procedure, A or B, which is selected by a dual procedure gun switch. If no dual procedure switch is plugged in, the Procedure defaults to A. Settings are saved at power down.

To load a memory, start by setting all adjustments and functions on the Power Feed to the desired settings. To save the settings to Memory 1, simply hit the Save button (its red light will illuminate) and then hit the 1 button. The settings are now saved in Memory 1. The contents of Memory 1 will not change, even if the power is turned off, until the next time the Save key and the 1 key are hit in sequence. The same procedure can be applied to each of the other 5 memories. If the Save key is hit accidentally, simply hit the Save button again, its light will go out, and the Save function will be canceled.

**Note:** It is not required to load all 6 memories at once, nor is it necessary to load them in order. Memory can be loaded at any time, except when welding. Similarly, the Save key is not active while the gun trigger is pulled, or while welding.

Memory has an advanced feature called 'memory reminder'. When the Save key is hit, the memory reminder function flashes the LED of the most recently used memory, so the operator can save procedures in the most recently used memory if desired. It is not necessary to save to the most recently used memory; the memory reminder function, and it's flashing LED, can be ignored.

Memories cannot be changed without using the Save key. When slight procedure adjustments are necessary, but there is no desire to 'permanently' save the adjustments to a memory, this can be done with Procedure A and Procedure B. Set the Panel to A or B, and recall a memory setting. Make the slight procedure adjustment -- it will be saved in A or B, whichever was selected when the adjustments were made. The memory location will not have changed.

To recall a memory setting, simply push that memory button. That memory's contents will be immediately recalled to the Control box.

If the 'Memory Change with Trigger Pull' DIP switch is on (see "Setting DIP Switches in the Control Box" section) it is possible to recall a given memory by quickly pulling and releasing the gun trigger before welding. To switch to memory 'n', simply pull and release the gun trigger 'n' times without attempting to weld. The trigger pulls and releases must be done quickly, in rapid succession. If too much time is allowed to pass, the memory location will not change. Note that whenever the trigger is pulled, a welding sequence (pre-flow, run in, etc.) begins, so the electrode should not be allowed to contact the work piece.

## CONTROL BOX PANELS -- SET UP CONTROLS DESCRIPTION

Certain large option panels can modify the set up parameters Preflow, Run In, Arc Control, Burnback, Postflow, and Crater. The meaning of those parameters, and their maximum and minimum values, follows.

**Preflow** - Time delay after the trigger is pulled, but before weld starts, during which shielding gas flows. Weld start is defined as the time when both the power source is energized and the Wire Drive begins feeding wire. Adjustable from 0.0 (Off) to 2.5 seconds in 0.1s increments.

**Run In** - Wire feed speed during arc starting. Wire Drive will feed wire at the Run In speed for one second, or until weld current flows. Low speed gear range: Off (Run In speed equals weld wire feed speed) or adjustable from 50 to 150 IPM (1.25 to 3.80 MPM). High speed gear range: Off (Run In speed equals weld wire feed speed) or adjustable from 75 to 150 IPM (2.00 to 3.80 MPM)

**Arc Control** - Unitless characteristic, also known as Inductance or Wave Control. Allows operator to vary the arc characteristics from "soft" to "harsh" in all weld modes. Adjustable from -10.0 to 10.0 in increments of 0.1. Off (0.0) is nominal.

**Burnback** - Time delay after the trigger is released during which the power source remains energized but the Wire Drive stops feeding wire. Adjustable from 0.00 (Off) to 0.25 seconds in 0.01 second increments.

**Postflow** - Time delay after burnback is complete, during which shielding gas flows. Adjustable from 0.0 (Off) to 10.0 seconds in 0.1 second increments.

**Crater** - Used only when welding with the 4-Step trigger mode. Can be set to Off or On. When On, Adjustments can be made to WFS and Volts/Trim on the Control/Display panel. These settings are then used for 'cratering' when in the 4-Step trigger mode (see explanation of 2 Step and 4 Step operation below). When Off, 'cratering' is not possible.

## CONTROL BOX -- PC BOARD ADJUSTMENTS

The Control Box Mother board provides the capability to adjust some wire feeding parameters as follows:

**Acceleration:** The motor acceleration can be varied in five steps, from slow to fast. See "Setting DIP Switches in the Control Box" section.

**Burnback:** For the options which cannot adjust the Burnback set up parameter (CV/G and M panels) a PC board adjustment (trimmer R5) is provided. The range is 0.0 to 0.25 seconds, increasing in the clockwise direction. This is ignored by options which have the ability to adjust Burnback (MX2 and MSP2 panels).

**Run In:** For the options which cannot adjust the Run In set up parameter (CV/G and M panels) a PC board DIP switch setting is provided. In one position, the run in speed will be the minimum Wire Drive WFS. At the other setting, run in will occur at the same speed as set on the WFS knob. This DIP switch setting is ignored by options which have the ability to adjust Run In (MX2 and MSP2 panels). See "Setting DIP Switches in the Control Box" section.

**CONTROL BOX -- SETTING OPERATING LIMITS**

Upper and lower operating limits can be set for the WFS/Amps setting and the Volts/Trim setting. Doing so requires knowledge of how to set the limits, and access to the PC board in the Control Box.

There are two independent sets of limits, Procedure A limits and Procedure B limits. If a DP/M door option is installed, the A and B limits must be set independently. If there is no DP/M door option, the Control Box defaults to Procedure A, and only Procedure A limits can be set.

With system power on, select the weld mode for which you want to set limits. If a Dual Procedure option is installed, select the procedure A. Turn the system power off. Remove the two screws holding the Control/Display panel to the Control Box, but do not unplug it. Tilt the panel down to allow access to DIP switches S1-1, S2-6 and S2-7. (See "Setting DIP Switches in the Control Box" section.) Do not allow the panel to hang by the wiring harness.

Determine if the Wire Drive is set up for low or high speed. If low speed, S1-1 should be off. If high speed, set S1-1 to on.

To adjust the lower limit, set S2-6 to on. Turn the power on and adjust the WFS/Amps and Volts/Trim knobs to the desired lower limits. Note: You will not be able to adjust the lower limit outside of the minimum and maximum wire feed speed of the Wire Drive, nor above the upper limit. Turn the system power off. Return S2-6 to off.

To adjust the upper limit, set S2-7 to on. Turn the power on and adjust the WFS/Amps and Volts/Trim knobs to the desired upper limits. Note: You will not be able to adjust the upper limit outside of the minimum and maximum wire feed speed of the Wire Drive, nor below the lower limit. Turn the system power off. Return S2-7 to off.

If a Dual Procedure panel is installed, repeat the above procedure with the Procedure B selected. When done, attach the Control/Display panel to the Control Box. The machine is now ready for normal operation with the new limits.

**CONTROL BOX -- USING OPERATING LIMITS**

Once set, limits apply to all weld modes. Limiting Procedure A to 200 to 300 inches per minute, for example, limits the ability of the operator to adjust his WFS in pulse, CV and FCAW weld modes. Limiting the Volts to 23.0 to 24.5 would limit the ability of the operator to adjust his Volts in synergic and non-synergic CV modes. Procedure B could be set up with different limits. Limits are absolute -- they will override values stored in the memories. Note that limits do not apply to set up parameters, such as a Preflow and Arc Control.



## WIRE DRIVE OPERATION

The most frequently used Wire Drive settings are external; some features are accessed by internal settings.

### WIRE DRIVE SETTINGS -- EXTERNAL

#### 2 STEP/4 STEP SWITCH:

The Wire Drive has a 2 Step/ 4 Step switch located near the gun connector. This switch has no effect in CC modes of operation, such as stick welding.

#### Europe and World 2 Step Logic:

1. Closing the gun trigger initiates the welding sequence (preflow, run in, etc.).
2. Opening the gun trigger ends the welding sequence (burnback, postflow, etc.).

#### World 4 Step Logic:

With Crater Fill "OFF"

1. Closing the gun trigger initiates the welding sequence (preflow, run in, etc.).
2. Opening the trigger after the welding arc is established allows the weld to continue as long as current flows. If the arc goes out, the 4 step cycle is reset.
3. Closing the trigger again allows the weld to continue.
4. Opening the trigger again ends the welding sequence (burnback, postflow, etc.).

With Crater Fill "ON"

1. Closing the gun trigger initiates the welding sequence (preflow, run in, etc.).
2. Opening the trigger after the welding arc is established allows the weld to continue as long as current flows. If the arc goes out, the 4 step cycle is reset.
3. Closing the trigger again changes the wire feed speed and the Volts/Trim to the Crater values, and the weld to continue.
4. Opening the trigger again ends the welding sequence (burnback, postflow, etc.).

#### European Only 4 Step Logic

With Crater Fill "OFF":

1. Closing the gun trigger initiates the welding sequence (preflow, run in, etc.).
2. Opening the trigger allows the wire to continue feeding before or after the welding arc is established. If the arc goes out the wire continues feeding.
3. Closing the trigger again cancels the interlock and the wire to continue feeding.
4. Opening the trigger again ends the welding sequence (burnback, postflow, etc.).

With Crater Fill "ON":

1. Closing the gun trigger initiates the welding sequence (preflow, run in, etc.).
2. Opening the trigger allows the wire to continue feeding before or after the welding arc is established. If the arc goes out the wire continues feeding.
3. Closing the trigger again cancels the interlock changes the wire feed speed and the Volts/Trim to the Crater values, and the wire continues feeding.
4. Opening the trigger again ends the welding sequence (burnback, postflow, etc.).

#### COLD FEED / GAS PURGE SWITCH:

The Wire Drive has a Cold Feed/Gas Purge Switch located near the gun connector. This is an up/down center-off momentary toggle switch.

When held in the up position, the Wire Drive will feed wire, but neither the power source nor the gas solenoid will be energized. When cold feeding, the feed speed can be adjusted by rotating the WFS encoder knob on the Control Box. Adjusting the cold feed will not affect the run in or welding wire feed speed. When the cold feed switch is released, the cold feed value is saved.

When this switch is held in the down position, the gas solenoid valve is energized, but neither the power source nor the drive motor will be energized.

## WIRE DRIVE -- PC BOARD ADJUSTMENTS

### ELECTRODE POLARITY:

The system needs to be aware of the electrode polarity. A DIP switch setting on the Wire Drive PC board is used for this purpose. See INSTALLATION Section "Setting DIP Switches in the Wire Drive".

### GEAR BOX RATIO:

The systems needs to know which gear has been installed on the Wire Drive, low or high speed. A DIP switch setting on the Wire Drive PC board is used for this purpose. See INSTALLATION section "Wire Drive Ratio" for information on how to set the DIP Switch.

## WIRE REEL LOADING - READI-REELS, SPOOLS OR COILS

### To Mount a 30 Lb. (14 kg) Read-Reel Package (Using the Molded Plastic K363-P Read-Reel Adapter:)

1. Open the Wire Drive Compartment Door
2. Depress the Release Bar on the Retaining Collar and remove it from the spindle.
3. Place the Adapter on the spindle
4. Re-install the Retaining Collar. Make sure that the Release Bar "pops up" and that the collar retainers fully engage the retaining ring groove on the spindle.
5. Rotate the spindle and adapter so the retaining spring is at the 12 o'clock position.
6. Position the Read-Reel so that it will rotate in a direction when feeding so as to be de-reeled from bottom of the coil.
7. Set one of the Read-Reel inside cage wires on the slot in the retaining spring tab.
8. Lower the Read-Reel to depress the retaining spring and align the other inside cage wires with the grooves in the molded adapter.
9. Slide cage all the way onto the adapter until the retaining spring "pops up" fully.

## ⚠ CAUTION

CHECK TO BE SURE THE RETAINING SPRING HAS FULLY RETURNED TO THE LOCKING POSITION AND HAS SECURELY LOCKED THE READI-REEL CAGE IN PLACE. RETAINING SPRING MUST REST ON THE CAGE, NOT THE WELDING ELECTRODE.

10. To remove Read-Reel from Adapter, depress retaining spring tab with thumb while pulling the Read-Reel cage from the molded adapter with both hands. Do not remove adapter from spindle.

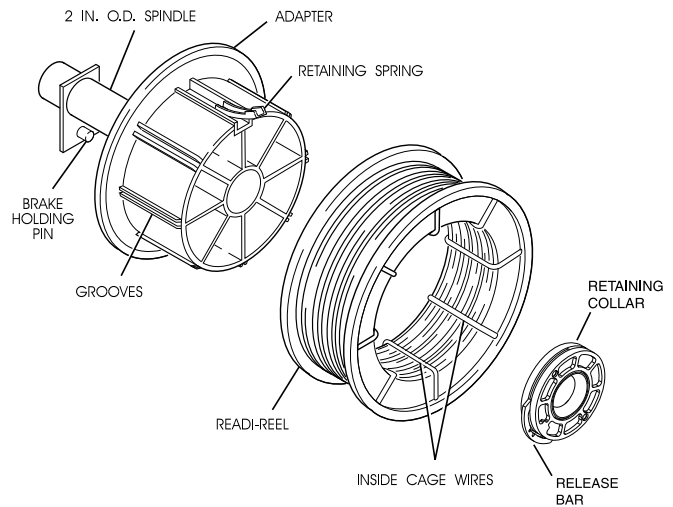


FIGURE B.1

### To Mount 10 to 44 Lb. (4.5-20 kg) Spools (12"/300 mm Diameter) or 14Lb.(6 Kg) Innershield Coils:

(For 13-14 lb. (6 Kg) Innershield coils, a K435 Coil Adapter must be used).

1. Open the Wire Drive Compartment Door
2. Depress the Release Bar on the Retaining Collar and remove it from the spindle.
3. Place the spool on the spindle making certain the spindle brake pin enters one of the holes in the back side of the spool. Be certain the wire comes off the reel in a direction so as to de-reel from the bottom of the coil.
4. Re-install the Retaining Collar. Make sure that the Release Bar "pops up" and that the collar retainers fully engage the retaining ring groove on the spindle.

## FEEDING ELECTRODE AND BRAKE ADJUSTMENT

- 1) Turn the Reel or spool until the free end of the electrode is accessible.
- 2) While tightly holding the electrode, cut off the bent end and straighten the first 6" (150 mm). Cut off the first 1" (25 mm). (If the electrode is not properly straightened, it may not feed or may jam causing a "birdnest".)
- 3) Insert the free end through the incoming guide tube.
- 4) Press the Cold Inch key or the Cold Feed Mode gun trigger and push the electrode into the drive roll.
- 1) Press end of 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", jams, or breaks at the drive roll, the drive roll pressure is too great. Back the pressure setting out turn, run new wire through gun, and repeat above steps.
- 3) If the only result is drive roll slippage, disengage the gun, pull the gun cable forward about 6" (150 mm). There should be a slight waviness in the exposed wire. If there is no waviness, the pressure is too low. Increase the pressure setting turn, reconnect the gun, tighten locking clamp and repeat the above steps.

### WARNING

When feeding with the gun trigger, unless "COLD FEED" trigger mode is selected, the electrode and drive mechanism are always "HOT" to work and ground and could remain "HOT" several seconds after the gun trigger is released.

- 5) Feed the electrode through the gun.
- 6) Adjust the brake tension with the thumbscrew on the spindle hub, until the reel turns freely but with little or no overrun when wire feeding is stopped. Do not overtighten.

## GAS GUARD REGULATOR SETTING

- 1) With the gas supply shut off, the Gas Guard regulator flow adjusting Key should be set to maximum (full clockwise) which is rated to be 60 SCFH (28 l/min).
- 2) Adjust gas supply flow rate for a level higher than will be required, then adjust Gas Guard flow adjusting Key counterclockwise to the desired gas flow rate.

## DRIVE ROLL PRESSURE SETTING

The Power Feed 11 pressure is factory pre-set to about position "2" as shown on the pressure indicator on the front of the feedplate door. This is an approximate setting.

The optimum drive roll pressure varies with type of wire, surface condition, lubrication, and hardness. Too much pressure could cause "birdnesting", but too little pressure could cause wire feed slippage with load and/or acceleration. The optimum drive roll setting can be determined as follows:

## MAKING A WELD

1. Use only a network compatible power source.
2. Properly connect the electrode and work leads for the correct electrode polarity.
3. Set all desired parameters such as trigger logic, Run-in Speed, Acceleration, Electrode polarity, etc. per "DIP SWITCH SETUP" in the INSTALLATION section.
4. Set 2-step, 4-step switch on wire drive to desired mode of operation. (Refer to "2-step/4-step switch operation" in this section.)
5. Select Weld Mode. (Refer to Control Box Operation in this section).
6. Use Control Select switches, increment/decrement switches, and encoder knobs to set desired parameters for weld depending on what options are installed. (Refer to Control Box Operation in this section).
7. Feed the electrode through the gun and cable and then cut the electrode within approximately .38" (9.5 mm) of the end of the contact tip for solid wire and within approximately .75" (19mm) of the extension guide for cored wire.
8. Connect work cable to metal to be welded. Work cable must make good electrical contact to the work. The work must also be grounded as stated in "Arc Welding Safety Precautions".

### WARNING



When using an Open Arc process, it is necessary to use correct eye, head, and body protection.

9. If used, be sure shielding gas valve is turned on.
10. Position electrode over joint. End of electrode may be lightly touching the work.
11. Lower welding helmet, close gun trigger, and start welding. Hold the gun so the contact tip to work distance gives the correct electrical stickout as required for the procedure being used.
12. To stop welding, release the gun trigger and then pull the gun away from the work after the arc goes

out and Postflow time, if used, is over.

13. If required, starting can be optimized by adjusting the acceleration and/or run-in speed. (Refer to Control Box Operation in this section).

## WIRE REEL CHANGING

At the end of a coil, remove the last of the old electrode coil from the conductor cable by either pulling it out at the nozzle end of the gun or by using the following procedure:

1. Cut the end of the electrode off at the gun end. Do not break it off by hand because this puts a slight bend in the wire making it difficult to pull it back through the nozzle.
2. Disconnect the gun cable from the gun connector on the Power Feed 11 wire drive unit and lay the gun and cable out straight.
3. Using pliers to grip the wire, pull it out of the cable from the connector end.
4. After the electrode has been removed, reconnect the gun cable to the drive. Load a new reel of electrode per the instructions in "Wire Reel Loading" in this section.

## WIRE FEED OVERLOAD PROTECTION

The wire drive has solid-state overload protection of the wire drive motor. If the wire drive motor becomes overloaded for an extended period of time the wire drive will issue a shutdown command to the Control Box and force it's status light to blink between green and red. The Control Box turns off the power source, wire feed and gas solenoid. The status light on the wire drive will continue to blink between green and red for about 30 seconds before the wire drive will automatically reset. At that time, the wire drive will issue a shutdown over command to the Control Box that will return the system to normal operation. The wire drive will force it's status light to solid green.

Overloads can result from improper tip size, liner, drive rolls, or guide tubes, obstructions or bends in the gun cable, feeding wire that is larger than the rated capacity of the feeder or any other factors that would impede normal wire feeding. (See "Avoiding Wire Feeding Problems" in the MAINTENANCE section).

## COMPONENT STATUS LIGHTS

Each network component has a single status light. The light is a bicolor, Green/Red, LED. The purpose of the status light is to allow the operator to quickly identify that the system is working properly or, if not,

which component is causing the problem. By using the status lights the operator can quickly pinpoint the system problem to a particular component. See the following table for a complete listing and description of all status light conditions.

**NOTE:** The green light **ON and steady** indicates a normal functioning system.

STATUS LIGHT STATES		
LED State	Power Source LED	LED on any other nodes (components); Wire Feeder, Control Box Etc.
Off	Power Source is not turned ON or is not functioning correctly.	The system component is not receiving input power or is faulty.
Green LED blinking at a "normal" rate	It should only blink for a few seconds while the system is mapping (identifying components). If blinking continues every group may have a mapping error. (DIP switches may be set incorrectly).	It should only blink for a few seconds until the system component (node) has been recognized. If the blinking continues at least one node in the group has a mapping error (DIP switches may be set incorrectly). The node or nodes with mapping errors will be blinking red. <ul style="list-style-type: none"> <li>• There may be too many components in the group. All components in the group will be blinking green.</li> <li>• The power source bus may not be available. The bus may be being used to program another component.</li> <li>• The LED's of the power source and the component being programmed will be solid green.</li> </ul>
Red LED blinking at a "normal" rate	Indicates a recoverable communication fault. The power source should automatically recover: If it cannot recover the LED will be solid red.	Indicates a recoverable communication fault most likely caused by one of the following. <ul style="list-style-type: none"> <li>• More than one control box (UI) in the group. All control boxes in the group will be blinking red.</li> <li>• No control box (UI) in the group. All nodes in the group will be blinking red.</li> <li>• More than one node, of the same equipment type, has the same group and feed head (FH) numbers. All these nodes will be blinking red.</li> <li>• The feed head DIP switches may be set to zero. The nodes with DIP switches set to zero will be blinking red.</li> <li>• The node bus may be off.</li> </ul>
Red/Green LED blinking at a "normal" rate	Indicates a recoverable hardware fault such as over temperature, overload shutdown etc.	Indicates a recoverable hardware fault such as over temperature, overload shutdown etc. Could also be an open shutdown circuit at the feed head (leads 570, 572 with tab terminals) typically used for water flow shutdown switches.

<b>STATUS LIGHT STATES (CON'T)</b>		
<b>LED State</b>	<b>Power Source LED</b>	<b>LED on any other nodes (components); Wire Feeder, Control Box Etc.</b>
Red LED blinking at a fast rate	Power source needs to be reprogrammed. Contact your Local Authorized Lincoln Field Service Facility.	System component (node) needs to be reprogrammed. Contact your Local Authorized Lincoln Field Service Facility.
Red LED ON and steady	Power source has a non-recoverable hardware fault. Contact your Local Authorized Lincoln Field Service Facility.	System component (node) has a non-recoverable hardware fault. Contact your Local Authorized Lincoln Field Service Facility.
Green LED ON and steady	System normal and functional.	System normal and functional.

**Normal Blinking LED** - Each illumination should exist for 0.5 seconds.

**Fast Blinking LED** - Each illumination should exist for 0.1 seconds.

TABLE C.1 – DRIVE ROLL AND GUIDE TUBE KITS

Wire Size		4-Roll Drive (4-Driven)
<b><u>Solid Steel Electrode</u></b>		
0.023" - 0.025"	(0.6 mm)	KP1505 - 030S
0.030"	(0.8 mm)	KP1505 - 030S
0.035"	(0.9 mm)	KP1505 - 035S
0.040"	(1.0 mm)	KP1505 - 045S*
0.045"	(1.2 mm)	KP1505 - 045S*
0.052"	(1.4 mm)	KP1505 - 052S
1/16"	(1.6 mm)	KP1505 - 1/16S
5/64"	(2.0 mm)	KP1505-5/64
3/32"	(2.4 mm)	KP1505-3/32
<b><u>Cored Electrode</u></b>		
0.030	(0.8 mm)	KP1505 - 035C
0.035"	(0.9 mm)	KP1505 - 035C
0.040"	(1.0 mm)	KP1505 - 045C
0.045"	(1.2 mm)	KP1505 - 045C
0.052"	(1.4 mm)	KP1505 - 052C
1/16"	(1.6 mm)	KP1505 - 1/16C
0.068"	(1.7 mm)	KP1505 - 068
5/64"	(2.0 mm)	KP1505 - 5/64
3/32"	(2.4 mm)	KP1505 - 3/32
7/64" Lincore Hard Facing	(2.8mm)	KP1505 - 7/64H
7/64"	(2.8mm)	KP1505 - 7/64
.120"	(3.0mm)	KP1505 - 120
<b><u>Aluminum Electrode</u></b>		
0.035"	(0.9 mm)	KP1507 - 035A
0.040"	(1.0 mm)	KP1507 - 040A
3/64"	(1.2 mm)	KP1507 - 3/64A
1/16"	(1.6 mm)	KP1507 - 1/16A
3/32"	(2.4 mm)	KP1507 - 3/32A

\* Included with K1636-1 Power Feed-11 (Europe) only.

The KP1507 series of drive roll kits contain a number of components, in addition to the drive rolls, to optimize the wire feeder for aluminum wire feeding. These components are specifically designed to protect the aluminum wire from abrasion and deformation, thereby avoiding many common aluminum feeding problems.

POWER FEED 11



## DESCRIPTION OF OPTIONAL CONTROL BOX PANELS

A number of Optional Features are available for use with Power Feed 11. Some Installation information is provided in this section, REFER TO THE INSTRUCTIONS THAT COME WITH EACH KIT FOR DETAILED INFORMATION REGARDING INSTALLATION.

### OPTIONAL PANELS FOR CONTROL BOX

The PF-11 Control Box is designed to accept two control panels and one door option. Panels can be mounted in one of two positions: Upper and lower.

Each Control Box is shipped with a Control/Display (CD) panel installed in the upper position, and a CV/Gouge (CV/G) panel in the lower position.

The CD panel must be installed in every Control Box. The remaining panel can be one of the following: CV/G, MX2, or MSP2.

**Note:** The CD panel must be installed in the upper position; its harness is not long enough to allow installation in the lower position. Similarly, option panels must be installed in the lower position.

### GENERAL PANEL INSTALLATION GUIDELINES:

Installation or removal of any panel can be done with only a Phillips screwdriver after the system power is turned off. To remove a panel, remove the two screws holding it in place, remove the push-on chassis ground wire and remove the harness connection to the Control Box main PC board. To install any panel, reverse that process. Turn power back on when complete (option panels are only recognized at power up. Do not install panels with the power on.) Note that removal or installation of any panel may also require the removal of the other panel, in order to have easy access to the PC board connectors. Detailed installation instructions are shipped with each option panel.

#### K1542-11 “MX2” Panel

This panel provides a selection of four weld modes: CV/MIG, CV/Flux Cored, CC/Stick/soft and CC/Stick/Crisp through a toggle switch and indicator lights (LEDs). It allows for adjustment of all set up parameters, Preflow, Run In, Arc Control, Burnback, Postflow, and Crater, through an up/down toggle switch, indicator lights and a 3 digit display.

#### K1542-12 “MSP2” Panel

This panel provides a selection of over 25 weld modes, including CV, pulse, FCAW and CC, through a toggle switch and indicator lights (LEDs). It allows for adjustment of all set up parameters, Preflow, Run In, Arc Control, Burnback, Postflow, and Crater, through an up/down toggle switch, indicator lights and a 3 digit display.

#### K1640-1 Dual Procedure/ Memory Door Panel

This panel provides two functions: Dual Procedure and Memory. Dual Procedure provides for setting and manual selection of two procedures. Selection can be done at the panel, or through a dual procedure welding gun switch connected to the Wire Drive trigger receptacle. Memory provides six independent storage locations for Control Box settings. All selections are done with push buttons and indicator lights.

Installation of the door option can be done with only a Phillips screwdriver and a 3/8” wrench after the system power is turned off. Start by removing the upper panel (for access to the PC board connector) and the old door (save the hinge parts). Connect the door option PC board connector and the push-on chassis ground wire, route the leads through the access hole, and install the door with the original hinge parts. Reinstall the upper panel to complete the installation. Detailed installation instruction are shipped with each door option.

## K1543, K1544 AND K1545 INPUT CABLE ASSEMBLIES

Available Cable Assemblies:

**K1543** - Control cable only. Consists of a 5-conductor control cable with a 5-pin control cable plug, without electrode cable, and is available in lengths of 8', 16', 25', 50' and 100'.

**K1544** - Consists of a 5-conductor control cable with a 5-pin control cable plug and a 4/0 electrode cable. It is rated at 600 amps, 60% duty cycle and is available in lengths of 8', 16', 25', and 50'.

**K1545** - Control cable and a 4/0 (85 mm<sup>2</sup>) electrode cable with Twist-Mate™ connector on one end and a stud terminal on the other. It is rated at 500 amps, 60% duty cycle and is available in lengths of 8', 16', 25', and 50'.

**With input power disconnected from the power source**, install the Control Cable Assemblies per the instruction in INSTALLATION - “Cable Connections”.



## WIRE SPINDLE ADAPTERS

**K435** - Permits 14 lb. (6 kg) Innershield coils to be mounted on 2" (51 mm) O.D. spindles.

**K363P** - Adapts Lincoln Readi-Reel coils of electrode 30 lb. (14 kg) and 22 lb. (10 kg) to a 2" (51 mm) spindle. Durable molded plastic one piece construction. Designed for easy loading; adapter remains on spindle for quick changeover.

## GUN AND CABLE ASSEMBLIES

A number of Fast-Mate™ air cooled and water cooled gun and cable assemblies as well as fume extraction models are available for use with the Power Feed 11. See the appropriate Magnum literature for detailed information.

### K1536-1 WATER FLOW SENSOR KIT

This kit is intended to be used as a means of stopping wire feeding in the event that the water cooler (for a water cooled gun) is not turned on. Water cooled guns can be damaged very quickly if they are used even momentarily without water flowing.

The K1536-1 has two control leads coming from the unit that become electrically common when water is flowing. The .25 inch tab terminals of leads 570 and 572, inside the feed head case, are disconnected from each other. Then the flow sensor control wires are connected to leads 570 and 572. Refer to the instructions that come with flow sensor kit for detailed installation instructions.

### K659-1 GAS GUARD REGULATOR

Adjustable flow regulator with removable adjuster key for CO<sub>2</sub> and Argon blend gases. Mounts onto feeder inlet, and reduces gas waste and arc start "blow" by reducing surge caused by excess pressure in supply hose.

Install the 5/8-18 male outlet of the regulator to the 5/8-18 female gas inlet on the back panel of the wire drive. Secure fitting with flow adjuster key at top. Attach gas supply to 5/8-18 female inlet of regulator per instructions in the INSTALLATION section.

### K1649-1 MOUNTING BRACKET-

## HORIZONTAL

The K1649-1 provides a bracket for mounting the Power Feed 11 horizontally on top of the Power Source. Installation instructions are included with the bracket.

## MAINTENANCE

### Safety Precautions

#### WARNING



#### **ELECTRIC SHOCK can kill.**

- Do not touch electrically live parts such as output terminals or internal wiring.
- When inching with gun trigger, electrode and drive mechanism are “hot” to work and ground and could remain energized several seconds after the gun trigger is released.
- Turn OFF input power at welding power source before installation or changing drive roll and/or guide tubes.
- 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.

Observe all additional Safety Guidelines detailed throughout this manual.

### Routine Maintenance

#### Drive Rolls and Guide Tubes

After feeding every coil of wire, inspect the drive roll section. Clean it as necessary. The drive rolls and Inner Wire Guides are stamped with the wire sizes they will feed. If a wire size other than that stamped on the roll(s) is to be used, the roll(s) and Inner Wire Guides must be changed.

All drive rolls have two identical grooves. The rolls may be flipped over to use the other groove.

See “Procedure to Install Drive Rolls and Wire Guides” in the INSTALLATION section for roll changing instructions.

#### Wire Reel Mounting - Readi-Reels and 10 through 44lb (4.5-14kg) Spools

No routine maintenance required.

### Avoiding Wire Feeding Problems

Wire feeding problems can be avoided by observing the following gun handling and feeder set up procedures:

- a) Do not kink or pull cable around sharp corners.
- b) Keep the electrode cable as straight as possible when welding or loading electrode through cable.
- c) Do not allow dolly wheels or trucks to run over cables.
- d) Keep cable clean by following maintenance instructions.
- e) Use only clean, rust-free electrode. The Lincoln electrodes have proper surface lubrication.
- f) Replace contact tip when the arc starts to become unstable or the contact tip end is fused or deformed.
- g) Do not use excessive wire spindle brake settings.
- h) Use proper drive rolls, wire guides and drive roll pressure settings.

### Periodic Maintenance

#### Wire Drive Motor and Gearbox

Every year inspect the gearbox and coat the gear teeth with grease. **Do not** use graphite grease.

#### Gun and Cable Maintenance

See appropriate Operator’s Manual.

### Procedure for Removing Feedplate from Wire Feeder

1. Using a 3/16" Hex Key Wrench remove the two screws that secure the Feedplate to the Interface Plate. These screws are located just below and to the right and left of the lower drive gears.
2. Disconnect the Electrode Lead from the Feedplate.
3. Swing the rear of the Feedplate out towards the front of the machine which will allow it to be pulled back and out of the machine.
4. Remove the gas hose and disconnect the gun leads.

## HOW TO USE TROUBLESHOOTING GUIDE

### WARNING

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

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

**Step 1. LOCATE PROBLEM (SYMPTOM).** Look under the column labeled “PROBLEM (SYMPTOMS)”. This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

**Step 2. POSSIBLE CAUSE.** The second column labeled “POSSIBLE CAUSE” lists the obvious external possibilities that may contribute to the machine symptom.

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

This column provides a course of action for the Possible Cause, generally it states to contact you local Lincoln Authorized Field Service Facility.

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

### WARNING



#### **ELECTRIC SHOCK can kill.**

- Do not touch electrically live parts such as output terminals or internal wiring.
- When inching with gun trigger, electrode and drive mechanism are “hot” to work and ground and could remain energized several seconds after the gun trigger is released.
- Turn OFF input power at welding power source before installation or changing drive roll and/or guide tubes.
- Welding power source must be connected to system ground per the National Electrical Code or any applicable local codes.
- Only qualified personnel should perform these trouble shooting procedures.

Observe all additional Safety Guidelines detailed throughout this manual.

### CAUTION

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

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
1. Rough wire feeding or wire not feeding but drive rolls are turning.	<ul style="list-style-type: none"> <li>a. Gun cable kinked and/or twisted.</li> <li>b. Wire jammed in gun and cable. Check for mechanical restrictions in feeding path.</li> <li>c. Check for current position of drive rolls Relative to split wire guide groove.</li> <li>d. Drive rolls may not be seated properly.</li> <li>e. Gun cable dirty. - Clean if necessary.</li> <li>f. Worn drive roll.</li> <li>g. Electrode rusty and/or dirty. Cable frayed, or poor solder joint at work or electrode lug.</li> <li>h. Worn nozzle or cable liner. - Replace if necessary.</li> <li>i. Partially flashed or melted contact tip. - Replace if necessary.</li> <li>j. Incorrect drive roll pressure. - Readjust if necessary.</li> <li>k. Improper liner, tip or inner/outer guides. - Replace if necessary.</li> </ul>	<p>If all recommended possible areas of misadjustment have been checked and the problem persists, <b>Contact your local Lincoln Authorized Field Service Facility.</b></p>

 **CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
2. Variable or "hunting arc."	<ul style="list-style-type: none"> <li>a. Wrong size, worn and/or melted contact tip. - Replace if necessary.</li> <li>b. Worn work cable or poor work connection. - Replace if necessary.</li> <li>c. Loose electrode or work cable connections.</li> <li>d. Wrong polarity. - Make sure electrode polarity is correct for process being used.</li> <li>e. Gas nozzle extended beyond gun tip or wire stickout too long while welding.</li> <li>f. Poor gas shielding on processes requiring gas. - Check gas flow and mixture.</li> </ul>	<p>If all recommended possible areas of misadjustment have been checked and the problem persists, <b>Contact your local Lincoln Authorized Field Service Facility.</b></p>
3. Poor arc striking with sticking or "blast-offs", weld porosity, narrow and ropy looking bead, or electrode stubbing into plate while welding.	<ul style="list-style-type: none"> <li>a. Improper procedures or techniques. - See "Gas Metal Arc Welding Guide" (GS-100).</li> <li>b. Improper gas shielding - Clean gas nozzle. Make certain that gas diffuser is not empty or turned off. Make certain gas flow rate is proper.</li> </ul> <p>Remove gun liner and check rubber seal for any sign of deterioration or damage. Be sure set screw in connector block is in place and tightened against the liner bushing.</p>	

 **CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
4. Tip seizes in diffuser.	a. Tip overheating due to prolonged or excessive high current and/or duty cycle welding.  <b>Note:</b> <i>A light application of high temperature antiseize lubricant (such as Lincoln E2067 Graphite Grease) may be applied to tip of threads.</i>	If all recommended possible areas of misadjustment have been checked and the problem persists, <b>Contact your local Lincoln Authorized Field Service Facility.</b>
5. Unit shuts off while welding or attempting to weld, status light is red/green alternating between colors every second. Unit tries to recover after 30 seconds and may repeat again.	a. Wire feed shut down circuit maybe electrically open. (Leads 570 and 572 in wire feed head.  b. The wire drive motor may be overloaded. Check for mechanical restrictions in the wire feeding path.	
6. Drive roll does not turn although arc voltage is present, and solenoid is on. Feed head and Control Box status LEDs are both solid green.	a. Check for loose or broken leads at the wire drive motor.  b. Defective wire feed motor or feed head PC board. Note: With WFS set to max control board should supply 24 VDC to motor (leads #550, #551).	

 **CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
7. No wire feed, solenoid, or arc voltage. Status LEDs are solid green.	a. Faulty gun trigger switch. The gun trigger switch or circuit may be faulty. Check or Replace.	<p>If all recommended possible areas of misadjustment have been checked and the problem persists, <b>Contact your local Lincoln Authorized Field Service Facility.</b></p>
8. No control of wire feed. All status lights are solid green. Preset WFS is adjustable on Control Box	a. Defective motor tach or control PC board, or harness. Check for loose or faulty connections on motor tach. See Wiring Diagram.	
9. Wire feed motor turns and solenoid operates, but no arc voltage is present. Status light is solid green on Control Box.	<p>a. Power source is unable to respond due to thermal or other type of shut down mode.</p> <p>b. Power source is defective. See Power Source LED Status Light Chart.</p>	

 **CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
10. Speed does not change when weld current flows. Status lights are solid green.	a. Run-in and weld speeds are set to the same value. b. Possible problem with current sensor electronics in power source. Check power source manual to trouble shoot current sensor electronics.	If all recommended possible areas of misadjustment have been checked and the problem persists, <b>Contact your local Lincoln Authorized Field Service Facility.</b>
11. Voltmeter and/or ammeter do not function properly even though status lights are solid green. Welding may vary from normal procedure.	a. 67 and/or 21 voltage sense leads may have intermittent or poor connections. Check. b. Possible problem with power source electronics.	
12. Purge switch on feed head does not activate solenoid but trigger closure in MIG or pulse modes does.	a. Defective gas purge switch or feed head board. Check continuity with gas purge switch held down across J1 pins 3 and 5. Release purge switch and note there should be no continuity now. If either of these fail, the problem is either in the gas purge switch or harnessing. If no failure, replace feed head board.	
13. Cold feed switch does not activate the motor but trigger does in MIG or Pulse modes. LEDs are solid green on both CB and feed head boards.	a. Defective cold feed switch or feed head PC board. Check continuity with cold feed switch held up across plug pins 3 and 4 of J1. Release the cold inch switch and note that there should be no continuity now. If either of these fail, the problem is either in the purge switch or harnessing. If continuity O.K., replace feed head board.	

 **CAUTION**

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

POWER FEED 11





Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
14. Displays and/or indicator lights do not change when their corresponding switches and or knobs are activated to request a change.	a. The encoders or switches may be faulty. b. Check for broken harness wire(s) or harness disconnected from intended location.	If all recommended possible areas of misadjustment have been checked and the problem persists, <b>Contact your local Lincoln Authorized Field Service Facility.</b>

 **CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
15. Display(s) are blank.	<ul style="list-style-type: none"> <li>a. Power source is OFF.</li> <li>b. Feeder supply or fuse circuit at power source is blown or tripped, or defective harness or cabling.</li> <li>c. Display or CB boards may be faulty.</li> </ul>	
16. Dual Procedure is not functioning when using remote dual procedure switch. Status lights are solid green on CB and head boards.	<ul style="list-style-type: none"> <li>a. Gun has not been selected at the control box. Set dual procedure switch on CB to gun. Refer to operating instructions.</li> <li>b. Faulty remote dual procedure switch. Remove switch. Check continuity between switch pins with switch open and closed. If it fails the continuity test, repair or replace switch.</li> <li>c. Faulty Local Dual procedure switch.</li> </ul>	<p>If all recommended possible areas of misadjustment have been checked and the problem persists, <b>Contact your local Lincoln Authorized Field Service Facility.</b></p>

 **CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
17. Dual Procedure is not functioning when using the local dual procedure switch (on CB). Status lights are solid green on CB and Head boards.	a. Faulty local dual procedure switch or CB mother board. Disconnect harness plug from J5 of CB mother board. Check that there is continuity between plug pins 1 and 7 local DPS is in position "A" but not when in gun or "B". Now check that there is continuity between plug pins 1 and 8 when local DPS is in position "B" but not when in "Gun" or "A". If any of these continuity tests fail, repair or replace switch or switch harness to correct the problem, Otherwise, replace CB mother board.	If all recommended possible areas of misadjustment have been checked and the problem persists, <b>Contact your local Lincoln Authorized Field Service Facility.</b>
18. Wire feed speed is consistent and adjustable, but operates at the wrong speed.	a. Dip switch on feed head board does not match gear ratio used at gear box. If using a high speed gear, the feed head PC board dip switch 8 must be set to 1 or "ON".  b. Feed head board is not properly reading DIP switch. Replace feed head PC board.	
19. Status LED not solid green	a. see LED Status Light Chart.	

 **CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

**Note:** For any Err # listed below write down the error number for reference and try cycling power to see if the error clears itself. If not, refer to the What to Do column for the given Err.

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Display shows any of the following:		
Err 001	More than 1 CB with the same group number.	Make sure the group dip switch setting is unique for each CB.
Err 003	Too many objects in group.	A given group can only support up to 7 objects. Remove any objects over 7 from the group either by changing the group dip switch settings or physically disconnecting any objects over 7 in the group.
Err 004	More than 1 object of the same equipment type with the same group # and feed head #.	Adjust the dip switch setting to make either the group # or feed head # unique for all objects of the same equipment type.
Err 005	A feed head has its feed head dip switches set to zero in a group with more than one object.	The appropriate feed head # is 1 through 7. Check the dip switch setting chart in INSTALLATION section and set the switches to make the Feed head ID non-zero.
Err 006	Did not receive a recognition command from the power source.	Check to see if the status light is <u>not</u> solid green on the power source (refer to status light states in OPERATION section if not). Also, check continuity in the communication lines from CB to Power Source (refer to wiring diagram). Refer to Power source trouble shooting section for additional information. If all these avenues fail, replace CB mother PC board.

 **CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

**Note:** For any Err # listed below write down the error number for reference and try cycling power to see if the error clears itself. If not, refer to the What to Do column for the given Err.

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Display shows any of the following:		
Err 020	An attempt was made to reprogram a CB or feed head but the program did not verify.	Check for potential electrical HF noise generators in the area. Try removing the noise source and programming again. If the Err 020 still occurs, either replace the EEPROM chip(s) in the board being reprogrammed or replace the whole PC board being reprogrammed.
Err 100	The Power Source issued a shut down command for some reason.	See what to Do on Err 006.
Err 200	No Heart beat response from the PS.	See what to Do on Err 006.
Err 201	No heart beat response from an object.	If this occurs while welding, the status LED should be flashing red on the object that lost heart beat. Otherwise, look for any nodes that are flashing green. This indicates they have not been recognized and there is a power source problem (see power source trouble shooting section). If the status LED is either flashing or solid red, there may be a problem with continuity in the communication lines. Check the lines for continuity, in the cable and harnessing (refer to wiring diagram).
Err 210	EEPROM error.	Parameter recalled at power up was out of range. Rotate Encoder Knob to reset. Check all settings before proceeding to weld. If this condition persists then replace the CB mother PC board.

**⚠ CAUTION**

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

POWER FEED 11



Observe all Safety Guidelines detailed throughout this manual

**Note:** For any Err # listed below write down the error number for reference and try cycling power to see if the error clears itself. If not, refer to the What to Do column for the given Err.

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Display shows any of the following:		
Err 211	Microprocessor RAM error in Control Box.	Turn Power off at power source. Wait 5 seconds. Turn power back on. If Err 211 is displayed again, then replace CB mother PC board.
Err 212	Microprocessor RAM Error in object board other than Control Box (Such as feed head)	Cycle power as in Err 211. If Err 212 is still displayed, then replace the PC board in the object with the fault. The object with the fault should be solid red on its status LED.
- - - (three dashes)	Appears on right display of CB module that contains the status LED	This is an indication that a constant current such as stick or gauge mode has been selected. Turning the right encoder clockwise when in this state will activate output to Power Source. Turning the right encoder counter-clockwise will deactivate output.

 **CAUTION**

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

POWER FEED 11



# WIRING DIAGRAM - POWER FEED 11 WIRE FEEDER

**NOTES:**

N.A. PIN NEAREST THE FLAT EDGE OF LED LENS (CATHODE) ALIGNS WITH BLACK LEAD OF LED SOCKET.

N.B. TOGGLE SWITCHES SHOWN FROM CONNECTION SIDE OF SWITCH.

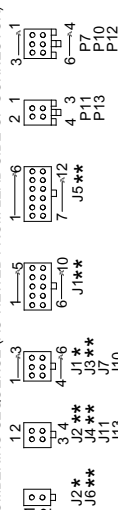
ELECTRICAL SYMBOLS PER E1537.

LEAD COLOR CODING

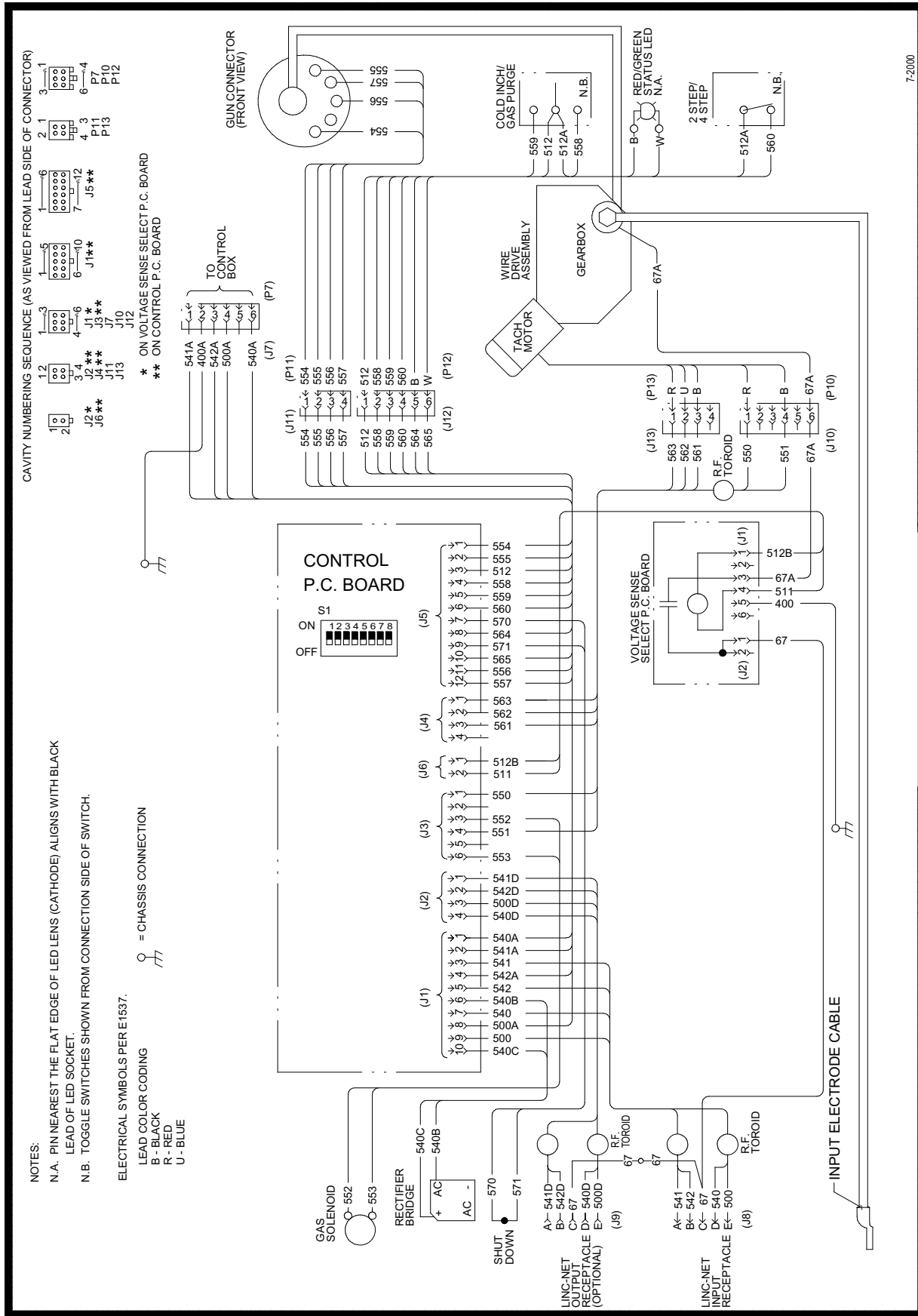
- B - BLACK
- R - RED
- U - BLUE

⏏ = CHASSIS CONNECTION

CAVITY NUMBERING SEQUENCE (AS VIEWED FROM LEAD SIDE OF CONNECTOR)



\* ON VOLTAGE SENSE SELECT P.C. BOARD  
 \*\* ON CONTROL P.C. BOARD

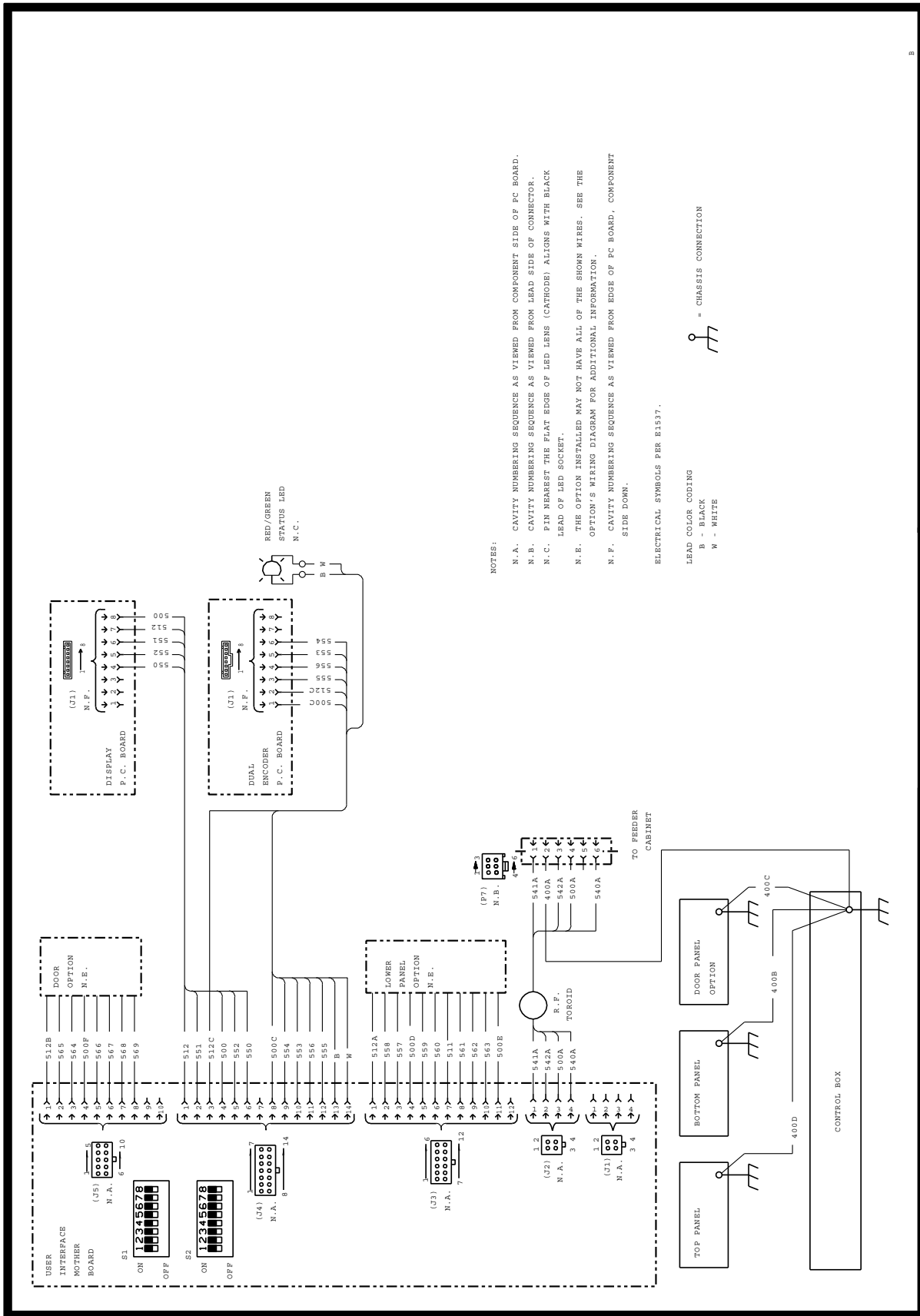


7-2000

L10778

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 POWER FEED 11 CONTROL BOX



NOTES:

- N.A. CAVITY NUMBERING SEQUENCE AS VIEWED FROM COMPONENT SIDE OF PC BOARD.
- N.B. CAVITY NUMBERING SEQUENCE AS VIEWED FROM LEAD SIDE OF CONNECTOR.
- N.C. PIN NEAREST THE FLAT EDGE OF LED LENS (CATHODE) ALIGNS WITH BLACK LEAD OF LED SOCKET.
- N.E. THE OPTION INSTALLED MAY NOT HAVE ALL OF THE SHOWN WIRES. SEE THE OPTION'S WIRING DIAGRAM FOR ADDITIONAL INFORMATION.
- N.F. CAVITY NUMBERING SEQUENCE AS VIEWED FROM EDGE OF PC BOARD, COMPONENT SIDE DOWN.

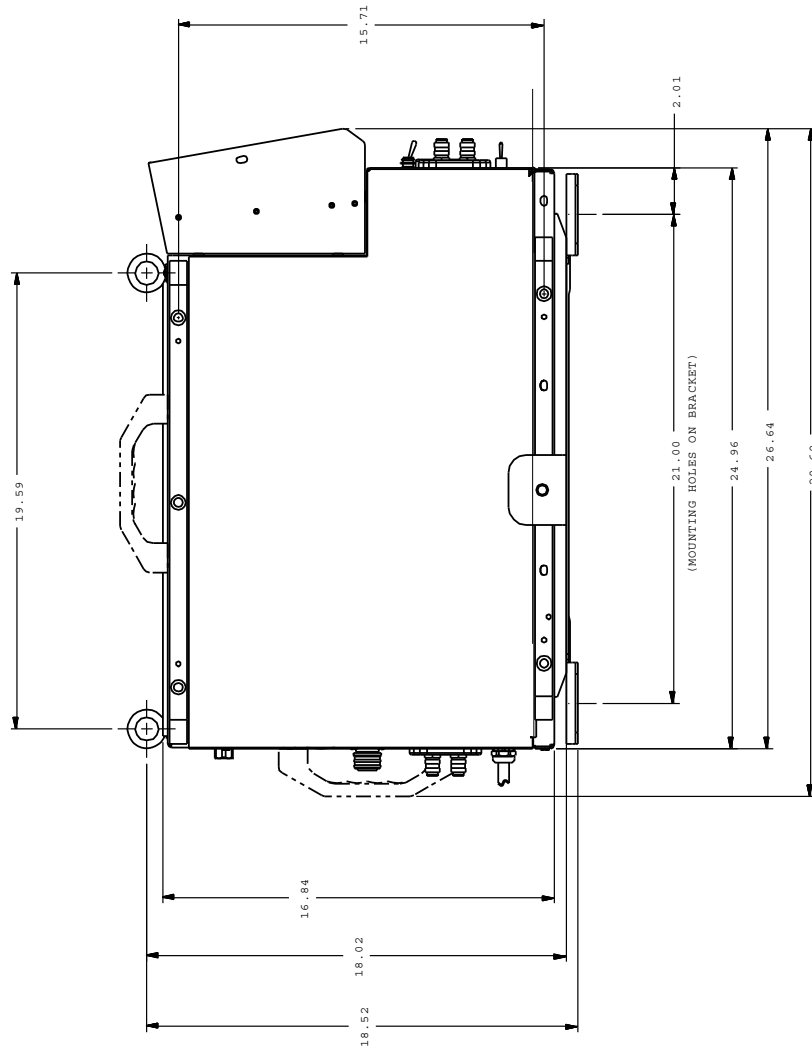
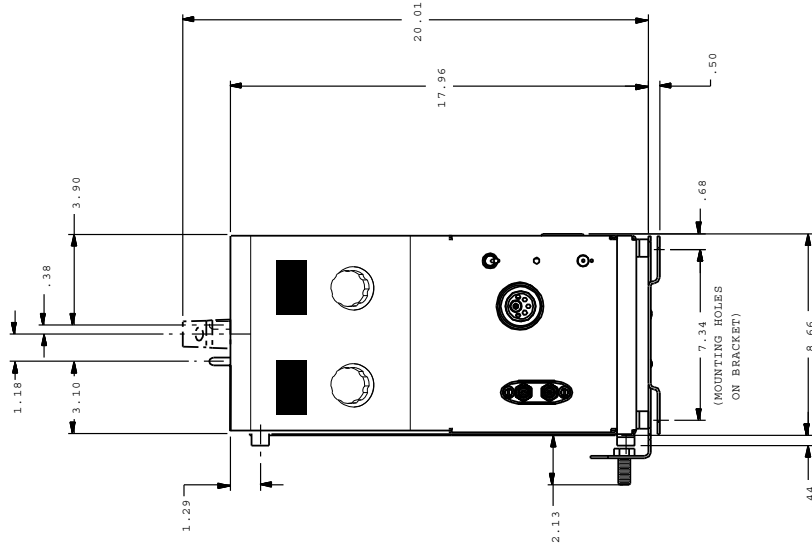
ELECTRICAL SYMBOLS PER E1537.

LEAD COLOR CODING  
 B - BLACK  
 W - WHITE

⏏ = CHASSIS CONNECTION

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..





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B-UF

POWER FEED 11



# NOTES

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<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ってください。</li> </ul>	<ul style="list-style-type: none"> <li>● パネルやカバーを取り外したままで機械操作をしないで下さい。</li> </ul>	Japanese <b>注意事項</b>
<ul style="list-style-type: none"> <li>● 頭部遠離煙霧。</li> <li>● 在呼吸區使用通風或排風器除煙。</li> </ul>	<ul style="list-style-type: none"> <li>● 維修前切斷電源。</li> </ul>	<ul style="list-style-type: none"> <li>● 儀表板打開或沒有安全罩時不準作業。</li> </ul>	Chinese <b>警告</b>
<ul style="list-style-type: none"> <li>● 얼굴로부터 용접가스를 멀리하십시오.</li> <li>● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 보수전에 전원을 차단하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 판넬이 열린 상태로 작동치 마십시오.</li> </ul>	Korean <b>위험</b>
<ul style="list-style-type: none"> <li>● ابعد 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>● أقطع التيار الكهربائي قبل القيام بأية صيانة.</li> </ul>	<ul style="list-style-type: none"> <li>● لا تشغيل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.</li> </ul>	Arabic <b>تحذير</b>

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

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

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

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.

<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>● Aíslese del trabajo y de la tierra.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenga el material combustible fuera del área de trabajo.</li> </ul>	<ul style="list-style-type: none"> <li>● Protéjase los ojos, los oídos y el cuerpo.</li> </ul>
French <b>ATTENTION</b>	<ul style="list-style-type: none"> <li>● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension.</li> <li>● Isolez-vous du travail et de la terre.</li> </ul>	<ul style="list-style-type: none"> <li>● Gardez à l'écart de tout matériel inflammable.</li> </ul>	<ul style="list-style-type: none"> <li>● Protégez vos yeux, vos oreilles et votre corps.</li> </ul>
German <b>WARNUNG</b>	<ul style="list-style-type: none"> <li>● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung!</li> <li>● Isolieren Sie sich von den Elektroden und dem Erdboden!</li> </ul>	<ul style="list-style-type: none"> <li>● Entfernen Sie brennbares Material!</li> </ul>	<ul style="list-style-type: none"> <li>● Tragen Sie Augen-, Ohren- und Körperschutz!</li> </ul>
Portuguese <b>ATENÇÃO</b>	<ul style="list-style-type: none"> <li>● Não toque partes elétricas e electrodos com a pele ou roupa molhada.</li> <li>● Isole-se da peça e terra.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenha inflamáveis bem guardados.</li> </ul>	<ul style="list-style-type: none"> <li>● Use proteção para a vista, ouvido e corpo.</li> </ul>
Japanese <b>注意事項</b>	<ul style="list-style-type: none"> <li>● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。</li> <li>● 施工物やアースから身体が絶縁されている様にして下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● 燃えやすいものの側での溶接作業は絶対にしてはなりません。</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条。</li> <li>● 使你自已与地面和工作件绝缘。</li> </ul>	<ul style="list-style-type: none"> <li>● 把一切易燃物品移离工作场所。</li> </ul>	<ul style="list-style-type: none"> <li>● 佩戴眼、耳及身体劳动保护用具。</li> </ul>
Korean <b>위험</b>	<ul style="list-style-type: none"> <li>● 전도체나 용접봉을 젖은 형갑 또는 피부로 절대 접촉치 마십시오.</li> <li>● 모재와 접지를 접촉치 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 인화성 물질을 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 الاجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجسدك أو بالملابس المبللة بالماء.</li> <li>● ضع عازلا على جسمك خلال العمل.</li> </ul>	<ul style="list-style-type: none"> <li>● ضع المواد القابلة للاشتعال في مكان بعيد.</li> </ul>	<ul style="list-style-type: none"> <li>● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.</li> </ul>

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

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

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

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



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